

Apple Computer, Inc.

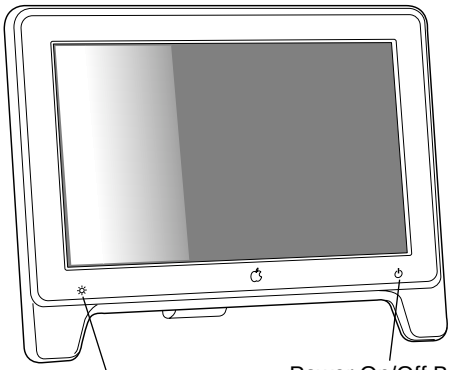
SERVICE MANUAL

M8536

TECHNICAL INFORMATION

Apple Computer, Inc.

CAUTION : Before servicing this chassis, it is important that the service technician read the "Safety Precautions" in this Service Manual.



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Macintosh 23" LCD Display

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

MARCH 2002

Apple Computer, Inc.

SPECIFICATIONS

1. LCD CHARACTERISTICS

Type : Color Active Matrix TFT LCD
Size : 23 inch
Pixel Pitch : 0.258mm(H) x 0.258mm(V)
Pixel Format : 1920 x 1200pixels (WUXGA)
RGB Stripe Arrangement
Color Depth : 8-bit, 16 million color(24bits)
Active Video Area : 495.36mm(H) x 309.6mm(V)
Surface Treatment : Anti-Glare, Hard Coating (3H)
Backlight Unit : 6CCFL (Cold Cathode
Fluorescent Lamp)

2. OPTICAL CHARACTERISTICS

2-1. Viewing Angle by Contrast Ratio ≥ 10

Left : 80° typ.
Right : 80° typ.
Top : 80° typ.
Bottom : 80° typ.

2-2. Luminance : 200 cd/m² typ.

2-3. Contrast Ratio : 300 : 1 typ.

3. SIGNAL (Refer to the Timing Chart)

3-1. Sync Signal

- 1) Type : TMDS
- 2) Input Voltage Level : V_{p-p} = 500mV
- 4) Input Impedance : 50Ω/ Signal line

3-2. Operating Frequency

Horizontal : 72.65 kHz
Vertical : 60 Hz

4. POWER SUPPLY

4-1. Power Adaptor: NONE

4-2. Power Consumption

MODE	Digital Signal	VIDEO	POWER CONSUMPTION	LED COLOR
POWER ON (NORMAL)	Active	ON	less than 75 W	WHITE
DPM MODE	Not Active	OFF	less than 5 W	FLASH WITH WHITE
POWER OFF	—	—	less than 5 W	OFF

5. ENVIRONMENT

5-1. Operating Temperature: 10°C~35°C (50°F~95°F)
(Ambient)

5-2. Relative Humidity : 20%~80%
(Non-condensing)

5-3. Altitude : 0~10,000ft (3,030m)

6. DIMENSIONS (with TILT/SWIVEL)

Width : 614.3mm (24.18")
Depth : 102.1mm (4.02")
Height : 493.4mm (19.42")

7. WEIGHT (with TILT/SWIVEL)

Net Weight : 11.5 kg (25.35 lbs)
Gross Weight : 14.1 kg (30.86 lbs)

PRECAUTION

WARNING FOR THE SAFETY-RELATED COMPONENT.

- There are some special components used in LCD monitor that are important for safety. ***These parts are marked  on the schematic diagram and the replacement parts list.*** It is essential that these critical parts should be replaced with the manufacturer's specified parts to prevent electric shock, fire or other hazard.
- Do not modify original design without obtaining written permission from manufacturer Inc. or you will void the original parts and labor guarantee.

WARNING

BE CAREFUL ELECTRIC SHOCK !

- If you want to replace with the new backlight (CCFL) or inverter circuit, must turn off the power button or disconnect the AC adapter because high voltage appears at inverter circuit about 650Vrms.
- Handle with care wires or connectors of the inverter circuit. If the wires are pressed cause short and may burn or take fire.

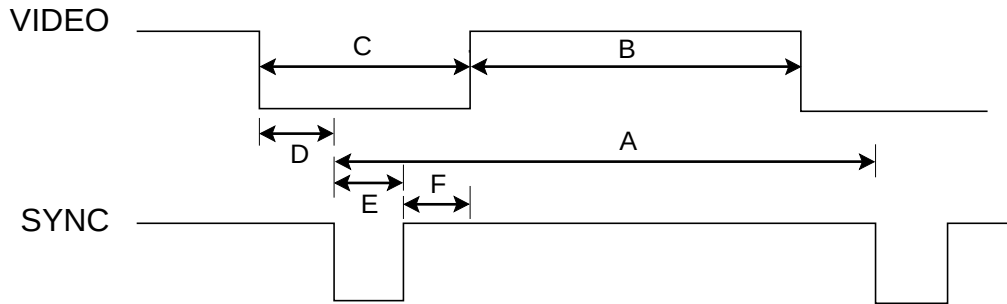
TAKE CARE DURING HANDLING THE LCD MODULE WITH BACKLIGHT UNIT.

- Must mount the module using mounting holes arranged in four corners.
- Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
- Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
- Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
- Make certain that treatment person's body are grounded through wrist band.
- Do not leave the module in high temperature and in areas of high humidity for a long time.
- The module not be exposed to the direct sunlight.
- Avoid contact with water as it may a short circuit within the module.
- If the surface of panel become dirty, please wipe it off with a softmaterial. (Cleaning with a dirty or rough cloth may damage the panel.)

CAUTION

Please use only a plastic screwdriver to protect yourself from shock hazard during service operation.

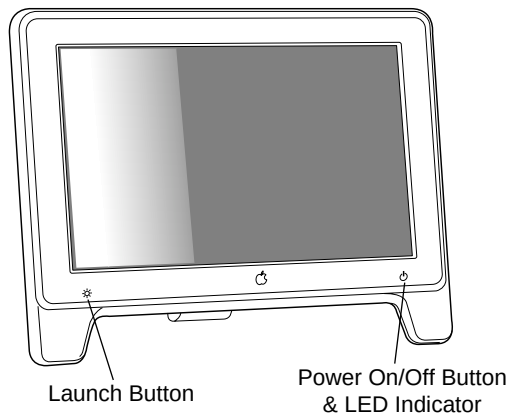
TIMING CHART



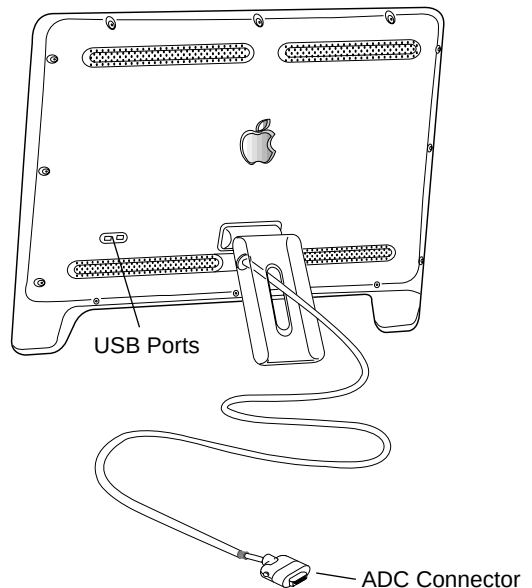
MODE		Sync Polarity	Dot Clock	Frequency	Total Period (A)	Video Active Time (B)	Blanking Time (C)	Front Porch (D)	Sync Duration (E)	Back Porch (F)	Resolution
1	H (Pixels)	—	156 MHz	72.65 KHz	2144	1920		64	32	128	1920 X 1200
	V (Lines)	—		60 Hz	1212	1200		3	3	6	

OPERATING INSTRUCTIONS

Front View



Rear View



Power ON/OFF Button

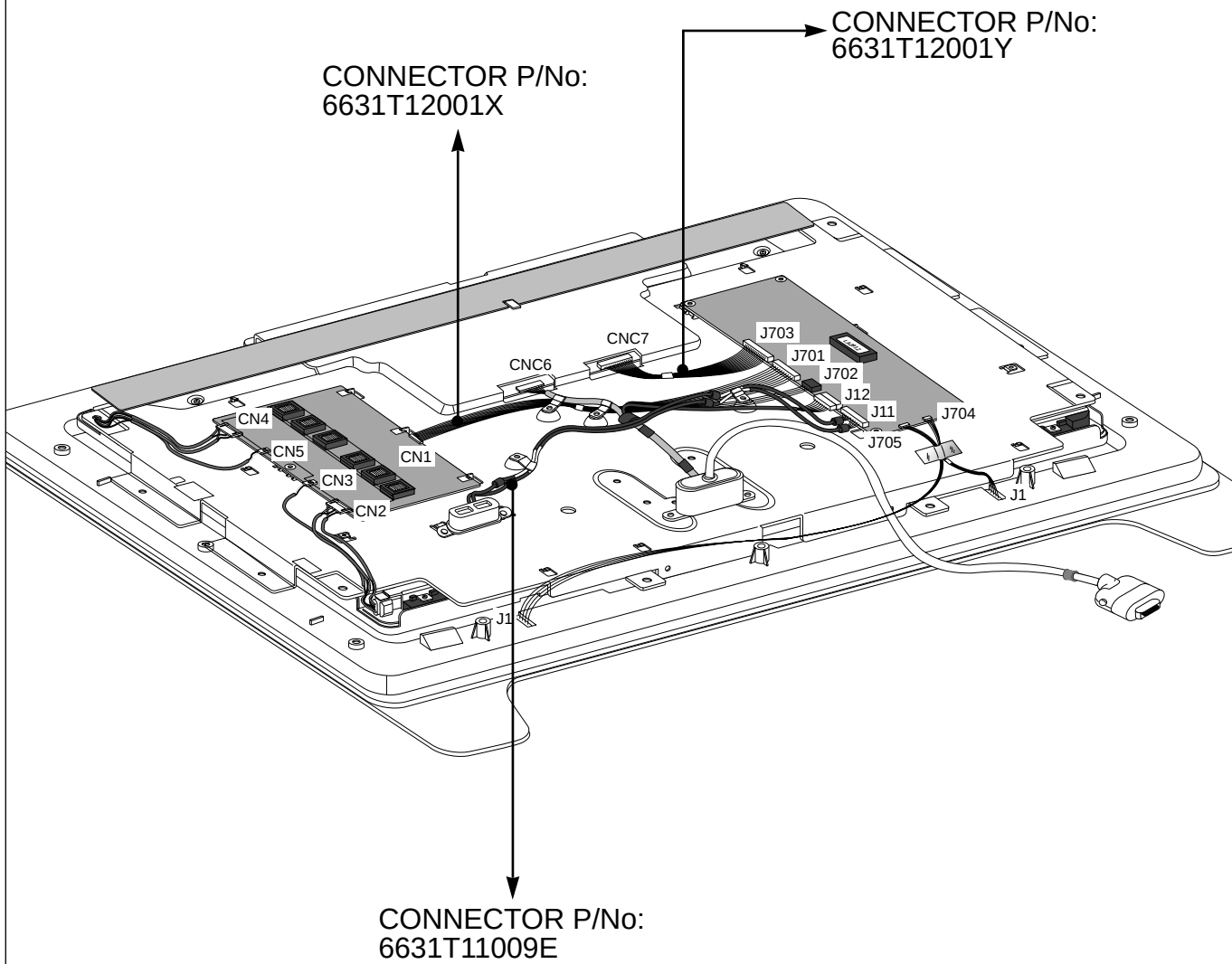
This button is used to turn the monitor on and off.

LED Indicator

This indicator lights up white when the monitor operates normally; In sleep mode this indicator is blinking.

Apple vision Launch Button

Use these button for adjusting the brightness.

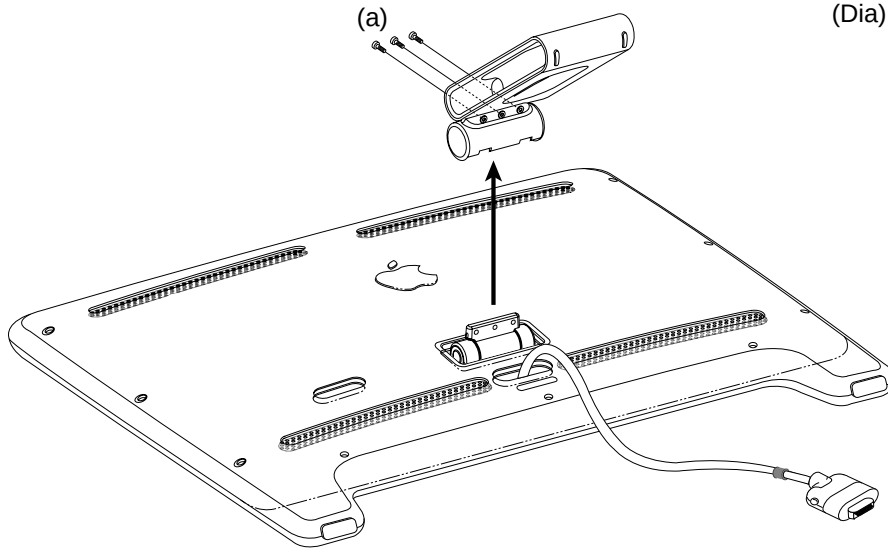
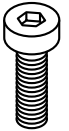


DISASSEMBLY

1. FOOT REMOVAL

- 1) Remove three screws (a).
- 2) Remove the Foot.

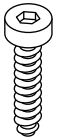
1-(a): 1SZZTMP003B
3.0 x 8.0(mm)
(Dia) (lenght)



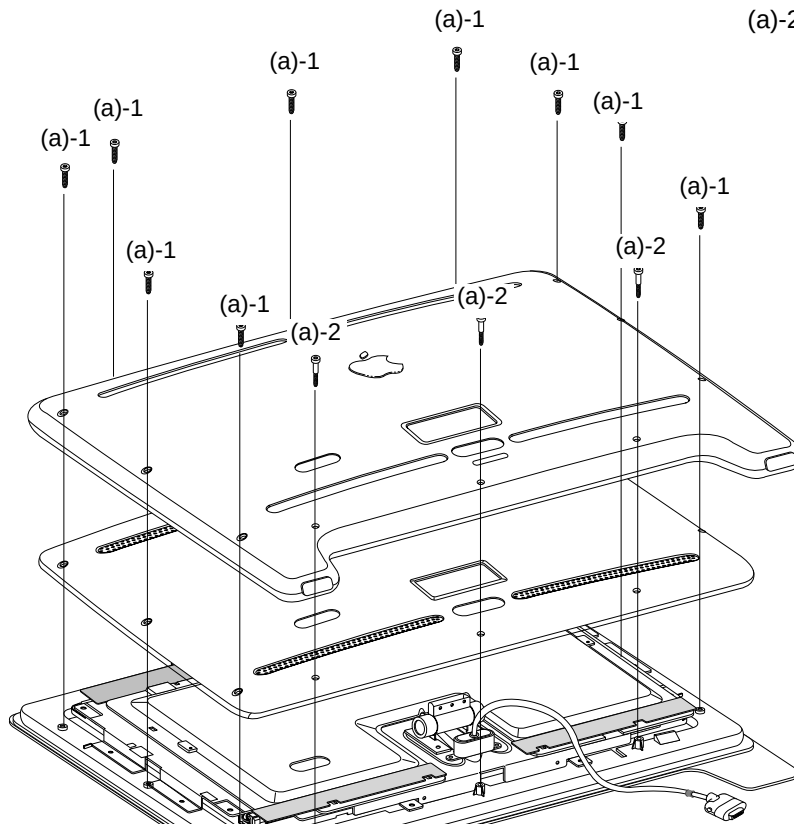
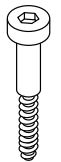
2. BACK COVER ASS'Y & REAR SHIELD REMOVAL

- 1) Remove twelve screws (a).
- 2) Remove the Back Cover Ass'y.
- 3) Remove the Rear shield.

(a)-1: 1SZZTTP001C
4.0 x 13.0



(a)-2: 1SZZTTF001A
3.0 x 20.0



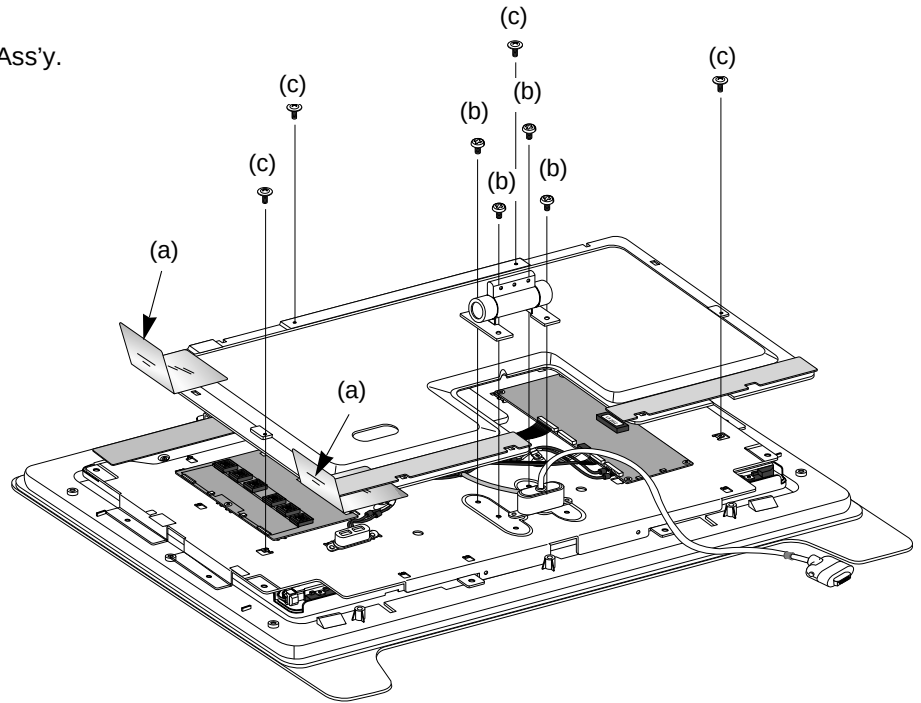
3. METAL HINGE ASS'Y & METAL SHIELD REMOVAL

- 1) Remove two Al.tape (a).
- 2) Remove four screws (b).
- 3) Remove the Metal Hinge Ass'y.
- 4) Remove four screws (c).
- 5) Remove the Metal Shield

(b): 332-110E
3.0 x 6.0



(c): 332-112G
Yellow Color
3.5 x 5.5



(a),(b)-1: 332-112G
Yellow Color
3.5 x 5.5

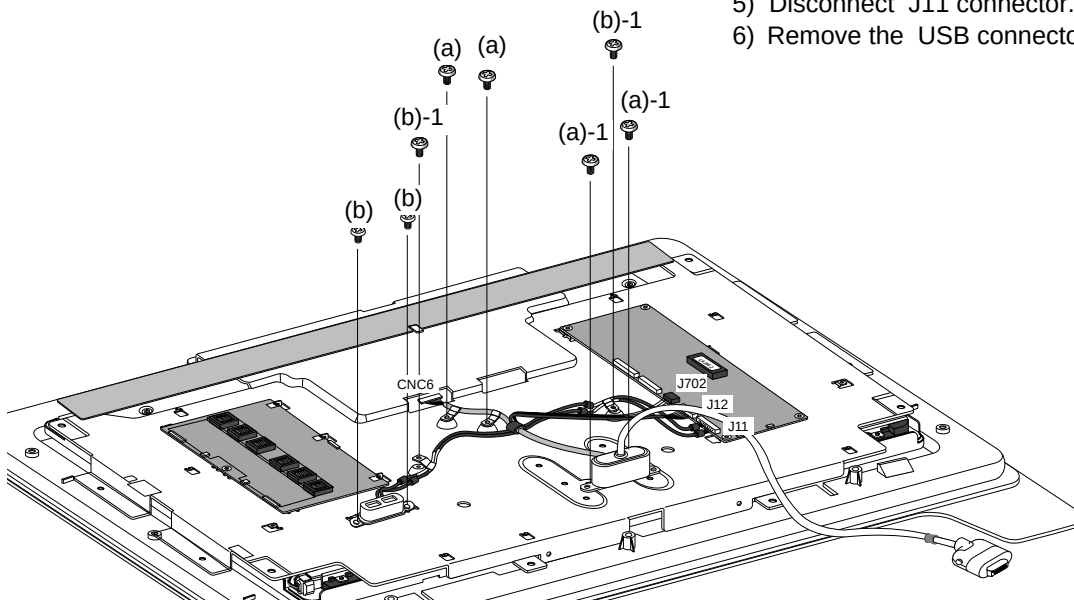


(a)-1,(b): 332-110E
3.0 x 6.0



4. SIGNAL CABLE & HINGE & USB CONNECTOR REMOVAL

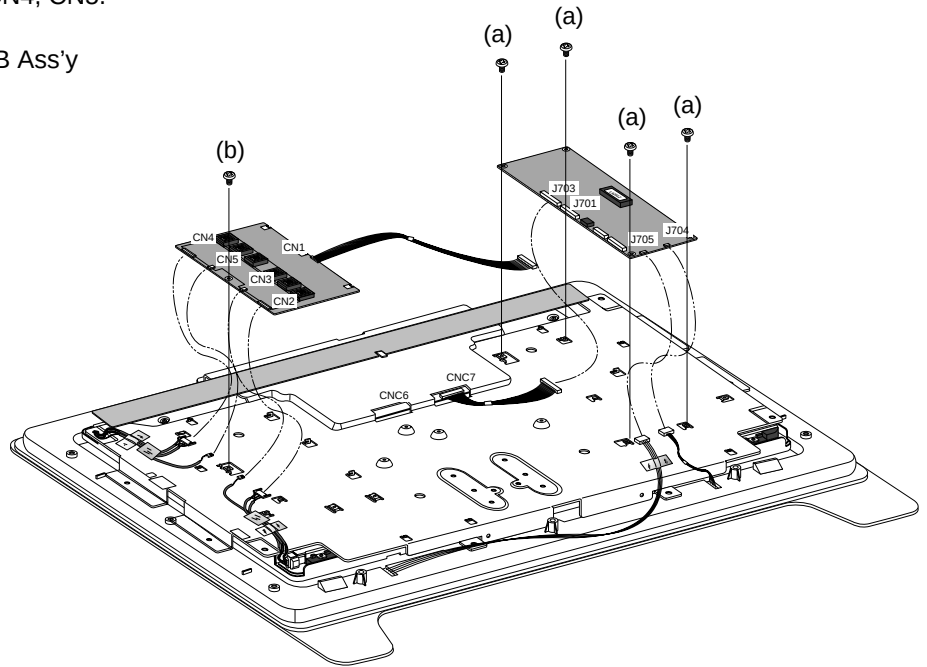
- 1) Remove four screws (a).
- 2) Disconnect J12, J702, CNC6 connector.
- 3) Remove signal cable.
- 4) Remove four screws (b).
- 5) Disconnect J11 connector.
- 6) Remove the USB connector.



5. MAIN PCB, INVERTER PCB ASS'Y REMOVAL

- 1) Disconnect J703, J701, J705, J704.
- 2) Remove four screws (a).
- 3) Remove the Main PCB Ass'y
- 4) Disconnect CN2, CN3, CN4, CN5.
- 5) Remove screw (b).
- 6) Remove the Inverter PCB Ass'y

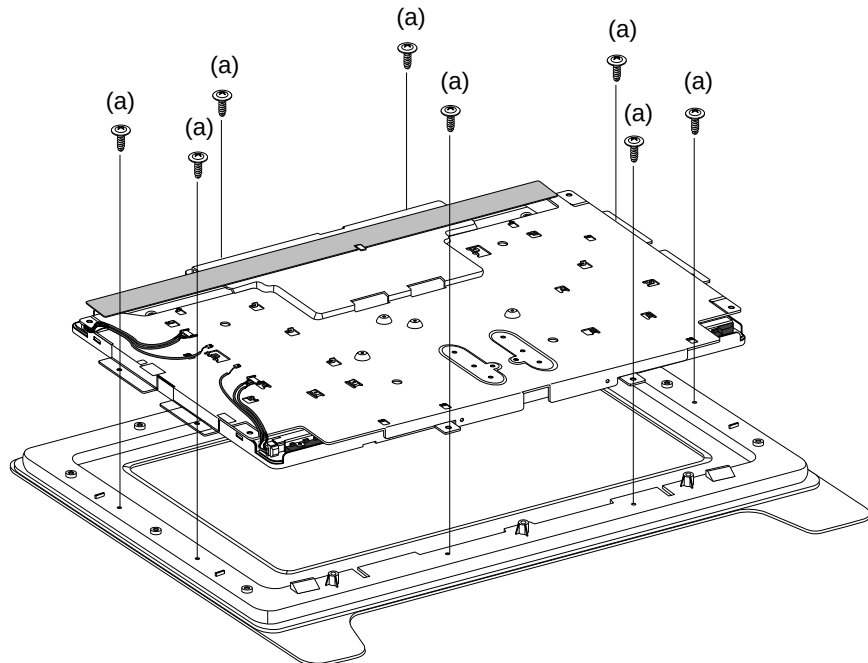
(a),(b): 1SZZTPP001B
3.0 x 4.0



6. CABINET ASS'Y REMOVAL

- 1) Remove eight screws (a).
- 2) Remove the Cabinet Ass'y.

(a): 332-095K
3.0 x 8.0mm



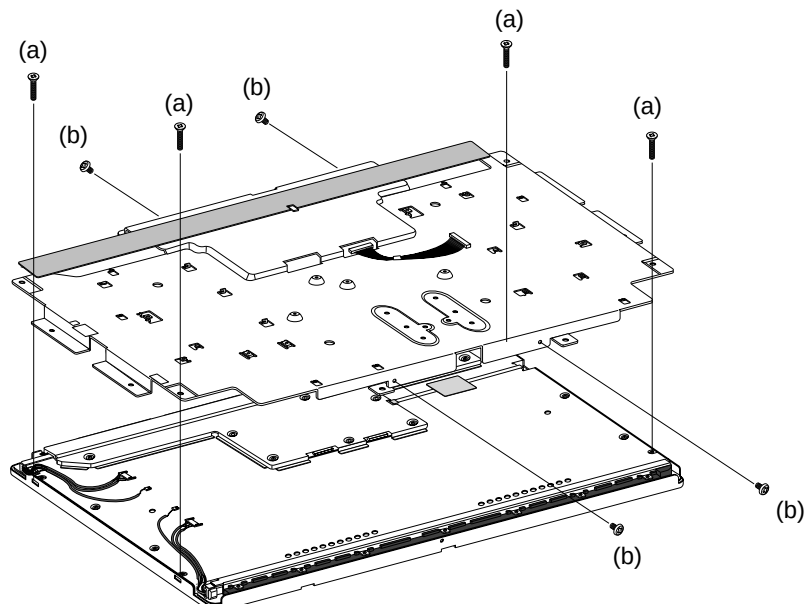
7. LCD MODULE REMOVAL

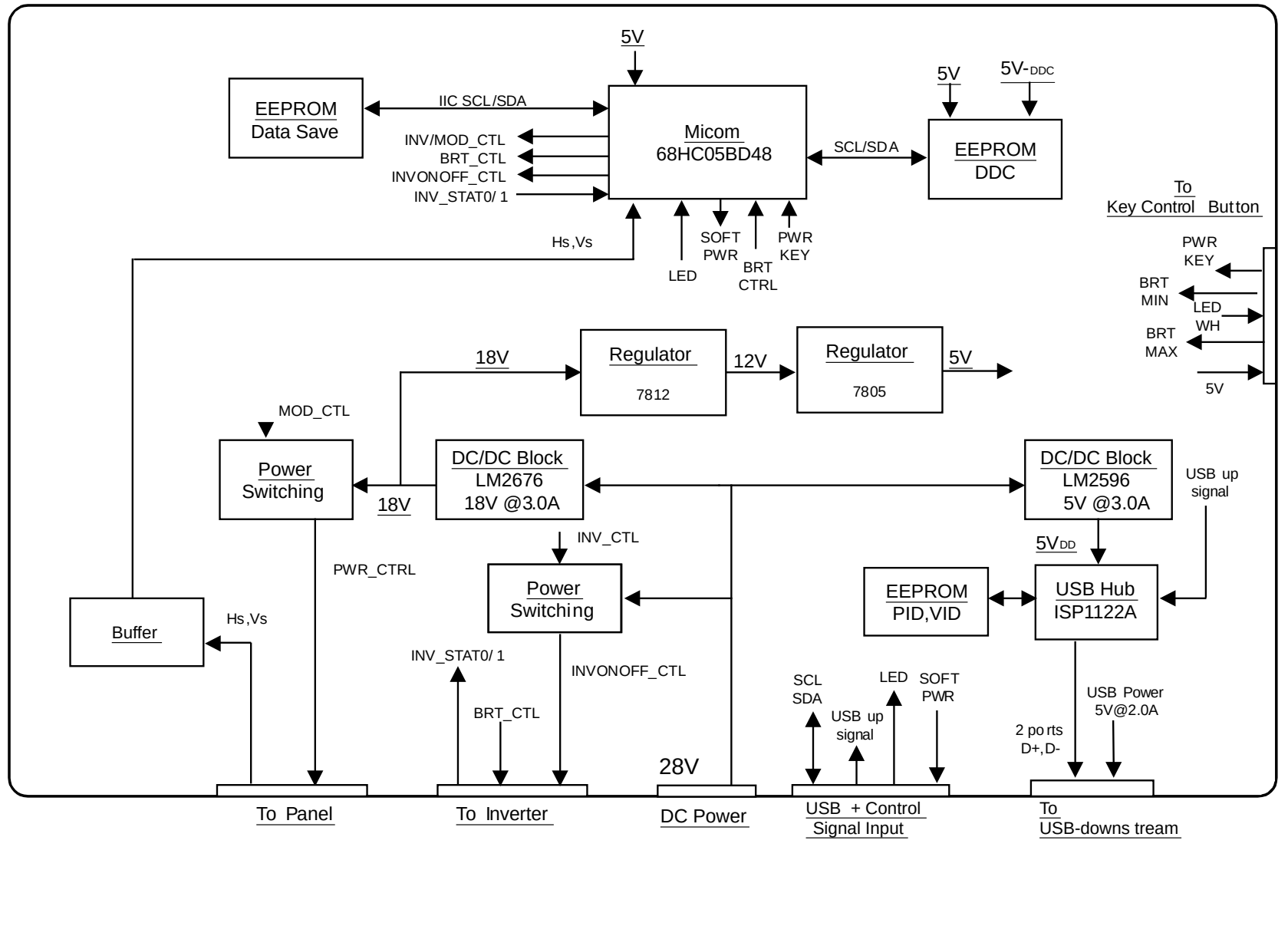
- 1) Remove four screws (a).
- 2) Remove four screws (b).
- 3) Remove the LCD Module.

(a): 1MCC0303219
3.0 x 18.0



(b): 1SZZTPP001B
3.0 x 4.0





Description of Block Diagram

1. DC/DC Block

: This circuit supplies +5V for logic, +5VDD for USB down stream application, +28V for Inverter power and +18V for panel power.
+5V is converted using BA12, BA05.
The 5VDD is converted using LM2596 and supplied to USB down stream application
The 28V is directly supplied for inverter from CPU power.
The 18V is converted using LM2676-adj and supplied to panel.

2. System Controller Block

: The Micro-controller is responsible for
-Protect LCD module against wrong display timing.
-Backlight brightness control.
-Monitor Power Management.
-USB communication to Mac
-Apple Vision Launch

3. USB Block

: USB Block contains both an USB display and a self-powered hub with 2 external downstream ports.
The USB hub's upstream port is connected to Mac's USB port.
The USB display device is connected to an internal downstream Port of the USB hub.

4. Interface Connectors

: The circuit is composed of LCD panel interface connector, J703, Inverter interface connector, J701, Mac interface connector, J12 and J702
USB down stream interface port, J11, Launch button connector, J704, Power button interface button, J705.

ADJUSTMENT

All adjustment are thoroughly checked and corrected when the monitor leaves the factory, but sometimes several minor adjustment may be required.

Adjustment should be following procedure and after warming up for a minimum of 10 minutes.

- Alignment appliances and tools.
 - IBM compatible PC.
 - Alignment Adapter and Software.
 - DVI-D Connector.

- Install the cable for adjustment such as Figure 1 and run the alignment program on the DOS for IBM compatible PC.

1. DDC Data Write Procedure

- 1) Use this procedure only when there is some problem on 24LC02 (DDC support IC).
- 2) Select **EEPROM** -> **Write EDID** command and Enter.
- 3) This will write the EDID data to 24LC02.

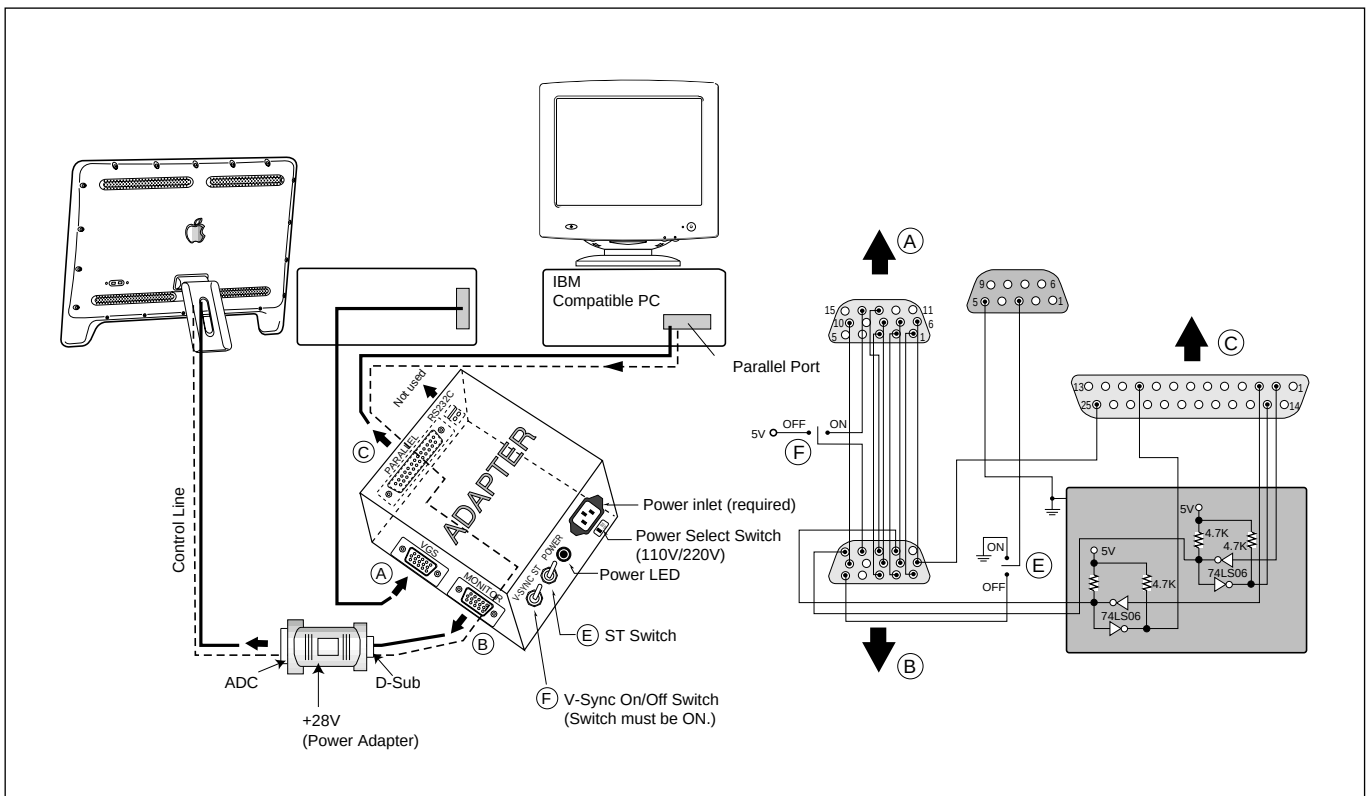
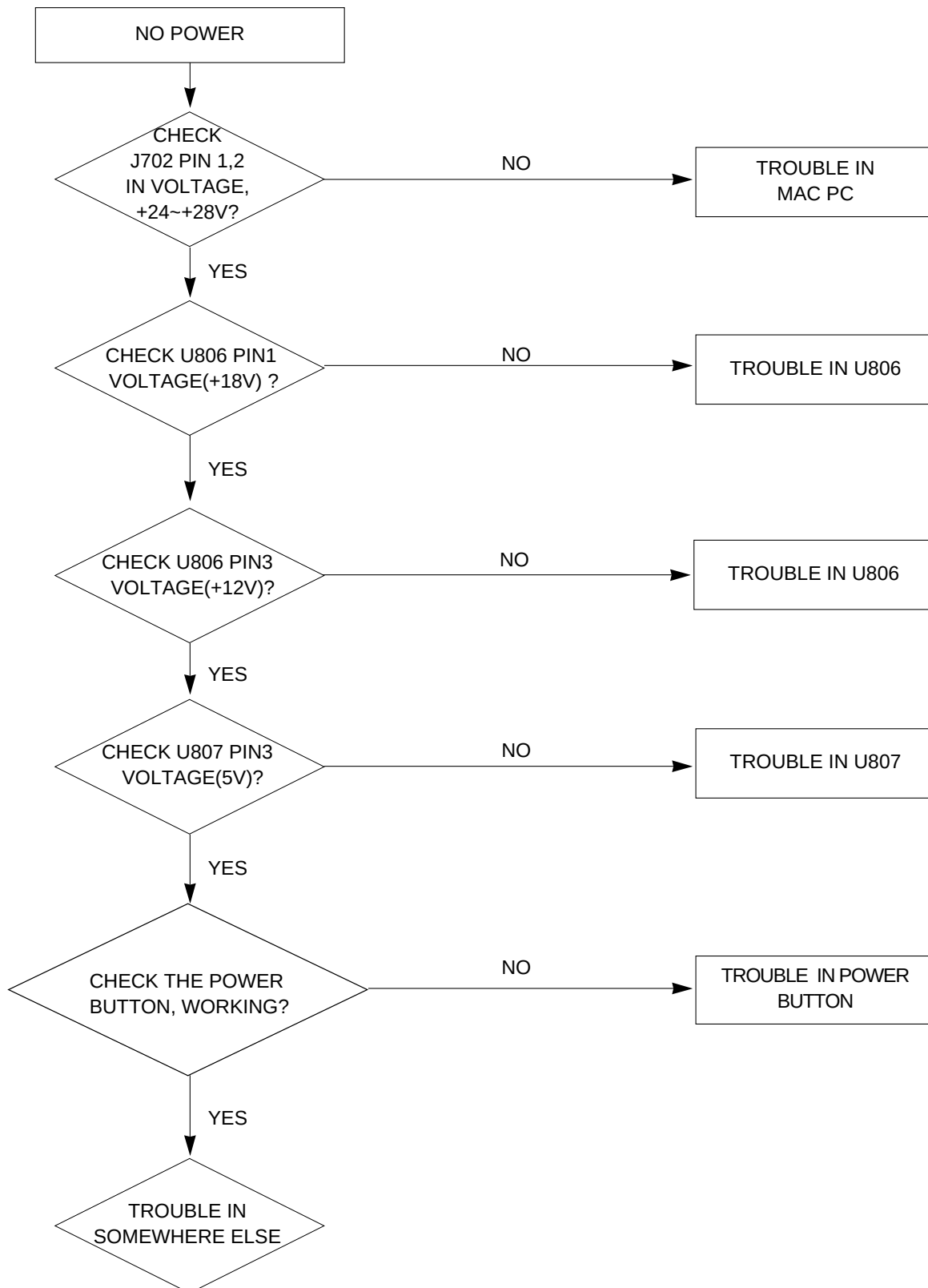


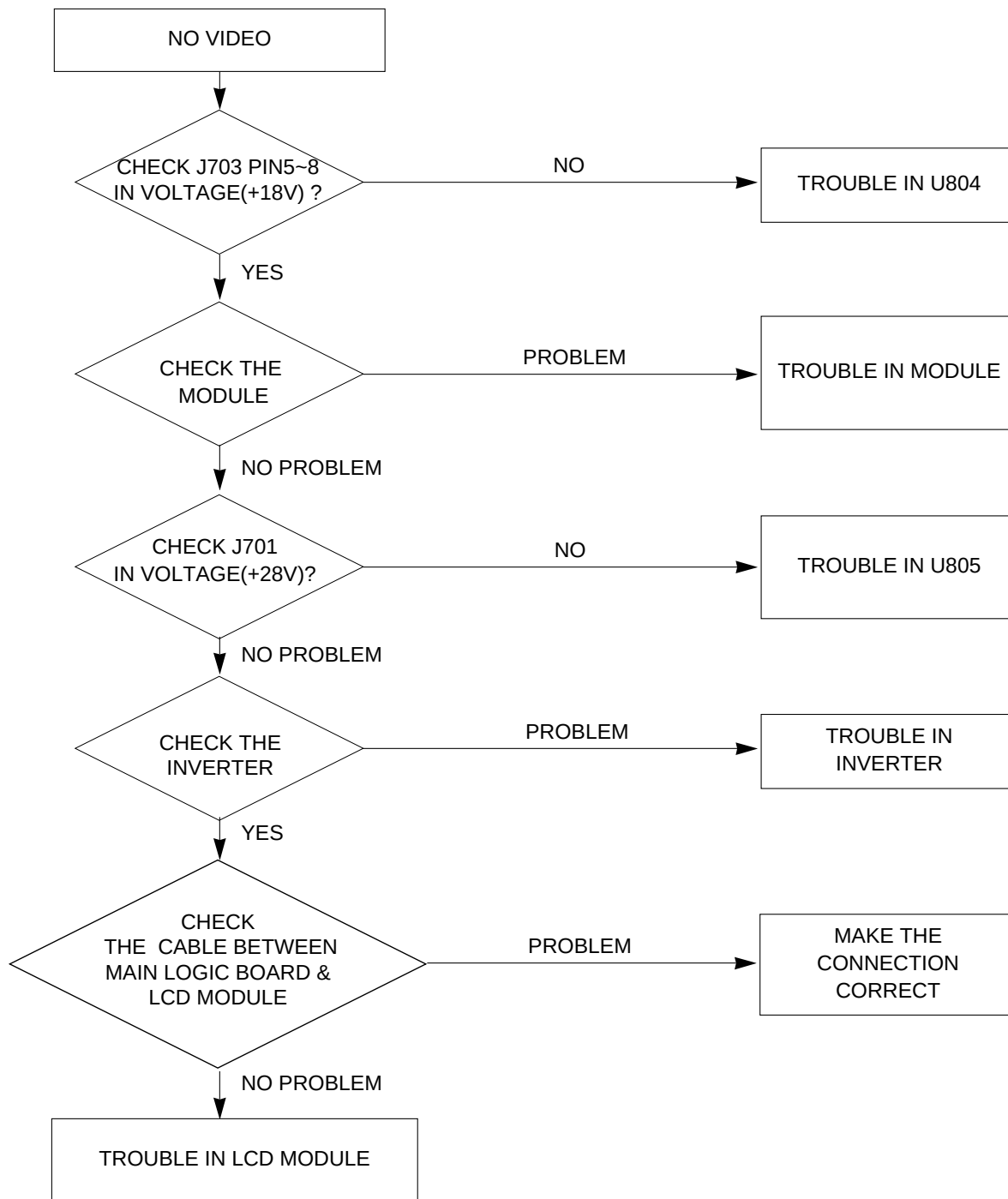
Figure 1. Cable Connection

TROUBLESHOOTING GUIDE

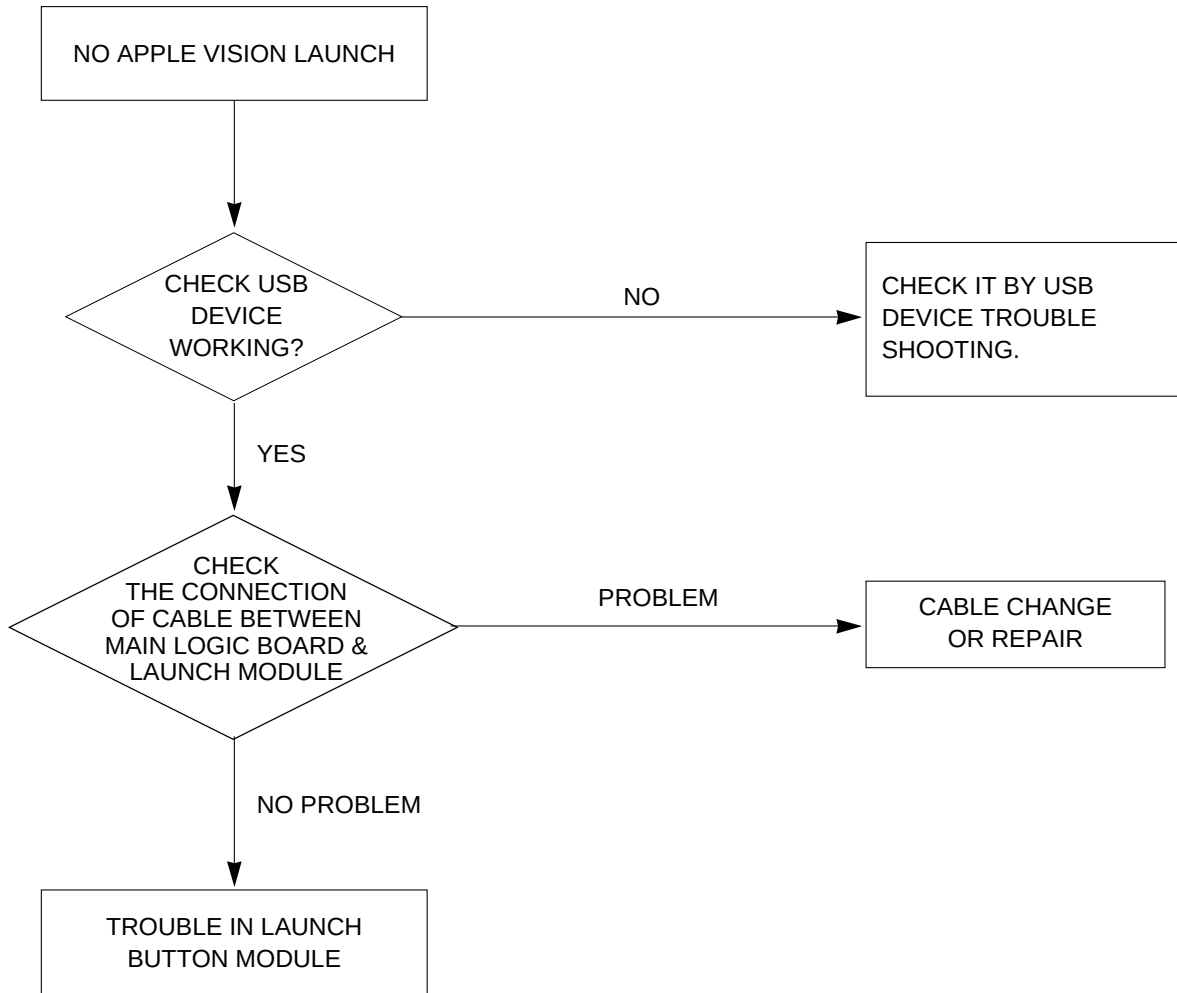
1. NO POWER



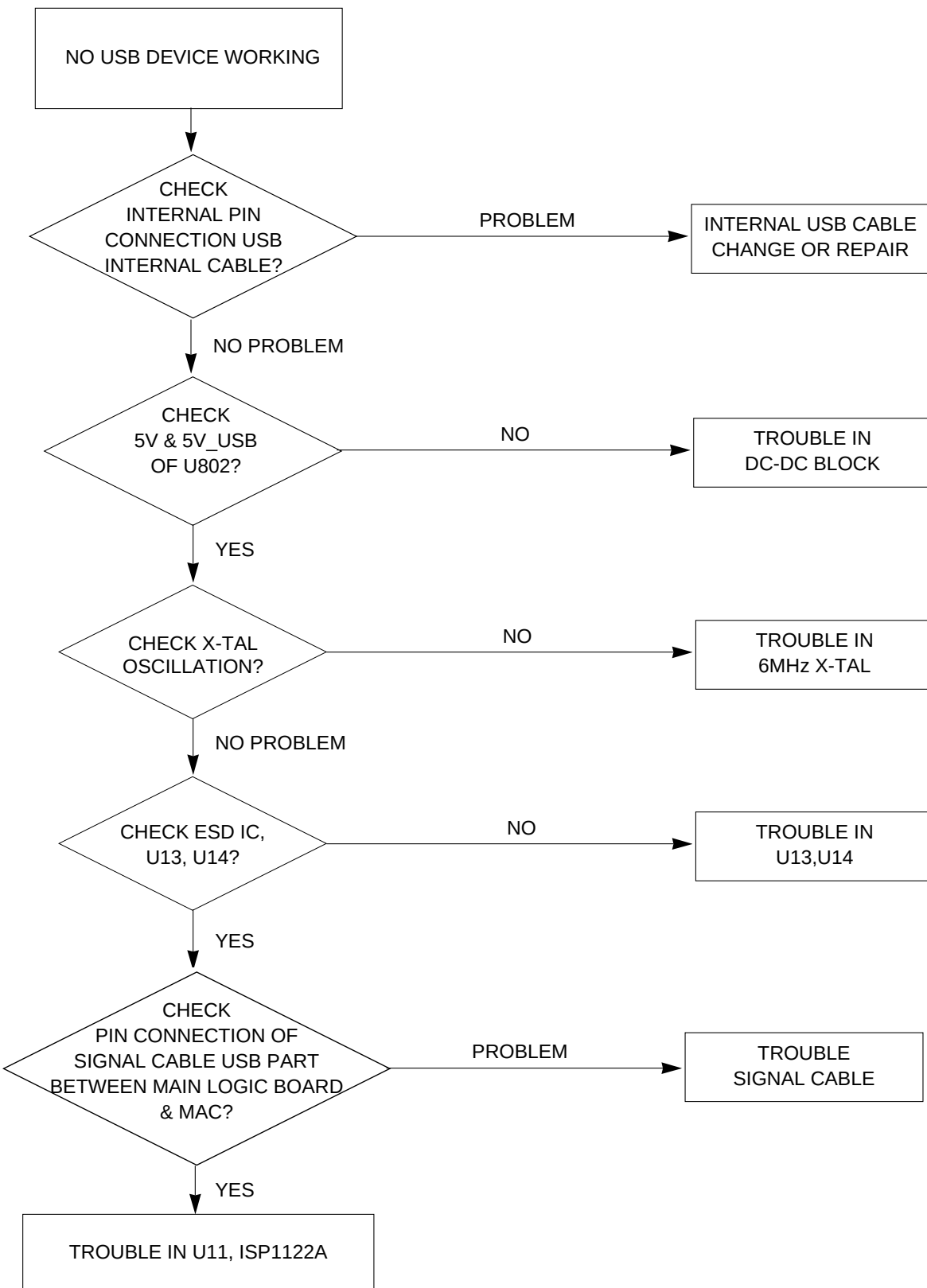
2. NO VIDEO



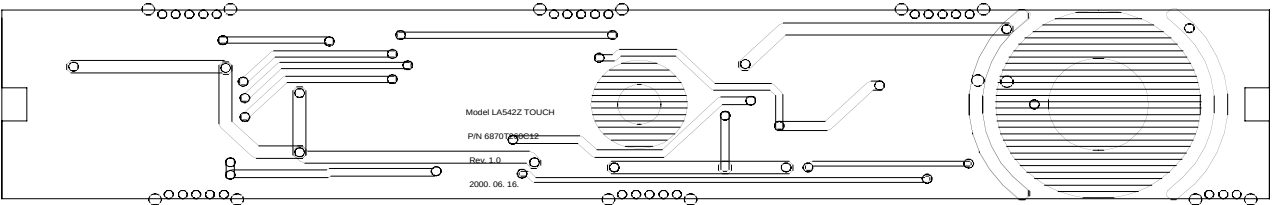
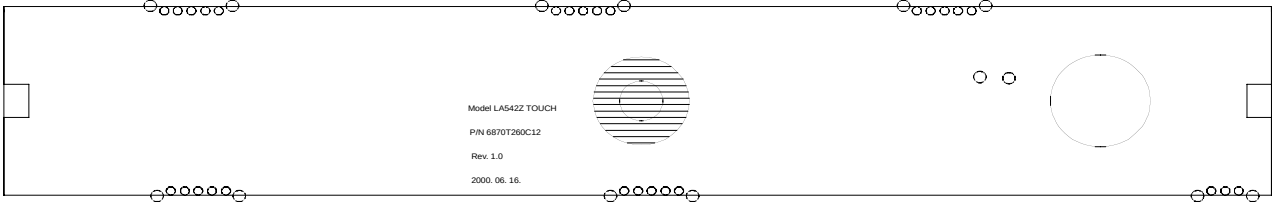
3. NO APPLE VISION LAUNCH



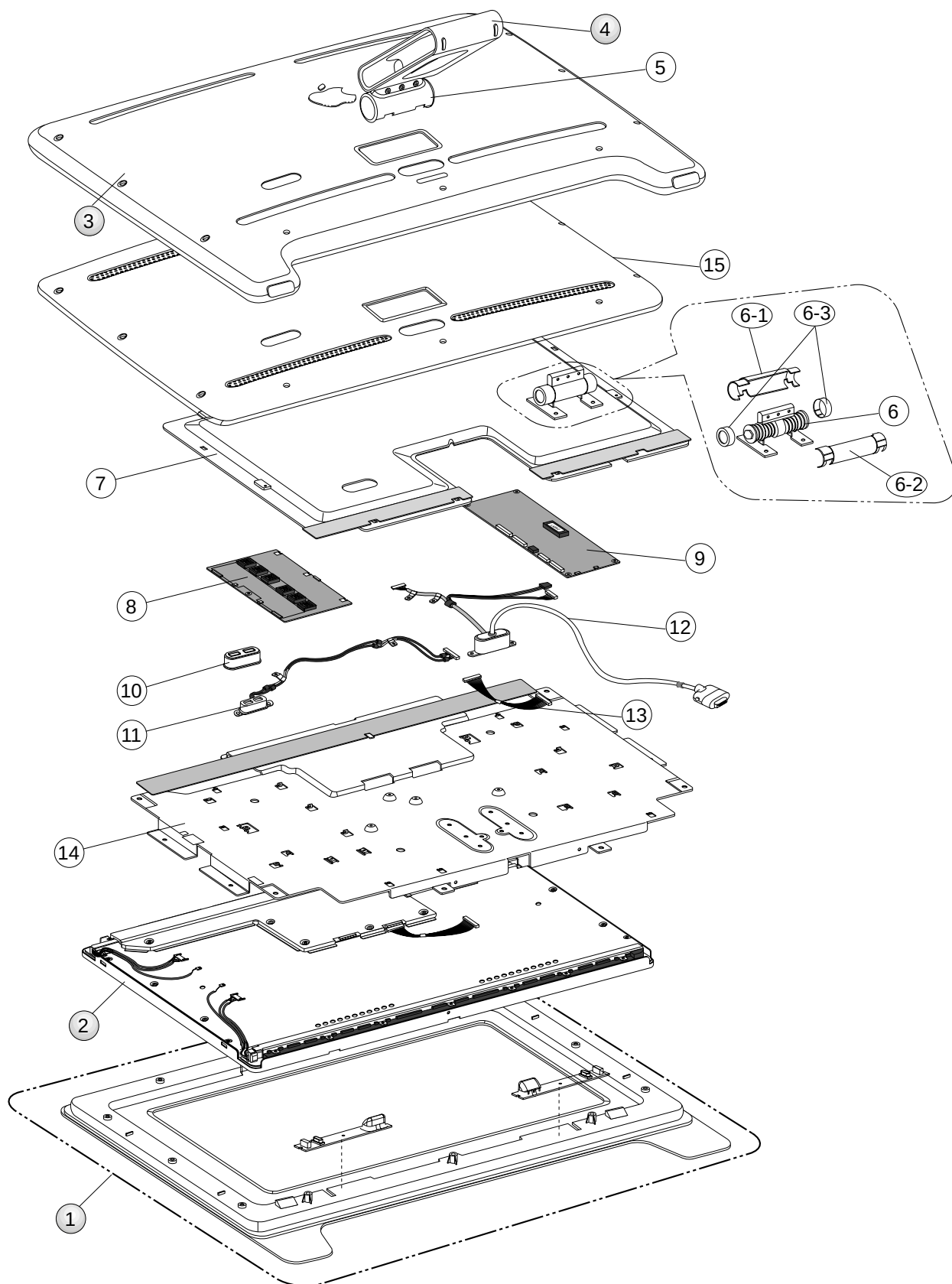
4. NO USB DEVICE WORKING



1. MAIN BOARD



EXPLODED VIEW



EXPLODED VIEW PARTS LIST

Ref. No.	Part No.	APPLE Part No.	Description
1	3091TKL034A	815-6595	CABINET ASSEMBLY, LA291Z APPLE 3090TKL034 (FRONT BEZEL)
2	6304FLP012A	707-1006	LCD(LIQUID CRYSTAL DISPLAY), LM230W1-A2 LG PHILPS 23 INCH WUXGA
3	3809TKL024A	815-6598	BACK COVER ASSEMBLY, LA291Z 3808TKL028 (REAR COVER)
4	3043TKK089A	815-6602	TILT SWIVEL ASSEMBLY, LA291Z 3042TKK025 FOOT(P63)
5	3550TKK238A	815-0164	COVER, LA291Z HINGE CAP (P63)
6	4951TKK074A	600-9602	METAL ASSEMBLY, TILT UNIT HINGE(HINGE ASSY)
6-1	3550TKK258A	815-6759	COVER, LA291Z HINGE TOP
6-2	3550TKK259A	815-6605	COVER, LA291Z HINGE BOTTOM
6-3	3550TKK260A	815-6604	COVER, LA291Z HINGE END CAP
7	4815TKK024A	805-3351	SHIEL, ASSEMBLY, REAR METAL EMI
8	6633TZA002B	614-0169	INVERTER ASSEMBLY, AMBIT K11I002.00 LA291Z
9	6871TMT292A	630-3831	PWB(PCB) ASSEMBLY, MAIN, LA291Z XAGT APPLE CL-30 TOTAL
10	3550TKK239A	815-6696	COVER, LA291Z PIECE USB(USB TRIM RING)
11	6631T11009E	592-0003	CONNECTOR ASSEMBLY, 12P ETC 350MM UL 2725 #30 IQ-010575A(592-0003) (USB CONNECTOR)
12	6850TAC005A	517-0887	CABLE, D-SUB, UL20276 AT 2000MM APPLE C/R 23" LCD DM(ADC CABLE)
13	6631T12001Y	•	CONNECTOR ASSEMBLY, 15P H-H 140MM UL1061#28 LA291Z
14	4950TKS191A	•	METAL, FRAME ADAPTER(P63)
15	3808TKL027A	815-6584	BACK COVER, LA291Z INNER(P63)

REPLACEMENT PARTS LIST

CAUTION: BEFORE REPLACING ANY OF THESE COMPONENTS,
READ CAREFULLY THE **SAFETY PRECAUTIONS** IN THIS MANUAL.

* NOTE : **S** SAFETY Mark 
AL ALTERNATIVE PARTS

DATE: 2002. 03. 21.				
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
MAIN BOARD				
CAPACITORS				
		C11	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C12	0CK105CF94A	1UF 1608 16V 80%,-20% R/TP F(Y5
		C13	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C14	0CH8106J611	10UF 35V M 85STD(CYL) R/TP
		C15	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		C16	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		C18	0CH8227D611	220UF 10V M 85STD (CYL) R/TP
		C19	0CH8107F611	100UF 16V M 85STD(CYL) R/TP
		C24	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5P)
		C25	0CC330CK41A	33PF 1608 50V 5% R/TP NP0
		C26	0CC330CK41A	33PF 1608 50V 5% R/TP NP0
		C27	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C28	0CC560CK41A	56PF 1608 50V 5% R/TP NP0
		C29	0CC560CK41A	56PF 1608 50V 5% R/TP NP0
		C30	0CC560CK41A	56PF 1608 50V 5% R/TP NP0
		C31	0CC560CK41A	56PF 1608 50V 5% R/TP NP0
		C32	0CH8107F611	100UF 16V M 85STD(CYL) R/TP
		C44	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0
		C47	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0
		C501	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C502	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C503	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		C504	0CC220CK41A	22PF 1608 50V 5% R/TP NP0
		C505	0CH8476F611	47UF 16V M 85STD(CYL) R/TP SAMY
		C506	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C507	0CC120CK41A	12PF 1608 50V 5% R/TP NP0
		C508	0CC120CK41A	12PF 1608 50V 5% R/TP NP0
		C509	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5P)
		C511	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C512	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C513	0CK332CK51A	3300PF 1608 50V 10% R/TP B(Y5P)
		C514	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5P)
		C701	0CC221CK41A	220PF 1608 50V 5% R/TP NP0
		C702	0CC221CK41A	220PF 1608 50V 5% R/TP NP0
		C703	0CC221CK41A	220PF 1608 50V 5% R/TP NP0
		C704	0CC221CK41A	220PF 1608 50V 5% R/TP NP0
		C705	0CC221CK41A	220PF 1608 50V 5% R/TP NP0
		C706	0CC221CK41A	220PF 1608 50V 5% R/TP NP0
		C707	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0
		C708	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C709	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0
		C710	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C713	0CH8107H611	100UF 25V M 85STD(CYL) R/TP
		C714	0CC101CK41A	100PF 1608 50V 5% R/TP NP0
		C715	0CC101CK41A	100PF 1608 50V 5% R/TP NP0
		C716	0CH8107F611	100UF 16V M 85STD(CYL) R/TP
		C720	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C721	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C722	0CH8107F611	100UF 16V M 85STD(CYL) R/TP
		C725	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C727	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C729	0CC101CK41A	100PF 1608 50V 5% R/TP NP0

DATE: 2002. 03. 21.				
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		C730	0CC101CK41A	100PF 1608 50V 5% R/TP NP0
		C801	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5P)
		C803	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5P)
		C804	0CE475VK6DC	4.7UF MV 50V 20% R/TP(SMD) SMD
		C807	0CH8476K611	47UF 50V M 85STD(CYL) R/TP
		C808	0CH3224K944	0.22UF 50V Z F 3216 R/TP
		C810	0CC120CK41A	12PF 1608 50V 5% R/TP NP0
		C811	0CC101CK41A	100PF 1608 50V 5% R/TP NP0
		C815	0CE337WF6DC	330UF MVK 16V 20% R/TP(SMD) SMD
		C816	0CE337WF6DC	330UF MVK 16V 20% R/TP(SMD) SMD
		C817	0CE337WF6DC	330UF MVK 16V 20% R/TP(SMD) SMD
		C818	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C819	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5P)
		C820	0CC120CK41A	12PF 1608 50V 5% R/TP NP0
		C821	0CC101CK41A	100PF 1608 50V 5% R/TP NP0
		C822	0CC101CK41A	100PF 1608 50V 5% R/TP NP0
		C823	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0
		C834	0CE107WK6DC	100UF MVK 50V 20% R/TP(SMD) SMD
		C836	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C837	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C838	0CE227VH6DC	220UF MV 25V 20% R/TP(SMD) SMD
		C840	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C841	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C842	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C843	0CH8106J691	10UF 35V M 105STD (CYL) R/TP
		C844	0CC221CK41A	220PF 1608 50V 5% R/TP NP0
		C845	0CH8107K611	100UF 50V M 85STD (CYL) R/TP
		C846	0CC221CK41A	220PF 1608 50V 5% R/TP NP0
		C848	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C849	0CH8106J691	10UF 35V M 105STD (CYL) R/TP
		C850	0CK104CK56A	0.1UF 1608 50V 10% R/TP X7R
		C852	0CH8107K611	100UF 50V M 85STD (CYL) R/TP
DIODEs				
		D11	0DS226009AA	KDS226 TP KEC SOT-23 80V 300MA
		D12	0DS226009AA	KDS226 TP KEC SOT-23 80V 300MA
		D13	0DS226009AA	KDS226 TP KEC SOT-23 80V 300MA
		D14	0DS226009AA	KDS226 TP KEC SOT-23 80V 300MA
		D15	0DS226009AA	KDS226 TP KEC SOT-23 80V 300MA
		D16	0DS226009AA	KDS226 TP KEC SOT-23 80V 300MA
		D802	0DS181009AA	KDS181 TP KEC SOT-23 80V 300M
		ZD11	0DR050008AA	SD05.TC R/TP SEMTECH SOD323 5V
		ZD12	0DR050008AA	SD05.TC R/TP SEMTECH SOD323 5V
		ZD801	0DR340009AA	MBRS340 TP FAIRCHILD NON 40V 3A
		ZD802	0DR340009AA	MBRS340 TP FAIRCHILD NON 40V 3A
ICs				
		U11	0IPH112200C	ISP1122ABD 32P,LQFP R/TP USB HU
		U12	0ISS524804B	S524A40X41(DCB0) SAMSUNG ELECTR
		U13	0DR050008BA	SR05.TC R/TP SEMTECH NON 5V 1A
		U14	0DR050008BA	SR05.TC R/TP SEMTECH NON 5V 1A
		U501	0IKE704200J	KIA7042AF SOT-89 TP 4.2V VOLTAG

DATE: 2002. 03. 21.				
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		U502	0IZZTSZ172A	MOTOROLA 42PIN BK LA291Z OTP M
		U503	0ISS524202B	S524A40X21(SCT0) SAMSUNG ELECTR
		U504	0ISS524202B	S524A40X21(SCT0) SAMSUNG ELECTR
		U508	0IFA741230A	DM74LS123MX 16SOP TP DUAL RETRI
		U801	0TFIR80016A	INTERNATIONAL RECTIFIER IRF7342
		U802	0INS259650A	LM2596-5V 5LEAD,TO263(S) TP 3A
		U804	0IPMGNS004B	LM2676S-ADJ NATIONAL SEMICONDC
		U805	0TF492509AA	SI4925DY TP TEMIC 30V 6.1A SO-
		U806	0IPMGRH001C	BA12FP ROHM 3P,TO252-3 R/TP 12V
		U807	0IPMGRH001B	BA05FP ROHM 3P,TO252-3 R/TP 5V
COILS & CORES				
		L11	6210TCE001S	HU-1M2012-121 CERATECH 2012MM R
		L12	6210TCE001S	HU-1M2012-121 CERATECH 2012MM R
		L15	6210TCE001S	HU-1M2012-121 CERATECH 2012MM R
		L20	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L21	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L22	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L23	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L26	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L27	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L28	6210TCE001H	HB-1T2012-301JT CERATEC 2012MM
		L29	6210TCE001H	HB-1T2012-301JT CERATEC 2012MM
		L30	6210TCE001H	HB-1T2012-301JT CERATEC 2012MM
		L31	6210TCE001H	HB-1T2012-301JT CERATEC 2012MM
		L33	6200J00007D	ACM2520U-601-2P TDK R/TP LA291Z
		L36	6200J00007D	ACM2520U-601-2P TDK R/TP LA291Z
		L501	6200J00007A	- TDK R/TP MPZ2012S300A,30 OHM,
		L701	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L702	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L703	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L704	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L705	6210TCE001G	HH-1M3216-501 CERATEC 3216MM R/
		L706	6210TCE001G	HH-1M3216-501 CERATEC 3216MM R/
		L707	6210TCE001G	HH-1M3216-501 CERATEC 3216MM R/
		L708	6210TCE001G	HH-1M3216-501 CERATEC 3216MM R/
		L709	6210TCE001G	HH-1M3216-501 CERATEC 3216MM R/
		L710	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L713	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L714	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L715	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L717	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L718	6210TCE001G	HH-1M3216-501 CERATEC 3216MM R/
		L719	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L723	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L724	6210TCE001G	HH-1M3216-501 CERATEC 3216MM R/
		L725	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L726	6210TCE001Y	HB-1H2012-320JT CERATEC 2012MM
		L801	6200J00007B	- TDK R/TP ACM0706-1000,LA291Z,
		L802	6200TEZ003D	TPRH1207-330M BOAM R/TP 33 UH
		L805	6200TEZ003D	TPRH1207-330M BOAM R/TP 33 UH
TRANSISTOR				
		Q501	0TR162309CA	KSC1623 TP SAMSUNG SOT23 NPN E
		Q502	0TR162309CA	KSC1623 TP SAMSUNG SOT23 NPN E
		Q804	0TR162309CA	KSC1623 TP SAMSUNG SOT23 NPN E
		Q805	0TR162309CA	KSC1623 TP SAMSUNG SOT23 NPN E
RESISTORS				
		R11	0RJ1501D677	1.5K OHM 1/10 W 5% 1608 R/TP

DATE: 2002. 03. 21.				
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		R12	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R13	0RJ1004D677	1000000 OHM 1/10 W 5% 1608 R/TP
		R14	0RJ1004D677	1000000 OHM 1/10 W 5% 1608 R/TP
		R17	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R18	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R21	0RJ1502D677	15K OHM 1/10 W 5% 1608 R/TP
		R22	0RJ1502D677	15K OHM 1/10 W 5% 1608 R/TP
		R23	0RJ1502D677	15K OHM 1/10 W 5% 1608 R/TP
		R24	0RJ1502D677	15K OHM 1/10 W 5% 1608 R/TP
		R25	0RJ1502D677	15K OHM 1/10 W 5% 1608 R/TP
		R26	0RJ1502D677	15K OHM 1/10 W 5% 1608 R/TP
		R27	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R28	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R29	0RJ0222D677	22 OHM 1/10 W 5% 1608 R/TP
		R30	0RJ0222D677	22 OHM 1/10 W 5% 1608 R/TP
		R31	0RJ1502D677	15K OHM 1/10 W 5% 1608 R/TP
		R32	0RJ1502D677	15K OHM 1/10 W 5% 1608 R/TP
		R33	0RJ0222D677	22 OHM 1/10 W 5% 1608 R/TP
		R34	0RJ0222D677	22 OHM 1/10 W 5% 1608 R/TP
		R35	0RJ1502D677	15K OHM 1/10 W 5% 1608 R/TP
		R36	0RJ1502D677	15K OHM 1/10 W 5% 1608 R/TP
		R37	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R38	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R39	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R40	0RJ0222D677	22 OHM 1/10 W 5% 1608 R/TP
		R41	0RJ0222D677	22 OHM 1/10 W 5% 1608 R/TP
		R43	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R44	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R45	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R46	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R501	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R502	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R503	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R504	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R505	0RJ1501D677	1.5K OHM 1/10 W 5% 1608 R/TP
		R506	0RJ1004D677	1000000 OHM 1/10 W 5% 1608 R/TP
		R507	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R508	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R509	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R510	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R511	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R512	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R513	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R514	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R515	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R518	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R519	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R521	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R522	0RJ1001D677	1K OHM 1/10 W 5% 1608 R/TP
		R525	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R526	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R527	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R528	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R529	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R530	0RJ3300D677	330 OHM 1/10 W 5% 1608 R/TP
		R531	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R532	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R533	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R534	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R535	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R536	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP

				DATE: 2002. 03. 21.
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		R537	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R538	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R539	0RJ1000D677	100 OHM 1/10 W 5% 1608 R/TP
		R70	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R701	0RJ4700D677	470 OHM 1/10 W 5% 1608 R/TP
		R704	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R705	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R801	0RJ2203D677	220K OHM 1/10 W 5% 1608 R/TP
		R802	0RJ2203D677	220K OHM 1/10 W 5% 1608 R/TP
		R803	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R808	0RJ4701D677	4.7K OHM 1/10 W 5% 1608 R/TP
		R818	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R819	0RJ6802D677	68K OHM 1/10 W 5% 1608 R/TP
		R820	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R821	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R822	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R823	0RJ6802D677	68K OHM 1/10 W 5% 1608 R/TP
		R824	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R825	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R826	0RJ1003D677	100K OHM 1/10 W 5% 1608 R/TP
		R830	0RJ0000D677	0 OHM 1/10 W 5% 1608 R/TP
		R840	0RJ1001D477	1K OHM 1/10 W 1% 1608 R/TP
		R841	0RJ3600D477	360 OHM 1/10 W 1% 1608 R/TP
		R842	0RJ2702D477	27K OHM 1/10 W 1% 1608 R/TP
		R843	0RJ2702D477	27K OHM 1/10 W 1% 1608 R/TP
OTHERs				
		F801	6600TC3001H	RUE500 PBI 30V 5A POLY
		F802	6600TC3001E	RUE185 PBI 30V 1.85A POLY
	LED510	DL210009GC		SML-210MT TP ROHM GREEN .
		X11	6202TST001C	SX-1, SUNNY SMD, 6.0MHZ ,50PPM
		X501	6202TST001E	SX-1 SUNNY CHIP 24MHZ 30PPM 20P
CONTROL BOARD				
		C1	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5P)
		C2	0CH7475F621	4.7UF 16V M 3528 TP(-)
		C3	0CC471CK41A	470PF 1608 50V 5% R/TP NP0
		C4	0CH3563K516	56000PF 50V K B 2012 R/TP
		C5	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5P)
		C6	0CH7475F621	4.7UF 16V M 3528 TP(-)
		C7	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0
		C8	0CC102CK41A	1000PF 1608 50V 5% R/TP NP0
		C9	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5P)
		C10	0CK103CK51A	0.01UF 1608 50V 10% R/TP B(Y5P)
		L1	6210TCE001C	HB-1T3216-500JT CERATEC 3216MM
		L2	6210TCE001K	HB-1H2012-260JT CERATEC 2012MM
		L3	6210TCE001K	HB-1H2012-260JT CERATEC 2012MM
		L4	6210TCE001K	HB-1H2012-260JT CERATEC 2012MM
	LED1	0DL315000DA		NSPW315BS(BS,BR) BK NICHIA WHIT
		Q1	0TR390409AE	FAIRCHILD KST3904(LGEMTF) TP SO
		R2	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R5	0RH0432G622	43 OHM 1 / 4 W 3216 5% D R/TP
		R6	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R7	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		R8	0RJ1002D677	10K OHM 1/10 W 5% 1608 R/TP
		U1	0IMCRMP003A	QT113C-S(PIC 12C509A-SM) MICRO
		U2	0IPMGML003A	MIC5205-4.0BM5 MICREL SOT-23-5

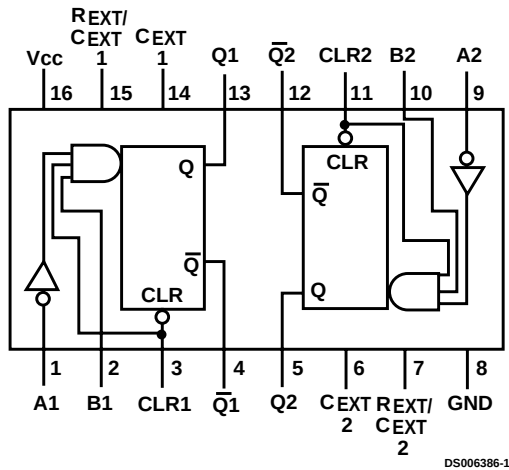
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Column 1	Column 2	Column 3	Column 4	Column 5

PIN CONFIGURATION

DM74LS123

Dual Retriggerable One-Shot with Clear and Complementary Outputs

BLOCK DIAGRAM



Function Table

Inputs			Outputs	
CLEAR	A	B	Q	$\bar{Q}$
L	X	X	L	H
X	H	X	L	H
X	X	L	L	H
H	L	↑	I	J
H	↓	H	I	J
↑	L	H	I	J

H = High Logic Level

L = Low Logic Level

X = Can Be Either Low or High

↑ = Positive Going Transition

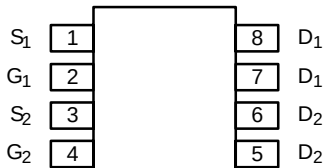
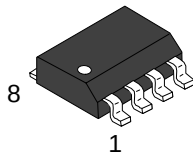
↓ = Negative Going Transition

I = A Positive Pulse

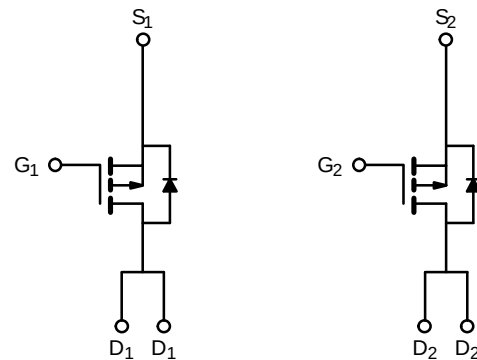
J = A Negative Pulse

SI4925DY

Dual P-Channel 30-V (D-S) Rated MOSFET

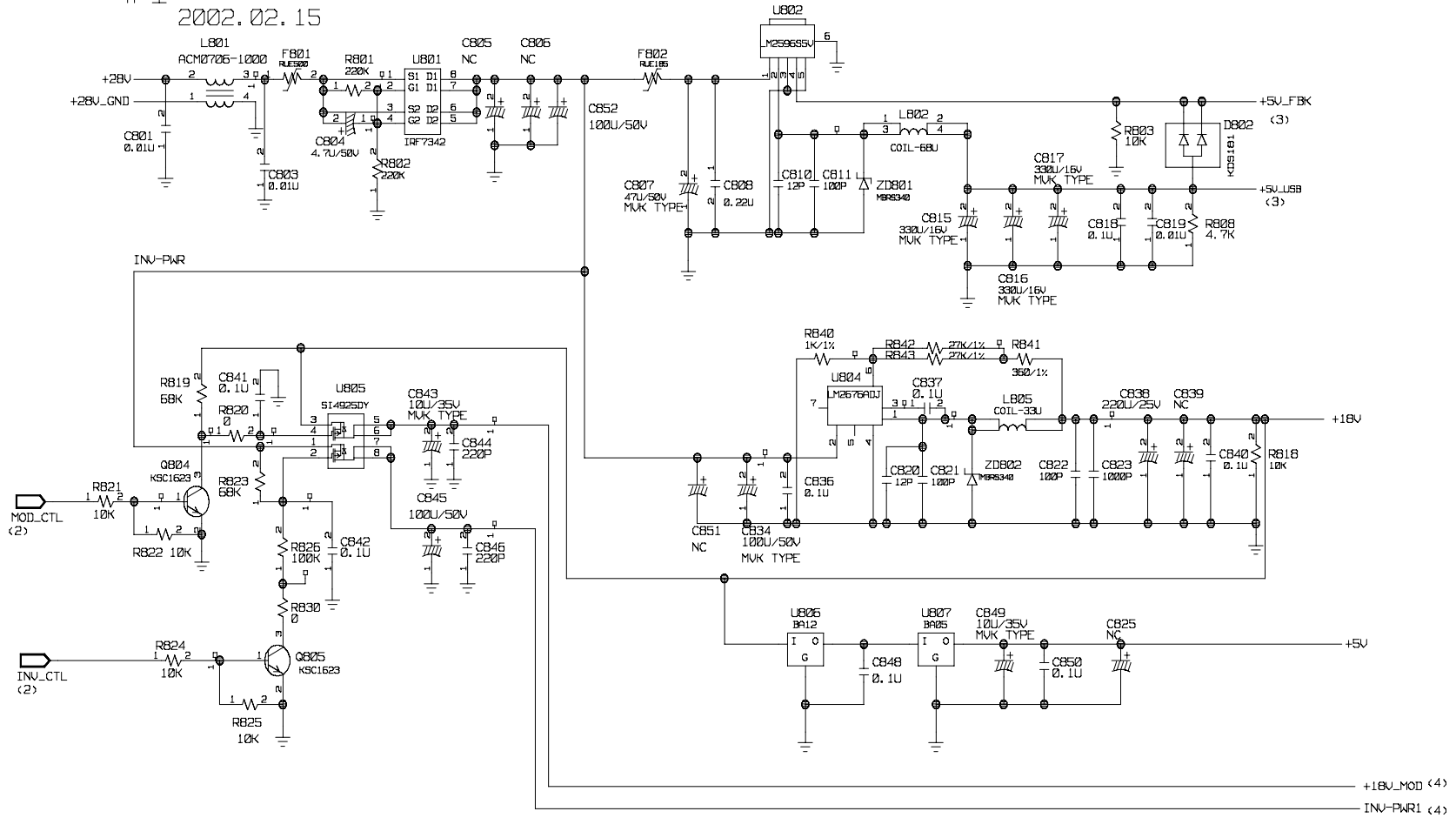


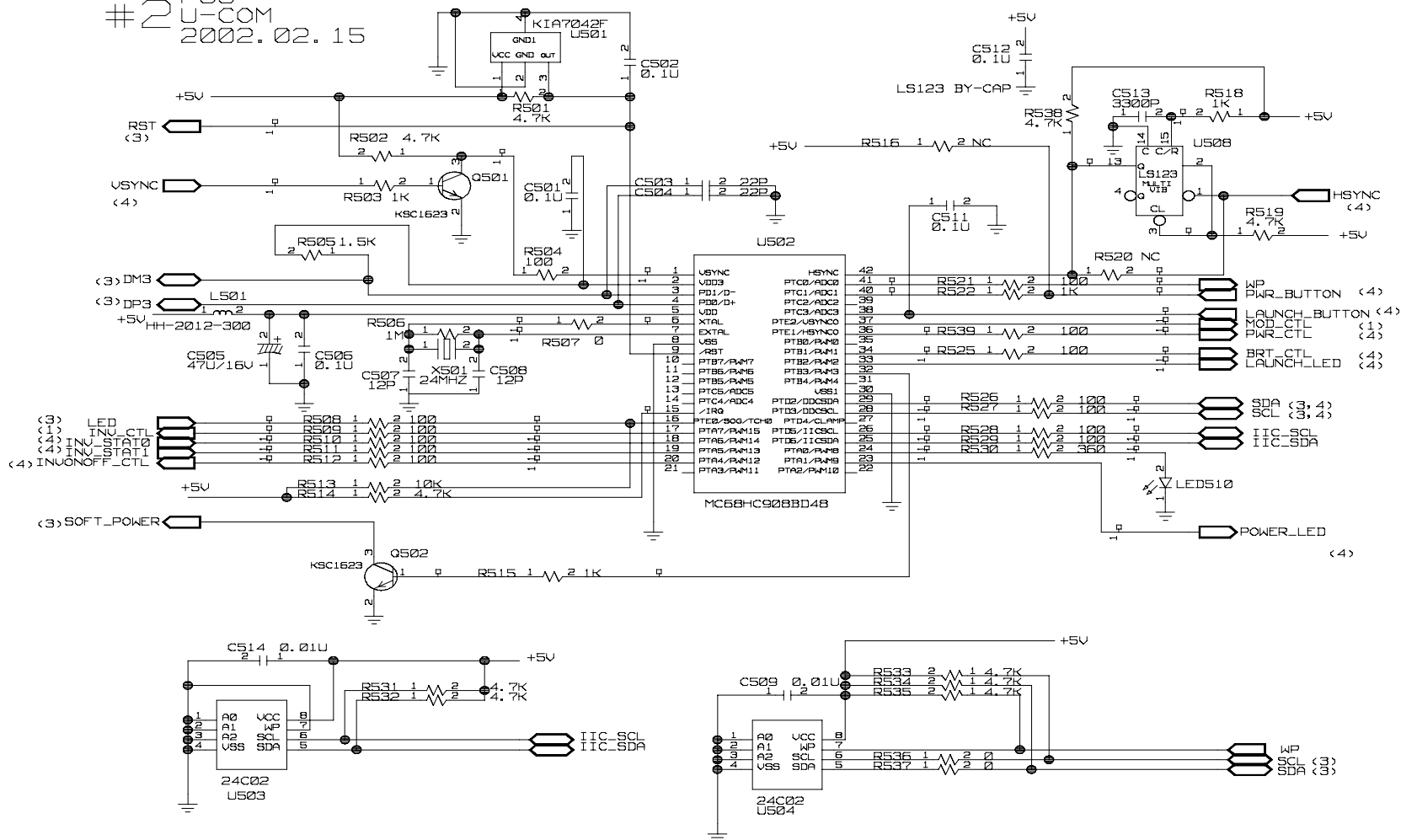
PIN CONFIGURATION



BLOCK DIAGRAM

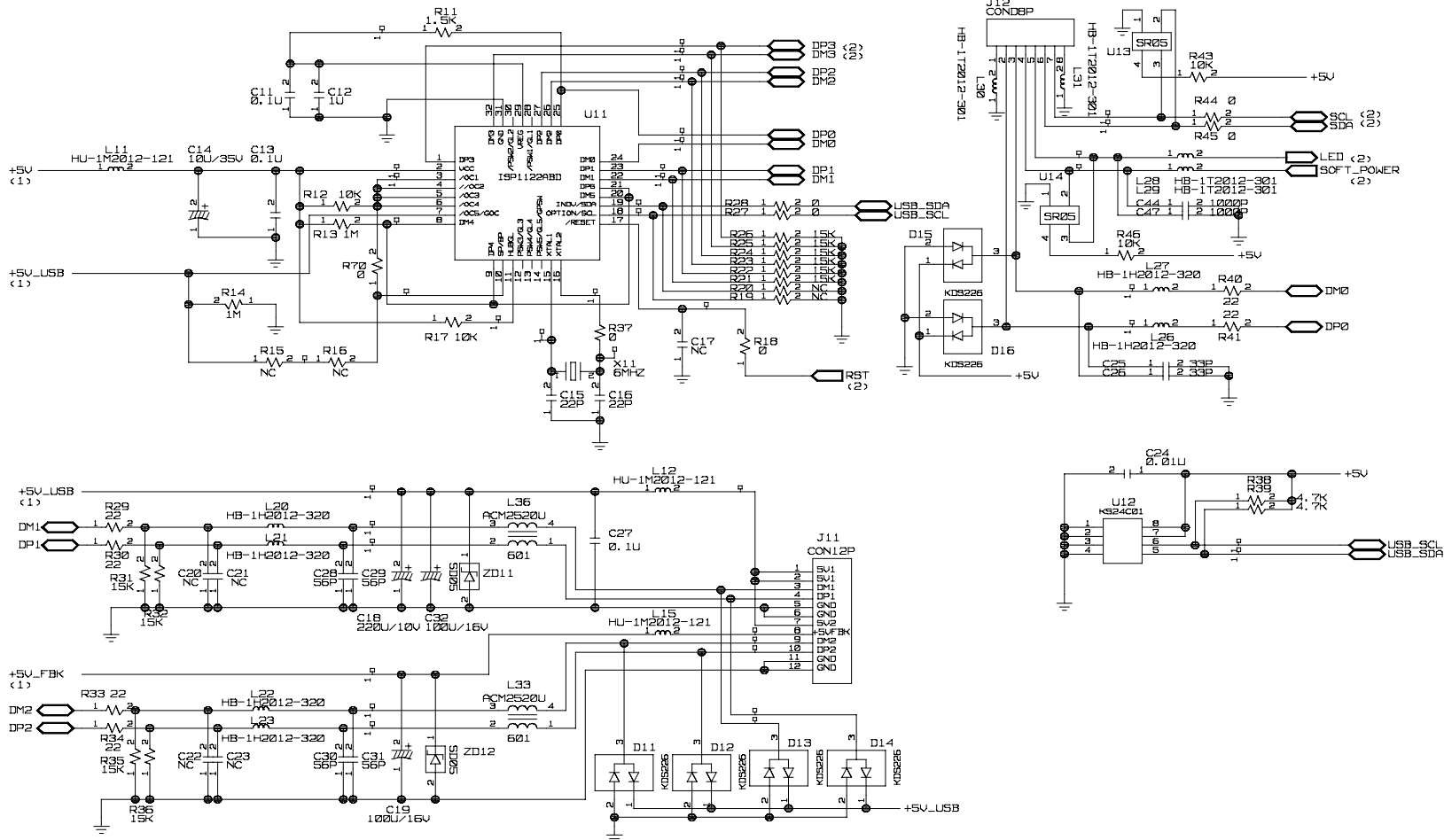
#1 P63
POWER GEN.
2002.02.15



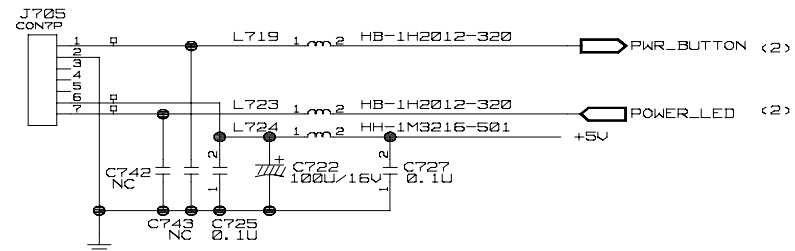
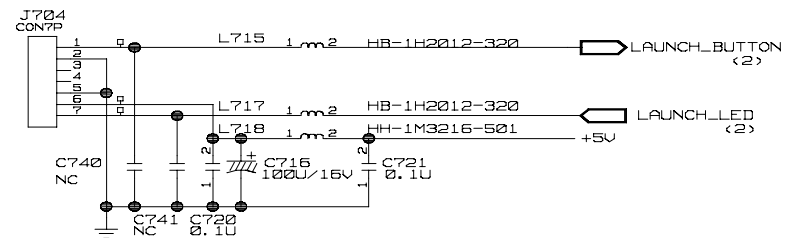
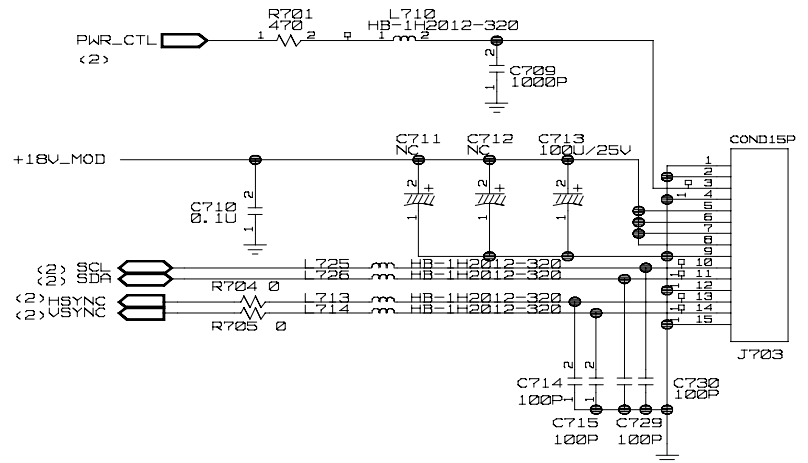
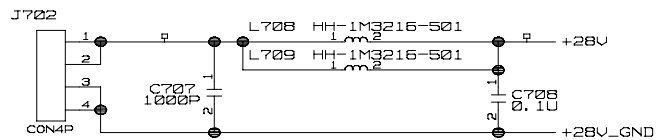
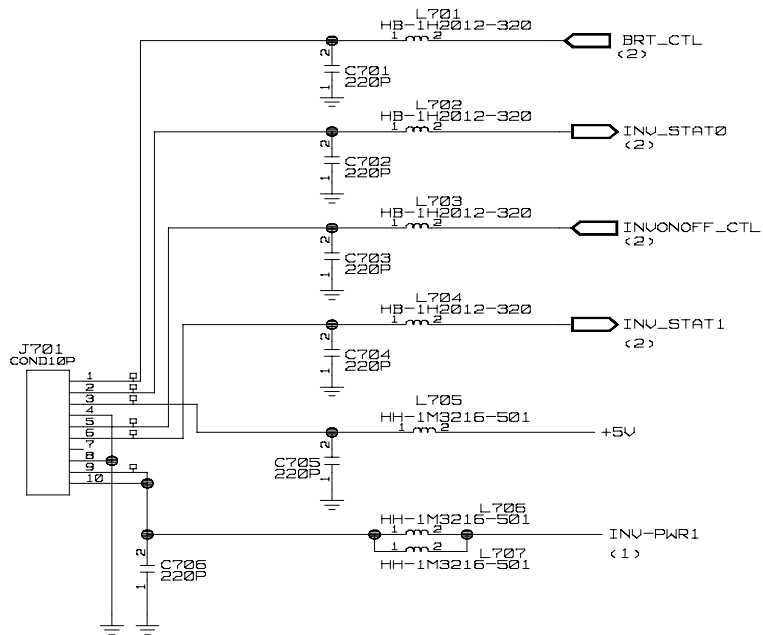


3. USB CONTROLLER

#3 P63
USB CONTROLLER
2002.03.13



#4 P63
CONNECTOR
2002.02.15



Apple Computer, Inc.

Printed in Korea

Macintosh 23" LCD Display

3828TSO030D
