SERVICE MANUAL

LCD DISPLAY
LCD1550X / LCD1550X-BK

NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION
DECEMBER 2001

CBB-S5765 Rev.A

Changes	
Following changes are added to Adjustment Procedure. 1) 1 PC available for DVI-PC is added to 2.2 Measurement instrument used. 2) Configuration of DVI-I input connector (VIDEO) mentioned in 2.4.3 Configuration of signal input/power input section is revised. 3) The check item <Swivel> is added to 2.5.2 Mechanism and appearance inspection. 4) Note 1) is added to 2.6.1 Preparation. 5) BRIGHTNESS MAX value of the setting state is changed to 220 from 255 in 2.6.1 Preparation. 6) Some confirmation items are added to 2.6.1.1 Confirming operation of operation SW and functions. 7) ADC MAX value is specified in 2.6.2.1 Confirming OSM picture during heat running. 8) 2.6.2.1 Confirming OSM picture during heat running is revised. 9) EDID DATA DUMP TEXT is newly entitled as 2.7 Configuration of DDC (EDID) data. 10) 2.7.1.10 Power voltage fluctuation and 2.7.1.11 Power asynchronous swing are deleted. 11) The table in 2.8.2.1 Picture performance inspection is revised. 12) The picture and the table in 2.8.2.3 Panel inspection is modified. 13) 2.9.3 Standards for display conditions is revised. 14) BRIGHTNESS MAX value in 2.10.1 OSM default setting is changed to 220 from 255. 15) The table <Factory mode> in 2.12 OSM display matrix is modified. **Rev.A**: 2/6/2002	

Contents

1. Circuit description

1.1 Power circuit

(1) The power block is compatible with 100 to 120VAC/220 to 240VAC. (Automatically tracked)

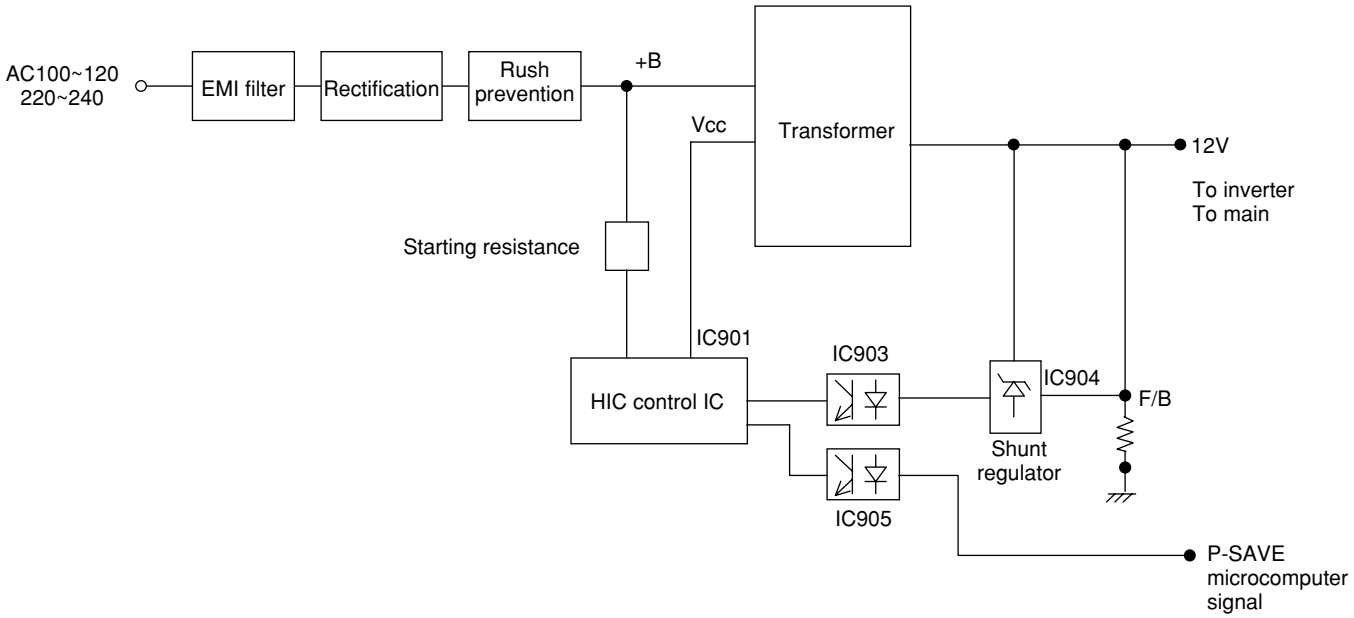
(2) The power supply section is a PRC (ON width control with constant OFF time) during P-SAVE, and operates as a pseudo-resonance circuit in the steady state.
By feeding back via the photocoupler IC903 from the output voltage with the HIC (STR-G6452) flyback converter type switching IC (IC901) with built-in POWER-MOS FET and separate-exciting control IC, the voltage is constantly controlled to prevent output voltage fluctuations caused by AC input voltage fluctuations and secondary side load fluctuations.

(3) Switching of the PRC and pseudo-resonance is controlled by inputting to IC901 via IC905 with a microcomputer signal.

	Standby mode (PRC mode)	Normal mode (pseudo-resonance mode)
Microcomputer signal (J901 ① PIN)	L	H
IC901 oscillation frequency	Approx. 20kHz	Approx. 50k~150kHz

(4) The secondary side output voltage of this power circuit is a single-phase 12V.

<Block diagram>

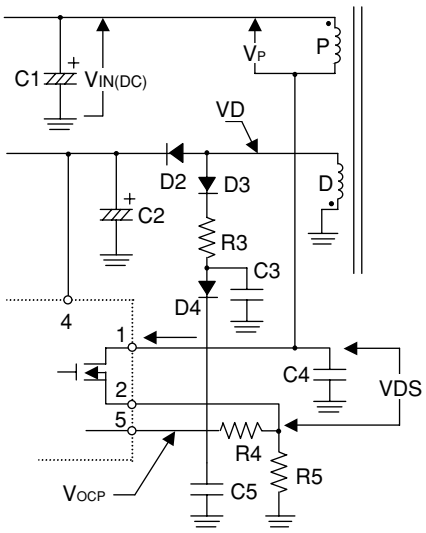


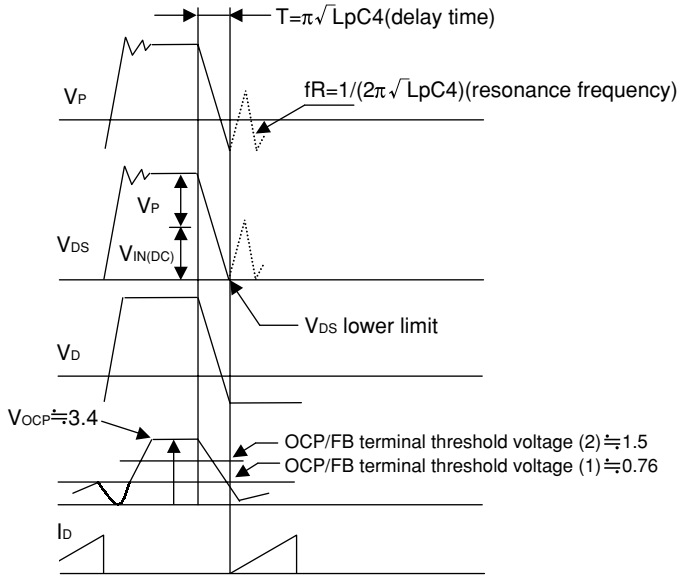
1.2 Detailed description of each circuit

1.2.1 Pseudo-resonance circuit method

With pseudo-resonance, when the discharge of energy (secondary coil current = 0) ends on the secondary side of the transformer, the transformer ends the transformer connection. Pseudo-resonance takes place between the primary side inductance and voltage resonance capacitor (or parasitic capacity) between the drain and source. The drain voltage is reduced to the sine wave. When the drain voltage reaches the bottom (valley) of this vibration waveform and the next cycle turns ON, soft switching takes place. With the effect of the voltage resonance capacitor, the dv/dt of the V_{DS} during turn OFF becomes gradual. This series of operations is called pseudo-resonance. The turn ON timing is applied using the signal that has passed through the delay circuit using the flyback voltage waveform of the auxiliary coil.

<Circuit and waveform>





1.2.2 Switching circuit operation

When actually changing over, if the voltage Vth (1) of the pseudo-signal applied on the HIC pin ⑤ OCP/FB terminal is nearly equal to 0.76VMIN or more or less than the threshold voltage Vth (2) 1.3V, the internal Comp 1 operates, and PRC operation with a fixed OFF interval takes place at TOFF ≒ 50μ S.

When this voltage is more than the threshold voltage Vth (2) ≒ 1.5V or more (Max. 6V), the internal Comp 2 operates. The OFF time generated by the internal transmitter changes at approx. 1μS (Max). MOSFET remains OFF while the voltage is higher than the threshold voltage Vth (1).

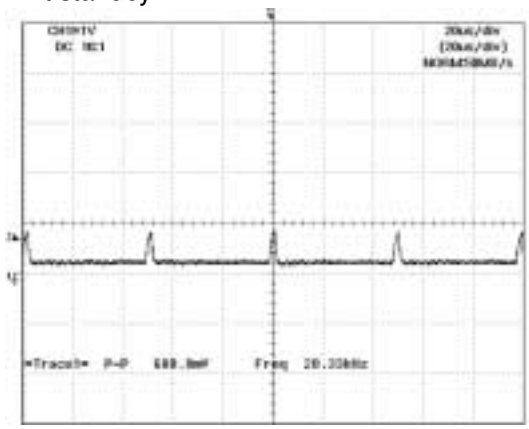
Pseudo-resonance operation refers to matching the timing for turning this MOSFET ON with the bottom point of the voltage resonance after the transformer has discharged the energy, and with a cycle one-half of the resonance frequency. When the voltage resonance capacitor C906 is connected between the drain and ground, and the delay circuit R907, R909, C914 or D902 is connected between the auxiliary coil T①-② and pin ⑤ OCP/FB terminal, the flyback voltage generated from the auxiliary coil when MOSFET is OFF causes the pseudo-resonance signal to operate the IC internal Comp 1 and Comp 2, and starts pseudo-resonance operation.

Even when discharge of the transformer energy has finished with the delay circuit, the pseudo-resonance signal will not lower to the pin ⑤ terminal immediately. This is because the charge at C909 and C914 rises above the threshold Vth (1) or less for a set time after the charge is discharged by the composite impedance of the IC internal active lowpass filter and R905.

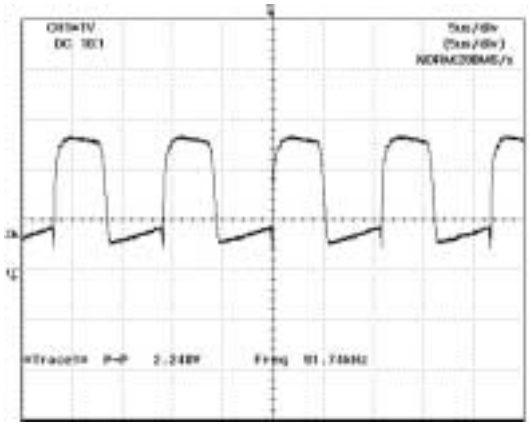
<Waveform at switching>

IC901 pin ⑤ waveform

At standby



When normal

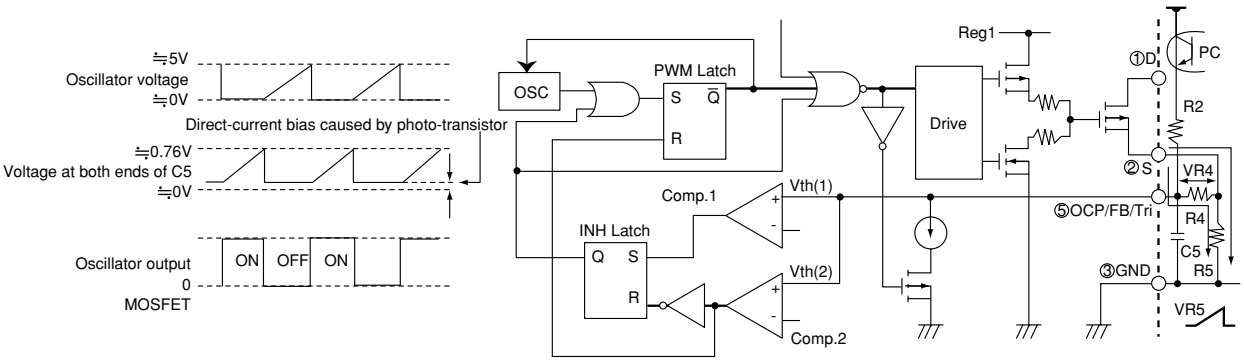


1.2.3 Description of operation

(1) When the power is turned ON, C924 is charged by the starting resistors R903 and R934. When this IC901 pin ④ voltage reaches 17.6V, the control circuit starts operation. After the control circuit starts operation, power is attained by rectifying and smoothing the coil voltage at the T901 auxiliary coil ②-①.

(2) IC901 pin ⑤ OCP/FB terminal, oscillator and constant-voltage control circuit
The oscillator uses the HIC's internal CI charging/discharging. Pulse signals are generated to determine the MOSFET OFF time. The constant-voltage control when the switching power is configured fixes the MOSFET OFF time (50μ sec), and functions with the PRC operation that changes the ON time and the pseudo-resonance operation.

The operation for no-constant voltage is shown in the figure below. When MOSFET is ON, capacitor C1 in OSC is charged to the constant-voltage (5.6V). By passing the drain current I_P to R906, a voltage drop (VR5) occurs at the pin ⑤ OCP/FB terminal. This voltage has the same waveform as I_P, and approximately the same voltage as VR5 is applied on the pin ①. When the pin ① voltage reaches the threshold voltage 0.76V, Comp 1 operates, and MOSFET turns OFF when the internal converter reverses. The C1 charge is released when MOSFET turns OFF, and charging of C1 starts with the constant-current discharge circuit. The voltage at both ends drops at the inclination determined by the capacitor in the OSC and the constant-current discharge circuit. When the voltage at both ends of the capacitor in OSC drops to approx. 1.2V, the oscillator output reverses again and MOSFET turns ON. At this time, the capacitor in OSC is rapidly charged to 5.6V. MOSFET continues oscillation with a repetition of these steps.

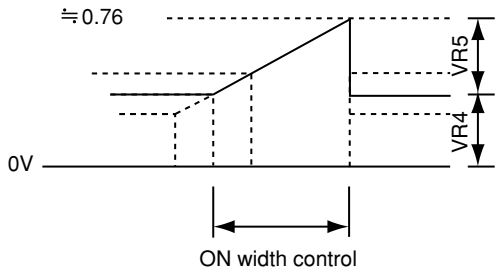


Oscillation operation during constant-voltage control

As explained above, the time determined by the VR5 (I_P) inclination is the MOSFET ON time. This fixed time is adjusted to 50μsec by the constant-current discharge circuit.
To control the output, the F/B current passed to photocoupler IC903 is passed to R905 and R935, and the voltage drop VR4 caused by this is applied on VR5. With this, the VR5 voltage value (IP peak value) required to reverse Comp 1 is used as the control for the current mode controlled by VR4 (FB current).

When MOSFET is OFF, the bias amount to just before MOSFET turns ON is lowered to approx. half by the active lowpass filter's 0.8mA (typ.) constant-current bias circuit. As a result, the surge noise that occurs when MOSFET turns ON is absorbed by C909.

Conventionally, the charging current of the oscillator's capacitor was changed by the photocoupler current, and the charging time until the threshold voltage Vth (1) $ 0.73[V] was changed. However, with the STR-G6452, the DC bias is controlled.



(3) Pin ⑤ OCP/FB terminal and OCP circuit

This is a pulse bypass method overcurrent protection circuit that detects the MOSFET drain current's peak value every pulse, and reverses the oscillator output.

The MOSFET drain current is detected by connecting R906 across the pin ② MOSFET source terminal and pin ③ GND terminal, and inputting the drop voltage into the OCP/FB terminal.

The OCP terminal's threshold voltage r+h(1) is approx. 0.76V (typ.) in respect to the GND. R905, R935 and C909 are the filter circuits used to prevent malfunctions by the surge current generated when MOSFET turns ON.

When the secondary output drops in the overload state, the primary auxiliary coil voltage drops in proportion. Thus, the pin ④ voltage drops to below the operation stop voltage, and the operation stops.

In this case, the circuit current drops simultaneously, so the pin ④ voltage rises again with the charging current from R903 and R934, and intermittent operation that restarts with the operation start voltage takes place.

1.2.4 Protection circuit

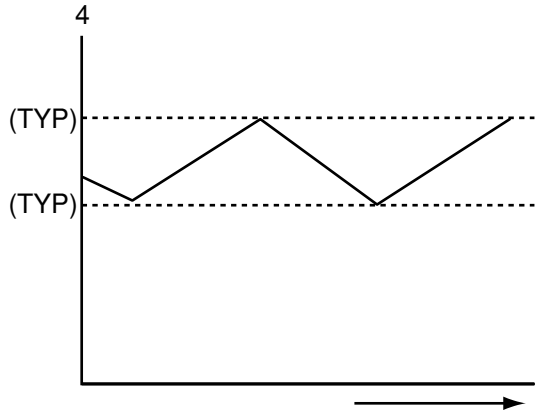
A fuse is inserted in the 12V line (F910, F911) as an overcurrent protection and as a circuit that maintains the oscillator output at the LOW level and stops the power circuit operation when the overvoltage protection (OVP) circuit or overheat protection (TSD) circuit operate.

1.2.4.1. Latch circuit

This circuit maintains the oscillator output at the LOW level and stops the power circuit operation when the overvoltage protection (OVP) circuit or overheat protection (TSD) circuit operate. The latch circuit holding current is 70μ A max. (Ta = 25˚C) when the voltage of pin ④ is 10.5V. By considering that this increases lightly at high temperatures and by passing a current of 140μ A or more to the pin ④ from the starting resistor, the power circuit will maintain the stopped state. A delay time is provided with C2 in the hybrid IC to prevent malfunctioning by noise, etc. If the OVP or TSD circuit operation continues for approx. 10μ sec or more, the latch circuit will operate.

Note that even if the latch circuit operates, the constant-voltage power (Reg) circuit is functioning in the control circuit, and the circuit current is high. Thus, the voltage of pin ④ will drop suddenly. When the voltage of pin ④ drops to below the operation stop voltage (10.1V (typ.)), the circuit current will drop to 70μ A (Ta = 25˚C) or less, so the voltage of pin ④ will start rising.

When the operation start voltage (17.6V (typ.)) is reached, the circuit current will start to increase again, so the voltage of pin ④ will drop suddenly. Thus, when the latch circuit is operating, the voltage of pin ④ will rise and lower between 10.1V (typ.) and 17.6V (typ.) and prevent the voltage of pin ④ from rising higher. An example of the voltage of pin ④ waveform during latch circuit operation is shown in the figure below. The latch circuit is canceled by lowering the voltage of pin ④ to less than 7.9V, and generally, it is restarted by turning the AC power OFF and ON.



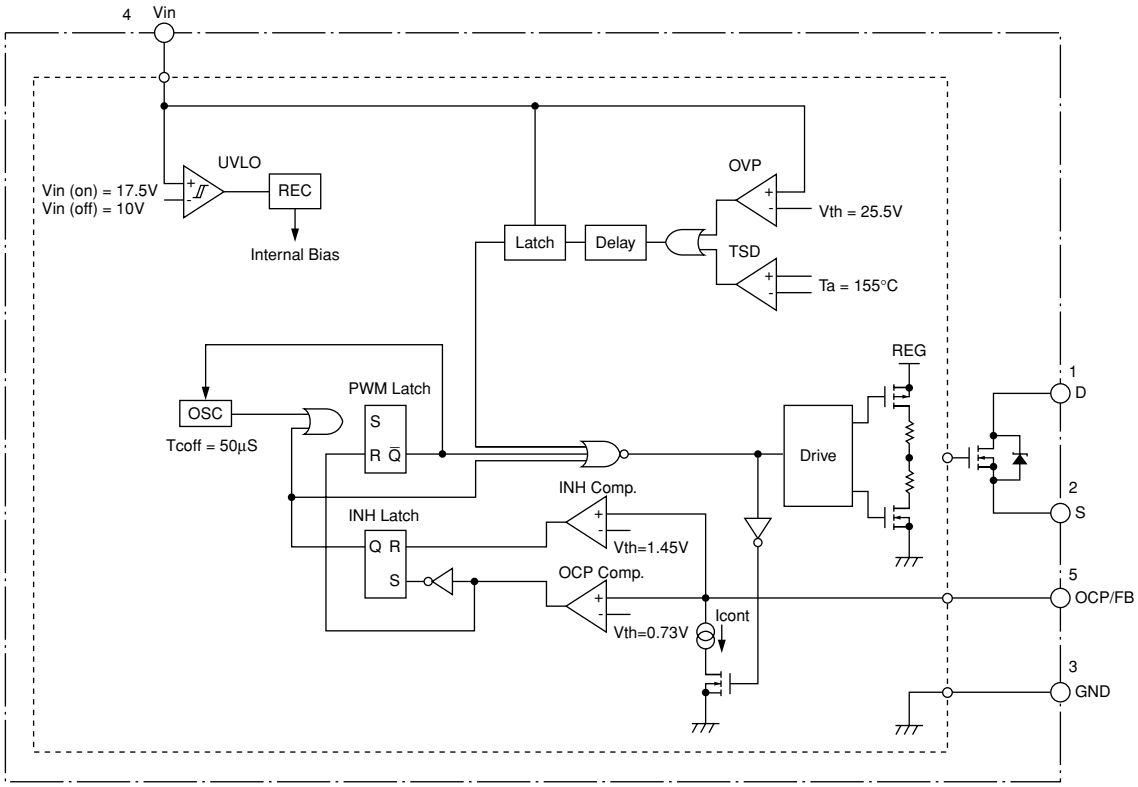
Example of waveform of pin ④ at latch circuit operation

1.2.4.2 Overheat protection circuit

This circuit operates the latch circuit when the hybrid IC's frame temperature exceeds 135˚C (MIN). The temperature is actually detected by the control circuit element. Since MOSFET and the control circuit element are on the same frame, this will also function when MOSFET overheats.

1.2.4.3 Overvoltage protection circuit

This circuit operates the latch circuit when the voltage of pin ④ exceeds 25.5V (typ.). Basically, this functions as the overvoltage protection for pin ④ in the control circuit. Normally, the pin ④ is supplied from the transformer's secondary coil. This voltage is proportional to the output voltage, and also functions for the secondary output overvoltage when the control circuit is open, etc.



Functions of each terminal

Terminal No.	Symbol	Name	Function
1	D	Drain terminal	MOSFET drain
2	S	Source terminal	MOSFET source
3	GND	Ground terminal	Ground
4	V_{IN}	Power terminal	Control circuit power input
5	O.C.P. / F.B	Overcurrent/feedback terminal	Overcurrent detection signal and constant-voltage control signal input

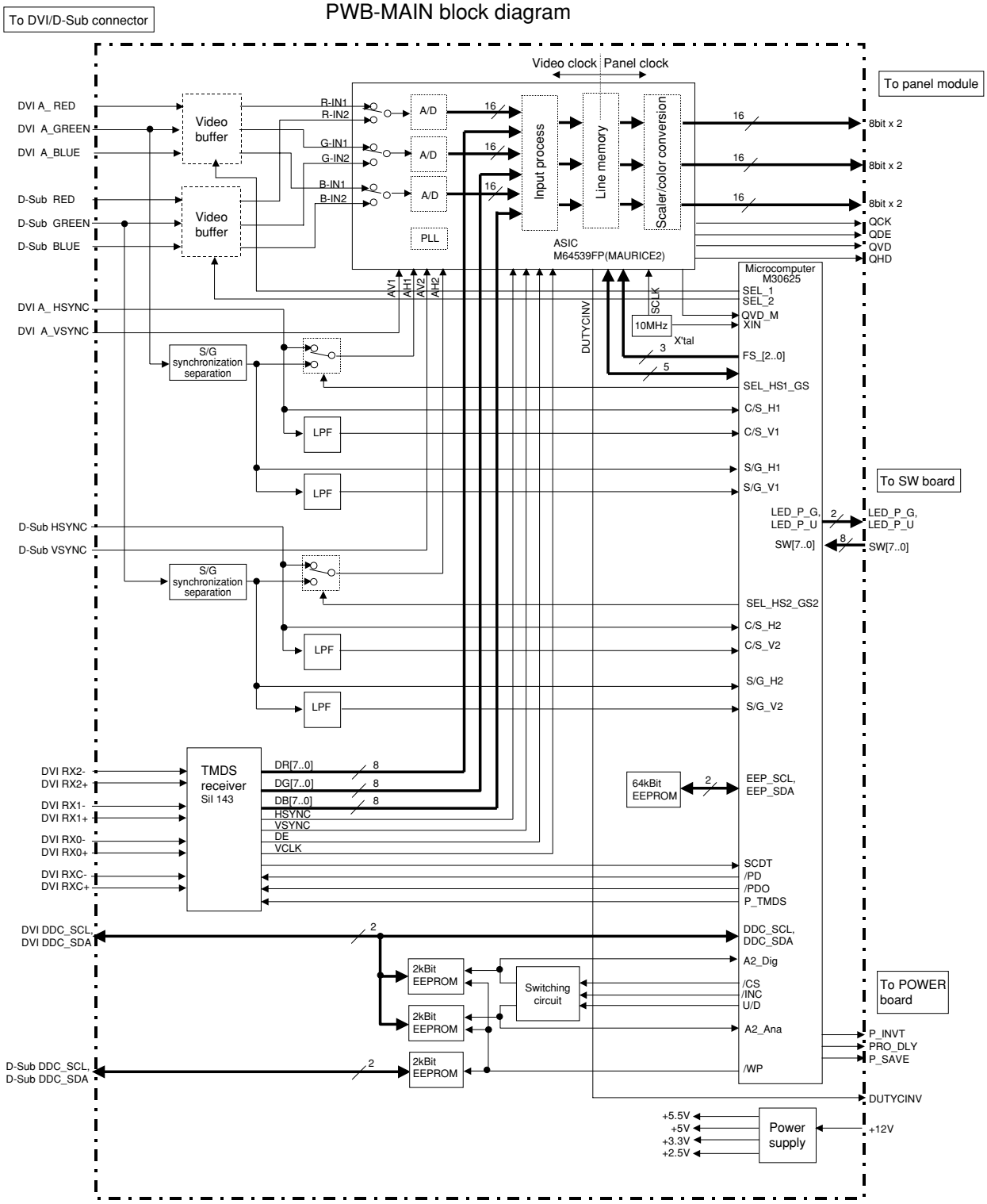
1.3 PWB-MAIN basic specifications

1.3.1 Basic specifications

- Two analog image system and one digital image system input compatible (AMBI X)
- Compatible synchronizing signal Analog 2Ch : SEPARATE, COMPOSITE, SYNC ON GREEN
  Digital 1Ch : TMDS
- Compatible with signals not displayed or selected / Input signal presence judgment and automatic switching function (VIDEO DETECT)
- DDC switching control function (DVI SELECTION)
- DDC2Bi/DDC CI compatible
- EDID data write protect control function (EEP WRITE PROTECT)
- Narrow bezel, wide angle S-IPS LCD panel (Hitachi TX38D26VC0VAA) interface
- Maurice2 incorporated for ASIC
  (Auto Adjust function, brightness, contrast, sharpness,γ curve, color temperature, color control adjustment function)

1.3.2 PWB-MAIN circuit block diagram

PWB-MAIN block diagram

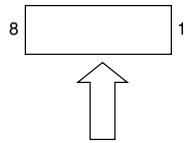


1.3.3 Input/output connector pin assignment

Main board - power board

B8B-PH-SM3-TBT SCN-8P

J601	Pin name	J901
1	+12V	1
2	+12V	2
3	GND	3
4	GND	4
5	P_INVT	5
6	DUTYCINV	6
7	PRO_DLY	7
8	P_SAVE	8

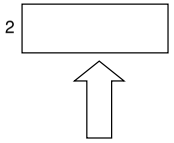


Cable connection

Main board - external thermistor (not used)

B 2B-PH-SM3-TBT

J600	Pin name
1	AUX_TH
2	+5V_OUT



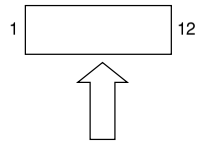
Cable connection

Main board - switch board

52807-1210

52852-1290 (CP452P318A21)

J100	Pin name	J800
1	GND	1
2	LED_P_U	2
3	LEFT	3
4	EXIT	4
5	-	5
6	RIGHT	6
7	NEXT	7
8	+	8
9	POWER_SW	9
10	RESET	10
11	LED_P_G	11
12	GND	12

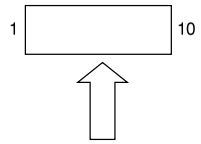


Flexible cable connection

Main board - serial writer

SM10B-SRSS-TB (CP452P311A51)

J101	Pin name
1	DG
2	CVSS
3	RESET
4	TXD
5	RXD
6	SCLK
7	BUSY
8	EPM*
9	CE*
10	M3.3V

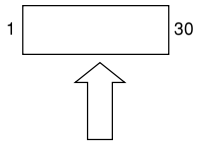


Cable connection

Main board - panel

FH12A-30S-0.5SH (CP452P281A11)

J400	Pin name	CN2	Pin name
30	GND	1	GND
29	Q5_7	2	PEV B7
28	Q5_6	3	PEV B6
27	Q5_5	4	PEV B5
26	Q5_4	5	PEV B4
25	GND	6	GND
24	Q5_3	7	PEV B3
23	Q5_2	8	PEV B2
22	Q5_1	9	PEV B1
21	Q5_0	10	PEV B0
20	GND	11	GND
19	Q3_7	12	PEV G7
18	Q3_6	13	PEV G6
17	Q3_5	14	PEV G5
16	Q3_4	15	PEV G4
15	GND	16	GND
14	Q3_3	17	PEV G3
13	Q3_2	18	PEV G2
12	Q3_1	19	PEV G1
11	Q3_0	20	PEV G0
10	GND	21	GND
9	Q1_7	22	PEV R7
8	Q1_6	23	PEV R6
7	Q1_5	24	PEV R5
6	Q1_4	25	PEV R4
5	GND	26	GND
4	Q1_3	27	PEV R3
3	Q1_2	28	PEV R2
2	Q1_1	29	PEV R1
1	Q1_0	30	PEV R0



Flexible cable connection

Main board - panel

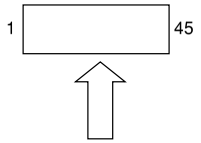
FH12A-45S-0.5SH (CP452P282A11)

J401	Pin name	CN1	Pin name
45	GND	1	GND
44	QCK	2	PDCLK
43	GND	3	GND
42	QDE	4	PDENA
41	GND	5	GND
40	QVD	6	VSYNC
39	GND	7	GND
38	QHD	8	HSYNC
37	GND	9	GND
36	NC	10	NC
35	GND	11	GND
34	Q4_7	12	POD B7
33	Q4_6	13	POD B6
32	Q4_5	14	POD B5
31	Q4_4	15	POD B4
30	GND	16	GND
29	Q4_3	17	POD B3
28	Q4_2	18	POD B2
27	Q4_1	19	POD B1
26	Q4_0	20	POD B0
25	GND	21	GND
24	Q2_7	22	POD G7
23	Q2_6	23	POD G6
22	Q2_5	24	POD G5
21	Q2_4	25	POD G4
20	GND	26	GND
19	Q2_3	27	POD G3
18	Q2_2	28	POD G2
17	Q2_1	29	POD G1
16	Q2_0	30	POD G0
15	GND	31	GND
14	Q0_7	32	POD R7
13	Q0_6	33	POD R6
12	Q0_5	34	POD R5
11	Q0_4	35	POD R4
10	GND	36	GND
9	Q0_3	37	POD R3
8	Q0_2	38	POD R2
7	Q0_1	39	POD R1
6	Q0_0	40	POD R0
5	PANEL5V	41	VDDD
4	PANEL5V	42	VDDD
3	PANEL5V	43	VDDD
2	PANEL5V	44	VDDD
1	TEST	45	TEST

Main board - signal connector (DVI)

QH11121-CB0 (CP452P343A10)

J200	Pin name
1	RX2- (RED)
2	RX2+ (RED)
3	GND
4	NC
5	NC
6	SCL_DDC
7	SDA_DDC
8	A_VSYNC
9	RX1- (GREEN)
10	RX1+ (GREEN)
11	GND
12	NC
13	NC
14	+5VDC
15	GND
16	HTPLUG
17	RX0- (BLUE)
18	RX0+ (BLUE)
19	GND
20	NC
21	NC
22	GND
23	RXC+ (CLOCK)
24	RXC- (CLOCK)
25 (C1)	A_RED
26 (C2)	A_GREEN
27 (C3)	A_BLUE
28 (C4)	A_HSYNC
29 (C5)	A_GND



Flexible cable connection

Main board - signal connector (DSUB)

NFNB715A10 (CP452C070A10)

J201	Pin name
1	RED
2	GREEN
3	BLUE
4	GND
5	GND
6	GND
7	GND
8	GND
9	+5VDC
10	GND
11	GND
12	SDA_DDC
13	HSYNC
14	VSYNC
15	SCL_DDC

1.4 Video input signal specifications

•Types of signals

Video signal	Analog RGB video signal 0.7Vp-p, digital signal TMDS
Synchronizing signal	Composite synchronizing signal (TTL level positive/negative polarity) Separate synchronizing signal (TTL level positive/negative polarity) Composite image synchronizing signal (0.3Vp-p Sync On Green negative polarity)

• Analog input signal rating

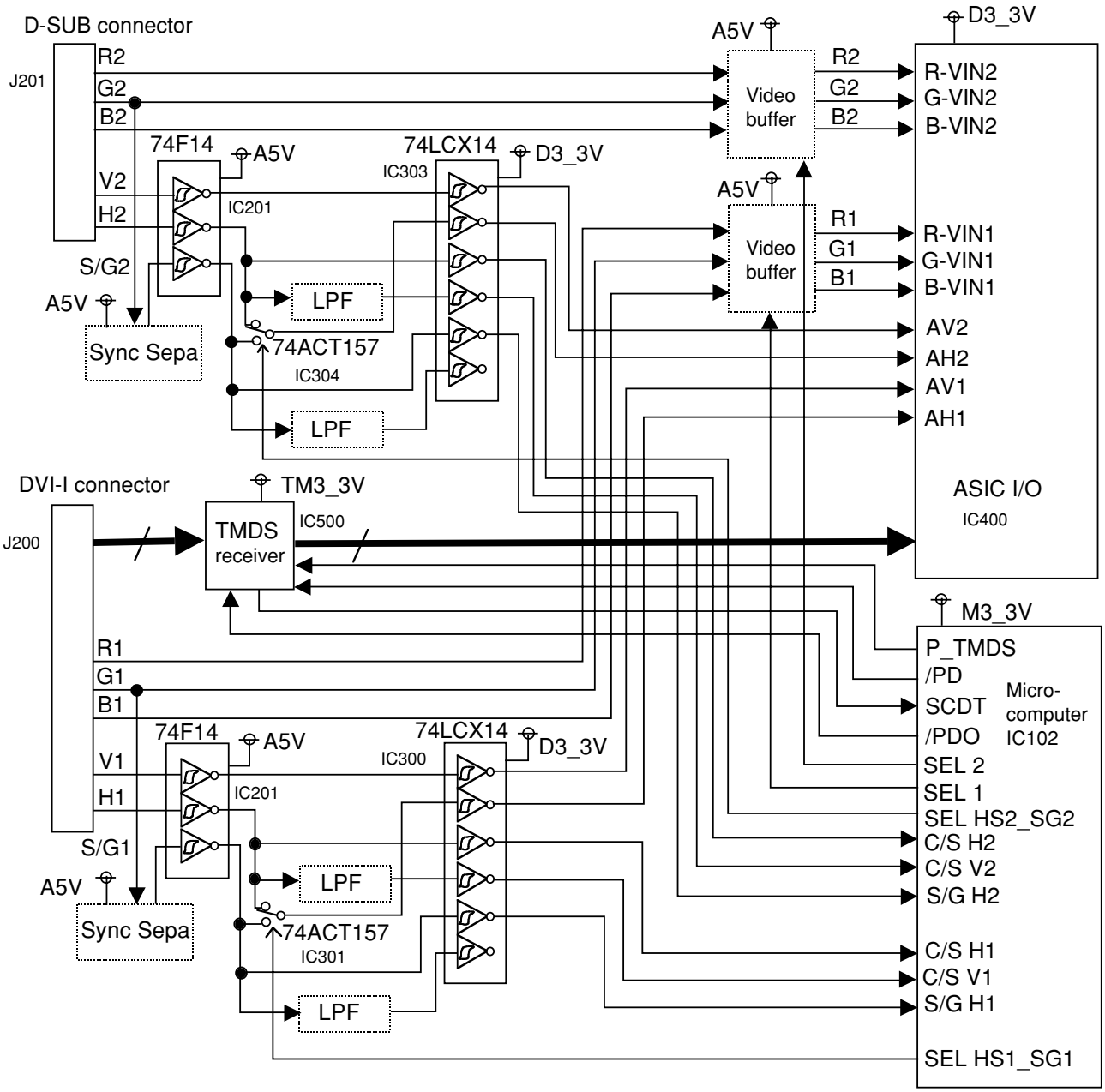
Signal name	Specifications			Unit	Remarks
	Min.	Typical	Max.		
Horizontal synchronizing signal frequency range	30.0		60	kHz	
Vertical synchronizing signal frequency range	50		75.1	Hz	
Video clock frequency	25.1		78.8	MHz	
Separate/composite synchronizing signal Hi level	2.5		5.0	Volt	Impedance 2.2kΩ
Separate/composite synchronizing signal Lo level	0		0.8	Volt	
Analog video signal level	0.6	0.7	1.0	Vp-p	Impedance 75kΩ

• Digital input signal rating

Signal name	Specifications			Unit	Remarks
	Min.	Typical	Max.		
Horizontal synchronizing signal frequency range	30.0		60	kHz	
Vertical synchronizing signal frequency range	50		75.1	Hz	
Video clock frequency	25.1		78.8	MHz	
TMDS signal	DVI 1.0 compatible				GND for 50Ω impedance

1.4.1 Video interface peripheral circuit

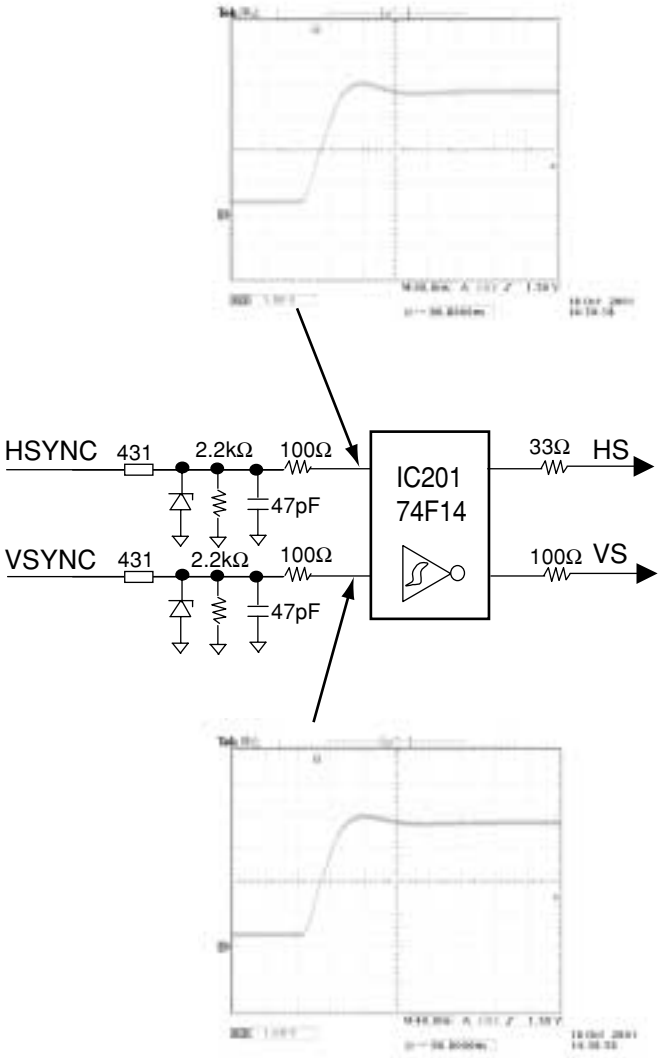
Video interface periphery



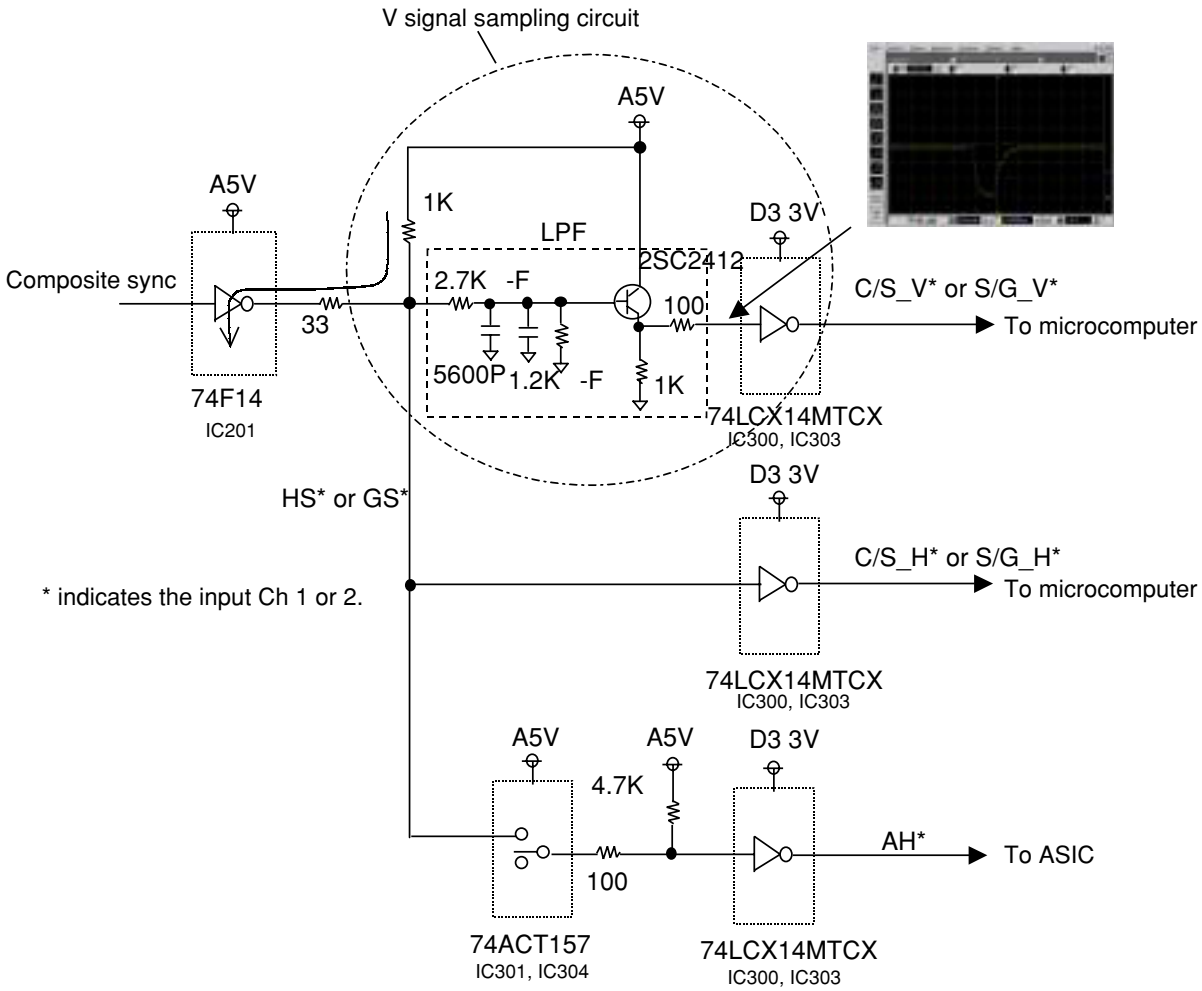
* 74LCX14 is used for the waveform rectification and level conversion (5V system to 3.3V system).

1.4.2 Horizontal/vertical synchronizing signal input circuit

The horizontal/vertical synchronizing signal input from an external source is terminated to 2.2kΩ and then passes through IC201 (74F14) which has hysteresis characteristics. The separate sync and composite sync are input into the synchronizing signal.



1.4.3 Composite sync V separation circuit



• LPF input step (HS* or GS*)

When 74F14 V_{OL} = 0.5V (Max.): 1_{OL} = 20mA

The LPF, 74ACT157 and 74LCX14 input impedance is high, so if it ignored, the current led in at 74F14 V_{OL} will be 4.8mA [5V/(1K+33)Ω], and the maximum value at HS* and GS* Lo level will be 0.66V = 0.5V [75F14 V_{OL} (Max.)] + 33Ω x 4.8mA.

74LCX14 V_{IL} = 0.72V (Min.) (at VCC = 3.3V conversion) > 0.66V → OK

74ACT157 V_{IL} = 0.8V (Min.) > 0.66V → OK

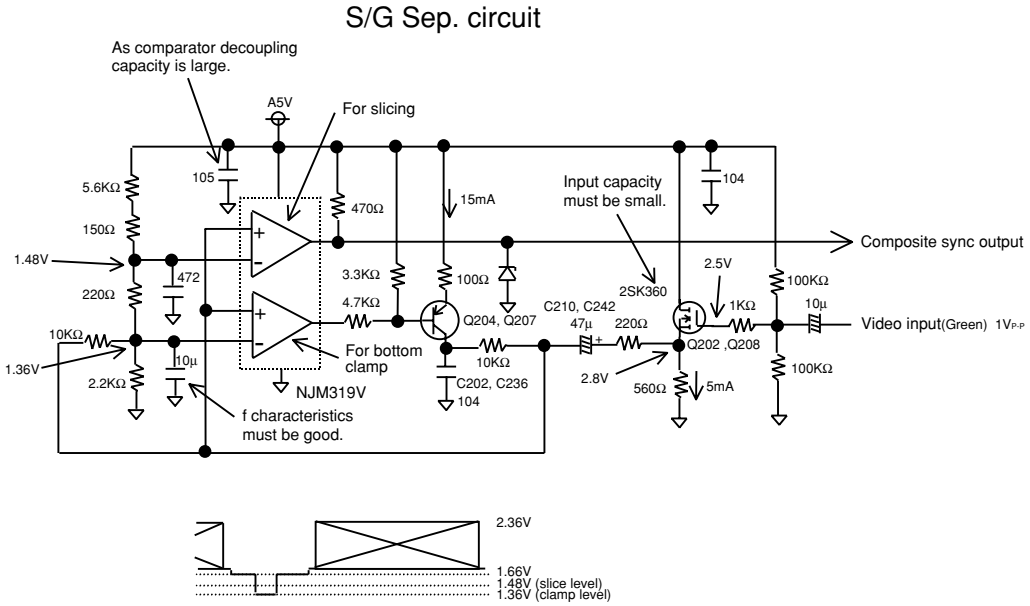
• LPF output step

74LCX4MTCX threshold level (at VCC = 3.3V conversion)

	Min.	Max.
V_{IH}	1.38V	2.50V
V_{IL}	0.72V	1.74V

The V signal sampling circuit's constant was set in consideration of the 74LCX14MTCX threshold level fluctuation. (Confirmation with the over-range of input signal SPEC timing, confirmation with different polarity, etc.)

1.4.4 Sync On Green synchronization separating circuit



Video input cutoff frequency

f_{ch} = 1/2πCR = 1/2π · 10µF · 100kΩ / / 100kΩ
=0.32Hz << 50Hz

Description of operations

The Green signal with $1V_{P-P}$ sync is input into FET (Q202, Q208) of the source follower circuit. This is because it is led in directly from the Green signal line's 75Ω terminator, so the input impedance is increased as high as possible, to reduce the effect of noise even if a slight pattern in led in. A source follower circuit FET (Q202, Q208) with small input capacity (2SK360 is Typ. 2.5pF) for higher harmonics (VHF) is used to avoid damping of the signal waveform caused by the input capacity. A grade E which I_{DSS} is between 6 and 10mA is used so that the FET operation point is V_{GS} = -0.3V and I_D = 5mA. With this, the bias voltage on the + polarity side of C210 and C242 is 2.8V.

(A voltage value that does not cause a reverse polarity when the polar capacitor C210 and C242 are in the steady state or power save state is selected.)

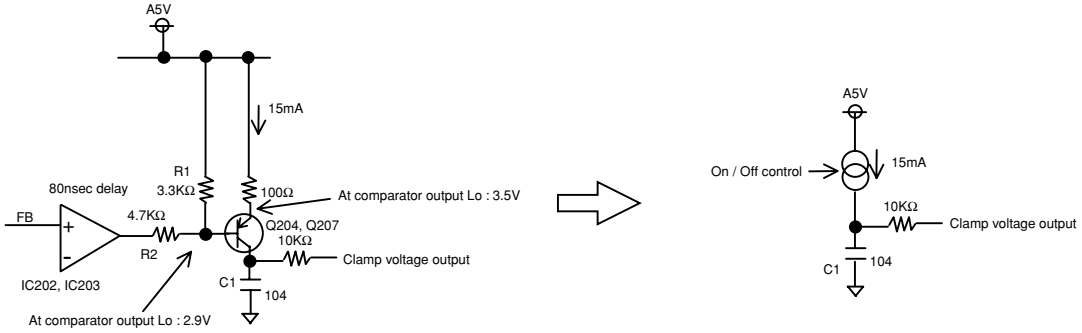
The input signal C-cut at 47µ F is compared at the clamp level voltage (1.36V) and bottom clamp comparator (IC202, IC203).

If the input signal sync (negative polarity) is lower than the clamp level voltage, the transistor (Q204, Q207) turns ON during the sync interval, and the input signal sync is raised by charging C202 and C236. The input signal is sync clamped with this operation. Next, the clamped input signal and voltage (1.48V) are compared at the slice comparator (IC202, IC203) to separate the composite sync from the video. The voltage is set so that the slice level is applied at the center of the analog sync ($0.3V_{P-P}$).

LC1550X has two analog inputs DCI-I(A) and D-SUB, and has the LAST DETECT function as one of the VIDEO DETECT functions. The displayed and selected signals and the signals not displayed or selected must be judged, so there are two Sync On Green synchronization separating circuits.

• Study of S/G clamp responsiveness

The clamp responsiveness is determined by the response time (80nsec Typ.) of the comparator (IC202, IC203) and the responsiveness of the drive circuit that gives the clamp potential to the video. The responsiveness of the drive circuit is explained below.
The transistor turns ON when the comparator output is Lo. At this time, the transistor's base voltage is 2.9V due to the voltage dividing of R1 and R2. [=4.7kΩ x 5V / (4.7kΩ+3.3kΩ)]
When V_{EB} = 0.6V, the emitter's voltage is 3.5V, and a 15mA emitter current flows when the transistor is ON [(5.0V - 3.5V)/100Ω]. When this is expressed as an equivalence circuit, it is as shown on the right.



The capacitor C1 is charged with a constant current, so as shown below, the clamp voltage output's step response is a linear response instead of a primary response. (As an image, this is not a phase control such as with a servo, and instead is equivalent to speed control. Thus, the response is fast.)
When Q = C • EV, then

$\Delta t = (C/I) \cdot \Delta V$
$= (0.1\mu F/15mA) \cdot \Delta V$
$= 6.7\mu \cdot \Delta V$

(Example)
If the minimum value of the H-SYNC width is 0.5μ sec, the maximum voltage fluctuation width that can be compensated at 0.5μ sec is 0.075V according to the above formula. For CRT (FHX7120), this is 0.079V which is approximately the same.

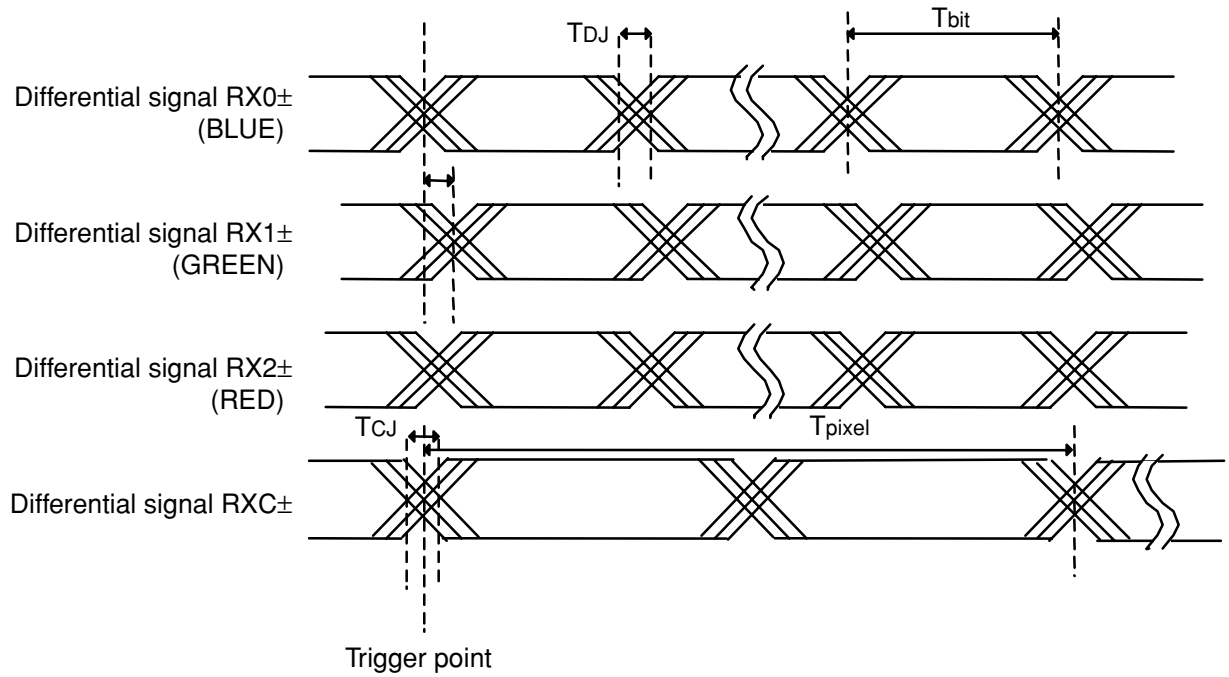
Study of S/G circuit fluctuation and input signal fluctuation
The A5V power voltage is 5V ± 0.1V and the voltage dividing resistor has a ±1% fluctuation, so the slice level - clamp level is within the following range.

(Slice level - clamp level) Max. 0.118V=390x1.01x5.1/((12000+120+4700))x0.99+390x1.01)
(Slice level - clamp level) Typ. 0.113V=390x5/(12000+120+390+4700)
(Slice level - clamp level) Min. 0.109V=390x0.99x4.9/((12000+120+4700))x1.01+390x0.99)

The S/G synchronizing signal amplitude has a 0.25V to 0.35V amplitude fluctuation. However, the (slice level - clamp level) Max. = 0.118V is smaller than this, there are no problems design-wise.

1.4.5 TMDS receiver

The TMDS signal (4Ch differential signal) shown below is input for the digital input signal. The TMDS receiver (IC500: Sil143) decodes this TMDS signal, and generates an 8-bit x 3 (RGB) data signal, VCLK, DE, HSYNC and VSYNC. Maurice2 is compatible with the digital input, so the TMDS receiver output can be directly connected.



Tolerable jitter / skew range

	640 x 480@60Hz 640 x 400@70Hz		800 ~600@60Hz		1024 ~768@60Hz	
	Typ	Max	Typ	Max	Typ	Max
T_{bit}	3.972ns		2.500ns		1.538ns	
T_{CJ}		1.19ns		0.75ns		0.46ns
T_{DJ}		1.59ns		1.00ns		0.62ns
$T_{skew(inter)}$		23.8ns		15.00ns		9.23ns
T_{pixel}	39.72ns		25.00ns		15.38ns	

*DVI Ver. 1.0 Standards

• Clock jitter $T_{CJ} \leqq 0.3 \times T_{bit}$

• Data jitter T_{DJ}, inter-pair$_{skew}$ $T_{skew(intra)} \leqq 0.4 \times T_{bit}$ (The data jitter T_{DJ} is specified with the template)

• Inter-pair$_{skew}$ $T_{skew(inter)} \leqq 0.6 \times T_{pixel}$

1.4.6 Input signal presence judgment function

List of control signals

μ-COM Pin No.	I / O	Signal name	Function	Remarks
47 ~ 51	I / O	MS*,RSTN	ASIC control	ASIC
3	I	C / S_H1	H measurement at H, V Sep. and C / S	DVI-I(A)
18	I	C / S_V1	V measurement at C / S	DVI-I(A)
2	I	S / G_H1	H measurement at S / G	DVI-I(A)
5	I	C / S_H2	H measurement at H, V Sep. and C / S	D-Sub
20	I	C / S_V2	V measurement at C / S	D-Sub
4	I	S / G_H2	H measurement at S / G	D-Sub
64	I	SCDT	TMDS SYNC DETECT	SiI143CT100
63	O	/ PDO	TMDS output buffer power save	SiI143CT100
65	O	/ PD	TMDS internal logic power save	SiI143CT100
52	O	P_TMDS	TM3_3V power supply OFF : Lo / ON :Hi	SI3033LSA

Function

• Analog input signal presence judgment

When using analog signals, it is judged that an input is present when the input signal judgment conditions shown below are satisfied. The input signal presence judgment is carried out constantly. To comply with automatic input signal (Ch) switching, the input signal presence judgment of signals not displayed or selected (DVI-I ⇔ D-SUB) is also carried out constantly. (The frequency is measured separately by hardware such as the microcomputer counter and ASIC counter hardware, so there is no problem in the processing speed.)

• If AV* (ASIC) > 10Hz (Results of simple frequency measurement by ASIC) Then ◯ or X.

• If C/S_H* (μ-COM) > 10kHz (Free run μ-COM counter, interrupt with 1H. Interrupt cycle is Min. 2msec) Then ◯ or X.

• If C/S_V* (μ-COM) > 10Hz (Free run μ-COM counter, interrupt with 1V. Interrupt cycle is 1V) Then ◯ or X.

• If S/G_H* (μ-COM) > 10kHz (Free run μ -COM counter, interrupt with 1H. Interrupt cycle is Min. 2msec) Then ◯ or X.

* indicates the video input signal (Ch). The DVI-I connector side is 1, and the D-SUB connector side is 2.

Input signal judgement condition

AV*	C / S_H*	C / S_V*	S / G_H*	Input signal
×	◯	◯	×	C / S
×	×	×	◯	S / G
◯	◯	×	×	H, V Sep.
×	◯	×	◯	S / G
◯	◯	◯	×	C / S
◯	×	×	◯	S / G
×	◯	◯	◯	C / S
◯	◯	×	◯	H, V Sep.
◯	◯	◯	◯	C / S
Other than the above				No input signal

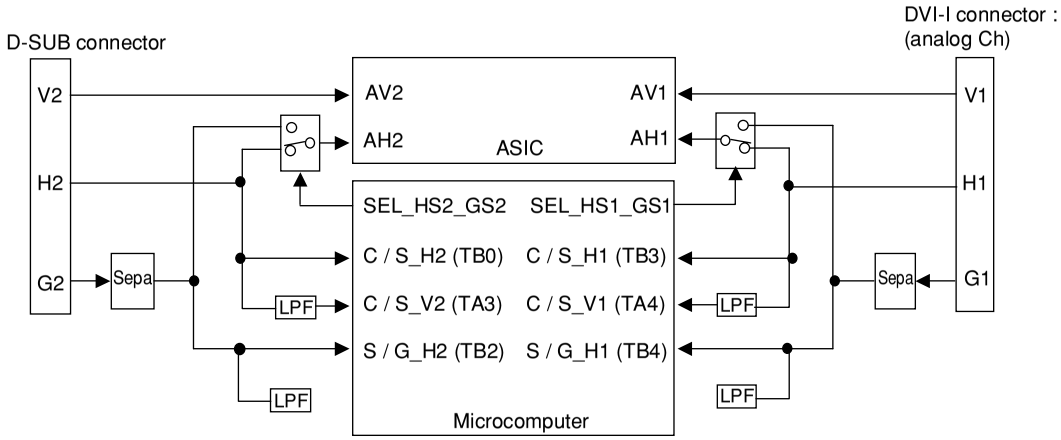
Explanatory table of analog input synchronizing signal presence judgment circuit

Compatible synchronizing signal

D-SUB connector	H, V
	C / S
	S / G
DVI-I connector : (analog Ch)	H, V
	C / S
	S / G

All combinations of input synchronizing signals (11 patterns)

1	$_4C_1$	H			
2		V			
3		C / S			
4		S / G			
5	$_4C_2$	H	V		
6		H	S / G		
7		V	C / S		
8		V	S / G		
9		C / S	S / G		
10	$_4C_3$	H	V	S / G	
11		V	C / S	S / G	



SEL_HS1_GS1 is the input signal switching switch which selects Separate-H, C / S or S / G at Ch1.

SEL_HS2_GS2 is the input signal switching switch which selects Separate-H, C / S or S / G at Ch2.

Input signal judgment conditions

	Input judgment / Input signal synchronizing signal	Measurement by ASIC (Maurice)		Measurement by microcomputer (M16C)			Input signal judgment results
		AH (accurate H measurement)	AV (accurate V measurement) (V measurement at H, V)	C / S_H (TB pulse cycle measurement mode) (H measurement at H, V or C / S)	C / S_V (event counter) (V measurement at C / S)	S / G_H (TB pulse cycle measurement mode) (H measurement at S / G)	
1	H		×	○	×	×	No input signal (only H)
2	V		○	×	×	×	No input signal (only V)
3	(C / S)		×	○	○	×	Input signal present (C / S)
4	(S / G)		×	×	×	○	Input signal present (S / G)
5	(H, V)		○	○	×	×	Input signal present (H, V)
6	H,(S / G)		×	○	×	○	Input signal present (S / G)
7	V,(C / S)		○	○	○	×	Input signal present (C / S)
8	V,(S / G)		○	×	×	○	Input signal present (S / G)
9	(C / S),S / G		×	○	○	○	Input signal present (C / S)
10	(H, V),S / G		○	○	×	○	Input signal present (H, V)
11	V,(C / S),S / G		○	○	○	○	Input signal present (C / S)
			Combination other than above four signal inputs				No input signal

( ) : Order of priority (C / S > H, V > S / G)

• Digital input signal presence judgment

For digital signals, the input signals are judged as the following table according to the state of the SCDT signal (64-pin) input into the microcomputer (IC102) from the TMDS receiver (IC500).

(Microcomputer input port) SCDT	Results of input signal judgment of digital signal
Hi	Input signal present
Lo	No input signal

The TMDS output buffer power save signal/PD0 and internal logic power save signal/PD are controlled as the following table according to the state of the front power switch, display input signal (Ch) and SCDT signal.

If there is no digital signal input (SCDT = Lo), the display input signal (Ch) is analog (DVI-I (A) or D-SUB) or the front power switch is OFF, the TMDS receiver's output buffer power is lowered (/PD0 = Lo) (excluding the SCDT output) by the /PD0 terminal. Normally, the input signal presence is judged constantly. However, during the PMS mode, the microcomputer sends the PWM signal to the /PD terminal (TMDS receiver power down at Lo) to control the power consumption of TMDS receiver, so the power consumption can be reduced according to the On duty (intermittent control).

(Note: OSM cannot be set for the mass-production F/W. The /PD PWM cycle is fixed to 500msec and to 50msec for the period /PD is Hi.)

The /PD PWM cycle and Hi interval are determined considering the fact that for the power consumption during power save, the Hi interval rarely drops below 50msec. In addition, the SCDT software filtering interval, feedback time from power save, time for SCDT to start after DE is input, and the time to start counting after /PD is turned ON and PLL starts are also considered.

* Software filtering is used to prevent malfunctioning in the PMS mode, considering the possibility of noise in SCDT signal output of the TMDS receiver.

Front power SW	Display input signal (Ch)	(Microcomputer input port) SCDT	(Microcomputer output port) / PDO	(Microcomputer output port) / PD	(Microcomputer output port) P_TMDS
On	DVI-I(D)	Hi	Hi (TMDS receiver output enable)	Normal : Hi (TMDS receiver On)	Hi
		Lo	Lo (TMDS receiver output open)	During PMS : PWM (TMDS receiver intermittent On)	Hi
On	DVI-I(A)	Don't Care	Lo (TMDS receiver output open)	Normal : Hi (TMDS receiver On) During PMS : PWM (TMDS receiver intermittent On)	Hi
On	D-Sub	Don't Care	Lo (TMDS receiver output open)	Normal : Hi (TMDS receiver On) During PMS : PWM (TMDS receiver intermittent On)	FIRST, LAST DETECT : Hi NONE : Lo
Off	Don't Care	Lo	Lo (TMDS receiver output open)	Lo (TMDS receiver Off)	Lo

1.4.7 Input signal switching control function

List of control signals

µ-COM Pin No.	I / O	Signal name	Function	Remarks
47 ~ 51	I / O	MS*, RSTN	ASIC control	ASIC
7	O	SEL_HS1_SG1	H, V Sep, and C/S and S/G input switching	74ACT157SJ
8	O	SEL_HS2_SG2	H, V Sep, and C/S and S/G input switching	74ACT157SJ
33	O	SEL_1	DVI-I (A) path video buffer output control	Video buffer
19	O	SEL_2	D-SUB path video buffer output control	Video buffer

Functions

• H, V Sep, and C/S and S/G input switching

When using analog signals, the microcomputer uses the selector to change the signal path input into the ASIC AH* terminal according to the input signal judgment results.

Input signal judgment results	SEL_HS1_SG1 (AH1 path selection)	SEL_HS2_SG2 (AH2 path selection)
No S / G in DVI-I (A)	Lo	Don't Care
S / G present in DVI-I (A)	Hi	Don't Care
No S / G in D-SUB	Don't Care	Lo
S / G present in D-SUB	Don't Care	Hi

* If the signal is displayed and selected when changing the path, it will be judged that the signal has changed, and the mode will be changed.

• Analog signal DVI-I (A) and analog signal D-SUB input selection

The microcomputer sets the ASIC internal input switching switcher (SOURCE register) to "analog 1" for DVI-I (A) and to "analog 2" for D-SUB.

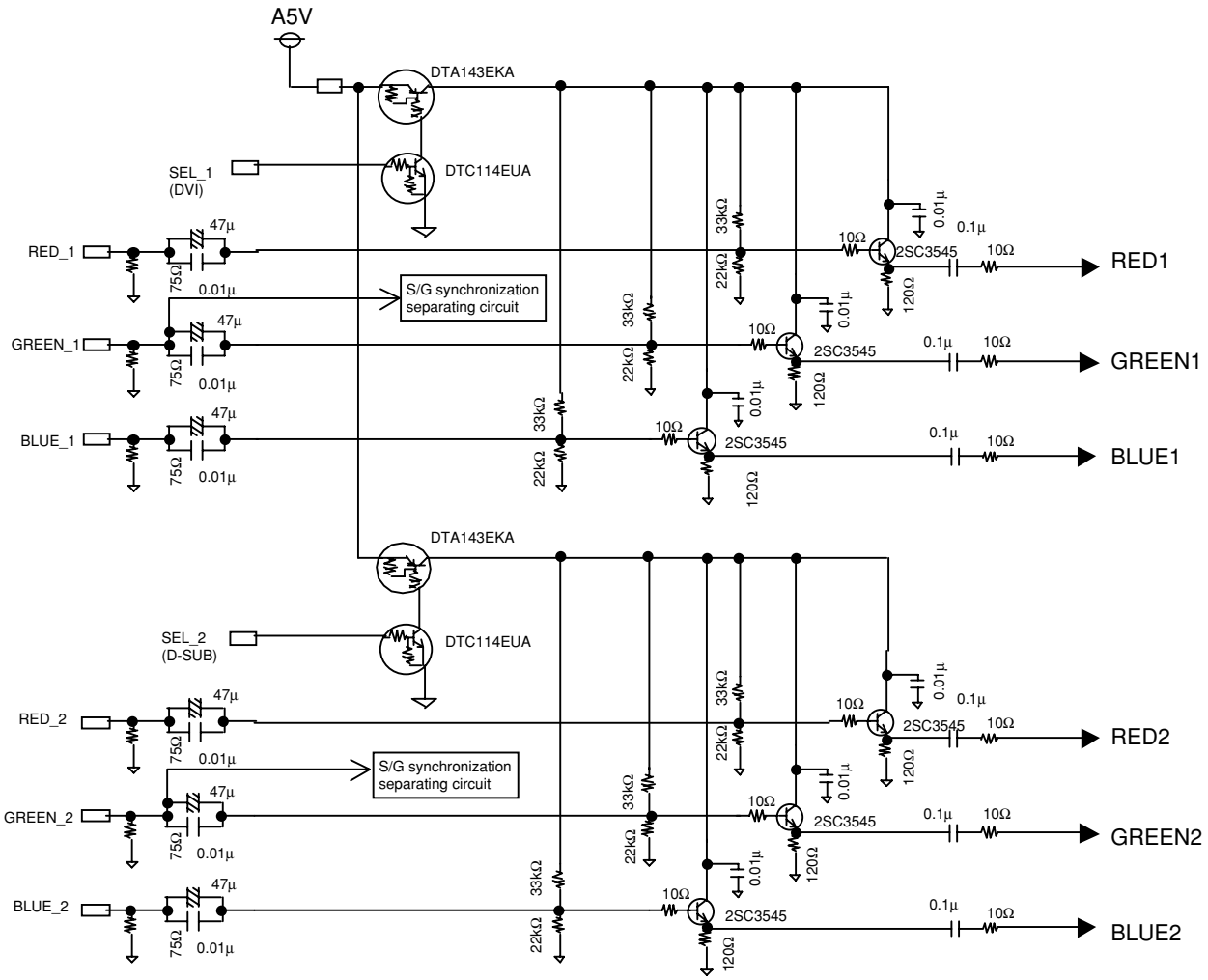
The video buffer output control follows the table below. Only the input and displayed Ch side is enabled with this, and video is input into ASIC (measures for crosstalk during ASIC 2Ch input).

SEL_1, SEL_2	Video buffer output
Lo	Disable (Equivalent to GND pull-down at 120Ω)
Hi	Enable (video through)

Since the buffer power is decreased when disabled, energy can be conserved by disabling both analog Ch video buffer outputs during the PMS mode, when the front power is OFF and during digital Ch display.

Front power switch	Display input Ch	SEL_1	SEL_2
On	DVI-I (D)	Lo	Lo
On	DVI-I (A)	Normal: Hi During PMS: Lo	Lo
On	D-SUB	Lo	Normal: Hi During PMS: Lo
Off	Don't Care	Lo	Lo

Analog signal DVI-I (A) and analog signal D-SUB input selection circuit (video buffer)



• Digital signal DVI-I (D) and analog signal (DVI-I (A), D-SUB) switching

The microcomputer sets the ASIC internal input switching switcher (SOURCE register) to "external digital" for DVI-I (D), "analog 1" for DVI-I (A), and to "analog 2" for D-SUB.

• The frequency and resolution (for digital signal) of the selected input signal are measured by ASIC.

For analog signal input: (Pin 148 : AH1, Pin 149 : AV1, Pin 146 : AH2, Pin 147 : AV2)
For digital signal input: (Pin 151 : DCLK, Pin 153 : DE, Pin 154 : DV, Pin 155 : DH)

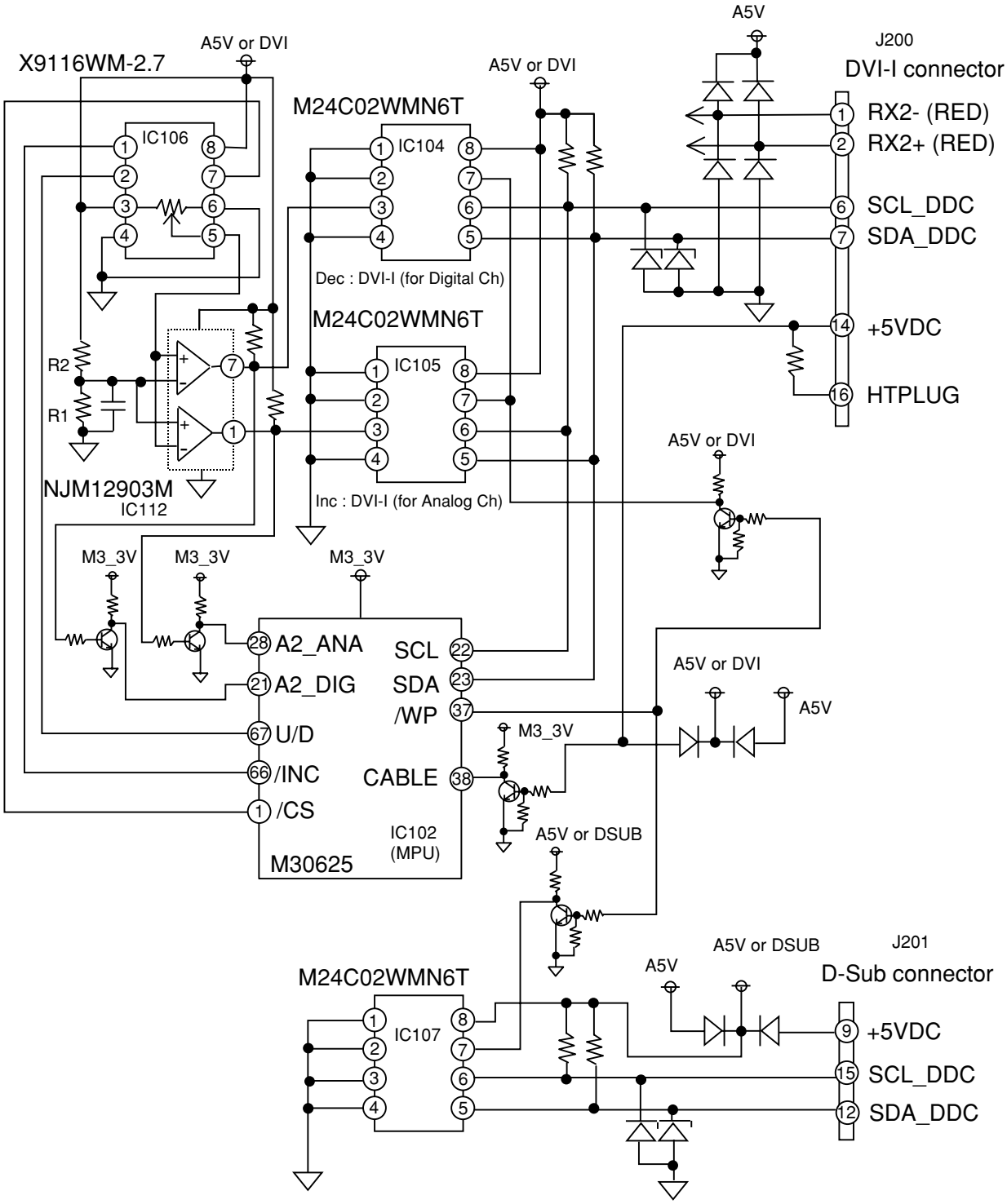
• The DVI-I (D) and DVI-I (A) input selection follows the following order of priority. Selection of input signal is controlled.

Input signal	/ PD	Order of priority
DVI-I (A)	Hi	2
DVI-I (D)	Hi	1
During PMS	Cycle pulse *1	-

*1 : 50msec interval "Hi" for both input 1 and 2. Control is carried out at an intermittent interval such as 450msec interval "Lo".

1.5 DDC interface peripheral circuit

DDC interface peripheral circuit



1.5.1 DDC switching control function

List of control signals

μ-COM Pin No.	I/O	Signal name	Function	Remarks
67	O	U/D	UP/DOWN CONTROL OUTPUT	X9116WM-2.7
66	O	/INC	INCREMENT CONTROL OUTPUT	X9116WM-2.7
1	O	/CS	CHIP SELECT OUTPUT	X9116WM-2.7
21	I	A2_DIG	EEPROM for DIGITAL A2-ADDRESS SENSE	NJM319V
28	I	A2_ANA	EEPROM for ANALOG A2-ADDRESS SENSE	NJM319V

Function

When the A5V_OR_DVI power (refer to next page) or DVI SELECT in OSM function is changed, the X9116WM-2.7 (IC106) pin 5 Rw (Wiper Terminal) output, NJM319V pin 12 OUTPUT 1 output (A2_DIG) and pin 7 OUTPUT 2 output (A2_ANA) are set to the following values. The DIGITAL EEPROM or ANALOG EEPROM slave address is set with this, and the EEPROM set in the A0 address is validated.

OSM DVI SELECT	Rw	A2_DIG	A2_ANA	DIG EEPROM address	ANA E2PROM ADDRESS
When DIGITAL is selected	Lo	Hi	Lo	A0 (valid)	A8 (invalid)
When ANALOG is selected	Hi	Lo	Hi	A8 (invalid)	A0 (valid)

* When the monitor power is ON, the value (DIGITAL or ANALOG) set in the initialization EEPROM is set.

The X9116WM-2.7 control is set in the following order with the 3-Wire Serial Interface (U/D, /INC, /CS).

When DIGITAL is selected for DVI-I

			Set value/status value	Remarks
1	R	A2_DIG, A2_ANA PORT	A2_DIG, A2_ANA = Previously stored value	Settling confirmation
2	W	U/D PORT	U/D = Lo (decrement)	Tap slide direction
3	W	/INC PORT	/INC = Transmission Lo (↓clock) x 16 times	Number of tap slides
4	R	A2_DIG, A2_ANA PORT	A2_DIG = Hi, A2_ANA = Lo	Setting confirmation
5	W	/INC, /CS PORT	/INC = Hi, /CS = Transmition Hi (↑clock)	Tap position store

When ANALOG is selected for DVI-I

			Set value/status value	Remarks
1	R	A2_DIG, A2_ANA PORT	A2_DIG, A2_ANA = Previously stored value	Settling confirmation
2	W	U/D PORT	U/D = Hi (increment)	Tap slide direction
3	W	/INC PORT	/INC = Transmission Lo (↓clock) x 16 times	Number of tap slides
4	R	A2_DIG, A2_ANA PORT	A2_DIG = Lo, A2_ANA = Hi	Setting confirmation
5	W	/INC, /CS PORT	/INC = Hi, /CS = Transmition Hi (↑clock)	Tap position store

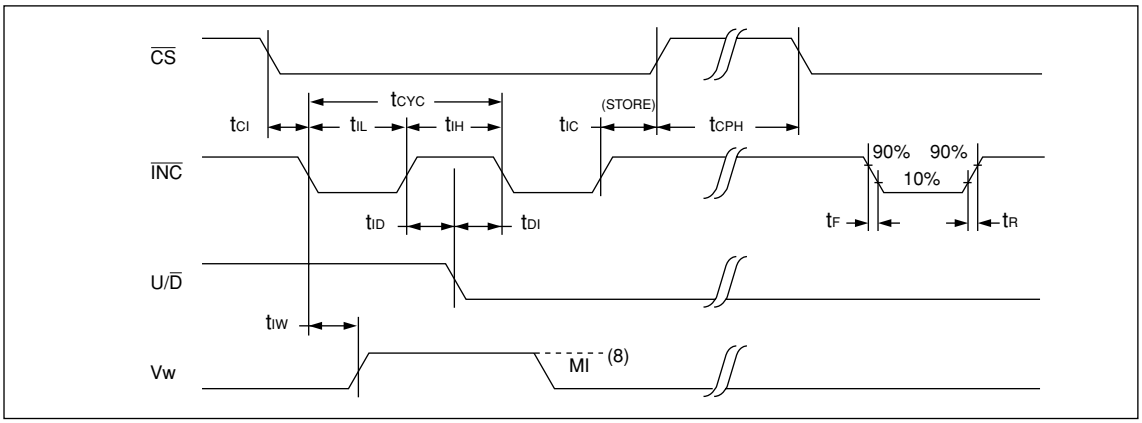
The DDC switching circuit can operate when either the A5V (monitor synchronizing signal/DDC system power) or DVI connector pin 14 +5VDC (external power from PC) is turned ON (A5V_OR_DVI power). The tap position information (equivalent to DVI SELECT results) stored in the X9116WM-2.7's non-volatile memory is automatically loaded when the power is turned ON. Thus, even if the monitor power for the asset management function is turned OFF (micro-computer is also OFF), the EDID data to which DVI SELECT results set previously have been reflected can be sent to the PC.

The AC timing for the 3-Wire Serial Interface is shown below.

A.C. OPERATING CHARACTERISTICS (Over recommended operating conditions unless otherwise specified)

Symbol	Parameter	Limits			Units
		Min.	Typ. (6)	Max.	
t_{CI}	$\overline{CS}$ to $\overline{INC}$ Setup	100			ns
t_{ID}	$\overline{INC}$ HIGH to U/$\overline{D}$ Change	100			ns
t_{DI}	U/$\overline{D}$ to $\overline{INC}$ Setup	2.9			µs
t_{IL}	$\overline{INC}$ LOW Period	1			µs
t_{IH}	$\overline{INC}$ HIGH Period	1			µs
t_{IC}	$\overline{INC}$ Inactive to $\overline{CS}$ Inactive	1			µs
t_{CPH}	$\overline{CS}$ Deselect Time (STORE)	10			ms
t_{IW}	$\overline{INC}$ to Vw Change		1	5	µs
t_{CYC}	$\overline{INC}$ Cycle Time	4			µs
t_R, t_F (7)	$\overline{INC}$ Input Rise and Fall Time			500	µs
t_{PU} (7)	Power up to Wiper Stable			5	µs
t_R V_{CC} (7)	V_{CC} Power-up Rate	0.2		50	mV/ms
t_{WR}	Store Cycle		5	10	ms

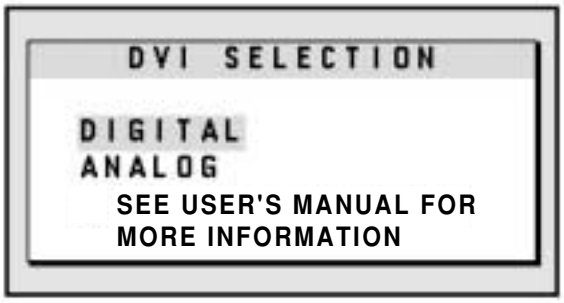
A.C. TIMING



Notes: (6) Typical values are for T_A = 25°C and nominal supply voltage.
(7) This parameter is periodically sampled and not 100% tested.
(8) MI in the A.C. timing diagram refers to the minimum incremental change in the Vw output due to a change in the wiper position.

The MODE SELECTION for the 3-Wire Serial Interface is shown below.

/CS	/INC	U/D	Mode
Lo	↓	Hi	Wiper Up
Lo	↓	Lo	Wiper Down
↑	Hi	X	Store Wiper Position
Hi	X	X	Standby Current
↑	Lo	X	No Store, Return to Standby



Key operations:

▶	: Selects an item (downward). (Moves upward when at last line)
◀	: Selects an item (upward). (Moves downward when at top line)
+	: Invalid
-	: Invalid
NEXT	: Invalid
RESET	: Invalid
EXIT	: Exits the OSM menu

The DVI SELECT menu for the OSM function is shown above. The DVI-I DDC is changed on this screen. The Ch is saved in the initialization EEPROM (IC100) when selected, and the EEPROM (IC104 or IC105) in which the EDID data (for analog/digital) to be selected is stored can be accessed. When DIGITAL is selected, the DVI-I (D) EDID data will be read in immediately after selection, and when ANALOG is selected, the DVI-I (A) EDID data will be read in. The above OSM menu will open when "-" or "+" is pressed while the DVI "NO SIGNAL" or "OUT OF RANGE" is displayed for OSM, and the current setting state can be confirmed. In addition, if the setting value does not match the PC and is not displayed on the screen, the problem can be resolved by displaying this OSM menu and changing DDC. The DDC switching circuit is compatible with the asset management function, and the changed settings are saved even when the monitor power is OFF. Thus, the selected EDID data is read in.

When considering the asset management function, the external power (+5V) supplied from the signal connector may be lower than the Standards depending on the PC. (The power is 5V±5% for VESA Standards.) As a design margin, the power should be 3V at the signal connector, and at least 2.7V at the V_{CC} of the DDC peripheral circuit IC after passing through the shot diode. Thus, the DDC peripheral circuit uses an IC having a V_{CC} that operates at a 2.7V to 5.5V power voltage. V_{CC}: 2.5V (Min.) EEPROM is used to provide a margin. Note that it is 5V±5% for the specifcation of this LCD monitor.

1.5.2 DDC2BI/DDC CI function (only DVI-I connector side)

List of control signals

μ-COM Pin No.	I/O	Signal name	Function	Remarks
23	I/O	DDC_SDA	DDC communication data	DVI-I connector
22	I	DDC_SCL	DDC communication clock	DVI-I connector

Function

With the DDC2BI or DDC CI function, data in the initialization EEPROM can be communicated with multiple functions such as external direct read & write, DDC2BI, DDC CI, etc., using the DDC communication line. This is possible only when the monitor power is ON.

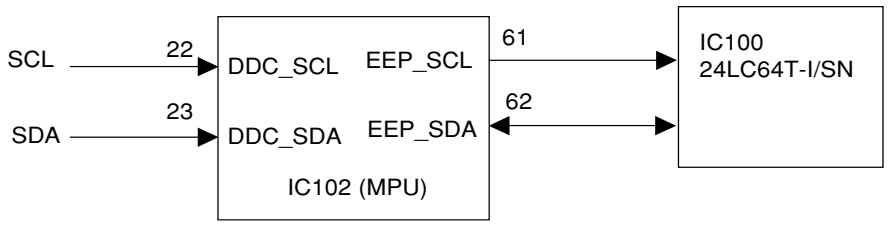
List of control signals

μ-COM Pin No.	I/O	Signal name	Function	Remarks
62	I/O	EEP_SDA	Initialization EEPROM communication data	24LC64T-I/SN
61	I	EEP_SCL	Initialization EEPROM communication clock	24LC64T-I/SN

Function

This is an interface with the initialization EEPROM (IC100), and the data is read/written with I2C communication.

The microcomputer (IC102) has two I/F ports of IIC bus. DDC communication is carried out using these ports.
This LCD monitor has specifications to support DDC2BI/DDC CI, and is adjusted to the DDC CI I/F specifications as the default. The communication speed is 100kbyte/sec max.



1.5.3 EDID data write protect control function

List of control signals

μ-COM Pin No.	I/O	Signal name	Function	Remarks
37	O	/WP	EDID data write protect setting: Lo/Cancel: Hi	M24C02WMN6T
43	I	P_ID0	LCD panel module setting	Pull-up / Pull-down
42	I	P_ID1		
41	I	P_ID2		
40	I	P_ID3		

Function

An EDID data write protection function is provided to prevent the monitor's EDID data from being damaged by an external source. However, to enable writing of the EDID data in the production process, the EDID data write protection can be set or canceled (only when the monitor power is ON) by using the DDC2BI or DDC CI function with the DDC communication line, or by using the factory 1 OSM function. The DDC2BI or DDC CI function is supported by the DVI-I connector (D-SUB connector supports only DDC2B), so the EDID data write protection for EEPROM at the D-SUB connector side must be set and canceled via the DVI-I connector. Internally, by setting the microcomputer's pin 37 /WP port to Lo, the EDID data write protection will be set. This will be canceled when set to Hi. /WP is fixed to Lo when the monitor power is OFF. The default value for /WP when the monitor power is ON is Lo. The value is not saved even when changed, so once the AC power is turned OFF, the value will return to the default value Lo.

DVI-I connector side EDID data R (Read) / W (Write) ability

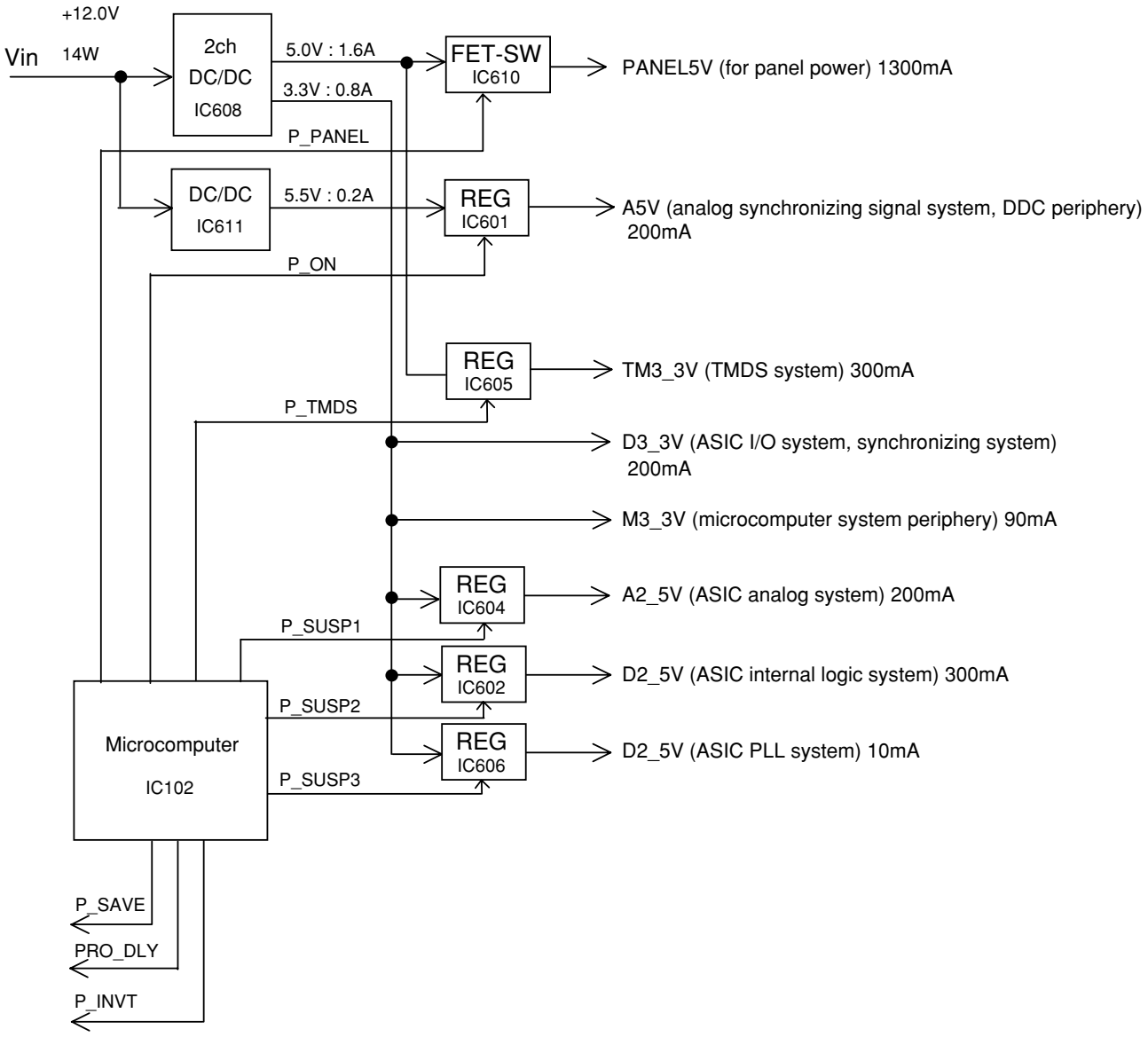
DVI external power + 5VDC (Hi : Asset management = ON)	Monitor internal power (Hi : Monitor AC = ON)	Microcomputer port /WP (Lo : Protect = ON)	DVI-I connector side	
			DIGITAL E2PROM	ANALOG E2PROM
Lo	Lo	Lo	R disabled / W disabled	R disabled / W disabled
Hi	Lo	Lo	R enabled (when selected) / W disabled	R enabled (when selected) / W disabled
X	Hi	Lo	R enabled (when selected) / W disabled	R enabled (when selected) / W disabled
X	Hi	Hi	R enabled (when selected) / W enabled	R enabled (when selected) / W enabled

D-SUB connector side EDID data R (Read) / W (Write) ability

D-SUB external power + 5VDC (Hi : Asset management = ON)	Monitor internal power (Hi : Monitor AC = ON)	Microcomputer port / WP (Lo : Protect = ON)	D-SUB connector side	
			-	ANALOG E2PROM
Lo	Lo	Lo	-	R disabled / W disabled
Hi	Lo	Lo	-	R enabled / W disabled
X	Hi	Lo	-	R enabled / W disabled
X	Hi	Hi	-	R enabled / W enabled

1.6 Power peripheral circuit

PWB-MAIN power configuration



1.6.1 DC/DC converter and panel power specifications

DC/DC specifications

Electrical characteristic

Item		Standards			Unit
		Min.	Typ.	Max.	
Input voltage	Vin voltage	11.0	12.0	13.0	V
Input current	Vin current	-	-	1200	mA
Output voltage	5V system voltage	5.00	5.25	5.50	V
	3.3V system voltage	3.20	3.40	3.60	V
	5.5V system voltage	5.40	5.70	6.00	V
Output current	5V system voltage	-	-	1600	mA
	3.3V system voltage	-	-	800	mA
	5.5V system voltage	-	-	200	mA

Panel power specifications

Electrical characteristic

Item	Standards			Unit
	Min.	Typ.	Max.	
Power voltage	4.5	5.0	5.5	V
Power current	-	(800)	1150	mA
Tolerable ripple current	-	-	±200	mV

Maximum LCD power current value: Fv = 60Hz Fclk = 40.0MHz full white

1.6.2 DC/DC output voltage design sheet

5V system output DC/DC (IC608)	IC specifications	Design value
Vref accuracy	1.23V ± 2%	
Output voltage fine adjustment resistor		330
R1 (output voltage dividing resistor upper limit)		5930 ± 1%
R2 (output voltage dividing resistor lower limit)		1800 ± 1%
DC/DC output voltage Max.		5.47V
DC/DC output voltage Typ.		5.28V
DC/DC output voltage Min.		5.10V

FET-SW (IC610)	IC specifications		Design value	
$R_{DS(On)}$ on resistor (Max.)	0.06			
FET output voltage Max.			5.47V	FET output voltage range must satisfy
FET output voltage Typ.			-	panel's input voltage range 4.5V to 5.5V.
FET output voltage Min.			5.03V	
Maximum drop voltage			-0.07V	
FET-SW tolerable channel loss	1.05W	>	0.08W	

3.3V system output DC/DC (IC608)	IC specifications	Design value
Vref accuracy	1.23V ± 2%	
Output voltage fine adjustment resistor		270
R1 (output voltage dividing resistor upper limit)		5870 ± 1%
R2 (output voltage dividing resistor lower limit)		3300 ± 1%
DC/DC output voltage Max.		3.53V
DC/DC output voltage Typ.		3.42V
DC/DC output voltage Min.		3.31V

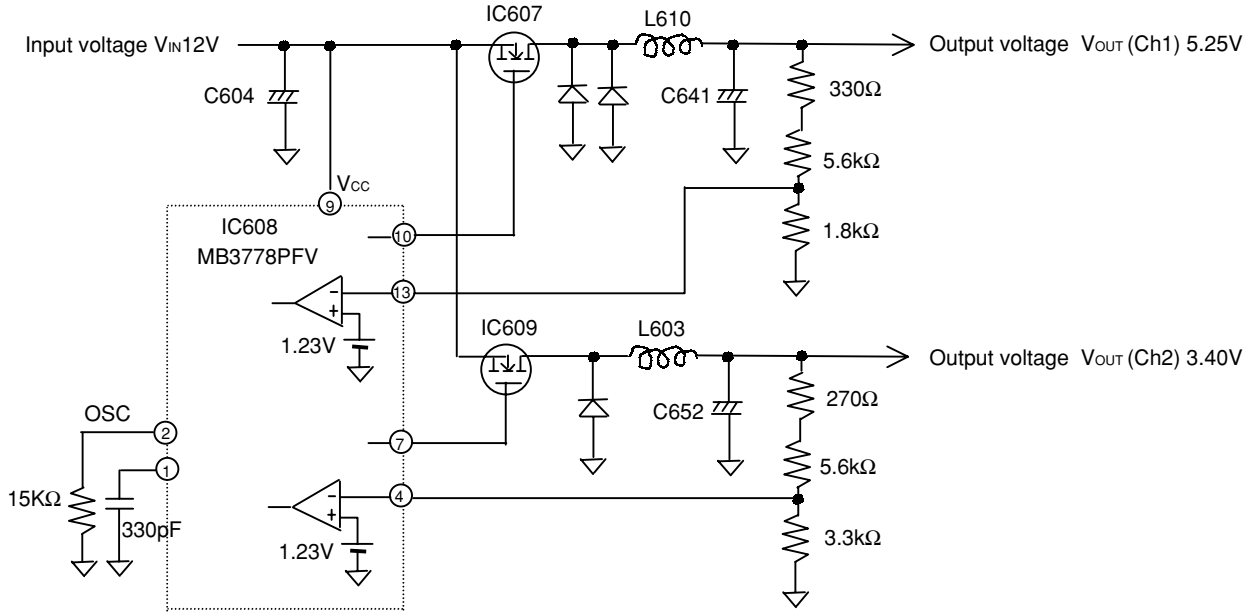
M3_3V system IC, D3_3V system IC power voltage

	Operating voltage	Absolute rating	
Microcomputer (IC102)	2.7~5.5V	-0.3~6.5V	DC/DC output voltage range must be
BR24C01AF-WE2 (IC104,5,7)	2.7~5.5V	-0.3~6.5V	within operating voltage range of load IC.
M24C32-W/24LC32A (IC100)	2.5~5.5V	-0.3~6.5V	
M51957AFP (IC101)	2.0~17V	18V	
KCO-7_355 (X100)	2.97~3.63V	-0.5~7V	
NJM12903 (IC103)	2.0~14V	~15V	
X9116WM-2.7 (IC106)	2.7~5.5V	-1~7V	
ASIC 3_3V I/O system (IC400)	3.0~3.6V	-0.3~4.2V	
74LCX14MTCX (IC302,5)	2.0~3.6V	-0.5~7V	
SI3025LSA (IC602, IC604)	V_{OUT}+0.4~3.5V	~16V	

(P prototype and following) 5.5V system output DC/DC (IC611)	IC specifications	Design value
Vref accuracy	1.26V ± 2%	
Output voltage fine adjustment resistor		750
R1 (output voltage dividing resistor upper limit)		6350 ± 1%
R2 (output voltage dividing resistor lower limit)		1800 ± 1%
DC/DC output voltage Max.		5.91V
DC/DC output voltage Typ.		5.71V
DC/DC output voltage Min.		5.50V

A5V regulator (PQ1U501M2ZP)	IC specifications		Design value
REG output voltage Max.	5.10V		
REG output voltage Typ.	5.00V		
REG output voltage Min.	4.90V		
Minimum potential difference between input/output (Max.)	0.4V	≦	0.4V
Maximum drop voltage			1.0V
Tolerable regulator collector loss (Max.)	0.35W	>	0.15W

MB3778PFV-G-BND-EF(IC608) Study of DC/DC step down circuit design



• Output voltage V_{OUT} (specification) V_{OUT} (Ch1) = 5.25V (Typ.)
V_{OUT} (Ch2) = 3.40V (Typ.)

(design value)

$= (V_{REF}/2) \cdot (1+ R1/R2)$ * V_{REF} = 2.46V±2%

V_{OUT} (Ch1) = (2.46V/2) • (1+(5.6kΩ+330Ω)/1.8kΩ) = 5.28V

V_{OUT} (Ch2) = (2.46V/2) • (1+(5.6kΩ+270Ω)/3.3kΩ) = 3.42V

• Output current I_{OUT} (specifications) I_{OUT} (Ch1) = 1.6A (MAX.)

I_{OUT} (Ch2) = 0.8A (MAX.)

• Ripple current ΔI_L (specifications) ΔI_L (Ch1) = 0.146Ap-p Set to 10% of I_{OUT} (Ch1)

ΔI_L (Ch2) = 0.121Ap-p Set to 15% of I_{OUT} (Ch2)

* Generally set to 30% or less

• Choke coil $L = (V_{IN} - R_{DS\ (ON)} \cdot I_{OUT} - V_{OUT}) \cdot V_{OUT} / \Delta I_L \cdot f_s \cdot V_{IN}$

L610 (Ch1) =(12V - 0.038Ω • 1.6A - 5.25V) • 5.25V / 0.146Ap-p • 200000Hz • 12V

=100µH

(Sagami Elec. product 7B12N: Tolerable current 1.7A, direct-current resistance 0.17Ω)

L603 (Ch2) = (12V - 0.038Ω • 0.8A - 3.40V) • 3.40V / 0.121Ap-p • 200000Hz • 12V

=100µH

(Taiyo yuden product NO8DP [A Typ.]: Tolerable current 1.05A, direct-current resistance 0.35Ω)

• Maximum power consumption P = (5.25V x 1.6A + 3.40V x 0.8A)/ efficiency 0.8

= 13.9W

* 80% efficiency is value generally used for DC/DC design

• Maximum input current I_{IN} = 13.9W / 12V

= 1.15A

Input fuse selection: 1.6A part x 97% x 75% = 1.16A > 1.15A >0.7A → OK

Temperature derating Rating derating

* The above maximum input current is calculated from the DC/DC maximum output current specifications, and is not the input current value that flows at the maximum load.
The DC/DC maximum output current value has a margin over the maximum load current value, so the actual maximum input current is approx. 0.7A.

• Output smoothing capacitor C641, C652 : 25V_470M-M

ESR = 0.15Ω MAX / 20˚C, 100kHz

Tolerable ripple current = 670mArms / 105˚C, 100kHz

* Tolerable ripple current frequency compensation coefficient = 1

5V output system

Ripple voltage (specifications) = 50mVp-p

Ripple voltage = ΔI_L x ESR (0.15Ω) = 0.146Ap-p x 0.15Ω = 0.022Vp-p ≦ 50mVp-p → OK

Ripple current = $\Delta I_L / 2\sqrt{3}$ = 0.042 Arms ≦ Tolerable ripple current (670mArms) → OK

3.3V output system

Ripple voltage (specifications) = 50mVp-p

Ripple voltage = ΔI_L x ESR (0.15Ω) = 0.121Ap-p x 0.15Ω = 0.018Vp-p ≦ 50mVp-p → OK

Ripple current = $\Delta I_L / 2\sqrt{3}$ = 0.035Arms ≦ Tolerable ripple current (670mArms) → OK

• Input capacitor C604 : 25V_470M-M

ESR = 0.15Ω MAX / 20˚C, 100kHz

Tolerable ripple current = 670mArms / 105˚C, 100kHz

* Tolerable ripple current frequency compensation coefficient = 1

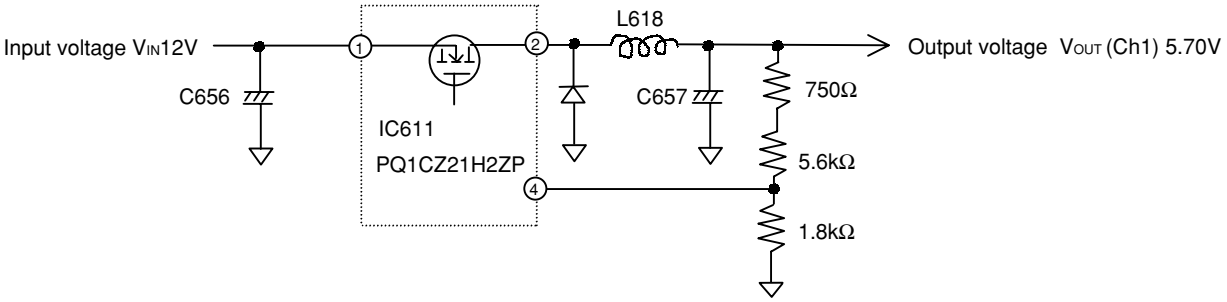
Ripple voltage = $\sqrt{D_{ON}(1-D_{ON})}$ $D_{ON} = V_{OUT} / V_{IN}$ = 5.25V / 12V =0.44

= $\sqrt{0.44\ (1-0.44)}$

=0.50Arms ≦ Tolerable ripple current (670mArms) → OK

• Oscillation frequency = 1 / (C_T x R_T) = 1/ (330pF x 15kΩ) = 200kHz

PQ1CZ21H2ZP(IC611) Study of DC/DC step down circuit design



• Output voltage V_{OUT} (specification) V_{OUT} = 5.70V (Typ.)
(design value)

$= V_{REF} \cdot (1 + R1/R2)$ * V_{REF} = 1.26V±2%

V_{OUT} = 1.26V • 1+(5.6kΩ+750Ω)/1.8kΩ) = 5.71V

• Output current I_{OUT} (specifications) I_{OUT} = 0.200A (MAX.)

• Ripple current ΔI_L (specifications) ΔI_L = 0.171Ap-p

• Choke coil $L = (V_{IN} - V_{sat} - V_{OUT}) \cdot V_{OUT} / \Delta I_L \cdot f_s \cdot V_{IN}$ * V_{sat} : internal switch's saturation voltage = 0.9V

L618 =(12V - 0.9V - 5.70V) • 5.70V / 0.171Ap-p • 100000Hz • 12V

=150µH

(Taiyo yuden product NO6DB 151K : Tolerable current 0.48A, direct-current resistance 1.0Ω)

• Maximum power consumption P = (5.70V x 0.2A) / efficiency 0.8

= 1.43W

* 80% efficiency is value generally used for DC/DC design

• Maximum input current I_{IN} = 1.43W / 12V

= 0.12A

• Output smoothing capacitor C657 : 16V_100M-M F55 (CP182P093A41)

ESR =1.00Ω MAX / 20˚C, 100kHz

Tolerable ripple current = 140mArms / 105˚C, 100kHz

* Tolerable ripple current frequency compensation coefficient = 1

5.5V output system

Ripple voltage (specifications) ≦ 200mVp-p

Ripple voltage = ΔI_L x ESR (1.00Ω) = 0.171Ap-p x 1.00Ω = 0.171Vp-p ≦ 200mVp-p → OK

Ripple current = $\Delta I_L / 2\sqrt{3}$ = 0.049Arms ≦ Tolerable ripple current (140mArms) → OK

• Input capacitor C656 : 16V_100M-M F55(CP182P093A41)

ESR = 1.00Ω MAX / 20˚C, 100kHz

Tolerable ripple current = 140mArms / 105˚C, 100kHz

* Tolerable ripple current frequency compensation coefficient = 1

Ripple voltage = $\sqrt{D_{ON}(1-D_{ON})}$ $D_{ON} = V_{OUT} / V_{IN}$ = 5.7V / 12V =0.48

$= \sqrt{0.48\ (1-0.48)}$

=0.50Arms ≦ Tolerable ripple current (140mArms) → OK

• Oscillation frequency = 100kHz

MB3778PFV-G-BND-EF (IC608) Study of DC/DC power MOS FET drive circuit

Power MOS FET : Vishay Siliconix product P-Channel MOS FET : Si3457DV (CP260P470A11) (IC607, IC609)

[Rating]

V_{DS} = -30V, I_D (DC)= -3.4A (Ta=70˚C), I_D (PULSE)= -10A, P_D = 1.3W (Ta=70˚C)

[Specifications]

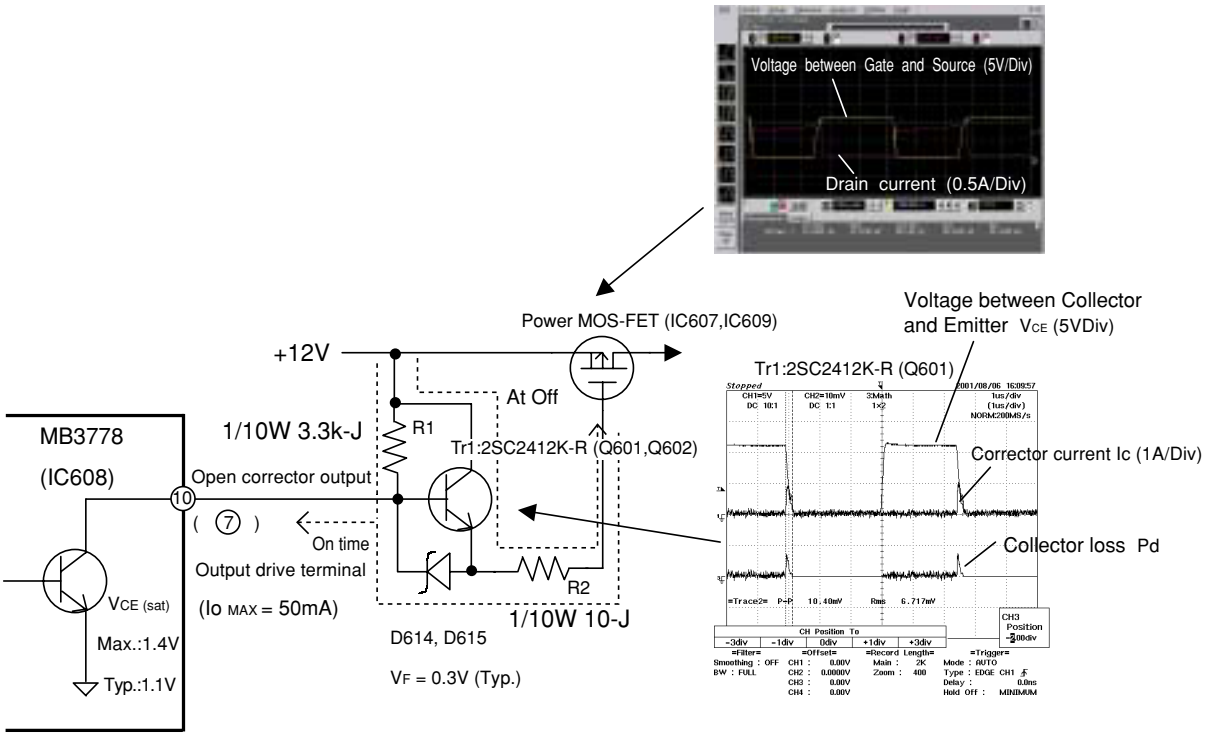
on resistor $R_{DS(on)}$ = 0.1Ω (V_{GS} = -4.5V, I_D = -3.4A)

t_d(on) = 15nsec (Max.)

t_d(off) = 50nsec (Max.)

C_{iss} = 11000nsec

The turn On + turn Off time is 65nsec, and is sufficiently small compared to the switching cycle 5000nsec (oscillation frequency 200kHz). (There is little switching loss.)



When switching is On, the power MOS-FET gate charge is pulled by the open collector transistor (base Hi) built-in the DC/DC IC (MB3778) to set the gate voltage V_{GS} to 12V- ($V_{CE(sat)}$+V_F).

(The DC/DC open collector transistor operates actively, so the power MOS-FET turns ON at a high speed.)

On the other hand, the turn OFF time slows during OFF due to the open collector's pull-up resistor R1 (base L_o). To charge the power MOS-FET gate, Tr1 in this drive circuit turns ON when the base voltage has been increased by 0.6V in respect to the emitter by the pull-up resistor R1. It then turns OFF at a high speed as the power MOS-FET gate is charged by Tr1's active operation. (Tr1 can be turned OFF at a high speed because the pull-up resistor is bypassed.)

The drive circuit consumes power only when the consumption power is turned ON and OFF by the Tr1 and R2, and thus can be ignored. When the power consumed by the pull-up resistor R1 during ON is considered, the following is attained.

Current consumption (during ON) = (12-$V_{CE(sat)}$)V / 3.3kΩ = 3.3mA

Power consumption = 3.3mA (at ON) x (12-$V_{CE(sat)}$)V x 0.5 (On Duty) = 18mW

The DC/DC IC (MB3778) used with this circuit has a two-channel output, so there are two driver circuits. The I_{CC} of the DC/DC IC is 2.4mA, so the power consumption is 28.8mW (=2.4mA x 12V), and the total power consumption including the driver circuit is 64.8mW (=18mW x 2Ch+28.8mW).

1.6.3 Power rising/falling edge sequence control function

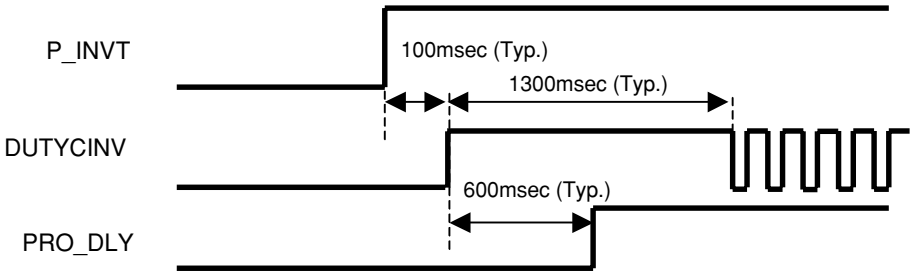
List of control signals

μ-COM Pin No.	I/O	Signal name	Function	Remarks
53	O	P_SAVE	PRC mode of power borad : Lo / resonance mode : Hi switching	PWB-POWER
59	O	PRO_DLY	Inverter protection circuit Invalid : Lo/Valid : Hi	PWB-POWER
47 ~ 51	I/O	MS*, RSTN	ASIC control (for DUTYCINV : PWM for inverter royer oscillation)	ASIC
57	O	P_INVT	Inverter lighting control Off : Lo / On : Hi	PWB-POWER
58	O	P_PANEL	Panel 5V power OFF : Lo / ON : Hi	DTC114EUA
56	O	P_SUSP1	A2_5V power OFF : Lo / ON : Hi	SI3025LSA
55	O	P_SUSP2	D2_5V power OFF : Lo / ON : Hi	SI3025LSA
54	O	P_SUSP3	P2_5V power OFF : Lo / ON : Hi	NJM2870F25
60	O	P_ON	A5V power OFF : Lo / ON : Hi	PQ1U501M2ZP
52	O	P_TMDS	TM3_3V power OFF : Lo / ON : Hi	SI3033LSA

Functions

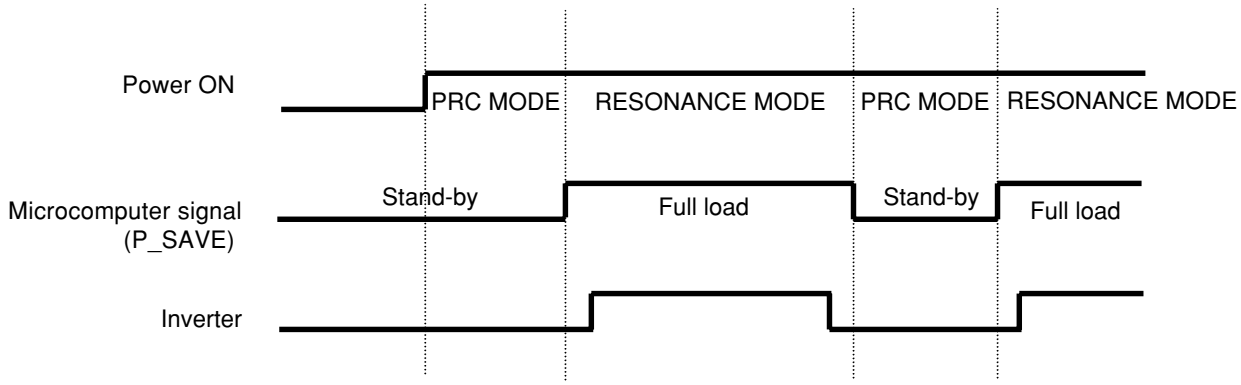
• Inverter control:

The microcomputer pin 57 P_INVT is used to control the inverter lighting, and the microcomputer pin 59 PRO_DLY is used to control the validity of the inverter's protection circuit. The ASIC PWM output DUTYCINV is used to control the royer oscillation of inverter. The microcomputer can control panel dimming by controlling the ASIC PWM output frequency. The inverter control signal timing specifications at the power's rising edge are shown below.



• Power board control

The microcomputer pin 53 P_SAVE is used to control the switching of the power board's PRC mode and resonance mode. The sequence at the power's rising edge is shown below. During power save, operation takes place at the PRC mode having good power efficiency. However, as a high load current cannot be passed (maximum approx. 1A at 12V), the resonance mode in which a load current can be applied is used normally.



• Power management control (FET-SW and regulator ON/OFF control, etc.)

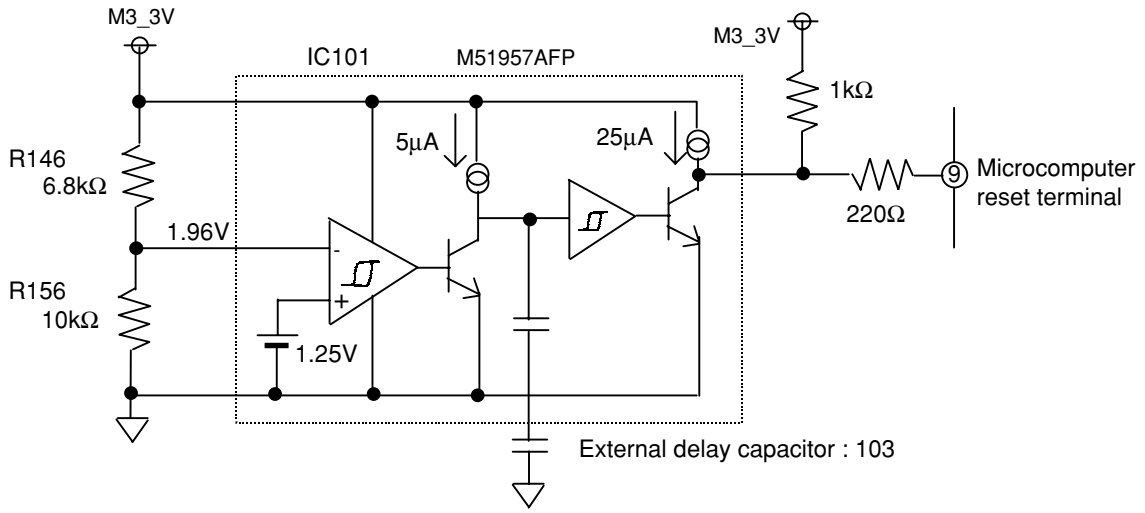
(1) At AC power ON
→ System reset
→ Microcomputer initialization
→ P_ON = ON
→ P_SUS* = ON
→ ASIC initialization
→ ASIC power save mode transfer

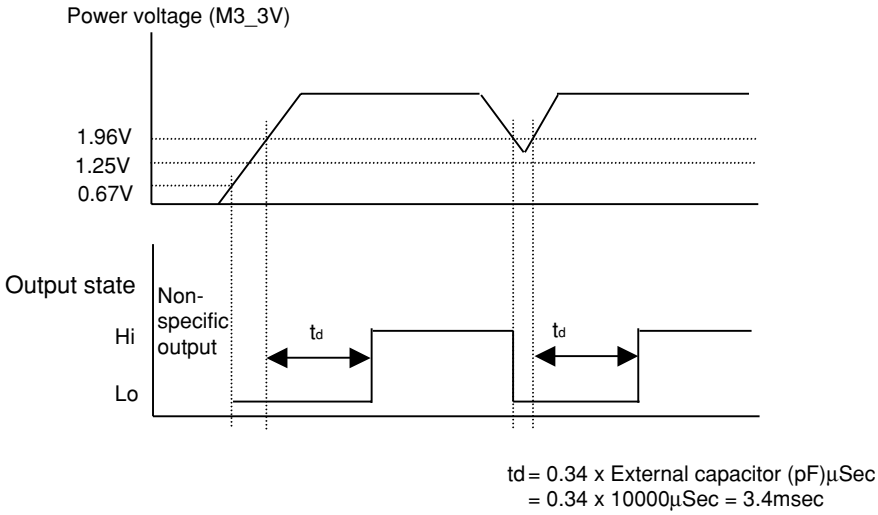
(2) Front power switch = ON & power save recovery
→ P_SAVE = ON (resonance mode)
→ ASIC power save mode cancel
→ P_PANEL = ON(black mask)
→ Delay
→ P_TMDS = ON
→ Inverter ON control (P_INVT = ON, PRO_DLY output, DUTYCINV output)
→ Video buffer ON (SEL_1 = ON or SEL_2 = ON during analog)

(3) Front power switch = OFF
→ Video buffer OFF
→ Inverter OFF control
→ P_PANEL = OFF
→ ASIC power save mode transfer
→ P_SAVE = OFF(PRC mode)
→ P_TMDS = OFF

(4) Power save transfer
→ Video buffer OFF
→ Inverter OFF control
→ P_PANEL = OFF
→ ASIC power save mode transfer
→ P_SAVE = OFF(PRC mode)
→ P_TMDS power save mode transfer
(P_TMDS = OFF when VIDEO DETECT = NONE, and D-SUB Ch is selected)

1.6.4 Reset circuit





td = 0.34 x External capacitor (pF)μSec
= 0.34 x 10000μSec = 3.4msec

< Selecting the reset voltage >

The operation power voltage range of the microcomputer (IC102) is 2.7V to 5.5V. Normally, the voltage should be reset when the microcomputer power (M3_3V) drops to 2.7V or less, but as the operation could malfunction due to power voltage noise, etc., the reset voltage is selected so that resetting actually takes place at 2.1V or less.

< Selection of resistance constant >

According to the DC/DC converter design sheet, the M3_3V power voltage range is 3.3V to 3.5V. However, if the power voltage drops to 2.1V or less due to an error mode, the following will be attained:

1+ (R146/R156) = reset voltage (2.1V) / reference voltage (1.25V).

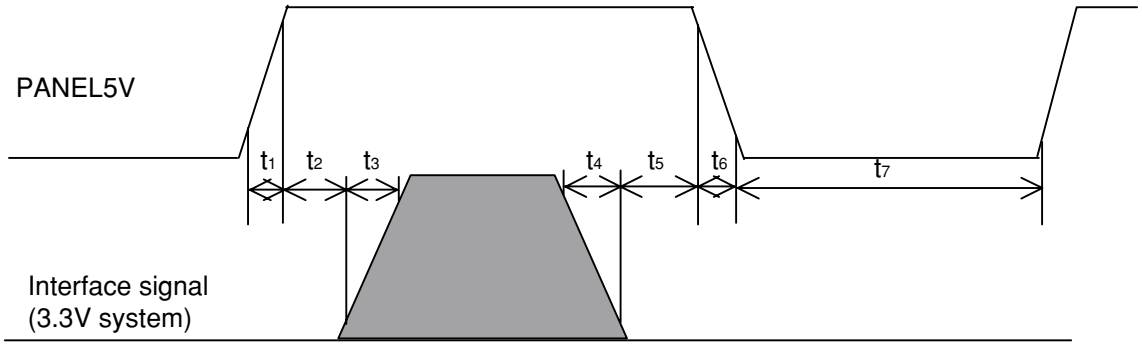
Thus, R146=6.8kΩ and R156=10kΩ are used.

< Oscillation circuit >

With the specifications X100 (CP285P030A11), the clock is supplied to the microcomputer's pin 12 with a 10MHz oscillator. ASIC multiplies the microcomputer clock in the ASIC, and uses it as the system clock.

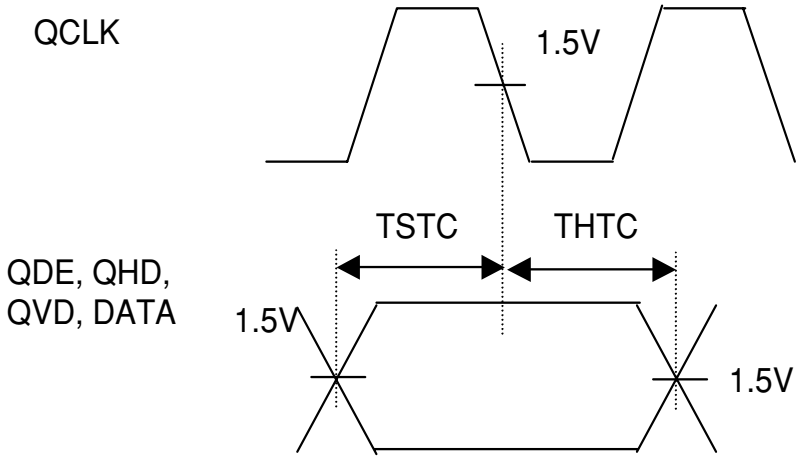
1.7 Panel interface

• Timing for panel power and interface signal



The following is set to satisfy the following panel AC timing with the microcomputer timing control.
t1 ≦ 40ms
0ms < t2 ≦ 50ms
0ms < t3 ≦ 3ms
0ms < t4 ≦ 3ms
0ms < t5 ≦ 50ms
0ms < t6 ≦1s
t7 ≧ 0.2s

• DC characteristics of interface signal.
The ASIC (Maurice2) clock delay time is set so that the panel clock's falling edge hits at the center of the data.



The timing reference is 1.5V.
Note that the panel input Hi level voltage (VIH) and panel input Lo level voltage (VIL) are as follows.

VIH ≧ 2.0V, VIL ≦ 0.8V (TTL level)

←Maurice2's panel output level is VOH ≧ D3_3V-0.05V and VOL ≦ 0.05V, and thus direct connection is possible.

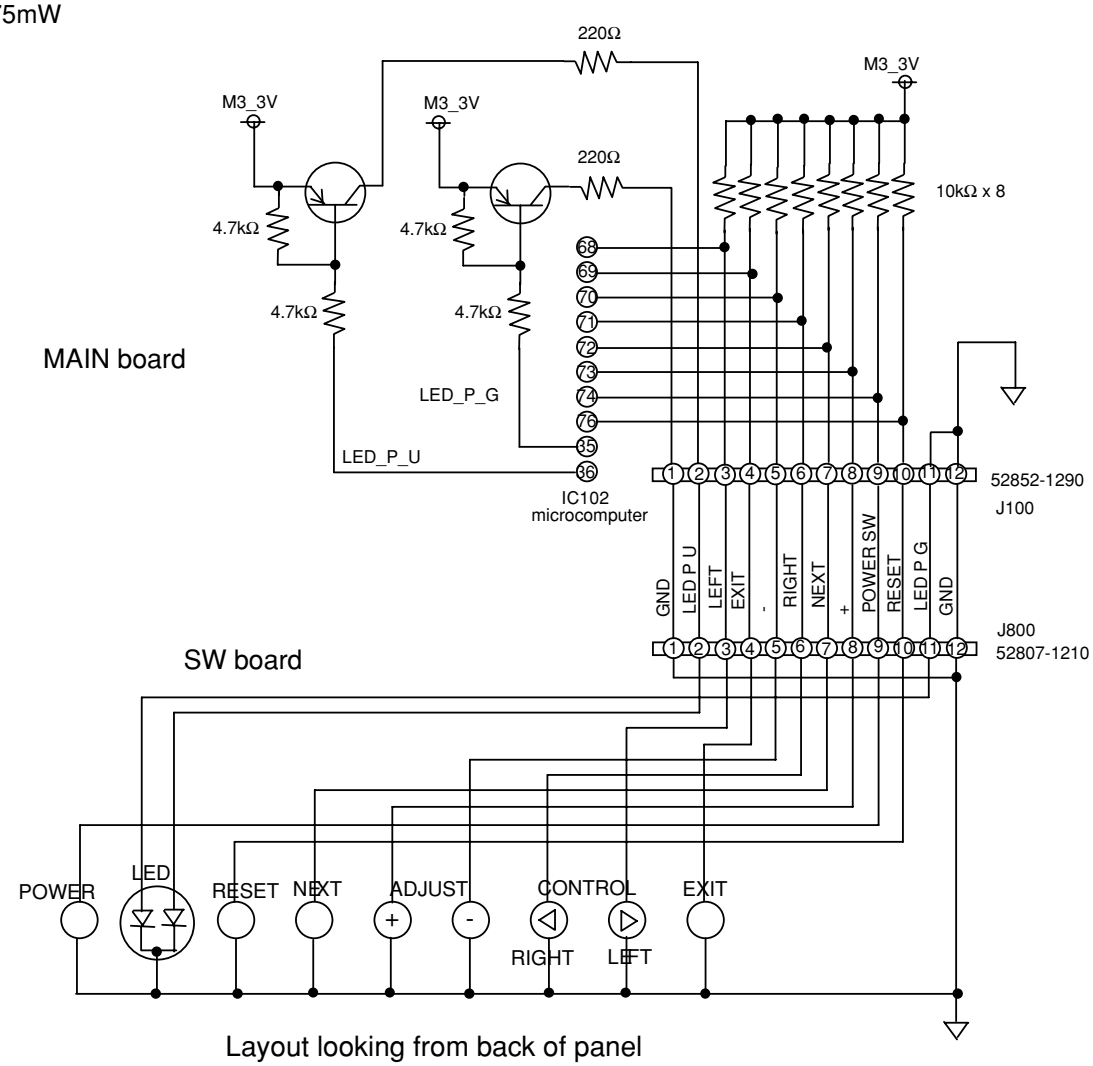
* D3_3V is Maurice2's I/O power 3.3V.

1.7.1 Switch board interface

List of control signals

μ-COM Pin No.	I/O	Signal name	Function	Remarks
68	I	LEFT	OSM menu selection : Normally 1, Lo when switch is pressed	PWB-SW
69	I	EXIT	OSM menu selection : Normally 1, Lo when switch is pressed	
70	I	-	OSM menu selection : Normally 1, Lo when switch is pressed	
71	I	RIGHT	OSM menu selection : Normally 1, Lo when switch is pressed	
72	I	NEXT	OSM menu selection : Normally 1, Lo when switch is pressed	
73	I	+	OSM menu selection : Normally 1, Lo when switch is pressed	
74	I	SW_DET	Front power switch monitoring : Normally 1, Lo when switch is pressed	
76	I	RESET	OSM menu selection : Normally 1, Lo when switch is pressed	
35	O	LED_P_G	Hi (default value) : Off, Lo : green LED On	
36	O	LED_P_U	Hi (default value) : Off, Lo : orange LED On	

Calculation of LED (CP264P480A10) drive current
Maximum rating : P_D = 75mW, I_F =30mA Photoelectric characteristics: V_F = 1.9V
LED drive current = (M3_3V-V_F) / 220Ω (transistor's $V_{CE(sat)}$ is ignored)
= 6mA < 30mA
LED power = (M3_3V-V_F) x 6mA
= 8.4mW < 75mW



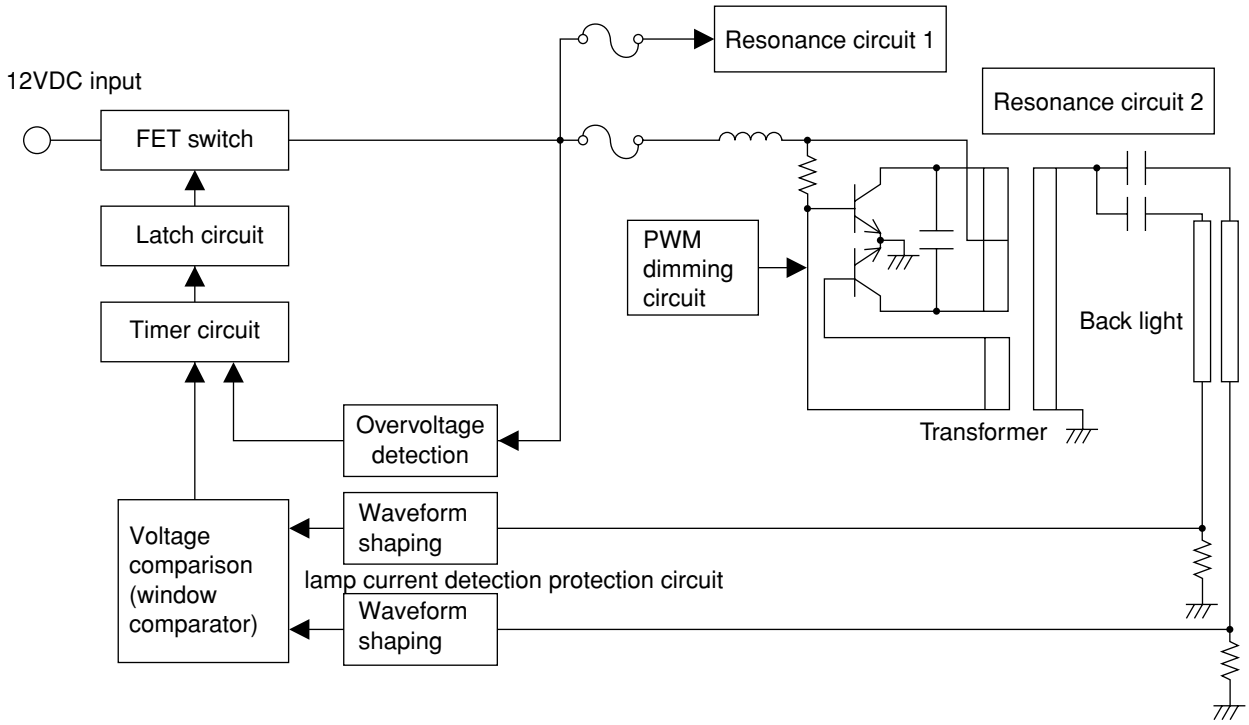
Layout looking from back of panel

1.8 Inverter circuit

1.8.1 Basic configuration

Oscillation circuit method: Self-exciting
Number of backlights: Four
Dimming method: PWM dimming

1.8.2. Circuit block diagram

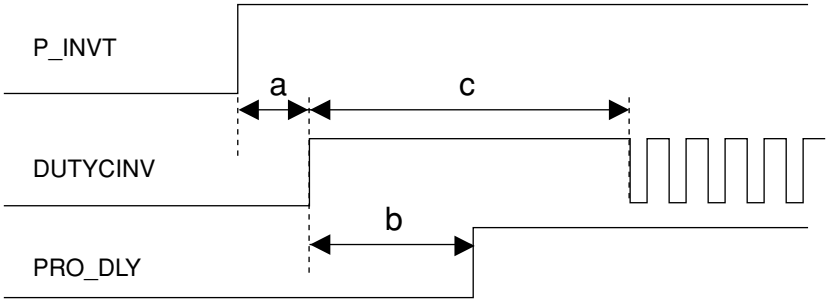


1.8.3. Input/output terminal functions

(1) J703

PIN No.	Name	Function
1	12V	Power input
2	12V	Power input
3	GND	GND
4	GND	GND
5	P_INVT	Inverter power control input Power ON (HIGH), OFF (LOW)
6	PRO_DLY	Protection circuit control input Protection circuit valid (HIGH), invalid (LOW)
7	DUTYCINV	Dimming PWM signal input Resonance circuit active (HIGH), inactive (LOW)

Sequence at inverter ON



Limit	Minimum	Typical.	Maximum
a	20msec	100msec	(200msec)
b	(400msec)	600msec	c or less
c	b or more	1300msec	

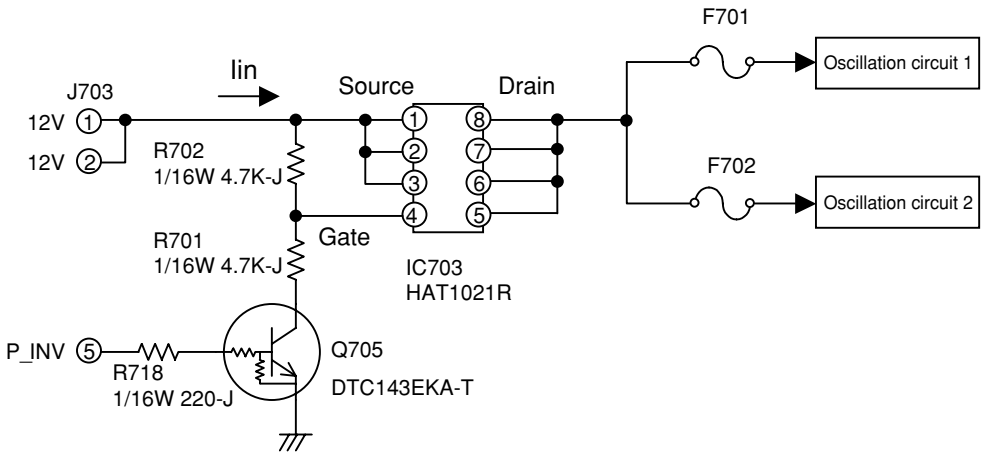
Each terminal turns to LOW simultaneously when the power is turned OFF.

(2) J701 (J702)

PIN No.	Name	Function
1	HOT_1 (HOT_3)	High pressure output 1 (3)
2	HOT_2 (HOT_4)	High pressure output 2 (4)
3	-	No connection
4	COLD_1 (COLD_3)	Ramp return 1 (3)
5	COLD_2 (COLD_4)	Ramp return 2 (4)

1.8.4. Detailed description of each circuit

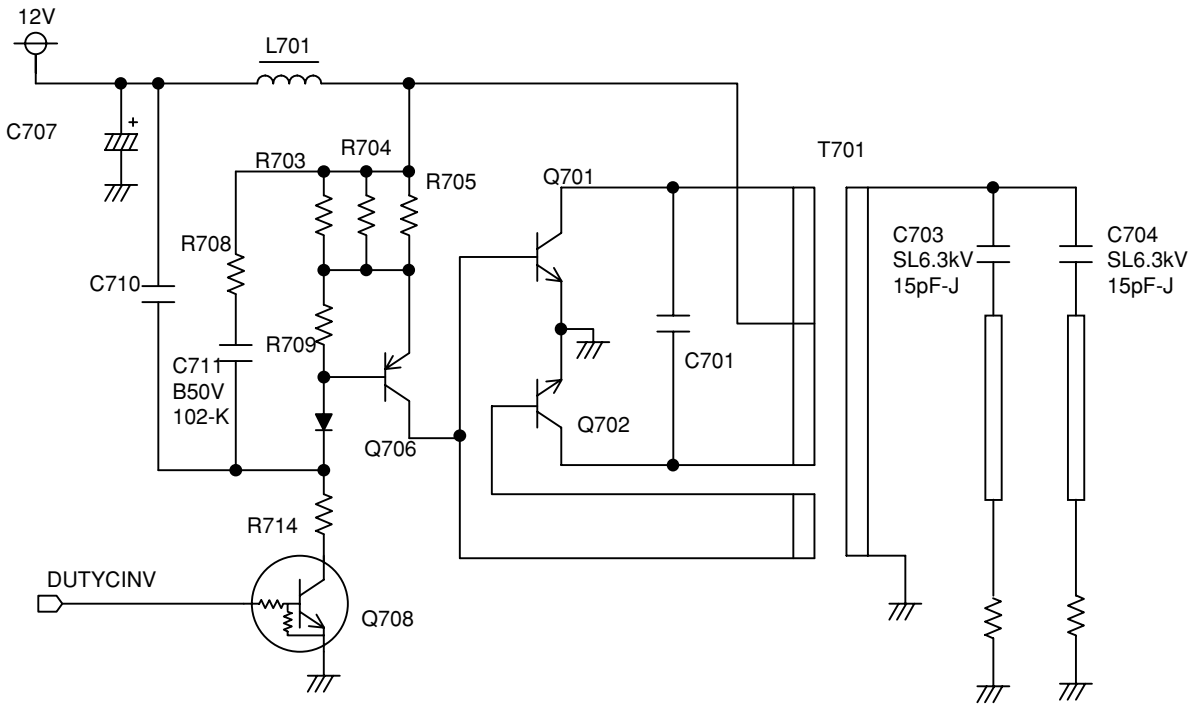
1.8.4.1 Power input section



The 12VDC output from the power board (PWB-POWER) is turned ON and OFF with the FET switch (IC703), and is supplied to each oscillation circuit.
The IC703 (FET switch) is turned ON and OFF by turning Q705 (digital transformer) ON/OFF with the signal (P_INVT) from the microcomputer.

1.8.4.2 Lamp drive circuit section

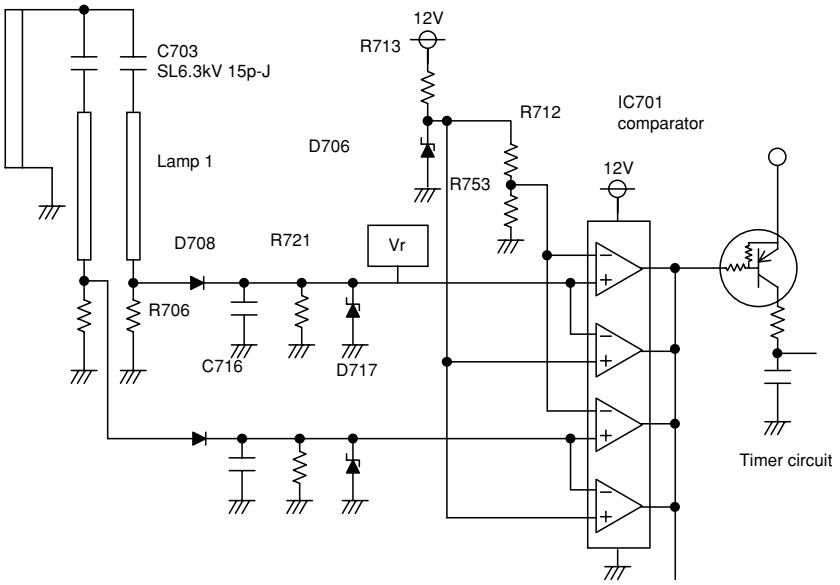
The lamp is driven with the self-exciting resonance circuit (royer circuit). For dimming, the PWM (Pulse Width Modulation) method that changes the duty ratio by turning the switching transistor base current ON and OFF is used.
Thus, the brightness can be changed with the Duty (PWM method) of PWM pulse signal (J703 pin 7: DUTYCINV) from ASIC.



1.8.4.3 Protection circuit section

The protection circuit is configured of a lamp current detection protection circuit (lamp current limiter) that detects errors by detecting the current in the lamp return wire, and setting a threshold for the upper and lower limits of that value. In addition, this circuit has an overvoltage protection circuit that detects the power voltage value, and a fuse. A timer circuit is provide before the protection latch circuit, and malfunctioning of the protection circuit by the transient response and noise is prevented. By using individual return wires for each lamp, errors can be detected in each lamp. This allows the ballast capacitor's short-circuits and the open state for one lamp to be detected.

1.8.4.3.1 Lamp current detection protection circuit (lamp current limiter)

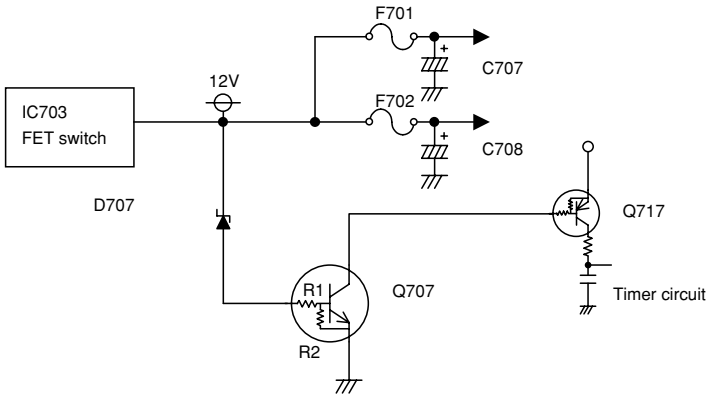


(1) Outline of operation

The current that flows to lamp 1's return wire is converted into voltage at R706, and is input into IC701 as the DC voltage rectified by D708 and C714. IC701 compares this voltage with the threshold (upper/lower limit range) set by the D706 reference voltage. If the lamp current is an abnormal value and exceeds this threshold, the IC701 comparator output is short circuited (the IC701 output type is an open collector).

The IC701 comparator output remains open while the lamp current is normal, and the protection circuit does not function.

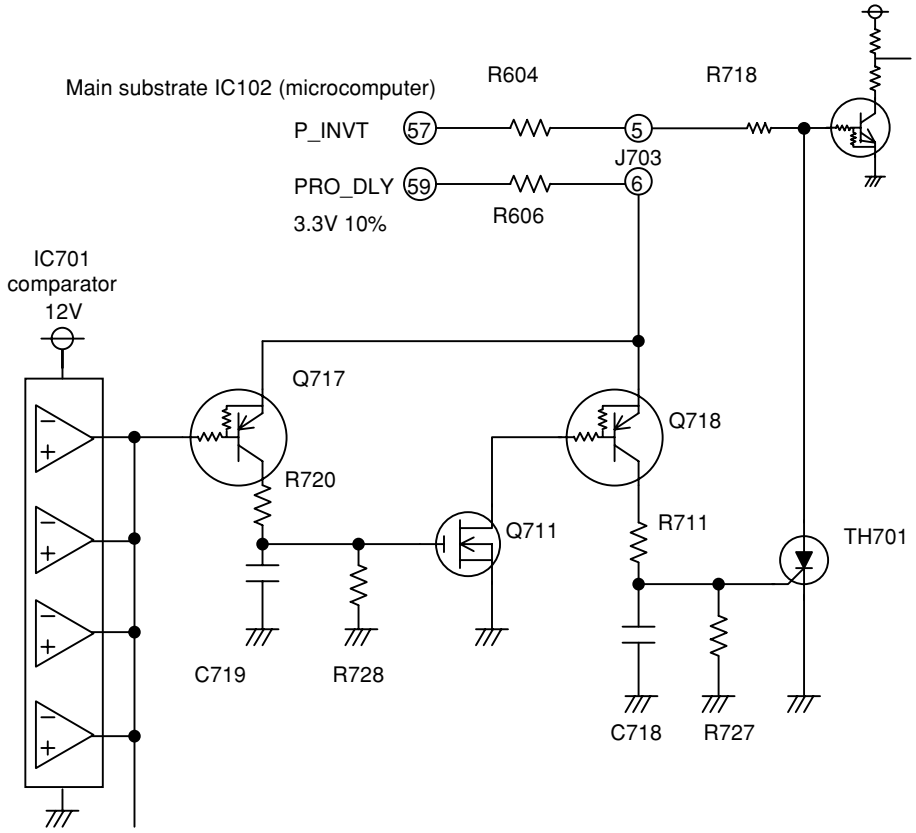
1.8.4.3.2 Overvoltage protection circuit



An overvoltage in the power voltage is detected, and the timer circuit and latch protection circuit are activated in the same manner as the lamp current detection protection circuit explained above.

1.8.4.3.3 Protection circuit operation timer circuit (malfunction prevention)

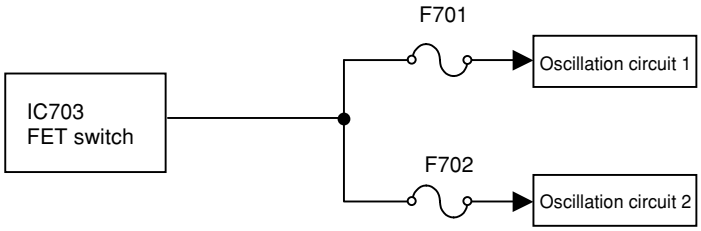
If detection of an error continues for a set time, the protection circuit will function to prevent malfunctions.



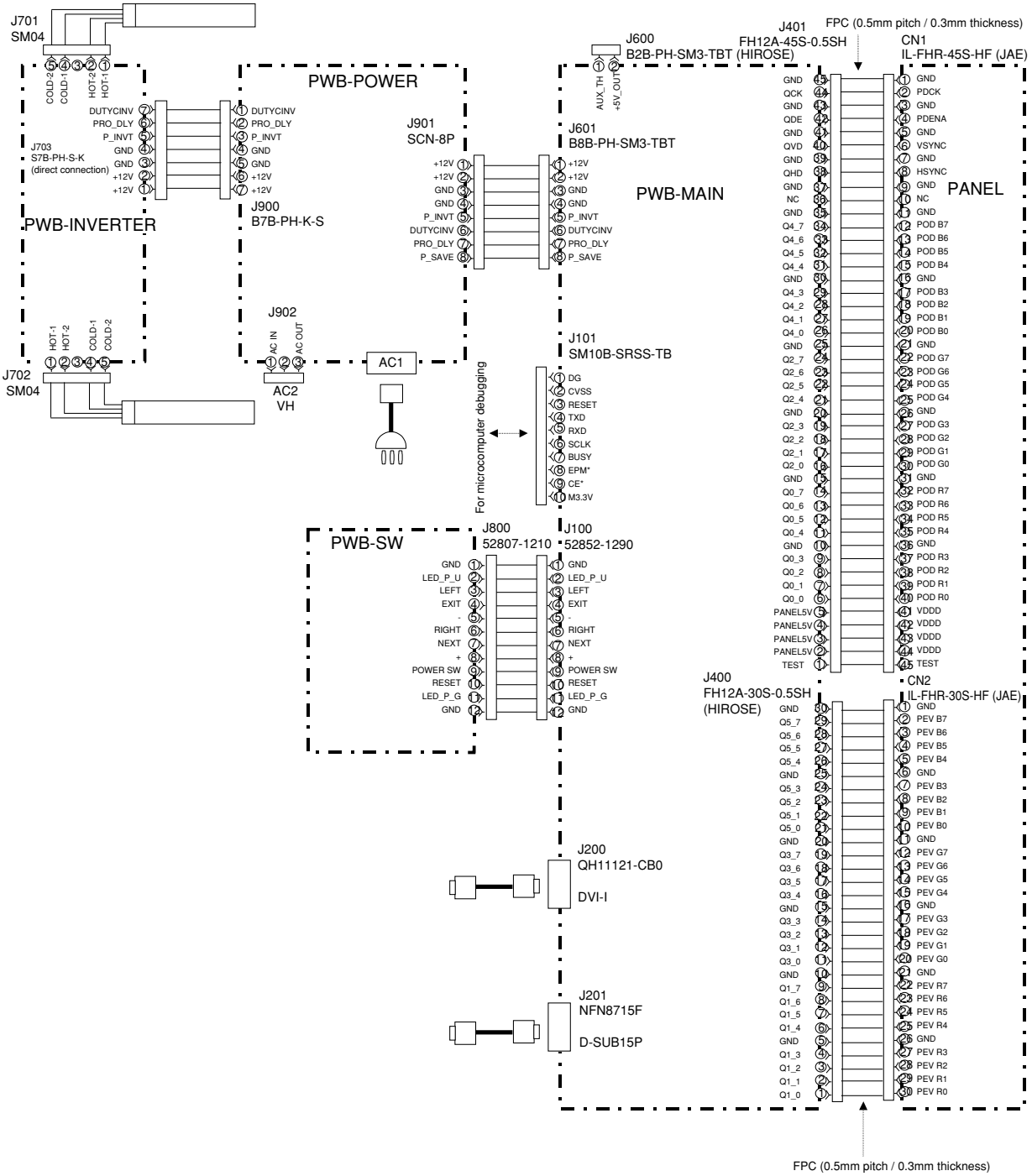
The protection circuit operation is delayed by the time constants set in R720, R728 and C719. To avoid affecting the time constant, FET (Q711) is used to drive Q718, and the thyristor (TH701) is turned ON (latched) to stop the supply of power to the oscillation circuit.

1.8.4.3.4 Fuse

A fuse is provided in the input section of each royer circuit.



Appendix Table 1. LCD1550X connection diagram



Appendix Table 2. Microcomputer port assignment table

Pin No.	Port No.	Pin name	Pin assignment	I/O	Details		Default value	Place of use
67	0	P0_0	U/D	O	DVI-I connector DDC switching control signal	0: Dec (digital), 1: Inc (analog)	0	X9116WM
66		P0_1	INC	O	DVI-I connector DDC switching control signal	Tap slide at each falling edge	0	X9116WM
65		P0_2	/PD	O	TMDS receiver power save mode	0: At TMDS power down, 1: When normal	1	Sii143
64		P0_3	SCDT	I	TMDS receiver DE detection	0: No sync, Sync	0	Sii143
63		P0_4	/PDO	O	TMDS receiver output enable	0: At TMDS output open, 1: When normal	1	Sii143
62		P0_5	EEP_SDA	I/O	EEPROM I/F bus data input			EEPROM
61		P0_6	EEP_SCL	O	EEPROM I/F bus clock output			EEPROM
60		P0_7	P_ON	O	A5V circuit power control	1: Power ON, 0: Power OFF		PQ1U501M2ZP
None	1			O				
None				O				
None				O				
None				O				
None				O				
None				O				
None				O				
None				O				
59	2	P2_0	PRO_DLY	O	For inverter sequence control			Inverter board
58		P2_1	P_PANEL	O	FET-SW output control for panel power	1: Output ON, 0: Output OFF		FET-SW for panel power
57		P2_2	P_INVT	O	Inverter lighting control	1: On, 0: Off		Inverter board
56		P2_3	P_SUSP1	O	A2.5V circuit power control	1: Power ON, 0: Power OFF		ASIC(analog circuit)
55		P2_4	P_SUSP2	O	D2.5V circuit power control	1: Power ON, 0: Power OFF		ASIC(digital logic circuit)
54		P2_5	P_SUSP3	O	Power control for PLL circuit	1: Power ON, 0: Power OFF		ASIC(PLL circuit)
53		P2_6	P_SAVE	O	PWB-POWER PRC mode/resonance mode switching control	1: When normal, 0: During power save		Power board
52		P2_7	P_TMDS	O	TM3_3V circuit power control	1: Power ON, 0: Power OFF		TMDS
51	3	P3_0	RSTN	O	ASIC forcible reset signal		0	ASIC
50		P3_1	MST	O	Communication I/F between microcomputer and ASIC	Clock	0	ASIC
49		P3_2	MSD	O	Communication I/F between microcomputer and ASIC	Data written to ASIC	0	ASIC
48		P3_3	MSQ	I	Communication I/F between microcomputer and ASIC	Data read from ASIC	0	ASIC
47		P3_4	RGSN	O	Communication I/F between microcomputer and ASIC	Enable	0	ASIC
46		P3_5	FS0	O	Panel clock setting signal 0		Set with hardware (Refer to separate table 1 for details)	ASIC
45		P3_6	FS1	O	Panel clock setting signal 1			ASIC
44		P3_7	FS2	O	Panel clock setting signal 2			ASIC
43	4	P4_0	MODEL1	I	Panel identification signal input 0		Set with hardware (Refer to separate table 2 for details)	
42		P4_1	MODEL2	I	Panel identification signal input 1			
41		P4_2	MODEL3	I	Panel identification signal input 2			
40		P4_3	MODEL4	I	Panel identification signal input 3			
None				O				
None				O				
None				O				
None				O				
39	5	P5_0	CE*	I	Chip enable signal for onboard writing			Serial writer
38		P5_1	CABLE	I	CABLE detection (unused)		0	
37		P5_2	/WP	O	EEPROM write protect for DDC communication	1: Write enabled, 0: Write protected	0	EEPROM for DDC communication
36		P5_3	LED_P_U	O	LED control signal (orange)		1	SW board
35		P5_4	LED_P_G	O	LED control signal (green)		1	SW board
34		P5_5	EPM*	I	Mode switching signal for onboard writing			Serial writer
33		P5_6	SEL 1	O	DVI-A video input buffer output enable signal	0: Output disable, 1: Output enable	0	
32		P5_7/CLKOUT	PIVOT_SENSE	I	Inclination sensor signal detection (unused)		0	Inclination sensor
31	6	P6_0/CTS0*/RTS0*	TMDS_CTL3	I	TMDS receiver CTL3 signal	0: When normal	0	Sii143
30		P6_1/CLK0	TMDS_CTL2	I	TMDS receiver CTL2 signal	0: When normal	0	Sii143
29		P6_2/RXD0	TMDS_CTL1	I	TMDS receiver CTL1 signal	0: When normal	0	Sii143
28		P6_3/TXD0	A2_ANA	I	DVI-I (for analog Ch) EEPROM A2 address detection	1: A2 address 0, 0: A2 address 1		EEPROM
27		P6_4/CTS1*/RTS1*/CTS0*/CLKS1	BUSY	I	BUSY signal for onboard writing			Serial writer
26		P6_5/CLK1	SCLK	I	Clock data for onboard writing			Serial writer
25		P6_6/RXD1	RXD	I	Reception data for onboard writing			Serial writer
24		P6_7/TXD1	TXD	I	Send data for onboard writing			Serial writer
23	7	P7_0/TXD2/SDA/TA0OUT	DDC_SDA	I	Data signal for DDC communication			PC
22		P7_1/RXD2/SCL/TA0IN/TB5N	DDC_SCL	I	Clock signal for DDC communication			PC
None				O				
None				O				
None				O				
None				O				
21		P7_6/TA3OUT	A2_DIG	I	DVI-I (for digital Ch) EEPROM A2 address detection	1: A2 address 0, 0: A2 address 1		EEPROM
20		P7_7/TA3IN	C/S_V2	I	V measurement at C/S for D-SUB connectors		0	
19	8	P8_0/TA4OUT	SEL_2	O	D-Sub video input buffer output enable signal	0: Output disable, 1: Output enable	0	
18		P8_1/TA4IN	C/S_V1	I	V measurement at C/S for DVI-I connector (analog Ch)		0	
17		P8_2/INT0*	S/G_V2	I	V measurement at S/G for D-Sub connector		0	
16		P8_3/INT1*	QVD_M	I	Equivalent to vertical synchronizing signal input (from ASIC)	Equivalent to frame signal		ASIC
15		P8_4/INT2*	S/G_V1	I	V measurement at S/G for DVI-I connector (analog Ch)		0	
14		P8_5/NMI*	MNI*	I	For onboard writing	Vcc		Serial writer
8		P8_6/XCOUT	SEL HS2_GS2	O	Input sync switching switch	0: H or C/S side, 1: S/G side		74F157MTCX
7		P8_7/XCIN	SEL HS1_GS1	O	Input sync switching switch	0: H or C/S side, 1: S/G side	0	(multiplexer IC)
5	9	P9_0/TB0IN/CLK3	C/S_H2	I	H measurement at C/S for D-Sub connector		0	
None				O				
4		P9_2/TB2IN/SOUT3	S/G_H2	I	H measurement at S/G for D-Sub connector		0	
3		P9_3/DA0/TB3IN	C/S_H1	I	H measurement at C/S for DVI-I connector (analog Ch)		0	
2		P9_4/DA1/TB4IN	S/G_H1	I	H measurement at S/G for DVI-I connector (analog Ch)		0	
1		P9_5/ANEX0/CLK4	/CS	O	DVI-I connector DDC switching control signal	L: Normal, ↑: Tap position store	0	X9116WM
80		P9_6/ANEX1/SOUT4		I	Internal thermistor circuit A/D input	0: Low temp., 255: High temp.		Thermistor circuit
79		P9_7/ADTRG*/SIN4		I		DG		
76	10	P10_0/AN0	RESET	I	OSD menu selection (reset the setting value to the default)	1: Normal, 0: When SW is pressed		SW board
74		P10_1/AN1	SW_DET	I	Front power switch monitoring	1: Normal, 0: When SW is pressed		
73		P10_2/AN2	+	I	OSD menu selection (+)	1: Normal, 0: When SW is pressed		SW board
72		P10_3/AN3	NEXT	I	OSD menu selection (move to next tag)	1: Normal, 0: When SW is pressed		SW board
71		P10_4/AN4/K10*	RIGHT	I	OSD menu selection (R)	1: Normal, 0: When SW is pressed		SW board
70		P10_5/AN5/K11*	-	I	OSD menu selection (-)	1: Normal, 0: When SW is pressed		SW board
69		P10_6/AN6/K12*	EXIT	I	Close OSD display	1: Normal, 0: When SW is pressed		SW board
68		P10_7/AN7/K13*	LEFT	I	OSD menu selection (L)	1: Normal, 0: When SW is pressed		SW board
78		AVCC		-		Vcc		
75		AVSS	Avss	-	D/A power supply	Vcc		
6		CNVSS(BYTE)	CVSS	-	For onboard writing			Serial writer
9		RESET	RESET	-	Reset signal input	L: Reset (normally H)		
13		VCC	Vcc	-	Microcomputer power supply	3.5V		
77		VREF	VREF	-	Reference power for D/A converter	Vcc		
11		VSS	Vss	-	Microcomputer GND	DG		
12		XIN	XIN	-	Clock input	10MHz		
10		XOUT		-		N.C.		

Panel clock frequency setting (separate table 1)

FS_2	FS_1	FS_0	
0	0	0	30MHz
0	0	1	32.5MHz
0	1	0	35MHz
0	1	1	37.5MHz
1	0	0	40MHz

Panel maker identification setting (separate table 2)

P_ID3	P_ID2	P_ID1	P_ID0	Panel clock	Panel maker	Panel type	EDID write protect	
0	0	0	0					
0	0	0	1					
0	0	1	0					
0	0	1	1					
0	1	0	0					
0	1	0	1					
0	1	1	0					
0	1	1	1					
1	0	0	0					
1	0	0	1					
1	0	1	0					
1	0	1	1					
1	1	0	0					
1	1	0	1					
1	1	1	0					
1	1	1	1		HITACHI	TX38D26VCOCAA	Invalid	

2. Adjustment procedure

2.1 Application

This adjustment procedure applies to the 15-inch (LCD1550X) LCD display monitor.

2.2 Measurement instruments used

(1) Analog signal generator: Astro Design VG-813 or equivalent
(2) Digital signal generator: Astro Design VG-828D or equivalent
(3) DVI-D PC: DELL PC (Carrying GeForce2 Ultra 3D 64MB), DELL PC DIMENSION 4200 (Carrying GeForce3 64MB DDR) or IBM PC NetVista
(4) DC voltmeter: Digital voltmeter
(5) Luminance meter: MINOLTA Color analyzer CA-110 or equivalent
(6) Oscilloscope: Scope with band of 300MHz
(7) Voltage converter: AC264V range adjustable
(8) Auto adjustment inspection machine: Which is provided from Nagasaki
(9) Isolation resistance tester: YOKOGAWA TYPE3213 or equivalent
(10) Isolation withstanding voltage meter: KIKUSUI MODEL TOS8650 or equivalent
(11) Grounding conductivity measuring instrument: CLARE U.K. product or equivalent

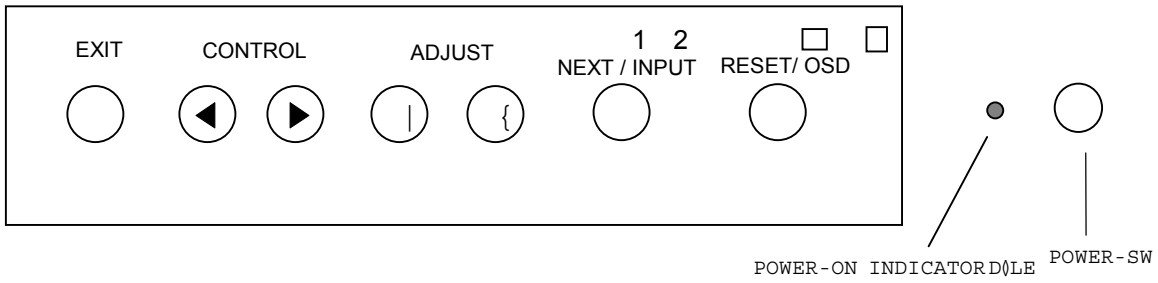
2.3 Standard setting state

Unless designated in particular, the test is carried out with the following state.

Item		State for Adjustment
Power voltage		AC120V 60Hz: for North America AC240V 50Hz: for Europe
Input frequency		Timing No.14 (60kHz/75Hz, XGA75
Input connector		DVI-A
OSM setting (USER MODE)	BRIGHTNESS	MAX
	CONTRAST	CENTER
	SHARPNESS	CENTER
	AccuColor	NATIVE or sRGB

2.4 Names of each LCD monitor part, and adjustment methods

2.4.1 Configuration of front control panel



(Note) When the item listed below is selected and RESET button is pressed, then the data value is to be set as follows.

(1) BRIGHTNESS: MAX
(2) CONTRAST: CENTER
(3) SHARPNESS: CENTER
(4) COLOR TEMPERATURE: PRESET
(5) COLOR CONTROL: All of R, Y, G, C, B, M and S should be 0 (CENTER)
(6) OSM TURN OFF: 45SEC

2.4.2 OSM operation method

<User mode>
OSM appears when CONTROL button or ADJUST button is pressed. The adjustment items are grouped according to category. Select the category with NEXT button, and select the adjustment item with CONTROL button.

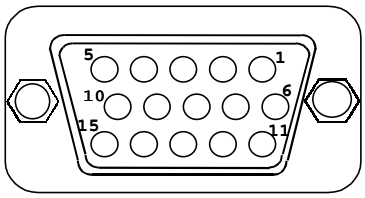
<Factory mode> (For factory adjustment)
-How to enter Factory mode-
To enter the factory adjustment mode, press front keys in order of DOWN (-), DOWN (-), UP (+), UP (+), DOWN (-), UP (+) and SELECT (▶) during OSM picture is not displayed. (In another way, select DISPLAY mode of adjustment item in INFORMATION of category → press RESET button → press RESET, DOWN (-) and UP (+) buttons simultaneously with RESET WARNING picture is seen → WARNING picture with red frame appears → press NEXT button)
With operation above, the color of OSM frame changes to magenta from cyan, and all indications in the factory mode are in English.
-How to return to User mode-
To return to User mode, turn POWER-SW OFF.

2.4.3 Configuration of signal input / power input section

D-SUB 1 pin input connector (VIDEO)

Pin No.	Signal	Definition
1	RV	Red Video
2	GV	Green Video
3	BV	Blue Video
4	OPT	GND
5	RT	DDC GND
6	RG	Red GND
7	GG	Green GND
8	BG	Blue GND
9	+5V	OPEN
10	SG	SYNC GND
11	OPT	GND
12	SDA	DDC-SDA
13	HS	Horizontal Sync
14	VS	Vertical Sync
15	SCL	DDC-SCL

Input signal cable is detachable.

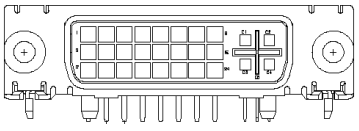


D-SUB Host Receptacle Connector

DVI-I input connector (VIDEO)

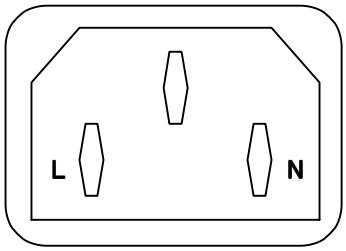
Pin No.	Signal	Pin No.	Signal
1	T.M.D.S. Data 2-	16	Hot Plug Detect
2	T.M.D.S. Data 2+	17	T.M.D.S. Data 0-
3	T.M.D.S. Data 2 Shield	18	T.M.D.S. Data 0+
4	N.C.	19	T.M.D.S. Data 0 Shield-
5	N.C.	20	N.C.
6	DDC Clock	21	N.C.
7	DDC Data	22	T.M.D.S. Data Clock Shield
8	Analog Vertical Sync	23	T.M.D.S. Data Clock +
9	T.M.D.S. Data 1-	24	T.M.D.S. Data Clock-
10	T.M.D.S. Data 1+	C1	Analog Red
11	T.M.D.S. Data 1 Shield	C2	Analog Green
12	N.C.	C3	Analog Blue
13	N.C.	C4	Analog Horizontal Sync
14	+5V Power	C5	Analog Ground (analog R, G and B return)
15	Ground (return for +5V, HSync and Vsync)		

Input signal cable is detachable.



DVI Compatible Host Receptacle

Power code is detachable.



Host Receptacle AC inlet

2.5 PWB, mechanism and appearance inspection

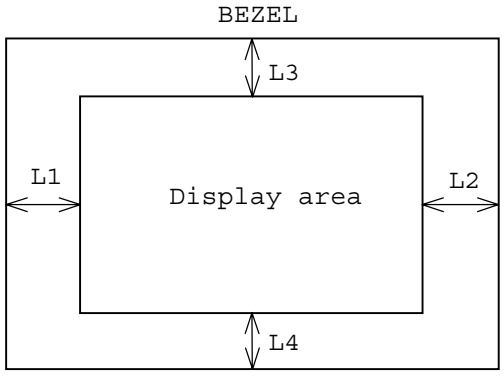
2.5.1 Visual and conductivity check

(1) There should be no cracks, remarkable contamination or solder faults on the PWBs.
(2) There should be no remarkable lifting or inclination of the parts on the PWBs, and the parts should not be in contact with other parts.
(3) There should be no short-circuit across the power supply and GND on the PWBs.

2.5.2 Mechanism and appearance inspection

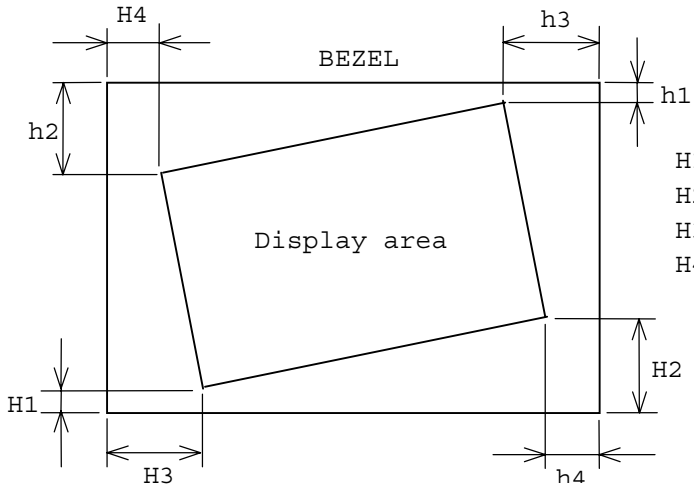
(1) All connectors, receptacle pins should be clamped firmly and fully inserted.
(2) Lead wires should not be pressed against any edge of metal parts.
(3) Lead wires should not be in contact with high temperature components.
(4) Metal parts should have no scratch, remarkable stain, dent or bend.
(5) Liquid crystal display should not be scratched or contaminated.
(6) There should be no abnormality with the front switch operation.
(7) There should be no wave patterns seen on the liquid crystal panel when the front switch is pressed.
(8) The picture position and picture inclination should satisfy the following specifications.

* Check if the picture position is within the following specification (with white frame pattern).



L1	0mm
L2	0mm
L3	0mm
L4	0mm

* Check if the picture inclination is within the following specification (with white frame pattern).



H1(h1)	0mm
H2(h2)	0mm
H3(h3)	0mm
H4(h4)	0mm

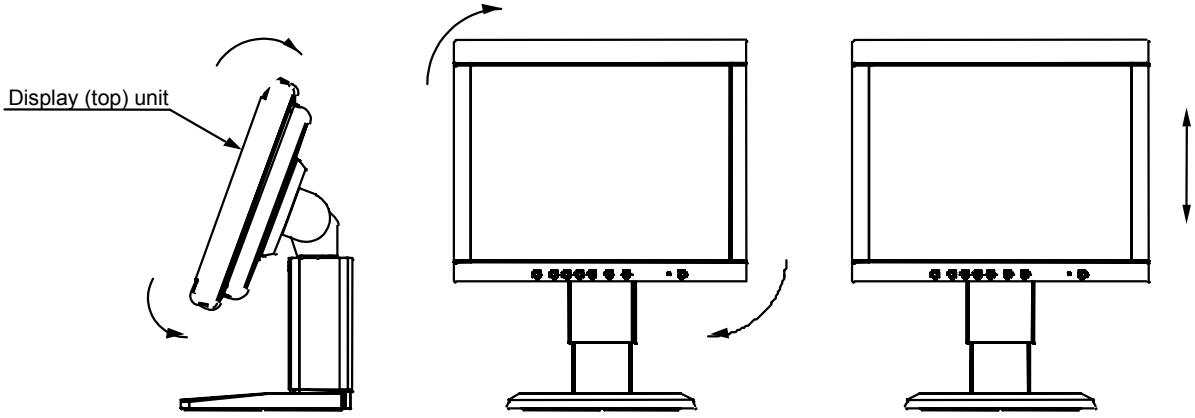
(9) Check the movement of stand without SIGNAL-CABLE (DVI-D / DVI-A) and AC-POWER-CORD.

<Inclination>
Display (top) unit should move properly without abnormal sound such as clattering or squeaking when it is moved as Picture A below.
Display (top) unit should not move when (+) button on the front is pressed lightly with the index finger.

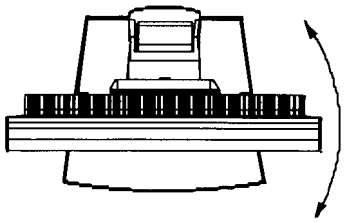
<Pivot>
Display (top) unit should move properly without abnormal sound such as clattering or squeaking when it is moved as Picture B below.
Confirm that display (top) unit can be compensated by pivot adjustment.

<Up-Down>
Display (top) unit should move properly without abnormal sound such as clattering or squeaking when it is moved as Picture C below.

<Swivel>
Display (top) unit should move properly without abnormal sound such as clattering or squeaking when it is moved as Picture D below.



Picture A　　Picture B　　Picture C

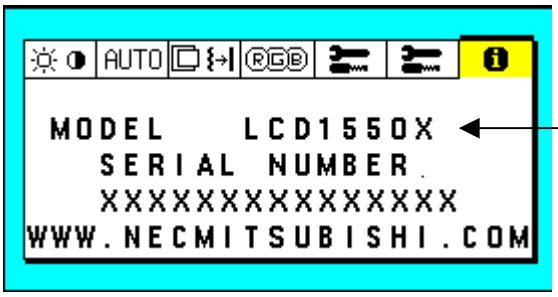


Picture D

2.5.3 PWB adjustment

2.5.3.1 Initial writing in EEPROM data

To initialize the preset timing, write the default data of preset timing listed in 2.11 Timing chart with an external source by communication.



Confirm that the model name shown on the OSM picture in factory mode is LCD1550X.

2.6 General adjustment and inspection

2.6.1 Preparation

Note1) Rough adjustment should be implemented with 100VAC/60Hz, and aging (heat-running) should be implemented with 240VAC/50Hz.
Note2) When DVI-D is used for input, unless particularly designated, only Timing No. 14 (60kHz/75Hz, XGA75) should be used for inspection.

Unless particularly designated, adjustment should be carried out with DVI-A input in factory mode and the setting state should be as follows. (To enter factory mode, refer to 2.4.2 OSM operation method.)

BRIGHTNESS: MAX (220)
CONTRAST: CENTER (128)
SHARPNESS: CENTER (64)
AccuColor: NATIVE or sRGB
COLOR CONTROL: All of R, Y, G, C, B, M and S should be 0 (CENTER)

Before aging, signal is input for confirmation of each operation switch operation.
Moreover, unless particularly designated, Timing No. 14 should be used for adjustment.

2.6.1.1 Confirming operation of operation SW and functions

(1) Input the confirmation timing with the signal generator, and set the pattern to OP2.
(2) Confirm that the picture appears within 4 seconds after turning the vacation switch and the power switch ON.
(3) Confirm that Power-On Indicator is lit in green.
(4) Press ( ) button to display the OSM picture.
(5) Select OSM POSITION with OSM, and press (+) / (-) button to confirm that OSM picture moves.
(6) After pressing RESET button, press NEXT button to confirm that the OSM picture returns to the appointed position.
(7) Press EXIT button, and confirm that OSM picture disappears.

2.6.1.2 Inspection of picture

(1) Check the picture position and the inclination according to 2.5.2 Mechanism and appearance inspection.
(2) Check the picture defect according to 2-9 Liquid crystal display defect standards.

2.6.1.3 Aging

(1) Set to aging mode with OSM.
(2) Carry out heat running for 30 minutes or more in the no-signal state.
(3) Cancel aging mode with OSM.

<How to enter aging mode>
To enter aging mode, press (+) and (-) buttons simultaneously holding down RESET button when OSM is displayed in NO SIGNAL state. Set OSM GAIN to MAX (255) using (+) and (-) buttons during heat running.

<How to disable aging mode>
To disable aging mode, press EXIT button when OSM is displayed.
Note that turning power ON and OFF can not disable the aging mode.

2.6.2 Main adjustment

2.6.2.1 Confirming OSM picture during heat running

(1) Confirm the ADC MAX value is 190 or less during heat running.
(2) Confirm that background of ADC MAX value indication is not red colored.
(The color of the background changes in the following order.
WHITE → YELLOW → MAGENTA → RED)

2.6.2.2 BIAS adjustment

(1) Input timing No. 14 (60kHz/75Hz, XGA75) with signal generator, then set the pattern to full black with frame and video signal level to 0.7V.
(2) Select BIAS with OSM, and press (+) button. (Automatic adjustment of BIAS)

2.6.2.3 GAIN adjustment

(1) Input timing No. 14 (60kHz/75Hz, XGA75) with signal generator, then set pattern to full white and video signal level to 0.7V.
(2) Select GAIN with OSM, and press (+) button. (Automatic adjustment of GAIN)

2.6.2.4 BRIGHT-LIMIT adjustment

(1) Input timing No. 14 (60kHz/75Hz, XGA75) with signal generator, then set pattern to full white and video signal level to 0.7V.
(2) Select MAX in BRIGHT-LMIT with OSM, and set the value to 220.
Measure the luminance at the center of the picture with luminance meter, then confirm that it is within the following value range.
190cd / m^2 – 300cd / m^2 (250cd / m^2 (typ.) for the specification of Liquid Crystal Panel)
(3) Select MIN in BRIGHT-LIMIT with OSM, and set the value to 30.
Measure the luminance at the center of the picture with luminance meter, then confirm that it is within the following value range.
15cd / m^2 – 30% with BRIGHT MAX

2.6.2.5 Confirming color coordination of Liquid Crystal Panel

(1) Input timing No. 14 (60kHz / 75Hz, XGA75) with signal generator, then set pattern to full white and video signal level to 0.7V.
(2) Set CONTRAST to CENTER (128) and BRIGHTNESS to MAX (220).
(3) Set color temperature (AccuColor) to N (NATIVE).
(4) Confirm that the color coordination is within the following value range at the center of the picture.
X = 0.305+/- 0.03 Y = 0.324 +/- 0.03

2.7 Configuration of DDC (EDID) data

The configuration of DDC (EDID) data is as follows.

EDID DATA DUMP TEXT
-- ANALOG EDID DATA DUMP TEXT --
Manufacturer Code: NEC
Product Code (HEX): 65C8
Product Code (DEC): 26056
(Microsoft INF ID: NEC65C8)
Serial Number (HEX): SN
Week of Manuf: WW
Year of Manuf: YY

EDID Version: 1
EDID Revision: 3
Extension Flag: 0

Video:
- Input Signal: ANALOG
- Setup: NO
- Sync on Green: YES
- Composite Sync: YES
- Separate Sync: YES
- V Sync Serration: NO
- V Signal Level: 0.700V/0.300V (1V p-p)

Max Image Size H: 30 cm
Max Image Size V: 23 cm
DPMS Stand By: YES
DPMS Suspend: YES
DPMS Active Off: YES
GTF Support: NO
Standard Default Color Space: YES
Preferred Timing Mode: YES
Display Type: RGB Color

Color:
- Gamma: 2.20
- Red x: 0.620
- Red y: 0.340
- Green x: 0.290
- Green y: 0.600
- Blue x: 0.150
- Blue y: 0.100
- White x: 0.310
- White y: 0.340

Established Timings:
- 720x400 @ 70 Hz
- 640x480 @ 60 Hz
- 640x480 @ 67 Hz
- 640x480 @ 72 Hz
- 640x480 @ 75 Hz
- 800x600 @ 56 Hz
- 800x600 @ 60 Hz
- 800x600 @ 72 Hz
- 800x600 @ 75 Hz
- 832x624 @ 75 Hz
- 1024x768 @ 60 Hz
- 1024x768 @ 70 Hz
- 1024x768 @ 75 Hz

Standard Timing #1:
- NOT USED

Standard Timing #2:
- NOT USED

Standard Timing #3:
- NOT USED

Standard Timing #4:
- NOT USED

Standard Timing #5:
- NOT USED

Standard Timing #6:
- NOT USED

Standard Timing #7:
- NOT USED

Standard Timing #8:
- NOT USED

Detailed Timing (block #1):
---Preferred Timing Mode---
- Pixel Clock: 65.00 MHz
- Horizontal Active: 1024 pixels
- Horizontal Blanking: 320 pixels
- Vertical Active: 768 lines
- Vertical Blanking: 38 lines
- (Horizontal Frequency: 48.36 kHz)
- (Vertical Frequency: 60.0 Hz)
- Horizontal Sync Offset: 24 pixels
- Horizontal Sync Width: 136 pixels
- Vertical Sync Offset: 3 lines
- Vertical Sync Width: 6 lines
- Horizontal Border: 0 pixels
- Vertical Border: 0 lines
- Horizontal Image Size: 304 mm
- Vertical Image Size: 228 mm
- Interlaced: NO
- Image: Normal Display
- Sync: Digital Separate
- Bit 1: OFF
- Bit 2: OFF

Monitor Range Limits (block #2):
- Minimum Vertical Rate: 50 Hz
- Maximum Vertical Rate: 75 Hz
- Minimum Horizontal Rate: 30 kHz
- Maximum Horizontal Rate: 60 kHz
- Maximum Pixel Clock: 80 MHz
- GTF Data: 00 0a 20 20 20 20 20 20

ANALOG EDID DATA DUMP HEX

00 FF FF FF FF FF FF 00
38 A3 C8 65 SN SN SN SN
WW YY 01 03 0E 1E 17 78
EE C6 A4 9E 57 4A 99 26
19 4F 57 BF EE 00 01 01
01 01 01 01 01 01 01 01
01 01 01 01 01 01 64 19
00 40 41 00 26 30 18 88
36 00 30 E4 10 00 00 18
00 00 00 FD 00 32 4B 1E

3C 08 00 0A 20 20 20 20
20 20 00 00 00 FC 00 4E
45 43 20 4C 43 44 31 35
35 30 58 0A 00 00 00 FF
00 S2 S2 S2 S2 S2 S2 S2
S2 S2 S2 S2 S2 S2 00 CS

SN: Serial number
WW: Week of Manufacture
YY: Year of Manufacture
S2: ASCII Serial Number
CS: Check Sum

Monitor Name (block #3): NEC LCD1550X

Monitor Serial Number (block #4): S2

SN: Serial number
WW: Week of Manufacture
YY: Year of Manufacture
S2: ASCII Serial Number

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-- DIGITAL EDID DATA DUMP TEXT --
Manufacturer Code: NEC
Product Code (HEX): 65C8
Product Code (DEC): 26056
(Microsoft INF ID: NEC65C8)
Serial Number (HEX): SN
Week of Manuf: WW
Year of Manuf: YY

EDID Version: 1
EDID Revision: 3
Extension Flag: 0

Video:
    Input Signal: DIGITAL
    DFP Compatible: NO

Max Image Size H: 30 cm
Max Image Size V: 23 cm
DPMS Stand By: YES
DPMS Suspend: YES
DPMS Active Off: YES
GTF Support: NO
Standard Default Color Space: YES
Preferred Timing Mode: YES
Display Type: RGB Color

Color:
    Gamma: 2.20
    Red x: 0.620
    Red y: 0.340
    Green x: 0.290
    Green y: 0.600
    Blue x: 0.150
    Blue y: 0.100
    White x: 0.310
    White y: 0.340

Established Timings:
    720x400 @ 70 Hz
    640x480 @ 60 Hz
    640x480 @ 67 Hz
    640x480 @ 72 Hz
    640x480 @ 75 Hz
    800x600 @ 56 Hz
    800x600 @ 60 Hz
    800x600 @ 72 Hz
    800x600 @ 75 Hz
    832x624 @ 75 Hz
    1024x768 @ 60 Hz
    1024x768 @ 70 Hz
    1024x768 @ 75 Hz

Standard Timing #1:
    NOT USED

Standard Timing #2:
    NOT USED

Standard Timing #3:
    NOT USED

Standard Timing #4:
    NOT USED

Standard Timing #5:
    NOT USED

Standard Timing #6:
    NOT USED

Standard Timing #7:
    NOT USED

Standard Timing #8:
    NOT USED

Detailed Timing (block #1):
 ---Preferred Timing Mode---
    Pixel Clock: 65.00 MHz
    Horizontal Active: 1024 pixels
    Horizontal Blanking: 320 pixels
    Vertical Active: 768 lines
    Vertical Blanking: 38 lines
    (Horizontal Frequency: 48.36 kHz)
    (Vertical Frequency: 60.0 Hz)
    Horizontal Sync Offset: 24 pixels
    Horizontal Sync Width: 136 pixels
    Vertical Sync Offset: 3 lines
    Vertical Sync Width: 6 lines
    Horizontal Border: 0 pixels
    Vertical Border: 0 lines
    Horizontal Image Size: 304 mm
    Vertical Image Size: 228 mm
    Interlaced: NO
    Image: Normal Display
    Sync: Digital Separate
    Bit 1: OFF
    Bit 2: OFF

Monitor Range Limits (block #2):
    Minimum Vertical Rate: 50 Hz
    Maximum Vertical Rate: 75 Hz
    Minimum Horizontal Rate: 30 kHz
    Maximum Horizontal Rate: 60 kHz
    Maximum Pixel Clock: 80 MHz
    GTF Data: 00 0a 20 20 20 20 20 20

Monitor Name (block #3): NEC LCD1550X

Monitor Serial Number (block #4): S2

DIGITAL EDID DATA DUMP HEX

00 FF FF FF FF FF FF 00
38 A3 C8 65 SN SN SN SN
WW YY 01 03 80 1E 17 78
EE C6 A4 9E 57 4A 99 26
19 4F 57 BF EE 00 01 01
01 01 01 01 01 01 01 01

01 01 01 01 01 01 64 19
00 40 41 00 26 30 18 88
36 00 30 E4 10 00 00 18
00 00 00 FD 00 32 4B 1E
3C 08 00 0A 20 20 20 20
20 20 00 00 00 FC 00 4E
45 43 20 4C 43 44 31 35
35 30 58 0A 00 00 00 FF
00 S2 S2 S2 S2 S2 S2 S2
S2 S2 S2 S2 S2 S2 00 CS

SN: Serial number
WW: Week of Manufacture
YY: Year of Manufacture
S2: ASCII Serial Number
CS: Check Sum

SN: Serial number
WW: Week of Manufacture
YY: Year of Manufacture
S2: ASCII Serial Number

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2.8 Inspection

Unless particularly designated, the performance is confirmed in 2.3 Standard setting state. The display should be set to the full white pattern with signal generator.

2.8.1 Electric performance

2.8.1.1 Confirming the operation of operation SW

(1) The picture must appear within four seconds after turning power switch ON.
(2) Confirm that Power-On Indicator is lit.
(3) Synchronization must not flow when power switch is turned ON and OFF.
(4) OSM must appear when CONTROL button is pressed.
(5) The setting value must smoothly change and abnormalities such as noise must not occur when (+) / (-) button is pressed.
(6) Press EXIT button, and confirm that OSM picture disappears.

2.8.1.2 Frequency change speed

Confirm that it does not take so long time to change the picture when frequency is changed. (Within five seconds)

2.8.1.3 Confirming frequency range (Confirming preset timing)

Confirm that the synchronization is not deviated at the designated preset timing (No. 4, 6, 10 and 14).

2.8.1.4 Confirming automatic adjustment function

Input the confirmation timing with signal generator.
Set the pattern to 1-dot-zigzag-grid with frame. Change the adjustment value of CLOCK intentionally, and select AUTO ADJUST with OSM. Confirm that the picture is put back to normal when (+) button is pressed so that AUTO ADJUST can be carried out.

2.8.1.5 Confirming composite sync. signal

Input composite sync. signal (SUN57 listed in 2.11 Timing chart) with signal generator, and set the pattern to 1-dot-zigzag-grid with frame. Start up AUTO ADJUST, and confirm that the picture appears normally.

2.8.1.6 Confirming Sync. On Green signal

Input Sync. On Green signal (Timing No. 19), and set the pattern to 1-dot-zigzag-grid with frame. Start up AUTO ADJUST, and confirm that the picture appears normally.

2.8.1.7 Confirming digital input

Input timing No. 14 to DVI-D connector with signal generator, and set the pattern to horizontal lamp with frame. Confirm that the picture appears normally (without out-of-synchronism, picture-short, vertical noise of chromatic color, dot noise, jitter and gray-scale noise).

2.8.1.8 Confirming D-SUB input connector

Input timing No. 14 to D-SUB connector with signal generator, and set the pattern to 1-dot-zigzag-grid with frame. Start up AUTO ADJUST, and confirm that the picture appears normally.

2.8.1.9 Confirming power management function

(1) Input the specified timing with signal generator, and set the pattern to full white.

Mode	H	V	Power voltage	Input timing	Power consumption
Normal	On	On	AC240V 50Hz	60KHz75Hz iXGA75 j	38W or less
Power-Save	Off	Off	"	"	3W or less

(2) Input the timings mentioned above, and confirm the image display or OSM display.
Turn the signal generator H-sync / V-sync OFF, and turn G signal OFF.
(3) Confirm that Power-On Indicator by power-SW turns to orange.
(4) Confirm that the picture returns within four seconds when H-sync/ V-sync and VIDEO signals are input.

2.8.1.10 Isolation voltage

Confirm that the abnormality is never seen when AC1500V is applied for two seconds across AC earth GND pin to chassis GND. Cut-off current must be 10mA.

2.8.1.11 Ground resistance

Confirm that the resistance must be less than 100m ohms or less when 25A is applied across AC earth GND pin to chassis GND.

2.8.1.12 Shock test

(1) Input confirmation timing with signal generator, and set the pattern to OPTION2 (pattern 06).
(2) Confirm that there is no abnormality in the image when shock is applied to the monitor. Do not apply shock on the front of the liquid crystal panel.

2.8.1.13 Confirming color selecting (AccuColor) function

(1) Input timing No. 14 (60kHz/75Hz, XGA75) with signal generator, and input OPTION2 (pattern 0B), gray-scale or full white for picture pattern.
(2) Confirm that color temperature varies by switching Color No. (1, 2, 3, sRGB, 5 and N (NATIVE).

2.8.2 Picture performance

2.8.2.1 Picture performance inspection

Check the picture performance with the following procedure. Confirm that preset symbol (P ¢ ¢) is correctly displayed on the upper right of the OSM picture in correspondence to the preset timing designated in the factory mode.

Inspection items	Display pattern	Measurement method	Criteria	Timing No.	Input connector
Sampling noise	1-dot-zigzag-grid + frame	Visual check	Image noise must not be remarkable. *1	4, 6, 10, 14	DVI-A
Picture position difference	1-dot-zigzag-grid + frame	Visual check	Top, bottom, left and right of the frame must be seen.	4, 6, 10, 14	DVI-A
Picture position difference	Frame	Visual check	Top, bottom, left and right of the frame must be seen.	14	DVI-D
Digital noise	Horizontal lamp (Gray-scale)	Visual check	Chromatic colored vertical noise, dot noise, jitter and gray-scale noise must not be seen.	14	DVI-D
Smear Pixel cross talk	WINDOW OPTION2 (pattern 06)	Visual check	Smear, etc. must not be remarkable.	14	DVI-A
Video tracking	OPTION2 (pattern 0B)	Visual check	All of gray-scale must be displayed.	14	DVI-A
BRIGHTNESS	OPTION2 (pattern 06)	Visual check	Varying must be carried out smoothly.	14	DVI-A
Horizontal line (flickering noise)	Horizontal lamp (gray-scale)	Varying CONTRAST with visual check	Horizontal line must not be remarkable.	14	DVI-A
Unevenness/spot on LCD panel	128/256 half tone	Visual check	There should be less than 1 pc of spot on monochromatic picture and the size should be within 1.2mm. Uneven spot should be less than 10m when it is judged on 128/255 gradation.	14	DVI-A

*1: If flickering is still seen in the inspection in timing No. 14 with the designated display pattern, change the pattern to the below, then confirm that the picture is displayed correctly.

Confirmation pattern: Frame + H character (H character: Font size = 7 x 9, Cell size = 13 x 14)

2.8.2.2 Confirming color coordination

(1) Input timing No. 14 (60kHz/75Hz, XGA75) with signal generator, and set the pattern to full white.
(2) Set BRIGHTNESS to MAX (220) and CONTRAST to CENTER (128) with OSM, and confirm that the color coordination at the center of the liquid crystal panel is as follows with COLOR COMPENSATION is off (NATIVE).

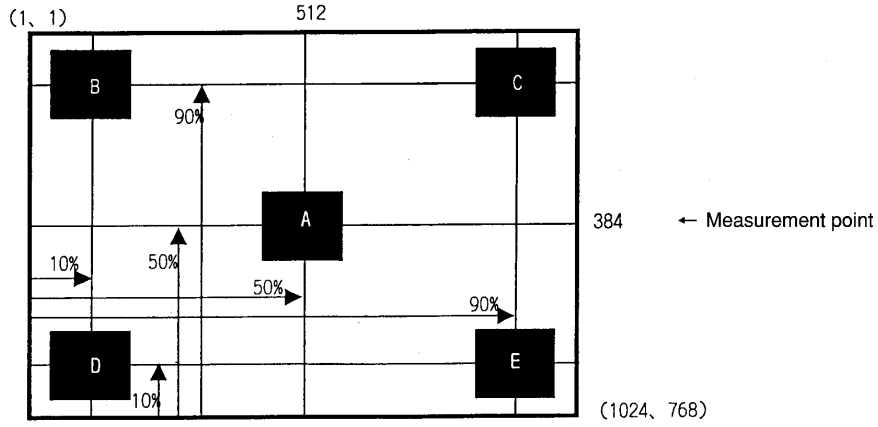
x = 0.305 +/- 0.03 y = 0.324 +/- 0.03

(3) Confirm that the value of x and y at the center of the liquid crystal panel is within the values specified below with BRIGHTNESS is set to MAX (220) and CONTRAST to CENTER (128) when each COLOR is selected with COLOR SELECTION (AccuColor).
If out of specification, compensate with each color temperature.

Color1	9300 j:	=0.281 +/- 0.015	=0.290 +/- 0.015
Color2	8200 j:	=0.290 +/- 0.015	=0.300 +/- 0.015
Color3	7500 j:	=0.300 +/- 0.015	=0.310 +/- 0.015
SRGB	6500 j:	=0.313 +/- 0.010	=0.329 +/- 0.010
Color5	5000 j:	=0.345 +/- 0.015	=0.352 +/- 0.015

2.8.2.3 Panel inspection (luminance / color coordination / defect)

(1) Luminance and color coordination
Input the confirmation timing with signal generator, and set the picture pattern to full white (0.7Vp-p). Measure
the luminance and color coordination with a luminance meter, and confirm that the values are as shown below.
For measuring of optical parameters, carry out the measurement where there is little effect from outer light (in a dark room, etc.), and the panel should be heated run for 30 minutes or more.



* The size of each point is 25mm x 25mm

Mode	Definition	Color setting	Contrast	Bright	Criterion
Contrast ratio	Full white/Full black luminance at point A	NATIVE	CENTER	MAX	150 or more (*)
White luminance	Full white luminance at point A	NATIVE	CENTER	MAX	175cd/m^2 or more 300cd/m^2 or less
BRIGHT variable range	Luminance at point A MAX value and MIN value	NATIVE	CENTER	MAX	175cd/m^2 or more
				MIN	15cd/m^2 to 30% of BRIGHT MAX value (For judgement, 1 minute or more should be passed after BRIGHT was changed.)
Xw	Color coordination at point A (X value)	NATIVE	CENTER	MAX	0.305 +/- 0.03 or less
Yw	Color coordination at point A (Y value)	NATIVE	CENTER	MAX	0.324 +/- 0.03 or less

* The criterion of 1cd/m^2 or less are executed by the blink of the measurement value (the measurement value is regarded as reference).

(2) Liquid crystal picture defect
Input the confirmation timing with signal generator. Visually check for the defects in each full mono color pattern of white, black, red, green and blue. Carry out the measurement where there is little effect from outer light (in a dark room, etc.).
Criterion: Must follow the details of “2.9 Liquid crystal display defect standards”.

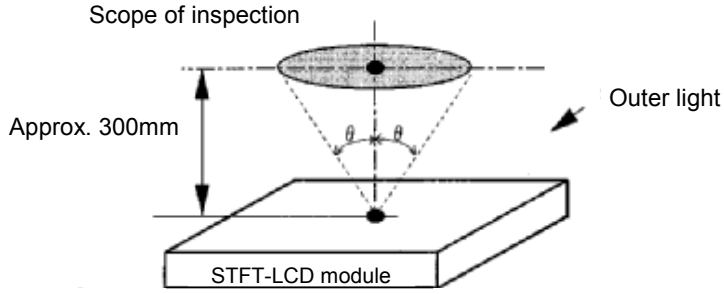
2.9 Liquid crystal display defect standards

2.9.1 Condition of appearance inspection

2.9.1.1 Scope of inspection

(1) Visual check must be carried out for appearance inspection.
(2) The inspector (eye point) and the point to be inspected must be located as the picture shown below.

˘ 45 : Appearance inspection when turning OFF the back light
˘ 5 : Appearance inspection when turning ON the back light



2.9.1.2 Environment for inspection

(1) Surrounding temperature must be 25 . Scope of inspection
(2) The outer light (except for the back light) must be approx. 500(lx) for the inspection with turning ON the back light.
The outer light must be approx. 1000(lx) for the inspection with turning OFF the back light.
In addition, the outer light must be non-directivity.
(3) The back light must be operated for appearance inspection with turning ON the back light.

2.9.1.3 Picture pattern

Appearance inspection with turning ON the back light must be carried out with eight colored picture patterns (grayscale 0 and 255).

2.9.2 Definition of applicable area

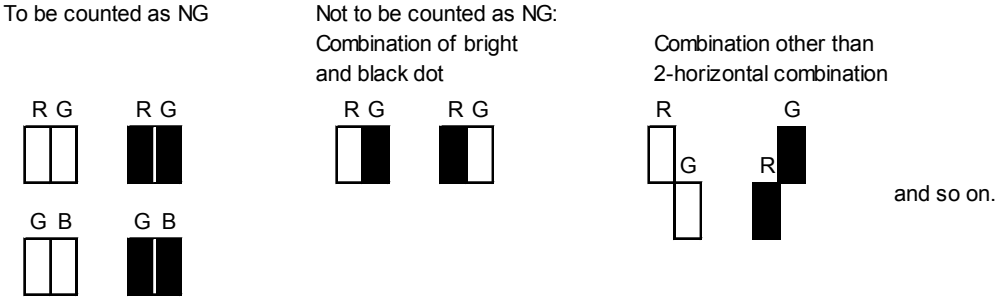
Liquid crystal display defect standards are only applied to the display part (pixel area).

2.9.3 Standards for display conditions (standard for errors/defects)

In case the state of the picture displayed is not fully stable (when the power switch is turned ON/OFF, the back light is operating to turn on and so on), the following standards should not be applied.

	No.	Item			Standard	Allowance	Unit	Remarks
Appearance inspection during back light ON	1	Joined defects	①	Continuous 2 bright dots	R + G, 2 continued horizontally	≦2	Pairs	Note 1
			②	Continuous 2 black dots	G + B, 2 continued horizontally	≦2		Note 2
			③	Continuous 3 or more bright dots	Both same and different colored dots should be counted.	≦0		Note 3
			④	Continuous 3 or more black dots		≦0		
		Dot defect	⑤	Dot defects other than ① and ②	R/G/B (black and bright dots)	≦4	Piece	Note 4
		Defective proximity	⑥	Adjacent same colored bright dot defects	Distance between defects 6.5mm	Each color ≦2	Pairs	Note 5
			⑦	Approach of adjacent defects of ⑥	Distance of approach ≦15mm	≦0		Note 6
			⑧	Defect cluster	A set of 2 or more dot defects in an area of 5x5 pixels (⑤ in consideration)	≦2	Cluster	Note 7
					Approach of adjacent defects of ① in an aria of 5x5 pixels	≦0	Pairs	Note 8
					Approach of adjacent defects of ② in an aria of 5x5 pixels			
		Total numbers of defect	Total numbers of bright dots (R/G/B) and black dots (R/G/B)			≦4	Piece	-
			Total numbers of bright dots in G			≦4		-
		*9:1) The defective part over 30% (compare to area) of 1 dot is regarded as a dot defect. 2) When the picture pattern is set to black, the luminance more than 30% of 1 dot is regarded as a bright mode dot defect. 3) When the picture pattern is set to white, the luminance below 70% of 1 dot is regarded as a black mode dot defect. 4) An independent defective dot (not adjoined to other defective dot) is regarded as a point dot defect. 5) The one composed of "n" pieces of linked defective dots is regarded as an "n" points linked dot defect.						
		*10: DO NOT use "ND" filter in counting bright dot(s).						

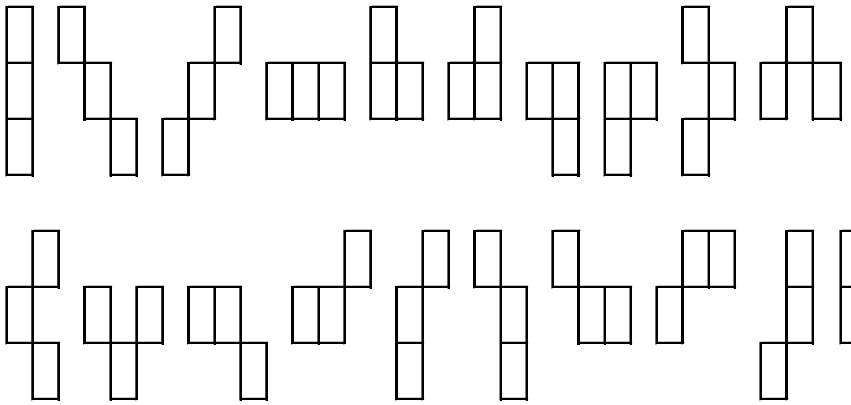
Note 1: R + G, 2 dots continued horizontally, G+B, 2 dots continued horizontally



Note 2: ① + ② ≦3 dots

Note 3: 3-defect combination

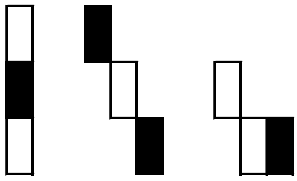
Combination patterns to be counted as NG / Combination of all bright or all black dots



and so on.

Not counted as NG / Combination of bright and black dots

ex)

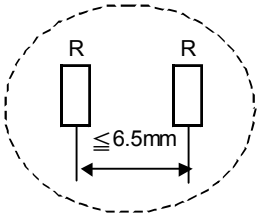


and so on.

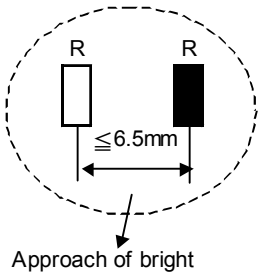
Note 4: The dots for composing 2-horizontal combinations of R + G shall be excluded from counting.

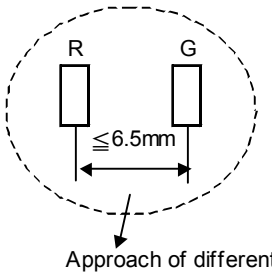
Note 5: Adjacent same colored bright dot defects

To be counted as NG

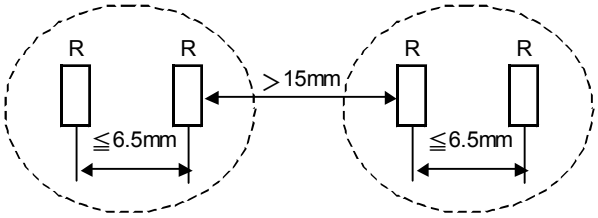


Not to be counted as NG





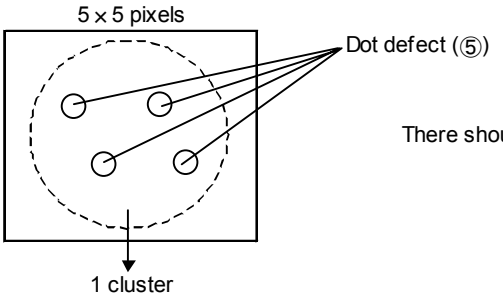
Note 6: Approach of adjacent defects



The distance between adjacent defects should be longer than 15mm.

Note 7: A set of 2 or more dot defects in an area of 5x5 pixels

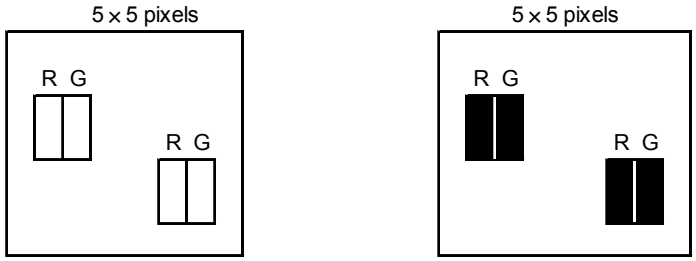
If there are 2 or more dot defects (⑤) in an area of 5 x 5 pixels, such a set of dot defects shall be counted as one cluster.



There should be less than 2 clusters throughout the screen area.

Note 8: Approach of defects of ① or ② in an area of 5 x 5 pixels

To be counted as NG



There should be no approach of ⓐs or Ⓐs in an area of 5 ~5 pixels.

	No.	Item			Allowance	Unit	Remarks
Appearance inspection during back right ON	2	Uneven linear contrast			Unacceptable if it can be seen easily	—	*11)
	3	Spot, stain					*12)
	4	Linear dust, contamination W: width (mm) L : length (mm)	W ≦0.02	—	-	piece(s)	*13)
			W≦0.04	L≦2.0	10		
				L＜2.0	0		
			W≦0.08	L≦1.0	10		
				L＞1.0	0		
			W＞0.08	—	According to circle spec.		
	5	Circular dust, Contamination D: Average diameter (mm)	D≦0.22		-	piece(s)	*13)
			D≦0.4		5		
			D＞0.4		0		
	6	Linear flaws on polarizing plate W: width (mm) L: length (mm)	W≦0.01	-	-	piece(s)	*14)
			W≦0.02	L≦40	10		
				L＞40	0		
			W≦0.04	L≦20	10		
				L＞20	0		
	7	Circular flaws on polarizing plate D: Average diameter (mm)	D≦0.2		-	piece(s)	*14)
			D≦0.4		10		
			D＞0.4		0		
Appearance inspection during back right OFF	8	Foams, peelings on polarizing plate D:Average diameter (mm)	D≦0.3		-	piece(s)	*14)
			D≦0.5		10		
			D≦1.0		5		
			D＞1.0		0		
	9	Polarizing plate undulation			Unacceptable if it can be seen easily	—	—

*11) There should be less than 1 piece of spot on monochromatic picture and the size should be within 1.2mm.

*12) Uneven spot should be less than 10mm when it is judged on 128/256 gradation.

*13) Removable dusts are excluded.

*14) This standards should be applied to the display part (pixel area).

2.10 Outgoing inspection

2.10.1 OSM default setting

Confirm that the OSM setting values are as shown below before outgoing.

<OSM default setting>

Menu	for NORTH AMERICA/EUROPE
BRIGHTNESS	MAX (220)
CONTRAST	CENTER (128)
SHARPNESS	CENTER (64)
AccuColor	NATIVE
R	0
Y	0
G	0
C	0
B	0
M	0
S	0
VIDEO DETECT	FIRST DETECT
DVI SELECTION	DIGITAL
LANGUAGE	ENGLISH
OSM H-POSITION	CENTER (50)
OSM V-POSITION	CENTER (50)
OSM TURN OFF	45SEC
OSM LOCK OUT j	OFF
RESOLUTION NOTIFIER	OFF
MODEL NAME at FACTORY MODE	LCD1550X

2.10.2 Checking the labels, etc.

“Rating nameplate” and “Serial No.” must be attached at the designated positions.

2.10.3 Packaging specifications

(1) There must be no remarkable contamination or scratching, etc.
(2) The type name must be accurately displayed.
(3) The Serial No. must be attached (it must be the same No. as the set).
(4) The unit must be accurately sealed.

2.11 Timing chart

<Preset Timing List>

No.	Timing name	Dot clock (MHz)	Horizontal						Vertical						HS/VS Polarity	Preset
			Frequency Fh (KHz)	Period Sh (°S)	Sync. pulse Ths (°S)	Front porch Thf (°S)	Back porch Thb (°S)	Display time Thd (°S)	Frequency FV (Hz)	Period SV (ms)	Sync. pulse Tvs (ms)	Front porch Tvf (ms)	Back porch Tvb (ms)	Display time Tvd (ms)		
1	MAC13	30.24	35.00 (Dots)	28.57 864	2.12 64	2.12 64	3.17 96	21.16 640	66.67 (Lines)	15.00 525	0.09 3	0.09 3	1.11 39	13.71 480	N, N	
2	MAC16	57.24	49.70 (Dots)	20.13 1152	1.12 64	0.56 32	3.91 224	14.54 832	74.52 (Lines)	13.42 667	0.06 3	0.02 1	0.78 39	12.56 624	N, N	
3	VGA350	25.175	31.47 (Dots)	31.78 800	3.81 96	0.64 16	1.91 48	25.42 640	70.08 (Lines)	14.27 449	0.06 2	1.18 37	1.91 60	11.12 350	P, N	
4	VGA60	25.175	31.47 (Dots)	31.78 800	3.81 96	0.64 16	1.91 48	25.42 640	59.94 (Lines)	16.68 525	0.06 2	0.32 10	1.05 33	15.25 480	N, N	
5	VGA75	31.50	37.50 (Dots)	26.67 840	2.03 64	0.51 16	3.81 120	20.32 640	75.00 (Lines)	13.33 500	0.08 3	0.03 1	0.43 16	12.80 480	N, N	
6	VESA720	28.32	31.47 (Dots)	31.78 900	3.81 108	0.64 18	1.91 54	25.42 720	70.08 (Lines)	14.27 449	0.06 2	0.41 13	1.08 34	12.71 400	N, P	
7	SVGA56	36.00	35.16 (Dots)	28.44 1024	2.00 72	0.67 24	3.56 128	22.22 800	56.25 (Lines)	17.78 625	0.06 2	0.03 1	0.63 22	17.07 600	P, P	
8	SVGA60	40.00	37.88 (Dots)	26.40 1056	3.20 128	1.00 40	2.20 88	20.00 800	60.32 (Lines)	16.58 628	0.11 4	0.03 1	0.61 23	15.84 600	P, P	
9	SVGA72	50.00	48.08 (Dots)	20.80 1040	2.40 120	1.12 56	1.28 64	16.00 800	72.19 (Lines)	13.85 666	0.12 6	0.77 37	0.48 23	12.48 600	P, P	
10	SVGA75	49.50	46.88 (Dots)	21.33 1056	1.62 80	0.32 16	3.23 160	16.16 800	75.00 (Lines)	13.33 625	0.06 3	0.02 1	0.45 21	12.80 600	P, P	
11	XGA60	65.00	48.36 (Dots)	20.68 1344	2.09 136	0.37 24	2.46 160	15.75 1024	60.00 (Lines)	16.67 806	0.12 6	0.06 3	0.60 29	15.88 768	N, N	
12	XGA70	75.00	56.48 (Dots)	17.71 1328	1.81 136	0.32 24	1.92 144	13.65 1024	70.07 (Lines)	14.27 806	0.11 6	0.05 3	0.51 29	13.60 768	N, N	
13	XGA72	78.08	58.10 (Dots)	17.21 1344	1.72 134	0.33 26	2.05 160	13.11 1024	72.08 (Lines)	13.87 806	0.10 6	0.05 3	0.50 29	13.22 768	N, N	
14	XGA75	78.75	60.02 (Dots)	16.66 1312	1.22 96	0.20 16	2.23 176	13.00 1024	75.03 (Lines)	13.33 800	0.05 3	0.02 1	0.47 28	12.80 768	P, P	
15	XGA60	65.00	48.36 (Dots)	20.68 1344	2.09 136	0.37 24	2.46 160	15.75 1024	60.00 (Lines)	16.67 806	0.12 6	0.06 3	0.60 29	15.88 768	P, P	
16	VGA73	31.5	37.86 (Dots)	26.41 832	1.27 40	0.76 24	4.06 128	20.32 640	72.81 (Lines)	13.73 520	0.08 3	0.24 9	0 .74 28	12.68 480	N, N	
17	SUN	70.49	52.45	19.04 1344	1.93 136	0.34 24	1.27 160	14.53 1024	65.07	15.37 806	0.11 6	0.06 3	0.55 29	14.64 768	P, N	
18	PAL	27	31.25	32 864	3.59 97	1.74 47	0.7 19	25.95 700	50	20 625	0.393 12	1.13 35	0.072 2	18.4 575	N, N	
S/G evaluation	S/G35	30.24	35	28.571 864	3.5 106	1.891	4.0 121	19.18 580	66.70	15.0 525	0.086 3	1.485	2.00 70	11.428 400	S/G	
Composite estimation	SUN57	74.25	56.59 (Dots)	17.67 1312	1.83 136	0.22 16	1.83 136	13.79 1024	70.04 (Lines)	14.28 808	0.106 6	0.035 2	0.57 32	13.57 768	N, P	
Frequency over limit	72K90	100.00	72.67 (Dots)	13.76 1376	1.28 128	0.32 32	1.92 192	10.24 1024	90.50 (Lines)	11.05 803	0.04 3	0.014 1	0.427 31	10.57 768	N, N	
Frequency under limit		21.053	24.83 (Dots)	40.28 848	3.04 64	2.8 59	4.04 85	30.4 640	41.38 (Lines)	19.33 600	0.322 8	2.376 59	0.52 13	16.112 400	N, N	

* of the preset shown in the above table indicates the timing for confirmation.

2.12 OSM display matrix

<User mode>

Level	OSM item	-	+	Setting or circuit operation	Adjustment range	Default value
1	BRIGHTNESS	Darkens	Brightens	Modulates inverter (back light)	0-MAX	MAX
	CONTRAST	Small	Large	Changes output data with digital contrast	0-MAX	CENTER
	CONTRAST (AUTO)	Executes		Automatically adjusts contrast	¥	¥
2(*2)	AUTO ADJUST	Executes		Automatically adjusts H.position, V.position, clock and clock phase	¥	¥
3(*2)	LEFT/RIGHT	Moves to the left	Moves to the right	Changes horizontal image position to where image data taken (Adjustment of horizontal position)	0-MAX	Optional
	DOWN/UP	Moves down	Moves up	Changes vertical image position to where image data taken (Adjustment of vertical position)	0-MAX	Optional
	H. SIZE	Narrows to the left	Expands to the right	Changes setting of PLL dividing ratio (Adjustment of Clock)	0-MAX	Optional
	FINE	Changes flickering of the picture		Changes clock phase (Adjustment of Clock phase)	0-MAX	Optional
4	CUSTOMIZE (AccuColor)	¥		Selects Color1/Color2/Color3/sRGB/Color5/Native	¥	NATIVE
	COLOR 1 (9300K)	Changes to lower color temperature	Changes to higher color temperature	Changes color temperature	5000K-9600K	9300K
	COLOR 2 (8200K)	Changes to lower color temperature	Changes to higher color temperature	Changes color temperature	5000K-9600K	8200K
	COLOR 3 (7500K)	Changes to lower color temperature	Changes to higher color temperature	Changes color temperature	5000K-9600K	7500K
	sRGB (6500K)	¥	¥	sRGB	¥	sRGB
	COLOR 5 (5000K)	Changes to lower color temperature	Changes to higher color temperature	Changes color temperature	5000K-9600K	5000K
	NATIVE	¥	¥	Panel color temperature	¥	Panel color temp
	R (RED)	Gets closer to Magenta	Gets closer to Yellow	Operates color conversion function	-100 to 100	0
	Y (YELLOW)	Gets closer to Red	Gets closer to Green	Operates color conversion function	-100 to 100	0
	G (GREEN)	Gets closer to Yellow	Gets closer to Cyan	Operates color conversion function	-100 to 100	0
	C (CYAN)	Gets closer to Green	Gets closer to Blue	Operates color conversion function	-100 to 100	0
	B (BLUE)	Gets closer to Cyan	Gets closer to Magenta	Operates color conversion function	-100 to 100	0
	M (MAGENDA)	Gets closer to Blue	Gets closer to Red	Operates color conversion function	-100 to 100	0
	S (SATURATION)	Color lights	Color deepens	Operates color conversion function	-100 to 100	0
5	SHARPNESS	Soft	Hard	Adjusts horizontal outline enforcement register of ASIC	0-MAX	CENTER
	EXPANSION MODE H.EXPANSION	Narrows to the horizontal direction	Expands to the horizontal direction	Changes pixel number for taking picture data	0-MAX	Optional
	EXPANSION MODE V.EXPANSION	Narrows to the vertical direction	Expands to the vertical direction	Changes line number for taking picture data	0-MAX	Optional
	VIDEO DETECT	Enters into sub menu		Selects FIRST DETECT/LAST DETECT/NONE	¥	FIRST DETECT
	DVI SELECTION	Enters into sub menu		Selects DIGITAL/ANALOG	¥	DIGITAL

6	LANGUAGE	Enters into sub menu		Selects language used at OSM pictures: 7 languages	¥	ENGLISH
	OSM POSITION (LEFT/RIGHT)	Moves to the left	Moves to the right	Changes OSM display position horizontally	0-MAX	CENTER
	OSM POSITION (DOWN/UP)	Moves down	Moves up	Changes OSM display position vertically	0-MAX	CENTER
	OSM TURN OFF	Enters into sub menu		Select how long the monitor waits after the last touch of a button to shut off OSM control menu. The preset choices are 10, 20, 30, 45, 60 and 120 seconds.	¥	45 SEC
	OSM LOCK OUT	Enters into sub menu		Locks out / cancels OSM control (Press both control keys for LOCK OUT, then press both control keys again for cancel.)	¥	Cancel
	RESOLUTION NOTIFIER	Enters into sub menu		Select RESOLUTION NOTIFIER ON/OFF	¥	OFF
	FACTORY PRESET	Executes		Resets all OSM control settings back to the factory settings	Except for LANGUAGE	¥
7	DISPLAY MODE	Executes		Indicates information about input timing used, etc.	¥	¥
	MONITOR INFO.	Executes		Indicates model name and serial number	¥	¥

<Factory mode>

Level	OSM item	-	+	Setting or circuit operation	Adjustment range	Default value
1	BRIGHTNESS	Darkens	Brightens	Modulates inverter (back light)	BRIGHT_MIN. ~ BRIGHT_MAX.	BRIGHT_MAX
	CONTRAST	Small	Large	Changes output data with digital contrast	30-225	128
	CONTRAST (AUTO)	Executes		Automatically adjusts contrast	¥	¥
2(*2)	AUTO ADJUST	Executes		Automatically adjusts H.position, V.position, clock and clock phase	¥	¥
3(*2)	LEFT/RIGHT	Moves to the left	Moves to the right	Changes horizontal image position to where image data taken (Adjustment of horizontal position)	512-1023	Note1
	DOWN/UP	Moves down	Moves up	Changes vertical image position to where image data taken (Adjustment of vertical position)	10-100	Note1
	H. SIZE	Narrows to the left	Expands to the right	Changes setting of PLL dividing ratio (Adjustment of Clock)	0-255	Note1
	FINE	Changes flickering of the picture		Changes clock phase (Adjustment of Clock phase)	0-31	Note1
4	CUSTOMIZE (AccuColor)	¥		Selects Color1/Color2/Color3/sRGB/Color5/Native	¥	NATIVE
	COLOR 1 (9300K)	Changes to lower color temperature	Changes to higher color temperature	Changes color temperature	5000K-9600K	9300K
	COLOR 2 (8200K)	Changes to lower color temperature	Changes to higher color temperature	Changes color temperature	5000K-9600K	8200K
	COLOR 3 (7500K)	Changes to lower color temperature	Changes to higher color temperature	Changes color temperature	5000K-9600K	7500K
	sRGB (6500K)	¥	¥	sRGB	¥	sRGB
	COLOR 5 (5000K)	Changes to lower color temperature	Changes to higher color temperature	Changes color temperature	5000K-9600K	5000K
	NATIVE	¥	¥	Panel color temperature	¥	Panel color temp.
	R (RED)	Gets closer to Magenta	Gets closer to Yellow	Operates color conversion function	-100 to 100	0
	Y (YELLOW)	Gets closer to Red	Gets closer to Green	Operates color conversion function	-100 to 100	0
	G (GREEN)	Gets closer to Yellow	Gets closer to Cyan	Operates color conversion function	-100 to 100	0
	C (CYAN)	Gets closer to Green	Gets closer to Blue	Operates color conversion function	-100 to 100	0
	B (BLUE)	Gets closer to Cyan	Gets closer to Magenta	Operates color conversion function	-100 to 100	0
	M (MAGENDA)	Gets closer to Blue	Gets closer to Red	Operates color conversion function	-100 to 100	0
	S (SATURATION)	Color lights	Color deepens	Operates color conversion function	-100 to 100	0
5	SHARPNESS	Soft	Hard	Adjusts horizontal outline enforcement register of ASIC	0-127	64
	EXPANSION MODE H.EXPANSION	Narrows to the horizontal direction	Expands to the horizontal direction	Changes pixel number for taking picture data	¥	Note1
	EXPANSION MODE V.EXPANSION	Narrows to the vertical direction	Expands to the vertical direction	Changes line number for taking picture data	1 to 2 time(s)	Note1
	VIDEO DETECT	Enters into sub menu		Selects FIRST DETECT/LAST DETECT/NONE	¥	FIRST DETECT
	DVI SELECTION	Enters into sub menu		Selects DIGITAL/ANALOG	¥	DIGITAL

6	LANGUAGE	Enters into sub menu		Selects language used at OSM pictures: 7 languages	¥	ENGLISH
	OSM POSITION (LEFT/RIGHT)	Moves to the left	Moves to the right	Changes OSM display position horizontally	0-100	50
	OSM POSITION (DOWN/UP)	Moves down	Moves up	Changes OSM display position vertically	0-100	50
	OSM TURN OFF	Enters into sub menu		Select how long the monitor waits after the last touch of a button to shut off OSM control menu. The preset choices are 10, 20, 30, 45, 60 and 120 seconds.	¥	45 SEC
	OSM LOCK OUT	Enters into sub menu		Locks out / cancels OSM control (Press both control keys for LOCK OUT, then press both control keys again for cancel.)	¥	Cancel
	RESOLUTION NOTIFIER	Enters into sub menu		Select RESOLUTION NOTIFIER ON/OFF	¥	OFF
	FACTORY PRESET	Executes		Resets all OSM control settings back to the factory settings	Except for LANGUAGE	¥
7	DISPLAY MODE	Executes		Indicates information about input timing used, etc.	¥	¥
	MONITOR INFO.	Executes		Indicates model name and serial number	¥	¥
8	BRIGHT LIMIT MIN.	Darkens	Brightens	Decides under limit of variable range	30 to BRIGHT LIMIT MAX.	30
	BRIGHT LIMIT MAX.	Darkens	Brightens	Decides upper limit of variable range	100-220	220
	DIMMER CONTROL DIMMER	Changes to lower BRIGHT LIMIT MAX.	Changes to higher BRIGHT LIMIT MAX.	BRIGHT LIMIT MAX. when thermal control is completed	BRIGHT MIN. to BRIGHT MAX	110
	DIMMER CONTROL DIMMER START	Changes to lower ADC value	Changes to higher ADC value	Decides ADC value at starting of thermal control	1 to DEMMER END - 1	180
	DIMMER CONTROL DIMMER END	Changes to lower ADC value	Changes to higher ADC value	Decides ADC value when thermal control is completed	DEMMER START + 1 to 239	203
	DIMMER CONTROL DIMMER DELTA	Small	Large	Decides caution range	0 - 50	10
	DIMMER CONTROL BRIGHT MAX.	¥		Indicates BRIGHT MAX. value controlled thermally	¥	¥
	DIMMER CONTROL ADC	¥		Indicates ADC value detected	¥	¥
	DIMMER CONTROL ADC MAX	¥		Indicates MAX HOLD value of ADC value	¥	¥
	ADC MAX RESET	Executes		Resets ADC MAX. value	¥	¥
	BIAS	Executes		Automatically adjusts RGB clamp voltage	¥	¥
	GAIN	Executes		Outputs digital data=FFH when 0.7V is input	¥	¥
	PLL LOCK EDGE	FRONT / BACK / RISE / FALL AUTO		Appoints basic sync. signal edge	¥	FRONT
	PCLK	32.5MHz 35.0 MHz 37.5MH		Switches panel lock	32.5 - 37.5	35.0
	SERVICE INF.	¥		Indicates lamp operation time, MPU operation time and MPU version	¥	¥
	ON TIME RESET	Executes		Clears panel operation time	¥	0
	TOTAL TIME RESET	Executes		Clears circuit operation time	¥	0
	CLKHDLY	Decrements	Increments	Micro adjustment of H. clock position of signal input to panel	0 - 7	1

	CHANGE SETUP OSD	ON	OFF		¥	OFF
	EEP WRITE PROTECT	ON	OFF	EEPROM write protect for EDID Effective: ON Ineffective: OFF Initialize with AC Power OFF of monitor (ON)	¥	ON
	POWER SAVE	ON	OFF	Power save mode Effective: ON Ineffective: OFF	¥	OFF

(Note 1) Setting values are different by timing.

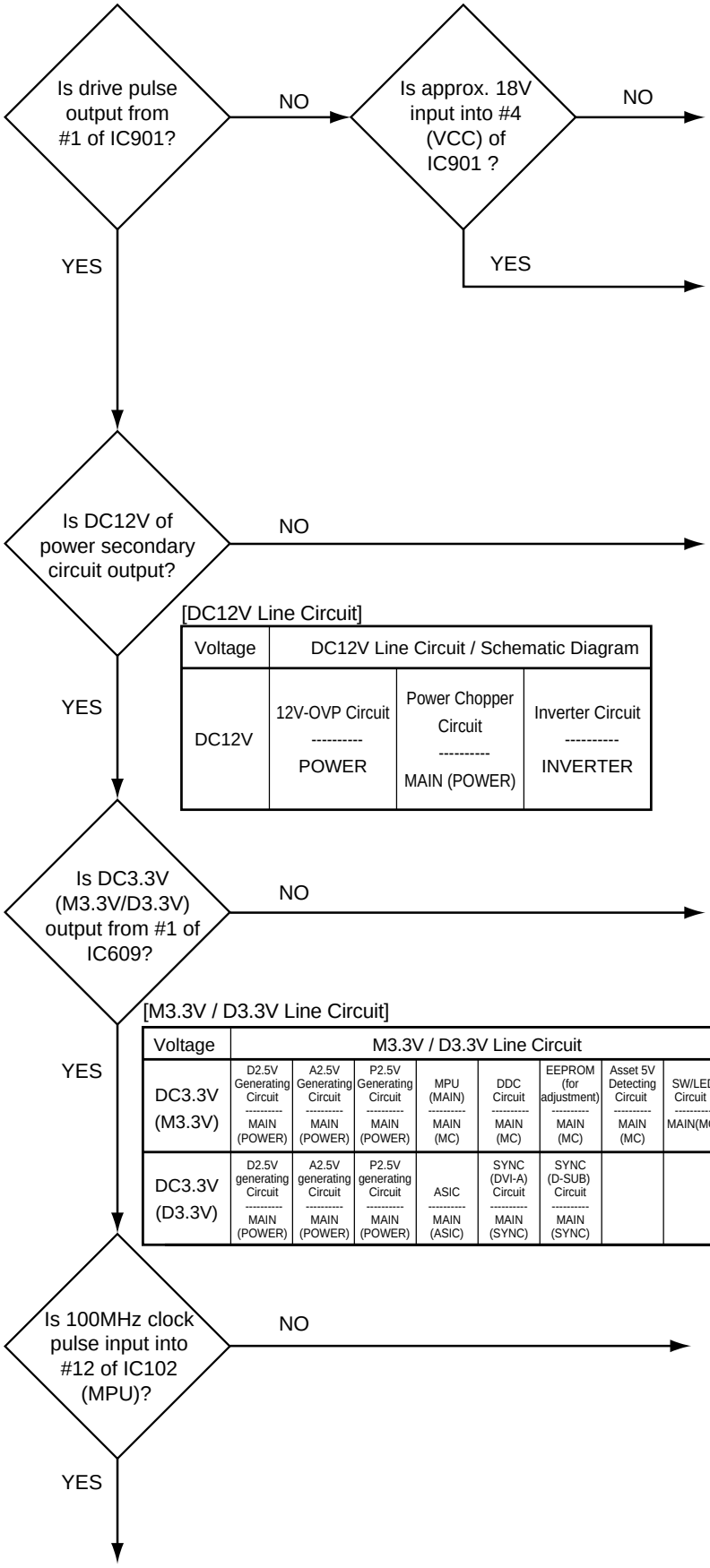
(Note 2) It is available with analog input.

3. TROUBLE SHOOTING

Contents

This trouble shooting is premised that the monitor has any problem.

1. No Power (POWER-ON INDICATOR is off)



Power primary circuit may have any problem. Please check the parts below.		
Power	Fuse	F901
Power	IC	IC901
Power	Trans	T901

Protection circuit of power primary circuit, or 12V-OVP of power secondary circuit may operate. Please check the parts below.		
Power	IC	IC901
Power	Precision resistor	R928
Power	Precision resistor	R929
Power	Precision resistor	R910
Power	Shunt regulator	IC904
Power	Photocoupler	IC903

12V line may have any problem. Please check the parts below.		
MAIN (Power)	Control circuit- fuse	F600
MAIN (Power)	Controller- IC	IC608
MAIN (Power)	5V- chopper- IC	IC611
Inverter	Controller- IC	IC701
Inverter	Controller- IC	IC702
Inverter	Output- Tr	Q701
Inverter	Output- Tr	Q702
Inverter	Output- Tr	Q703
Inverter	Output- Tr	Q704
Inverter	Output- trans	T701
Inverter	Output- trans	T702

[DC12V Line Circuit]

Voltage	DC12V Line Circuit / Schematic Diagram		
DC12V	12V-OVP Circuit --- POWER	Power Chopper Circuit --- MAIN (POWER)	Inverter Circuit --- INVERTER

M3.3V/D3.3V line may have any problem. Please check the parts below.		
MAIN (Power)	Controller- IC	IC608
MAIN (Power)	M3.3/D3.3V- controller- Tr	Q602
MAIN (Power)	M3.3/D3.3V- generator- IC	IC609
MAIN (Power)	D2.5V- generator- IC	IC602
MAIN (Power)	A2.5V- generator- IC	IC604
MAIN (Power)	P2.5- generator- IC	IC606
MC	EEPROM (for adjustment)	IC100
MC	Reset IC	IC101
MC	MPU	IC102
ASIC	ASIC	IC400
Sync	DVI-A- IC	IC300
Sync	D-SUB- IC	IC303

[M3.3V / D3.3V Line Circuit]

Voltage	M3.3V / D3.3V Line Circuit							
DC3.3V (M3.3V)	D2.5V Generating Circuit --- MAIN (POWER)	A2.5V Generating Circuit --- MAIN (POWER)	P2.5V Generating Circuit --- MAIN (POWER)	MPU (MAIN) --- MAIN (MC)	DDC Circuit --- MAIN (MC)	EEPROM (for adjustment) --- MAIN (MC)	Asset 5V Detecting Circuit --- MAIN (MC)	SW/LED Circuit --- MAIN(MC)
DC3.3V (D3.3V)	D2.5V generating Circuit --- MAIN (POWER)	A2.5V generating Circuit --- MAIN (POWER)	P2.5V generating Circuit --- MAIN (POWER)	ASIC --- MAIN (ASIC)	SYNC (DVI-A) Circuit --- MAIN (SYNC)	SYNC (D-SUB) Circuit --- MAIN (SYNC)		

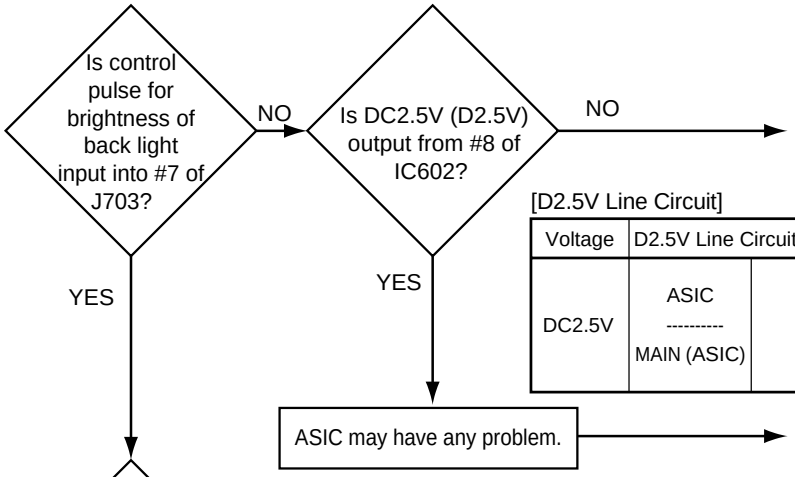
Control circuit may have any problem. Please check the parts below.		
MC	Crystal oscillator	X100
MC	MPU	IC102

MPU may have any problem. →

Please check the part below.		
MC	MPU	IC102

2. No Picture

2.1 Back Light Does Not Turn On (POWER-ON INDICATOR (Green) Is Blinking)



D2.5V line may have any problem. Please check the parts below.		
MAIN (Power)	D2.5V- generator- IC	IC602
ASIC	ASIC	IC400

[D2.5V Line Circuit]

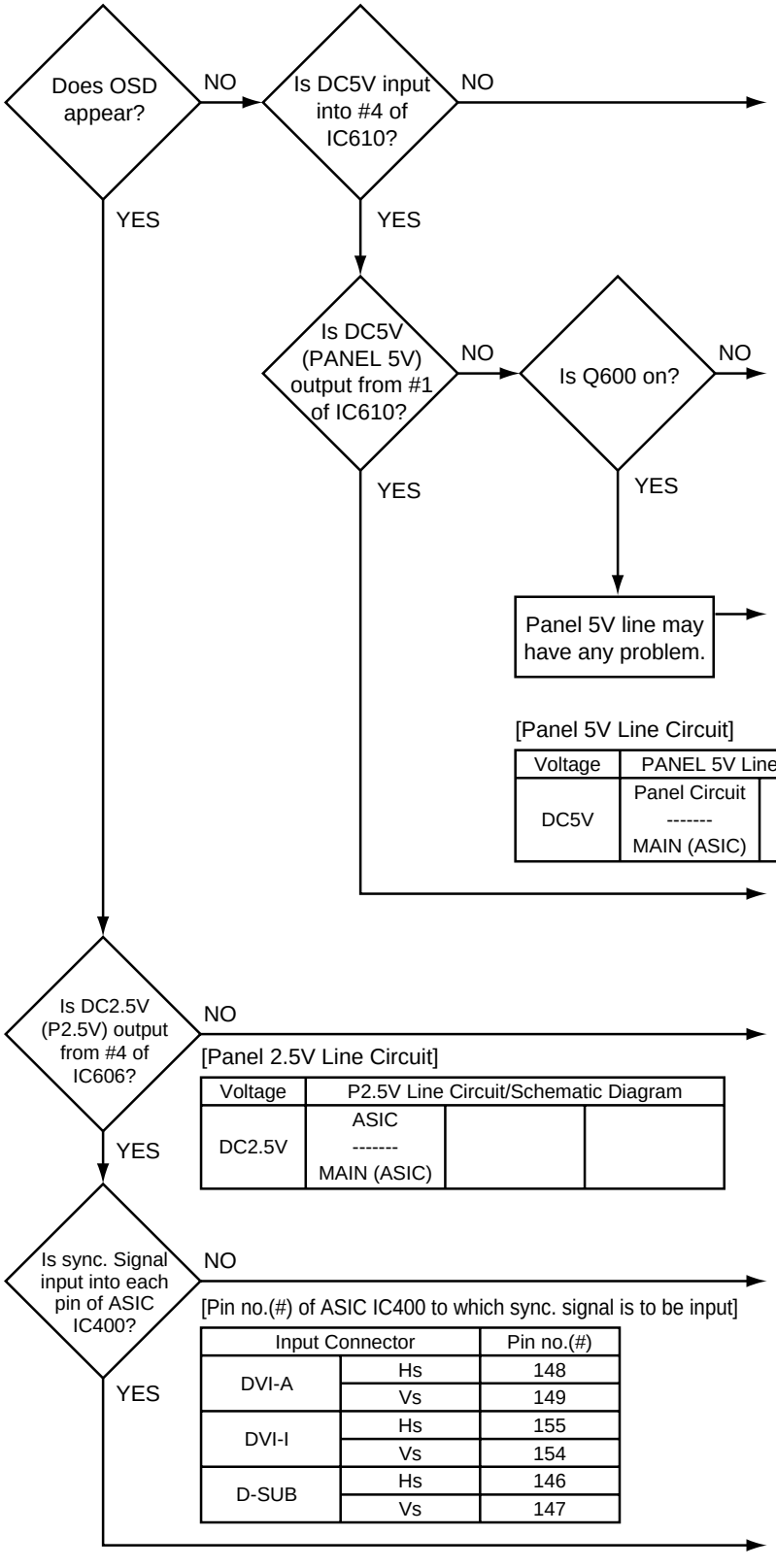
Voltage	D2.5V Line Circuit/Schematic Diagram		
DC2.5V	ASIC ---------- MAIN (ASIC)		

Please check the part below.		
ASIC	ASIC	IC400

Protection circuit in inverter circuit may have any problem. Please check the parts below.		
		LCD panel (back light)
Inverter	Output- Tr	Q701
Inverter	Output- Tr	Q702
Inverter	Output- Tr	Q703
Inverter	Output- Tr	Q704
Inverter	Output- trans	T701
Inverter	Output- trans	T702
Inverter	12V-OVP- Tr	Q707
Inverter	12V-OVP- zener diode	D707
Inverter	Output- F/B- zener diode	D717
Inverter	Output- F/B- zener diode	D718
Inverter	Output- F/B- zener diode	D719
Inverter	Output- F/B- zener diode	D720
Inverter	Output- F/B- IC	IC701
Inverter	Output- F/B- IC	IC702
Inverter	Abnormal detector- Tr	Q717
Inverter	Abnormal detector- Tr	Q718
Inverter	Abnormal detector- Tr	Q711
Inverter	Abnormal detector- thyristor	TH701
MC	MPU	IC102

Inverter drive circuit may have any problem. Please check the parts below.		
		LCD panel (back light)
Inverter	OCP- fuse	F701
Inverter	OCP- fuse	F702
Inverter	Output- Tr	Q701
Inverter	Output- Tr	Q702
Inverter	Output- Tr	Q703
Inverter	Output- Tr	Q704
Inverter	Output- trans	T701
Inverter	Output- trans	T702
Inverter	Power output- IC	IC703

2.2 Back Light Is On (POWER-ON INDICATOR (Green) is blinking).



5V line may have any problem. Please check the parts below.		
MAIN (Power)	DC 12V/5V convertor- Tr	Q601
MAIN (Power)	DC 12V/5V convertor- IC	IC607
MAIN (Power)	DC 12V/6V convertor- IC	IC608
MAIN (Power)	5V OVP- precision resistor	R614
MAIN (Power)	5V OVP- precision resistor	R616
MAIN (Power)	5V OVP- precision resistor	R619
MAIN (Power)	P5V generator- IC	IC610
MAIN (Power)	TM3.3V generator- IC	IC605

Control circuit may have any problem. Please check the parts below.		
MAIN (Power)	PANEL 5V- ON/OFF- Tr	Q600
MC	MPU	IC102

Please check the parts below.		
MAIN (Power)	PANEL 5V generator- IC	IC610
		LCD panel

[Panel 5V Line Circuit]

Voltage	PANEL 5V Line Circuit/Schematic Diagram		
DC5V	Panel Circuit ------- MAIN (ASIC)		

Video circuit may have any problem. Please check the parts below.		
ASIC	ASIC	IC400
MC	EEPROM (for adjustment)	IC100
MC	MPU	IC102

P2.5V line may have any problem. Please check the parts below.		
MAIN (Power)	P2.5V generator- IC	IC606
ASIC	ASIC	IC400

[Panel 2.5V Line Circuit]

Voltage	P2.5V Line Circuit/Schematic Diagram		
DC2.5V	ASIC ------- MAIN (ASIC)		

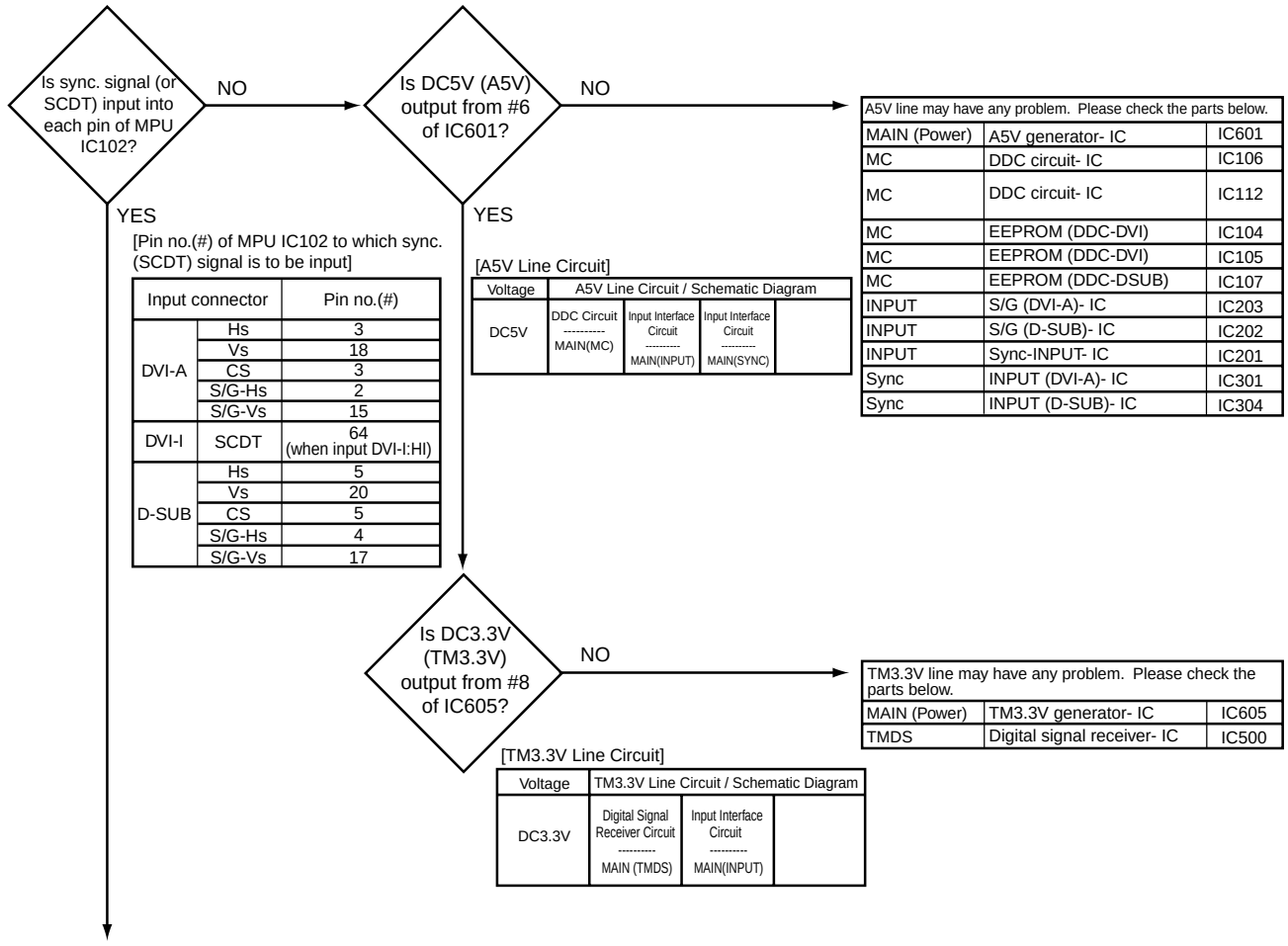
Sync. signal input circuit or ASIC may have any problem. Please check the parts below.		
Sync	DVI-A- IC	IC300
Sync	D-SUB- IC	IC303
TMDS	Digital signal receiver- IC	IC500
ASIC	ASIC	IC400

[Pin no.(#) of ASIC IC400 to which sync. signal is to be input]

Input Connector		Pin no.(#)
DVI-A	Hs	148
	Vs	149
DVI-I	Hs	155
	Vs	154
D-SUB	Hs	146
	Vs	147

Video circuit may have any problem. Please check the parts below.		
INPUT	D-SUB-Tr	Q203
INPUT	D-SUB-Tr	Q205
INPUT	DVI-A-Tr	Q200
INPUT	DVI-A-Tr	Q201
TMDS	Digital signal receiver- IC	IC500
ASIC	ASIC	IC400
MC	EEPROM (for Adjustment)	IC100
MC	MPU	IC102

2.3 POWER-SAVE Operates (POWER-ON INDICATOR (Orange) is blinking.)



[Pin no.(#) of MPU IC102 to which sync. (SCDT) signal is to be input]

Input connector		Pin no.(#)
DVI-A	Hs	3
	Vs	18
	CS	3
	S/G-Hs	2
	S/G-Vs	15
DVI-I	SCDT	64 (when input DVI-I:HI)
D-SUB	Hs	5
	Vs	20
	CS	5
	S/G-Hs	4
	S/G-Vs	17

[A5V Line Circuit]

Voltage	A5V Line Circuit / Schematic Diagram			
DC5V	DDC Circuit ---------- MAIN(MC)	Input Interface Circuit ---------- MAIN(INPUT)	Input Interface Circuit ---------- MAIN(SYNC)	

A5V line may have any problem. Please check the parts below.		
MAIN (Power)	A5V generator- IC	IC601
MC	DDC circuit- IC	IC106
MC	DDC circuit- IC	IC112
MC	EEPROM (DDC-DVI)	IC104
MC	EEPROM (DDC-DVI)	IC105
MC	EEPROM (DDC-DSUB)	IC107
INPUT	S/G (DVI-A)- IC	IC203
INPUT	S/G (D-SUB)- IC	IC202
INPUT	Sync-INPUT- IC	IC201
Sync	INPUT (DVI-A)- IC	IC301
Sync	INPUT (D-SUB)- IC	IC304

[TM3.3V Line Circuit]

Voltage	TM3.3V Line Circuit / Schematic Diagram		
DC3.3V	Digital Signal Receiver Circuit ---------- MAIN (TMDS)	Input Interface Circuit ---------- MAIN(INPUT)	

TM3.3V line may have any problem. Please check the parts below.		
MAIN (Power)	TM3.3V generator- IC	IC605
TMDS	Digital signal receiver- IC	IC500

Please check the part below.		
MC	MPU	IC102

3. Abnormal Picture or Ineffective Adjustment

[A2.5V Line Circuit]

Voltage	A2.5V Line Circuit / Schematic Diagram		
DC2.5V	ASIC -------- MAIN (ASIC)		

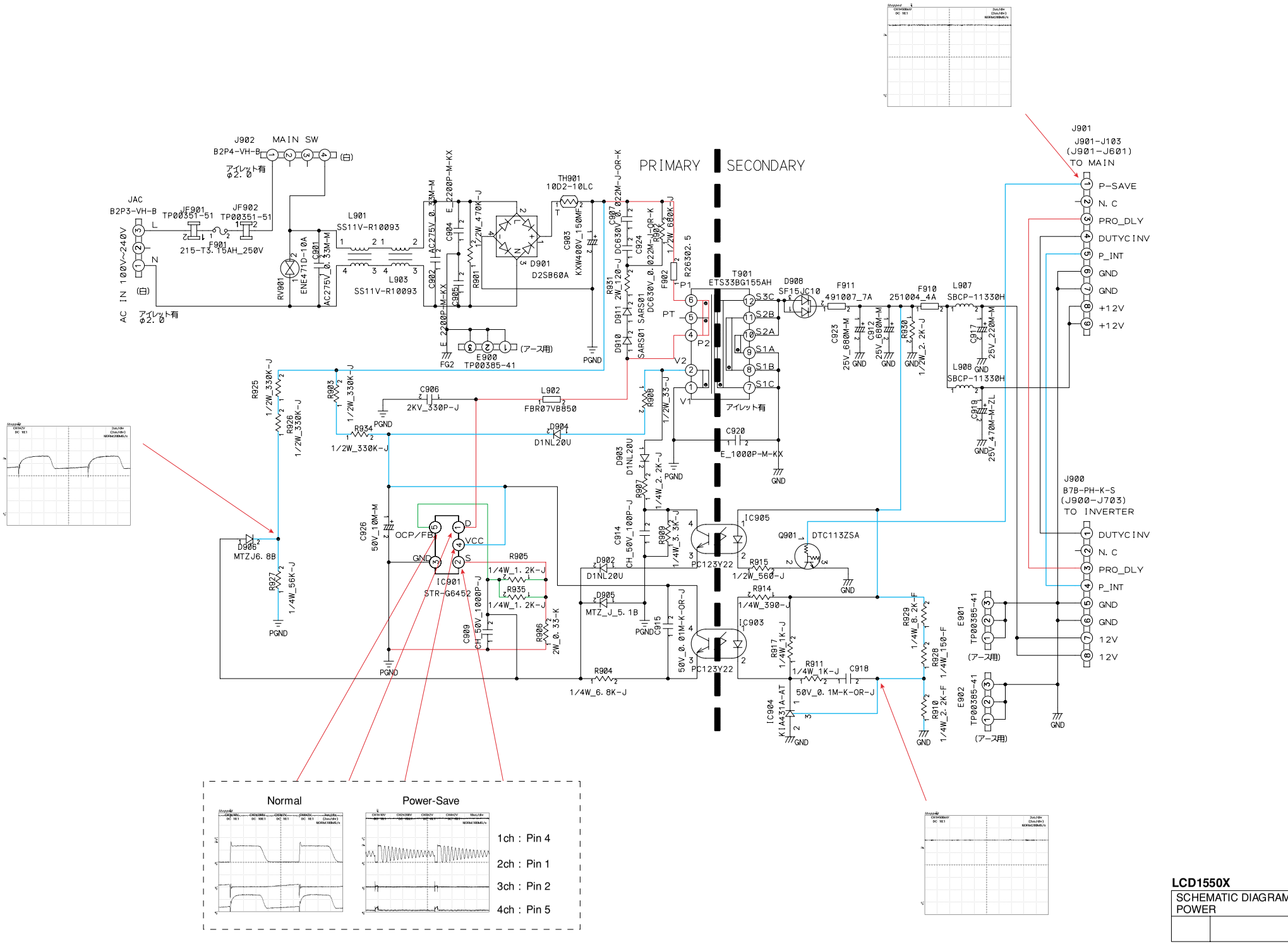
*A2.5V is generated in IC604 and output from its #8.

A2.5V line or control circuit may have any problem. Please check the parts below.		
MAIN (Power)	A2.5V generator- IC	IC604
ASIC	ASIC	IC400
MC	EEPROM (for adjustment)	IC100
MC	MPU	IC102

4. Wave form

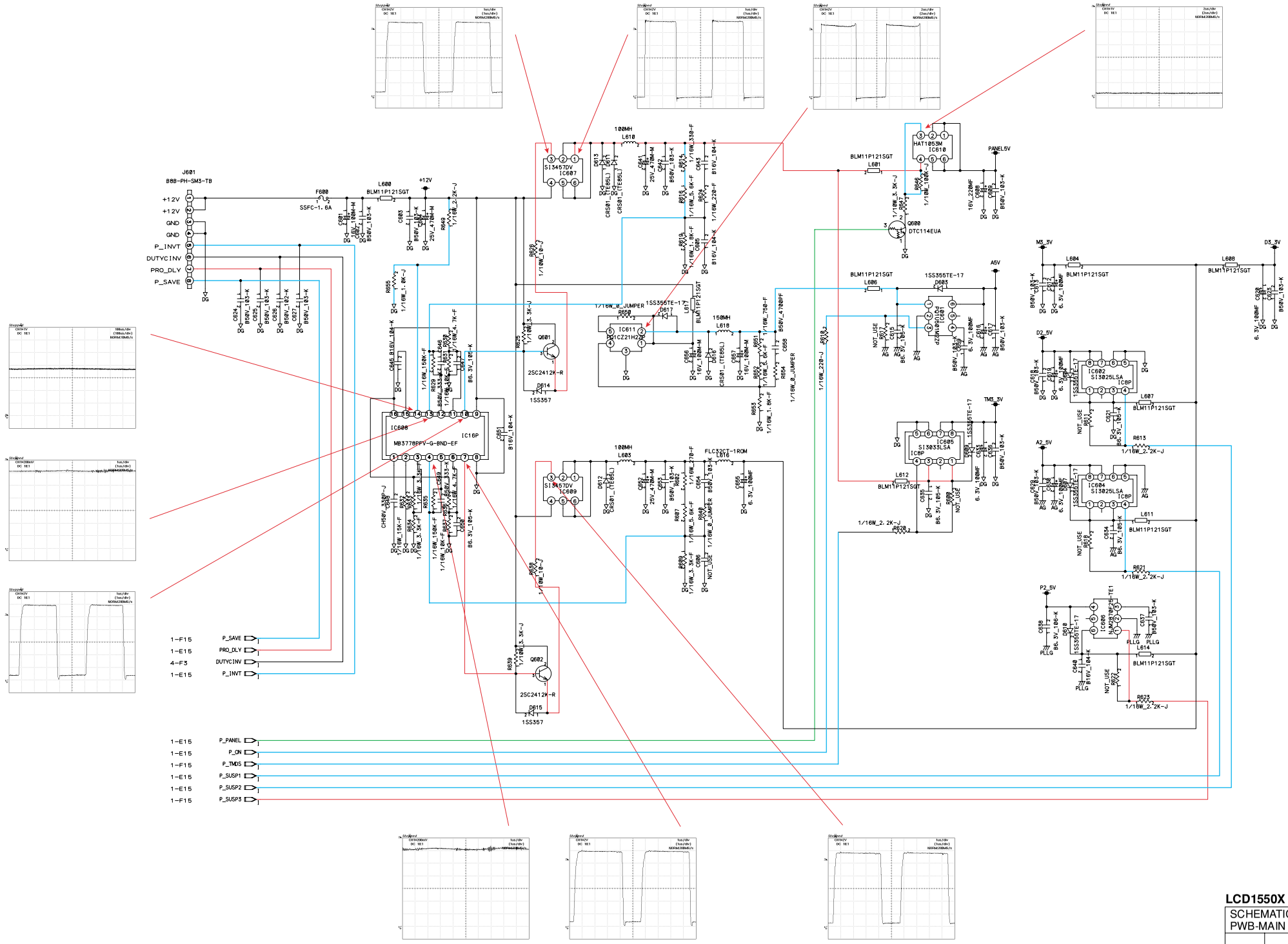
- **Measurment condition**
  - (1) Input timing : XGA (FH : 60kHz / FV : 75Hz)
    (Timing No.14, refer to 2.12 Timing chart in Adjustment procedure)
  - (2) Display pattern : Full White raster
  - (3) Condition
    - Brightness : MAX
    - Contrast : CENTER

1. **POWER**
2. **PWB-MAIN (POWER)**
3. **PWB-MAIN (INPUT)**
4. **PWB-MAIN (SYNC)**
5. **PWB-MAIN (TMDS)**
6. **PWB-MAIN (MC)**
7. **PWB-MAIN (ASIC)**
8. **INVERTER**
9. **PWB-SW**



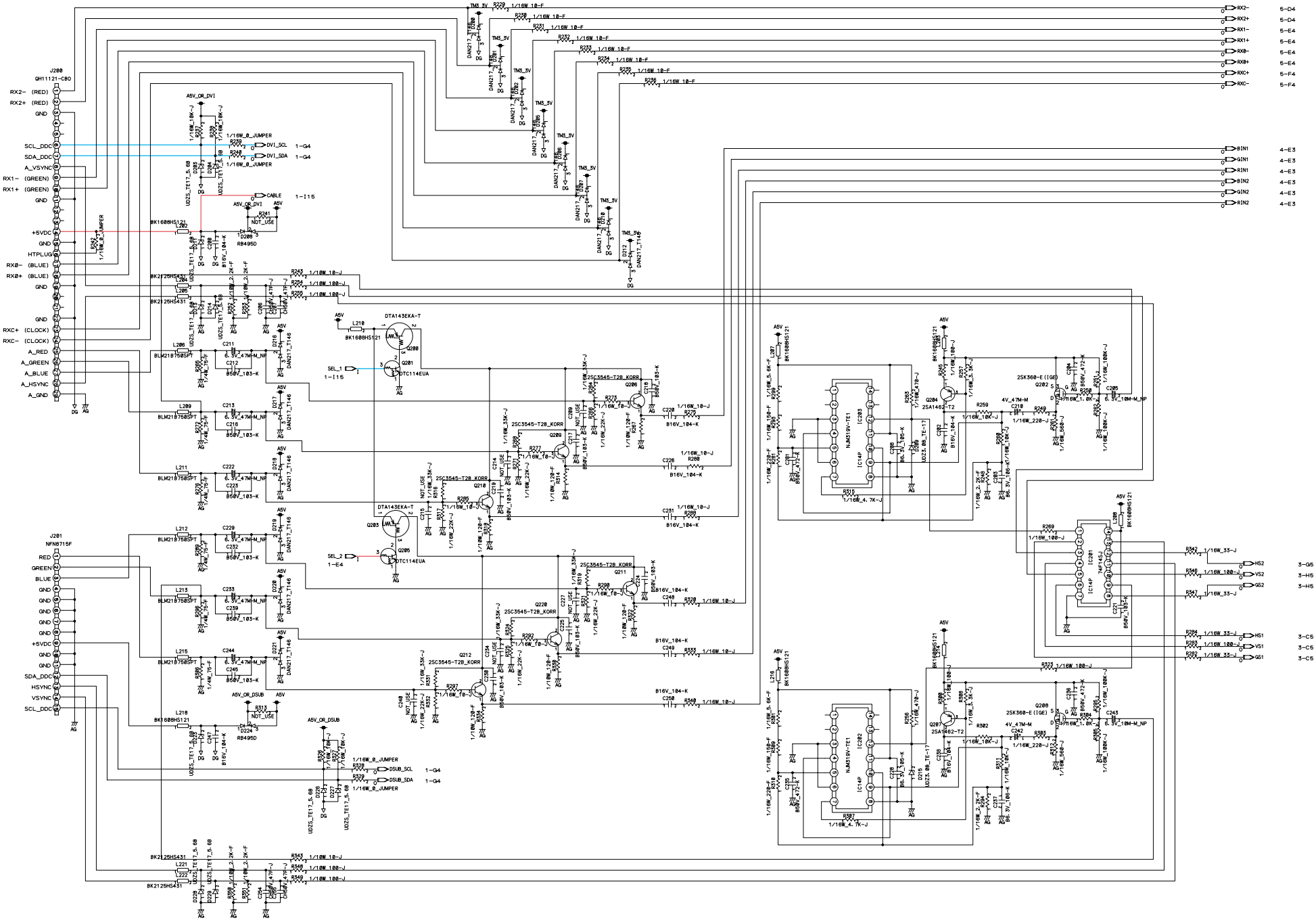
LCD1550X

SCHEMATIC DIAGRAM POWER	



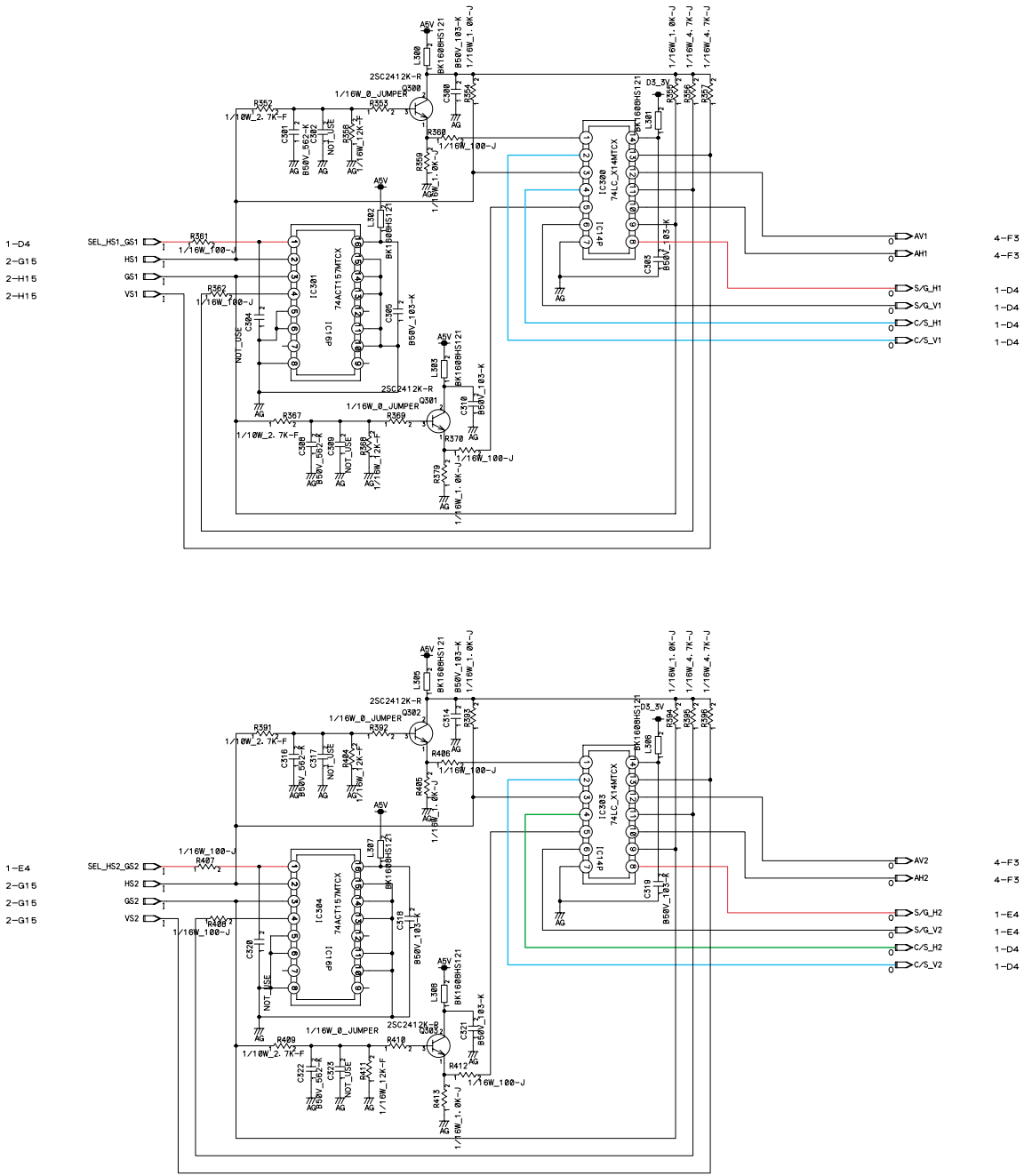
LCD1550X

SCHEMATIC DIAGRAM PWB-MAIN (POWER)	



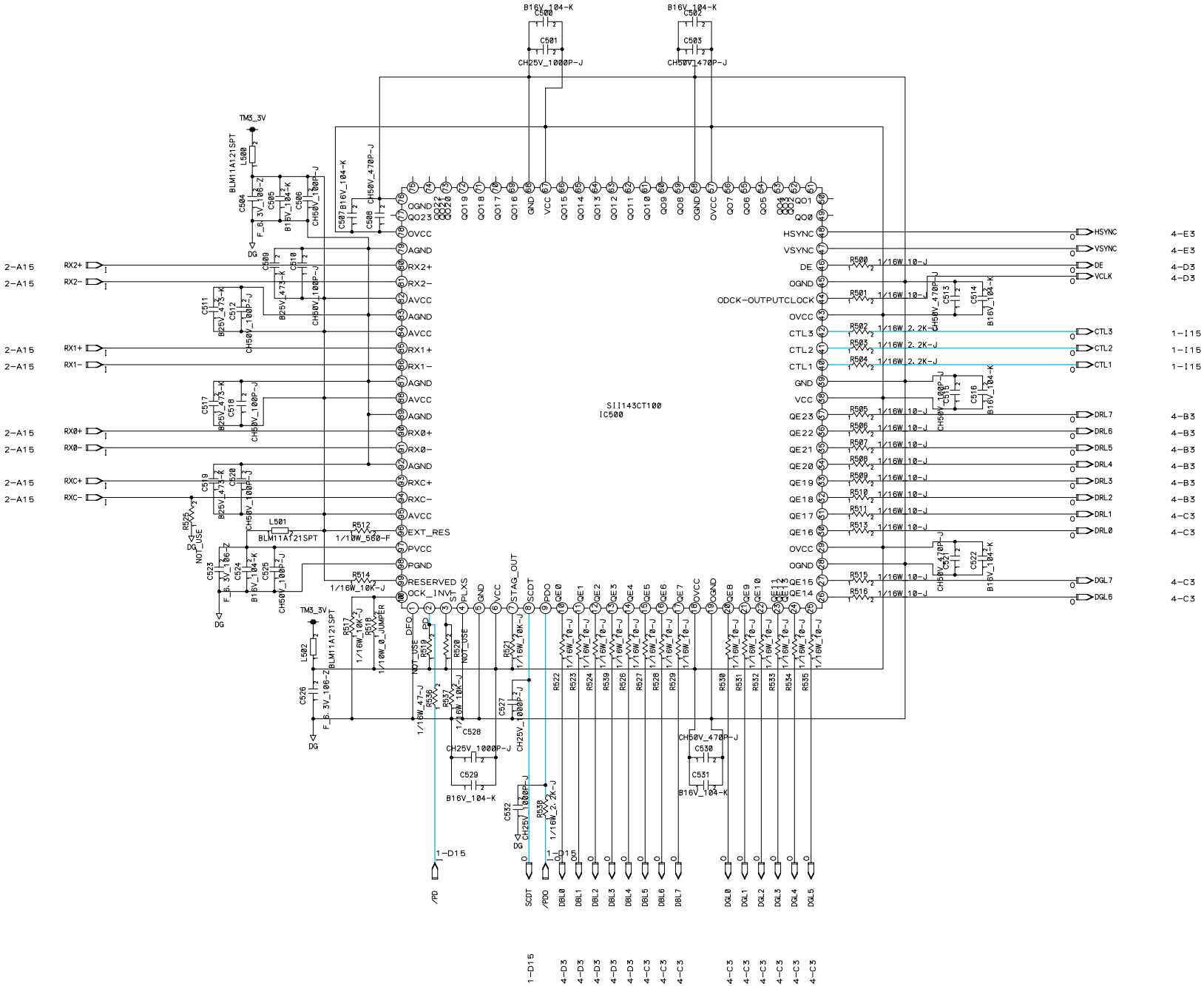
LCD1550X

SCHEMATIC DIAGRAM PWB-MAIN (INPUT)	



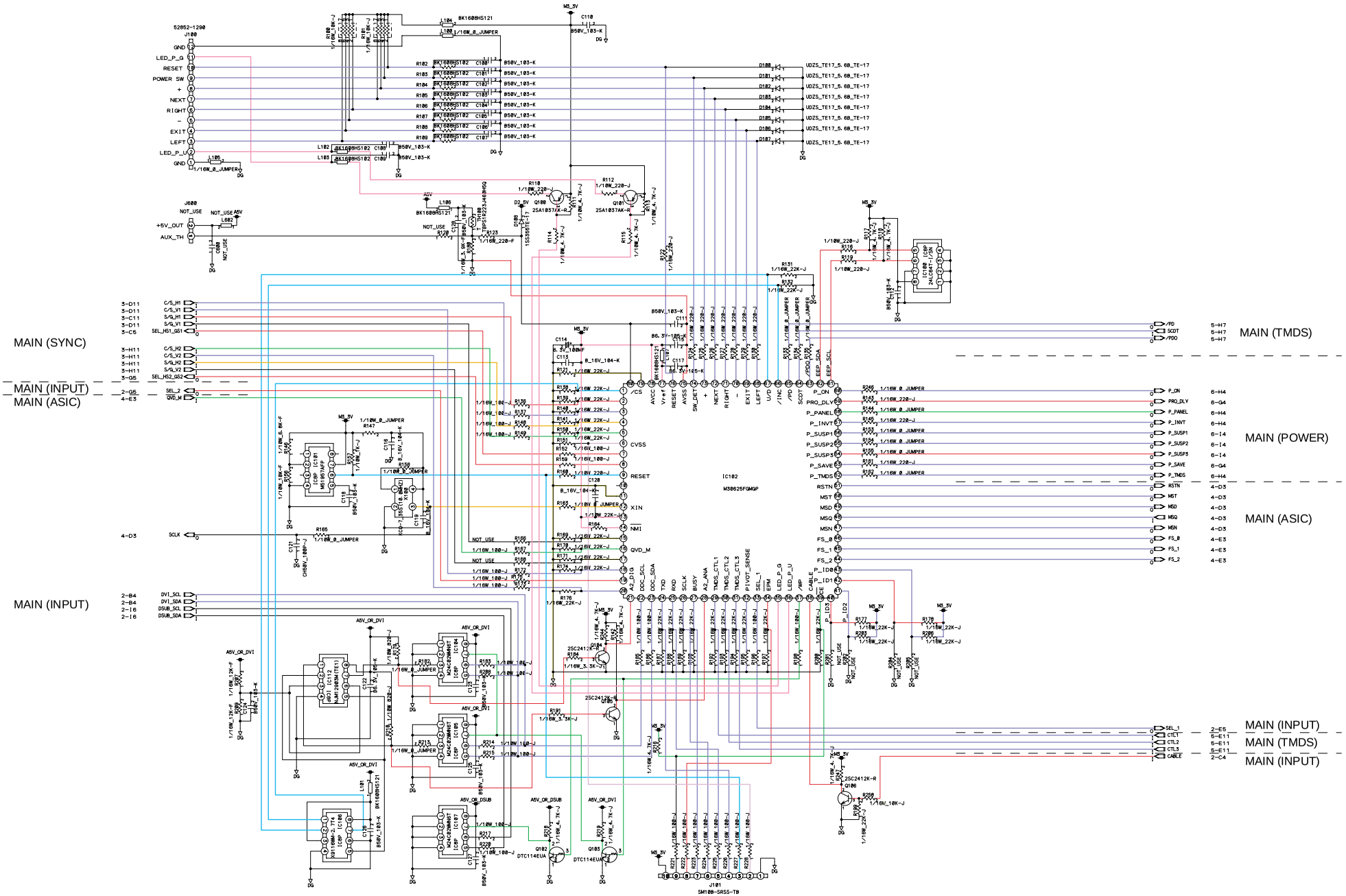
LCD1550X

SCHEMATIC DIAGRAM PWB-MAIN (SYNC)	



LCD1550X

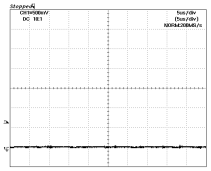
SCHEMATIC DIAGRAM PWB-MAIN (TMDS)	



LCD1550X

SCHEMATIC DIAGRAM PWB-MAIN (MC)	

IC102-1



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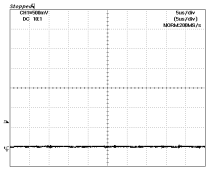

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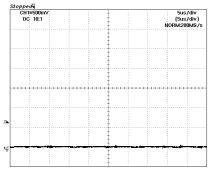

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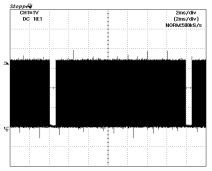

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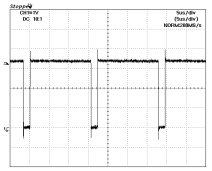

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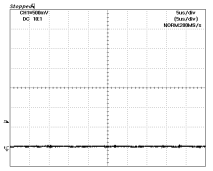

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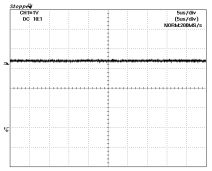

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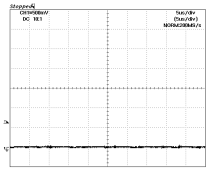

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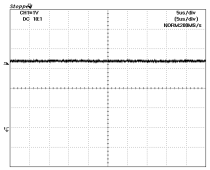

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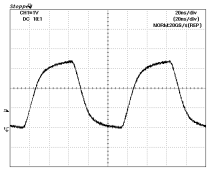

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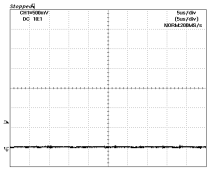

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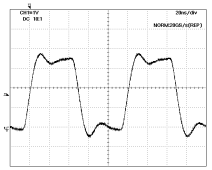

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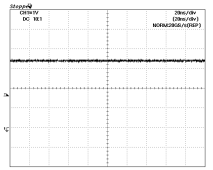

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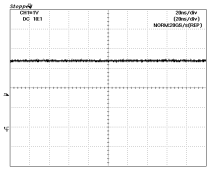

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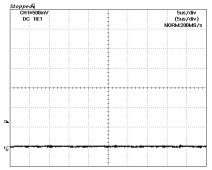

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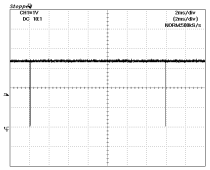

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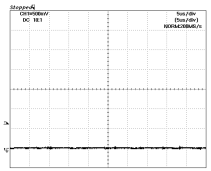

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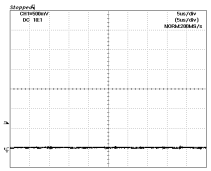

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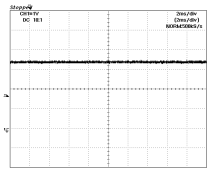

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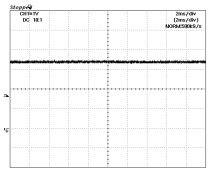

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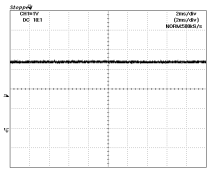

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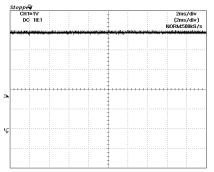

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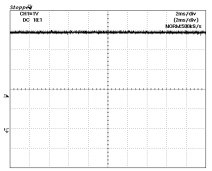

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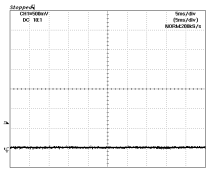
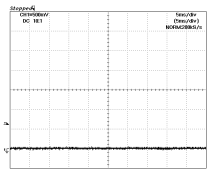


IC102-25



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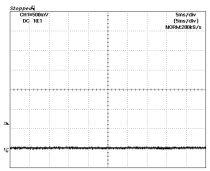

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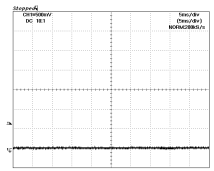

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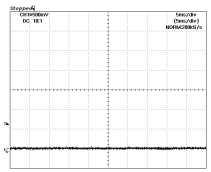

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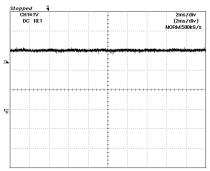

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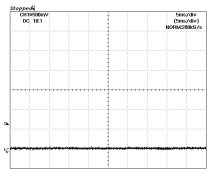

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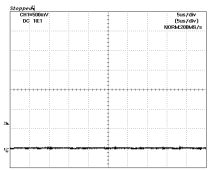

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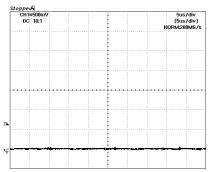

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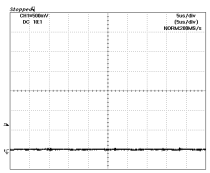

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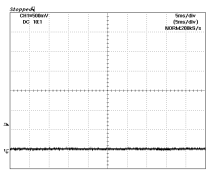

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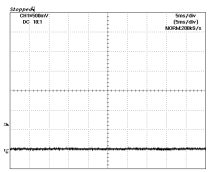

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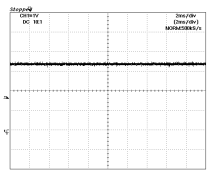

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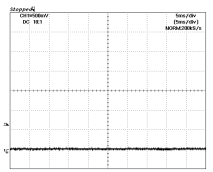

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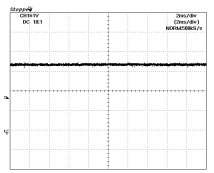

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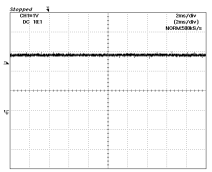

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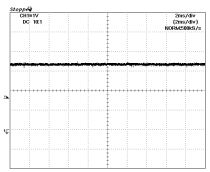

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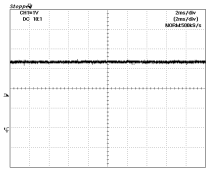
SCHEMATIC DIAGRAM PWB-MAIN (MC) (1/2)	

IC102-41



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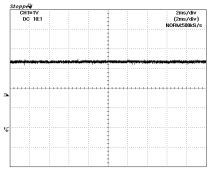

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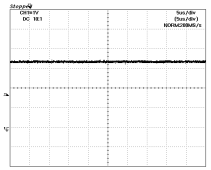

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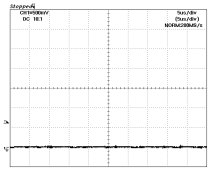

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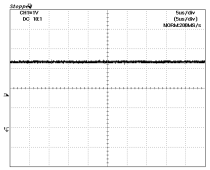

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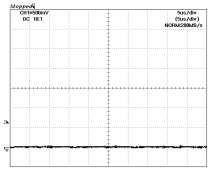

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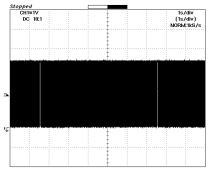

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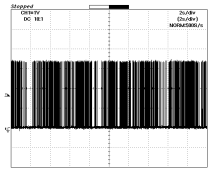

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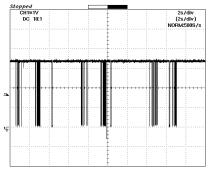

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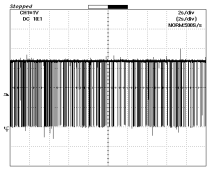

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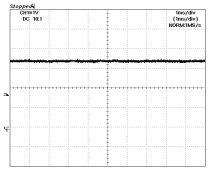

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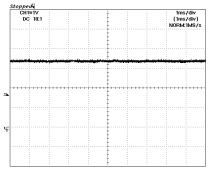

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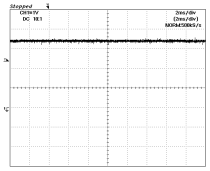

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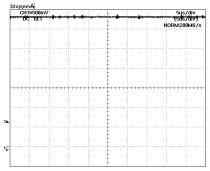

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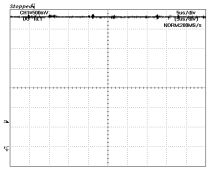

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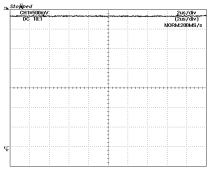

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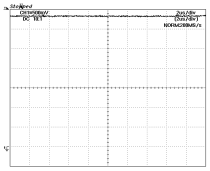

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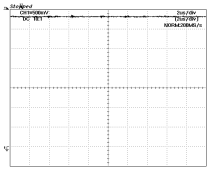

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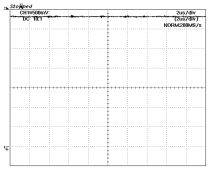

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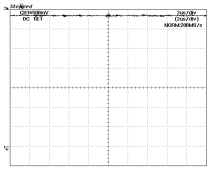

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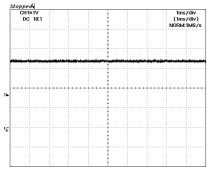

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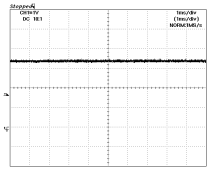

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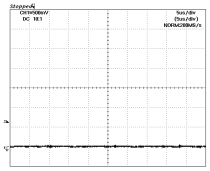

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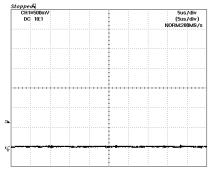

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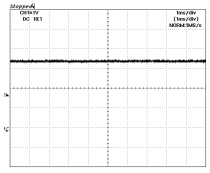

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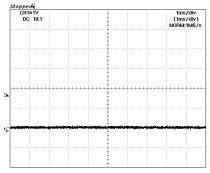

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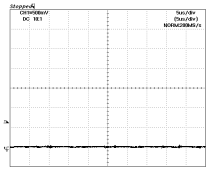

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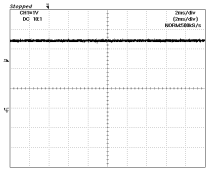

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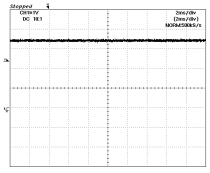

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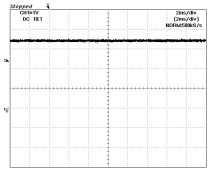

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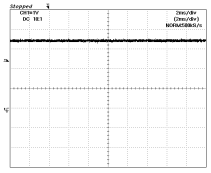

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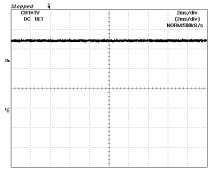

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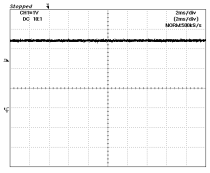

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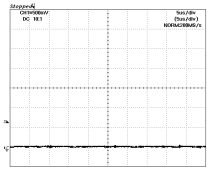

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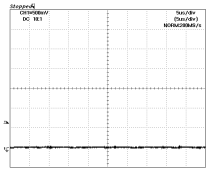

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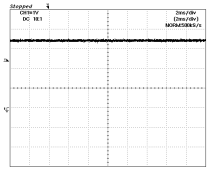

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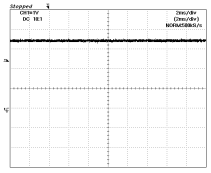

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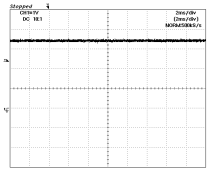

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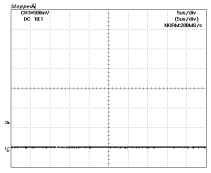

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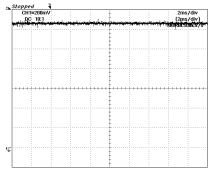

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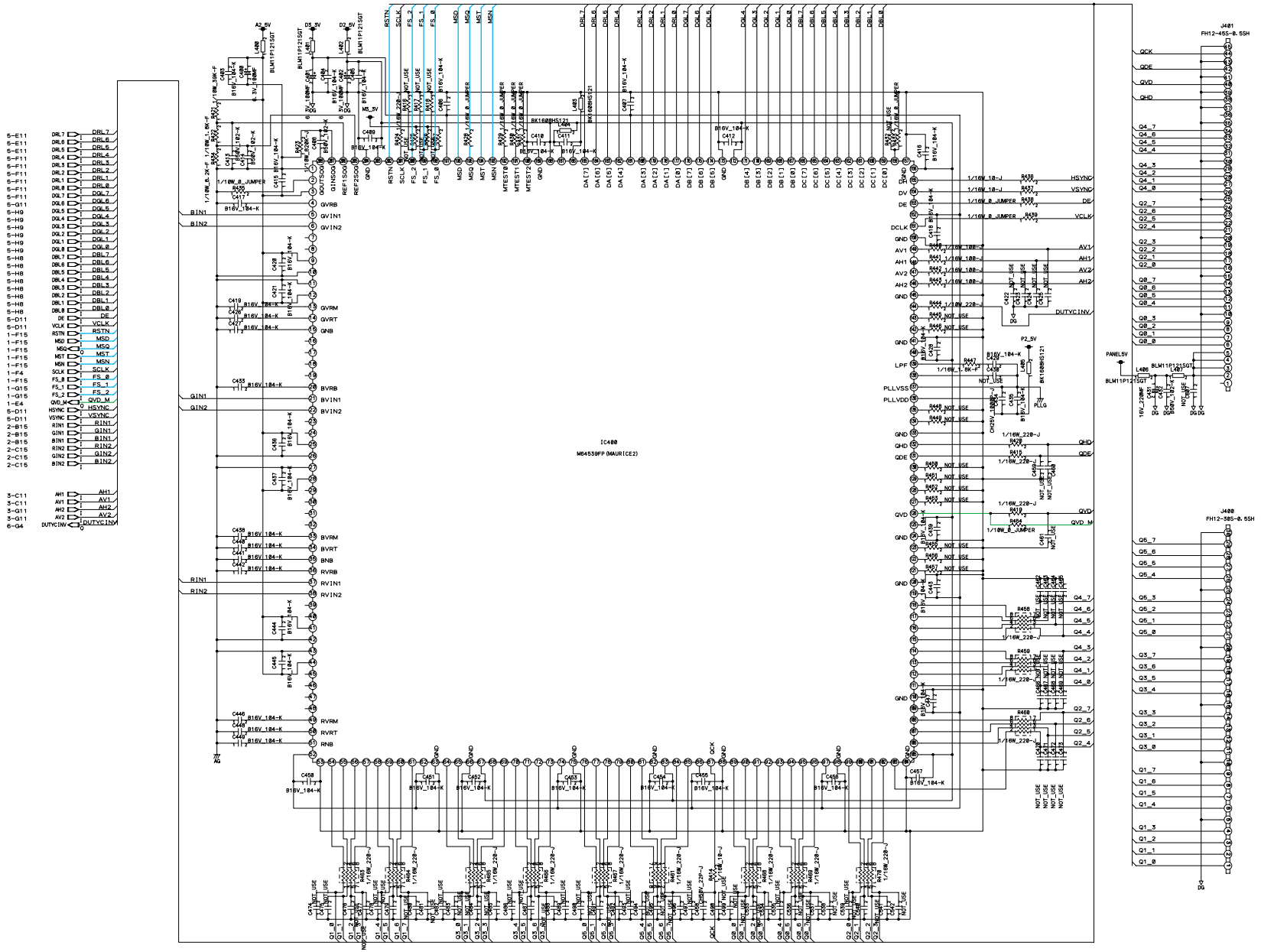
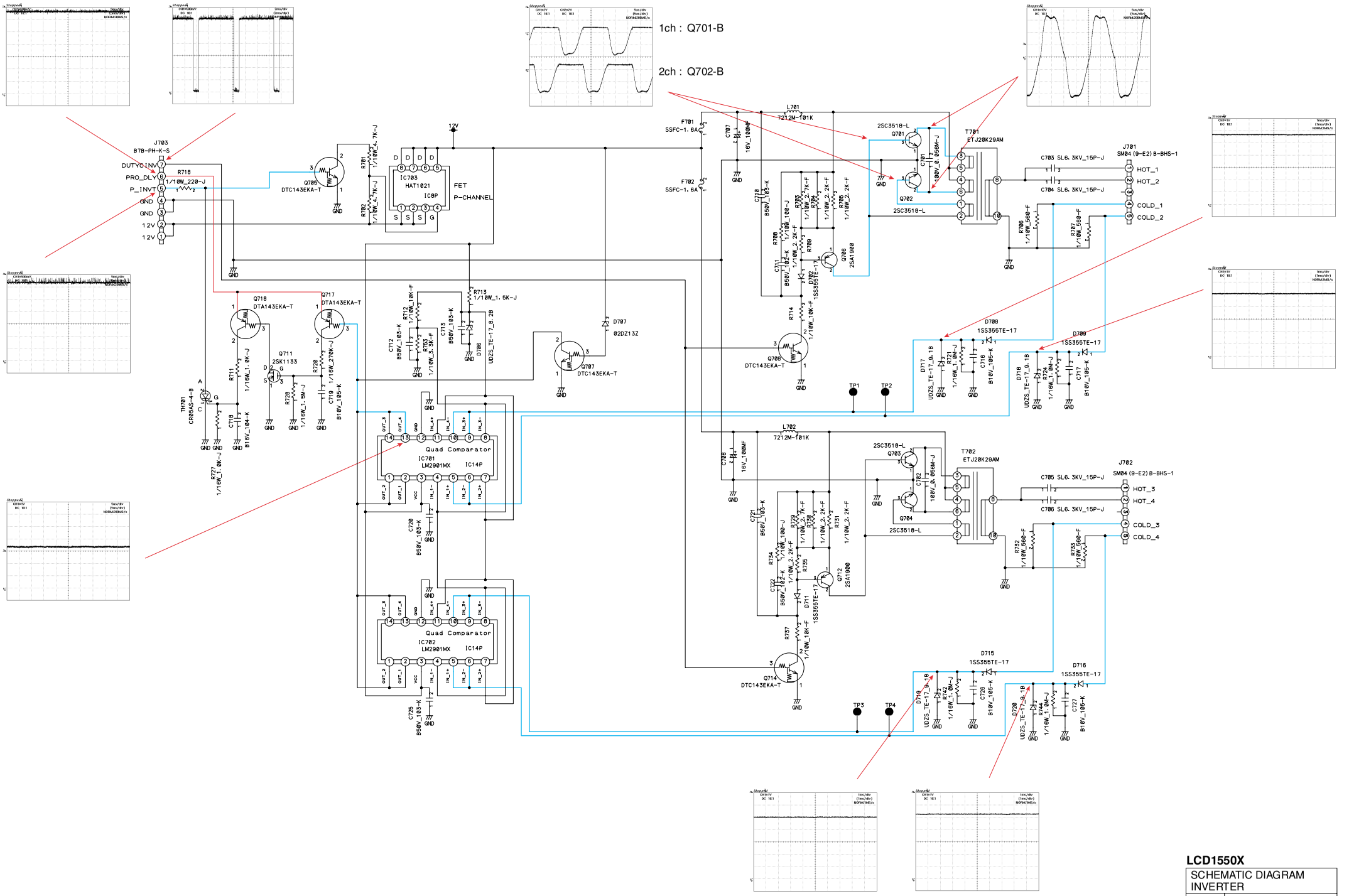
SCHEMATIC DIAGRAM PWB-MAIN (MC) (2/2)	



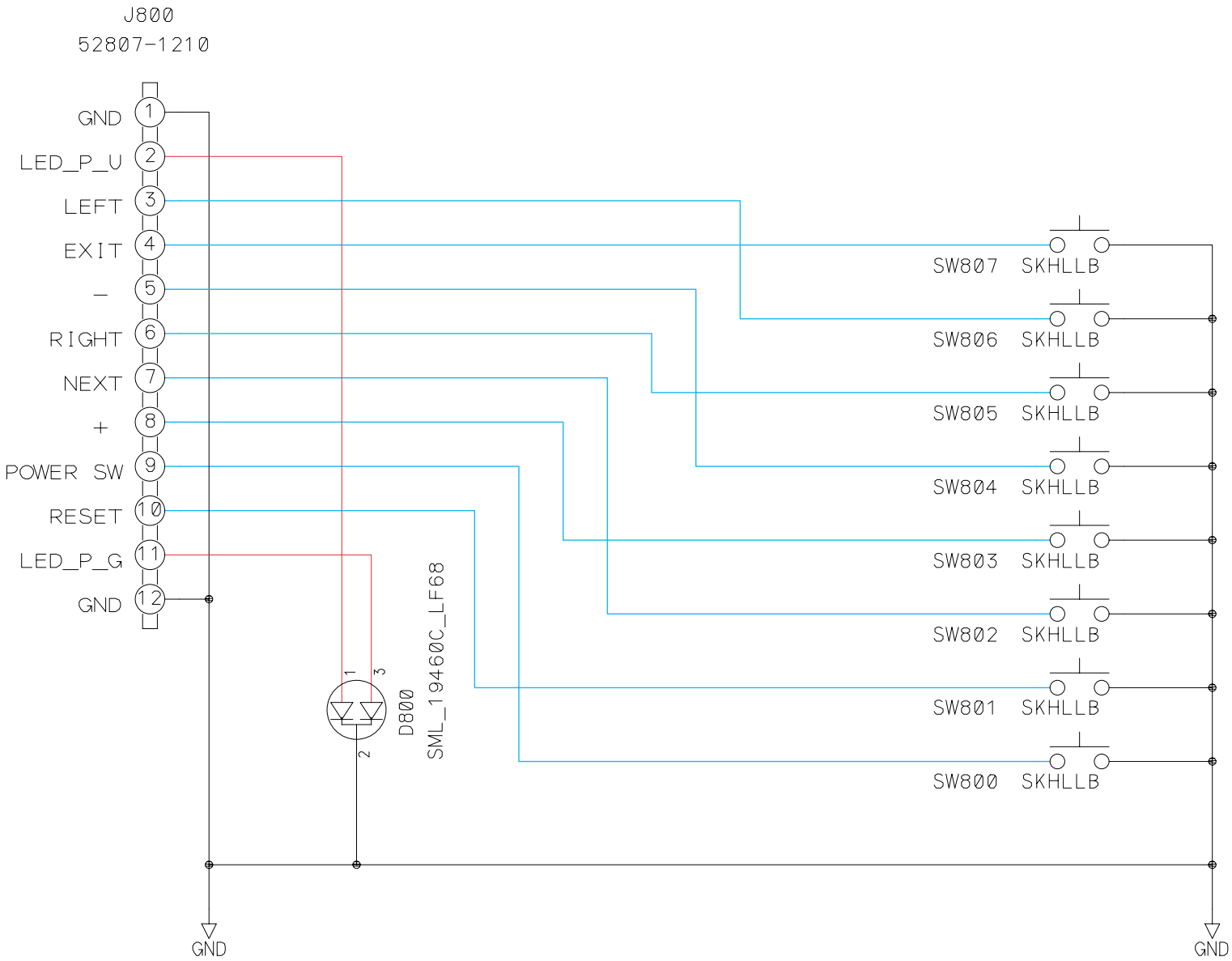
LCD1550X

SCHEMATIC DIAGRAM PWB-MAIN (ASIC)	



LCD1550X

SCHEMATIC DIAGRAM INVERTER	

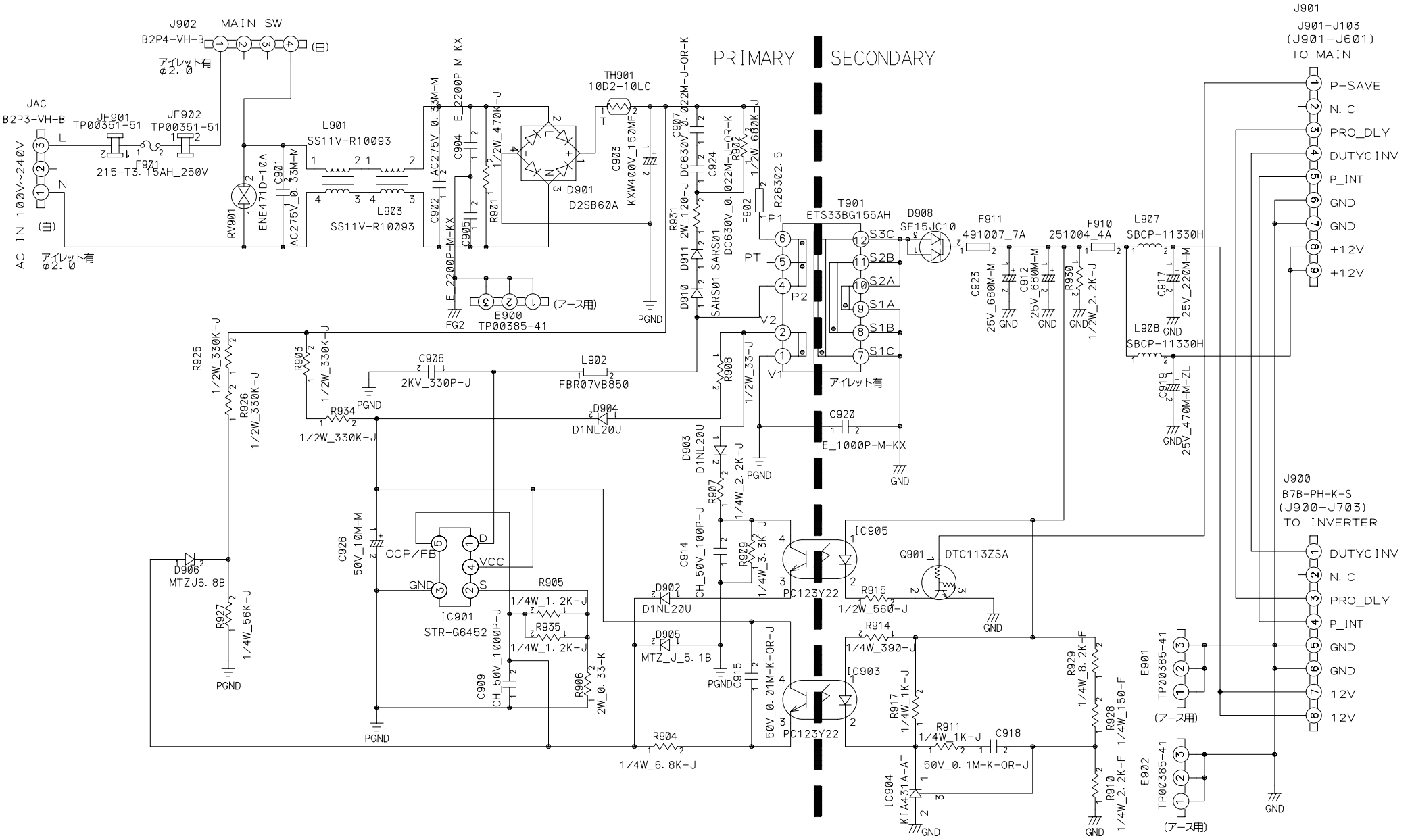


LCD1550X

SCHEMATIC DIAGRAM PWB-SW	

5. Schematic diagram

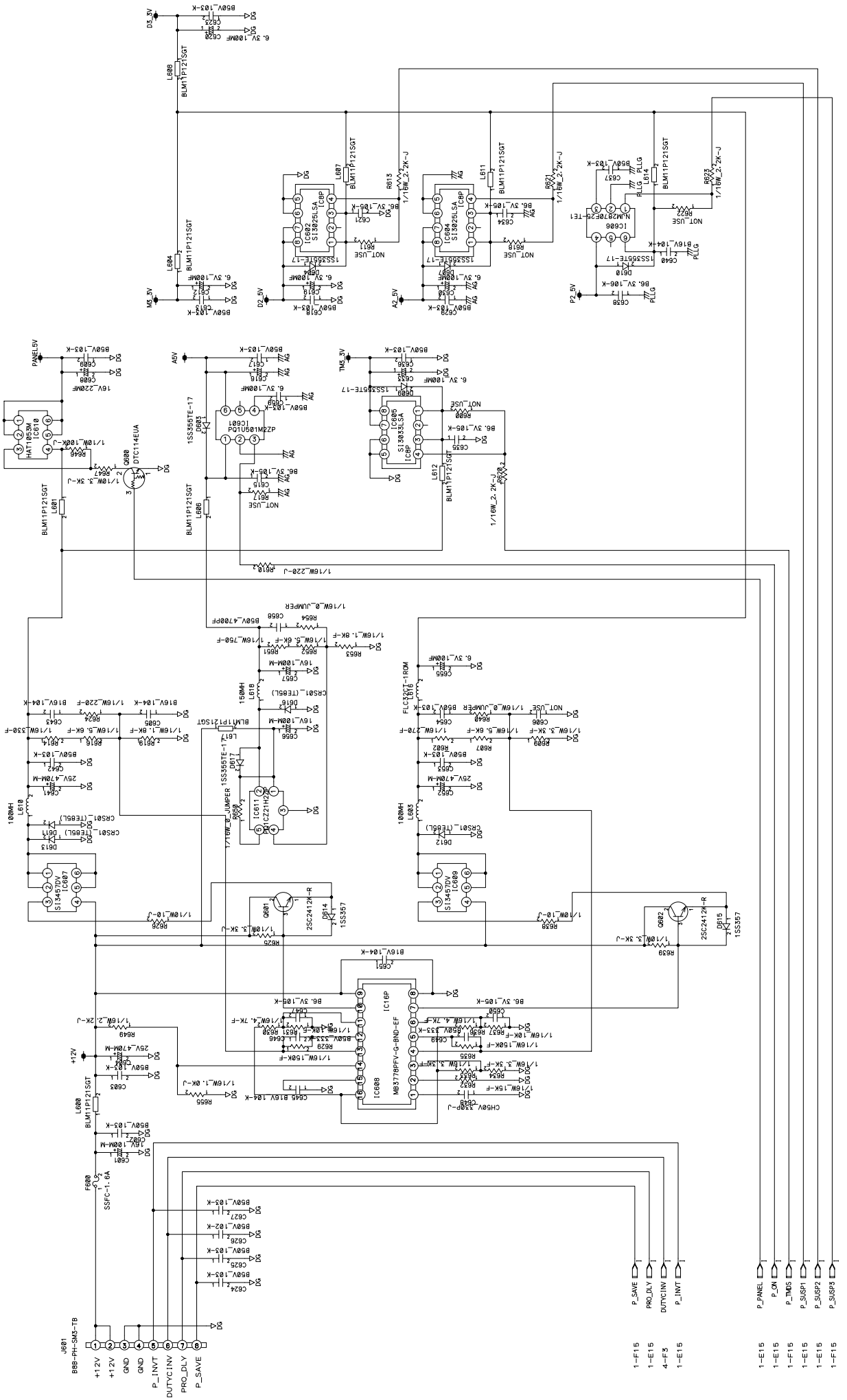
1. POWER
2. PWB-MAIN (POWER)
3. PWB-MAIN (INPUT)
4. PWB-MAIN (SYNC)
5. PWB-MAIN (TMDS)
6. PWB-MAIN (MC)
7. PWB-MAIN (ASIC)
8. INVERTER
9. PWB-SW

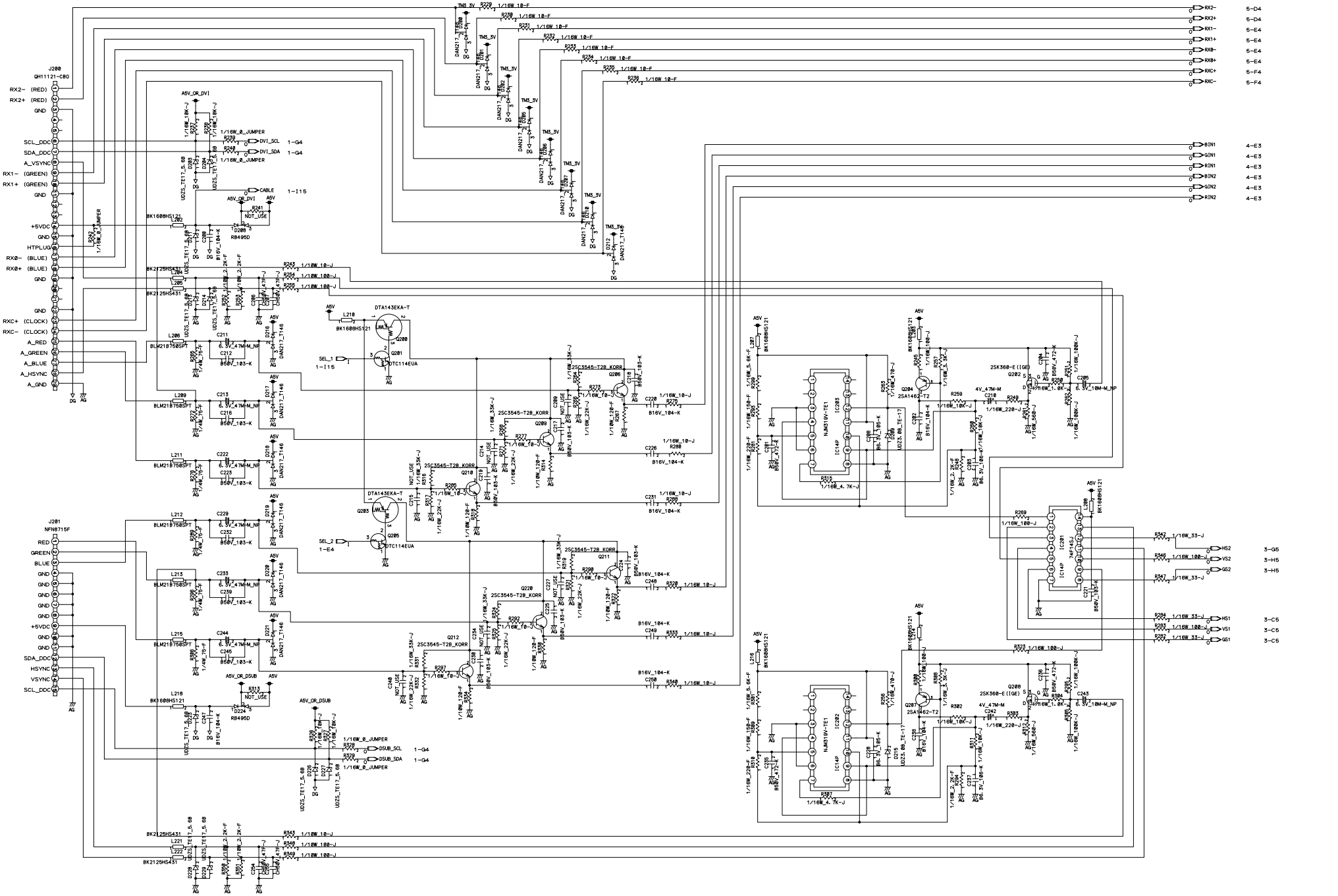


LCD1550X

SCHEMATIC DIAGRAM POWER	

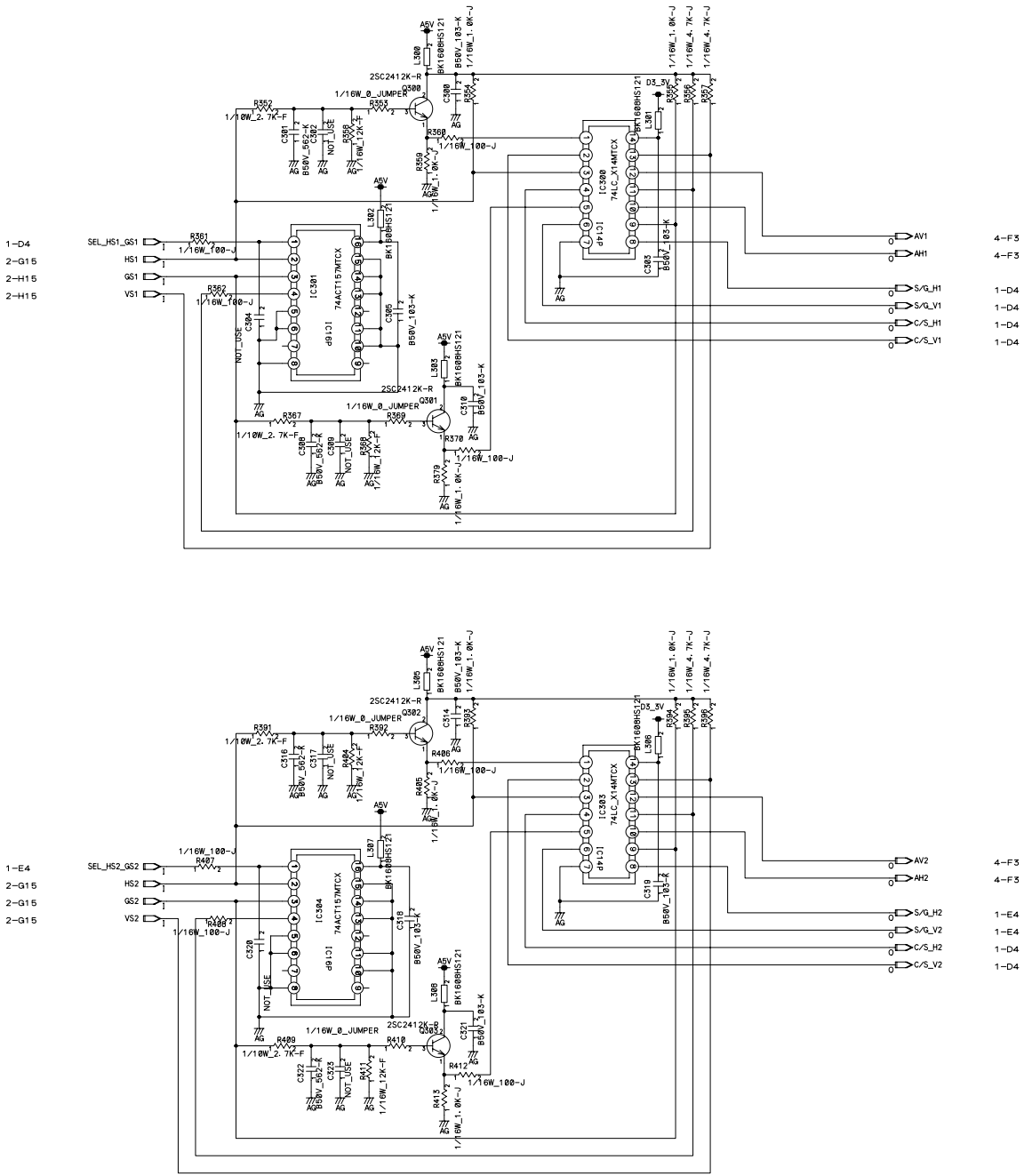
LCD1550X
SCHEMATIC DIAGRAM
PWB-MAIN (POWER)





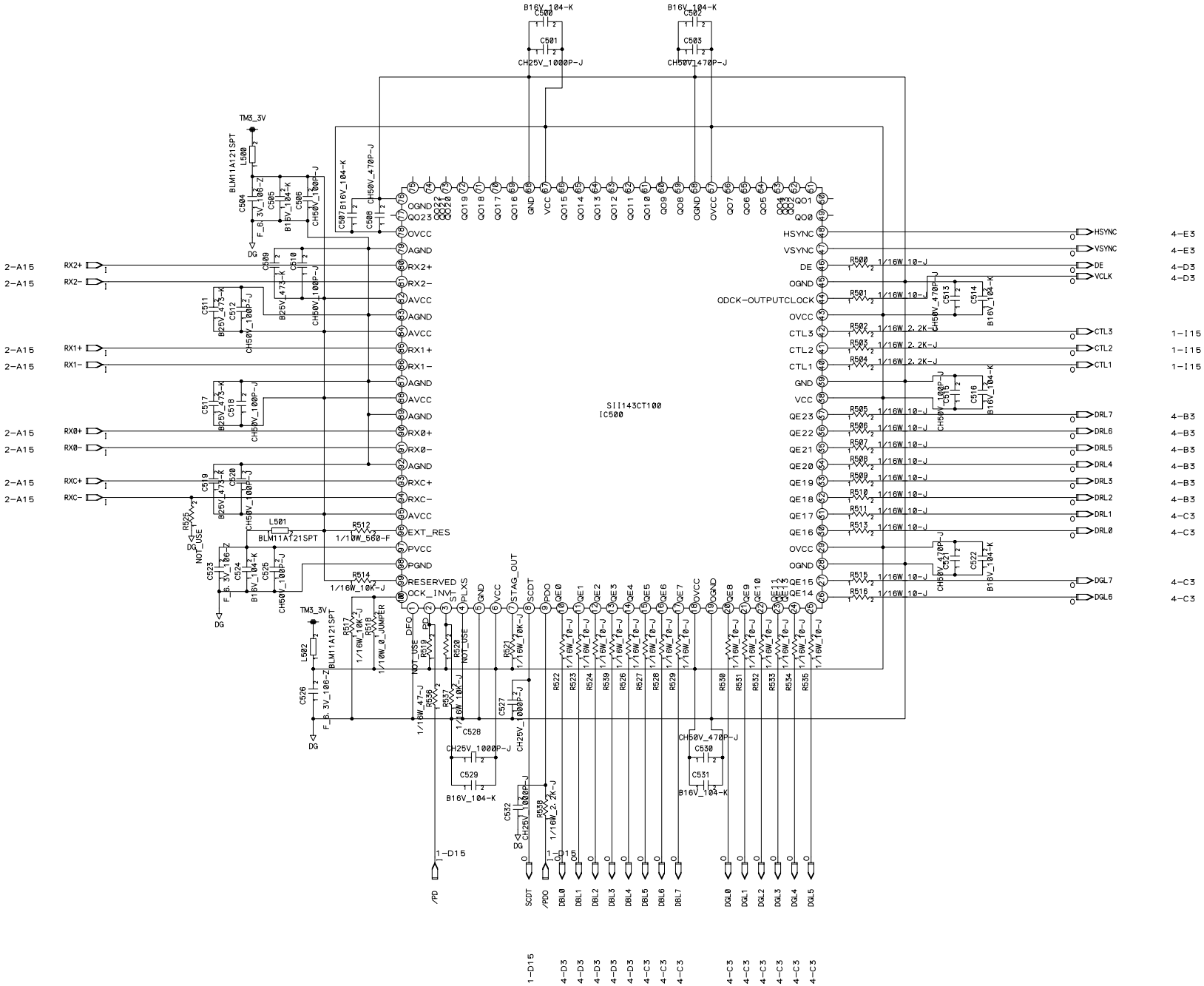
LCD1550X

SCHEMATIC DIAGRAM PWB-MAIN (INPUT)	



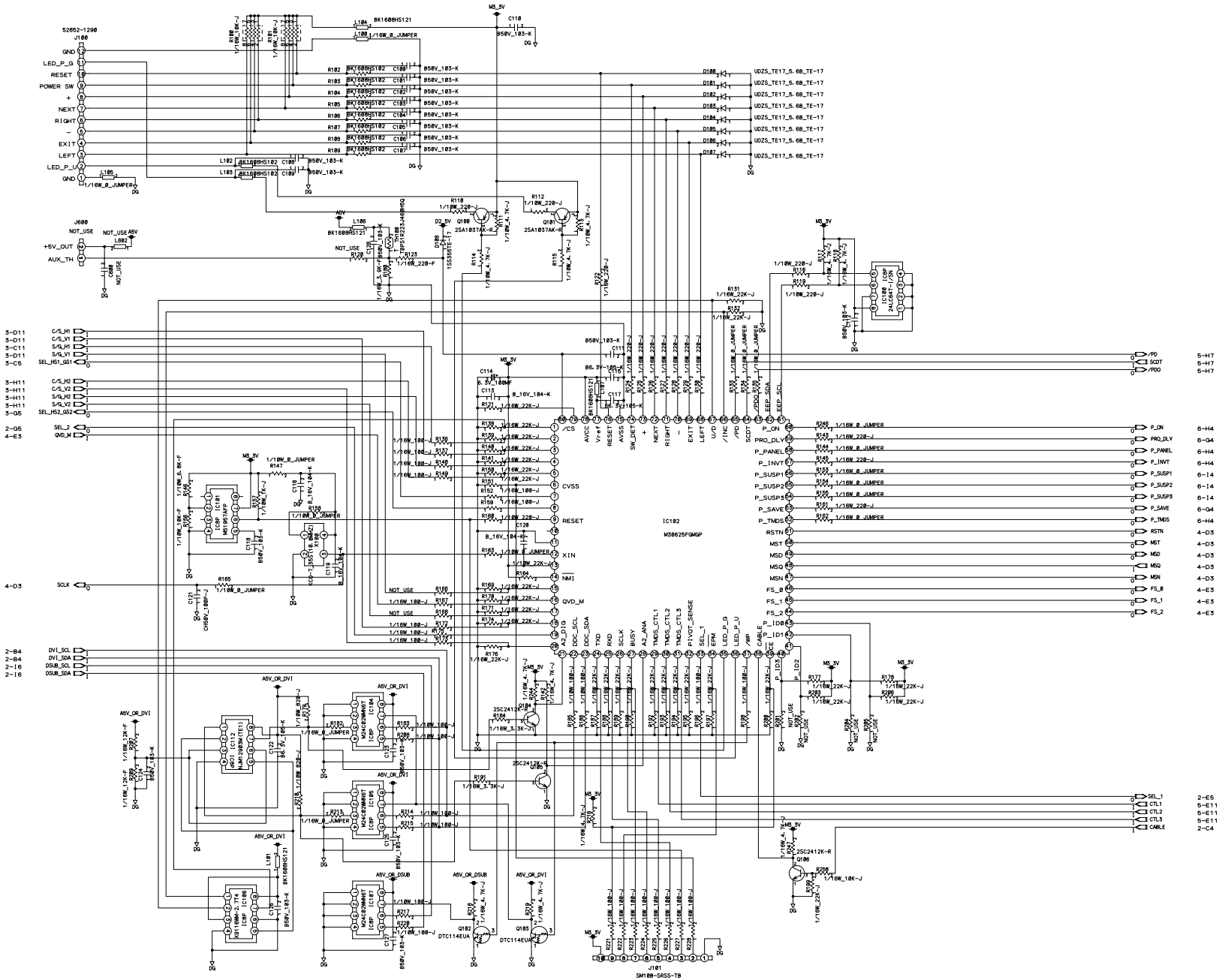
LCD1550X

SCHEMATIC DIAGRAM PWB-MAIN (SYNC)	



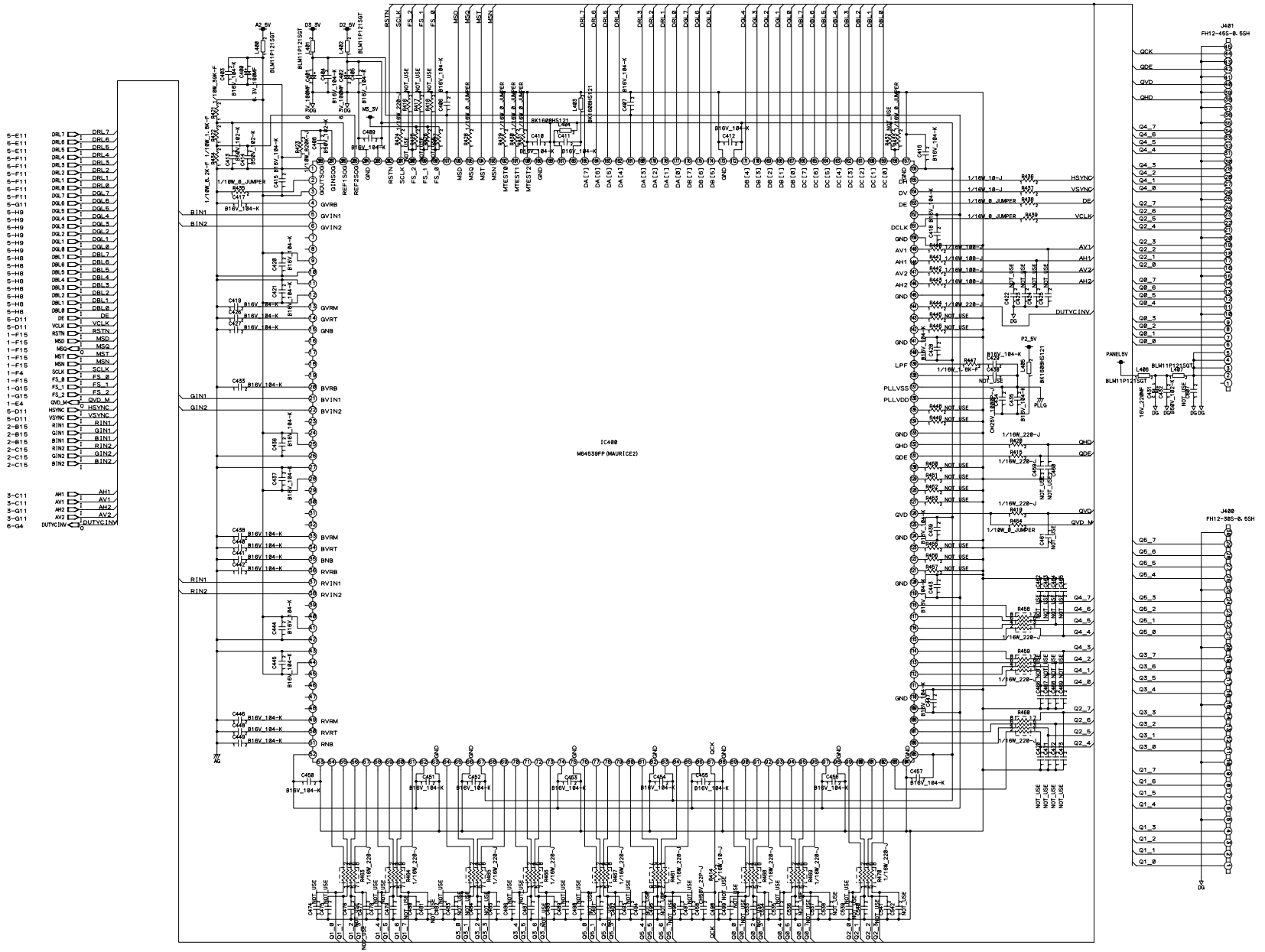
LCD1550X

SCHEMATIC DIAGRAM PWB-MAIN (TMDS)	



LCD1550X

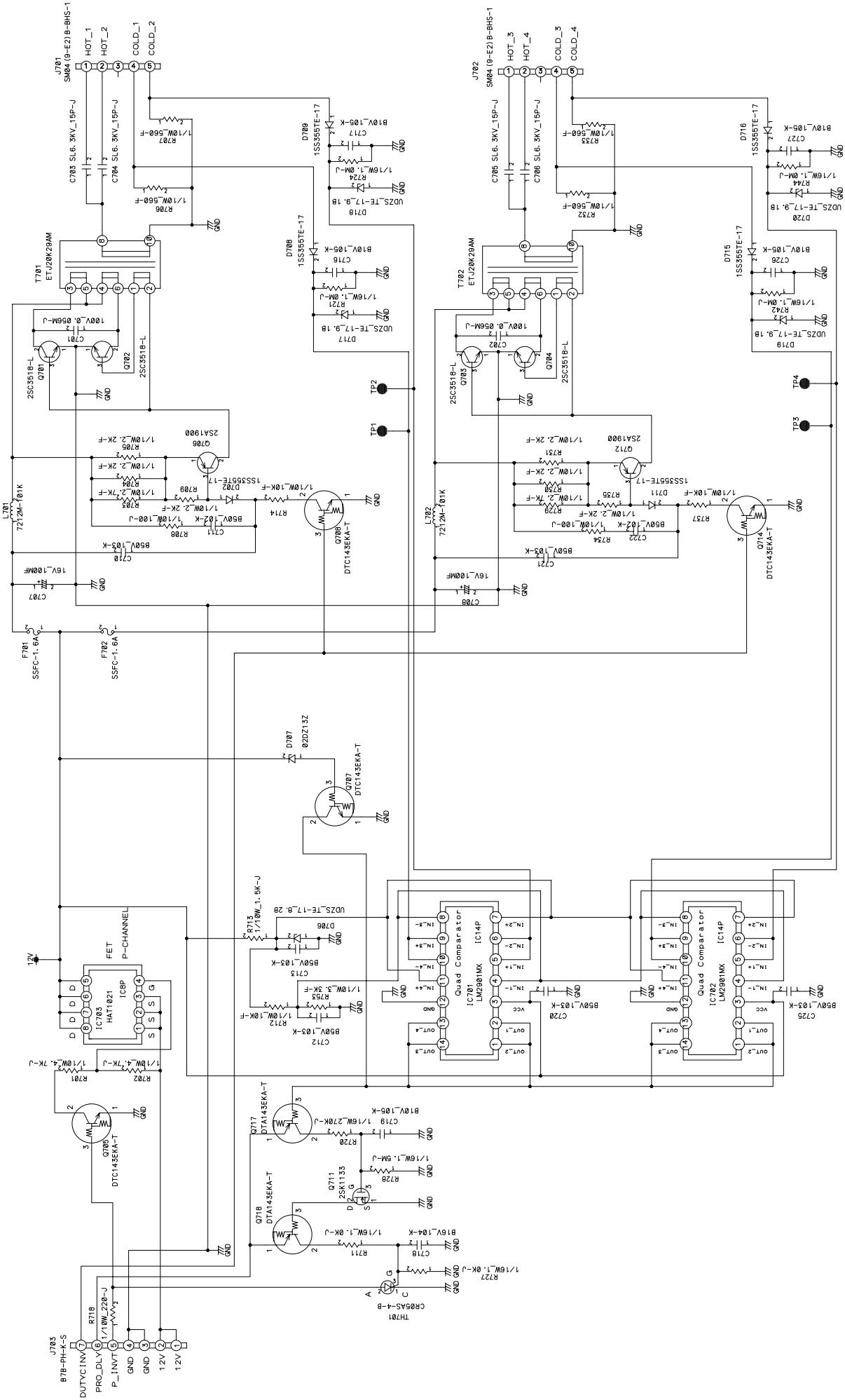
SCHEMATIC DIAGRAM PWB-MAIN (MC)	

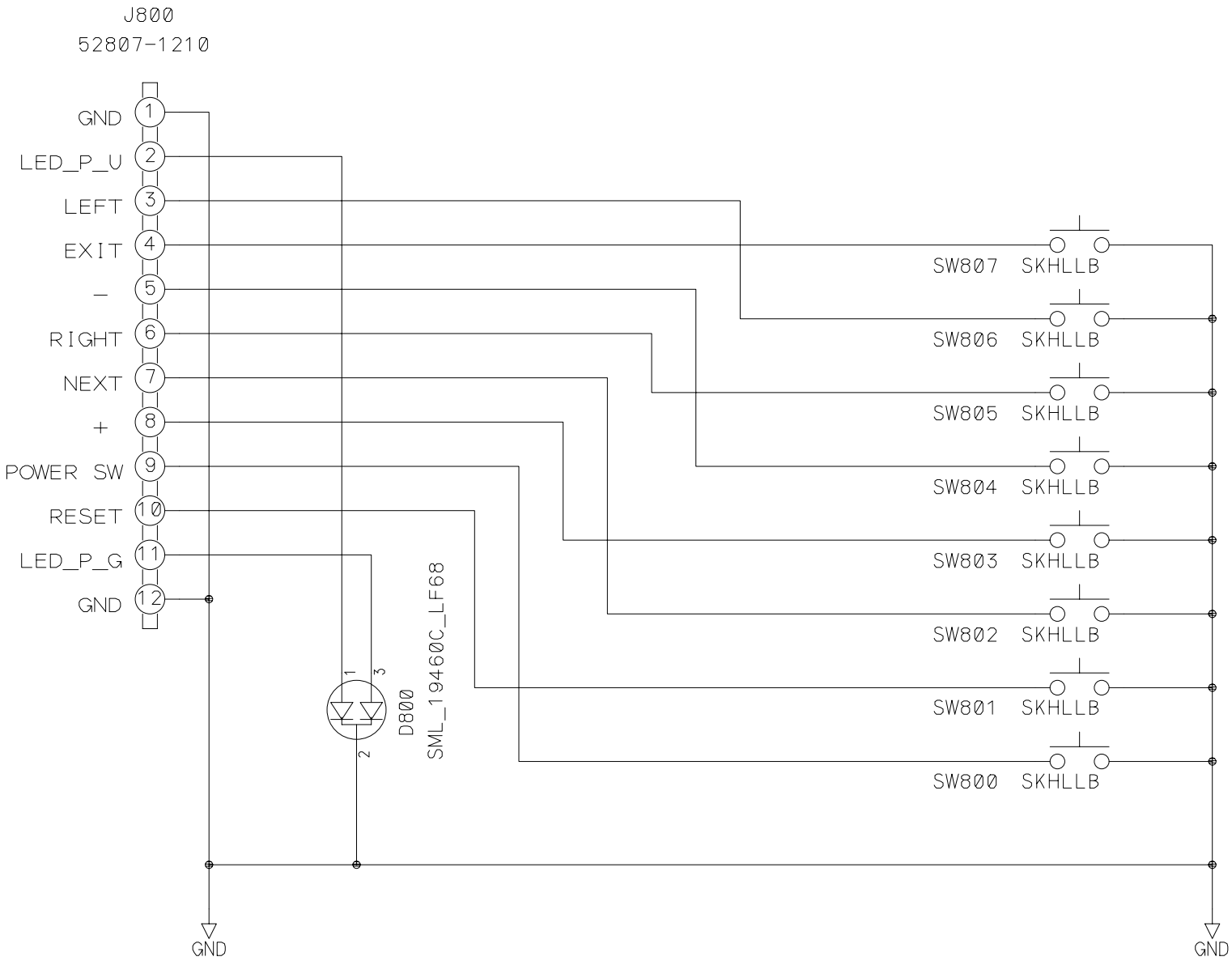


LCD1550X

SCHEMATIC DIAGRAM PWB-MAIN (ASIC)	

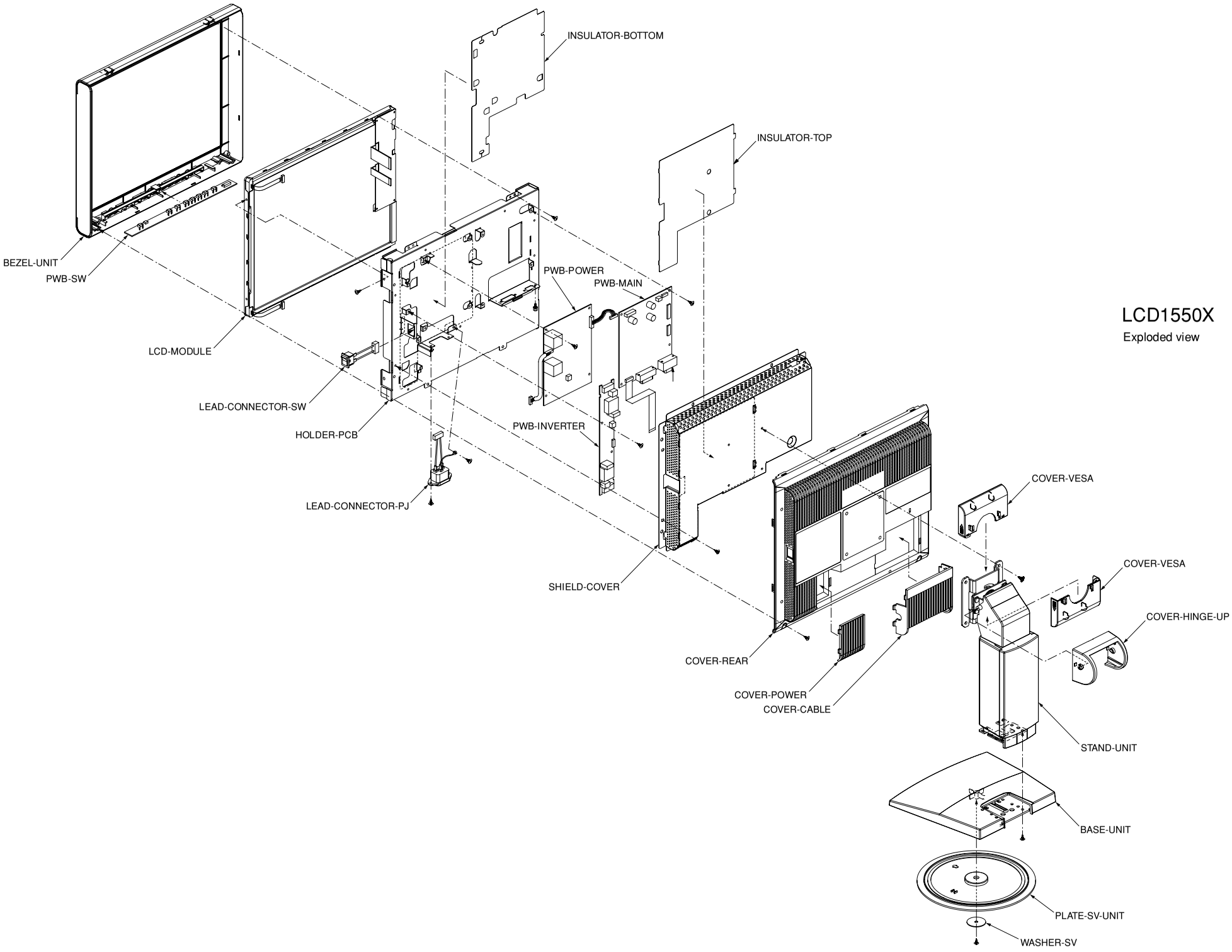
LCD1550X
SCHEMATIC DIAGRAM
INVERTER





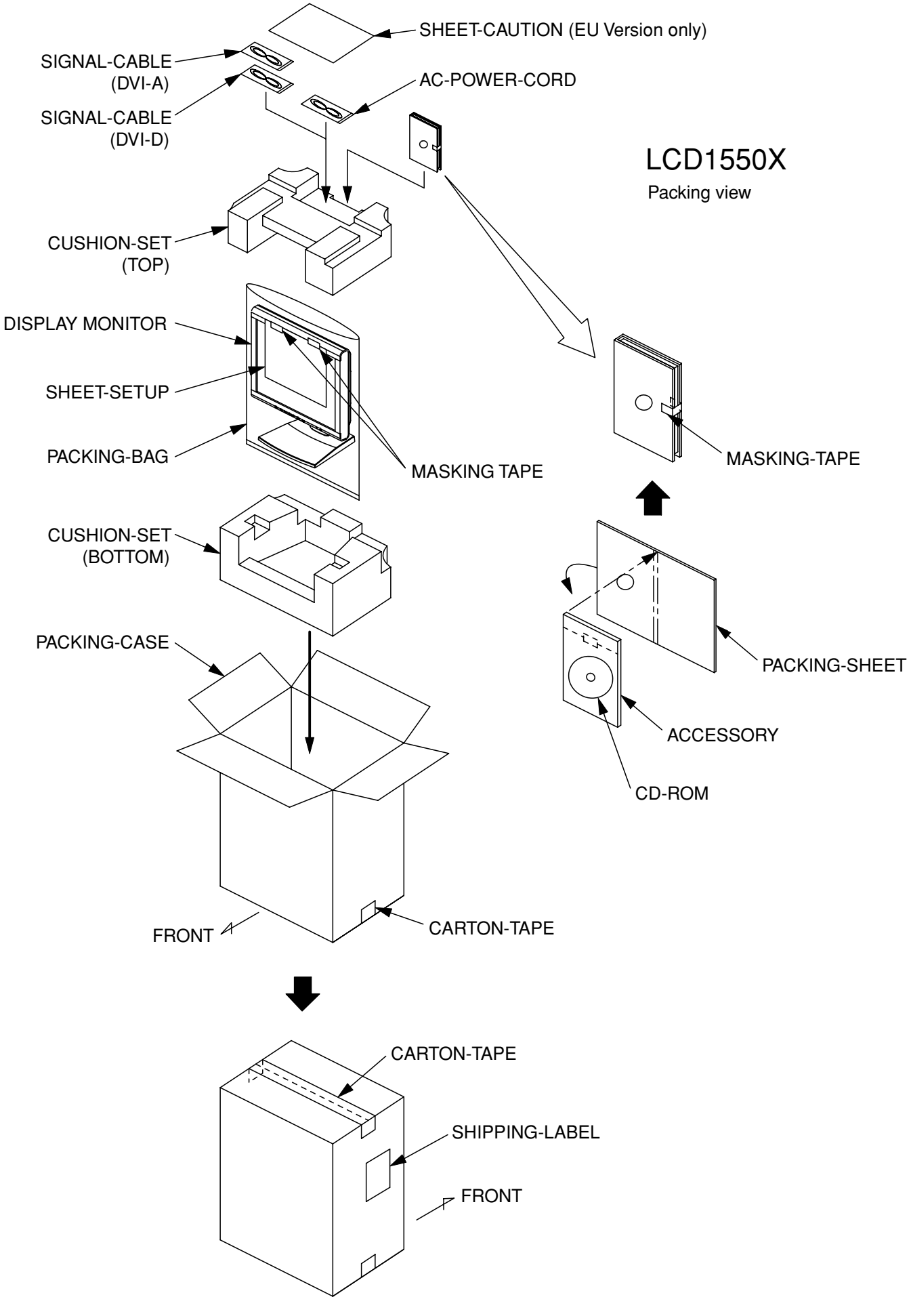
LCD1550X

SCHEMATIC DIAGRAM PWB-SW	



LCD1550X

Exploded view

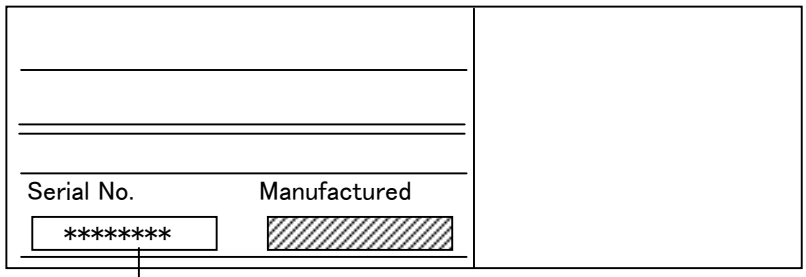

SHEET-CAUTION (EU Version only)
SIGNAL-CABLE (DVI-A)
SIGNAL-CABLE (DVI-D)
AC-POWER-CORD
LCD1550X
Packing view
CUSHION-SET (TOP)
DISPLAY MONITOR
SHEET-SETUP
PACKING-BAG
MASKING TAPE
MASKING-TAPE
CUSHION-SET (BOTTOM)
PACKING-CASE
PACKING-SHEET
ACCESSORY
CD-ROM
FRONT
CARTON-TAPE
CARTON-TAPE
SHIPPING-LABEL
FRONT

SERIAL NUMBER INFORMATION

Refer to the serial number information shown below.

Ex.) Rating label

Model name: LCD1550X



1 1 2 0 0 0 0 0 1

Manufactured Year: 0 to 9
(Last digit)

Manufactured Month: 01 to 12

Control Code: 0 to 9 or A to Z
(It is possible to use fixed no. for same destination if model name is same.)

Running No.: 00001 to 99999

NEC/MITSUBISHI
NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS

Technical Specification
For
15”TFT COLOR LCD MONITOR

Model Name : MultiSync LCD1550X
(LCD1550X / LCD1550X-BK)

DATE : Oct. 4, 2001

Drawn by

Checked by

NEC MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION
NAGASAKI WORKS

Document No. VSPF-A028

Document History

This document contains electrical and mechanical specification of LCD1550X.

Notice:
/Please use this specifications after you confirm it is latest specifications.
/If you find the difference between common specification and this specification, this specification is given priority.
Design and Specifications are subject to change without notice

Rev.	Date	Page	Description	Approved	Inspected	Drawn

*** NOTE : USE RESTRICTIONS AND LIMITATIONS**

This product is not authorized for use in life support devices or systems, military application, or other application which pose a significant risk of personal injury.
Therefore, the product shall not be used for such purpose.

TABLE of CONTENTS

Attached : Fig.1 ~ Fig.13

1 Foreword

This specification defines LCD1550X 15.0“ TFT active matrix LCD monitor.

*The LCD1550X color monitor’s wide compatibility makes it possible to upgrade adapters or software without purchasing a new monitor.

*The LCD1550X color monitor has a wider viewing angle with XtraView technology.

*By accepting analog signal inputs, the LCD1550X color monitor can display an 16million of colors depending on the graphics adapter and the software being used.

*The LCD1550X color monitor is designed to meet AC 100-240V input.

*The LCD1550X color monitor is microprocessor controlled with a resident memory base of pre-programmed screen and input configurations and also digital user controls.

*The LCD1550X color monitor automatically scans all horizontal frequencies between 30.0kHz and 60.0kHz, and all vertical frequencies between 50.0Hz and 75.0Hz.

*The LCD1550X color monitor supports the VGA, SVGA, non-interlaced XGA, Apple Macintosh family, and the other VESA compatible graphics adapters.

*The LCD1550X color monitor has a maximum horizontal resolution of 1024 dots and a maximum vertical resolution of 768 lines for superior clarity of display.

*The LCD1550X color monitor has a 15.0" diagonally measured LCD.

*The LCD1550X color monitor has a 15 pin mini D-sub connector that is configured for IBM VGA compatible adapter. And also LCD1550X color monitor has a DVI-I connector for Digital video and Analog video signal adapter.

* The LCD1550X color monitor has a ambix Technology: Dual input technology allowing both analog and digital inputs of one connector (DVI-I) as well as additional legacy analog support of a traditional 15-pin VGA connector. Provides traditional MultiSync technology compatibility for analog as well as TMDS (Transition Minimized Differential Signaling) based digital compatibility for digital inputs.

*The LCD1550X color monitor has a screen rotation mechanism and this function is more effective with Pivot software.

2 General Description (Quick Reference)

Product Specifications ***MultiSync LCD1550X***

			15" TFT Color LCD Monitor
		Analog Input	Digital Input
LCD Module		HITACHI TX38D26VC0CAA (15.0" / 38cm diagonal)	
	Pixel Pitch	0.297mm	
	Resolution	1024x768 dots (XGA)	
	Color	16,777,216	
	Brightness	250cd/m2(Typ.)	
	Contrast Ratio	300:1(Typ)	
	Viewing Angle	Up 80 / Down 80 / Left 80 / Right 80 @ CR>10	
Frequency	Horizontal	30.0kHz - 60.0kHz	30.0kHz - 60.0kHz
	Vertical	50.0-75.1 Hz	50.0-75.1 Hz
Pixel Clock		25.0MHz - 78.8MHz	25.0MHz - 78.8MHz
Viewable Size		304.1 x 228.1mm	
Power Management		Yes VESA DPMS	
Plug and Play		Yes VESA DDC2B	Yes VESA DDC2Bi, DDCCI
Auto Adjustment		Yes (Contrast / Position / Size / Phase/Clock)	
Controllable Function		Brightness / Contrast / Color control etc.	
Input Signal	Signal Drive	Separated Direct Drive	TMDS
	Video	Analog RGB 0.7V p-p Input Impedance 75Ohm Composite : level Posi /Nega Composite sync on Green Video : 0.3Vp-p Nega (video 0.7Vp-pPosi)	
	Sync	Separate level Posi / Nega	
	Input	Mini D-sub 15Pin	DVI-I(Analog and digital)
	Signal Cable	DVI-I(A) to D-Sub Cable / L= 1.8 m	DVI-D to DVI-D Cable / L= 1.8 m
	Power Supply	Universal (100-240V)	
Current Rating		0.7A @ 100 - 120V, 0.4A @ 220 - 240V	
Operational Environment	Temperature	5-35degC	
	Humidity	10-80% (without condensation)	
Storage Environment	Temperature	-20 - 60degC	
	Humidity	10-90% (without condensation)	
Dimension	Net	345.2(W) x 379.7~434.7(H) x 201.7(D) mm	
	Gross	426(W) x 480(H) x 290(D) mm	
Weight	Net	Approximately6.0kg	
	Gross	Approximately8.5kg	
Kensington compatible Security Lock		Yes	
VESA compatible arm mounting interface		Yes 75mmx75mm	
Tilt/Swivel/Rotation		Up 45deg / Down 5deg	
Complied Regulatory and Guidelines		UL/cUL/FCC-B/CE/TuVGS/TuVErgo/Ctick/PSB/AS/TCO99 /GOST/PCBC/EPA/VCCI	
Accessaries		User's manual, Power Cord x 1(2), DVI-D to DVI-D Digital Signal Cable x 1, DVI-D to DVI-A Digital Signal Cable x 1, CD-ROM, Sales Office List(B Ver), CD-ROM	

3. Electrical Characteristics

3.1 Input signals

Video signal	Analog RGB / Digital TMDS
Sync signal	Composite Sync(Negative/ Positive) Separate Sync (Negative/ Positive) Sync-on green

3.2 Signal level

Signal name	spec			Unit	Remarks
	min	Typ.	max		
Horizontal frequency	30.0		60	kHz	
Vertical frequency	50		75.1	Hz	
Video clock frequency	25.1		78.8	MHz	
Sync (TTL High level)	2.5		5.0	Volt.	Terminated 2.2K ohm to GND
Sync (TTL Low level)	0		0.8	Volt.	Terminated 2.2K ohm to GND
Analog video signal	0.6	0.7	1.0	Vp-p	Terminated 75 ohm to GND

3.3 Power Supply

Input Voltage	90 to 264VAC
Frequency	47 to 53 / 57 to 63Hz
Power Consumption(max)	38W(MAX)
AC Leakage current	3.5mA
Inrush current (cold start)	< 50A $_0$-p(AC100V) / < 90A$_0$-p (AC240V)

3.4 Power management

This function conforms DPMS of VESA, and International Energy Star Office Equipment program.

Table 3.4.1 . Power Management condition and status for ANALOG Input mode

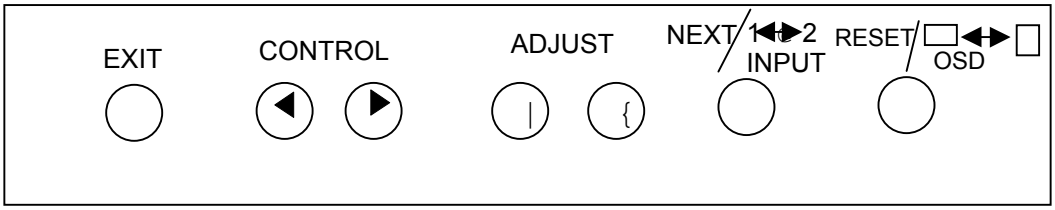
DPMS	Display	LED	Power consumption iW j	Recovery times (sec)	H-sync	V-sync
On state	normal	GREEN	< 38W	---	ON	ON
Active off	No display	AMBER	< 3W	Approx. 3sec.	OFF	ON
	No display	AMBER	< 3W	Approx. 3sec.	ON	OFF
	No display	AMBER	< 3W	Approx. 3sec.	OFF	OFF
Complete	No display	OFF	0W	N/A	N/A	N/A

Table 3.4.2 Power Management condition and status for DIGITAL Input mode

DPMS	Display	LED	Power consumption iW j	Recovery times (sec)	Signals		
					DE	H-Sync.	V-Sync.
On	normal	Green	< 38W	N/A	Pulses	ON	ON
Active OFF	No Display	Amber	< 3W	Approx. 3sec.	No Pulses	N/A	N/A
Complete	No Display	OFF	0W	N/A	N/A	N/A	N/A

4. Functions

4.1 Front control SW



4.2 OSD function

4.2.1 OSM Control

The various functions are controlled by 7 buttons on the front bezel using OSM(On Screen Manager).

4.2.2 OSM USER Menu

Group Menu	Adjustment Item	Description
Bright	Brightness	LCD back light brightness adjustment.
	Contrast	Input video gain adjustment.
	Auto Adjust Contrast (Analog input only)	Automatic Contrast adjustment.
Auto Adjust	Auto Adjust (Analog input only)	Automatically adjust the image position, H.size and fine setting
Position Controls	H-Position	Horizontal position control.
	V-Position	Vertical position control.
	H-Size	Horizontal display size adjustment.
	Fine	Clock Phase adjustment
Color Setting	Color1	Default Color : 9300K / Custom(5000k to 9600k)
	Color2	Default Color : 8200K / Custom(5000k to 9600k)
	Color3	Default Color : 7500K / Custom(5000k to 9600k)
	sRGB	Default Color : 6500K
	Color5	Default Color : 5000K / Custom(5000k to 9600k)
	Native	Panel Native Color
	Color Control	R G B Y M C S
Tool1	Sharpness	Image Enhancement
	Expansion Mode	Expanding image
	VIDEO Detect	Video detection priority
	DVI SELECTION	EDID Data Selection on DVI input
Tool2	Language	OSM menus in Seven languages
	OSD Position	Select the OSD position
	OSM Turn Off	OSM turn off time
	OSM Lock out	OSM control lock
	Resolution Notifier	ON /OFF Selection
	Factory Reset	Reset all OSM control setting s back to the factory setting
Information	Display mode	current resolution, H/V-frequency Information
	Monitor Info	Model name and Serial number information

4.3 Control Lock Mode

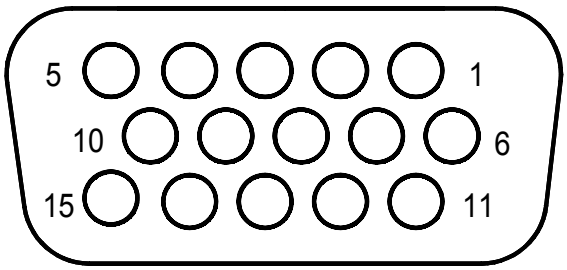
This control completely locks out access to all OSM control functions. When attempting to activate OSM controls while in the Lock Out mode, a screen will appear indicating the OSM controls are locked out.
To activate the OSM Lock Out function, press both of “select Left” and “select Right ” and hold down simultaneously.
In this mode only “OSD Rotation” and “Input 1/2 Select” function by front button are active and the other items are disable to select.
To resume back to user mode, Press both of “select Left” and “select Right ” and hold down simultaneously.

4.4 Input Signal Connectors

4.4.1 Analog Video Input : 15 pin mini D-sub

Table 3. Pin assignment for analog video input connector

PIN NO.	Separate Sync	Composite Sync	Sync On Green
1	RED		
2	GREEN		GREEN W/SYNC
3	BLUE		
4	GROUND		
5	DDC-GROUND		
6	RED VIDEO GROUND		
7	GREEN VIDEO GROUND		
8	BLUE VIDEO GROUND		
9	+5V DDC INPUT		
10	SYNC-GROUND		
11	GROUND		
12	DDC-SDA		
13	H.SYNC	H/V SYNC	
14	V.SYNC		
15	DDC-SCL		



4.4.2 Digital Interface Signals

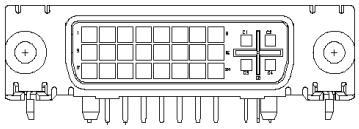
4.4.2.1 Video Signals and Sync Signals

Signal Format	Panel Link™ T.M.D.S (transition minimized differential signaling) architecture
R,G,B color depth	8 bit
Dot clock rate	80MHz maximum
minimum Hsync width	N/A (DE Only)
minimum Vsync width	N/A (DE Only)

4.4.2.2 Input Signal Connectors

Table 4. DVI Connector Pin Assignment

Pin No.	Signal Name	Pin No.	Signal Name
1	T.M.D.S. Data 2-	16	Hot Plug Detect
2	T.M.D.S. Data 2+	17	T.M.D.S. Data 0-
3	T.M.D.S. Data 2 Shield	18	T.M.D.S. Data 0+
4	N.C.	19	T.M.D.S. Data 0 Shield-
5	N.C.	20	N.C.
6	DDC Clock	21	N.C.
7	DDC Data	22	T.M.D.S. Data Clock Shield
8	Analog Vertical Sync	23	T.M.D.S. Data Clock+
9	T.M.D.S. Data 1-	24	T.M.D.S. Data Clock-
10	T.M.D.S. Data 1+	C1	Analog Red
11	T.M.D.S. Data 1 Shield	C2	Analog Green
12	N.C.	C3	Analog Blue
13	N.C.	C4	Analog Horizontal Sync
14	+5V Power	C5	Analog Ground
15	Ground (return for +5V, HSync and Vsync)		(analog R, G and B return)



DVI Compatible Host Receptacle Connector

4.5 DDC

This monitor compliance of VESA DDC 2B.
See appendix-2 for EDID data.

4.6 Other functions

4.6.1 Expand function

This monitor can expand the input image when smaller resolution than 1024 768 is input and the expanding ratio is selected by the micro-processor correspond to input signal.

4.6.2 Auto setup function

Auto setup function is performed to detect the input signal format (H/V frequency, video active area, sync pulse, and back-porch) by the internal microprocessor.
Adjustment items are as follows
H/V-position
H-Size(Clock)
Fine (Clock-Phase)

"H-Size(Clock)" and "Fine(Clock-phase)" cannot setup perfectly at some PCs.
In this case, the fine turning of "H-size" and "Fine" by manual are necessary.
If you proceed the "Auto setup" on character mode such as "Dos Prompt mode", you also cannot setup perfectly. We recommend to indicating the bright and full window pattern such as "Windows back ground" or use test pattern in the CD-ROM comes with this monitor for "Auto setup".

* Contrast, Black-level are set up by AUTO function.

5. Screen Performance

5.1 Test condition

AC voltage	120/240 VAC 60/50Hz
Video signal	1024X768 @60Hz 0.7Vp-p
Aging times	more than 30min
Temperature	20 to 25 degrees, C.
Relative humidity	40 ~80
Setting	Brightness : 100% Contrast and Display Image must be set by Auto-setup with test-pattern on the screen (Black-Level: 50%). Color : NATIVE
Ambient luminance	200 }50 cd/m^2
Luminance meter	Topcon BM5, BM-7, Prichard 1980A or same equivalent

5.2 Luminance

Luminance	more than 160 cd/m2 : L3(Center point of TFT panel)
Uniformity	more than 65%:(L min / L max) *100
Contrast	More than 160

(note 4) Judge point for brightness uniformity

Brightness uniformity is judged at nine (9) points on display area:

The brightness uniformity (Buni) is defined as the following equation.

@ @ @

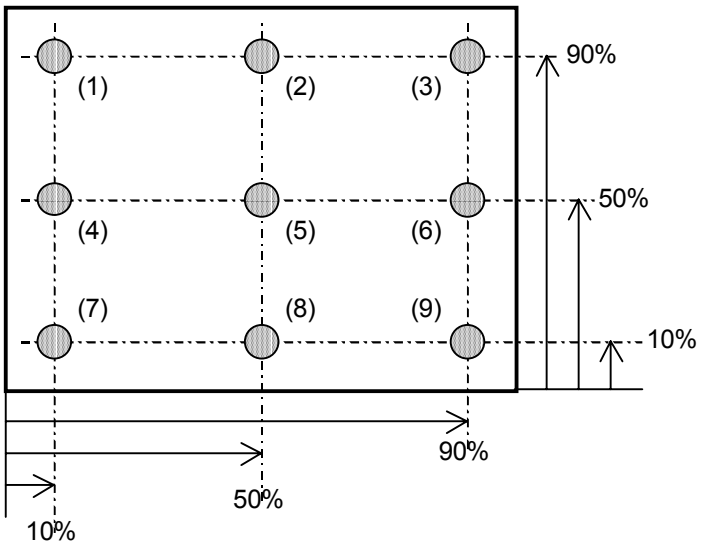
Buni = (bBmax or Bmin | Bave b ~100) ^Bave

@ @

Bmax = Maximum brightness among nine (9) measuring points

Bmin = Minimum brightness among nine (9) measuring points

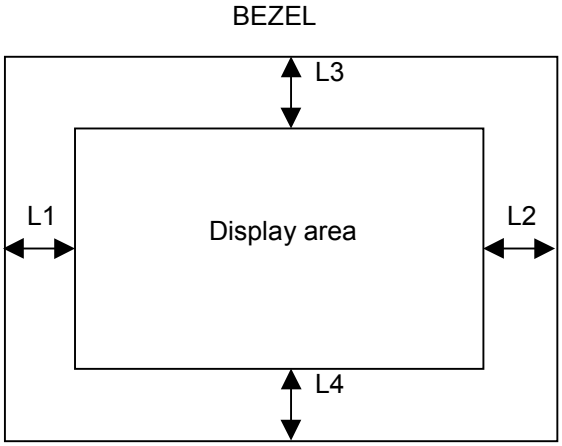
Bave =Average brightness of (1) to (9)



5.3 Color temperature

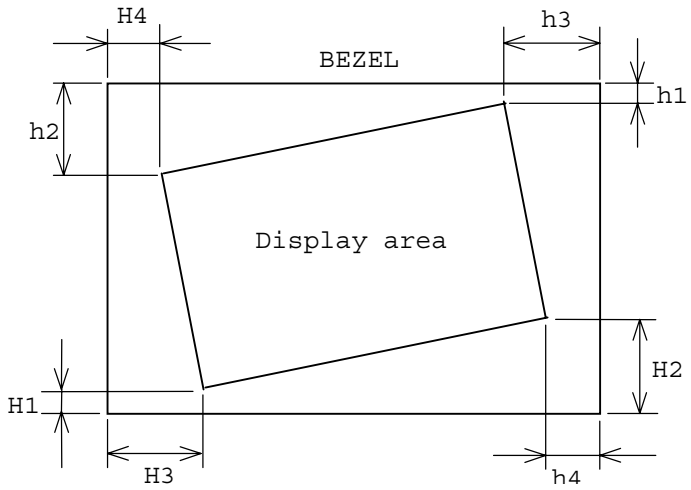
COLOR setting	NATIVE : X=0.310 +0.03, -0.03 Y=0.340 +0.03, -0.03
	Custom : 5000k ~9600k

5.4 Geometry



L1, L2, L3, L4 0mm

5.5 Rotations



H1(h1)	0mm
H2(h2)	0mm
H3(h3)	0mm
H4(h4)	0mm

6. Mechanical Specifications

6.1 Cabinet Tilt Base

Molded material	White	Cabinet FPC+ABS (Flame class : 5VB) Tilt base FPC+ABS (Flame class : 5VB)
	Black	Cabinet FPC+ABS (Flame class : 5VB) Tilt base FPC+ABS (Flame class : 5VB)
Cabinet color	White	Mist White iMitsubishi color NO. B-N-C072 j
	Black	Dark Roof Gray iMitsubishi color NO. B-N-C084 j
Tilt /Swivel Base	Tilt	Down : 5 degree, Up : 45 degrees
	Swivel	Right / Left : 173.5 degrees
Dimension		W F345.2 /H F379.7 434.7 /D F201.7mm ^See Fig.-1A(US White), Fig.-1A-BK(US Black), Fig.-1B(EU)
Control Switch		See Fig.-2A(US White), Fig.-2A-BK(US Black), Fig.-2B(EU)
Bezel Logo		See Fig.-2A(US White), Fig.-2A-BK(US Black), Fig.-2B(EU)
Logo (Rear)		See Fig.-3A(US White), Fig.-3A-BK(US Black), Fig.-3B(EU)

6.2 Rating label

See Fig.-4A (US White), Fig.-4A-BK(US Black), Fig.-4B(EU)

6.3 Carton box

Paper material	double wall corrugated fiberbord
Carton box print	See Fig.-6A(US White), Fig.-6A-BK(US Black), Fig.-6B(EU)
Outer Dimension	W: 426 mm H: 480 mm D: 290 mm See Fig.-5A
Packing style	See Fig.-7A(US White), Fig.-7A-BK(US Black), Fig.-7B(EU)

6.4 Weight

Net with Stand	Approx. 6.0kg
Net without Stand	Approx. 3.5kg
Gross	Approx. 8.5kg

6.5 Accessories

	USA		Europe
	White	Black	
AC Power code	See Fig.-8A	See Fig.-8A-BK	See Fig.-8-1B (Except U.K.) See Fig.-8-2B (U.K.)
Signal Cable	See Fig.-9-1A, Fig.-9-2A	See Fig.-9-1A-BK Fig.-9A-2A-BK	See Fig.-9-1A, Fig.-9-2A
Bar Code label	See Fig.-13A	See Fig.-13A-BK	See Fig.-15B
Use's guide	2 Languages (English , French) See Fig.-10-1A		11 Languages (English ,German ,French ,Italian ,Spanish ,Russian, Czech, Dutch, Turkish, Polish, Greek) See Fig.-10B
Set Up Sheet	See Fig.-12A		See Fig.-13B
Sales Office Sheet			See Fig.-11B
Caution Sheet			See Fig.-14B
Liquid View Brochure	See Fig.-11A		
CD-ROM	See Fig.-16		

7. Environment condition

7.1 temperature, Relative Humidity & Altitude

	Operating	Storage and shipment
Temperature	5 to 35 degrees, C.	- 20 to 60 degrees, C.
Related humidity	10 to 80 % without condensation	10 to 90% without condensation
Altitude	3,000m(10000ft)	16,000m(53333ft)

7.2 Vibration test(Packing)

Swept Sine

Test Axis	3axis
Search frequency	5 to 200 to 5Hz
Sweep time	2 minutes
Acceleration	4.91m/s^2 (0.5G) (zero to peak)
Dwelling time	5 minutes for each resonant point of each 3axis
Mounting	Fixed firmly on the vibration table

Random Vibration

Test Axis	3axis
Search frequency	5 - 200 Hz
Sweep time	2 minutes
Acceleration	0 - 14.4m/s^2 (rms)
Dwelling time	30minutes ~3axis
Mounting	Fixed firmly on the vibration table

7.3 Drop test (Packing)

Test point	Height
1 corner	76cm
3 edges	76cm
1Top surface	57cm
1 Bottom surface	81.5cm
Other 4surface	76cm

8. TFT LCD Panel Specifications

8.1 TFT LCD Panel Specifications

Item			Specifications	Remarks
LCD Module type			15.0" / 38.016 cm diagonal	
Module Dimension			331.6(H) x 255.5 (V) mm x 13.5 (D)	Unit :
Display Type			Active matrix thin-film-transistor (TFT)	
Display Mode			IPS, Normally Black	
Resolution			1024 ¡H ¡Á 768(V)	Aspect ratio 4:3
Active Display Area			304 .128(H) x 228.096(V) mm	Unit : mm
Pixel Pitch			0.297(H) x 0.297(V)	Unit : mm
Color Filter			Stripe	
Surface Treatment			Anti-glare treatment of the front polarizer	
Viewing Angle (Typical)		Horizontal(¡ã)	-80 to 80 degrees	CR>=10(*2)
		Vertical(¡ã)	-80 to 80 degrees	CR>=10(*2)
Contrast ratio			300:1(typ),	
Luminance			250 (typ),	Unit: cd/m2(*1)
Response time (typical)		Rise time	Tr = 25(Typ.)	Unit : ms
		Fall time	Tf = 25(Typ.)	Unit : ms
Back Light		Type	CCFL (X 4)	
		Life time	50,000(typical)	Unit : Hours
Color Chromaticity (typical)	Red		0.62 ¡Ó0.03	Viewing Angle = 0 degree
			0.34 ¡Ó0.03	
	Green		0.29 ¡Ó0.03	
			0.60 ¡Ó0.03	
	Blue		0.15 ¡Ó0.03	
			0.10 ¡Ó0.03	
	White		0.31 ¡Ó0.03	
			0.34 ¡Ó0.03	

NOTE: *1) These items are measured using Topcon BM5, BM-7, Prichard 1980A or same equivalent under the dark room condition.

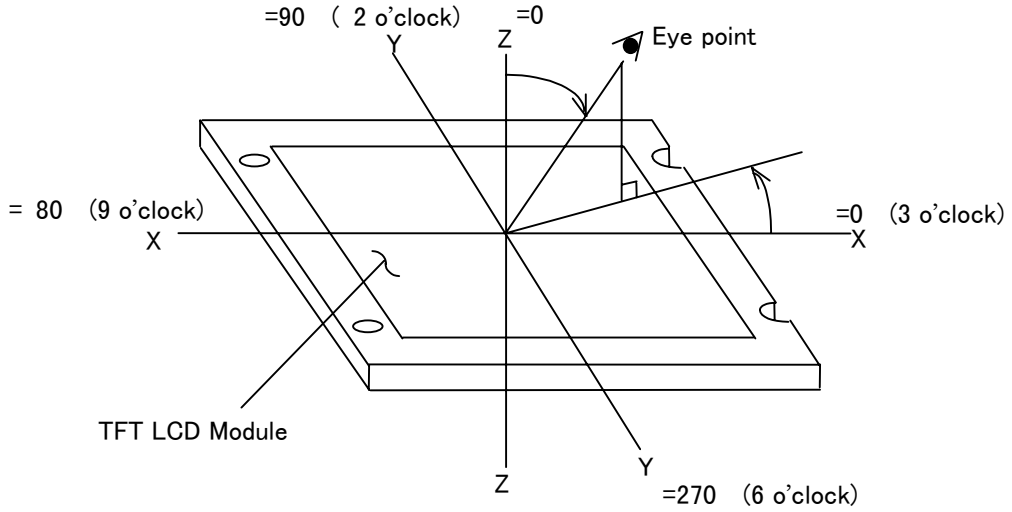
NOTE: *2) The definition of CR (Contrast Ratio)=White Luminance / black luminance

Notes

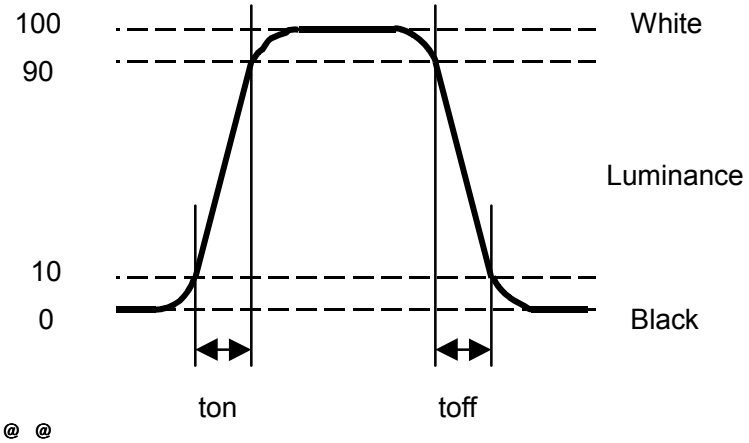
(note 1) Contrast ratio is defined as the following formula.

$$\text{Contrast ratio} = \frac{\text{Brightness(Luminance) with all pixels at "white"}}{\text{Brightness with all pixels at "black"}}$$

(note 2) Viewing angle is measured as follows:



(note 3) Definition of response time is as follows:
When the display data is changed from white to black, response time is measured.



@ @ @ @ @ @ @ @ @ @ @ @

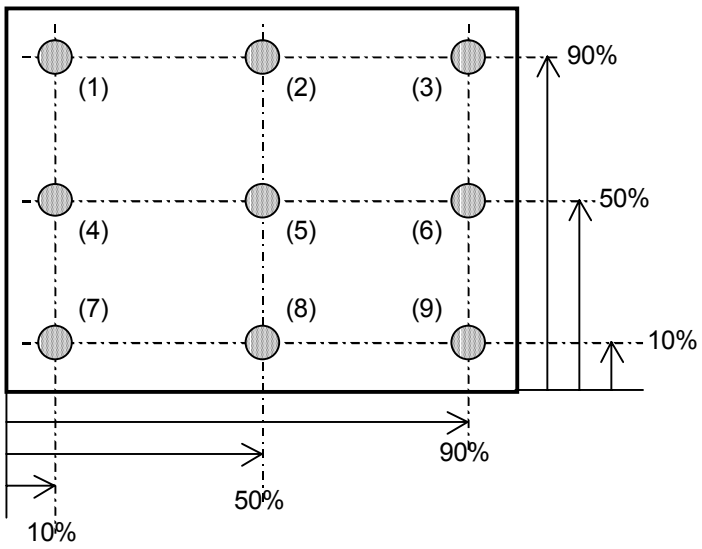
(note 4) Judge point for brightness uniformity
Brightness uniformity is judged at nine (9) points on display area:
The brightness uniformity (Buni) is defined as the following equation.

@ @ @

Buni = (bBmax or Bmin | Bave b ~100) ^Bave
@ @

Bmax = Maximum brightness among nine (9) measuring points
Bmin = Minimum brightness among nine (9) measuring points

Bave =Average brightness of (1) to (9)



8.2 Defect, Scratch and Dust

Conditions

These defects are inspected under the following conditions:

Temperature: 77+0/-9 degree. F, 25+0/-5 degree. C.

Viewing angle: Standard viewing angle (refer to below figure)

θ =< 45degree for inspection with non-lighting screen

θ =< 5 degree for inspection with lighting screen

Outside light: 500lux for inspection with lighting screen.

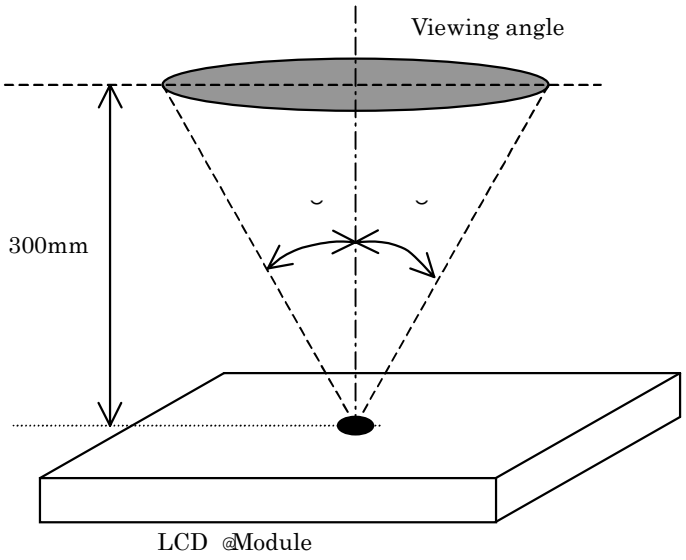
1000lux for inspection with non-lighting screen.

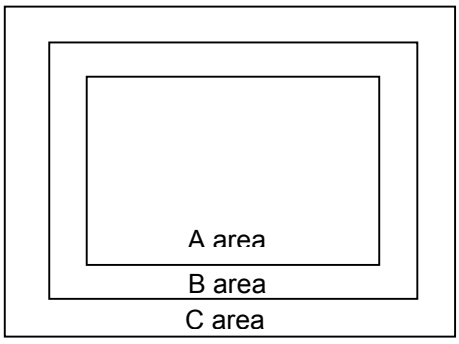
Brightness control is at its maximum point.

Distance: 300mm(refer to below figure)

Division of Zone: Only display area was specified.

(Display peripheral area and case area are not specified.





A area : Display (Pixel area)

B area : Periphery area of Display area

LCD panel area Exclude Display area

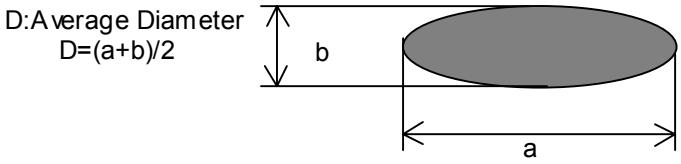
C area : Case area

8.2.1 . Inspection criteria

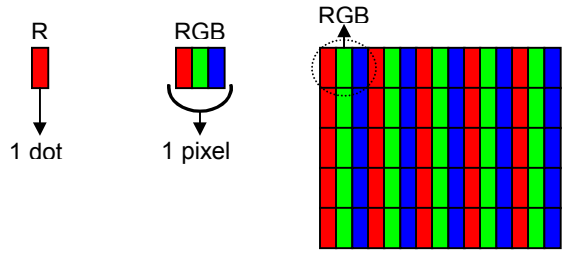
Defect Type				Acceptable A area	Unit	Note
Adjacent Fault		Luminous 2 Adjacent Dot	R+G Horizontal Adjacent, G+R Horizontal Adjacent	2	pcs	Notes1.2
		Dark 2 Adjacent Dot		2		
		Total (+)		3		
		Adjacent 3 or more Luminous Dot		0		Notes3
		Adjacent 3 or more Dark Dot		0		
Dots Fault		Dot Fault exclude ,	R.G.B(Dark dots + Luminous Dots)	4	pcs	Notes 4
Neighboring Fault		Luminous same color Neighboring Dots	Fault distance 6.5mm	Each color :2	set	Notes 5
		Closest distance between	Nearby Distance 15mm	0		Notes 6
		Fault Cluster	2 or more defect dots (D) in 5X5 pixels	2	pcs	Notes 7
			Nearby in 5X5 pixels	0	pcs	Notes 8
			Nearby in 5X5 pixels			
Total Fault		Total (Luminous dot(R.G.B) + Dark dot (R.G.B))		4	pcs	-
		Total Luminous G Dots		4		-
Mura with line shaped contrast Mura, Stain				No Perceptible at full white	-	Notes 11.12.
Dust, Stain with Line Shape W:Width(mm) L:Length(mm)	W 0.02		L : N/A		pcs	Notes 13.
	W 0.04		L 2.0	10		
			L 2.0	0		
	W 0.08		L 1.0	10		
			L 1.0	0		
	W 0.08			Refer to Dot Shape		
Dust, Stain with Dot Shape D :Average Diameter(mm)	D 0.22			N/A	pcs	Notes 13.
	D 0.4			5		
	D 0.4			0		
Scratch on Polarizer with Line Shape W:Width(mm) L:Length(mm)	W 0.01		L : N/A	N/A	pcs	Notes 14.
	W 0.02		L 40.0	10		
			L 40.0	0		
	W 0.04		L 20.0	10		
			L 20.0	0		
Scratch on Polarizer with Dot Shape D :Average Diameter(mm)	D 0.2			N/A	pcs	Notes 14.
	D 0.4			10		
	D 0.4			0		
Polarizer with Bubble / Peel off D:Average Diameter(mm)	D 0.3			N/A	pcs	Notes 14.
	D 0.5			10		
	D 1.0			5		
	D 1.0			0		
Polarizer Wave				No remarkable	-	-

Notes 9

1. Dot defect
   Defective part exceeds 30% of area at one dot.
2. Dot defective with luminous mode:
   Luminous dot which bright more than 30% ○when display the screen with all black pattern.
3. Dot defective with dark mode:
   Luminous dot which bright more than 70% ○when display the screen with all white pattern.
4. One dot defect:
   The defective isolated dot.(Start that it is not adjacent to other defective dots.)
5. Linkage (Adjacent) dots:
   To defined as linked two or more adjacent defect dots.
6. Average Diameter defined as follows.



Definition of defect dot: Defect area is out of 1/3 dot size. Defect size is confirmed by using 10 times of loupe. Also dot defects include intermittent bright and dark dots which can be recognized with the naked eye.



Note 10 : No ND Filter for luminance defects

Note 11. : A stain on the single color screen specified as follows.
Number: 1 max ○Size: 1.5mm max

Note 12. : Spot Mura judged by 128/255gradiation screen : Size : D=15mm Max

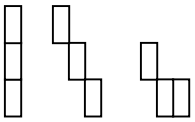
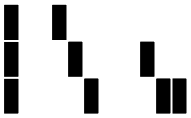
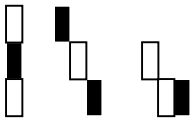
Note 13. : Ignore the thing that can be wiped out.

Note 14. : Applicable only in A area, not in B area

Note 1: Examples of “Adjacent 2 dots” are as follows

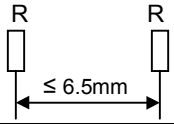
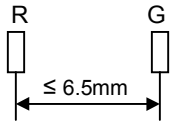
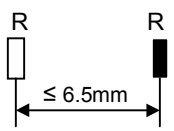
Dot defect combination	Bright dot :Dark dot	Count Criteria
R+G horizontal adjacent	Note1. 	NG
	Note1. 	NG
Combination of bright and dark dots		Allowed
Combination of different color	 etc.	Allowed

Note 2: Examples of “Adjacent 3 dots” are as follows

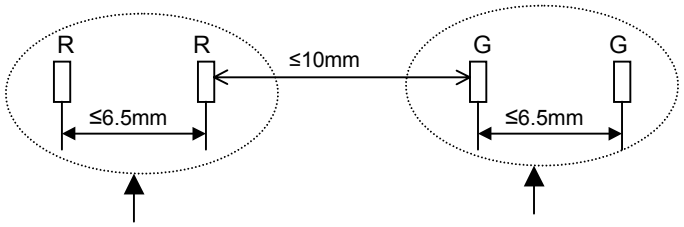
Dot defect combination	Bright dot Dark dot	Count Criteria
Adjacent 3 bright dots	Note3.  etc.	NG
Adjacent 3 dark dots	Note3.  etc.	NG
Combination of bright and dark dots	Note3.  etc.	Allowed

Note 4: Defect dots which make up @and A(R+G horizontal adjacent) are not counted.

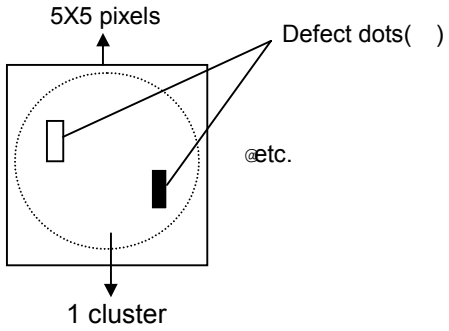
Note 5: Examples of “Distance between 2 dots ≤6.5mm” are as follows.

Dot defect combination	Bright dot Dark dot	Count Criteria
Combination of same color bright dots (R, G or B)	 etc.	≤ 2sets/each color total ≤ 6 sets
Combination of different color dots	 etc.	Allowed
Combination of bright and dark dots	 etc.	Allowed

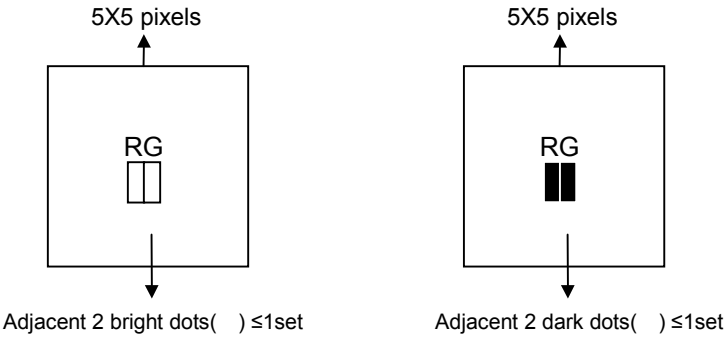
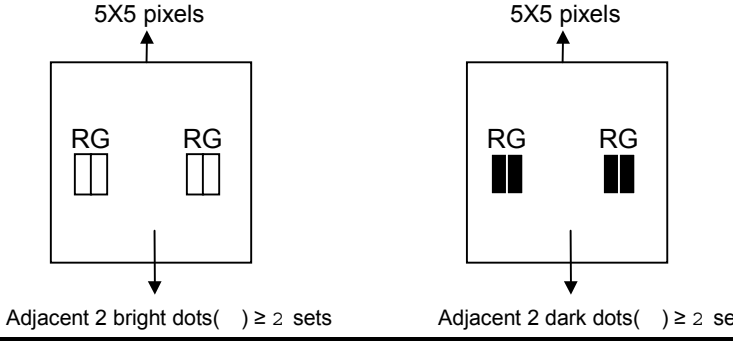
Note 6: Example of “Distance between each sets of E” is as follows.

@ @ @ @ @ @ @ Bright dot	Count Criteria
 @etc.	NG

Note 7: Example of “Cluster of defect dots ( )” is as follows.

@ @ @ Bright dot @Dark dot	Count Criteria
When 2 or more defect dot ( ) exist in 5X5 pixels, the set of the dot defect are counted as 1 cluster. 	≤ 2 cluster

Note 8: Example of “Adjacent 2 dots (@, A)in 5X5 pixels” are as follows.

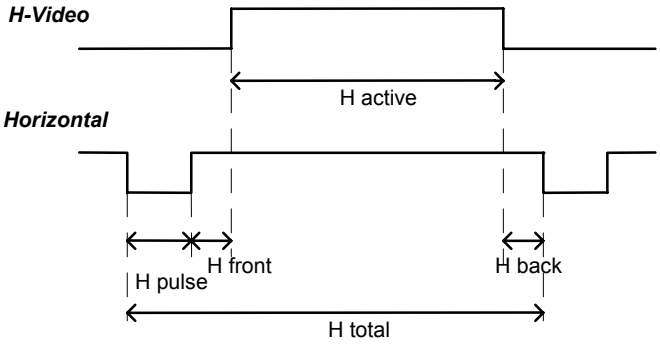
@ @ @ Bright dot @Dark dot	Count Criteria
	Allowed
	NG

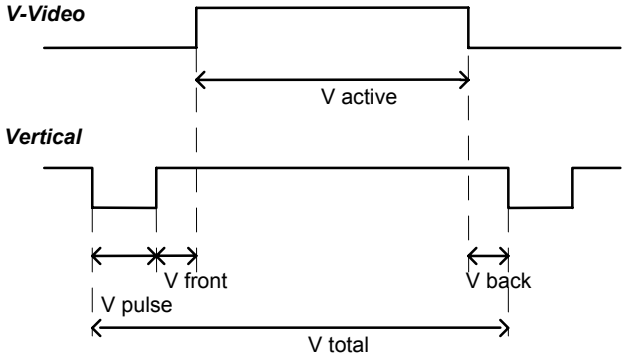
9 Notice for Handling

A LCD (Liquid Crystal Display) has the following specific characteristics. These characteristics are not indicative of a defect or malfunction.
(a) The display condition of an LCD may be affected by the ambient temperature.
(b) The LCD uses cold cathode tubes for backlight. Optical characteristics such as brightness or uniformity will change during the LCD's life time
(c) Uneven brightness and/or small spots may appear depending on different display patterns.

(1) Electrostatic discharges may cause damage to a LCD. Therefore, the user should be handle a LCD with care.
(2) The LCD display surface is made from a fragile glass material. Impulse or pressure to the LCD display surface should be avoided.
(Shock < acceleration 30G X 7msec)
(3) The surface of the polarizer is very soft and easily scratched. Do not touch, push or rub by hard thing more than HB of pencil hardness. (Even if using tissue paper, the surface of protection panel may be scratched.) Also, please do not touch it by bare hand. Use a soft dry cloth for cleaning if there is dirt on surface of panel. If dirt on surface is hard to remove, please wipe it with absorbent cotton, chamois or other soft materials absorbing Normal-Hexane recommended as cleaning chemicals.
If using another type solution, there is a possibility that the surface of the panel may become discolored. If a dirty cloth is used, there is a possibility that dirt from cloth may adhere to the surface of panel. Use a clean cloth only. A pressure onto the surface of protection panel may cause the obstruction for display)
(4) An atmosphere with high humidity should be avoided. If dew appears on the LCD monitor, the monitor should be stored for over 30minutes in dry room prior to operating.
(5) Do not store and/or operate the LCD monitor in areas of high temperature and/or high humidity. Pack the LCD monitor in electro-conductive pouch and store it under relatively low temperature atmosphere (0 - 35 degree.C / 60%RH or below), in case of a long term storage.
(6) Do not reassemble and/or readjust the LCD monitor.
(7) Do not display fixed pattern for an extended period of time may cause an after-image effect,
but it will disappear.
(8) Handle connector and cable with care.
(9) Light vertical stripes may be appeared depending on different display patterns. This is not trouble or inferior.
(10) Light horizontal stripes may be appeared depending on different display patterns. This is not trouble or inferior.
(11) Lamp start-up time also gets longer at lower temperature.
(12) Saliva and water drop on LCD display surface should be immediately wiped off since they degrade the polarizer.
(13) Optical performance of the LCD changes by the temperature. (Response time gets longer at lower temperature.)
(14) Please do not expose the LCD against the intensive light which is likely to degrade the polarizer & color filter.
(15) If scratching by on the customer side, we don't bear the responsibility.
(16) The lamp of backlight has a little mercury. Please handle it appropriately in case of disposal.

Appendix I Preset Signal Timings





Appendix II EDID Code

```
   ANALOG EDID DATA DUMP TEXT

Manufacturer Code: NEC
Product Code (HEX): 65C8
Product Code (DEC): 26056
(Microsoft INF ID: NEC65C8)
Serial Number (HEX): SN
Week of Manuf: WW
Year of Manuf: YY

EDID Version: 1
EDID Revision: 3
Extension Flag: 0

Video:
   Input Signal: ANALOG
   Setup: NO
   Sync on Green: YES
   Composite Sync: YES
   Separate Sync: YES
   V Sync Serration: NO
   V Signal Level: 0.700V/0.300V (1V p-p)

Max Image Size H: 30 cm
Max Image Size V: 23 cm
DPMS Stand By: YES
DPMS Suspend: YES
DPMS Active Off: YES
GTF Support: NO
Standard Default Color Space: YES
Preferred Timing Mode: YES
Display Type: RGB Color

Color:
   Gamma: 2.20
   Red x: 0.620
   Red y: 0.340
   Green x: 0.290
   Green y: 0.600
   Blue x: 0.150
   Blue y: 0.100
   White x: 0.310
   White y: 0.340

Established Timings:
   720x400 @ 70 Hz
   640x480 @ 60 Hz
   640x480 @ 67 Hz
   640x480 @ 72 Hz
   640x480 @ 75 Hz
   800x600 @ 56 Hz
   800x600 @ 60 Hz
   800x600 @ 72 Hz
   800x600 @ 75 Hz
   832x624 @ 75 Hz
   1024x768 @ 60 Hz
   1024x768 @ 70 Hz
   1024x768 @ 75 Hz

Standard Timing #1:
   NOT USED

Standard Timing #2:
   NOT USED

Standard Timing #3:
   NOT USED

Standard Timing #4:
   NOT USED

Standard Timing #5:
   NOT USED

Standard Timing #6:
   NOT USED

Standard Timing #7:
   NOT USED

Standard Timing #8:
   NOT USED
```

```
Detailed Timing (block #1):   ---Preferred Timing
Mode---
   Pixel Clock: 65.00 MHz                    Image: Normal Display
   Horizontal Active: 1024 pixels              Sync: Digital Separate
   Horizontal Blanking: 320 pixels             Bit 1: OFF
   Vertical Active: 768 lines                  Bit 2: OFF
   Vertical Blanking: 38 lines
   (Horizontal Frequency: 48.36 kHz)         Monitor Range Limits (block #2):
   (Vertical Frequency: 60.0 Hz)               Minimum Vertical Rate: 50 Hz
   Horizontal Sync Offset: 24 pixels           Maximum Vertical Rate: 75 Hz
   Horizontal Sync Width: 136 pixels           Minimum Horizontal Rate: 30 kHz
   Vertical Sync Offset: 3 lines               Maximum Horizontal Rate: 60 kHz
   Vertical Sync Width: 6 lines                Maximum Pixel Clock: 80 MHz
   Horizontal Border: 0 pixels                 GTF Data: 00 0a 20 20 20 20 20 20
   Vertical Border: 0 lines
   Horizontal Image Size: 304 mm             Monitor Name (block #3): NEC LCD1550X
   Vertical Image Size: 228 mm
   Interlaced: NO                            Monitor Serial Number (block #4): S2

                                             EDID EDITOR V1.44 (010306) Copyright (C)
                                             Mitsubishi Electric 1995-2000
SN: Serial number
WW: Week of Manufacture
YY: Year of Manufacture
S2: ASCII Serial Number

   ANALOG EDID DATA DUMP HEX

  00 FF FF FF FF FF FF 00
  38 A3 C8 65 SN SN SN SN
  WW YY 01 03 0E 1E 17 78
  EE C6 A4 9E 57 4A 99 26
  19 4F 57 BF EE 00 01 01
  01 01 01 01 01 01 01 01
  01 01 01 01 01 01 64 19
  00 40 41 00 26 30 18 88
  36 00 30 E4 10 00 00 18
  00 00 00 FD 00 32 4B 1E
  3C 08 00 0A 20 20 20 20
  20 20 00 00 00 FC 00 4E
  45 43 20 4C 43 44 31 35
  35 30 58 0A 00 00 00 FF
  00 S2 S2 S2 S2 S2 S2 S2
  S2 S2 S2 S2 S2 S2 00 CS

  SN: Serial number
  WW: Week of Manufacture
  YY: Year of Manufacture
  S2: ASCII Serial Number
  CS: Check Sum
```

DIGITAL EDID DATA DUMP TEXT

Manufacturer Code: NEC
Product Code (HEX): 65C8
Product Code (DEC): 26056
(Microsoft INF ID: NEC65C8)
Serial Number (HEX): SN
Week of Manuf: WW
Year of Manuf: YY

EDID Version: 1
EDID Revision: 3
Extension Flag: 0

Video:
   Input Signal : DIGITAL
   DFP Compatible: NO

Max Image Size H: 30 cm
Max Image Size V: 23 cm
DPMS Stand By: YES
DPMS Suspend: YES
DPMS Active Off: YES
GTF Support: NO
Standard Default Color Space: YES
Preferred Timing Mode: YES
Display Type: RGB Color

Color:
   Gamma: 2.20
   Red x: 0.620
   Red y: 0.340
   Green x: 0.290
   Green y: 0.600
   Blue x: 0.150
   Blue y: 0.100
   White x: 0.310
   White y: 0.340

Established Timings:
   720x400 @ 70 Hz
   640x480 @ 60 Hz
   640x480 @ 67 Hz
   640x480 @ 72 Hz
   640x480 @ 75 Hz
   800x600 @ 56 Hz
   800x600 @ 60 Hz
   800x600 @ 72 Hz
   800x600 @ 75 Hz
   832x624 @ 75 Hz
   1024x768 @ 60 Hz
   1024x768 @ 70 Hz
   1024x768 @ 75 Hz

Standard Timing #1:
   NOT USED

Standard Timing #2:
   NOT USED

Standard Timing #3:
   NOT USED

Standard Timing #4:
   NOT USED

Standard Timing #5:
   NOT USED

Standard Timing #6:
   NOT USED

Standard Timing #7:
   NOT USED

Standard Timing #8:
   NOT USED

```
Detailed Timing (block #1):  ---Preferred Timing Mode---

Pixel Clock: 65.00 MHz                        Interlaced: NO
   Horizontal Active: 1024 pixels             Image: Normal Display
   Horizontal Blanking: 320 pixels            Sync: Digital Separate
   Vertical Active: 768 lines                 Bit 1: OFF
   Vertical Blanking: 38 lines                Bit 2: OFF
   (Horizontal Frequency: 48.36 kHz)       Monitor Range Limits (block #2):
   (Vertical Frequency: 60.0 Hz)              Minimum Vertical Rate: 50 Hz
   Horizontal Sync Offset: 24 pixels          Maximum Vertical Rate: 75 Hz
   Horizontal Sync Width: 136 pixels          Minimum Horizontal Rate: 30 kHz
   Vertical Sync Offset: 3 lines              Maximum Horizontal Rate: 60 kHz
   Vertical Sync Width: 6 lines               Maximum Pixel Clock: 80 MHz
   Horizontal Border: 0 pixels                GTF Data: 00 0a 20 20 20 20 20 20
   Vertical Border: 0 lines
   Horizontal Image Size: 304 mm           Monitor Name (block #3): NEC LCD1550X
   Vertical Image Size: 228 mm             Monitor Serial Number (block #4): S2

SN: Serial number
WW: Week of Manufacture
YY: Year of Manufacture
S2: ASCII Serial Number

EDID EDITOR V1.44 (010306) Copyright (C) Mitsubishi Electronic 19
```

DIGITAL EDID DATA DUMP HEX

```
00 FF FF FF FF FF FF 00
38 A3 C8 65 SN SN SN SN
WW YY 01 03 80 1E 17 78
EE C6 A4 9E 57 4A 99 26
19 4F 57 BF EE 00 01 01
01 01 01 01 01 01 01 01
01 01 01 01 01 01 64 19
00 40 41 00 26 30 18 88
36 00 30 E4 10 00 00 18
00 00 00 FD 00 32 4B 1E
3C 08 00 0A 20 20 20 20
20 20 00 00 00 FC 00 4E
45 43 20 4C 43 44 31 35
35 30 58 0A 00 00 00 FF
00 S2 S2 S2 S2 S2 S2 S2
S2 S2 S2 S2 S2 S2 00 CS

SN: Serial number
WW: Week of Manufacture
YY: Year of Manufacture
S2: ASCII Serial Number
CS: Check Sum
```

Appendix III Preset Timing Chart

m n	Timing	Dot Clock (MHz)	Horizontal						Vertical						HS,VS
			Freq. Fh (KHz)	Period sh (˚S)	Pulse Width shs (˚S)	Front Porch Thf (˚S)	Back Porch Thb (˚S)	Display Time Thd (˚S)	Freq. FV (Hz)	Period sv (ms)	Pulse Width svs (ms)	Front Porch Tvf (ms)	Back Porch Tvb (ms)	Display Time Tvd (ms)	
1	MAC13	30.24	35.0 (Dot)	28.57 864	2.12 64	2.12 64	3.17 96	21.16 640	66.67 (Line)	15.00 525	0.09 3	0.09 3	1.11 39	13.71 480	N AN
2	MAC16	57.24	49.0 (Dot)	20.13 1152	1.12 64	0.56 32	3.91 224	14.54 832	74.52 (Line)	13.42 667	0.06 3	0.02 1	0.78 39	12.56 624	N AN
3	VGA350	25.175	34.7 (Dot)	31.78 800	3.81 96	0.64 16	1.91 48	25.42 640	70.08 (Line)	14.27 449	0.06 2	1.18 37	1.91 60	11.12 350	P AN
4	VGA60	25.175	34.7 (Dot)	31.78 800	3.81 96	0.64 16	1.91 48	25.42 640	59.94 (Line)	16.68 525	0.06 2	0.32 10	1.05 33	15.25 480	N AN
5	VGA75	31.50	37.5 (Dot)	26.67 840	2.03 64	0.51 16	3.81 120	20.32 640	75.00 (Line)	13.33 500	0.08 3	0.03 1	0.43 16	12.80 480	N AN
6	VESA720	28.32	34.7 (Dot)	31.78 900	3.81 108	0.64 18	1.91 54	25.42 720	70.08 (Line)	14.27 449	0.06 2	0.41 13	1.08 34	12.71 400	N AP
7	SVGA56	36.00	35.6 (Dot)	28.44 1024	2.00 72	0.67 24	3.56 128	22.22 800	56.25 (Line)	17.78 625	0.06 2	0.03 1	0.63 22	17.07 600	P AP
8	SVGA60	40.00	37.8 (Dot)	26.40 1056	3.20 128	1.00 40	2.20 88	20.00 800	60.32 (Line)	16.58 628	0.11 4	0.03 1	0.61 23	15.84 600	P AP
9	SVGA72	50.00	48.0 (Dot)	20.80 1040	2.40 120	1.12 56	1.28 64	16.00 800	72.19 (Line)	13.85 666	0.12 6	0.77 37	0.48 23	12.48 600	P AP
10	SVGA75	49.50	46.8 (Dot)	21.33 1056	1.62 80	0.32 16	3.23 P60	16.16 800	75.00 (Line)	13.33 625	0.06 3	0.02 1	0.45 21	12.80 600	P AP
11	XGA60	65.00	48.6 (Dot)	20.68 1344	2.09 136	0.37 24	2.46 160	15.75 1024	60.00 (Line)	16.67 806	0.12 6	0.06 3	0.60 29	15.88 768	N AN
12	XGA70	75.00	56.8 (Dot)	17.71 1328	1.81 136	0.32 24	1.92 144	13.65 1024	70.07 (Line)	14.27 806	0.11 6	0.05 3	0.51 29	13.60 768	N AN
13	XGA72	78.08	58.0 (Dot)	17.21 1344	1.72 134	0.33 26	2.05 160	13.11 1024	72.08 (Line)	13.87 806	0.10 6	0.05 3	0.50 29	13.22 768	N AN
14	XGA75	78.75	60.2 (Dot)	16.66 1312	1.22 96	0.20 16	2.23 176	13.00 1024	75.03 (Line)	13.33 800	0.05 3	0.02 1	0.47 28	12.80 768	P AP
15	XGA60	65.00	48.36 (Dot)	20.68 1344	2.09 136	0.37 24	2.46 160	15.75 1024	60.00 (Line)	16.67 806	0.12 6	0.06 3	0.60 29	15.88 768	P AP
16	VGA73	31.5	37.86 (Dot)	26.41 832	1.27 40	0.76 24	4.06 128	20.32 640	72.81 (Line)	13.73 520	0.08 3	0.24 9	0.74 28	12.68 480	N AN
17	SUN	70.49	52.45	19.04 1344	1.93 136	0.34 24	1.27 160	14.53 1024	65.07	15.37 806	0.11 6	0.06 3	0.55 29	14.64 768	P AN
18	PAL	27	31.25	32 864	3.59 97	1.74 47	0.7 19	25.95 701	50	20 625	0.39312	1.13 35	0.0722	18.4 575	N AN

Appendix IV Regulation

	Regulation	Country	Version			Comments
			A (U.S.A.)	B (EU)	C (China)	
Safety	¡ UL 1950	U.S.A.				
	¡ CSA C22.2 No.950	Canada				
	¡ TUV-GS (EN60950+ZH1/618)	Germany				
	¡ EN60950	EU				
	SEMKO NEMKO DEMKO FIMKO	North Europe				
	¡ PSB	Singapore				
	¡ AS	Australia				
	¡ CCIB	China				
	¡ GOST	Russia				
	¡ PCBC	Poland				
	¡	Korea				
d l b	¡ FCC (Class A ¡ Class B)	U.S.A.				
	¡ DOC (Class A ¡ Class B)	Canada				
	¡ VCCI (Class A ¡ Class B)	Japan				
	¡ EN55022 (Class A ¡Class B) ¡ EN50082-1 (EMS) EN61000-3-2 ¡ EN61000-3-3	EU				EN61000-3-2N/A due to Power Consumption : less than 50W
	AS/NZS 3548 (EMC Framework)	Australia				
	¡ Ctick	Australia				
	¡ BSMI	Taiwan				
	¡ CCIB	China				
	¡ GOST	Russia				
	¡ PCBC	Poland				
	¡	Korea				
VLF/ELF	¡ MPR-11 ¡ TCO91					
Ergonomics	¡ ISO13406-2 (TUV-ISO)					
	¡TUV-ERGO (MPR-11+ISO13406-2)					
Power Save	Energy2000					
	¡ EPA	U.S.A.				
	¡International Energy Star Office Equipment program					
Others	¡ CE˘ • ,	EU				
	¡ TUV-ERGO (MPR-11+ISO13406-2)					
	TCO92 (EN60950+TC091+NUTEK)					
	¡ TCO95 (TCO92+Erg{Environment)					Black cabinet
	¡ TCO99 (TCO95+ Erg{Environment)					Exclude for Black cabinet

LCD1550X OUTLINE

NOTE :

- CABINET COLOR : MIST WHITE MC-8510
- TILT ANGLE : +45˚ ~ -5˚
- SWIVEL : +173.5˚ ~ -173.5˚
- HIGH ADJUST : 55mm
- PIVOT
- WEIGHT

  WITH STAND : APPROX 6.0 kg

  WITHOUT STAND : APPROX 3.5 kg

SCALE : 1/5
DIMENSION IN mm.

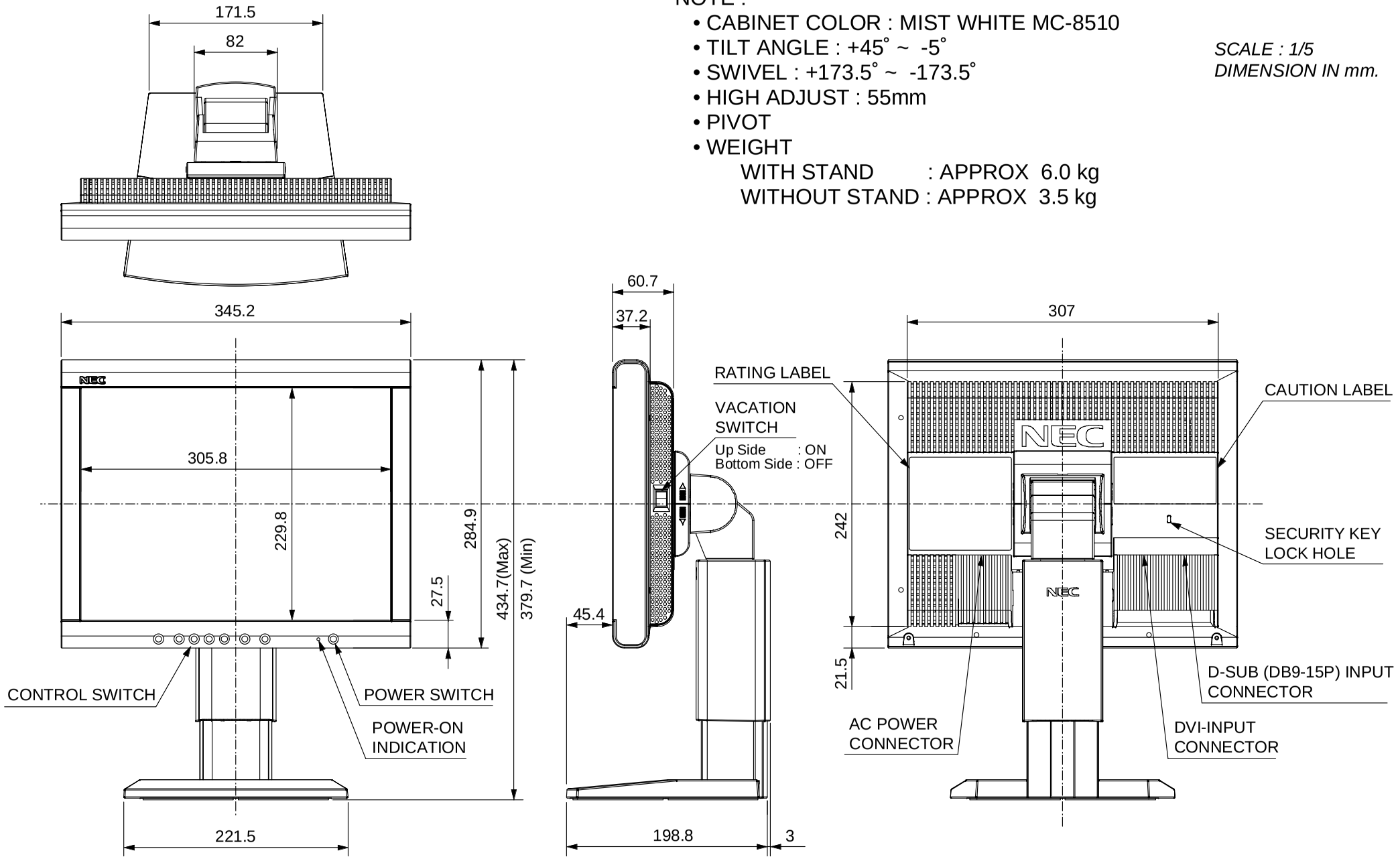
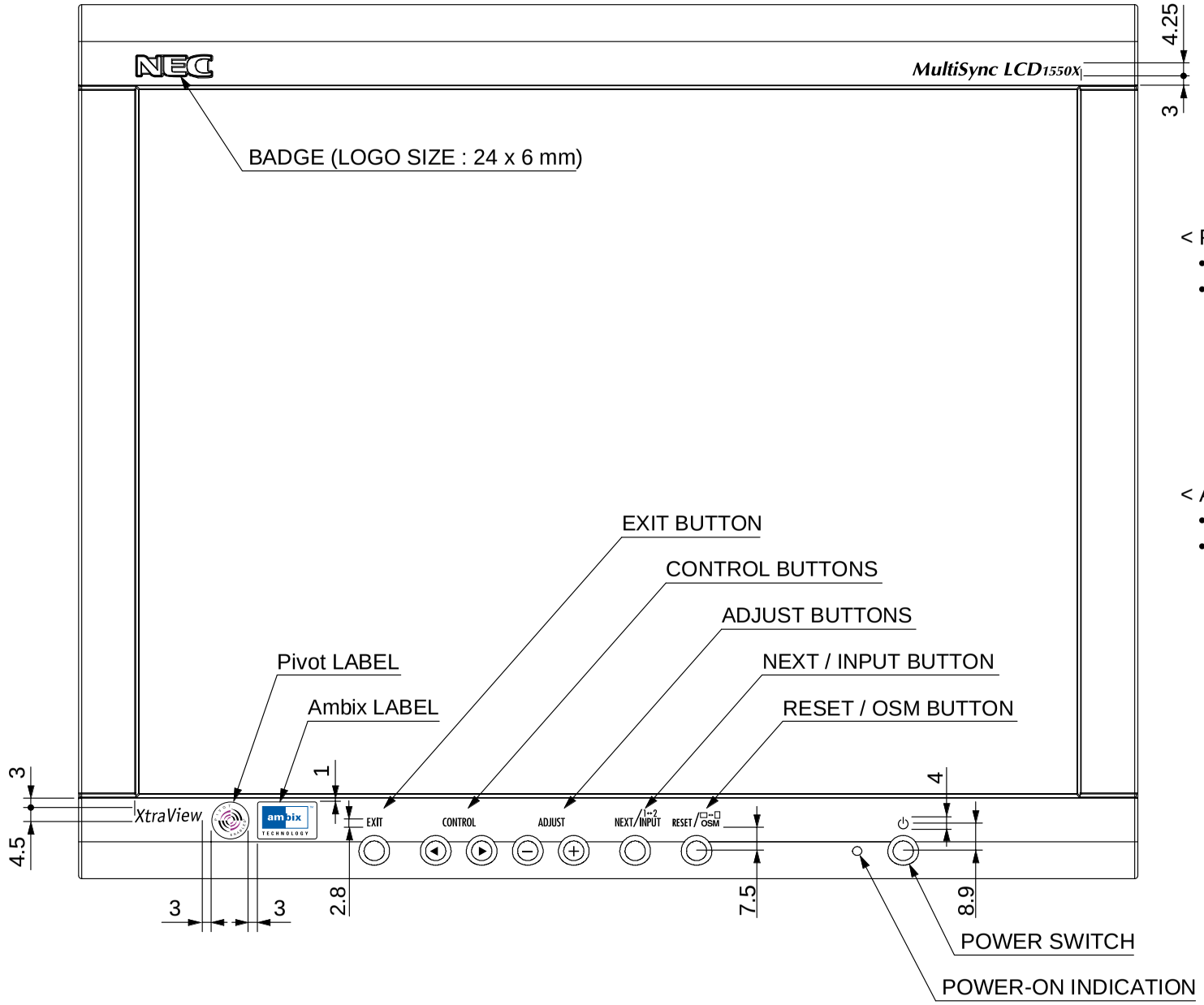


Fig.-1A

LCD1550X LOCATION OF FRONT LOGO

• COLOR OF LETTERING : REAL GRAY SILVER EC-0790

SCALE : 1/2
DIMENSION IN mm.



< Pivot LABEL >
- COLOR OF MATERIAL : TRANSPARENCY
- COLOR OF LETTERING : PURPLE (Pantone 254)
  BLACK

< Ambix LABEL >
- COLOR OF MATERIAL : SILVER
- COLOR OF LETTERING : BLUE (Pantone 2728)
  BLACK

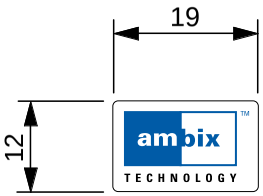


Fig.-2A

LCD1550X LOCATION OF REAR LOGO

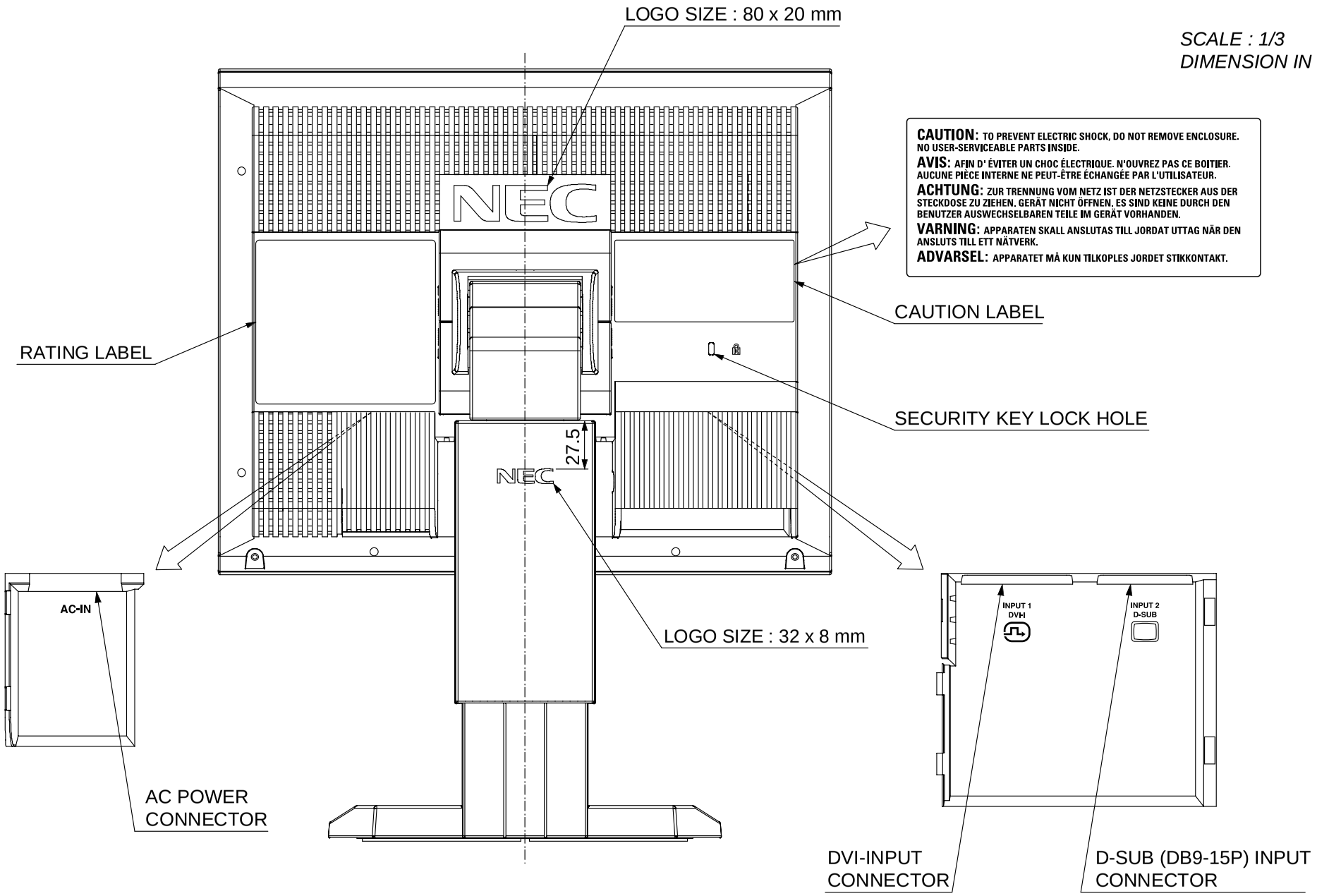


Fig.-3A

LCD1550X RATING LABEL

- BACK GROUND COLOR : CABINET COLOR (MIST WHITE)
- LETTERING COLOR : DARK REAL GRAY #8505

SCALE : 1/1
DIMENSION IN mm.

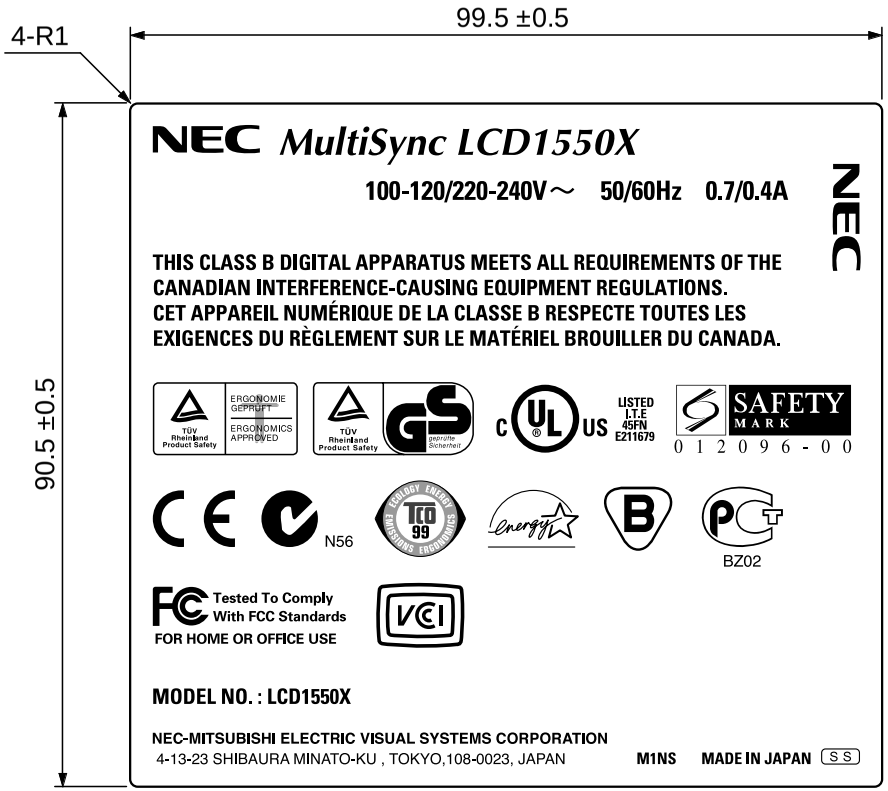
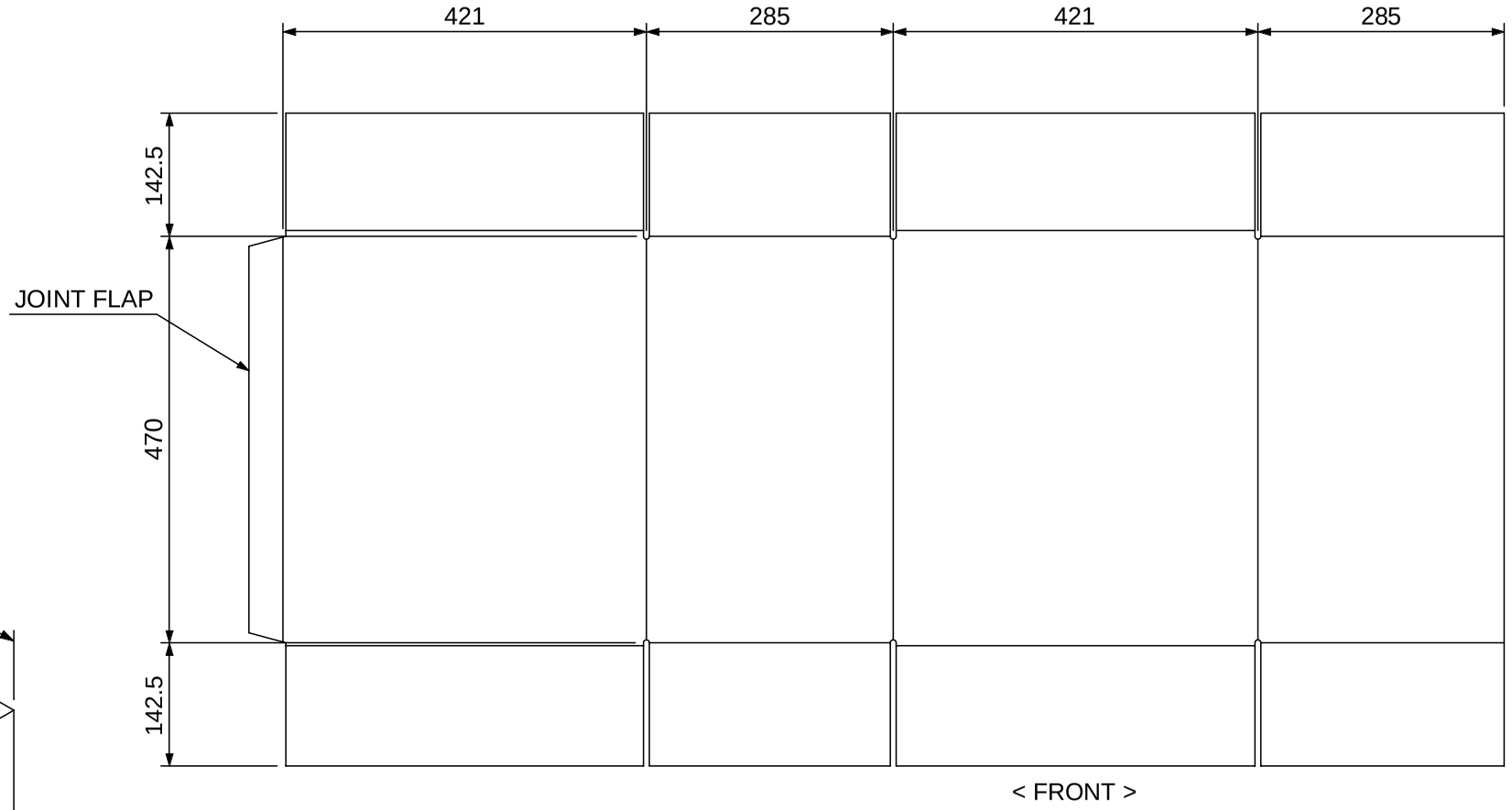


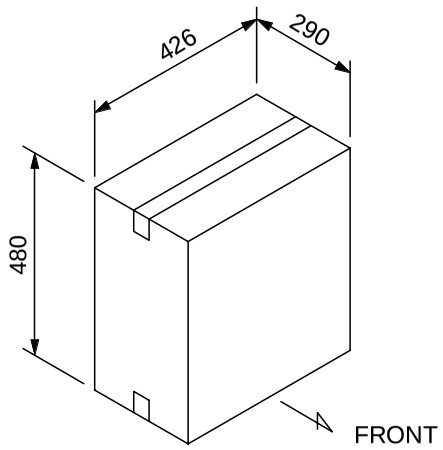
Fig.-4A

LCD1550X CARTON BOX

• COLOR OF MATERIAL : KRAFT COLOR (BROWN)

SCALE : 1/8
DIMENSION IN mm.





OUTER DIMENSION

INNER DIMENSION : 416 (W) x 460 (H) x 280 (D)

Fig.-5A

LCD1550X PRINTING SPECIFICATION OF CARTON BOX

- COLOR OF PRINTING : BLACK

SCALE : 1/6
DIMENSION IN mm.

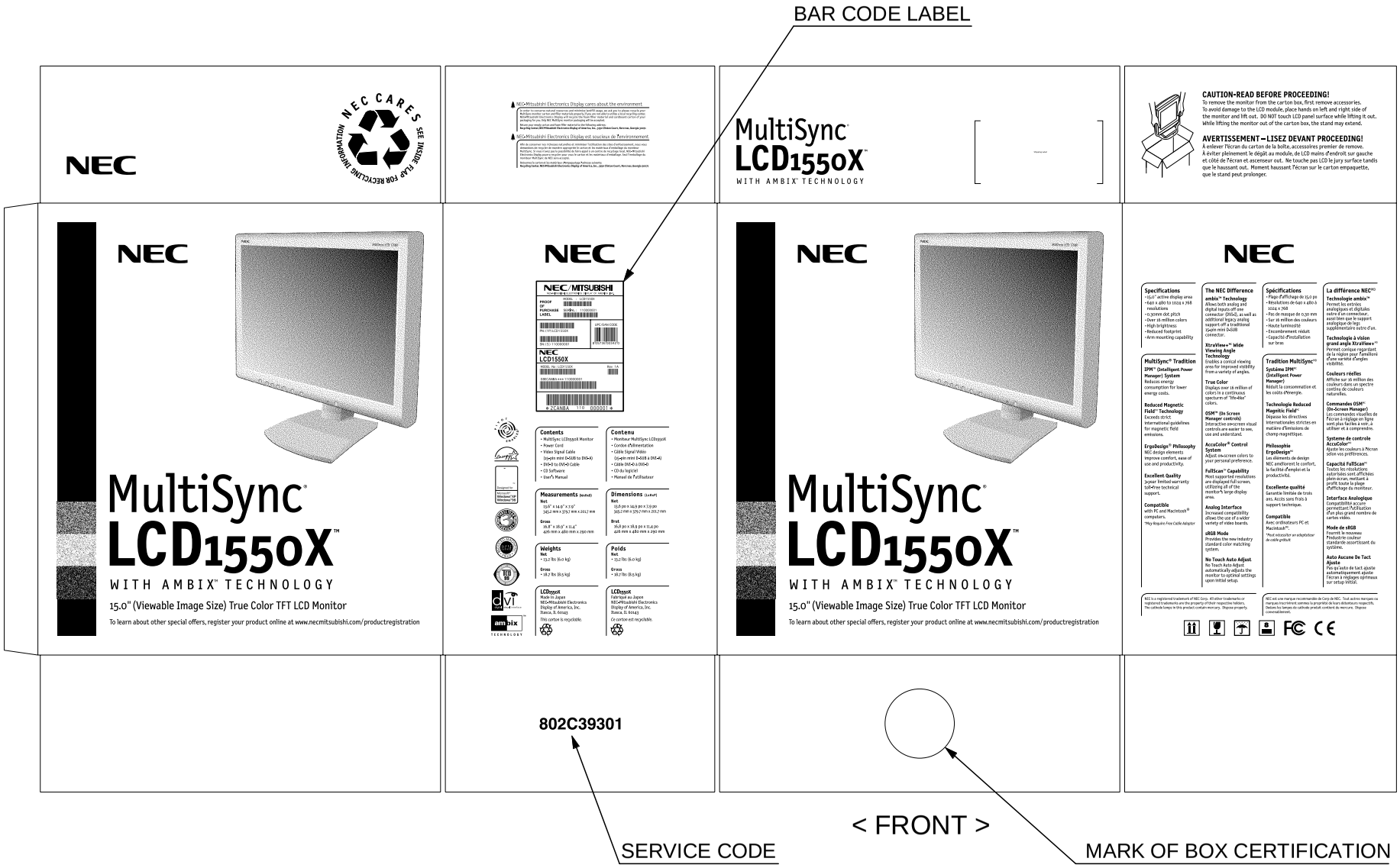


Fig.-6A

LCD1550X PACKING STYLE

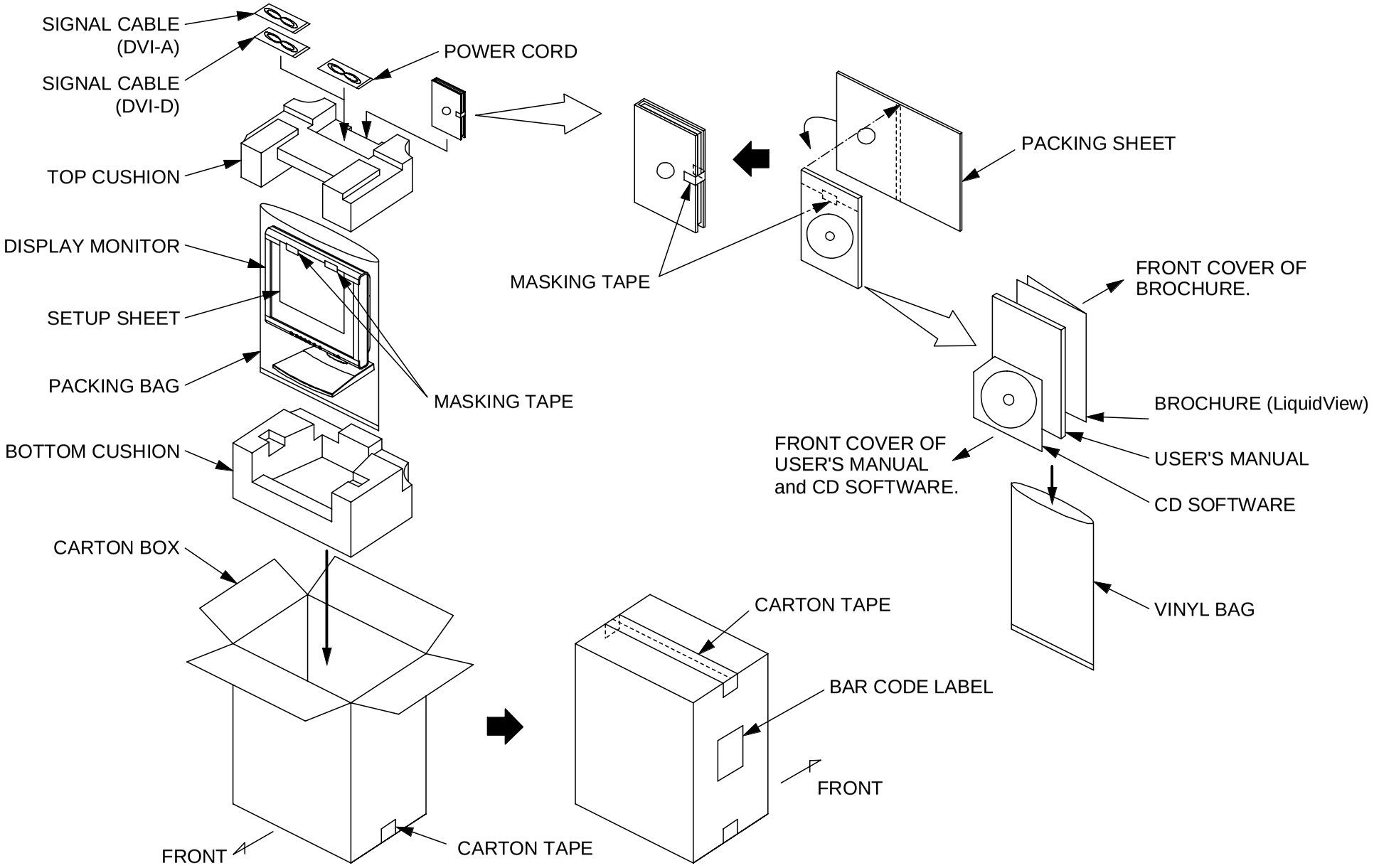


Fig.-7A

LCD1550X POWER CORD

SCALE : NTS
DIMENSION IN mm.

1.CABLE SIZE : AWG18X3C
2.JACKET : PVC
3.COLOR : LIGHT GRAY
4.ABILITY
  (1) VOLTAGE : AC 125V
  (2) AMPERAGE : AC 10A
  (3) TEMPERATURE : 60°C
5.REGULATORY APPROVALS : UL, CSA

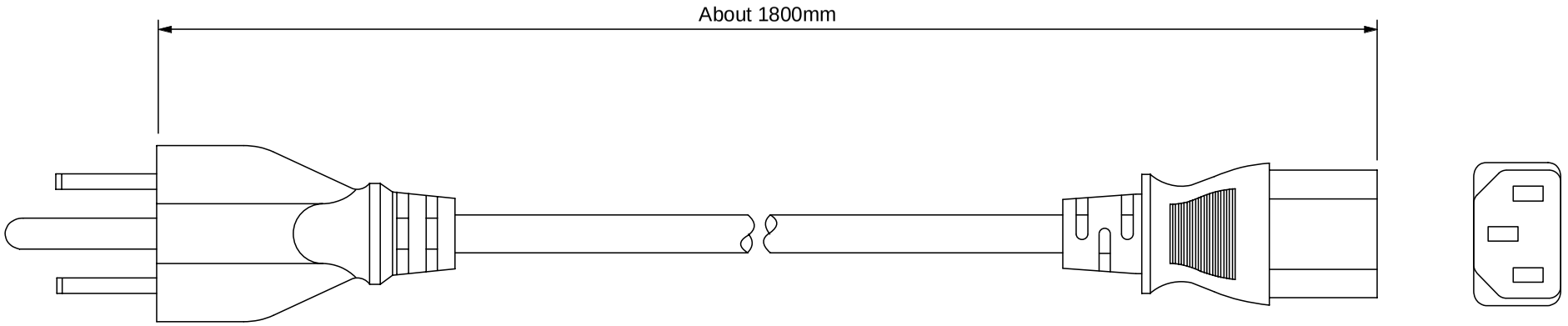
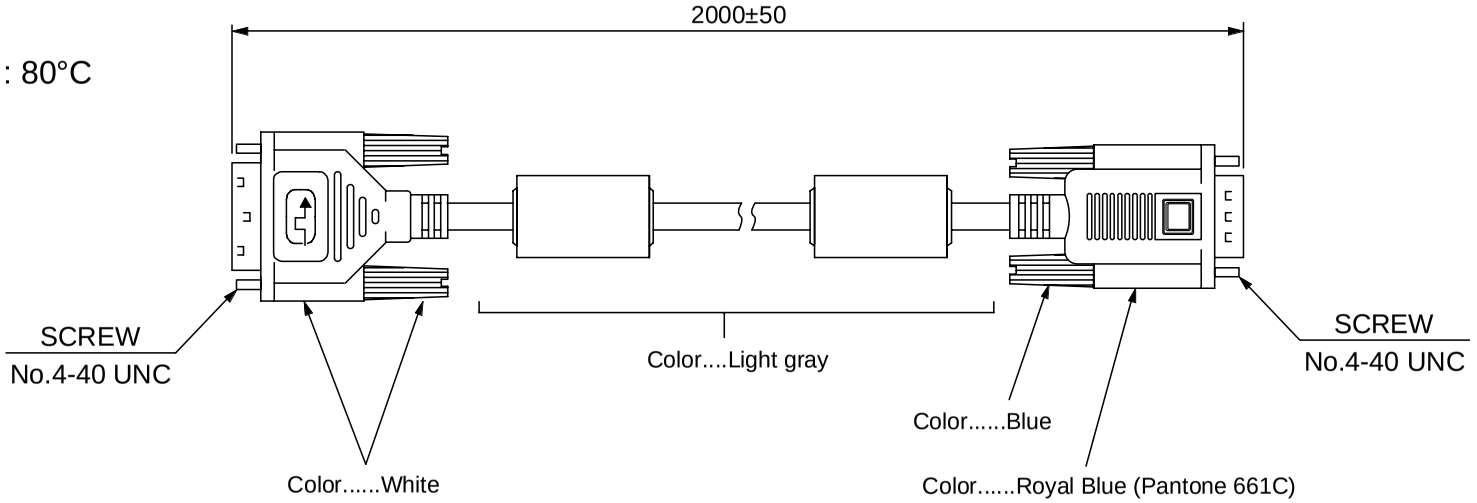


Fig.-8A

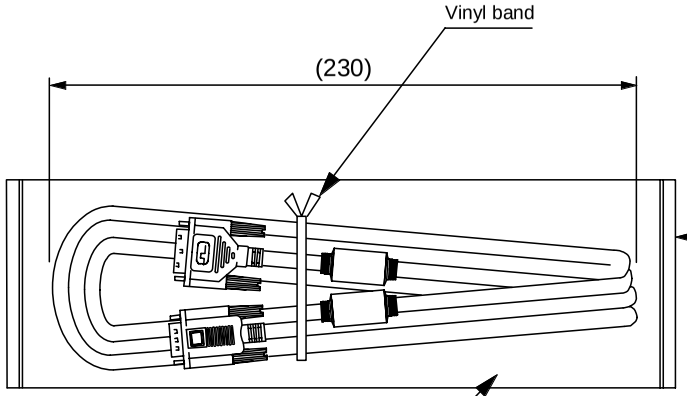
LCD1550X SIGNAL CABLE (DVI-A)

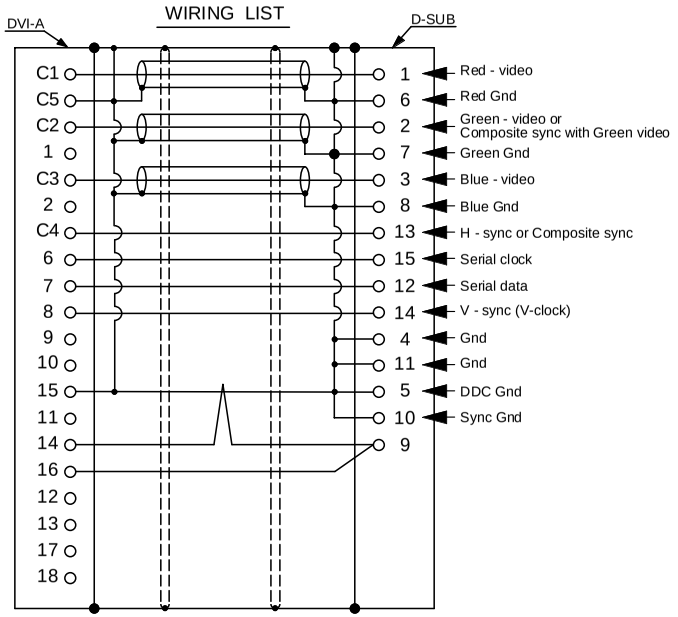
SCALE : NTS
DIMENSION IN mm.

1.JACKET : PVC
2.ABILITY
(1)VOLTAGE : 30V
(2)TEMPERATURE : 80°C



Packing





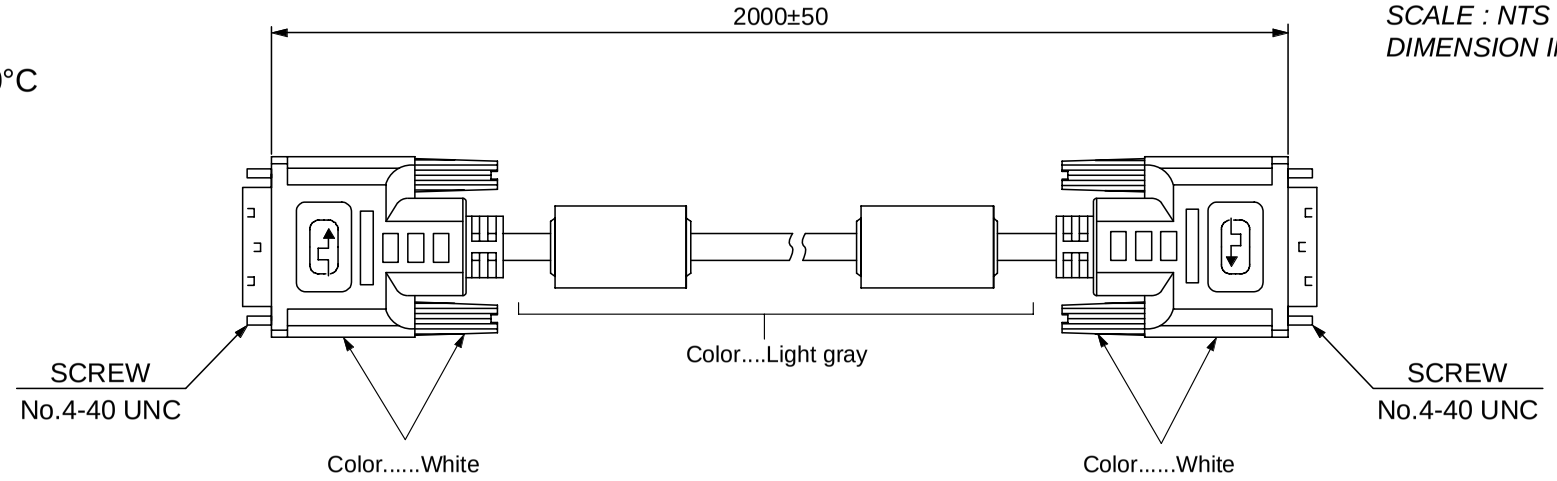
NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION. SC-D830

Fig.-9-1A

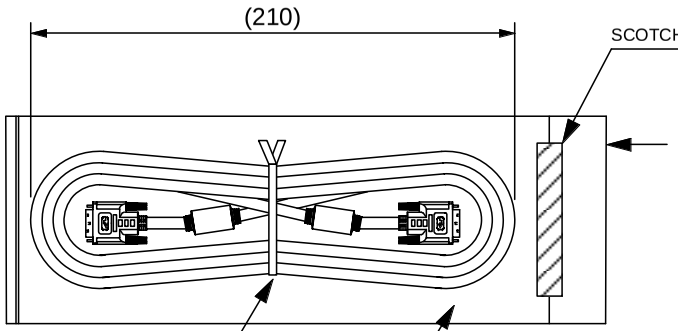
LCD1550X SIGNAL CABLE (DVI-D)

1.JACKET : PVC
2.ABILITY
(1)VOLTAGE : 30V
(2)TEMPERATURE : 80°C

SCALE : NTS
DIMENSION IN mm.



Packing

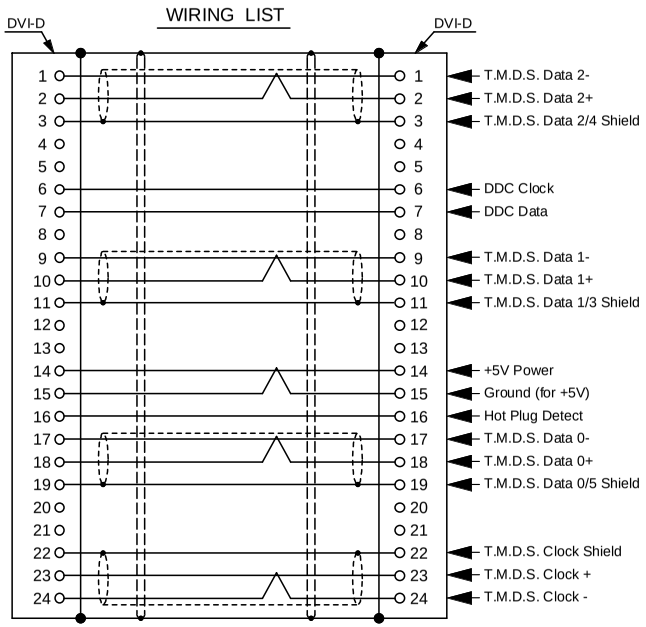


Vinyl bag specifications

•Material : Polyethylene (PE)
•Thickness : 0.06mm
•Dimension : 141.5X330.2mm

The undermentioned content is printed in black.

WIRING LIST



NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION. SC-D801

Fig.-9-2A

LCD1550X USER'S MANUAL

- LANGUAGE : English, French
- MATERIAL : RECYCLE PAPER (WHITE)
- LETTERING COLOR : BLACK

SCALE : NTS
DIMENSION IN mm.

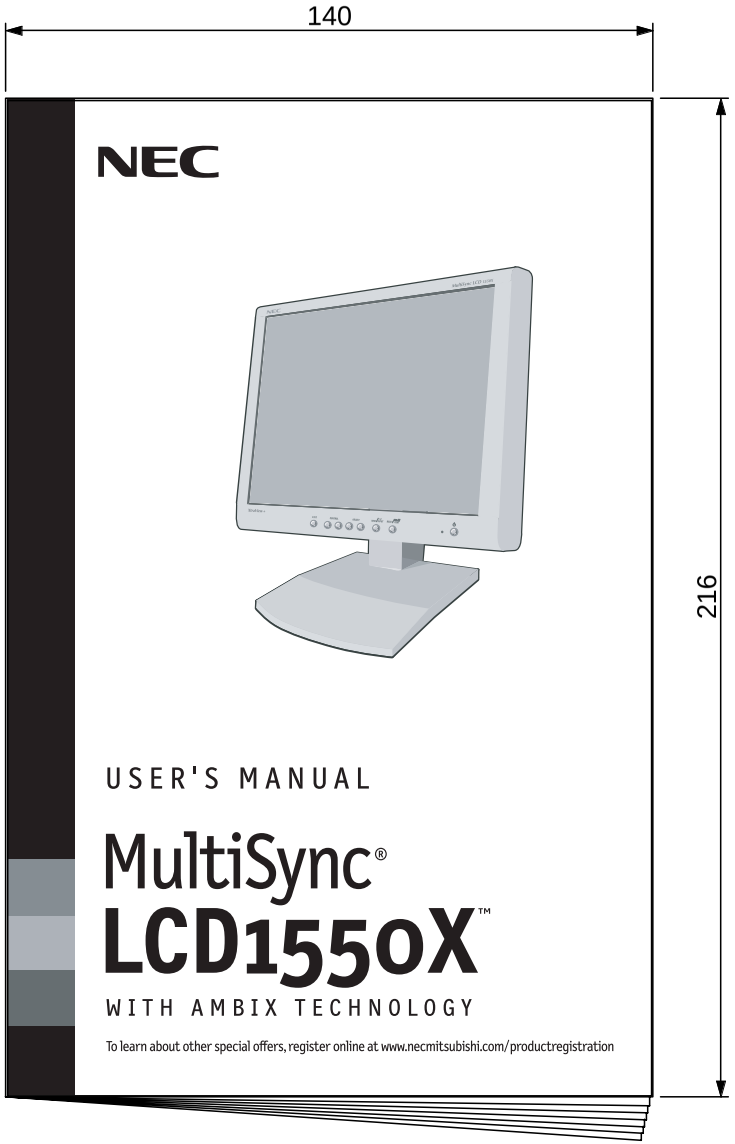
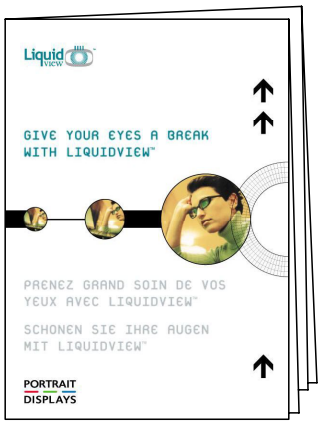


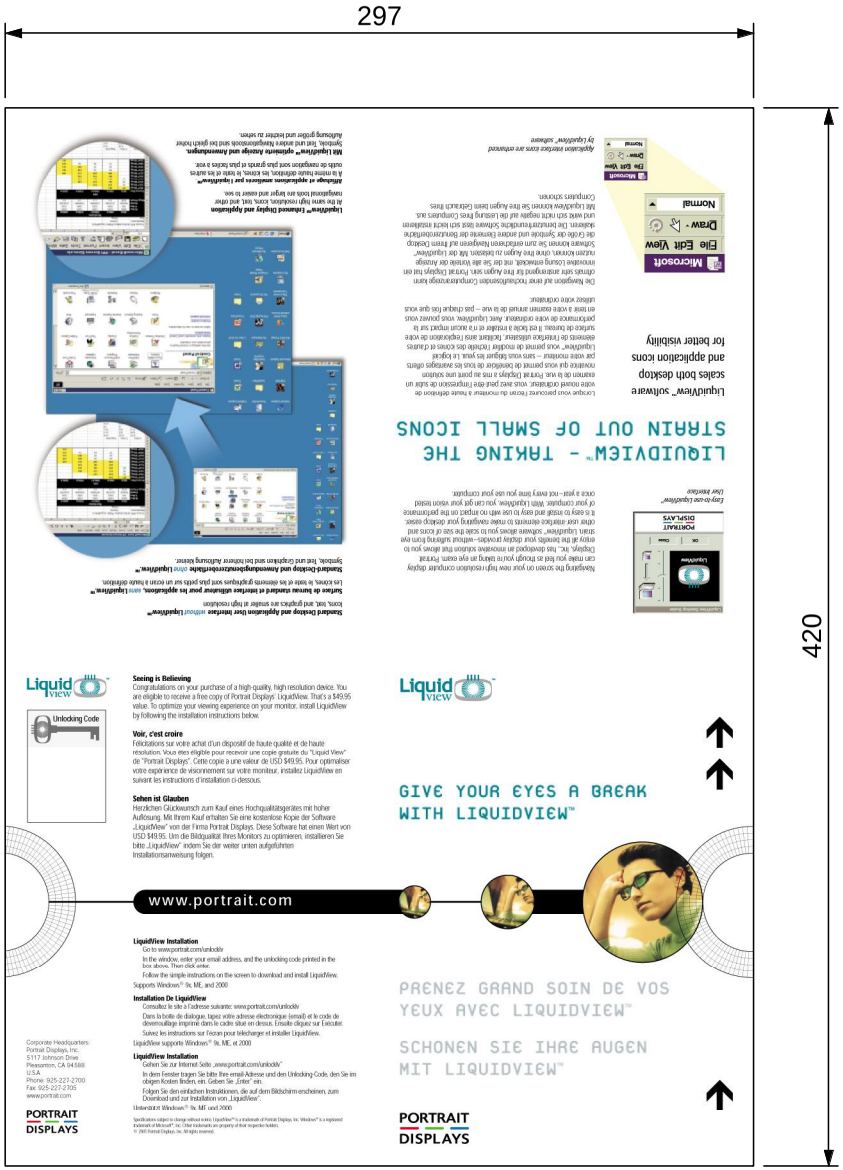
Fig.-10A

LCD1550X BROCHURE (LiquidView)

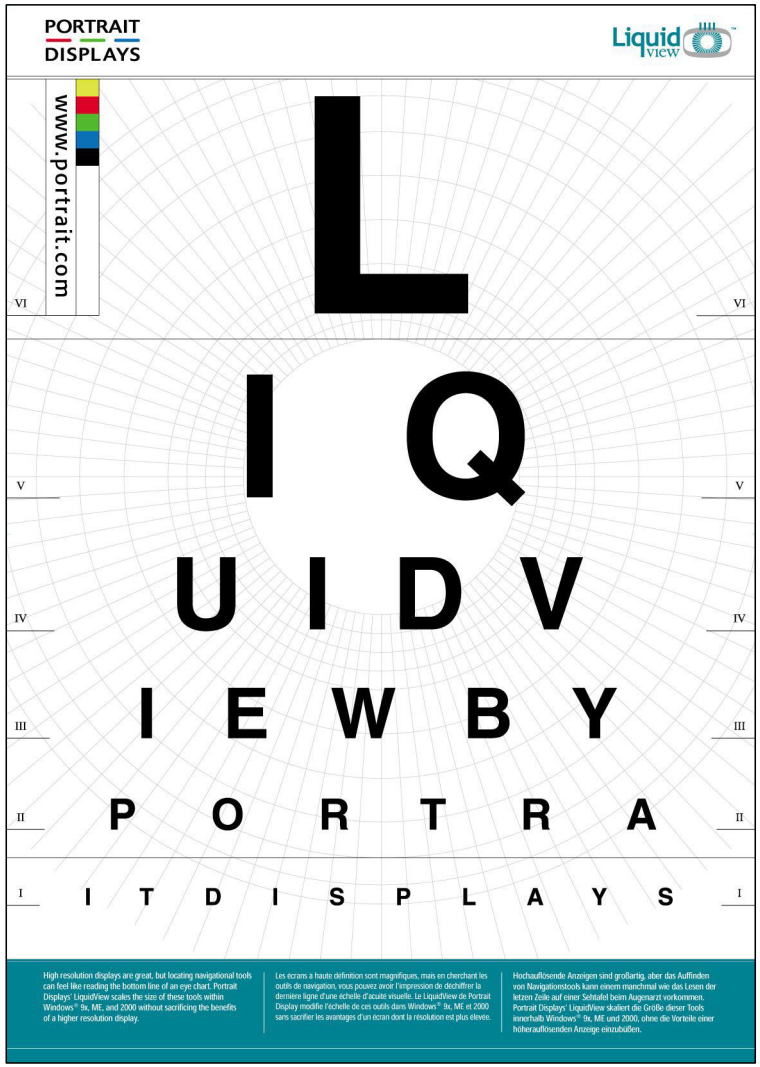
SCALE : NTS
DIMENSION IN mm.



FINAL CONDITION



FRONT



REAR

Fig.-11A

LCD1550X SETUP SHEET

- MATERIAL : RECYCLE PAPER (WHITE)
- LETTERING COLOR : BLACK

SCALE : NTS
DIMENSION IN mm.

297

210

NEC MultiSync® LCD1550X™
Setup Instructions for Windows® 95/98/2000/XP & NT Computers

For Optimal Performance, the MultiSync LCD1550X should be setup for 1024x768 @60Hz.

Once you have booted up your computer and have entered Windows, please follow the instructions below to fully optimize your MultiSync LCD monitor.

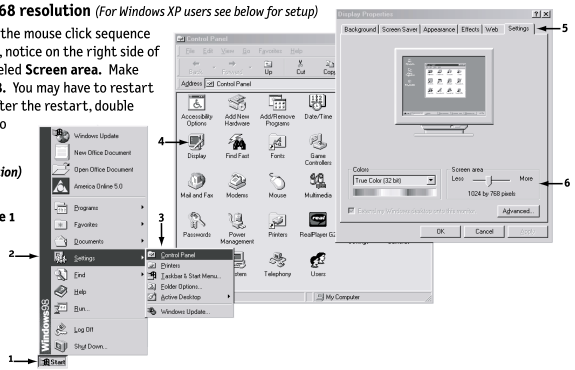
Step 1: Setting your computer at 1024x768 resolution *(For Windows XP users see below for setup)*

Open the Display Properties window by following the mouse click sequence (**1-5**) indicated by the numbers of **Figure 1.** Next, notice on the right side of the Display Properties window, there is a box labeled **Screen area.** Make sure the "**Screen**" slide bar (**6**) is set to **1024x768.** You may have to restart your computer for this change to take effect. After the restart, double check the **Display Properties/Settings** window to make sure you are now at 1024x768.

Windows XP Quick Setup *(XP Defult Configuration)*

1. Choose the "**Start**" menu
2. Now select "**Control Panels**"
3. Under the "Control Panels", select "**Appearance and Themes**"
4. Choose "**Display**"
5. Select the "**Settings**" tab
6. Under "**Screen Resolution**" slide the bar to **1024x768** resolution.

Figure 1



*Proceed to **Step 2** on the reverse side.*

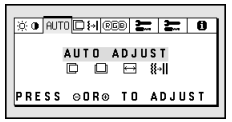
FRONT

Step 2: No Touch Auto Adjust

As soon as your computer is set to **1024x768** resolution, the monitor automatically activates the No Touch Auto Adjust function. This function is activated only when the new video signal is received for the first time. If the image quality after activating No Touch Auto Adjust is not sufficient, please proceed to Step 3.

Step 3: Auto Adjust your MultiSync LCD Monitor

- To begin the setup/adjustment of the NEC MultiSync LCD1550X monitor, select one of the **CONTROL** or **ADJUST** buttons on the front bezel of the monitor to bring up the NEC ***On Screen Manager*** (OSM).
- Select the **NEXT** button to highlight the "**AUTO ADJUST**" tab in green.
- Select one of the **ADJUST** buttons to initiate the Auto Adjust Function.
- Press **EXIT** button to close the OSM menu.



If the image quality after activating Auto Adjust is not sufficient, please proceed to Step 4.

Step 4: Manual Adjust

Please refer to the NEC MultiSync LCD1550X User's Manual under "**Controls**", "**Position Controls**" section, "**FINE**" function.

If you have any questions regarding the setup of your MultiSync LCD monitor, please refer to the user's manual or contact the NEC-Mitsubishi Electronics Display Technical Support Center at 800.632.4662.

NEC

Part No. CP870C133A10
Printed in Japan

REAR

Fig.-12A

LCD1550X BAR CODE LABEL

- BACK GROUND COLOR : WHITE
- LETTERING COLOR : BLACK

SCALE : 1/1
DIMENSION IN mm.

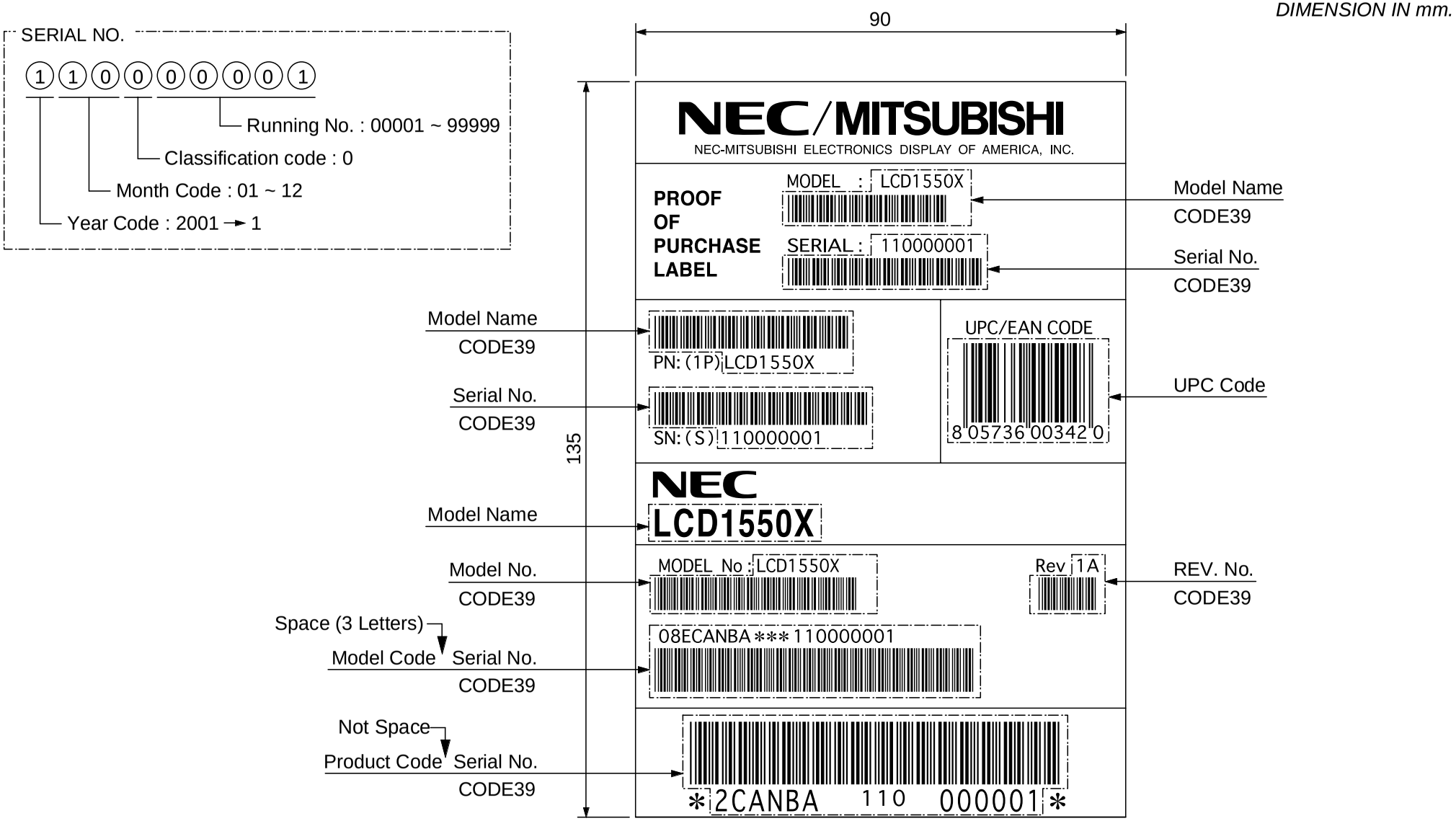


Fig.-13A

MultiSync LCD1550X

User's Manual

Uživatelská příručka

Bedienerhandbuch

Οδηγίες Χρήσης

Manual del usuario

Manuel Utilisateur

Manuale utente

Gebruikershandleiding

Podręcznik użytkownika

Руководство пользователя

Kullanıcı Klavuzu

NEC





Declaration

Declaration of the Manufacturer

We hereby certify that the colour monitor
MultiSync LCD1550X (LCD1550X)
is in compliance with

Council Directive 73/23/EEC:
- EN 60950

Council Directive 89/336/EEC:
- EN 55022
- EN 61000-3-2
- EN 61000-3-3
- EN 55024

and marked with

CE

NEC-Mitsubishi Electric Visual Systems, Corp.
MS Shibaura Bldg., 13-23,
Shibaura 4-chome,
Minato-Ku, Tokyo 108-0023, Japan

VCCI Statement

この装置は、情報処理装置等電波障害自主規制協議会(VCCI)の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをしてください。

TCO'99

MultiSync LCD1550X (LCD1550X)

Congratulations! You have just purchased a TCO'99 approved and labeled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also to the further development of environmentally adapted electronics products.

Why do we have environmentally labelled computers?

In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during the manufacturing. Since it has not been possible for the majority of electronics equipment to be recycled in a satisfactory way, most of these potentially damaging substances sooner or later enter Nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (internal) and natural (external) environments. Since all methods of conventional electricity generation have a negative effect on the environment (acidic and climate-influencing emissions, radioactive waste, etc.), it is vital to conserve energy. Electronics equipment in offices consume an enormous amount of energy since they are often left running continuously.

What does labelling involve?

This product meets the requirements for the TCO'99 scheme which provides for international and environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Svenska Naturskyddsforeningen (The Swedish Society for Nature Conservation) and Statens Energimyndighet (The Swedish National Energy Administration).

The requirements cover a wide range of issues: environment, ergonomics, usability, emission of electrical and magnetic fields, energy consumption and electrical and fire safety.

The environmental demands concern restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons) and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental plan which must be adhered to in each country where the company implements its operational policy. The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.

Labelled products must meet strict environmental demands, for example, in respect of the reduction of electric and magnetic fields, physical and visual ergonomics and good usability.

Environmental Requirements

Flame retardants

Flame retardants are present in printed circuit boards, cables, wires, casings and housings. In turn, they delay the spread of fire. Up to thirty percent of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride and these are related to another group of environmental toxins, PCBs, which are suspected to give rise to severe health effects, including reproductive damage in fisheating birds and mammals, due to the bioaccumulative* processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

TCO'99 demand requires that plastic components weighing more than 25 grams must not contain flame retardants with organically bound chlorine and bromine. Flame retardants are allowed in the printed circuit boards since no substitutes are available.

Lead**

Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning.

TCO'99 requirement permits the inclusion of lead since no replacement has yet been developed.

Cadmium**

Cadmium is present in rechargeable batteries and in the colourgenerating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses.

TCO'99 requirement states that batteries, the colourgenerating layers of display screens and the electrical or electronics components must not contain any cadmium.

Mercury**

Mercury is sometimes found in batteries, relays and switches. Mercury damages the nervous system and is toxic in high doses.

TCO'99 requirement states that batteries may not contain any Mercury. It also demands that no mercury is present in any of the electrical or electronics components associated with the display unit.

CFCs (freons)

CFCs (freons) are sometimes used for washing printed circuit boards. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on Earth of ultraviolet light with consequent increased risks of skin cancer (malignant melanoma).

The relevant TCO'99 requirement; Neither CFCs nor HCFCs may be used during the manufacturing and assembly of the product or its packaging.

* Bio-accumulative is defined as substances which accumulate within living organisms.

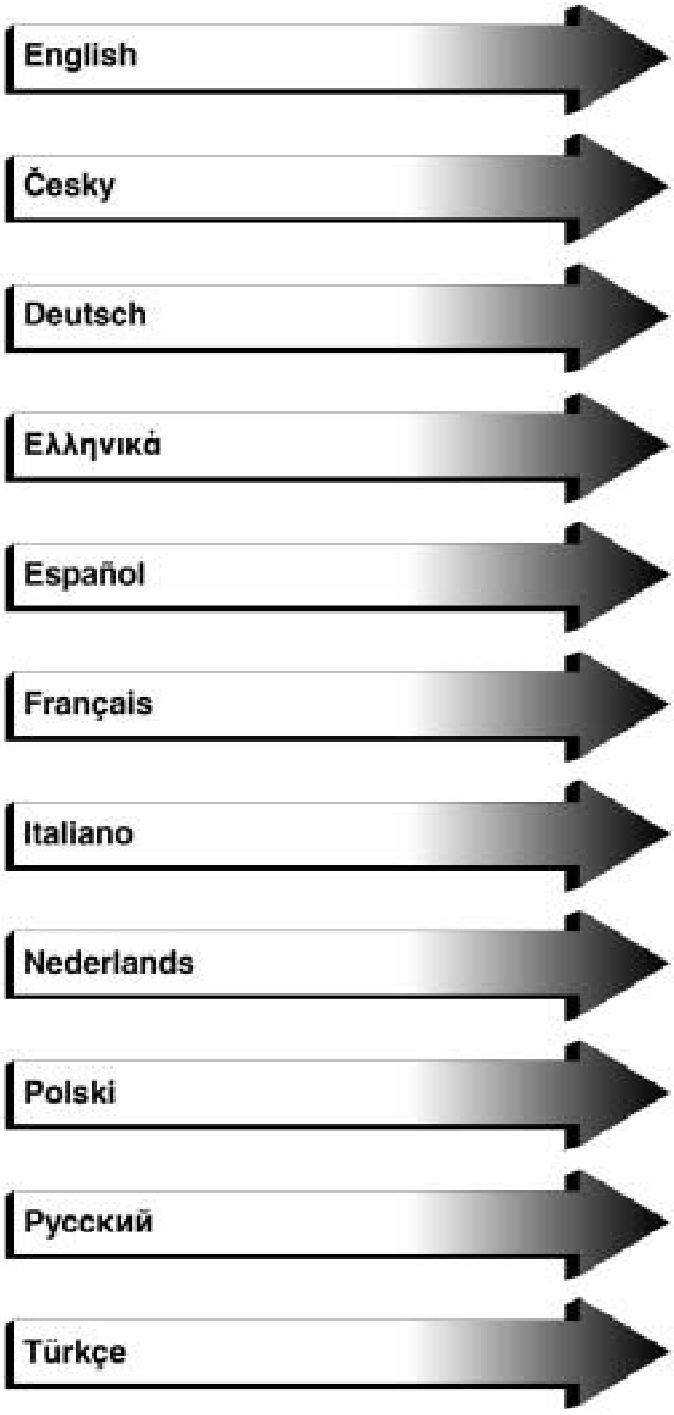
** Lead, Cadmium and Mercury are heavy metals which are Bioaccumulative.

To obtain complete information on the environmental criteria document, order from:

TCO Development Unit
SE-114 94 Stockholm
SWEDEN
FAX Number: +46 8 782 92 07

E-mail (Internet): development@tco.se

You may also obtain current information on TCO'99 approved and labelled products by visiting their website at:
http://www.tco-info.com/


English
Česky
Deutsch
Ελληνικά
Español
Français
Italiano
Nederlands
Polski
Русский
Türkçe





WARNING

TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. ALSO, DO NOT USE THIS UNIT'S POLARIZED PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLETS UNLESS THE PRONGS CAN BE FULLY INSERTED.
REFRAIN FROM OPENING THE CABINET AS THERE ARE HIGH VOLTAGE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION

RISK OF ELECTRIC SHOCK • DO NOT OPEN

CAUTION

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol warns user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any part inside this unit.

This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully in order to avoid any problems.

Caution:

When operating the MultiSync LCD1550X (LCD1550X) with a 220-240V AC power source in Europe, use the power cord provided with the monitor.

In the UK, a BS approved power cord with a moulded plug has a Black (five Amps) fuse installed for use with this equipment. If a power cord is not supplied with this equipment please contact your supplier.

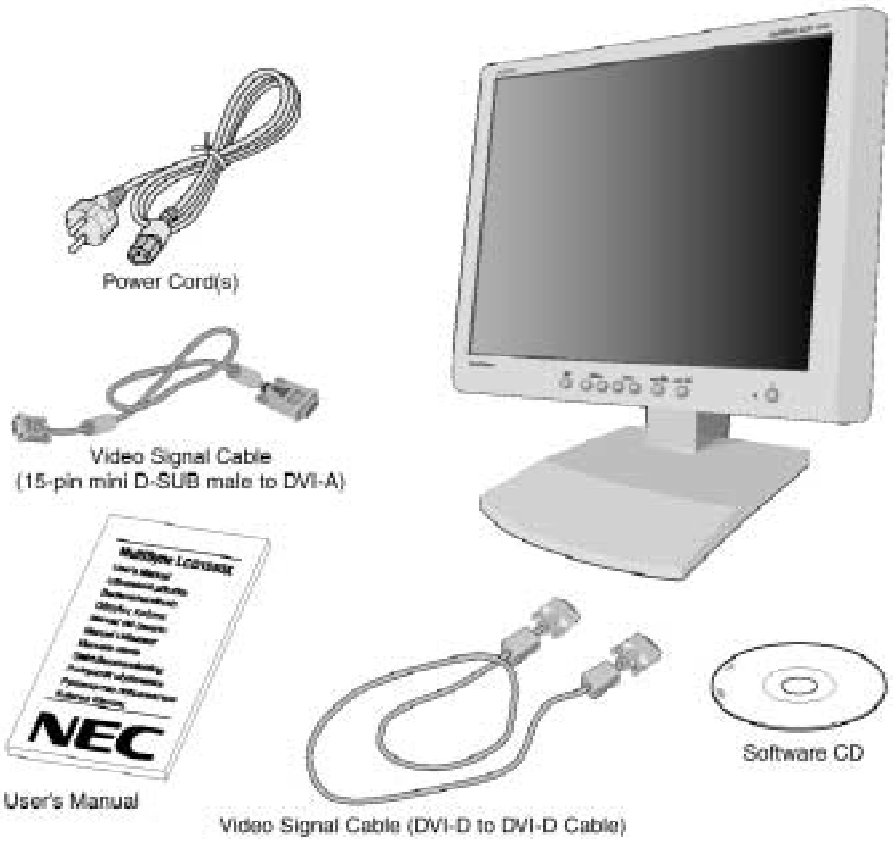
When operating the MultiSync LCD1550X with a 220-240V AC power source in Australia, use the power cord provided with the monitor.

For all other cases, use a power cord that matches the AC voltage of the power outlet and has been approved by and complies with the safety standard of your particular country.

Contents

Your new NEC MultiSync LCD monitor box* should contain the following:

- MultiSync LCD1550X monitor with tilt base
- Power Cord(s)
- Video Signal Cable (15-pin mini D-SUB male to DVI-A)
- Video Signal Cable (DVI-D to DVI-D Cable)
- User's Manual
- NEC LCD Setup Software, Pivot Software, User's Manual and other helpful files. To see the User's Manual, Acrobat Reader 4.0 must be installed on your PC.



* *Remember to save your original box and packing material to transport or ship the monitor.*

Quick Start

English

To attach the MultiSync LCD monitor to your system, follow these instructions:

1. Turn off the power to your computer.
2. **For the PC or Mac with DVI digital output:** Connect the DVI-D to DVI-D signal cable to the connector of the display card in your system (**Figure A.1**). Tighten all screws.

   For the PC with Analog output: Connect the 15-pin mini D-SUB to DVI-A signal cable to the connector of the display card in your system (**Figure A.2**).

   For the Mac: Connect the MultiSync Macintosh cable adapter to the computer (**Figure B.1**). Attach the 15-pin mini D-SUB signal cable to the MultiSync Macintosh cable adapter (**Figure B.1**).

NOTE: Some Macintosh systems do not require a Macintosh cable adapter.

3. Remove connector cover. Connect the DVI signal cable to the connector on the back of the monitor. Place the video signal cable (**Figure C.1**).

   Replace connector cover.

NOTE: Incorrect cable connections may result in irregular operation, damage display quality/components of LCD module and/or shorten the module's life.

4. Remove power cord cover. Connect one end of the power cord to the AC inlet on the back of the monitor and the other end to the power outlet (**Figure D.1**). Replace the power cord cover.

NOTE: Please refer to Caution section of this manual for proper selection of AC power cord.

5. Check the Vacation Switch on the right hand side of the monitor is in the ON position. Turn on the monitor with the Power Button (**Figure E.1**) and the computer.

NOTE: There are two switches: one on the right side and one on the front side of the monitor. DO NOT switch on/off quickly.

6. To complete the setup of your MultiSync LCD monitor, use the following OSM controls:
   - Auto Adjust Contrast (Analog input only)
   - Auto Adjust (Analog input only)

Refer to the **Controls** section of this User's Manual for a full description of these OSM controls.

NOTE: If you have any problems, please refer to the **Troubleshooting** section of this User's Manual.

NOTE: Refer to User's Manual in the NEC LCD Setup Software CD case for installation and operation of this software.

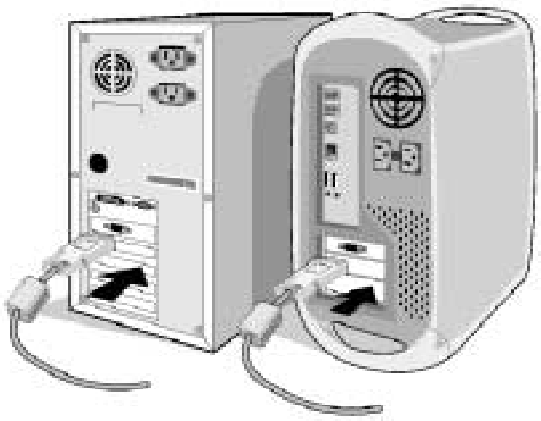


Figure A.1

Figure A.2

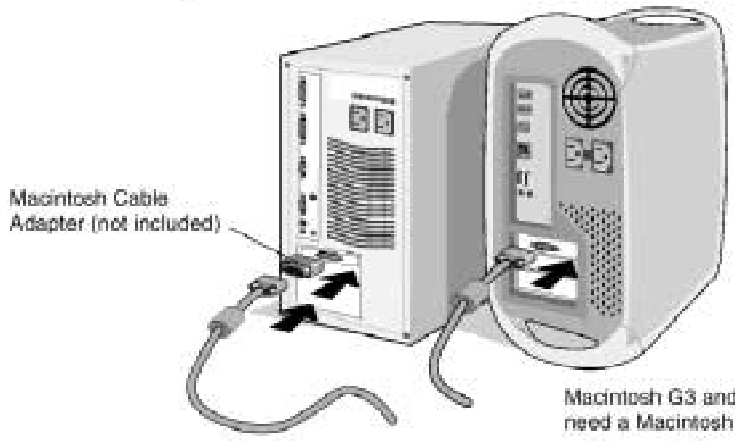


Figure B.1

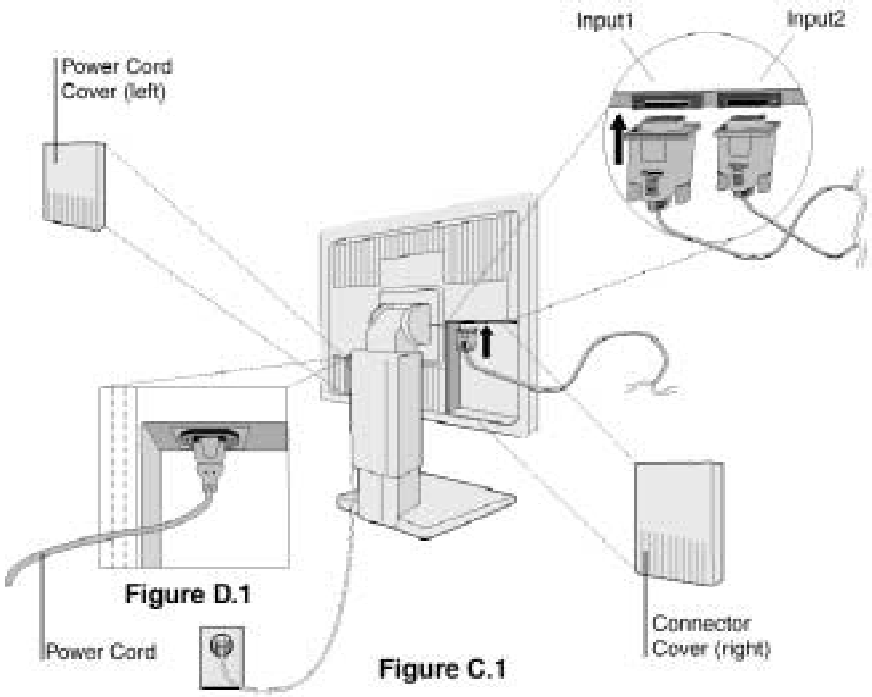


Figure D.1

Figure C.1

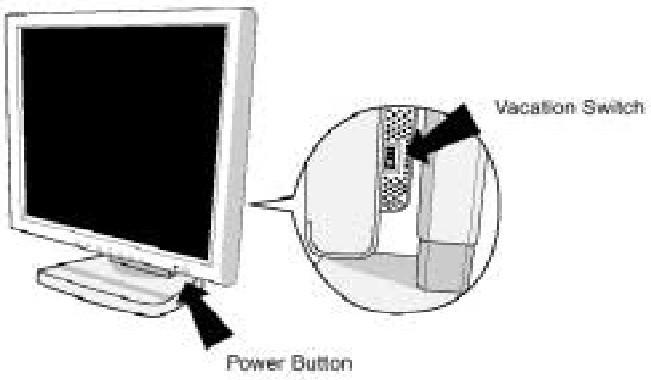


Figure E.1

Raise and Lower Monitor Screen

The monitor may be raised or lowered in either Portrait or Landscape mode.

To raise or lower screen, place hands on each side of the monitor and lift or lower to the desired height (**Figure RL.1**).

Screen Rotation

Before rotating, the screen must be raised to the highest level to avoid knocking the screen on the desk or pinching your fingers.

To raise the screen, place hands on each side of the monitor and lift up to the highest position (**Figure RL.1**).

To rotate screen, place hands on each side of the monitor screen and turn clockwise from Landscape to Portrait or counter-clockwise from Portrait to Landscape (**Figure R.1**).

To toggle the orientation of the OSM menu between Landscape and Portrait modes, press the RESET button while OSM menu is off.

Tilt and Swivel

Grasp both sides of the monitor screen with your hands and adjust the tilt and swivel as desired (**Figure TS.1**).

Remove Monitor Stand for Mounting

To prepare the monitor for alternate mounting purposes:

1. Disconnect all cables.
2. Place hands on each side of the monitor and lift up to the highest position (**Figure RL.1**).
3. Place monitor face down on a non-abrasive surface (Place the screen on a 50 mm platform so that the stand is parallel with the surface.) (**Figure S.1**).
4. Press the "▼" portion with your index finger and at the same time slide the lower stand cover. (**Figure S.2**)

   Next, lift up the stand, remove the lower stand cover, then go on to remove the upper stand cover. (**Figure S.3**)

   Return the stand to its original position, remove the 4 screws that connect the monitor to the stand, and lift off the stand assembly. (**Figure S.4**)

5. Reverse this process to reattach stand.

NOTE: Use only VESA-compatible alternative mounting method.

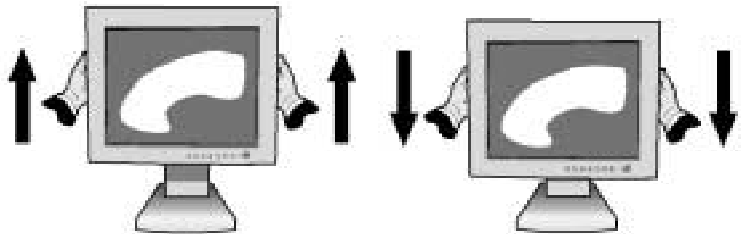


Figure RL.1

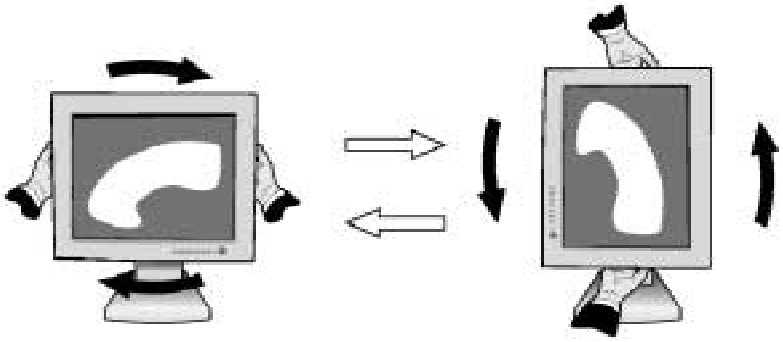


Figure R.1

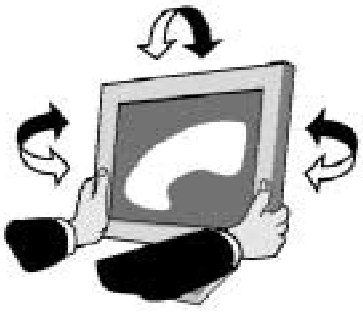


Figure TS.1

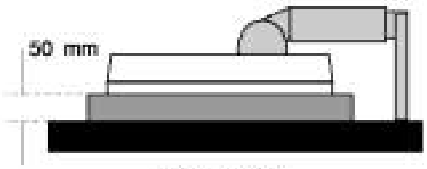


Figure S.1

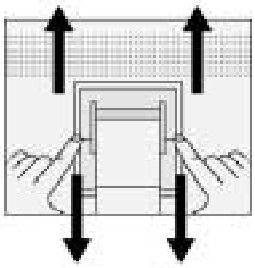


Figure S.2

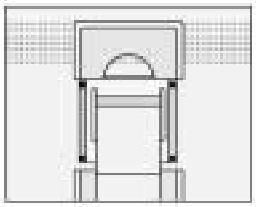


Figure S.3

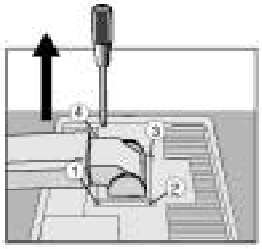


Figure S.4

Caution: Please use the attached screws (4pcs) when mounting. To fulfil the safety requirements the monitor must be mounted to an arm which guaranties the necessary stability under consideration of the weight of the monitor. The LCD monitor shall only be used with an approved arm (e.g. GS mark).

Controls

English

OSM (On-Screen-Manager) Controls

The OSM controls on the front of the monitor function as follows:
To access OSM press any of the control buttons (◀, ▶, -, +).
To change DVI/D-SUB signal input, press the NEXT button.
To rotate OSM between Landscape and Portrait modes, press the RESET button.

NOTE: OSM menu must be closed in order to change signal input and to rotate.

Control	Menu
EXIT	Exits the OSM controls. Exits to the OSM main menu.
CONTROL ◀/▶	Moves the highlighted area left/right to select control menus. Moves the highlighted area up/down to select one of the controls.
ADJUST -/+	Moves the bar left/right to increase or decrease the adjustment. Activates Auto Adjust function. Enter the sub menu.
NEXT	Moves the highlighted area of main menu right to select one of the controls.
RESET	Resets the highlighted control menu to the factory setting. Resets the highlighted control to the factory setting.

NOTE: When RESET is pressed in the main and sub-menu, a warning window will appear allowing you to cancel the RESET function by pressing the EXIT button.

Brightness/Contrast Controls

BRIGHTNESS
Adjusts the overall image and background screen brightness.

CONTRAST
Adjusts the image brightness in relation to the background.

AUTO ADJUST (Analog input only)
Adjusts the image displayed for non-standard video inputs.

Auto Adjust (Analog input only)
Automatically adjusts the Image Position, the H. Size and Fine setting.

Position Controls (Analog input only)

LEFT/RIGHT
Controls Horizontal Image Position within the display area of the LCD.

DOWN/UP
Controls Vertical Image Position within the display area of the LCD.

H. SIZE
Adjusts the horizontal size by increasing or decreasing this setting.

FINE
Improves focus, clarity and image stability by increasing or decreasing this setting.

Colour Control Systems
Six colour presets select the desired colour setting (sRGB and NATIVE colour presets are standard and cannot be changed). Colour temperature increases or decreases in each preset.

R,Y,G,C,B,M,S

Increases or decreases Red, Yellow, Green, Cyan, Blue, Magenta and Saturation depending upon which is selected. The change in colour will appear on screen and the direction (increase or decrease) will be shown by the colour bars.

sRGB

sRGB mode dramatically improves the colour fidelity in the desktop environment by a single standard RGB colour space. With this colour supported environment, the operator could easily and confidently communicate colours without further colour management overhead in the most common situations.

NATIVE

Original colour presented by the LCD panel that is unadjustable.

Tools 1

SHARPNESS

This function is digitally capable to keep crisp image at any timings. It is continuously adjustable to get distinct image or soft one as you prefer, and set independently by different timings.

EXPANSION MODE

Sets the zoom method.

H-EXPANSION

The horizontal image is expanded to approximately 2 times.

V-EXPANSION

The vertical image is changeable.

VIDEO DETECT

Selects the method of video detection when more than one computer is connected.

FIRST DETECT

The video input has to be switched to "FIRST DETECT" mode. When current video input signal is not present, then the monitor searches for a video signal from the other video input port. If the video signal is present in the other port, then the monitor switches the video source input port to the new found video source automatically. The monitor will not look for other video signals while the current video source is present.

LAST DETECT

The video input has to be switched to the "LAST DETECT" mode. When the monitor is displaying a signal from the current source and a new secondary source is supplied to the monitor, then the monitor will automatically switch to the new video source. When current video input signal is not present, then the monitor searches for a video signal from the other video input port. If the video signal is present in the other port, then the monitor switches the video source input port to the new found video source automatically.

NONE

The Monitor will not search the other video input port unless the monitor is turned on.

DVI SELECTION

This function selects EDID Data for ANALOG signal or DIGITAL signal on the DVI input.

When the DVI-D is connected to DVI, DVI Selection is recommended to be selected to DIGITAL.

When the DVI-A is connected to DVI, DVI Selection is recommended to be selected to ANALOG.

DIGITAL

EDID DATA for DVI DIGITAL input is available.

ANALOG

EDID DATA for DVI ANALOG input is available.

Tools 2

LANGUAGE
OSM control menus are available in seven languages.

OSM POSITION
You can choose where you would like the OSM control image to appear on your screen. Selecting OSM Location allows you to manually adjust the position of the OSM control menu left, right, down or up.

OSM TURN OFF
The OSM control menu will stay on as long as it is use. In the OSM Turn Off submenu, you can select how long the monitor waits after the last touch of a button to shut off the OSM control menu. The preset choices are 10, 20, 30, 45, 60 and 120 seconds.

OSM LOCK OUT
This control completely locks out access to all OSM control functions. When attempting to activate OSM controls while in the Lock Out mode, a screen will appear indicating the OSM controls are locked out.
To activate the OSM Lock Out function, press ◄, then ► and hold down simultaneously. To de-activate the OSM Lock Out, press ◄, then ► and hold down simultaneously.

RESOLUTION NOTIFIER
This optimal resolution is 1024 x 768. If ON is selected, a message will appear on the screen after 30 seconds, notifying you that the resolution is not at 1024 x 768.

FACTORY PRESET
Selecting Factory Preset allows you to reset all OSM control settings back to the factory settings. Individual settings can be reset by highlighting the control to be reset and pressing the RESET button.

❶ Information

MODE **DISPLAY MODE**

Provides information about the current resolution display and technical data including the preset timing being used and the horizontal and vertical frequencies. Increases or decreases the current resolution. (Analog input only)

MONITOR INFO

Indicates the model and serial numbers of your monitor.

OSM Warning

OSM Warning menus disappear with Exit button.

NO SIGNAL: This function gives a warning when there is no Horizontal or Vertical Sync Signal present and advises you to check all Video Inputs on the monitor and computer to make sure they are properly connected. After power is turned on or when there is a change of input signal or video is inactive, the **No Signal** window will appear.

RESOLUTION NOTIFIER: This function gives a warning of use with optimized resolution. After power is turned on or when there is a change of input signal or the video signal doesn't have proper resolution, the **Resolution Notifier** window will open. This function can be disabled in the TOOL menu.

OUT OF RANGE: This function gives a recommendation of the optimized resolution and refresh rate. After the power is turned on or there is a change of input signal or the video signal doesn't have proper timing, the **Out Of Range** menu will appear.

NOTE: If "❶ CHANGE DVI SELECTION" is displayed, switch to DVI SELECTION.

Recommended Use

Safety Precautions and Maintenance

FOR OPTIMUM PERFORMANCE, PLEASE NOTE THE FOLLOWING WHEN SETTING UP AND USING THE MULTISYNC LCD COLOUR MONITOR:

- **DO NOT OPEN THE MONITOR.** There are no user serviceable parts inside and opening or removing covers may expose you to dangerous shock hazards or other risks. Refer all servicing to qualified service personnel.
- Do not spill any liquids into the cabinet or use your monitor near water.
- Do not insert objects of any kind into the cabinet slots, as they may touch dangerous voltage points, which can be harmful or fatal or may cause electric shock, fire or equipment failure.
- Do not place any heavy objects on the power cord. Damage to the cord may cause shock or fire.
- Do not place this product on a sloping or unstable cart, stand or table, as the monitor may fall, causing serious damage to the monitor.
- Do not place any objects onto the monitor and do not use the monitor outdoors.
- The inside of the flourescent tube located within the LCD monitor contains mercury. Please follow the bylaws or rules of your municipality to dispose of the tube properly.

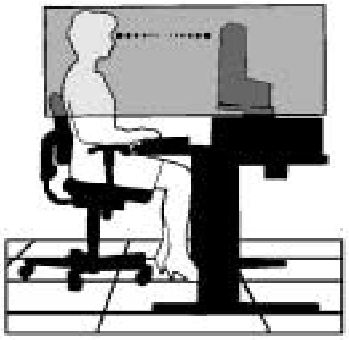
Immediately unplug your monitor from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the monitor.
- If the monitor has been exposed to rain or water.
- If the monitor has been dropped or the cabinet damaged.
- If the monitor does not operate normally by following operating instructions.
- Do not bend power cord.
- Do not use monitor in high temperatured, humid, dusty, or oily areas.
- Do not cover vent on monitor.
- If monitor is broken, do not come in contact with the liquid crystal.
- If glass is broken. Handle with care.

CAUTION

- Allow adequate ventilation around the monitor so that heat can properly dissipate. Do not block ventilated openings or place the monitor near a radiator or other heat sources. Do not put anything on top of monitor.
- The power cable connector is the primary means of detaching the system from the power supply. The monitor should be installed close to a power outlet which is easily accessible.
- Handle with care when transporting. Save packaging for transporting.

CORRECT PLACEMENT AND ADJUSTMENT OF THE MONITOR CAN REDUCE EYE, SHOULDER AND NECK FATIGUE. CHECK THE FOLLOWING WHEN YOU POSITION THE MONITOR:



- For optimum performance, allow 20 minutes for warm-up.
- Adjust the monitor height so that the top of the screen is at or slightly below eye level. Your eyes should look slightly downward when viewing the middle of the screen.
- Position your monitor no closer than 40 cm and no further away than 70 cm from your eyes. The optimal distance is 58 cm.
- Rest your eyes periodically by focusing on an object at least 6 m away. Blink often.
- Position the monitor at a 90° angle to windows and other light sources to minimize glare and reflections. Adjust the monitor tilt so that ceiling lights do not reflect on your screen.
- If reflected light makes it hard for you to see your screen, use an antiglare filter.
- Clean the LCD monitor surface with a lint-free, non-abrasive cloth. Avoid using any cleaning solution or glass cleaner!
- Adjust the monitor's brightness and contrast controls to enhance readability.
- Use a document holder placed close to the screen.
- Position whatever you are looking at most of the time (the screen or reference material) directly in front of you to minimize turning your head while you are typing.

- Avoid displaying fixed patterns on the monitor for long periods of time to avoid image persistence (after-image effects).
- Get regular eye checkups.

Ergonomics

To realize the maximum ergonomics benefits, we recommend the following:

- Use the preset Size and Position controls with standard signals.
- Use the preset Colour Setting.
- Use non-interlaced signals with a vertical refresh rate between 60-75 Hz.
- Do not use primary colour blue on a dark background, as it is difficult to see and may produce eye fatigue to insufficient contrast.

ALL PARTS LIST

MODEL NO.: LCD1550X

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
CAPACITOR				
C 100	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 101	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 102	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 103	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 104	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 105	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 106	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 107	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 108	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 109	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 110	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 111	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 112	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 113	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 114	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 115	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 116	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 117	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 118	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 119	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 120	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 121	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 122	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 123	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 124	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 125	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 126	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 127	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 128	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 200	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 201	CP156P062 09	C-CERAMIC-CHIP	B50V 472-K	1.6X0.8
C 202	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 203	CP141P518 01	C-CERAMIC-CHIP	B6.3V_106-K	2.0X1.25
C 204	CP156P062 09	C-CERAMIC-CHIP	B50V 472-K	1.6X0.8
C 205	CP182P070 01	C-ELE-CHIP	6.3V 10M-M NP 105C	
C 206	CP156P052 05	C-CERAMIC-CHIP	CH50V 47P-J	1.6X0.8
C 207	CP156P052 05	C-CERAMIC-CHIP	CH50V 47P-J	1.6X0.8
C 208	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 210	CP182P390 01	C-ELE-CHIP	4V_47M-M	
C 211	CP182P070 03	C-ELE-CHIP	6.3V 47M-M NP 105C	
C 212	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 213	CP182P070 03	C-ELE-CHIP	6.3V 47M-M NP 105C	
C 216	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 217	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 218	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 219	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 220	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 221	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 222	CP182P070 03	C-ELE-CHIP	6.3V 47M-M NP 105C	
C 223	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 224	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 225	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 226	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 228	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 229	CP182P070 03	C-ELE-CHIP	6.3V 47M-M NP 105C	
C 230	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 231	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 232	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 233	CP182P070 03	C-ELE-CHIP	6.3V 47M-M NP 105C	
C 235	CP156P062 09	C-CERAMIC-CHIP	B50V 472-K	1.6X0.8
C 236	CP156P062 09	C-CERAMIC-CHIP	B50V 472-K	1.6X0.8
C 237	CP141P518 01	C-CERAMIC-CHIP	B6.3V_106-K	2.0X1.25
C 238	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 239	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 242	CP182P390 01	C-ELE-CHIP	4V_47M-M	
C 243	CP182P070 01	C-ELE-CHIP	6.3V 10M-M NP 105C	
C 244	CP182P070 03	C-ELE-CHIP	6.3V 47M-M NP 105C	
C 245	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
C 247	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 248	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 249	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 250	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 254	CP156P052 05	C-CERAMIC-CHIP	CH50V 47P-J	1.6X0.8
C 255	CP156P052 05	C-CERAMIC-CHIP	CH50V 47P-J	1.6X0.8
C 300	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 301	CP156P063 04	C-CERAMIC-CHIP	B50V 562-K	1.6X0.8
C 303	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 305	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 308	CP156P063 04	C-CERAMIC-CHIP	B50V 562-K	1.6X0.8
C 310	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 314	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 316	CP156P063 04	C-CERAMIC-CHIP	B50V 562-K	1.6X0.8
C 318	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 319	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 321	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 322	CP156P063 04	C-CERAMIC-CHIP	B50V 562-K	1.6X0.8
C 400	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 401	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 402	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 403	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 404	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 405	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 406	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 407	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 408	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K	1.6X0.8
C 409	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 410	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 411	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 412	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 413	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K	1.6X0.8
C 414	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K	1.6X0.8
C 415	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 416	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 417	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 418	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 419	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 420	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 421	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 426	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 427	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 428	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 429	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 431	CP182P093 06	C-ELE-CHIP	16V 220MF	F80
C 432	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K	1.6X0.8
C 433	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 434	CP156P056 01	C-CERAMIC-CHIP	CH25V 1000P-J	1.6X0.8
C 435	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 436	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 437	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 438	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 439	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 440	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 441	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 442	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 443	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 444	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 445	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 446	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 447	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 448	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 449	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 450	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 451	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 452	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 453	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 454	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 455	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 456	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 457	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 458	CP156P051 06	C-CERAMIC-CHIP	CH50V 22P-J	1.6X0.8
C 500	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
C 501	CP156P056 01	C-CERAMIC-CHIP	CH25V 1000P-J	1.6X0.8
C 502	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 503	CP156P055 02	C-CERAMIC-CHIP	CH50V 470P-J	1.6X0.8
C 504	CP156P072 05	C-CERAMIC-CHIP	F_6.3V_106-Z	
C 505	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 506	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 507	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 508	CP156P055 02	C-CERAMIC-CHIP	CH50V 470P-J	1.6X0.8
C 509	CP156P063 02	C-CERAMIC-CHIP	B25V 473-K	1.6X0.8
C 510	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 511	CP156P063 02	C-CERAMIC-CHIP	B25V 473-K	1.6X0.8
C 512	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 513	CP156P055 02	C-CERAMIC-CHIP	CH50V 470P-J	1.6X0.8
C 514	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 515	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 516	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 517	CP156P063 02	C-CERAMIC-CHIP	B25V 473-K	1.6X0.8
C 518	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 519	CP156P063 02	C-CERAMIC-CHIP	B25V 473-K	1.6X0.8
C 520	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 521	CP156P055 02	C-CERAMIC-CHIP	CH50V 470P-J	1.6X0.8
C 522	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 523	CP156P072 05	C-CERAMIC-CHIP	F_6.3V_106-Z	
C 524	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 525	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 526	CP156P072 05	C-CERAMIC-CHIP	F_6.3V_106-Z	
C 527	CP156P056 01	C-CERAMIC-CHIP	CH25V 1000P-J	1.6X0.8
C 528	CP156P056 01	C-CERAMIC-CHIP	CH25V 1000P-J	1.6X0.8
C 529	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 530	CP156P055 02	C-CERAMIC-CHIP	CH50V 470P-J	1.6X0.8
C 531	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 532	CP156P056 01	C-CERAMIC-CHIP	CH25V 1000P-J	1.6X0.8
C 600	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 601	CP182P093 04	C-ELE-CHIP	16V 100MH	F55
C 602	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 603	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 604	CP182P094 06	C-ELE-CHIP	25V_470M-M	
C 605	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 607	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 608	CP182P093 06	C-ELE-CHIP	16V 220MF	F80
C 609	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 612	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 613	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 615	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 616	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 617	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 618	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 619	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 620	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 621	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 623	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 624	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 625	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 626	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K	1.6X0.8
C 627	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 629	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 630	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 633	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 634	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 635	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 636	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 637	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 638	CP141P518 01	C-CERAMIC-CHIP	B6.3V_106-K	2.0X1.25
C 640	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 641	CP182P094 06	C-ELE-CHIP	25V_470M-M	
C 642	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 643	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 645	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 646	CP141P514 04	C-CERAMIC-CHIP	B50V 333-K	2.0X1.25
C 647	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 648	CP156P054 07	C-CERAMIC-CHIP	CH50V 330P-J	1.6X0.8
C 649	CP141P514 04	C-CERAMIC-CHIP	B50V 333-K	2.0X1.25
C 650	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
C 651	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K 1.6X0.8	
C 652	CP182P094 06	C-ELE-CHIP	25V_470M-M	
C 653	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 654	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 655	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 656	CP182P093 04	C-ELE-CHIP	16V 100MH F55	
C 657	CP182P093 04	C-ELE-CHIP	16V 100MH F55	
C 658	CP156P062 09	C-CERAMIC-CHIP	B50V 472-K 1.6X0.8	
C 659	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 701	CP173P280 01	C-M-PP	100V 0.056M-J LXA595W	
C 702	CP173P280 01	C-M-PP	100V 0.056M-J LXA595W	
C 703	CP156P240 02	C-CERAMIC	SL6.3KV 15P-J LCD1550X	
C 704	CP156P240 02	C-CERAMIC	SL6.3KV 15P-J LCD1550X	
C 705	CP156P240 02	C-CERAMIC	SL6.3KV 15P-J LCD1550X	
C 706	CP156P240 02	C-CERAMIC	SL6.3KV 15P-J LCD1550X	
C 707	CP182P093 04	C-ELE-CHIP	16V 100MH F55	
C 708	CP182P093 04	C-ELE-CHIP	16V 100MH F55	
C 710	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 711	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K 1.6X0.8	
C 712	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 713	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 716	CP141P516 08	C-CERAMIC-CHIP	B10V 105-K 2.0X1.25	
C 717	CP141P516 08	C-CERAMIC-CHIP	B10V 105-K 2.0X1.25	
C 718	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K 1.6X0.8	
C 719	CP141P516 08	C-CERAMIC-CHIP	B10V 105-K 2.0X1.25	
C 720	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 721	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 722	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K 1.6X0.8	
C 725	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 726	CP141P516 08	C-CERAMIC-CHIP	B10V 105-K 2.0X1.25	
C 727	CP141P516 08	C-CERAMIC-CHIP	B10V 105-K 2.0X1.25	
C 901	CP189P200 07	C-M-P	AC275V 0.33M-M ECQU2A334ML	
C 902	CP189P200 07	C-M-P	AC275V 0.33M-M ECQU2A334ML	
C 903	CP185P044 01	C-ELE	KXW400V 150MF LCD1550X	
C 904	CP156P110 09	C-CERAMIC-AC	E 2200P-M-KX	
C 905	CP156P110 09	C-CERAMIC-AC	E 2200P-M-KX	
C 906	CP155P363 07	C-CERAMIC	2KV_330P-J LCD1550X	
C 907	CP173P210 05	C-M-P	DC630V 0.022M-J-OR-K	
C 909	CP155P516 05	C-CERAMIC	CH 50V 1000P-J	
C 912	CP182P314 07	C-ELECTROLYTIC	25V 680M-M 10X20	
C 914	CP155P513 08	C-CERAMIC	CH 50V 100P-J	
C 915	CP172P130 07	C-POLYESTER	50V 0.01M-K-OR-J 103 SO	
C 917	CP182P314 04	C-ELECTROLYTIC	25V 220M-M 8X11.5	
C 918	CP172P134 03	C-POLYESTER	50V 0.1M-K-OR-J 104 SO	
C 919	CP182P315 01	C-ELECTROLYTIC	25V 470M-M 10X16	
C 920	CP156P110 07	C-CERAMIC-AC	E 1000P-M-KX	
C 923	CP182P314 07	C-ELECTROLYTIC	25V 680M-M 10X20	
C 924	CP173P210 05	C-M-P	DC630V 0.022M-J-OR-K	
C 926	CP182P107 03	C-ELECTROLYTIC	50V 10M-M 5X11	
DIODE				
D 100	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 101	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 102	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 103	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 104	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 105	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 106	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 107	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 108	CP264P380 01	DIODE	1SS355TE-17	
D 200	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 201	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 202	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 203	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 204	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 205	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 206	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 207	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 208	CP264P576 01	DIODE-CHIP	RB495D	
D 209	CP264P310 05	DIODE-ZENER-CHIP	UDZ3.0B TE-17	
D 210	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 211	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 212	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 213	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
D 214	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 215	CP264P310 05	DIODE-ZENER-CHIP	UDZ3.0B TE-17
D 216	CP264P360 02	DIODE-CHIP	DAN217 T146
D 217	CP264P360 02	DIODE-CHIP	DAN217 T146
D 218	CP264P360 02	DIODE-CHIP	DAN217 T146
D 219	CP264P360 02	DIODE-CHIP	DAN217 T146
D 220	CP264P360 02	DIODE-CHIP	DAN217 T146
D 221	CP264P360 02	DIODE-CHIP	DAN217 T146
D 223	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 224	CP264P576 01	DIODE-CHIP	RB495D
D 226	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 227	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 228	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 229	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 603	CP264P380 01	DIODE	1SS355TE-17
D 604	CP264P380 01	DIODE	1SS355TE-17
D 607	CP264P380 01	DIODE	1SS355TE-17
D 609	CP264P380 01	DIODE	1SS355TE-17
D 610	CP264P380 01	DIODE	1SS355TE-17
D 611	CP264P569 01	DIODE-CHIP	CRS01(TE85L) LXA595W
D 612	CP264P569 01	DIODE-CHIP	CRS01(TE85L) LXA595W
D 613	CP264P569 01	DIODE-CHIP	CRS01(TE85L) LXA595W
D 614	CP264P581 01	DIODE-CHIP	1SS357 LXA595W
D 615	CP264P581 01	DIODE-CHIP	1SS357 LXA595W
D 616	CP264P569 01	DIODE-CHIP	CRS01(TE85L) LXA595W
D 617	CP264P380 01	DIODE	1SS355TE-17
D 702	CP264P380 01	DIODE	1SS355TE-17
D 706	CP264P426 06	DIODE-ZENER-CHIP	UDZS TE-17 8.2B (DH)
D 707	CP264P575 01	DIODE-CHIP	02DZ13Z LXA595W
D 708	CP264P380 01	DIODE	1SS355TE-17
D 709	CP264P380 01	DIODE	1SS355TE-17
D 711	CP264P380 01	DIODE	1SS355TE-17
D 715	CP264P380 01	DIODE	1SS355TE-17
D 716	CP264P380 01	DIODE	1SS355TE-17
D 717	CP264P426 07	DIODE-ZENER-CHIP	UDZS TE-17 9.1B (DH)
D 718	CP264P426 07	DIODE-ZENER-CHIP	UDZS TE-17 9.1B (DH)
D 719	CP264P426 07	DIODE-ZENER-CHIP	UDZS TE-17 9.1B (DH)
D 720	CP264P426 07	DIODE-ZENER-CHIP	UDZS TE-17 9.1B (DH)
D 800	CP264P480 02	LED	SML 19460C LF68
D 901	CP264P551 01	DIODE	D2SB60A
D 902	CP264P342 01	DIODE	D1NL20U
D 903	CP264P342 01	DIODE	D1NL20U
D 904	CP264P342 01	DIODE	D1NL20U
D 906	CP264P293 03	DIODE	MTZ J 6.8 B
D 908	CP264P593 01	DIODE	SF15JC10 LCD1550X
D 910	CP264P566 01	DIODE	SARS01 LXA595W
D 911	CP264P566 01	DIODE	SARS01 LXA595W
FUSE			
F 600	CP283P021 02	FUSE	SSFC-1.6A
F 701	CP283P021 02	FUSE	SSFC-1.6A
F 702	CP283P021 02	FUSE	SSFC-1.6A
F 901	CP283P017 06	FUSE	215-T3.15AH 250V
F 902	CP283P031 01	FUSE	250V 2.5A R26302.5
F 910	CP283P016 08	FUSE	251004 4A
F 911	CP283P052 02	PROTECTOR	491007 7A
IC			
IC100	CP266P287 01	IC	24LC64T-I/SN
IC101	CP263P283 01	IC	M51957AFP LXA580W
IC102	CP266P342 01	IC MOS	M30625FGMGP LXA580W
IC104	CP266P329 02	IC-MOS	M24C02WMN6T
IC105	CP266P329 02	IC-MOS	M24C02WMN6T
IC106	CP266P388 01	IC-MOS	X9116WM-2.7T4
IC107	CP266P329 02	IC-MOS	M24C02WMN6T
IC112	CP263P374 01	IC-LINEAR	NJM12903M(TE1)
IC201	CP272P111 01	IC-FTTL	74F14SJ
IC202	CP263P029 04	IC-LINEAR	NJM319V-TE1
IC203	CP263P029 04	IC-LINEAR	NJM319V-TE1
IC300	CP266P334 01	IC-MOS	74LC X14MTCX LXA580W
IC301	CP266P387 01	IC-MOS	74ACT157MTCX
IC303	CP266P334 01	IC-MOS	74LC X14MTCX LXA580W
IC304	CP266P387 01	IC-MOS	74ACT157MTCX
IC400	CP267P140 01	IC-CUSTOM	M64539FP(MAURICE2) LXA595W
IC500	CP266P389 01	IC-MOS	SII143CT100

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
IC601	CP263P371 01	IC-REGULATOR	PQ1U501M2ZP 5V
IC602	CP263P286 03	IC-REGULATOR	SI3025LSA 2.5V
IC604	CP263P286 03	IC-REGULATOR	SI3025LSA 2.5V
IC605	CP263P286 04	IC-REGULATOR	SI3033LSA 3.3V
IC606	CP263P373 01	IC-REGULATOR	NJM2870F25-TE1 2.5V
IC607	CP260P470 01	FET-CHIP	SI3457DV
IC608	CP263P295 01	IC	MB3778PFV-G-BND-EF
IC609	CP260P470 01	FET-CHIP	SI3457DV
IC610	CP260P497 01	FET-CHIP	HAT1053M LXA595W
IC611	CP263P375 01	IC	PQ1CZ21H2ZP
IC701	CP263P583 01	IC-LINEAR	LM2901MX LCD1550X
IC702	CP263P583 01	IC-LINEAR	LM2901MX LCD1550X
IC703	CP260P476 02	FET-CHIP	HAT1021
IC901	CP267P160 01	HIC	STR-G6452 LCD1550X
IC903	CP268P017 01	PHOTO-COUPLER	PC123Y22
IC904	CP263P215 02	IC	KIA431A-AT
IC905	CP268P017 01	PHOTO-COUPLER	PC123Y22
CONNECTOR			
J 100	CP452P318 02	CONNECTOR-FFC	52852-1290 LXA595W (MI)
J 101	CP452P311 05	CONNECTOR-SR	SM10B-SRSS-TB LXA580W (MI)
J 200	CP452P343 01	CONNECTOR-DVI	QH11121-CBO (MI)
J 201	CP452C070 01	CONNECTOR-D-SUB	NFN8715F
J 400	CP452P310 03	CONNECTOR-FFC-SMT	FH12-30S-0.5SH LXM510J (MI)
J 401	CP452P310 06	CONNECTOR-FFC-SMT	FH12-45S-0.5SH LXM510J (MI)
J 600	CP452P284 01	CONNECTOR-PH-SM3	B2B-PH-SM3-TB (MI)
J 601	CP452P284 07	CONNECTOR-PH-SM3	B8B-PH-SM3-TB (MI)
J 701	CP452P315 02	CONNECTOR-SMT	SM04(9-E2)B-BHS-1 LCD1550X (MI)
J 702	CP452P315 02	CONNECTOR-SMT	SM04(9-E2)B-BHS-1 LCD1550X (MI)
J 703	CP452C023 07	CONNECTOR-PH	B7B-PH-K-S
J 800	CP452P268 02	CONNECTOR-FFC	52807-1210
J 900	CP246B185 05	LEAD-CONNECTOR	J703-J900 LCD1550X (MT)
J 901	CP246B185 04	LEAD-CONNECTOR	J901-J601 LCD1550X (MT)
J 902	CP452P345 01	CONNECTOR-VH	B2P4-VH-B LCD1550X
JAC	CP452P247 03	CONNECTOR	B2P3-VH-B (MI)
COIL, FILTER			
L 101	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 102	CP410P102 04	FERRITE-CHIP	BK1608HS102
L 103	CP410P102 04	FERRITE-CHIP	BK1608HS102
L 104	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 106	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 107	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 202	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 203	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 204	CP410P041 03	FERRITE-CHIP	BK2125HS431
L 205	CP410P041 03	FERRITE-CHIP	BK2125HS431
L 206	CP410P072 08	FERRITE-CHIP	BLM21B750SPT
L 207	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 208	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 209	CP410P072 08	FERRITE-CHIP	BLM21B750SPT
L 210	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 211	CP410P072 08	FERRITE-CHIP	BLM21B750SPT
L 212	CP410P072 08	FERRITE-CHIP	BLM21B750SPT
L 213	CP410P072 08	FERRITE-CHIP	BLM21B750SPT
L 214	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 215	CP410P072 08	FERRITE-CHIP	BLM21B750SPT
L 216	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 218	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 221	CP410P041 03	FERRITE-CHIP	BK2125HS431
L 222	CP410P041 03	FERRITE-CHIP	BK2125HS431
L 300	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 301	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 302	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 303	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 305	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 306	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 307	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 308	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 400	CP410P079 01	FERRITE-CHIP	BLM11P121SGT
L 401	CP410P079 01	FERRITE-CHIP	BLM11P121SGT
L 402	CP410P079 01	FERRITE-CHIP	BLM11P121SGT
L 403	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 404	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 405	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
L 406	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 407	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 500	CP410P071 09	FERRITE-CHIP	BLM11A121SPT	
L 501	CP410P071 09	FERRITE-CHIP	BLM11A121SPT	
L 502	CP410P071 09	FERRITE-CHIP	BLM11A121SPT	
L 600	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 601	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 602	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121	
L 603	CP321P448 07	COIL-CHOKE-CHIP	100MH	(MI)
L 604	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 606	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 607	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 608	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 610	CP321P447 07	COIL-CHOKE-CHIP	100MH	
L 611	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 612	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 614	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 616	CP321P406 02	COIL-RF	FLC32CT-1ROM	(MI)
L 617	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 618	CP321P449 05	COIL-CHOKE-CHIP	150MH	
L 701	CP321P432 01	COIL-CHOKE	7212M-101K	LXA595W (MI)
L 702	CP321P432 01	COIL-CHOKE	7212M-101K	LXA595W (MI)
L 901	CP351P084 02	LINE-FILTER	SS11V-R10093	LCD1550X
L 902	CP410P012 03	BEAD-FERRITE	FBR07VB850	
L 903	CP351P084 02	LINE-FILTER	SS11V-R10093	LCD1550X
L 907	CP321P301 01	COIL-CHOKE	SBCP-11330H	LXA550W
L 908	CP321P301 01	COIL-CHOKE	SBCP-11330H	LXA550W
R 102	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 103	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 104	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 105	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 106	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 107	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 108	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 109	CP410P102 04	FERRITE-CHIP	BK1608HS102	
TRANSISTOR				
Q 100	CP260P114 01	TRANSISTOR-CHIP	2SA1037AK-R	
Q 101	CP260P114 01	TRANSISTOR-CHIP	2SA1037AK-R	
Q 102	CP260P339 01	TRANSISTOR	DTC114EUA	
Q 103	CP260P339 01	TRANSISTOR	DTC114EUA	
Q 104	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 105	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 106	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 200	CP260P473 01	TRANSISTOR	DTA143EKA-T	LXA585W
Q 201	CP260P339 01	TRANSISTOR	DTC114EUA	
Q 202	CP260P091 02	FET-MOS-CHIP	2SK360-E(IGE)	
Q 203	CP260P473 01	TRANSISTOR	DTA143EKA-T	LXA585W
Q 204	CP260P119 01	TRANSISTOR	2SA1462-T2B,Y34	
Q 205	CP260P339 01	TRANSISTOR	DTC114EUA	
Q 206	CP260P120 01	TRANSISTOR-CHIP	2SC3545-T2B KORR	
Q 207	CP260P119 01	TRANSISTOR	2SA1462-T2B,Y34	
Q 208	CP260P091 02	FET-MOS-CHIP	2SK360-E(IGE)	
Q 209	CP260P120 01	TRANSISTOR-CHIP	2SC3545-T2B KORR	
Q 210	CP260P120 01	TRANSISTOR-CHIP	2SC3545-T2B KORR	
Q 211	CP260P120 01	TRANSISTOR-CHIP	2SC3545-T2B KORR	
Q 212	CP260P120 01	TRANSISTOR-CHIP	2SC3545-T2B KORR	
Q 220	CP260P120 01	TRANSISTOR-CHIP	2SC3545-T2B KORR	
Q 300	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 301	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 302	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 303	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 600	CP260P339 01	TRANSISTOR	DTC114EUA	
Q 601	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 602	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 701	CP260P477 01	TRANSISTOR	2SC3518-L	LXA595W
Q 702	CP260P477 01	TRANSISTOR	2SC3518-L	LXA595W
Q 703	CP260P477 01	TRANSISTOR	2SC3518-L	LXA595W
Q 704	CP260P477 01	TRANSISTOR	2SC3518-L	LXA595W
Q 705	CP260P472 01	TRANSISTOR	DTC143EKA-T	LXA585W
Q 706	CP260P343 01	TRANSISTOR-CHIP	2SA1900	
Q 707	CP260P472 01	TRANSISTOR	DTC143EKA-T	LXA585W
Q 708	CP260P472 01	TRANSISTOR	DTC143EKA-T	LXA585W
Q 711	CP260P327 01	MOS-FET	2SK1133	

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
Q 712	CP260P343 01	TRANSISTOR-CHIP	2SA1900	
Q 714	CP260P472 01	TRANSISTOR	DTC143EKA-T	LXA585W
Q 717	CP260P473 01	TRANSISTOR	DTA143EKA-T	LXA585W
Q 718	CP260P473 01	TRANSISTOR	DTA143EKA-T	LXA585W
Q 901	CP260P359 01	TRANSISTOR	DTC113ZSA	
RESISTOR				
L 100	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
L 105	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 100	CP109P183 08	R-NETWORK-CHIP	1/16W 10K-J	
R 101	CP109P183 08	R-NETWORK-CHIP	1/16W 10K-J	
R 110	CP103P102 01	R-CARBON-CHIP	1/10W 220-J	
R 111	CP103P103 06	R-CARBON-CHIP	1/10W 4.7K-J	
R 112	CP103P102 01	R-CARBON-CHIP	1/10W 220-J	
R 113	CP103P103 06	R-CARBON-CHIP	1/10W 4.7K-J	
R 114	CP103P103 06	R-CARBON-CHIP	1/10W 4.7K-J	
R 115	CP103P103 06	R-CARBON-CHIP	1/10W 4.7K-J	
R 116	CP103P102 01	R-CARBON-CHIP	1/10W 220-J	
R 117	CP103P493 06	R-CHIP	1/16W 4.7K-J	
R 118	CP103P493 06	R-CHIP	1/16W 4.7K-J	
R 119	CP103P102 01	R-CARBON-CHIP	1/10W 220-J	
R 121	CP103P494 04	R-CHIP	1/16W 22K-J	
R 122	CP103P492 01	R-CHIP	1/16W 220-J	
R 123	CP104P003 03	R-CHIP	1/16W 220-F	1.6X0.8
R 124	CP103P492 01	R-CHIP	1/16W 220-J	
R 125	CP103P492 01	R-CHIP	1/16W 220-J	
R 126	CP103P492 01	R-CHIP	1/16W 220-J	
R 127	CP103P492 01	R-CHIP	1/16W 220-J	
R 128	CP103P492 01	R-CHIP	1/16W 220-J	
R 129	CP103P492 01	R-CHIP	1/16W 220-J	
R 130	CP103P492 01	R-CHIP	1/16W 220-J	
R 131	CP103P494 04	R-CHIP	1/16W 22K-J	
R 132	CP103P494 04	R-CHIP	1/16W 22K-J	
R 133	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 134	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 135	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 136	CP103P491 06	R-CHIP	1/16W 100-J	
R 137	CP103P491 06	R-CHIP	1/16W 100-J	
R 138	CP103P494 04	R-CHIP	1/16W 22K-J	
R 139	CP103P494 04	R-CHIP	1/16W 22K-J	
R 140	CP103P494 04	R-CHIP	1/16W 22K-J	
R 141	CP103P494 04	R-CHIP	1/16W 22K-J	
R 142	CP103P493 06	R-CHIP	1/16W 4.7K-J	
R 143	CP103P492 01	R-CHIP	1/16W 220-J	
R 144	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 145	CP103P492 01	R-CHIP	1/16W 220-J	
R 146	CP103P113 08	R-CARBON-CHIP	1/10W 6.8K-F	
R 147	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER	
R 148	CP103P491 06	R-CHIP	1/16W 100-J	
R 149	CP103P491 06	R-CHIP	1/16W 100-J	
R 150	CP103P494 04	R-CHIP	1/16W 22K-J	
R 151	CP103P494 04	R-CHIP	1/16W 22K-J	
R 152	CP103P491 06	R-CHIP	1/16W 100-J	
R 153	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 154	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 155	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 156	CP103P114 01	R-CARBON-CHIP	1/10W 10K-F	
R 157	CP103P102 08	R-CARBON-CHIP	1/10W 1K-J	
R 158	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER	
R 159	CP103P491 06	R-CHIP	1/16W 100-J	
R 160	CP103P102 01	R-CARBON-CHIP	1/10W 220-J	
R 161	CP103P492 01	R-CHIP	1/16W 220-J	
R 162	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 163	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER	
R 164	CP103P104 04	R-CARBON-CHIP	1/10W 22K-J	
R 165	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER	
R 167	CP103P491 06	R-CHIP	1/16W 100-J	
R 169	CP103P494 04	R-CHIP	1/16W 22K-J	
R 170	CP103P494 04	R-CHIP	1/16W 22K-J	
R 171	CP103P494 04	R-CHIP	1/16W 22K-J	
R 172	CP103P491 06	R-CHIP	1/16W 100-J	
R 173	CP103P491 06	R-CHIP	1/16W 100-J	
R 174	CP103P494 04	R-CHIP	1/16W 22K-J	
R 175	CP103P491 06	R-CHIP	1/16W 100-J	

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
R 176	CP103P494 04	R-CHIP	1/16W 22K-J
R 177	CP103P494 04	R-CHIP	1/16W 22K-J
R 178	CP103P494 04	R-CHIP	1/16W 22K-J
R 179	CP103P102 07	R-CARBON-CHIP	1/10W 820-J
R 180	CP104P006 03	R-CHIP	1/16W 3.9K-F 1.6X0.8
R 182	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 183	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 184	CP103P494 01	R-CHIP	1/16W 10K-J
R 185	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 186	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 187	CP103P494 04	R-CHIP	1/16W 22K-J
R 188	CP103P494 04	R-CHIP	1/16W 22K-J
R 189	CP103P494 04	R-CHIP	1/16W 22K-J
R 190	CP103P494 04	R-CHIP	1/16W 22K-J
R 191	CP103P494 01	R-CHIP	1/16W 10K-J
R 192	CP103P494 04	R-CHIP	1/16W 22K-J
R 193	CP103P494 04	R-CHIP	1/16W 22K-J
R 194	CP103P494 04	R-CHIP	1/16W 22K-J
R 195	CP103P494 04	R-CHIP	1/16W 22K-J
R 196	CP103P491 06	R-CHIP	1/16W 100-J
R 197	CP103P494 04	R-CHIP	1/16W 22K-J
R 198	CP103P491 06	R-CHIP	1/16W 100-J
R 199	CP103P494 04	R-CHIP	1/16W 22K-J
R 200	CP103P494 04	R-CHIP	1/16W 22K-J
R 203	CP103P494 04	R-CHIP	1/16W 22K-J
R 206	CP103P494 04	R-CHIP	1/16W 22K-J
R 207	CP104P007 05	R-CHIP	1/16W 12K-F 1.6X0.8
R 208	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 209	CP104P007 05	R-CHIP	1/16W 12K-F 1.6X0.8
R 210	CP103P102 07	R-CARBON-CHIP	1/10W 820-J
R 213	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 214	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 215	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 216	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 217	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 218	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 219	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 220	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 221	CP103P491 06	R-CHIP	1/16W 100-J
R 222	CP103P491 06	R-CHIP	1/16W 100-J
R 223	CP103P491 06	R-CHIP	1/16W 100-J
R 224	CP103P491 06	R-CHIP	1/16W 100-J
R 225	CP103P491 06	R-CHIP	1/16W 100-J
R 226	CP103P491 06	R-CHIP	1/16W 100-J
R 227	CP103P491 06	R-CHIP	1/16W 100-J
R 228	CP103P491 06	R-CHIP	1/16W 100-J
R 229	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 230	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 231	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 232	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 233	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 234	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 235	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 236	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 237	CP103P494 01	R-CHIP	1/16W 10K-J
R 238	CP103P494 01	R-CHIP	1/16W 10K-J
R 239	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 240	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 242	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 243	CP103P100 04	R-CARBON-CHIP	1/10W 10-J
R 244	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 245	CP103P491 06	R-CHIP	1/16W 100-J
R 246	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 247	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 248	CP104P005 07	R-CHIP	1/16W 2.2K-F 1.6X0.8
R 249	CP103P492 01	R-CHIP	1/16W 220-J
R 250	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 251	CP103P495 02	R-CHIP	1/16W 100K-J
R 252	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F
R 253	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F
R 254	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 255	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 256	CP103P492 04	R-CHIP	1/16W 470-J

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
R 257	CP103P493 04	R-CHIP	1/16W 3.3K-J	
R 258	CP103P494 01	R-CHIP	1/16W 10K-J	
R 259	CP103P494 01	R-CHIP	1/16W 10K-J	
R 260	CP103P494 01	R-CHIP	1/16W 10K-J	
R 261	CP103P492 05	R-CHIP	1/16W 560-J	
R 262	CP103P495 02	R-CHIP	1/16W 100K-J	
R 263	CP103P492 04	R-CHIP	1/16W 470-J	
R 264	CP103P494 06	R-CHIP	1/16W 33K-J	
R 265	CP103P482 04	R-METAL-CHIP	1/4W 75-F	
R 266	CP103P494 04	R-CHIP	1/16W 22K-J	
R 267	CP103P111 07	R-CARBON-CHIP	1/10W 120-F	
R 268	CP103P494 06	R-CHIP	1/16W 33K-J	
R 269	CP103P491 06	R-CHIP	1/16W 100-J	
R 271	CP103P494 04	R-CHIP	1/16W 22K-J	
R 272	CP103P482 04	R-METAL-CHIP	1/4W 75-F	
R 273	CP103P490 04	R-CHIP	1/16W 10-J	
R 275	CP103P490 04	R-CHIP	1/16W 10-J	
R 276	CP103P482 04	R-METAL-CHIP	1/4W 75-F	
R 277	CP103P490 04	R-CHIP	1/16W 10-J	
R 280	CP103P490 04	R-CHIP	1/16W 10-J	
R 281	CP104P003 03	R-CHIP	1/16W 220-F	1.6X0.8
R 282	CP103P491 01	R-CHIP	1/16W 33-J	
R 283	CP103P491 06	R-CHIP	1/16W 100-J	
R 284	CP103P491 01	R-CHIP	1/16W 33-J	
R 285	CP103P490 04	R-CHIP	1/16W 10-J	
R 288	CP103P490 04	R-CHIP	1/16W 10-J	
R 289	CP103P482 04	R-METAL-CHIP	1/4W 75-F	
R 290	CP103P490 04	R-CHIP	1/16W 10-J	
R 292	CP103P490 04	R-CHIP	1/16W 10-J	
R 293	CP104P002 09	R-CHIP	1/16W 150-F	1.6X0.8
R 294	CP104P005 07	R-CHIP	1/16W 2.2K-F	1.6X0.8
R 295	CP103P495 02	R-CHIP	1/16W 100K-J	
R 296	CP103P482 04	R-METAL-CHIP	1/4W 75-F	
R 297	CP103P490 04	R-CHIP	1/16W 10-J	
R 299	CP104P006 07	R-CHIP	1/16W 5.6K-F	1.6X0.8
R 300	CP103P491 06	R-CHIP	1/16W 100-J	
R 301	CP104P006 07	R-CHIP	1/16W 5.6K-F	1.6X0.8
R 302	CP103P494 01	R-CHIP	1/16W 10K-J	
R 303	CP103P492 01	R-CHIP	1/16W 220-J	
R 304	CP103P492 08	R-CHIP	1/16W 1.0K-J	
R 305	CP103P495 02	R-CHIP	1/16W 100K-J	
R 306	CP103P482 04	R-METAL-CHIP	1/4W 75-F	
R 307	CP103P493 06	R-CHIP	1/16W 4.7K-J	
R 308	CP103P493 04	R-CHIP	1/16W 3.3K-J	
R 309	CP104P002 09	R-CHIP	1/16W 150-F	1.6X0.8
R 310	CP104P003 03	R-CHIP	1/16W 220-F	1.6X0.8
R 311	CP103P494 01	R-CHIP	1/16W 10K-J	
R 312	CP103P492 05	R-CHIP	1/16W 560-J	
R 314	CP103P111 07	R-CARBON-CHIP	1/10W 120-F	
R 315	CP103P493 06	R-CHIP	1/16W 4.7K-J	
R 316	CP103P494 06	R-CHIP	1/16W 33K-J	
R 317	CP103P494 04	R-CHIP	1/16W 22K-J	
R 318	CP103P111 07	R-CARBON-CHIP	1/10W 120-F	
R 319	CP103P494 06	R-CHIP	1/16W 33K-J	
R 320	CP103P490 04	R-CHIP	1/16W 10-J	
R 321	CP103P494 04	R-CHIP	1/16W 22K-J	
R 322	CP103P111 07	R-CARBON-CHIP	1/10W 120-F	
R 323	CP103P491 06	R-CHIP	1/16W 100-J	
R 324	CP103P494 06	R-CHIP	1/16W 33K-J	
R 325	CP103P494 04	R-CHIP	1/16W 22K-J	
R 326	CP103P494 01	R-CHIP	1/16W 10K-J	
R 327	CP103P494 01	R-CHIP	1/16W 10K-J	
R 328	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 329	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 330	CP103P111 07	R-CARBON-CHIP	1/10W 120-F	
R 331	CP103P494 06	R-CHIP	1/16W 33K-J	
R 332	CP103P494 04	R-CHIP	1/16W 22K-J	
R 333	CP103P490 04	R-CHIP	1/16W 10-J	
R 334	CP103P111 07	R-CARBON-CHIP	1/10W 120-F	
R 340	CP103P490 04	R-CHIP	1/16W 10-J	
R 342	CP103P491 01	R-CHIP	1/16W 33-J	
R 343	CP103P100 04	R-CARBON-CHIP	1/10W 10-J	
R 346	CP103P491 06	R-CHIP	1/16W 100-J	

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
R 347	CP103P491 01	R-CHIP	1/16W 33-J
R 348	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 349	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 350	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F
R 351	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F
R 352	CP103P113 03	R-CARBON-CHIP	1/10W 2.7K-F
R 353	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 354	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 355	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 356	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 357	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 358	CP104P007 05	R-CHIP	1/16W 12K-F 1.6X0.8
R 359	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 360	CP103P491 06	R-CHIP	1/16W 100-J
R 361	CP103P491 06	R-CHIP	1/16W 100-J
R 362	CP103P491 06	R-CHIP	1/16W 100-J
R 367	CP103P113 03	R-CARBON-CHIP	1/10W 2.7K-F
R 368	CP104P007 05	R-CHIP	1/16W 12K-F 1.6X0.8
R 369	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 370	CP103P491 06	R-CHIP	1/16W 100-J
R 379	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 391	CP103P113 03	R-CARBON-CHIP	1/10W 2.7K-F
R 392	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 393	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 394	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 395	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 396	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 404	CP104P007 05	R-CHIP	1/16W 12K-F 1.6X0.8
R 405	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 406	CP103P491 06	R-CHIP	1/16W 100-J
R 407	CP103P491 06	R-CHIP	1/16W 100-J
R 408	CP103P491 06	R-CHIP	1/16W 100-J
R 409	CP103P113 03	R-CARBON-CHIP	1/10W 2.7K-F
R 410	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 411	CP104P007 05	R-CHIP	1/16W 12K-F 1.6X0.8
R 412	CP103P491 06	R-CHIP	1/16W 100-J
R 413	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 414	CP103P490 04	R-CHIP	1/16W 10-J
R 415	CP103P492 01	R-CHIP	1/16W 220-J
R 419	CP103P492 01	R-CHIP	1/16W 220-J
R 420	CP103P492 01	R-CHIP	1/16W 220-J
R 421	CP103P114 07	R-CARBON-CHIP	1/10W 39K-F
R 422	CP103P113 01	R-CARBON-CHIP	1/10W 1.8K-F
R 423	CP103P106 03	R-CARBON-CHIP	1/10W 820K-J
R 424	CP103P492 01	R-CHIP	1/16W 220-J
R 428	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 429	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 430	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 431	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 433	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 434	CP103P113 09	R-CARBON-CHIP	1/10W 8.2K-F
R 435	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER
R 436	CP103P490 04	R-CHIP	1/16W 10-J
R 437	CP103P490 04	R-CHIP	1/16W 10-J
R 438	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 439	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 440	CP103P491 06	R-CHIP	1/16W 100-J
R 441	CP103P491 06	R-CHIP	1/16W 100-J
R 442	CP103P491 06	R-CHIP	1/16W 100-J
R 443	CP103P491 06	R-CHIP	1/16W 100-J
R 444	CP103P102 01	R-CARBON-CHIP	1/10W 220-J
R 447	CP104P005 05	R-CHIP	1/16W 1.8K-F 1.6X0.8
R 454	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER
R 458	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 459	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 460	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 461	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 463	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 464	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 465	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 466	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 467	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 468	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
R 469	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J	
R 470	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J	
R 500	CP103P490 04	R-CHIP	1/16W 10-J	
R 501	CP103P490 04	R-CHIP	1/16W 10-J	
R 502	CP103P493 02	R-CHIP	1/16W 2.2K-J	
R 503	CP103P493 02	R-CHIP	1/16W 2.2K-J	
R 504	CP103P493 02	R-CHIP	1/16W 2.2K-J	
R 505	CP103P490 04	R-CHIP	1/16W 10-J	
R 506	CP103P490 04	R-CHIP	1/16W 10-J	
R 507	CP103P490 04	R-CHIP	1/16W 10-J	
R 508	CP103P490 04	R-CHIP	1/16W 10-J	
R 509	CP103P490 04	R-CHIP	1/16W 10-J	
R 510	CP103P490 04	R-CHIP	1/16W 10-J	
R 511	CP103P490 04	R-CHIP	1/16W 10-J	
R 512	CP103P112 05	R-CARBON-CHIP	1/10W 560-F	
R 513	CP103P490 04	R-CHIP	1/16W 10-J	
R 514	CP103P494 01	R-CHIP	1/16W 10K-J	
R 515	CP103P490 04	R-CHIP	1/16W 10-J	
R 516	CP103P490 04	R-CHIP	1/16W 10-J	
R 517	CP103P494 01	R-CHIP	1/16W 10K-J	
R 518	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER	
R 521	CP103P494 01	R-CHIP	1/16W 10K-J	
R 522	CP103P490 04	R-CHIP	1/16W 10-J	
R 523	CP103P490 04	R-CHIP	1/16W 10-J	
R 524	CP103P490 04	R-CHIP	1/16W 10-J	
R 526	CP103P490 04	R-CHIP	1/16W 10-J	
R 527	CP103P490 04	R-CHIP	1/16W 10-J	
R 528	CP103P490 04	R-CHIP	1/16W 10-J	
R 529	CP103P490 04	R-CHIP	1/16W 10-J	
R 530	CP103P490 04	R-CHIP	1/16W 10-J	
R 531	CP103P490 04	R-CHIP	1/16W 10-J	
R 532	CP103P490 04	R-CHIP	1/16W 10-J	
R 533	CP103P490 04	R-CHIP	1/16W 10-J	
R 534	CP103P490 04	R-CHIP	1/16W 10-J	
R 535	CP103P490 04	R-CHIP	1/16W 10-J	
R 536	CP103P491 02	R-CHIP	1/16W 47-J	
R 537	CP103P494 01	R-CHIP	1/16W 10K-J	
R 538	CP103P493 02	R-CHIP	1/16W 2.2K-J	
R 539	CP103P490 04	R-CHIP	1/16W 10-J	
R 602	CP104P003 05	R-CHIP	1/16W 270-F	1.6X0.8
R 607	CP104P006 07	R-CHIP	1/16W 5.6K-F	1.6X0.8
R 609	CP104P006 01	R-CHIP	1/16W 3.3K-F	1.6X0.8
R 610	CP103P492 01	R-CHIP	1/16W 220-J	
R 613	CP103P493 02	R-CHIP	1/16W 2.2K-J	
R 614	CP104P003 07	R-CHIP	1/16W 330-F	1.6X0.8
R 616	CP104P006 07	R-CHIP	1/16W 5.6K-F	1.6X0.8
R 619	CP104P005 05	R-CHIP	1/16W 1.8K-F	1.6X0.8
R 620	CP103P493 02	R-CHIP	1/16W 2.2K-J	
R 621	CP103P493 02	R-CHIP	1/16W 2.2K-J	
R 623	CP103P493 02	R-CHIP	1/16W 2.2K-J	
R 624	CP104P003 03	R-CHIP	1/16W 220-F	1.6X0.8
R 625	CP103P103 04	R-CARBON-CHIP	1/10W 3.3K-J	
R 626	CP103P100 04	R-CARBON-CHIP	1/10W 10-J	
R 629	CP104P010 05	R-CHIP	1/16W 150K-F	1.6X0.8
R 630	CP104P006 05	R-CHIP	1/16W 4.7K-F	1.6X0.8
R 631	CP104P007 03	R-CHIP	1/16W 10K-F	1.6X0.8
R 632	CP104P007 07	R-CHIP	1/16W 15K-F	1.6X0.8
R 633	CP104P006 01	R-CHIP	1/16W 3.3K-F	1.6X0.8
R 634	CP104P006 01	R-CHIP	1/16W 3.3K-F	1.6X0.8
R 635	CP104P010 05	R-CHIP	1/16W 150K-F	1.6X0.8
R 636	CP104P006 05	R-CHIP	1/16W 4.7K-F	1.6X0.8
R 637	CP104P007 03	R-CHIP	1/16W 10K-F	1.6X0.8
R 638	CP103P100 04	R-CARBON-CHIP	1/10W 10-J	
R 639	CP103P103 04	R-CARBON-CHIP	1/10W 3.3K-J	
R 640	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 646	CP103P105 02	R-CARBON-CHIP	1/10W 100K-J	
R 647	CP103P103 04	R-CARBON-CHIP	1/10W 3.3K-J	
R 649	CP103P493 02	R-CHIP	1/16W 2.2K-J	
R 650	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 651	CP104P004 06	R-CHIP	1/16W 750-F	1.6X0.8
R 652	CP104P006 07	R-CHIP	1/16W 5.6K-F	1.6X0.8
R 653	CP104P005 05	R-CHIP	1/16W 1.8K-F	1.6X0.8
R 654	CP103P497 01	R-CHIP	1/16W 0 JUMPER	

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
R 655	CP103P492 08	R-CHIP	1/16W 1.0K-J	
R 701	CP103P103 06	R-CARBON-CHIP	1/10W 4.7K-J	
R 702	CP103P103 06	R-CARBON-CHIP	1/10W 4.7K-J	
R 703	CP103P113 03	R-CARBON-CHIP	1/10W 2.7K-F	
R 704	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F	
R 705	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F	
R 706	CP103P112 05	R-CARBON-CHIP	1/10W 560-F	
R 707	CP103P112 05	R-CARBON-CHIP	1/10W 560-F	
R 708	CP103P101 06	R-CARBON-CHIP	1/10W 100-J	
R 709	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F	
R 711	CP103P492 08	R-CHIP	1/16W 1.0K-J	
R 712	CP103P114 01	R-CARBON-CHIP	1/10W 10K-F	
R 713	CP103P103 01	R-CARBON-CHIP	1/10W 1.5K-J	
R 714	CP103P114 01	R-CARBON-CHIP	1/10W 10K-F	
R 718	CP103P102 01	R-CARBON-CHIP	1/10W 220-J	
R 720	CP103P495 07	R-CHIP	1/16W 270K-J	
R 721	CP103P496 04	R-CHIP	1/16W 1.0M-J	
R 724	CP103P496 04	R-CHIP	1/16W 1.0M-J	
R 727	CP103P492 08	R-CHIP	1/16W 1.0K-J	
R 728	CP103P496 06	R-CHIP	1/16W 1.5M-J	
R 729	CP103P113 03	R-CARBON-CHIP	1/10W 2.7K-F	
R 730	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F	
R 731	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F	
R 732	CP103P112 05	R-CARBON-CHIP	1/10W 560-F	
R 733	CP103P112 05	R-CARBON-CHIP	1/10W 560-F	
R 734	CP103P101 06	R-CARBON-CHIP	1/10W 100-J	
R 735	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F	
R 737	CP103P114 01	R-CARBON-CHIP	1/10W 10K-F	
R 742	CP103P496 04	R-CHIP	1/16W 1.0M-J	
R 744	CP103P496 04	R-CHIP	1/16W 1.0M-J	
R 753	CP103P113 04	R-CARBON-CHIP	1/10W 3.3K-F	
R 901	CP103P465 01	R-SURGE	1/2W 470K-J	
R 902	CP104P422 01	R-METAL	1/2W 680K-J	
R 903	CP103P415 05	R-CARBON	1/2W 330K-J	
R 904	QX103P413 05	R-CARBON	1/4W 6.8K-J	682 RD-H
R 905	QX103P412 06	R-CARBON	1/4W 1.2K-J	122 RD-H
R 906	CP103P170 06	R-METAL-PLATE	2W 0.33-K	
R 907	QX103P412 09	R-CARBON	1/4W 2.2K-J	222 RD-H
R 908	CP103P410 07	R-CARBON	1/2W 33-J	
R 909	QX103P413 01	R-CARBON	1/4W 3.3K-J	332 RD-H
R 910	CP103P065 07	R-METAL-S	1/4W 2.2K-F	222 RN-H
R 911	QX103P412 05	R-CARBON	1/4W 1K-J	102 RD-H
R 914	QX103P412 01	R-CARBON	1/4W 390-J	391 RD-H
R 915	CP103P412 02	R-CARBON	1/2W 560-J	
R 917	QX103P412 05	R-CARBON	1/4W 1K-J	102 RD-H
R 925	CP103P415 05	R-CARBON	1/2W 330K-J	
R 926	CP103P415 05	R-CARBON	1/2W 330K-J	
R 927	QX103P414 06	R-CARBON	1/4W 56K-J	563 RD-H
R 928	CP103P062 09	R-METAL-S	1/4W 150-F	151 RN-H
R 929	CP103P067 01	R-METAL-S	1/4W 8.2K-F	822 RN-H
R 930	CP103P412 09	R-CARBON	1/2W 2.2K-J	
R 931	CP104P121 05	R-METAL	2W 120-J	
R 934	CP103P415 05	R-CARBON	1/2W 330K-J	
R 935	QX103P412 06	R-CARBON	1/4W 1.2K-J	122 RD-H
VARISTOR				
RV901	CP265P108 08	VARISTOR	ENE471D-10A	
SWITCH				
SW800	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW801	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW802	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW803	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW804	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW805	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW806	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW807	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
TRANS				
T 701	CP409P096 01	TRANS-INVERTER	ETJ20K29AM	LCD1550X (MI)
T 702	CP409P096 01	TRANS-INVERTER	ETJ20K29AM	LCD1550X (MI)
T 901	CP350P103 01	TRANS-POWER	ETS33BG155AH	LCD1550X
THERMISTOR				
TH100	CP265P517 08	THERMISTOR-CHIP	TBPSIR223J460H5Q	
TH901	CP265P119 01	THERMISTOR	10D2-10LC	
THYRISTOR				

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
TH701	CP264P592 01	THYRISTOR	CR05AS-4-B LCD1550X
LCD-PANEL			
	CP289P022 01	LCD-MODULE	TX38D26VC0CAA LCD1550X
ASSY PCBs			
	CT920B631 01	ASSY-PCB-POWER	
	CT920C278 01	ASSY-PCB-INVERTER	
	CT920C279 01	ASSY-PCB-SW	
	CT920C280 01	ASSY-PCB-MAIN	
COSMETIC PARTS			
	CP700A271 01	COVER-REAR	PC+ABS CU6800 LCD1550X (MI)
	CP702B058 01	COVER-VESA	PC+ABS CU6800 LCD1550X (MI)
	CP702B059 01	COVER-CABLE	PC+ABS CU6800 LCD1550X (MI)
	CP702B060 01	COVER-POWER	PC+ABS CU6800 LCD1550X (MI)
	CP702B061 01	COVER-HINGE-UP	PC+PS LCD1550X (MI)
	CP722A010 01	PLATE-SV-UNIT	LCD1550X (MI)
	CP722A008 01	STAND-UNIT	LCD1550X (MI)
	CP722A009 01	BASE-UNIT	LCD1550X (MI)
OTHERS			
E 900	CP442P004 02	EARTH-TERMINAL	TP00385-41
E 901	CP442P004 02	EARTH-TERMINAL	TP00385-41
E 902	CP442P004 02	EARTH-TERMINAL	TP00385-41
FG801	CP246C365 02	PIN-LEAD	LXM510J (MT)
FG802	CP246C365 02	PIN-LEAD	LXM510J (MT)
JF901	CP442P001 01	FUSE-CLIP	TP00351-51
JF902	CP442P001 01	FUSE-CLIP	TP00351-51
X 100	CP285P030 01	CRYSTAL	KCO-735S(10.0MHZ) LXA580W
	CH330H509 09	SO-COPPER-WIRE	
	CH330H509 09	SO-COPPER-WIRE	
	CP081P001 01	SILICONE-GUM	TSE3940
	CP096P012 01	TAPE-AL	CCJ-36-201-W20MM (MT)
	CP096P012 01	TAPE-AL	CCJ-36-201-W20MM (MT)
	CP210A271 01	LAYER	CP210P001 PWB-MAIN (MI)
	CP210B096 01	LAYER	CP210P002 PWB-POWER (MI)
	CP210B097 01	LAYER	CP210P001 PWB-INV (MI)
	CP210C100 01	LAYER	CP210P002 PWB-SW (MI)
	CP223B007 01	INSULATOR-TOP	N-7 T0.5 LCD1550X (MI)
	CP223B008 01	INSULATOR-BOTTOM	N-7 T0.5 LCD1550X (MI)
	CP231D013 01	TUBE-UL	LCD1550X (MY)
	CP242C293 02	SIGNAL-CABLE	SC-D801 LCD1550X
	CP242C294 01	SIGNAL-CABLE	SC-D830 NSZ2102U
	CP246C428 02	FFC-CABLE	12P LCD1550X (MT)
	CP246C428 03	FFC-CABLE	30P LCD1550X (MT)
	CP246C428 04	FFC-CABLE	45P LCD1550X (MT)
	CP246C434 02	LEAD-CONNECTOR-PJ	LCD1550X (MT)
	CP246C439 02	LEAD-CONNECTOR-SW	LCD1550X (MT)
	CP442P004 02	EARTH-TERMINAL	TP00385-41
	CP540D077 01	LEAD-CLAMPER	LWS-1.5SLVOBK LCD1550X (MI)
	CP553D007 04	SPACER	MO-48 T4.0 LCD1550X (MI)
	CP554D027 01	GASKET-EMI	LCD1550X (MI)
	CP554D028 01	GASKET-EMI	LCD1550X (MI)
	CP580A118 01	SHIELD-COVER	SECC-C E16/16 T0.8 LCD1550X
	CP590D099 01	RADIATOR	A6063S-T5 LXA595W
	CP593A164 01	HOLDER-PCB	SECC-C E16/16 T0.8 LCD1550X
	CP669D016 07	SCREW-TB-BIND-W	4X10 46LA005
	CP669D041 01	SCREW-HEX	JFS-4S-B1WM FS6605K
	CP669D074 01	SCREW-TB-SEMS	3X8 LXM510J
	CP669D089 01	SCREW-SEMS	M4X8 LXA550W
	CP669D104 02	SCREW-TB-SEMS	3X8
	CP669D104 02	SCREW-TB-SEMS	3X8
	CP669D113 01	SCREW-BIND	M3X5 46LA005 LCD1550X
	CP669D114 01	SCREW-CAP	M3X0.5-6 46LA005 LCD1550X
	CP669D118 04	SCREW-TB-BIND	3X12 LCD1550X
	CP669D118 04	SCREW-TB-BIND	3X12 LCD1550X
	CP669D502 02	SCREW-SEMS	M3X0.5-10
	CP677D020 01	EYELET	2.0X3.0X3.3 0.2T
	CP677D020 02	EYELET	1.6X3.0X3.0 0.2T
	CP680D009 01	WASHER-SV	LCD1550X
	CP775C370 01	RATING-LABEL	LCD1550X
	CP775C370 02	RATING-LABEL	LCD1550X
	CP803A109 01	CUSHION-SET	FOAMED-P.S P=0.01667LCD1550X
	CP829D019 01	PACKING-SHEET	LCD1550X
	CP831C047 01	PACKING-BAG	LCD1550X
	QX096Z462 07	MASKING-TAPE	W18X18M

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
	QX096Z466 07	CARTON-TAPE 75X50	096N010A 75X50M-CLARITY
	QX669D204 06	SCREW-SEMS-W	M4X0.7-16
	QX669D220 02	SCREW-TB	* 3X8

OPTIONAL PARTS

LCD1550X-US				
	CP242C229 06	AC-POWER-CORD		(MT)
	CP720B107 01	BEZEL-UNIT	CP700A270-1	LCD1550X-US(MI)
	CP802C393 01	PACKING-CASE		LCD1550X-US
	CP859C233 01	ACCESSORY	CP871C190-9	LCD1550X-US
LCD1550X-EU				
	CP242C289 02	AC-POWER-CORD		(MT)
	CP242C290 02	AC-POWER-CORD		NSZ2107U-UK(MT)
	CP720B107 02	BEZEL-UNIT	CP700A270-1	LCD1550X-EU(MI)
	CP802C393 03	PACKING-CASE		LCD1550X-EU
	CP859C233 02	ACCESSORY	CP871C191-1	LCD1550X-EU

ALL PARTS LIST

MODEL NO.: LCD1550X-BK

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
CAPACITOR				
C 100	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 101	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 102	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 103	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 104	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 105	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 106	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 107	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 108	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 109	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 110	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 111	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 112	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 113	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 114	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 115	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 116	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 117	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 118	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 119	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 120	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 121	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 122	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 123	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 124	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 125	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 126	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 127	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 128	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 200	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 201	CP156P062 09	C-CERAMIC-CHIP	B50V 472-K	1.6X0.8
C 202	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 203	CP141P518 01	C-CERAMIC-CHIP	B6.3V_106-K	2.0X1.25
C 204	CP156P062 09	C-CERAMIC-CHIP	B50V 472-K	1.6X0.8
C 205	CP182P070 01	C-ELE-CHIP	6.3V 10M-M NP 105C	
C 206	CP156P052 05	C-CERAMIC-CHIP	CH50V 47P-J	1.6X0.8
C 207	CP156P052 05	C-CERAMIC-CHIP	CH50V 47P-J	1.6X0.8
C 208	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 210	CP182P390 01	C-ELE-CHIP	4V_47M-M	
C 211	CP182P070 03	C-ELE-CHIP	6.3V 47M-M NP 105C	
C 212	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 213	CP182P070 03	C-ELE-CHIP	6.3V 47M-M NP 105C	
C 216	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 217	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 218	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 219	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 220	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 221	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 222	CP182P070 03	C-ELE-CHIP	6.3V 47M-M NP 105C	
C 223	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 224	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 225	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 226	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 228	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 229	CP182P070 03	C-ELE-CHIP	6.3V 47M-M NP 105C	
C 230	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 231	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 232	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 233	CP182P070 03	C-ELE-CHIP	6.3V 47M-M NP 105C	
C 235	CP156P062 09	C-CERAMIC-CHIP	B50V 472-K	1.6X0.8
C 236	CP156P062 09	C-CERAMIC-CHIP	B50V 472-K	1.6X0.8
C 237	CP141P518 01	C-CERAMIC-CHIP	B6.3V_106-K	2.0X1.25
C 238	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 239	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 242	CP182P390 01	C-ELE-CHIP	4V_47M-M	
C 243	CP182P070 01	C-ELE-CHIP	6.3V 10M-M NP 105C	
C 244	CP182P070 03	C-ELE-CHIP	6.3V 47M-M NP 105C	
C 245	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
C 247	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 248	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 249	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 250	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 254	CP156P052 05	C-CERAMIC-CHIP	CH50V 47P-J	1.6X0.8
C 255	CP156P052 05	C-CERAMIC-CHIP	CH50V 47P-J	1.6X0.8
C 300	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 301	CP156P063 04	C-CERAMIC-CHIP	B50V 562-K	1.6X0.8
C 303	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 305	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 308	CP156P063 04	C-CERAMIC-CHIP	B50V 562-K	1.6X0.8
C 310	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 314	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 316	CP156P063 04	C-CERAMIC-CHIP	B50V 562-K	1.6X0.8
C 318	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 319	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 321	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 322	CP156P063 04	C-CERAMIC-CHIP	B50V 562-K	1.6X0.8
C 400	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 401	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 402	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 403	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 404	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 405	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 406	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 407	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 408	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K	1.6X0.8
C 409	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 410	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 411	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 412	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 413	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K	1.6X0.8
C 414	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K	1.6X0.8
C 415	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 416	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 417	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 418	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 419	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 420	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 421	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 426	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 427	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 428	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 429	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 431	CP182P093 06	C-ELE-CHIP	16V 220MF	F80
C 432	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K	1.6X0.8
C 433	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 434	CP156P056 01	C-CERAMIC-CHIP	CH25V 1000P-J	1.6X0.8
C 435	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 436	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 437	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 438	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 439	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 440	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 441	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 442	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 443	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 444	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 445	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 446	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 447	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 448	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 449	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 450	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 451	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 452	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 453	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 454	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 455	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 456	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 457	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 458	CP156P051 06	C-CERAMIC-CHIP	CH50V 22P-J	1.6X0.8
C 500	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
C 501	CP156P056 01	C-CERAMIC-CHIP	CH25V 1000P-J	1.6X0.8
C 502	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 503	CP156P055 02	C-CERAMIC-CHIP	CH50V 470P-J	1.6X0.8
C 504	CP141P518 01	C-CERAMIC-CHIP	B6.3V_106-K	2.0X1.25
C 505	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 506	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 507	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 508	CP156P055 02	C-CERAMIC-CHIP	CH50V 470P-J	1.6X0.8
C 509	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 510	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 511	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 512	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 513	CP156P055 02	C-CERAMIC-CHIP	CH50V 470P-J	1.6X0.8
C 514	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 515	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 516	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 517	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 518	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 519	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 520	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 521	CP156P055 02	C-CERAMIC-CHIP	CH50V 470P-J	1.6X0.8
C 522	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 523	CP141P518 01	C-CERAMIC-CHIP	B6.3V_106-K	2.0X1.25
C 524	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 525	CP156P053 04	C-CERAMIC-CHIP	CH50V 100P-J	1.6X0.8
C 526	CP141P518 01	C-CERAMIC-CHIP	B6.3V_106-K	2.0X1.25
C 527	CP156P056 01	C-CERAMIC-CHIP	CH25V 1000P-J	1.6X0.8
C 528	CP156P056 01	C-CERAMIC-CHIP	CH25V 1000P-J	1.6X0.8
C 529	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 530	CP156P055 02	C-CERAMIC-CHIP	CH50V 470P-J	1.6X0.8
C 531	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 532	CP156P056 01	C-CERAMIC-CHIP	CH25V 1000P-J	1.6X0.8
C 600	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 601	CP182P093 04	C-ELE-CHIP	16V 100MH	F55
C 602	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 603	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 604	CP182P094 06	C-ELE-CHIP	25V_470M-M	
C 605	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 607	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 608	CP182P093 06	C-ELE-CHIP	16V 220MF	F80
C 609	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 612	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 613	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 615	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 616	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 617	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 618	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 619	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 620	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 621	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 623	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 624	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 625	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 626	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K	1.6X0.8
C 627	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 629	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 630	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 633	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 634	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 635	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 636	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 637	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 638	CP141P518 01	C-CERAMIC-CHIP	B6.3V_106-K	2.0X1.25
C 640	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 641	CP182P094 06	C-ELE-CHIP	25V_470M-M	
C 642	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K	1.6X0.8
C 643	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 645	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K	1.6X0.8
C 646	CP141P514 04	C-CERAMIC-CHIP	B50V 333-K	2.0X1.25
C 647	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8
C 648	CP156P054 07	C-CERAMIC-CHIP	CH50V 330P-J	1.6X0.8
C 649	CP141P514 04	C-CERAMIC-CHIP	B50V 333-K	2.0X1.25
C 650	CP156P065 05	C-CERAMIC-CHIP	B6.3V-105-K	1.6X0.8

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
C 651	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K 1.6X0.8	
C 652	CP182P094 06	C-ELE-CHIP	25V_470M-M	
C 653	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 654	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 655	CP182P092 03	C-ELE-CHIP	6.3V 100MF	
C 656	CP182P093 04	C-ELE-CHIP	16V 100MH F55	
C 657	CP182P093 04	C-ELE-CHIP	16V 100MH F55	
C 658	CP156P062 09	C-CERAMIC-CHIP	B50V 472-K 1.6X0.8	
C 659	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 701	CP173P280 01	C-M-PP	100V 0.056M-J LXA595W	
C 702	CP173P280 01	C-M-PP	100V 0.056M-J LXA595W	
C 703	CP156P240 02	C-CERAMIC	SL6.3KV 15P-J LCD1550X	
C 704	CP156P240 02	C-CERAMIC	SL6.3KV 15P-J LCD1550X	
C 705	CP156P240 02	C-CERAMIC	SL6.3KV 15P-J LCD1550X	
C 706	CP156P240 02	C-CERAMIC	SL6.3KV 15P-J LCD1550X	
C 707	CP182P093 04	C-ELE-CHIP	16V 100MH F55	
C 708	CP182P093 04	C-ELE-CHIP	16V 100MH F55	
C 710	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 711	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K 1.6X0.8	
C 712	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 713	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 716	CP141P516 08	C-CERAMIC-CHIP	B10V 105-K 2.0X1.25	
C 717	CP141P516 08	C-CERAMIC-CHIP	B10V 105-K 2.0X1.25	
C 718	CP156P060 03	C-CERAMIC-CHIP	B16V 104-K 1.6X0.8	
C 719	CP141P516 08	C-CERAMIC-CHIP	B10V 105-K 2.0X1.25	
C 720	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 721	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 722	CP156P060 01	C-CERAMIC-CHIP	B50V 102-K 1.6X0.8	
C 725	CP156P060 02	C-CERAMIC-CHIP	B50V 103-K 1.6X0.8	
C 726	CP141P516 08	C-CERAMIC-CHIP	B10V 105-K 2.0X1.25	
C 727	CP141P516 08	C-CERAMIC-CHIP	B10V 105-K 2.0X1.25	
C 901	CP189P200 07	C-M-P	AC275V 0.33M-M ECQU2A334ML	
C 902	CP189P200 07	C-M-P	AC275V 0.33M-M ECQU2A334ML	
C 903	CP185P044 01	C-ELE	KXW400V 150MF LCD1550X	
C 904	CP156P110 09	C-CERAMIC-AC	E 2200P-M-KX	
C 905	CP156P110 09	C-CERAMIC-AC	E 2200P-M-KX	
C 906	CP155P363 07	C-CERAMIC	2KV_330P-J LCD1550X	
C 907	CP173P210 05	C-M-P	DC630V 0.022M-J-OR-K	
C 909	CP155P516 05	C-CERAMIC	CH 50V 1000P-J	
C 912	CP182P314 07	C-ELECTROLYTIC	25V 680M-M 10X20	
C 914	CP155P513 08	C-CERAMIC	CH 50V 100P-J	
C 915	CP172P130 07	C-POLYESTER	50V 0.01M-K-OR-J 103 SO	
C 917	CP182P314 04	C-ELECTROLYTIC	25V 220M-M 8X11.5	
C 918	CP172P134 03	C-POLYESTER	50V 0.1M-K-OR-J 104 SO	
C 919	CP182P315 00	C-ELECTROLYTIC	25V 470M-M 10X16	
C 920	CP156P110 07	C-CERAMIC-AC	E 1000P-M-KX	
C 923	CP182P314 07	C-ELECTROLYTIC	25V 680M-M 10X20	
C 924	CP173P210 05	C-M-P	DC630V 0.022M-J-OR-K	
C 926	CP182P107 03	C-ELECTROLYTIC	50V 10M-M 5X11	
DIODE				
D 100	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 101	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 102	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 103	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 104	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 105	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 106	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 107	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 108	CP264P380 01	DIODE	1SS355TE-17	
D 200	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 201	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 202	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 203	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 204	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 205	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 206	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 207	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 208	CP264P576 01	DIODE-CHIP	RB495D	
D 209	CP264P310 05	DIODE-ZENER-CHIP	UDZ3.0B TE-17	
D 210	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 211	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)
D 212	CP264P360 02	DIODE-CHIP	DAN217 T146	
D 213	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B	(DH)

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
D 214	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 215	CP264P310 05	DIODE-ZENER-CHIP	UDZ3.0B TE-17
D 216	CP264P360 02	DIODE-CHIP	DAN217 T146
D 217	CP264P360 02	DIODE-CHIP	DAN217 T146
D 218	CP264P360 02	DIODE-CHIP	DAN217 T146
D 219	CP264P360 02	DIODE-CHIP	DAN217 T146
D 220	CP264P360 02	DIODE-CHIP	DAN217 T146
D 221	CP264P360 02	DIODE-CHIP	DAN217 T146
D 223	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 224	CP264P576 01	DIODE-CHIP	RB495D
D 226	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 227	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 228	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 229	CP264P426 03	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 603	CP264P380 01	DIODE	1SS355TE-17
D 604	CP264P380 01	DIODE	1SS355TE-17
D 607	CP264P380 01	DIODE	1SS355TE-17
D 609	CP264P380 01	DIODE	1SS355TE-17
D 610	CP264P380 01	DIODE	1SS355TE-17
D 611	CP264P569 01	DIODE-CHIP	CRS01(TE85L) LXA595W
D 612	CP264P569 01	DIODE-CHIP	CRS01(TE85L) LXA595W
D 613	CP264P569 01	DIODE-CHIP	CRS01(TE85L) LXA595W
D 614	CP264P581 01	DIODE-CHIP	1SS357 LXA595W
D 615	CP264P581 01	DIODE-CHIP	1SS357 LXA595W
D 616	CP264P569 01	DIODE-CHIP	CRS01(TE85L) LXA595W
D 617	CP264P380 01	DIODE	1SS355TE-17
D 702	CP264P380 01	DIODE	1SS355TE-17
D 706	CP264P426 06	DIODE-ZENER-CHIP	UDZS TE-17 8.2B (DH)
D 707	CP264P575 01	DIODE-CHIP	02DZ13Z LXA595W
D 708	CP264P380 01	DIODE	1SS355TE-17
D 709	CP264P380 01	DIODE	1SS355TE-17
D 711	CP264P380 01	DIODE	1SS355TE-17
D 715	CP264P380 01	DIODE	1SS355TE-17
D 716	CP264P380 01	DIODE	1SS355TE-17
D 717	CP264P426 07	DIODE-ZENER-CHIP	UDZS TE-17 9.1B (DH)
D 718	CP264P426 07	DIODE-ZENER-CHIP	UDZS TE-17 9.1B (DH)
D 719	CP264P426 07	DIODE-ZENER-CHIP	UDZS TE-17 9.1B (DH)
D 720	CP264P426 07	DIODE-ZENER-CHIP	UDZS TE-17 9.1B (DH)
D 800	CP264P480 02	LED	SML 19460C LF68
D 901	CP264P551 01	DIODE	D2SB60A
D 902	CP264P342 01	DIODE	D1NL20U
D 903	CP264P342 01	DIODE	D1NL20U
D 904	CP264P342 01	DIODE	D1NL20U
D 906	CP264P293 03	DIODE	MTZ J 6.8 B
D 908	CP264P593 01	DIODE	SF15JC10 LCD1550X
D 910	CP264P566 01	DIODE	SARS01 LXA595W
D 911	CP264P566 01	DIODE	SARS01 LXA595W
FUSE			
F 600	CP283P021 02	FUSE	SSFC-1.6A
F 701	CP283P021 02	FUSE	SSFC-1.6A
F 702	CP283P021 02	FUSE	SSFC-1.6A
F 901	CP283P017 06	FUSE	215-T3.15AH 250V
F 902	CP283P031 01	FUSE	250V 2.5A R26302.5
F 910	CP283P016 08	FUSE	251004 4A
F 911	CP283P052 02	PROTECTOR	491007 7A
IC			
IC100	CP266P287 01	IC	24LC64T-I/SN
IC101	CP263P283 01	IC	M51957AFP LXA580W
IC102	CP266P342 01	IC MOS	M30625FGMGP LXA580W
IC104	CP266P329 02	IC-MOS	M24C02WMN6T
IC105	CP266P329 02	IC-MOS	M24C02WMN6T
IC106	CP266P388 01	IC-MOS	X9116WM-2.7T4
IC107	CP266P329 02	IC-MOS	M24C02WMN6T
IC112	CP263P374 01	IC-LINEAR	NJM12903M(TE1)
IC201	CP272P111 01	IC-FTTL	74F14SJ
IC202	CP263P029 04	IC-LINEAR	NJM319V-TE1
IC203	CP263P029 04	IC-LINEAR	NJM319V-TE1
IC300	CP266P334 01	IC-MOS	74LC X14MTCX LXA580W
IC301	CP266P387 01	IC-MOS	74ACT157MTCX
IC303	CP266P334 01	IC-MOS	74LC X14MTCX LXA580W
IC304	CP266P387 01	IC-MOS	74ACT157MTCX
IC400	CP267P140 01	IC-CUSTOM	M64539FP(MAURICE2) LXA595W
IC500	CP266P389 01	IC-MOS	SII143CT100

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
IC601	CP263P371 01	IC-REGULATOR	PQ1U501M2ZP 5V
IC602	CP263P286 03	IC-REGULATOR	SI3025LSA 2.5V
IC604	CP263P286 03	IC-REGULATOR	SI3025LSA 2.5V
IC605	CP263P286 04	IC-REGULATOR	SI3033LSA 3.3V
IC606	CP263P373 01	IC-REGULATOR	NJM2870F25-TE1 2.5V
IC607	CP260P470 01	FET-CHIP	SI3457DV
IC608	CP263P295 01	IC	MB3778PFV-G-BND-EF
IC609	CP260P470 01	FET-CHIP	SI3457DV
IC610	CP260P497 01	FET-CHIP	HAT1053M LXA595W
IC611	CP263P375 01	IC	PQ1CZ21H2ZP
IC701	CP263P583 01	IC-LINEAR	LM2901MX LCD1550X
IC702	CP263P583 01	IC-LINEAR	LM2901MX LCD1550X
IC703	CP260P476 02	FET-CHIP	HAT1021
IC901	CP267P160 01	HIC	STR-G6452 LCD1550X
IC903	CP268P017 01	PHOTO-COUPLER	PC123Y22
IC904	CP263P215 02	IC	KIA431A-AT
IC905	CP268P017 01	PHOTO-COUPLER	PC123Y22
CONNECTOR			
J 100	CP452P318 02	CONNECTOR-FFC	52852-1290 LXA595W (MI)
J 101	CP452P311 05	CONNECTOR-SR	SM10B-SRSS-TB LXA580W (MI)
J 200	CP452P343 01	CONNECTOR-DVI	QH11121-CBO (MI)
J 201	CP452C070 01	CONNECTOR-D-SUB	NFN8715F
J 400	CP452P310 03	CONNECTOR-FFC-SMT	FH12-30S-0.5SH LXM510J (MI)
J 401	CP452P310 06	CONNECTOR-FFC-SMT	FH12-45S-0.5SH LXM510J (MI)
J 600	CP452P284 01	CONNECTOR-PH-SM3	B2B-PH-SM3-TBT (MI)
J 601	CP452P284 07	CONNECTOR-PH-SM3	B8B-PH-SM3-TBT (MI)
J 701	CP452P315 02	CONNECTOR-SMT	SM04(9-E2)B-BHS-1 LCD1550X (MI)
J 702	CP452P315 02	CONNECTOR-SMT	SM04(9-E2)B-BHS-1 LCD1550X (MI)
J 703	CP452C023 07	CONNECTOR-PH	B7B-PH-K-S
J 800	CP452P268 02	CONNECTOR-FFC	52807-1210
J 900	CP246B185 05	LEAD-CONNECTOR	J703-J900 LCD1550X (MT)
J 901	CP246B185 04	LEAD-CONNECTOR	J901-J601 LCD1550X (MT)
J 902	CP452P345 01	CONNECTOR-VH	B2P4-VH-B LCD1550X
JAC	CP452P247 03	CONNECTOR	B2P3-VH-B (MI)
COIL, FILTER			
L 101	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 102	CP410P102 04	FERRITE-CHIP	BK1608HS102
L 103	CP410P102 04	FERRITE-CHIP	BK1608HS102
L 104	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 106	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 107	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 202	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 203	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 204	CP410P041 03	FERRITE-CHIP	BK2125HS431
L 205	CP410P041 03	FERRITE-CHIP	BK2125HS431
L 206	CP410P072 08	FERRITE-CHIP	BLM21B750SPT
L 207	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 208	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 209	CP410P072 08	FERRITE-CHIP	BLM21B750SPT
L 210	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 211	CP410P072 08	FERRITE-CHIP	BLM21B750SPT
L 212	CP410P072 08	FERRITE-CHIP	BLM21B750SPT
L 213	CP410P072 08	FERRITE-CHIP	BLM21B750SPT
L 214	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 215	CP410P072 08	FERRITE-CHIP	BLM21B750SPT
L 216	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 218	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 221	CP410P041 03	FERRITE-CHIP	BK2125HS431
L 222	CP410P041 03	FERRITE-CHIP	BK2125HS431
L 300	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 301	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 302	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 303	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 305	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 306	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 307	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 308	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 400	CP410P079 01	FERRITE-CHIP	BLM11P121SGT
L 401	CP410P079 01	FERRITE-CHIP	BLM11P121SGT
L 402	CP410P079 01	FERRITE-CHIP	BLM11P121SGT
L 403	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 404	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121
L 405	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
L 406	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 407	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 500	CP410P071 09	FERRITE-CHIP	BLM11A121SPT	
L 501	CP410P071 09	FERRITE-CHIP	BLM11A121SPT	
L 502	CP410P071 09	FERRITE-CHIP	BLM11A121SPT	
L 600	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 601	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 602	CP410P102 01	BEAD-FERRITE-CHIP	BK1608HS121	
L 603	CP321P448 07	COIL-CHOKE-CHIP	100MH	(MI)
L 604	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 606	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 607	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 608	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 610	CP321P447 07	COIL-CHOKE-CHIP	100MH	
L 611	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 612	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 614	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 616	CP321P406 02	COIL-RF	FLC32CT-1ROM	(MI)
L 617	CP410P079 01	FERRITE-CHIP	BLM11P121SGT	
L 618	CP321P449 05	COIL-CHOKE-CHIP	150MH	
L 701	CP321P432 01	COIL-CHOKE	7212M-101K	LXA595W (MI)
L 702	CP321P432 01	COIL-CHOKE	7212M-101K	LXA595W (MI)
L 901	CP351P084 02	LINE-FILTER	SS11V-R10093	LCD1550X
L 902	CP410P012 03	BEAD-FERRITE	FBR07VB850	
L 903	CP351P084 02	LINE-FILTER	SS11V-R10093	LCD1550X
L 907	CP321P301 01	COIL-CHOKE	SBCP-11330H	LXA550W
L 908	CP321P301 01	COIL-CHOKE	SBCP-11330H	LXA550W
R 102	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 103	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 104	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 105	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 106	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 107	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 108	CP410P102 04	FERRITE-CHIP	BK1608HS102	
R 109	CP410P102 04	FERRITE-CHIP	BK1608HS102	
TRANSISTOR				
Q 100	CP260P114 01	TRANSISTOR-CHIP	2SA1037AK-R	
Q 101	CP260P114 01	TRANSISTOR-CHIP	2SA1037AK-R	
Q 102	CP260P339 01	TRANSISTOR	DTC114EUA	
Q 103	CP260P339 01	TRANSISTOR	DTC114EUA	
Q 104	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 105	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 106	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 200	CP260P473 01	TRANSISTOR	DTA143EKA-T	LXA585W
Q 201	CP260P339 01	TRANSISTOR	DTC114EUA	
Q 202	CP260P091 02	FET-MOS-CHIP	2SK360-E(IGE)	
Q 203	CP260P473 01	TRANSISTOR	DTA143EKA-T	LXA585W
Q 204	CP260P119 01	TRANSISTOR	2SA1462-T2B,Y34	
Q 205	CP260P339 01	TRANSISTOR	DTC114EUA	
Q 206	CP260P120 01	TRANSISTOR-CHIP	2SC3545-T2B KORR	
Q 207	CP260P119 01	TRANSISTOR	2SA1462-T2B,Y34	
Q 208	CP260P091 02	FET-MOS-CHIP	2SK360-E(IGE)	
Q 209	CP260P120 01	TRANSISTOR-CHIP	2SC3545-T2B KORR	
Q 210	CP260P120 01	TRANSISTOR-CHIP	2SC3545-T2B KORR	
Q 211	CP260P120 01	TRANSISTOR-CHIP	2SC3545-T2B KORR	
Q 212	CP260P120 01	TRANSISTOR-CHIP	2SC3545-T2B KORR	
Q 220	CP260P120 01	TRANSISTOR-CHIP	2SC3545-T2B KORR	
Q 300	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 301	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 302	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 303	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 600	CP260P339 01	TRANSISTOR	DTC114EUA	
Q 601	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 602	CP260P110 01	TRANSISTOR-CHIP	2SC2412K-R	
Q 701	CP260P477 01	TRANSISTOR	2SC3518-L	LXA595W
Q 702	CP260P477 01	TRANSISTOR	2SC3518-L	LXA595W
Q 703	CP260P477 01	TRANSISTOR	2SC3518-L	LXA595W
Q 704	CP260P477 01	TRANSISTOR	2SC3518-L	LXA595W
Q 705	CP260P472 01	TRANSISTOR	DTC143EKA-T	LXA585W
Q 706	CP260P343 01	TRANSISTOR-CHIP	2SA1900	
Q 707	CP260P472 01	TRANSISTOR	DTC143EKA-T	LXA585W
Q 708	CP260P472 01	TRANSISTOR	DTC143EKA-T	LXA585W
Q 711	CP260P327 01	MOS-FET	2SK1133	

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
Q 712	CP260P343 01	TRANSISTOR-CHIP	2SA1900	
Q 714	CP260P472 01	TRANSISTOR	DTC143EKA-T	LXA585W
Q 717	CP260P473 01	TRANSISTOR	DTA143EKA-T	LXA585W
Q 718	CP260P473 01	TRANSISTOR	DTA143EKA-T	LXA585W
Q 901	CP260P359 01	TRANSISTOR	DTC113ZSA	
RESISTOR				
L 100	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
L 105	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 100	CP109P183 08	R-NETWORK-CHIP	1/16W 10K-J	
R 101	CP109P183 08	R-NETWORK-CHIP	1/16W 10K-J	
R 110	CP103P102 00	R-CARBON-CHIP	1/10W 220-J	
R 111	CP103P103 06	R-CARBON-CHIP	1/10W 4.7K-J	
R 112	CP103P102 00	R-CARBON-CHIP	1/10W 220-J	
R 113	CP103P103 06	R-CARBON-CHIP	1/10W 4.7K-J	
R 114	CP103P103 06	R-CARBON-CHIP	1/10W 4.7K-J	
R 115	CP103P103 06	R-CARBON-CHIP	1/10W 4.7K-J	
R 116	CP103P102 00	R-CARBON-CHIP	1/10W 220-J	
R 117	CP103P493 06	R-CHIP	1/16W 4.7K-J	
R 118	CP103P493 06	R-CHIP	1/16W 4.7K-J	
R 119	CP103P102 00	R-CARBON-CHIP	1/10W 220-J	
R 121	CP103P494 04	R-CHIP	1/16W 22K-J	
R 122	CP103P492 00	R-CHIP	1/16W 220-J	
R 123	CP104P003 03	R-CHIP	1/16W 220-F	1.6X0.8
R 124	CP103P492 00	R-CHIP	1/16W 220-J	
R 125	CP103P492 00	R-CHIP	1/16W 220-J	
R 126	CP103P492 00	R-CHIP	1/16W 220-J	
R 127	CP103P492 00	R-CHIP	1/16W 220-J	
R 128	CP103P492 00	R-CHIP	1/16W 220-J	
R 129	CP103P492 00	R-CHIP	1/16W 220-J	
R 130	CP103P492 00	R-CHIP	1/16W 220-J	
R 131	CP103P494 04	R-CHIP	1/16W 22K-J	
R 132	CP103P494 04	R-CHIP	1/16W 22K-J	
R 133	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 134	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 135	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 136	CP103P491 06	R-CHIP	1/16W 100-J	
R 137	CP103P491 06	R-CHIP	1/16W 100-J	
R 138	CP103P494 04	R-CHIP	1/16W 22K-J	
R 139	CP103P494 04	R-CHIP	1/16W 22K-J	
R 140	CP103P494 04	R-CHIP	1/16W 22K-J	
R 141	CP103P494 04	R-CHIP	1/16W 22K-J	
R 142	CP103P493 06	R-CHIP	1/16W 4.7K-J	
R 143	CP103P492 00	R-CHIP	1/16W 220-J	
R 144	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 145	CP103P492 00	R-CHIP	1/16W 220-J	
R 146	CP103P113 08	R-CARBON-CHIP	1/10W 6.8K-F	
R 147	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER	
R 148	CP103P491 06	R-CHIP	1/16W 100-J	
R 149	CP103P491 06	R-CHIP	1/16W 100-J	
R 150	CP103P494 04	R-CHIP	1/16W 22K-J	
R 151	CP103P494 04	R-CHIP	1/16W 22K-J	
R 152	CP103P491 06	R-CHIP	1/16W 100-J	
R 153	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 154	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 155	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 156	CP103P114 00	R-CARBON-CHIP	1/10W 10K-F	
R 157	CP103P102 08	R-CARBON-CHIP	1/10W 1K-J	
R 158	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER	
R 159	CP103P491 06	R-CHIP	1/16W 100-J	
R 160	CP103P102 00	R-CARBON-CHIP	1/10W 220-J	
R 161	CP103P492 00	R-CHIP	1/16W 220-J	
R 162	CP103P497 01	R-CHIP	1/16W 0 JUMPER	
R 163	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER	
R 164	CP103P104 04	R-CARBON-CHIP	1/10W 22K-J	
R 165	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER	
R 167	CP103P491 06	R-CHIP	1/16W 100-J	
R 169	CP103P494 04	R-CHIP	1/16W 22K-J	
R 170	CP103P494 04	R-CHIP	1/16W 22K-J	
R 171	CP103P494 04	R-CHIP	1/16W 22K-J	
R 172	CP103P491 06	R-CHIP	1/16W 100-J	
R 173	CP103P491 06	R-CHIP	1/16W 100-J	
R 174	CP103P494 04	R-CHIP	1/16W 22K-J	
R 175	CP103P491 06	R-CHIP	1/16W 100-J	

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
R 176	CP103P494 04	R-CHIP	1/16W 22K-J
R 177	CP103P494 04	R-CHIP	1/16W 22K-J
R 178	CP103P494 04	R-CHIP	1/16W 22K-J
R 179	CP103P102 07	R-CARBON-CHIP	1/10W 820-J
R 180	CP104P006 03	R-CHIP	1/16W 3.9K-F 1.6X0.8
R 182	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 183	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 184	CP103P494 00	R-CHIP	1/16W 10K-J
R 185	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 186	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 187	CP103P494 04	R-CHIP	1/16W 22K-J
R 188	CP103P494 04	R-CHIP	1/16W 22K-J
R 189	CP103P494 04	R-CHIP	1/16W 22K-J
R 190	CP103P494 04	R-CHIP	1/16W 22K-J
R 191	CP103P494 00	R-CHIP	1/16W 10K-J
R 192	CP103P494 04	R-CHIP	1/16W 22K-J
R 193	CP103P494 04	R-CHIP	1/16W 22K-J
R 194	CP103P494 04	R-CHIP	1/16W 22K-J
R 195	CP103P494 04	R-CHIP	1/16W 22K-J
R 196	CP103P491 06	R-CHIP	1/16W 100-J
R 197	CP103P494 04	R-CHIP	1/16W 22K-J
R 198	CP103P491 06	R-CHIP	1/16W 100-J
R 199	CP103P494 04	R-CHIP	1/16W 22K-J
R 200	CP103P494 04	R-CHIP	1/16W 22K-J
R 203	CP103P494 04	R-CHIP	1/16W 22K-J
R 206	CP103P494 04	R-CHIP	1/16W 22K-J
R 207	CP104P007 05	R-CHIP	1/16W 12K-F 1.6X0.8
R 208	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 209	CP104P007 05	R-CHIP	1/16W 12K-F 1.6X0.8
R 210	CP103P102 07	R-CARBON-CHIP	1/10W 820-J
R 213	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 214	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 215	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 216	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 217	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 218	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 219	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 220	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 221	CP103P491 06	R-CHIP	1/16W 100-J
R 222	CP103P491 06	R-CHIP	1/16W 100-J
R 223	CP103P491 06	R-CHIP	1/16W 100-J
R 224	CP103P491 06	R-CHIP	1/16W 100-J
R 225	CP103P491 06	R-CHIP	1/16W 100-J
R 226	CP103P491 06	R-CHIP	1/16W 100-J
R 227	CP103P491 06	R-CHIP	1/16W 100-J
R 228	CP103P491 06	R-CHIP	1/16W 100-J
R 229	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 230	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 231	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 232	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 233	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 234	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 235	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 236	CP104P000 01	R-CHIP	1/16W 10-F 1.6X0.8
R 237	CP103P494 00	R-CHIP	1/16W 10K-J
R 238	CP103P494 00	R-CHIP	1/16W 10K-J
R 239	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 240	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 242	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 243	CP103P100 04	R-CARBON-CHIP	1/10W 10-J
R 244	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 245	CP103P491 06	R-CHIP	1/16W 100-J
R 246	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 247	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 248	CP104P005 07	R-CHIP	1/16W 2.2K-F 1.6X0.8
R 249	CP103P492 00	R-CHIP	1/16W 220-J
R 250	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 251	CP103P495 02	R-CHIP	1/16W 100K-J
R 252	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F
R 253	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F
R 254	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 255	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 256	CP103P492 04	R-CHIP	1/16W 470-J

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
R 257	CP103P493 04	R-CHIP	1/16W 3.3K-J
R 258	CP103P494 00	R-CHIP	1/16W 10K-J
R 259	CP103P494 00	R-CHIP	1/16W 10K-J
R 260	CP103P494 00	R-CHIP	1/16W 10K-J
R 261	CP103P492 05	R-CHIP	1/16W 560-J
R 262	CP103P495 02	R-CHIP	1/16W 100K-J
R 263	CP103P492 04	R-CHIP	1/16W 470-J
R 264	CP103P494 06	R-CHIP	1/16W 33K-J
R 265	CP103P482 04	R-METAL-CHIP	1/4W 75-F
R 266	CP103P494 04	R-CHIP	1/16W 22K-J
R 267	CP103P111 07	R-CARBON-CHIP	1/10W 120-F
R 268	CP103P494 06	R-CHIP	1/16W 33K-J
R 269	CP103P491 06	R-CHIP	1/16W 100-J
R 271	CP103P494 04	R-CHIP	1/16W 22K-J
R 272	CP103P482 04	R-METAL-CHIP	1/4W 75-F
R 273	CP103P490 04	R-CHIP	1/16W 10-J
R 275	CP103P490 04	R-CHIP	1/16W 10-J
R 276	CP103P482 04	R-METAL-CHIP	1/4W 75-F
R 277	CP103P490 04	R-CHIP	1/16W 10-J
R 280	CP103P490 04	R-CHIP	1/16W 10-J
R 281	CP104P003 03	R-CHIP	1/16W 220-F 1.6X0.8
R 282	CP103P491 00	R-CHIP	1/16W 33-J
R 283	CP103P491 06	R-CHIP	1/16W 100-J
R 284	CP103P491 00	R-CHIP	1/16W 33-J
R 285	CP103P490 04	R-CHIP	1/16W 10-J
R 288	CP103P490 04	R-CHIP	1/16W 10-J
R 289	CP103P482 04	R-METAL-CHIP	1/4W 75-F
R 290	CP103P490 04	R-CHIP	1/16W 10-J
R 292	CP103P490 04	R-CHIP	1/16W 10-J
R 293	CP104P002 09	R-CHIP	1/16W 150-F 1.6X0.8
R 294	CP104P005 07	R-CHIP	1/16W 2.2K-F 1.6X0.8
R 295	CP103P495 02	R-CHIP	1/16W 100K-J
R 296	CP103P482 04	R-METAL-CHIP	1/4W 75-F
R 297	CP103P490 04	R-CHIP	1/16W 10-J
R 299	CP104P006 07	R-CHIP	1/16W 5.6K-F 1.6X0.8
R 300	CP103P491 06	R-CHIP	1/16W 100-J
R 301	CP104P006 07	R-CHIP	1/16W 5.6K-F 1.6X0.8
R 302	CP103P494 00	R-CHIP	1/16W 10K-J
R 303	CP103P492 00	R-CHIP	1/16W 220-J
R 304	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 305	CP103P495 02	R-CHIP	1/16W 100K-J
R 306	CP103P482 04	R-METAL-CHIP	1/4W 75-F
R 307	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 308	CP103P493 04	R-CHIP	1/16W 3.3K-J
R 309	CP104P002 09	R-CHIP	1/16W 150-F 1.6X0.8
R 310	CP104P003 03	R-CHIP	1/16W 220-F 1.6X0.8
R 311	CP103P494 00	R-CHIP	1/16W 10K-J
R 312	CP103P492 05	R-CHIP	1/16W 560-J
R 314	CP103P111 07	R-CARBON-CHIP	1/10W 120-F
R 315	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 316	CP103P494 06	R-CHIP	1/16W 33K-J
R 317	CP103P494 04	R-CHIP	1/16W 22K-J
R 318	CP103P111 07	R-CARBON-CHIP	1/10W 120-F
R 319	CP103P494 06	R-CHIP	1/16W 33K-J
R 320	CP103P490 04	R-CHIP	1/16W 10-J
R 321	CP103P494 04	R-CHIP	1/16W 22K-J
R 322	CP103P111 07	R-CARBON-CHIP	1/10W 120-F
R 323	CP103P491 06	R-CHIP	1/16W 100-J
R 324	CP103P494 06	R-CHIP	1/16W 33K-J
R 325	CP103P494 04	R-CHIP	1/16W 22K-J
R 326	CP103P494 00	R-CHIP	1/16W 10K-J
R 327	CP103P494 00	R-CHIP	1/16W 10K-J
R 328	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 329	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 330	CP103P111 07	R-CARBON-CHIP	1/10W 120-F
R 331	CP103P494 06	R-CHIP	1/16W 33K-J
R 332	CP103P494 04	R-CHIP	1/16W 22K-J
R 333	CP103P490 04	R-CHIP	1/16W 10-J
R 334	CP103P111 07	R-CARBON-CHIP	1/10W 120-F
R 340	CP103P490 04	R-CHIP	1/16W 10-J
R 342	CP103P491 00	R-CHIP	1/16W 33-J
R 343	CP103P100 04	R-CARBON-CHIP	1/10W 10-J
R 346	CP103P491 06	R-CHIP	1/16W 100-J

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
R 347	CP103P491 00	R-CHIP	1/16W 33-J
R 348	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 349	CP103P101 06	R-CARBON-CHIP	1/10W 100-J
R 350	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F
R 351	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F
R 352	CP103P113 03	R-CARBON-CHIP	1/10W 2.7K-F
R 353	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 354	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 355	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 356	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 357	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 358	CP104P007 05	R-CHIP	1/16W 12K-F 1.6X0.8
R 359	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 360	CP103P491 06	R-CHIP	1/16W 100-J
R 361	CP103P491 06	R-CHIP	1/16W 100-J
R 362	CP103P491 06	R-CHIP	1/16W 100-J
R 367	CP103P113 03	R-CARBON-CHIP	1/10W 2.7K-F
R 368	CP104P007 05	R-CHIP	1/16W 12K-F 1.6X0.8
R 369	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 370	CP103P491 06	R-CHIP	1/16W 100-J
R 379	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 391	CP103P113 03	R-CARBON-CHIP	1/10W 2.7K-F
R 392	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 393	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 394	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 395	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 396	CP103P493 06	R-CHIP	1/16W 4.7K-J
R 404	CP104P007 05	R-CHIP	1/16W 12K-F 1.6X0.8
R 405	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 406	CP103P491 06	R-CHIP	1/16W 100-J
R 407	CP103P491 06	R-CHIP	1/16W 100-J
R 408	CP103P491 06	R-CHIP	1/16W 100-J
R 409	CP103P113 03	R-CARBON-CHIP	1/10W 2.7K-F
R 410	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 411	CP104P007 05	R-CHIP	1/16W 12K-F 1.6X0.8
R 412	CP103P491 06	R-CHIP	1/16W 100-J
R 413	CP103P492 08	R-CHIP	1/16W 1.0K-J
R 414	CP103P490 04	R-CHIP	1/16W 10-J
R 415	CP103P492 00	R-CHIP	1/16W 220-J
R 419	CP103P492 00	R-CHIP	1/16W 220-J
R 420	CP103P492 00	R-CHIP	1/16W 220-J
R 421	CP103P114 07	R-CARBON-CHIP	1/10W 39K-F
R 422	CP103P113 01	R-CARBON-CHIP	1/10W 1.8K-F
R 423	CP103P106 03	R-CARBON-CHIP	1/10W 820K-J
R 424	CP103P492 00	R-CHIP	1/16W 220-J
R 428	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 429	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 430	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 431	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 433	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 434	CP103P113 09	R-CARBON-CHIP	1/10W 8.2K-F
R 435	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER
R 436	CP103P490 04	R-CHIP	1/16W 10-J
R 437	CP103P490 04	R-CHIP	1/16W 10-J
R 438	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 439	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 440	CP103P491 06	R-CHIP	1/16W 100-J
R 441	CP103P491 06	R-CHIP	1/16W 100-J
R 442	CP103P491 06	R-CHIP	1/16W 100-J
R 443	CP103P491 06	R-CHIP	1/16W 100-J
R 444	CP103P102 00	R-CARBON-CHIP	1/10W 220-J
R 447	CP104P005 05	R-CHIP	1/16W 1.8K-F 1.6X0.8
R 454	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER
R 458	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 459	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 460	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 461	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 463	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 464	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 465	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 466	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 467	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 468	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
R 469	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 470	CP109P181 09	R-NETWORK-CHIP	1/16W 220-J
R 500	CP103P490 04	R-CHIP	1/16W 10-J
R 501	CP103P490 04	R-CHIP	1/16W 10-J
R 502	CP103P493 02	R-CHIP	1/16W 2.2K-J
R 503	CP103P493 02	R-CHIP	1/16W 2.2K-J
R 504	CP103P493 02	R-CHIP	1/16W 2.2K-J
R 505	CP103P490 04	R-CHIP	1/16W 10-J
R 506	CP103P490 04	R-CHIP	1/16W 10-J
R 507	CP103P490 04	R-CHIP	1/16W 10-J
R 508	CP103P490 04	R-CHIP	1/16W 10-J
R 509	CP103P490 04	R-CHIP	1/16W 10-J
R 510	CP103P490 04	R-CHIP	1/16W 10-J
R 511	CP103P490 04	R-CHIP	1/16W 10-J
R 512	CP103P112 05	R-CARBON-CHIP	1/10W 560-F
R 513	CP103P490 04	R-CHIP	1/16W 10-J
R 514	CP103P494 00	R-CHIP	1/16W 10K-J
R 515	CP103P490 04	R-CHIP	1/16W 10-J
R 516	CP103P490 04	R-CHIP	1/16W 10-J
R 517	CP103P494 00	R-CHIP	1/16W 10K-J
R 518	CP103P107 02	R-CARBON-CHIP	1/10W 0 JUMPER
R 521	CP103P494 00	R-CHIP	1/16W 10K-J
R 522	CP103P490 04	R-CHIP	1/16W 10-J
R 523	CP103P490 04	R-CHIP	1/16W 10-J
R 524	CP103P490 04	R-CHIP	1/16W 10-J
R 526	CP103P490 04	R-CHIP	1/16W 10-J
R 527	CP103P490 04	R-CHIP	1/16W 10-J
R 528	CP103P490 04	R-CHIP	1/16W 10-J
R 529	CP103P490 04	R-CHIP	1/16W 10-J
R 530	CP103P490 04	R-CHIP	1/16W 10-J
R 531	CP103P490 04	R-CHIP	1/16W 10-J
R 532	CP103P490 04	R-CHIP	1/16W 10-J
R 533	CP103P490 04	R-CHIP	1/16W 10-J
R 534	CP103P490 04	R-CHIP	1/16W 10-J
R 535	CP103P490 04	R-CHIP	1/16W 10-J
R 536	CP103P491 02	R-CHIP	1/16W 47-J
R 537	CP103P494 00	R-CHIP	1/16W 10K-J
R 538	CP103P493 02	R-CHIP	1/16W 2.2K-J
R 539	CP103P490 04	R-CHIP	1/16W 10-J
R 602	CP104P003 05	R-CHIP	1/16W 270-F 1.6X0.8
R 607	CP104P006 07	R-CHIP	1/16W 5.6K-F 1.6X0.8
R 609	CP104P006 01	R-CHIP	1/16W 3.3K-F 1.6X0.8
R 610	CP103P492 00	R-CHIP	1/16W 220-J
R 613	CP103P493 02	R-CHIP	1/16W 2.2K-J
R 614	CP104P003 07	R-CHIP	1/16W 330-F 1.6X0.8
R 616	CP104P006 07	R-CHIP	1/16W 5.6K-F 1.6X0.8
R 619	CP104P005 05	R-CHIP	1/16W 1.8K-F 1.6X0.8
R 620	CP103P493 02	R-CHIP	1/16W 2.2K-J
R 621	CP103P493 02	R-CHIP	1/16W 2.2K-J
R 623	CP103P493 02	R-CHIP	1/16W 2.2K-J
R 624	CP104P003 03	R-CHIP	1/16W 220-F 1.6X0.8
R 625	CP103P103 04	R-CARBON-CHIP	1/10W 3.3K-J
R 626	CP103P100 04	R-CARBON-CHIP	1/10W 10-J
R 629	CP104P010 05	R-CHIP	1/16W 150K-F 1.6X0.8
R 630	CP104P006 05	R-CHIP	1/16W 4.7K-F 1.6X0.8
R 631	CP104P007 03	R-CHIP	1/16W 10K-F 1.6X0.8
R 632	CP104P007 07	R-CHIP	1/16W 15K-F 1.6X0.8
R 633	CP104P006 01	R-CHIP	1/16W 3.3K-F 1.6X0.8
R 634	CP104P006 01	R-CHIP	1/16W 3.3K-F 1.6X0.8
R 635	CP104P010 05	R-CHIP	1/16W 150K-F 1.6X0.8
R 636	CP104P006 05	R-CHIP	1/16W 4.7K-F 1.6X0.8
R 637	CP104P007 03	R-CHIP	1/16W 10K-F 1.6X0.8
R 638	CP103P100 04	R-CARBON-CHIP	1/10W 10-J
R 639	CP103P103 04	R-CARBON-CHIP	1/10W 3.3K-J
R 640	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 646	CP103P105 02	R-CARBON-CHIP	1/10W 100K-J
R 647	CP103P103 04	R-CARBON-CHIP	1/10W 3.3K-J
R 649	CP103P493 02	R-CHIP	1/16W 2.2K-J
R 650	CP103P497 01	R-CHIP	1/16W 0 JUMPER
R 651	CP104P004 06	R-CHIP	1/16W 750-F 1.6X0.8
R 652	CP104P006 07	R-CHIP	1/16W 5.6K-F 1.6X0.8
R 653	CP104P005 05	R-CHIP	1/16W 1.8K-F 1.6X0.8
R 654	CP103P497 01	R-CHIP	1/16W 0 JUMPER

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION		
R 655	CP103P492 08	R-CHIP	1/16W 1.0K-J	
R 701	CP103P103 06	R-CARBON-CHIP	1/10W 4.7K-J	
R 702	CP103P103 06	R-CARBON-CHIP	1/10W 4.7K-J	
R 703	CP103P113 03	R-CARBON-CHIP	1/10W 2.7K-F	
R 704	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F	
R 705	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F	
R 706	CP103P112 05	R-CARBON-CHIP	1/10W 560-F	
R 707	CP103P112 05	R-CARBON-CHIP	1/10W 560-F	
R 708	CP103P101 06	R-CARBON-CHIP	1/10W 100-J	
R 709	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F	
R 711	CP103P492 08	R-CHIP	1/16W 1.0K-J	
R 712	CP103P114 00	R-CARBON-CHIP	1/10W 10K-F	
R 713	CP103P103 00	R-CARBON-CHIP	1/10W 1.5K-J	
R 714	CP103P114 00	R-CARBON-CHIP	1/10W 10K-F	
R 718	CP103P102 00	R-CARBON-CHIP	1/10W 220-J	
R 720	CP103P495 07	R-CHIP	1/16W 270K-J	
R 721	CP103P496 04	R-CHIP	1/16W 1.0M-J	
R 724	CP103P496 04	R-CHIP	1/16W 1.0M-J	
R 727	CP103P492 08	R-CHIP	1/16W 1.0K-J	
R 728	CP103P496 06	R-CHIP	1/16W 1.5M-J	
R 729	CP103P113 03	R-CARBON-CHIP	1/10W 2.7K-F	
R 730	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F	
R 731	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F	
R 732	CP103P112 05	R-CARBON-CHIP	1/10W 560-F	
R 733	CP103P112 05	R-CARBON-CHIP	1/10W 560-F	
R 734	CP103P101 06	R-CARBON-CHIP	1/10W 100-J	
R 735	CP103P113 02	R-CARBON-CHIP	1/10W 2.2K-F	
R 737	CP103P114 00	R-CARBON-CHIP	1/10W 10K-F	
R 742	CP103P496 04	R-CHIP	1/16W 1.0M-J	
R 744	CP103P496 04	R-CHIP	1/16W 1.0M-J	
R 753	CP103P113 04	R-CARBON-CHIP	1/10W 3.3K-F	
R 901	CP103P465 01	R-SURGE	1/2W 470K-J	
R 902	CP104P422 01	R-METAL	1/2W 680K-J	
R 903	CP103P415 05	R-CARBON	1/2W 330K-J	
R 904	QX103P413 05	R-CARBON	1/4W 6.8K-J	682 RD-H
R 905	QX103P412 06	R-CARBON	1/4W 1.2K-J	122 RD-H
R 906	CP103P170 06	R-METAL-PLATE	2W 0.33-K	
R 907	QX103P412 09	R-CARBON	1/4W 2.2K-J	222 RD-H
R 908	CP103P410 07	R-CARBON	1/2W 33-J	
R 909	QX103P413 01	R-CARBON	1/4W 3.3K-J	332 RD-H
R 910	CP103P065 07	R-METAL-S	1/4W 2.2K-F	222 RN-H
R 911	QX103P412 05	R-CARBON	1/4W 1K-J	102 RD-H
R 914	QX103P412 00	R-CARBON	1/4W 390-J	391 RD-H
R 915	CP103P412 02	R-CARBON	1/2W 560-J	
R 917	QX103P412 05	R-CARBON	1/4W 1K-J	102 RD-H
R 925	CP103P415 05	R-CARBON	1/2W 330K-J	
R 926	CP103P415 05	R-CARBON	1/2W 330K-J	
R 927	QX103P414 06	R-CARBON	1/4W 56K-J	563 RD-H
R 928	CP103P062 09	R-METAL-S	1/4W 150-F	151 RN-H
R 929	CP103P067 01	R-METAL-S	1/4W 8.2K-F	822 RN-H
R 930	CP103P412 09	R-CARBON	1/2W 2.2K-J	
R 931	CP104P121 05	R-METAL	2W 120-J	
R 934	CP103P415 05	R-CARBON	1/2W 330K-J	
R 935	QX103P412 06	R-CARBON	1/4W 1.2K-J	122 RD-H
VARISTOR				
RV901	CP265P108 08	VARISTOR	ENE471D-10A	
SWITCH				
SW800	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW801	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW802	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW803	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW804	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW805	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW806	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
SW807	CP432P029 01	SW-TACT	SKHLLB	LCD1550X
TRANS				
T 701	CP409P096 01	TRANS-INVERTER	ETJ20K29AM	LCD1550X (MI)
T 702	CP409P096 01	TRANS-INVERTER	ETJ20K29AM	LCD1550X (MI)
T 901	CP350P103 01	TRANS-POWER	ETS33BG155AH	LCD1550X
THERMISTOR				
TH100	CP265P517 08	THERMISTOR-CHIP	TBPSIR223J460H5Q	
TH901	CP265P119 01	THERMISTOR	10D2-10LC	
THYRISTOR				

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
TH701	CP264P592 01	THYRISTOR	CR05AS-4-B LCD1550X
LCD-PANEL			
	CP289P022 01	LCD-MODULE	TX38D26VC0CAA LCD1550X
ASSY PCBs			
	CT920B631 01	ASSY-PCB-POWER	
	CT920C278 01	ASSY-PCB-INVERTER	
	CT920C279 01	ASSY-PCB-SW	
	CT920C280 01	ASSY-PCB-MAIN	
COSMETIC PARTS			
	CP700A271 02	COVER-REAR	PC+ABS CU6800 LCD1550X (MI)
	CP702B058 02	COVER-VESA	PC+ABS CU6800 LCD1550X (MI)
	CP702B059 02	COVER-CABLE	PC+ABS CU6800 LCD1550X (MI)
	CP702B060 02	COVER-POWER	PC+ABS CU6800 LCD1550X (MI)
	CP702B061 02	COVER-HINGE-UP	PC+ABS FR3005 LCD1550X-BK(ME)
	CP722A008 02	STAND-UNIT	LCD1550X-BK(ME)
	CP722A009 02	BASE-UNIT	LCD1550X-BK(ME)
	CP722A010 02	PLATE-SV-UNIT	LCD1550X-BK(ME)
OTHERS			
E 900	CP442P004 02	EARTH-TERMINAL	TP00385-41
E 901	CP442P004 02	EARTH-TERMINAL	TP00385-41
E 902	CP442P004 02	EARTH-TERMINAL	TP00385-41
FG801	CP246C365 02	PIN-LEAD	LXM510J (MT)
FG802	CP246C365 02	PIN-LEAD	LXM510J (MT)
JF901	CP442P001 01	FUSE-CLIP	TP00351-51
JF902	CP442P001 01	FUSE-CLIP	TP00351-51
X 100	CP285P030 01	CRYSTAL	KCO-735S(10.0MHZ) LXA580W
	CH330H509 09	SO-COPPER-WIRE	
	CH330H509 09	SO-COPPER-WIRE	
	CH600H179 09	SVGS-1	6-WHT
	CH650H209 09	SVGS-1	12-WHT
	CP081P001 01	SILICONE-GUM	TSE3940
	CP096P004 01	MASKING-TAPE	19X50M CREAM
	CP096P004 01	MASKING-TAPE	19X50M CREAM
	CP096P012 01	TAPE-AL	CCJ-36-201-W20MM (MT)
	CP096P012 01	TAPE-AL	CCJ-36-201-W20MM (MT)
	CP210A271 01	LAYER	CP210P001 PWB-MAIN (MI)
	CP210B096 01	LAYER	CP210P002 PWB-POWER (MI)
	CP210B097 01	LAYER	CP210P001 PWB-INV (MI)
	CP210C100 01	LAYER	CP210P002 PWB-SW (MI)
	CP223B007 01	INSULATOR-TOP	N-7 T0.5 LCD1550X (MI)
	CP223B008 01	INSULATOR-BOTTOM	N-7 T0.5 LCD1550X (MI)
	CP242C293 03	SIGNAL-CABLE	SC-D801 LCD1550X-BK
	CP242C294 02	SIGNAL-CABLE	SD-D830 LDX1550X-BK
	CP246C428 02	FFC-CABLE	12P LCD1550X (MT)
	CP246C428 03	FFC-CABLE	30P LCD1550X (MT)
	CP246C428 04	FFC-CABLE	45P LCD1550X (MT)
	CP246C434 02	LEAD-CONNECTOR-PJ	LCD1550X (MT)
	CP246C439 01	LEAD-CONNECTOR-SW	LCD1550X (MT)
	CP442P004 02	EARTH-TERMINAL	TP00385-41
	CP479P050 01	CD-ROM	CD-ROM(US) LCD1550X
	CP540D077 01	LEAD-CLAMPER	LWS-1.5SLVOBK LCD1550X (MI)
	CP553D007 04	SPACER	MO-48 T4.0 LCD1550X (MI)
	CP554D027 01	GASKET-EMI	LCD1550X (MI)
	CP554D028 01	GASKET-EMI	LCD1550X (MI)
	CP554D029 01	GASKET-EMI	LCD1550X (MI)
	CP580A118 01	SHIELD-COVER	SECC-C E16/16 T0.8 LCD1550X
	CP590D099 01	RADIATOR	A6063S-T5 LXA595W
	CP593A164 01	HOLDER-PCB	SECC-C E16/E16 T0.8 LCD1550X
	CP669D016 07	SCREW-TB-BIND-W	4X10 46LA005
	CP669D041 01	SCREW-HEX	JFS-4S-B1WM FS6605K
	CP669D074 01	SCREW-TB-SEMS	3X8 LXM510J
	CP669D089 01	SCREW-SEMS	M4X8 LXA550W
	CP669D094 04	SCREW-TB-BIND	3X12 46LA005 LCD1550X
	CP669D104 02	SCREW-TB-SEMS	3X8
	CP669D104 02	SCREW-TB-SEMS	3X8
	CP669D113 01	SCREW-BIND	M3X5 46LA005 LCD1550X
	CP669D114 01	SCREW-CAP	M3X0.5-6 46LA005 LCD1550X
	CP669D118 04	SCREW-TB-BIND	3X12 LCD1550X
	CP669D502 02	SCREW-SEMS	M3X0.5-10
	CP677D020 01	EYELET	2.0X3.0X3.3 0.2T
	CP677D020 02	EYELET	1.6X3.0X3.0 0.2T
	CP680D009 01	WASHER-SV	SECC T=1.0 LCD1550X
	CP775C370 03	RATING-LABEL	LCD1550X-BK

SUMBOL NO.	PART NO.	DESCRIPTION/SPECIFICATION	
	CP775C370 04	RATING-LABEL	LCD1550X-BK
	CP803A109 01	CUSHION-SET	FOAMED-P.S P=0.01667LCD1550X
	CP829D019 01	PACKING-SHEET	LCD1550X
	CP831C047 01	PACKING-BAG	HDPE T0.044 LCD1550X
	CP850D286 01	LABEL-AMBIX	25792581 LCD1550X
	QX096Z462 07	MASKING-TAPE	W18X18M
	QX096Z466 07	CARTON-TAPE 75X50	096N010A 75X50M-CLARITY
	QX669D204 06	SCREW-SEMS-W	M4X0.7-16
	QX669D220 02	SCREW-TB	* 3X8
LCD1550X-BK-US			
	CP242C229 07	AC-POWER-CORD	(MT)
	CP720B107 03	BEZEL-UNIT	CP700A270-2 LCD1550X-US(MI)
	CP802C393 02	PACKING-CASE	LCD1550X-US
	CP859C233 01	ACCESSORY	CP871C190-9 LCD1550X-US
	CP870C133 01	SHEET-SETUP	LCD1550X-US
LCD1550X-BK-EU			
	CP242C289 01	AC-POWER-CORD	(MT)
	CP242C290 03	AC-POWER-CORD	LCD1550X (MT)
	CP720B107 04	BEZEL-UNIT	CP700A270-2 LCD1550X-EU(MI)
	CP802C393 03	PACKING-CASE	LCD1550X-EU
	CP859C233 02	ACCESSORY	CP871C191-1 LCD1550X-EU
	CP870C133 02	SHEET-SETUP	LCD1550X-EU
	CP870C134 01	SHEET-CAUTION	LCD1550X-EU