OKI

MICROLINE 320 FLATBED

Troubleshooting Manual with Component Parts List

All specifications are subject to change without notice.

TROUBLESHOOTING MANUAL

CONTENTS

1. OUTLINE

These troubleshooting flow charts have been prepared for repairing the ML320 FLATBED printed circuit board assemblies. Those who are engaged in the repair work are expected to have an adequate level of experience and ability.

2. TOOLS

The following tools are required for ordinary repair work in addition to generally used tools.

Oscilloscope	Approximately 100 MHz
Soldering iron	Any soldering iron available on the market (preferably with a pointed tip). A special soldering iron set can be used to improve the work efficiency.

3. TROUBLESHOOTING ITEMS

① One of the operation voltages is missing.

- 1-1 There is no + 40V output.
- 1-2 There is no + 8V output.
- 1-3 There is no + 5V output.
- 1-4 There is no 10V AC output.
- 1-5 There is no output.

② Only the power lamp is illuminated.

③ Printer alarm occurs.

These errors are indicated by lit LEDs on the operator panel.

- 3-1 Internal CPU RAM error
- 3-2 Program ROM error
- 3-3 External RAM error
- 3-4 Serial Interface error
- 3-5 Spacing error
- 3-6 CG ROM error
- 3-7 EEPROM error

④ Printing wrong character or some characters are not printed.

⑤ Line feed malfunction.

⑥ The printing operation is not performed after an operation switch is pressed.

- 6-1 The SELECT switch does not function.
- 6-2 The MODE switch does not function.
- 6-3 The LF switch does not function.
- 6-4 The FF switch does not function.

6-5 The PARK switch does not function.
6-6 The TOF switch does not function.
6-7 The PRINT switch does not function.
6-8 The CHARACTER switch does not function.
6-9 The EJECT switch does not function.

⑦ Data cannot be received.

7-1A The parallel interface data cannot be received. (Special)
7-1B The parallel interface data cannot be received. (Standard)
7-2 The print data is missing or printing operation is not performed after the parallel interface data is received.

① One of the operation voltages is missing.

The connectors and parts mentioned in (1-1) through (1-3) are located on the power supply PCB (SUII).

(1-1) There is no + 40V output (but there is + 5V output).

- Q1 emitter - Is the voltage between Pins 4 and 5 of CN2 (0V) 32V to 52V? (Power supply PCB)
  - Yes — Is the waveform of Pin 2 of IC2 same as the one shown in Figure 1? (Power supply PCB)

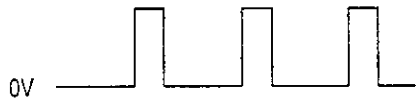

Figure 1

    - Yes — Replace Q1 or Q2.
  - No — Replace IC2 or IC3. (for SUII-PCB)
- No — Is the AC voltage being supplied to Pins 1 or 2, and 7 or 8 of CN1? (Power supply PCB)
  - Yes — Replace D1.
- No — Is the fuse on the filter board open?
  - Yes — Go to step (1-5).
- No — Replace the transformer.

Note: The connectors and parts are located on the DC power supply PCB (SUII-PCB).

(1-2) There is no + 8V output.

- Is the fuse F1 open? (Power supply PCB)
  - No — Is the AC voltage being supplied to Pins 3 and 6 of CN1? (Power supply PCB)
    - Yes — Replace D12.
  - No — Replace the transformer.
- Yes — Replace D12.

Note: The connectors and parts are located on the DC power supply PCB (SUII-PCB).

(1-3) There is no + 5V output.

- Is there + 8V output?
  - Yes Replace IC1. (Power supply PCB)
- No Go to step (1-2).

Note: The connectors and parts are located on the DC power supply PCB (SUII-PCB).

(1-4) There is no 10 V AC output.

- Replace the transformer.

(1-5) There is no output.

- Is the fuse on the filter board open?
  - No Replace the transformer.
- Yes Is the signal being input to Pin 12 of CN3? (Control PCB)
  - Yes Is the D11 cathode voltage approximately 11V? (Control PCB)
    - No Replace TR1 or TR9.
  - Yes Is there output to TR7 collector? (Control PCB)
    - Yes Replace TR7 or 08E.
  - No Is there any output to D506 cathode? (Control PCB)
    - No Replace TR504
  - Yes Is 08B-14 voltage approximately 5V? (Control PCB)
    - No Replace 07B or 08B.
  - Yes Replace TR6, TR501, 06B or 04B.
- No Is there a short circuit between the emitter and collector of Q1? (Power supply PCB)
  - Yes Replace Q1.
- No Is there a short circuit between the anode and cathode of D2? (Power supply PCB)
  - Yes Replace D2.
- No Is there a short circuit in D1? (Power supply PCB)
  - Yes Replace D1.
- No Replace the transformer.

Note: Flowchart of the inner vertical line applies to the control PCB (SHPQ-PCB). Others apply to the DC power supply PCB (SUII-PCB).

② Only the power lamp is illuminated (the printing operation is not performed at all).

• Is the oscillation waveform of OSC same as the one shown in Figure 2?

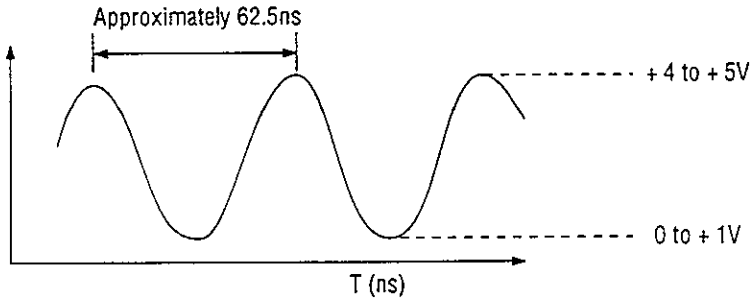

Figure 2

• No Replace the OSC.

Yes • Is RSTOUT-P signal on Pin 4 of 05D same as the one shown in Figure 3?

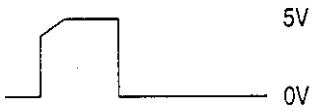

Figure 3

• No Are the input waveforms of Pins 6 and 7 of 03A same as those shown in Figure 4?

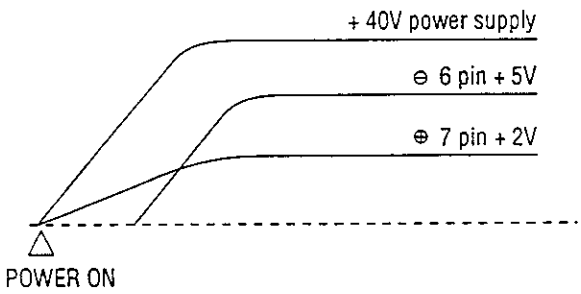

Figure 4

• Yes Replace 03A.

• No Replace the elements of the input line signals of Pins 6 and 7 of 03A, or replace CN1.

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Ⓐ

Yes Are ALE-P (Pin 27), PSEN-N (Pin 26), RD-N (Pin 13), WR-N (Pin 12) and BUS signals of 05D same as those shown in Figure 5?

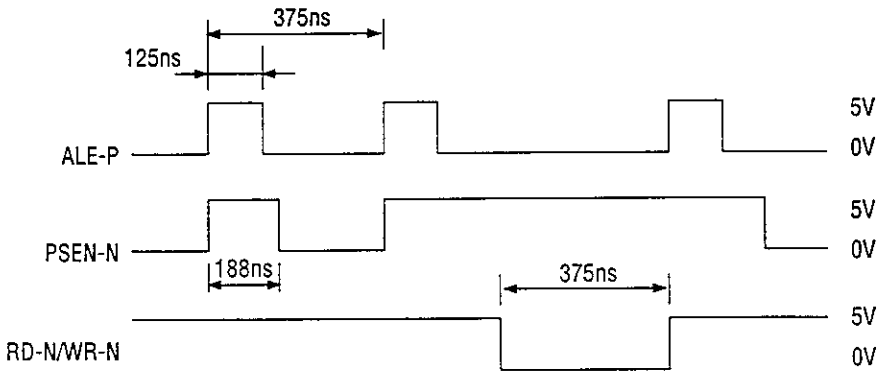

Figure 5

The signal level of the bus line should be stable at high or low level at the fall of PSEN-N or at the rise of RD-N/WR-N.

- No Replace 05D.

Yes Are the LEDDATA-P (Pin 49) and LEDCLK-P (Pin 50) signals of 04B same as the one shown in Figure 6?

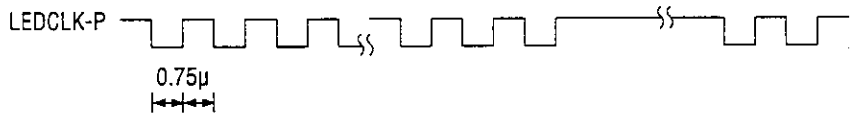

Figure 6

The signal level of LEDDATA-P should be stable at high or low level at the rise of LEDCLK-P.

- No Replace 04B.

Yes Replace CN2.

③ Printer alarm occurs.

3-1 Internal CPU RAM error

- Replace 05D.

3-2 Program ROM error

- Replace 03B.

3-3 External RAM error

- Are $\overline{RAS}$ (on Pin 5), $\overline{CAS}$ (on Pin 16), $\overline{OE}$ (on Pin 1), $\overline{WR}$ (on Pin 4) of 04C and 04D, and AD 0-7 and DRAM A0-7 same as those shown in Figure 7?

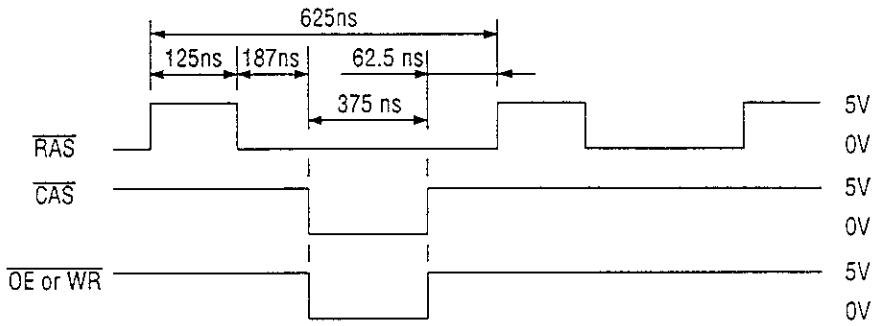

Figure 7

The signal levels of AD 0-7 and DRAM A0-7 should be stable at high or low level at the rise of $\overline{OE}$ or $\overline{WR}$.

- NO Is RAS same as the one shown in Figure 7?
  - No Replace 04B.
- Yes Is the CAS same as the one shown in Figure 7?
  - No Is the output signal on Pin 3 of 05E same as the one shown in Figure 8?

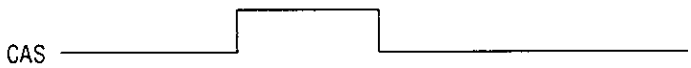

Figure 8

  - No Replace 05E. Is the output signal on Pin 3 now same as the one shown in Figure 8?
    - No Replace 04B.
  - Yes Replace 05E.
- Yes Replace 05D.

- Yes Replace 04C or 04D (D-RAM).

3-4 Serial interface error

• Are CN4 and serial interface board connected properly?

  • No Connect them properly.

• Yes Replace the serial interface. Is the operation normal now?

  • No Replace 04B.

3-5 Spacing error

• Are the waveforms of SPU (Pin 67), SPV (Pin 68) and SPW (Pin 69) of 04B same as those shown in Figure 9?

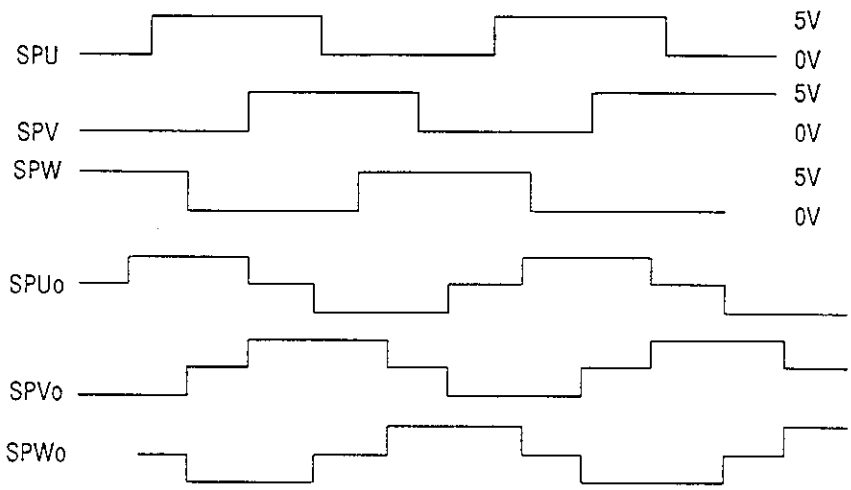

Figure 9

The cycle of SPDA should be 64μs and the rectangular wave should be output.

• No Are the input waveforms of PHASE A (Pin 75) and PHASE B (Pin 76) of 04B same as those shown in Figure 10? (Move the carriage manually if the operation is stopped).

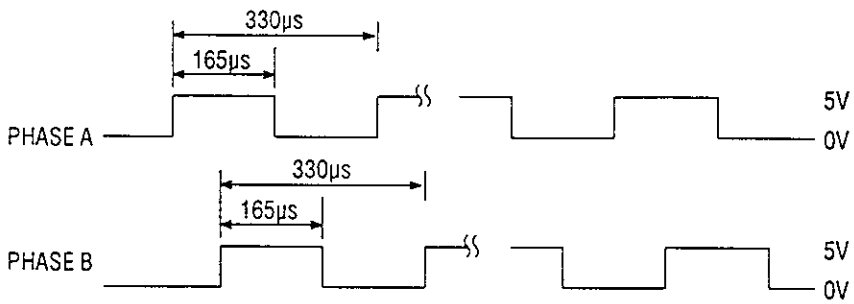

Figure 10

(The above diagram shows the timing during constant-speed operation.)

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Ⓓ • No Replace the carriage unit or CN8.

Ⓑ Ⓓ

Yes Replace 04B.

Yes Are SPUo, SPVo, and SPWo outputs of 08E same as those shown in Figure 9?

No Is the rectangular wave being input to the base of TR7?

• No Replace the 08E.

Yes Is the supply voltage being output to the collector of TR7?

• No Replace TR7.

Yes Is the supply voltage being supplied to Pin 1 of 08E?

• No Replace L1.

Yes Replace the 08E.

Yes Replace the carriage unit or CN8.

3-6 CG ROM error

Is CGRD-N (Pin 84) of 04B same as the one shown in Figure 11?

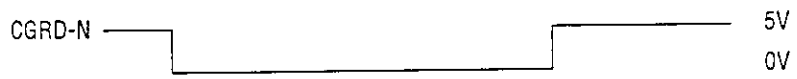


Figure 11

DATA bus signal should be stable at high or low level at the rise of RD-N.

• No Replace 04B.

Yes Replace 02B.

3-7 EEPROM error

• Are EEDIN-P (Pin 7) of 05D and EECS-P (Pin 88) of 04B same as those shown in Figure 12?

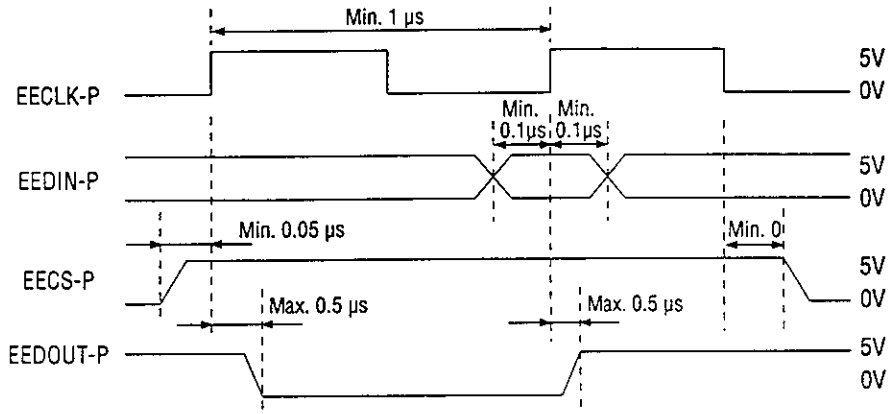


Figure 12

- No Replace 05D or 04B.

• Yes Replace 05B.

④ Printing wrong character or some characters are not printed.

• Is $\overline{\text{HEAD ON}}$ signal (on Pin 73) of 04B same as the one shown in Figure 13?

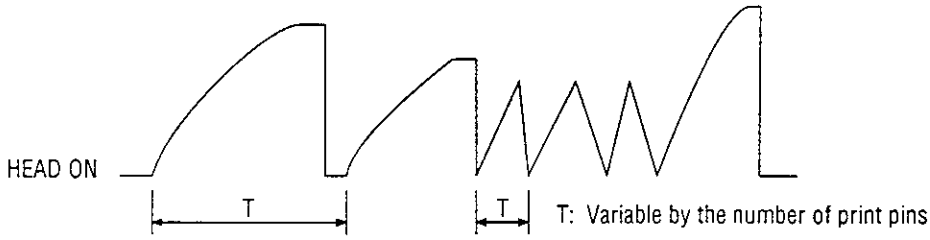


Figure 13

• No Replace 04B when $\overline{\text{HEAD ON}}$ signal is stable at high level.
Replace 04B, C14, or 06B when $\overline{\text{HEAD ON}}$ signal is stable at low level.

• Yes Are the output signals on Pins 1 and 2 of the comparator 06B same as those as shown in Figure 14?

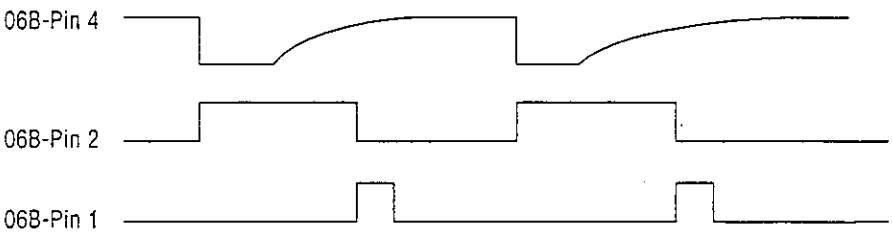


Figure 14

• No Replace 06B or elements of the input circuit.

• Yes Does TR5, TR502 or TR6 come on only when the output signals on Pins 1 and 2 of the comparator 06B are at high level?

• No Replace the malfunctioning transistor (TR5, TR502, or TR6).

• Yes Are $\overline{\text{HEAD 1}}$ to $\overline{\text{HEAD 8}}$ signals (on pins 40, 41, 42, 43, 44, 1, 2, and 3) of 05D at low level?

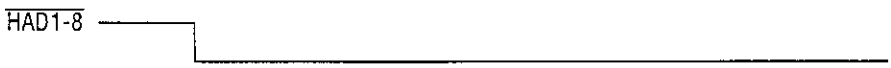


Figure 15

• No Check 05D and 04B.

• Yes Are the output signals (on Pins 16, 2, 8, and 10) of 08B and the output signals (on Pins 16, 8, 2, and 10) of 07B at low level? Is TR4 being turned to ON?

• No Replace 08B, 07B, and TR4.

• Yes Replace the carriage unit or CN8.

⑤ Line feed malfunction

- Are LF PHA and LF PHB signals of 04B same as those shown in Figure 16?

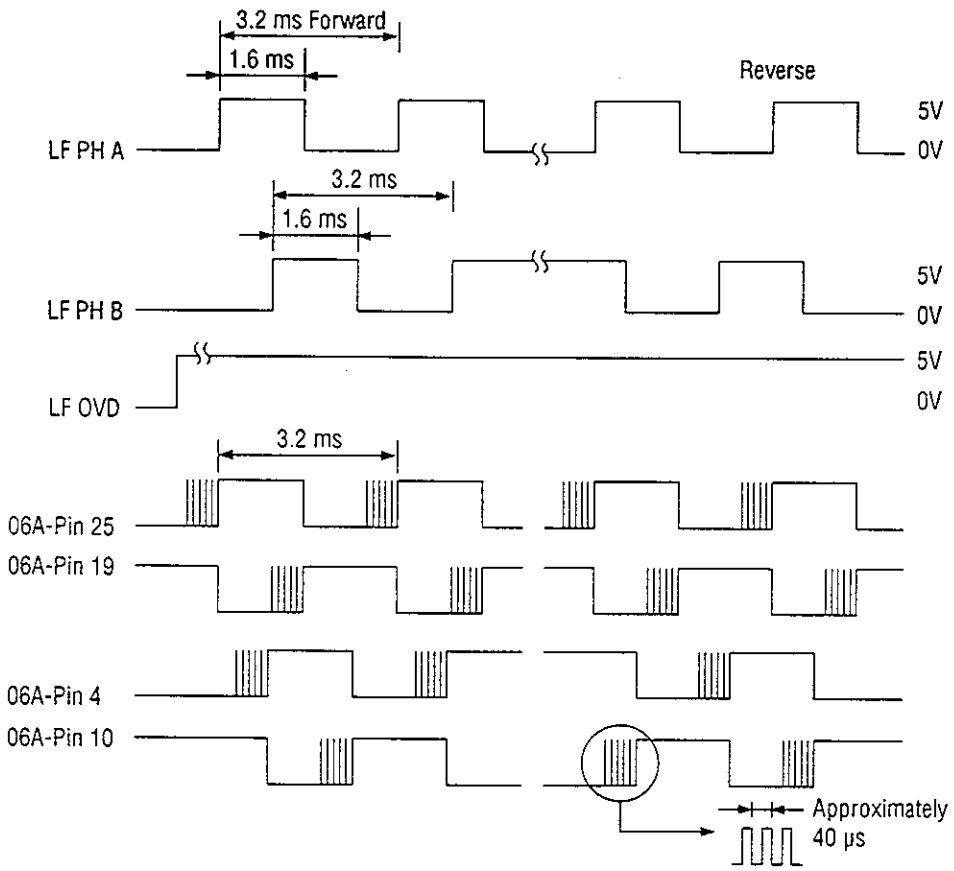


Figure 16

  - No Replace 04B.

- Yes Is the waveform of LF OVD same the one as shown in Figure 16 during constant-speed operation?

  - No Replace 03B.

- Yes Are the VR1/VR2 voltages of Pins 2 and 27 of 06A approximately 3.9V?

  - No Replace one of the input elements (TR505, 506) of VR1 or VR2.

- Yes Are the waveforms at Pins 4, 10, 19 and 25 of 06A same as those shown in Figure 16?

  - No Replace 06A.

- Yes Replace either LF motor or CN9. Check for bad connection to SHPQ-PCB.

⑥ The printing operation is not performed after an operating switch is pressed.

6-1 The SELECT switch does not function.

- Is $\overline{\text{SEL SW}}$ signal on Pin 2 of 01B low when SEL switch is pressed?
  - No Replace one of the elements of either SEL switch or CN2.
- Yes Go to ©.

6-2 The MODE switch does not function.

- Is $\overline{\text{MODE SW}}$ signal on Pin 4 of 01B low when MODE switch is pressed?
  - No Replace one of the elements of either MODE switch or CN2.
- Yes Go to ©.

6-3 The LF switch does not function.

- Is $\overline{\text{LF SW}}$ signal on Pin 6 of 01B low when LF switch is pressed?
  - No Replace one of the elements of either LF switch or CN2.
- Yes Go to ©.

6-4 The FF switch does not function.

- Is $\overline{\text{FF SW}}$ signal on Pin 8 of 01B low when FF switch is pressed?
  - No Replace one of the elements of either FF switch or CN2.
- Yes Go to ©.

6-5 The PARK switch does not function.

- Is $\overline{\text{PARK SW}}$ signal on Pin 11 of 01B low when PARK switch is pressed?
  - No Replace one of the elements of either PARK switch or CN2.
- Yes Go to ©.

6-6 The TOF switch does not function.

- Is $\overline{\text{TOF SW}}$ signal on Pin 13 of 01B low when TOF switch is pressed?
  - No Replace one of the elements of either TOF switch or CN2.
- Yes Go to ©.

6-7 The PRINT switch does not function.

- Is $\overline{\text{PRINT SW}}$ signal on Pin 15 of 01B low when PRINT switch is pressed?
  - No Replace one of the elements of either PRINT switch or CN2.
- Yes Go to ©.

6-8 The CHARACTER switch does not function.

- Is $\overline{\text{CHA SW}}$ signal on Pin 17 of 01B low when CHA switch is pressed?
  - No Replace one of the elements of either CHA switch or CN2.
- Yes Go to ©.

6-9 The EJECT switch does not function.

- Is $\overline{\text{ED SW}}$ signal on Pin 7 of 04B low when EJECT switch is pressed?
  - No Replace one of the elements of either EJECT switch or CN2.
- Yes Replace 04B.

© Does the output signal on Pin 11 of 05E occasionally drop to low level?

Figure 17

- No Does the output signal on Pin 8 of 05E occasionally rise to high level?

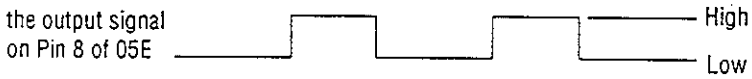


Figure 18

  - No Replace 05E.
- Yes Does the output signal on Pin 71 of 04B occasionally rise to high level?

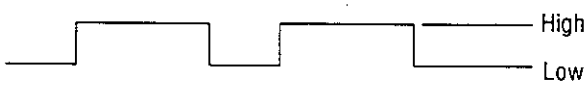


Figure 19

  - No Replace 04B.
- Yes Replace 05E.

- Yes Replace 01B.

⑦ Data cannot be received.

(7-1A) The parallel interface data cannot be received. (Special)

- Is IF DATA 1-8 of 04B (MSM7U042) same as the one shown in Figure 20?

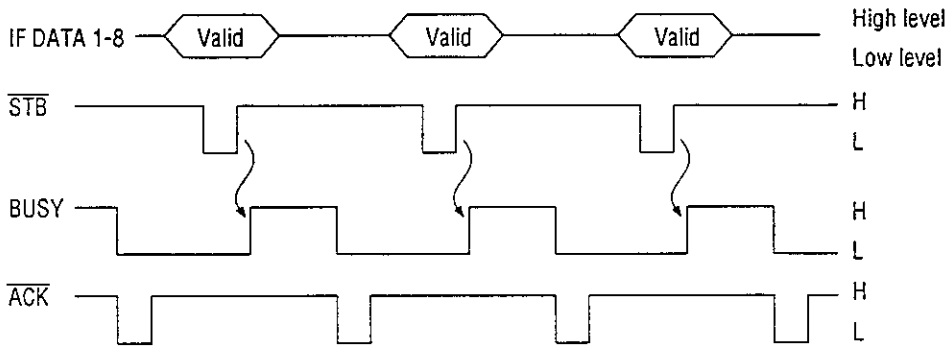


Figure 20

  - No Replace the resistor of either IF DATA 1-8 signals or CN1.

Yes Is $\overline{STB}$ signal (Pin 1) of 04B same as the one shown in Figure 20?

  - No Replace either the resistor or capacitor which is used for $\overline{STB}$ signal.

Yes Are BUSY signal (Pin 8) and $\overline{ACK}$ signal (Pin 7) of 04B same as the ones shown in Figure 20?

  - No Replace 04B.

Yes Replace 01D.

7-1B The parallel interface data cannot be received. (Standard)

- Is IF DATA 1-8 of 04B (MSM7U042) same as the one shown in Figure 21?

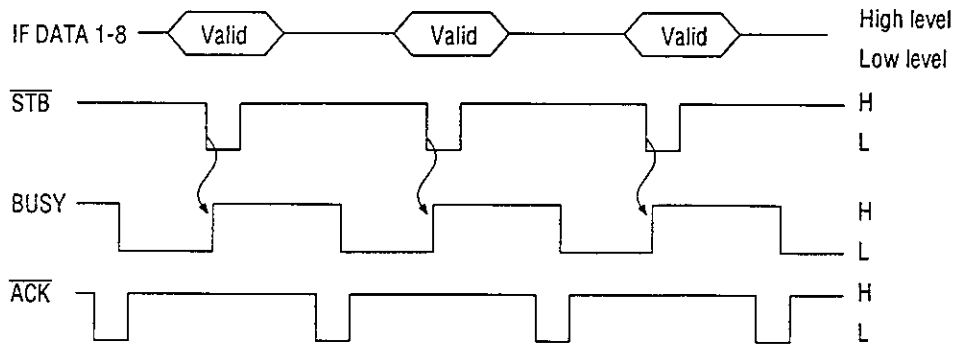


Figure 21

  - No Replace the resistor which is used for IF DATA 1-8 signals or CN1.

- Yes Is $\overline{STB}$ signal (Pin 1) of 04B same as the one shown in Figure 21?

  - No Replace either the resistor or capacitor which is used for $\overline{STB}$ signal.

- Yes Are BUSY signal (Pin 8) and $\overline{ACK}$ signal (Pin 7) of 04B same as the ones shown in Figure 21.

  - No Replace 04B.

- Yes Replace 01D.

7-2 The print data is missing or printing operation is not performed after the parallel interface data is received.

- Does character missing printing occur even during self-test?

  - Yes Go to step ④.

- No Are BUSY (Pin 8) or $\overline{ACK}$ (Pin 7) signal of 04B same as those shown in Figure 20 or 21.

  - No Replace 04B.

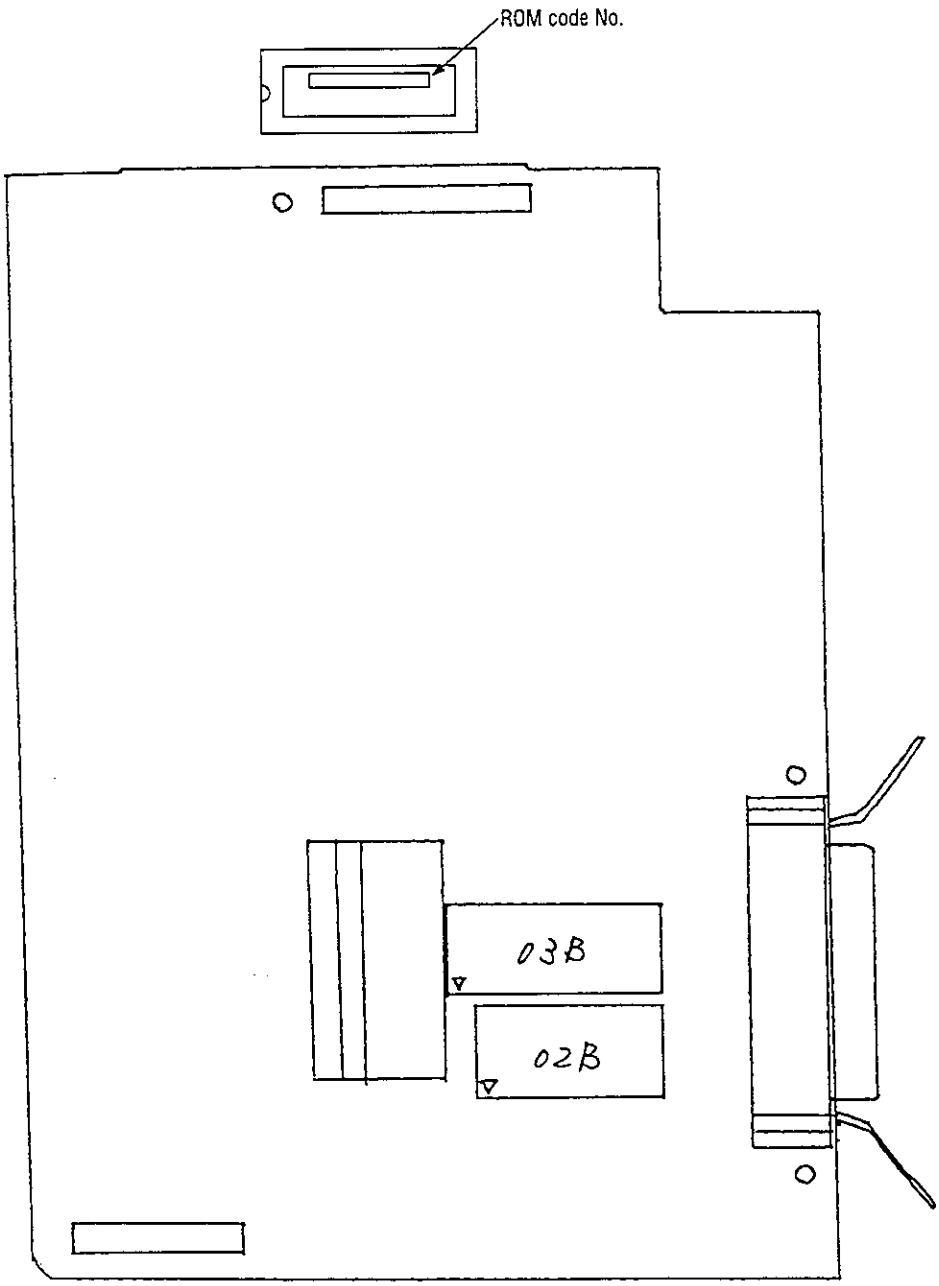
- Yes Replace 03B or the resistor which is used for either $\overline{ACK}$ or BUSY signal.

COMPONENT PARTS LIST

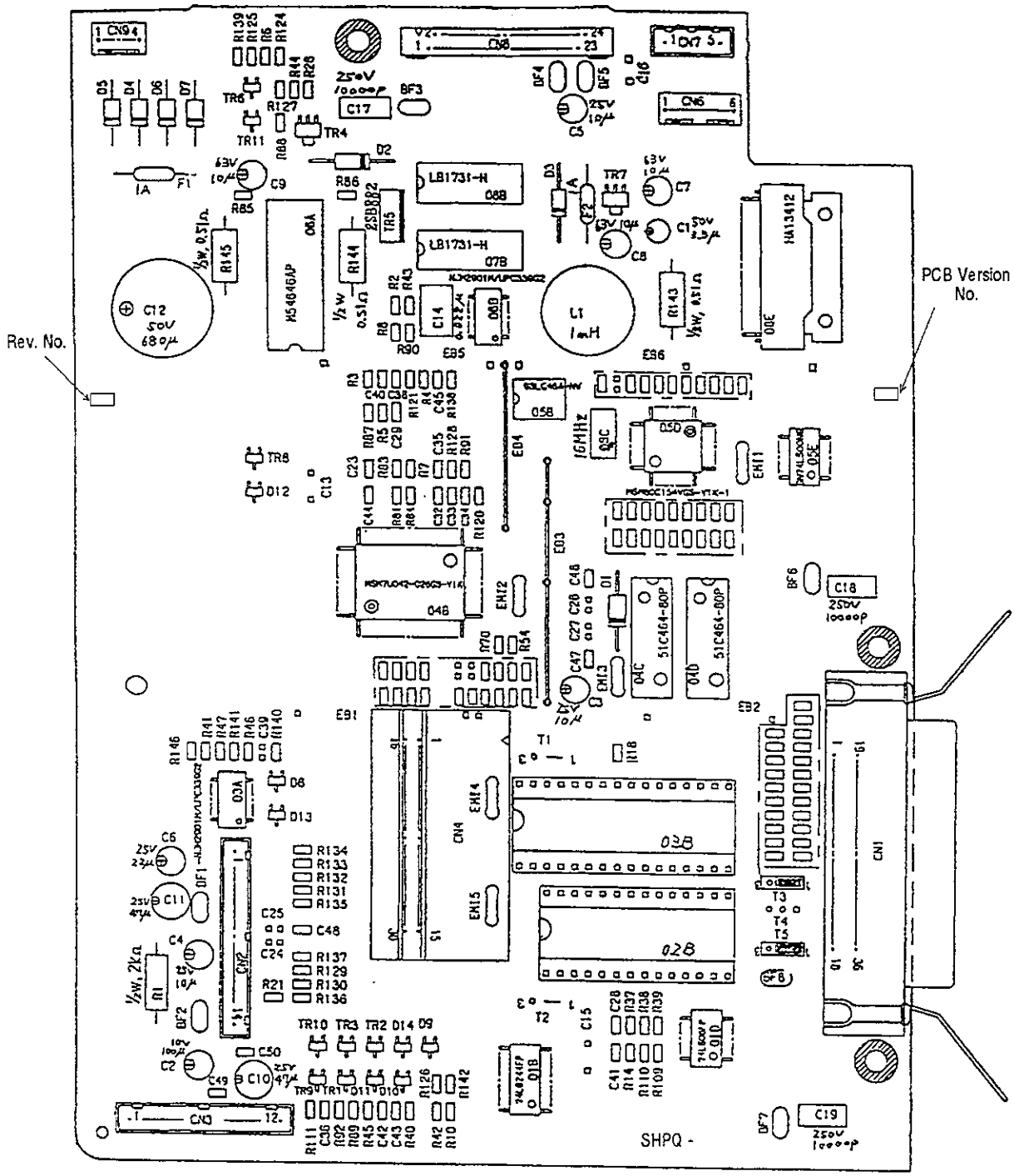
CONTENTS

Table of ROM identification for each G. NO.

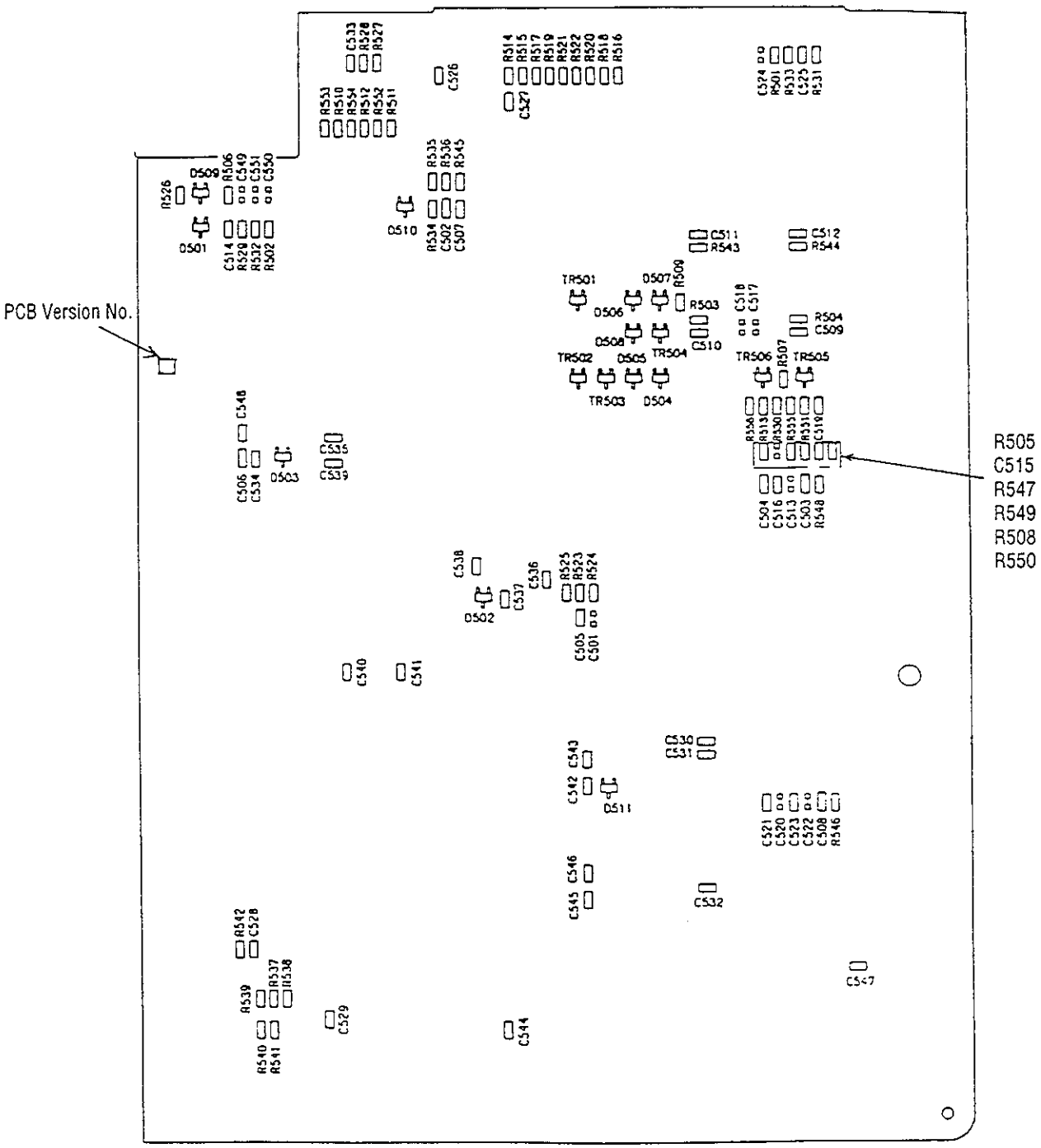
G. No.	ROM No.	ROM code No.	ROM code No.	Use	Remarks
1	03B	4YR4084-7099G1	84-7099	ML320FB OEL	EI compatible
	02B	4YR4077-7163G1	77-7163		
101	03B	———		ML320FB OEL	Without ROM for maintenance
	02B	———			



SHPQ-Printed Circuit Board (4YA4053-3211GXXX) 1/2 (1/2)



SHPQ-Printed Circuit Board (4YA4053-3211GXXX) 1/2 (2/2) (1/2)
Rev. 1 PCB Version 2



SHPQ-Printed Circuit Board (4YA4053-3211GXXX) 1/2 (2/2) (2/2)
Rev. 1 PCB Version 2

SHPQ-Printed Circuit Board (4YA4053-3211GXXX) 2/2 (1/8) Rev. 1 PCB Version 2
For: G1, G101

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1					
2					
3					
4	D8-10, D501-506	MA151WK/N202K/2838 Signal diode (CP)	611A0003N0003	9	
5	D13, 14	MA3047-H Zener diode (CP)	613A0291M0102H	2	
6	D507	MA3075-M/RD7.5M-B2 Zener diode (CP)	613A0103M0152B	1	
7	D11	MA3100/RD10M-B Zener diode (CP)	613A0103M0182	1	
8	D508, 509	MA3300/RD30M-B Zener diode (CP)	613A0103M0292	2	
9	D510	MA3300-M Zener diode (CP)	613A0291M0292M	1	
10	D12	RD2.7M-B1 Zener diode (CP)	613A0233M0042A	1	
11	D4-7	1SR004-40 Rectifier diode	610A0303M0004	4	
12	D3	DFM1E1 Rectifier diode	610A0221M0001	1	
13	D1, 2	EMO1Z/SM1XN02/DSM1D2 Rectifier diode	610A0003M0001	2	
14	D511	SB05-05CP Rectifier diode (CP)	610A0332N0001	1	
15					
16					
17	R1	RD1/2Y2KΩJ RD Resistor	321A1431J0202	1	
18	R2	RM73B2A124F RN Resistor (CP)	323A5003F0124	1	

SHPQ-Printed Circuit Board (4YA4053-3211GXXX) 2/2 (2/8) Rev. 1 PCB Version 2
For: G1, G101

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
19	R3	RM73B2A153F RN Resistor (CP)	323A5003F0153	1	
20	R4	RM73B2A222F RN Resistor (CP)	323A5003F0222	1	
21	R5, 6, 501	RM73B2A242F RN Resistor (CP)	323A5003F0242	3	
22	R7-10	RM73B2A101J RN Resistor (CP)	323A5003J0101	4	
23	R12-15, R502-504	RM73B2A102J RN Resistor (CP)	323A5003J0102	7	
24	R18, 21, 28-40, 146, 505-512	RM73B2A103J RN Resistor (CP)	323A5003J0103	24	
25	R41, 42, R514-522	RM73B2A104J RN Resistor (CP)	323A5003J0104	11	
26	R43-45	RM73B2A122J RN Resistor (CP)	323A5003J0122	3	
27	R46	RM73B2A132J RN Resistor (CP)	323A5003J0132	1	
28	R47	RM73B2A182J RN Resistor (CP)	323A5003J0182	1	
29	R49-51, 55, 56, 59-69, 91, 120, 524, 525	RM73B2A201J RN Resistor (CP)	323A5003J0201	20	
30					
31	R73-89, R526	RM73B2A202J RN Resistor (CP)	323A5003J0202	18	
32	R527, 528	RM73B2A203J RN Resistor (CP)	323A5003J0203	2	
33	R90	RM73B2A222J RN Resistor (CP)	323A5003J0222	1	
34	R529-531	RM73B2A223J RN Resistor (CP)	323A5003J0223	3	
35	R532	RM73B2A224J RN Resistor (CP)	323A5003J0224	1	
36					

SHPQ-Printed Circuit Board (4YA4053-3211GXXX) 2/2 (3/8) Rev. 1 PCB Version 2
For: G1, G101

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
37	R92	RM73B2A273J RN Resistor (CP)	323A5003J0273	1	
38	R533	RM73B2A303J RN Resistor (CP)	323A5003J0303	1	
39					
40	R101-110, R534-542	RM73B2A332J RN Resistor (CP)	323A5003J0332	19	
41					
42	R112-119	RM73B2A471J RN Resistor (CP)	323A5003J0471	8	
43	R121	RM73B2A472J RN Resistor (CP)	323A5003J0472	1	
44	R543, 544	RM73B2A473J RN Resistor (CP)	323A5003J0473	2	
45	R124, 125, 545, 546, 555	RM73B2A511J RN Resistor (CP)	323A5003J0511	5	
46	R126	RM73B2A513J RN Resistor (CP)	323A5003J0513	1	
47	R127	RM73B2A561J RN Resistor (CP)	323A5003J0561	1	
48	R128-139, R547-554	RM73B2A562J RN Resistor (CP)	323A5003J0562	20	
49	R140	RM73B2A682J RN Resistor (CP)	323A5003J0682	1	
50	R141	RM73B2A683J RN Resistor (CP)	323A5003J0683	1	
51					
52	R48, 122, 123, 142, 523, 556	2125JPW Chip jumper (CP)	323A5003P0001	6	
53	R143-145	MSF1/2B0.51ΩJ RS Resistor	324A1001J0518	3	
54	R52-54, 57, 58, 70-72, 111	RM73B2A431J RN Resistor (CP)	323A5003J0431	9	

SHPQ-Printed Circuit Board (4YA4053-3211GXXX) 2/2 (4/8) Rev. 1 PCB Version 2
For: G1, G101

No.	Symbol	Type/Name		Part No.	Q'ty	Remarks
55	R513	RM73B2A154J RN Resistor (CP)		323A5003J0154	1	
56	C17-19	TCK45F2E103ZYA CK Capacitor	250V 10000pF	302A4027Z5103	3	
57	C502	CC2012CH1H100D CC Capacitor (CP)		303A3007C0100	1	
58	C20-23, 503-506	CC2012SL1H101J CC Capacitor (CP)		303A3007K0101	8	
59	C28, 507	CC2012SL1H102J CC Capacitor (CP)		303A3007K0102	2	
60	C29	CC2012SL1H221J CC Capacitor (CP)		303A3007K0221	1	
61	C30	CC2012SL1H471J CC Capacitor (CP)		303A3007K0471	1	
62	C31, 508	CC2012SL1H561J CC Capacitor (CP)		303A3007K0561	2	
63	C509-512	CC2012SL1H821J CC Capacitor (CP)		303A3007K0821	4	
64	C32-36, 514	CK2012B1H103K CK Capacitor (CP)		303A6008K3103	6	
65	C37, 516	CK2012R1H223K CK Capacitor (CP)		303A6008K3223	2	
66	C38	CK2012B1H472K CK Capacitor (CP)		303A6008K3472	1	
67	C40-50, 519, 521, 523, C525-548	CK2012F1E104Z CK Capacitor (CP)		303A6008Z2104	38	
68						
69	C14	CQMF92PP2A223G-F0 CQ Capacitor	100V 0.022μF	306A4103G2223	1	
70	C12	SRC50VB-680(M) CE Capacitor	50V 680μF	304A1035H1681	1	
71	C2	SME10VB-100-0A CE Capacitor	10V 100μF	304A1123A1101	1	
72	C10,11	KME25VB-47 CE Capacitor	25V 47μF	304A1115E1470	2	

SHPQ-Printed Circuit Board (4YA4053-3211GXXX) 2/2 (5/8) Rev. 1 PCB Version 2
For: G1, G101

No.	Symbol	Type/Name		Part No.	Q'ty	Remarks
73	C6	SME25VB-22-0A CE Capacitor	25V 22µF	304A1123E1220	1	
74	C1	50MS5-3.3M CE Capacitor	50V 3.3µF	304A1046H1339	1	
		or		or		
75		CEUSM2A3R3 CE Capacitor	100V 3.3µF	304A1041A2339		
76	C3-5	SME25VB-10-0A CE Capacitor	25V 10µF	304A1123E1100	3	
77	C7-9	SME63VB-10-0A CE Capacitor	63V 10µF	304A1123J1100	3	
78						
79						
80	03A, 06B	NJM2901M/UPC339G2 BIP Linear IC (SO)		720A0503N0007	2	
81	04C, 04D	51C464-80P MOS-D-RAM		802A0003M8304	2	
82	01B	74LS244FP BIP Digital IC (SO)		700A0503N0244	1	
83	04B	MSM7U042-026GS-V1K MOS Digital IC (FP)		702A4624N7145	1	
84	05D	MSM80C154VGS-V1K-1 MOS-CPU (FP)		851A0124N0013	1	
85	05B	93LC46A-NW MOS-EEPROM		816A0303M0000	1	
86	08E	HA13412 BIP Linear IC		720A4021E0004	1	
87	05E	SN74LS00NS BIP Digital IC (SO)		700A0550N0000	1	
88	01D	74LS06FP BIP Digital IC (SO)		700A0503N0006	1	
89	06A	M54646AP BIP Linear IC		720A1822M0002	1	
90						

SHPQ-Printed Circuit Board (4YA4053-3211GXXX) 2/2 (6/8) Rev. 1 PCB Version 2
For: G1, G101

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
91	EMI1-EMI5	DSS306-0AFZ103N EMI Filter	342A1009P3103	5	
92					
93	F1, F2	251-001 Fuse	540A2208S1102	2	
94					
95	EB4	Power supply bar L=30.48 P=30.48 N=2	3LH-31313-117	1	
96					
97	EB3	Power supply bar L=45.72	3LH-31313-160	1	
98					
99	L1	RSL1513N102K/OL1614 H-coil	353A3040K0102	1	
100					
101	BF1-BF8	ZBF253D-01 Beads filter	377A1115P1309	8	
102	4	DICF-28CS-E IC Socket	245A1221P0280	1	
103	2	DICF-32CS-E IC Soket	245A1221P0320	1	
104	CN9	00-8263-0412-00-000 PC Connector	224A3357P0040	1	
105	CN6	00-8263-0612-00-000 PC Connector	224A3357P0060	1	
106	CN8	Z-355S PC Connector	224A3198P0240	1	
107	CN4	MCR69-30D-2.54DS PC Connector	224A1052P0300	1	
108	CN3	DF1B-12P-2.5DSA PC Connector	224A3716P0120	1	

SHPQ-Printed Circuit Board (4YA4053-3211GXXX) 2/2 (7/8) Rev. 1 PCB Version 2
For: G1, G101

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
109	CN2	DF1B-14P-2.5DSA PC Connector	224A3716P0140	1	
110	CN7	DF1B-5P-2.5DSA PC Connector	224A3716P0050	1	
111	CN1	Centro 36FAGL-M3 Square-shaped connector with screw	220A0122P0360	1	
112					
113	OSC	FAR-C4SB16000000M12C Piezoelectric oscillator	381A2001B0005	1	
114					
115	07B, 08B	LB1731-H BIP-INF-IC	710A2031M0002	2	
		or	or		
116		M54661P/LB1731 BIP-INF-IC	710A2003M0001		
117	TR502	2SC2713 NPN-HF-TR (CP)	602A1025N0050	1	
118	TR1-TR3, TR501	2SC3361/2SC2412KVL NPN-HF-TR (CP)	602A1003N0002	4	
119	TR503	2SC3361 NPN-HF-TR (CP)	602A1032N0002	1	
120	TR4	2SD1472 NPN-LF-TR (CP)	603A1121N0007	1	
121	TR504	2SA1163 PNP-HF-TR (CP)	600A1025N0033	1	
		or	or		
122		2SA1331 PNP-HF-TR (CP)	600A1032N0002		
123	TR5	2SB882 PNP-LF-TR (CP)	601A1132M0003	1	
124	TR6	2SA1331/2SA1037K PNP-HF-TR (CP)	600A1003N0002	1	
125	TR7	2SB1123 PNP-LF-TR (CP)	601A1032N0002	1	
126	TR8-TR11, TR505, TR506	A1344/UN2111/DTA114K PNP-HF-TR (CP)	600A1003N0003	6	

SHPQ-Printed Circuit Board (4YA4053-3211GXXX) 2/2 (8/8) Rev. 1 PCB Version 2
For: G1, G101

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
127					
128	T3, T5	IMSA9202B-1-03Z013GF PC Connector	224A4082P0030	2	
129	T1, T2	Short wire (U-type) 0.65 or Tin plated copper link wire	5KH-31036-25 or 4YC4100-1054P001	2	P=2.5
130	3	IMSA-9206H-GF PC Connector	224A4080P0020	2	
131					
132					
133					
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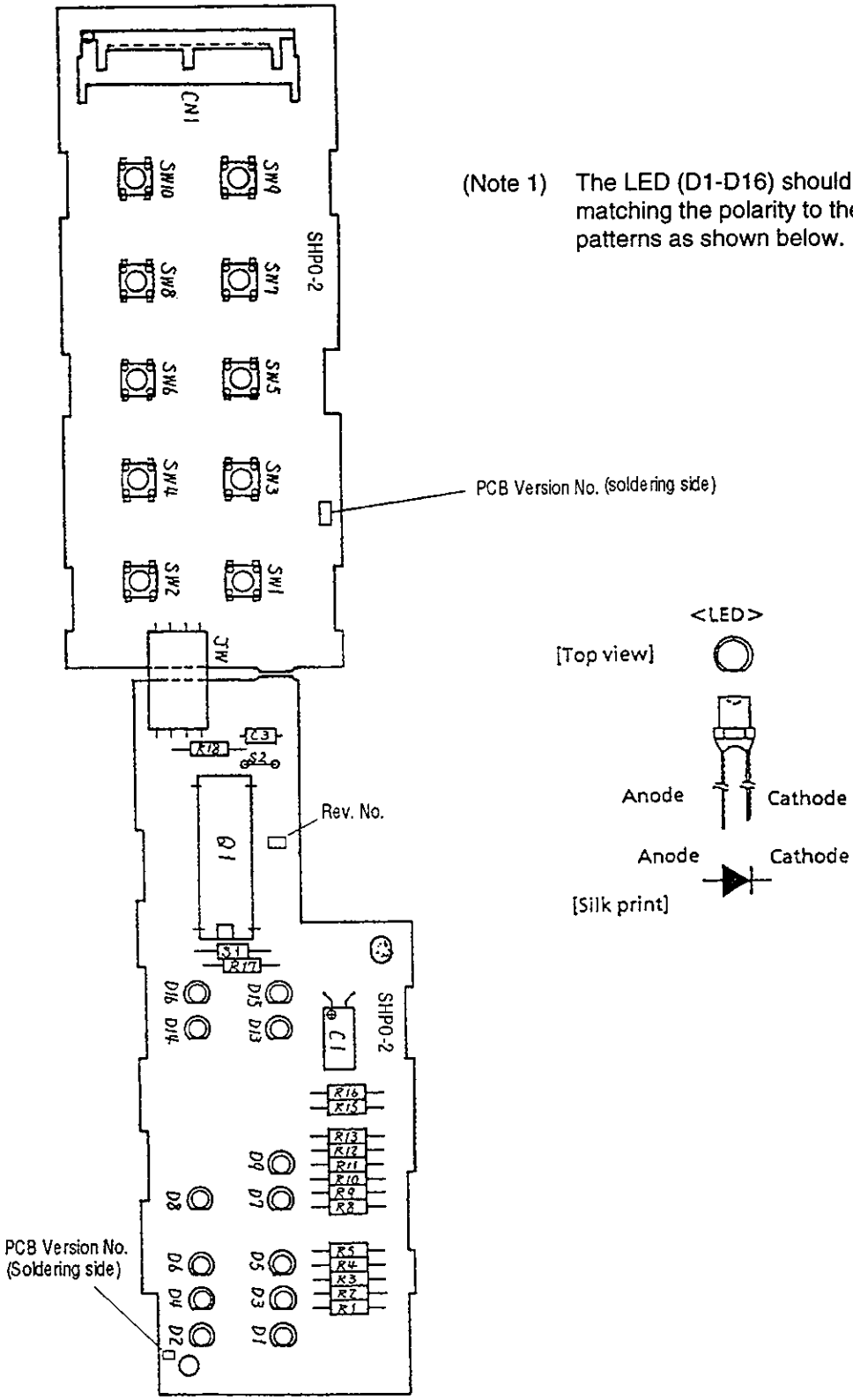
139					
140					



(Note 1) The LED (D1-D16) should be mounted, matching the polarity to the silk-printed patterns as shown below.

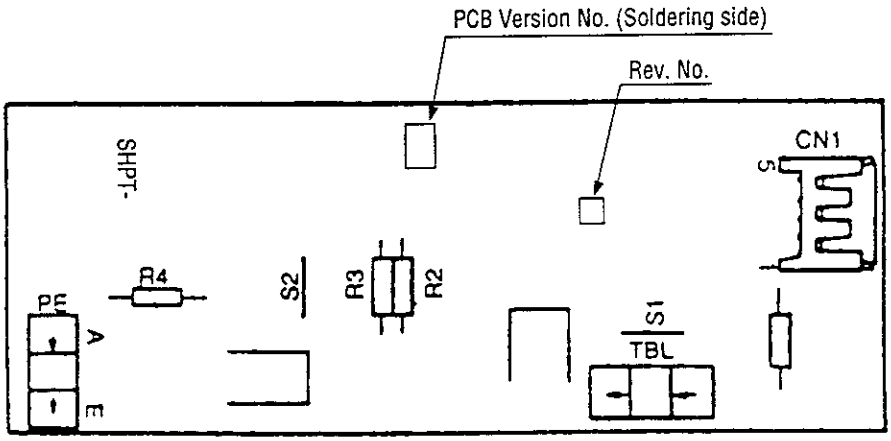
SHPO-2-Printed Circuit Board (4YA4053-2291G2) 1/2
Rev. 1 PCB Version 2

SHPO-2-Printed Circuit Board (4YA4053-2291G2) 2/2 (1/2) Rev. 1 PCB Version 2

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1					
2					
3	R2-5, 8-13, 15, 16	RD1/4Y 110ΩJ RD Resistor	321A1421J0111	12	
4	R1	RD1/4Y 150ΩJ RD Resistor	321A1421J0151	1	
5	R17, 18	RD1/4Y 5.6KΩJ RD Resistor	321A1421J0562	2	
6					
7	SW1-10	SOA-113HS Push-button switch	205A1162P1001	10	
8					
9	C1	SME25VB-10-0A CE Capacitor	304A1123E1100	1	
10					
11	C3	CK92F1H104ZY CK Capacitor	303A0420Z3104	1	
12					
13	D3	GL3HD47 LED	650A0128M0022	1	
14		or SEL3213C LED	or 650A0129M0014		
15	D1, 2, 4-9, 13-16	GL3HY47-B, C (LT3H477) LED	650A0228M0007	12	
16		or SEL3913K-YZ LED	or 650A0229M0015		
17					
18	Q1	MSM59371RS CPU-INF-IC	855A0824F0014	1	

SHPO-2- Printed Circuit Board (4YA4053-2291G2) 2/2 (2/2) Rev. 1 PCB Version 2

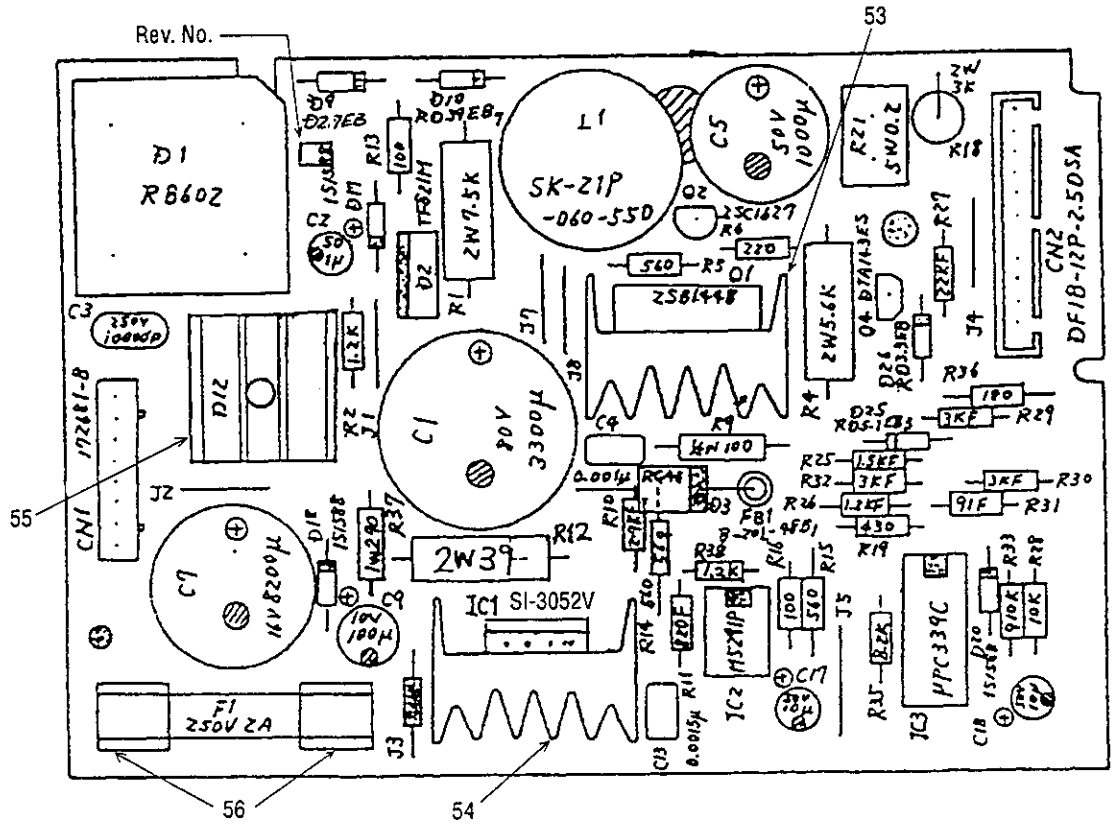
No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
19					
20	CN1	DF1B-14P-2.5DS PC Connector	224A3717P0140	1	
21					
22	JW	V2RJ-D-0M-1SX4X95 Jumper	238A1043P0021	1	
23					
24	S1	JPW02 Jumper wire	321A1520P0001	1	
25					
26	S2	Short wire (U-type) 0.65 P=5.0 or	5KH-31036-50 or	1	P=5.0
27		Tin plated copper link wire	4YC4100-1054P001		
28					



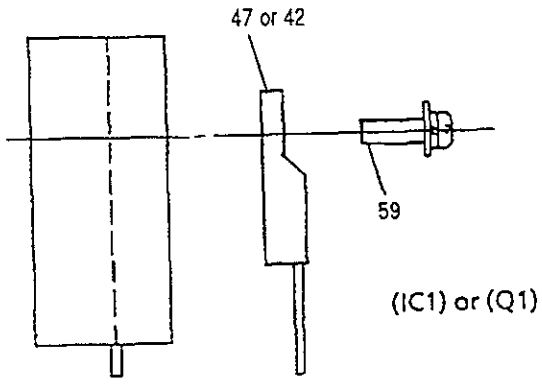
SHPT-Printed Circuit Board (4YA4053-2289G1) 1/2
Rev. 1 PCB Version 2

SHPT-Printed Ciucuit Board (4YA4053-2289G1) 2/2 Rev. 1 PCB Version 2

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1					
2					
3	R1, 4	RD 1/4 Y430ΩJ RD Resistor	321A1421J0431	2	
4	R2, 3	RD 1/4 Y20KΩJ RD Resistor	321A1421J0203	2	
5					
6	TBL, PE	EE-SJ5-B Photo coupler	652A0127M0009	2	
7					
8	CN1	DF1B-5P-2.5DS PC Connector	224A3717P0050	1	
9					
10	S1, 2	Short wire (U-type) 0.65 P=7.5 or	5KH-31036-75 or	2	P=7.5
11		Tin plated copper link wire	4YC4100-1054P001		
12	2	Bracket	4PP4053-1413P001	2	



(Note 1) Details for mounting the IC1 or Q1



SUII-Printed Circuit Board (4YB4049-7012P1) 1/2
Rev. 4 PCB Version 4

SUII-Printed Ciucuit Board (4YB4049-7012P1) 2/2 (1/4) Rev. 4 PCB Version 4

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1	D1	S5VB20 or RB602 Diode bridge	4FP-24462	1	
2	D3	RG4Z or ERC35-02 Diode	4FP-24460	1	
3	D12	S4VB20 or RB402 Diode bridge	4FP-24461	1	
4	D17, 18, 20	1S953 or 1S1588 or 1S2075K Diode	4FP-24207	3	
5	D9	RD2.7EB Zener diode	4FP-24005-24	1	
6	D26	RD3.3EB Zener diode	4FP-24005-26	1	
7	D25	RD5.1EB3 or RD5.1EB2 Zener diode	4FP-24005-40	1	
8	D10	RD39EB7 Zener diode	4FP-24005-63	1	
9	D2	8P2M or TF821M or CR8AMW8 Thyristor	4FP-24459	1	
10	R13, 16	1/4W, 100ΩJ RD Resistor	4LP-8446-101	2	
11	R36	1/4W, 180ΩJ RD Resistor	4LP-8446-181	1	
12	R6	1/4W, 220ΩJ RD Resistor	4LP-8446-221	1	
13	R19	1/4W, 430ΩJ RD Resistor	4LP-8446-431	1	
14	R3, 14, 15	1/4W, 560ΩJ RD Resistor	4LP-8446-561	3	
15	R2, 38	1/4W, 1.2kΩJ RD Resistor	4LP-8446-122	1	
16	R28	1/4W, 10kΩJ RD Resistor	4LP-8446-103	1	
17	R35	1/4W, 8.2kΩJ RD Resistor	4LP-8446-822	1	
18	R33	1/4W, 910kΩJ RD Resistor	4LP-8446-914	1	

SUII-Printed Ciucuit Board (4YB4049-7012P1) 2/2 (2/4) Rev. 4 PCB Version 4

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
19	R31	1/4W, 91ΩF RD Resistor	323A1222F0910	1	
20	R11	1/4W, 820ΩF RD Resistor	323A1222F0821	1	
21	R26	1/4W, 1.2kΩF RD Resistor	323A1222F0122	1	
22	R27	1/4W, 22kΩF RD Resistor	323A1222F0223	1	
23	R25	1/4W, 1.5kΩF RD Resistor	323A1222F0152	1	
24	R29, 30, 32	1/4W, 3kΩF RD Resistor	323A1222F0302	3	
25	R10	1/4W, 27kΩF RD Resistor	323A1222F0273	1	
26	R9	1/2W, 100ΩJ RS Resistor	4FP-22113-101	1	
27	R37	1W, 270ΩJ RS Resistor	4FP-22136-271	1	
28	R12	2W, 39ΩJ RS Resistor	4FP-22115-390	1	
29	R4	2W, 5.6kΩJ RS Resistor	4FP-22115-562	1	
30	R1	2W, 7.5kΩJ RS Resistor	4FP-22115-752	1	
31	R18	2W, 3kΩJ RS Resistor	4FP-22068-302	1	
32	R21	5W, 0.2ΩJ RW Resistor	4FP-22108-8	1	
33	C4	100V, 0.001μF CQ Capacitor	4FP-23044-35	1	
34	C13	100V, 0.0015μF CQ Capacitor	4FP-23044-36	1	
35	C3	250V, 0.01μF CK Capacitor	302A4027Z5103	1	
36	C2	50V, 1μF CE Capacitor	4FP-23012-57	1	

SUII-Printed Ciucuit Board (4YB4049-7012P1) 2/2 (3/4) Rev. 4 PCB Version 4

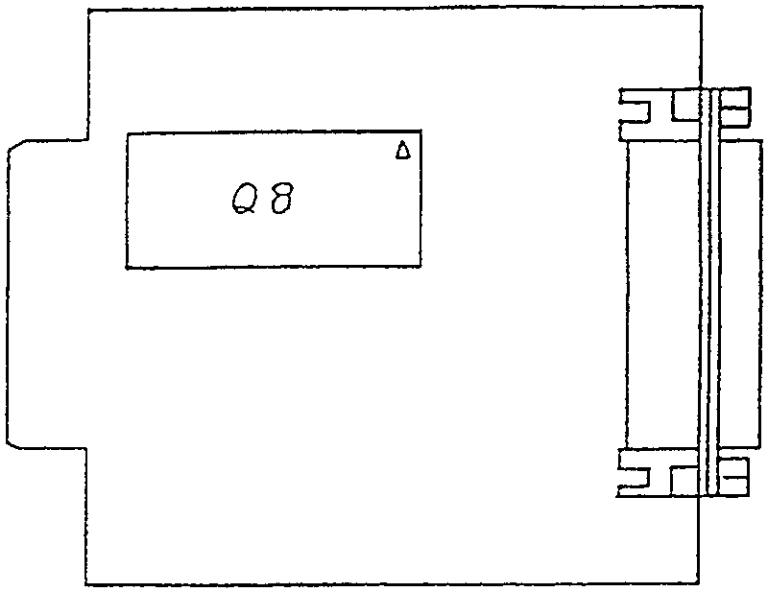
No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
37	C17, 18	50V, 10μF CE Capacitor	4FP-23012-61	2	
38	C9	10V, 100μF CE Capacitor	4FP-23012-12	1	
39	C5	50V, 1000μF CE Capacitor	4FP-23140	1	
40	C1	80V, 3300μF CE Capacitor	4FP-23139	1	
41	C7	16V, 8200μF CE Capacitor	4FP-23141	1	
42	Q1	2SB1382 or 2SB1420 or 2SB1448 Transistor	4FP-24531	1	
43	Q2	2SC1627 or 2SC2719 Transistor	4FP-24486	1	
44	Q4	DTA143ES Transistor	4FP-24519-5	1	
45	FB1	B-20L-48B EMC beads	4FP-21542-6	1	
46	L1	SK-21P-060-550 Coil	4FP-21566	1	
47	IC1	SI-3052V 3-Pin regulator	4FP-25074	1	
48	IC2	M5291P Regulator control IC	4FP-25129	1	
49	IC3	UPC339C or MB4204 or NJM2901N Comparator IC	720A0523M0006	1	
50	CN1	172681-8 Connector	4FP-12836-8	1	
51	CN2	DF1B-12P-2.5DSA Connector	224A3716P0120	1	
52	(Q1)	OSH24-L71.5-SP Heat sink	4FP-14110-5	1	
53	(IC1)	OSH2460-SP Heat sink	4FP-14110-4	1	
54	(D12)	OSH-20-L-18 Heat sink	4FP-14133	1	

SUII-Printed Ciucuit Board (4YB4049-7012P1) 2/2 (4/4) Rev. 4 PCB Version 4

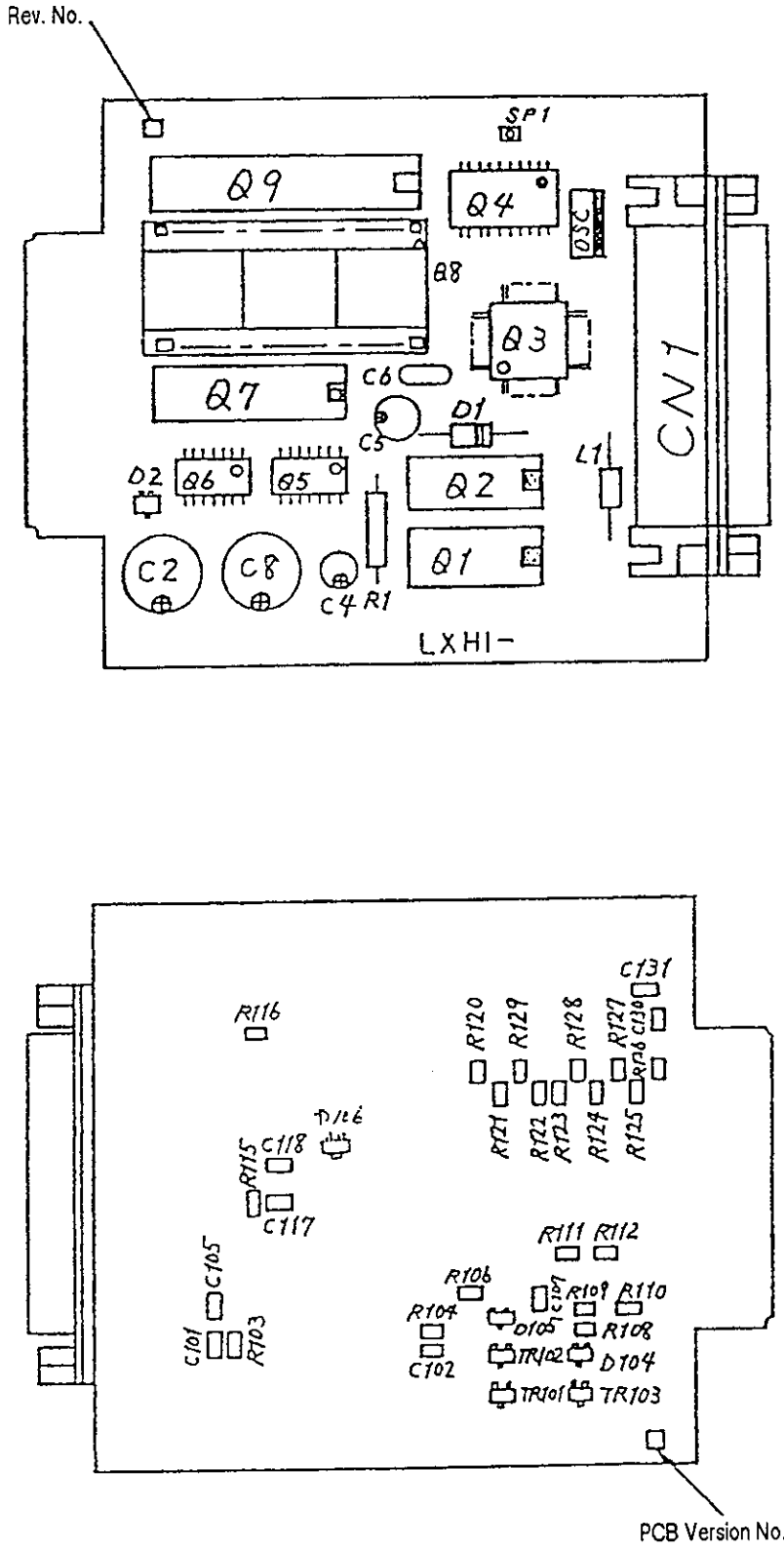
No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
55	(F1)	TS-01-P-SN Fuse clip	4FP-21069	2	
56	F1	61NM020H (250V, 2A) or MGC-2 (250V, 2A) Fuse	4FP-21107-2	1	
57	J1, 2, 4, 7, 8	Jumper wire P=10	4FP-22079-3	5	
58	J3, 5	Jumper wire P=12.5	4FP-22079-4	2	
59		Screw	+P(SW+W)3-12-HHC	3	

Table of ROM classification according to G. No.

G. No.	ROM No.	ROM code No.	ROM code No.	Use	Remarks
001	Q8			ODA/ODG	Factory option
003	Q8			ODG	Single unit supply



RS-232C (LXHI)-Printed Circuit Board (4YA4021-1050GXXX) 1/2 (1/2)



RS-232C (LXHI)-Printed Circuit Board (4YA4021-1050GXXX) 1/2 (2/2)
REV.7 PCB Version 7

LXHI-Printed Circuit Board (4YA4021-1050GXXX) 2/2 (1/3) Rev. 7 PCB Version 7

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1					
2					
3	D2	MA153 Signal diode (CP)	611A0029N0004	1	
4	D104, 105, 106	MA151WK/DAN202K Signal diode (CP)	611A0003N0003	3	
5	D1	RD10F-B Zener diode	613A2232L0182	1	
6					
7	R115	RM73B2B102J RN Resistor (CP)	323A5015J0102	1	
8	R104	RM73B2B122J RN Resistor (CP)	323A5015J0122	1	
9	R103, 109, 110	RM73B2B242J RN Resistor (CP)	323A5015J0242	3	
10	R111, 112, 116, 120-129	RM73B2B103J RN Resistor (CP)	323A5015J0103	13	
11	R106	RM73B2B203J RN Resistor (CP)	323A5015J0203	1	
12	R108	RM73B2B474J RN Resistor (CP)	323A5015J0474	1	
13	R1	RD1/2Y150ΩJ RD Resistor (CP)	321A1431J0151	1	
14					
15	C101, 102, 105, 107, 117, 118, 130, 131	CK3216F1H104Z CK Capacitor (CP)	303A6009Z3104	8	
16					
17	C6	CK92F1E105ZS 25V CK Capacitor 1.0μ	303A4117Z2105	1	
18	C5	CEUSM1E470 25V CE Capacitor 47μ	304A1041E1470	1	

LXHI-Printed Circuit Board (4YA4021-1050GXXX) 2/2 (2/3) Rev. 7 PCB Version 7

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
19	C2,3	CEUSM1E221 25V CE Capacitor 220µ	304A1041E1221	2	
20	C4	CEUSM2A010 100V CE Capacitor 1.0µ	304A1041A2109	1	
21					
22	Q6	74LS05FP BIP Digital IC (SO)	700A0503N0005	1	
23	Q5	74LS32FP BIP Digital IC (SO)	700A0503N0032	1	
24	Q4	SN74LS373NS BIP Digital IC (SO)	700A0550N0373	1	
25	Q7	74LS245P BIP Digital IC	700A0503M0245	1	
26	Q2	75189P BIP-INF-IC	710A0003M0189	1	
27	Q1	75188P BIP-INF-IC	710A0003M0188	1	
28					
29					
30	Q3	MSM80C51FV-568GS-V1K MOS-CPU (ROM) (EP)	853A0150N0568	1	
31	Q9	HM6264ALSP-15 MOS-S-RAM	804A0021M6335	1	
32					
33	Q8	DICF-28CS-E IC Socket	245A1221P0280	1	
34					
35	TR101	A1344/UN2111/DTA114K PNP-HF-TR (CP)	600A1003N0003	1	
36	TR103	2SA1331/2SA1037K PNP-HF-TR (CP)	600A1003N0002	1	

LXHI-Printed Circuit Board (4YA4021-1050GXXX) 2/2 (3/3) Rev. 7 PCB Version 7

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
37	TR102	2SC3361/2SC2412K NPN-HF-TR (CP)	602A1003N0002	1	
38					
39					
40	OSC	FAR-C4SB11059000-M02 Oscillator	4LP-12186-1	1	
41					
42	SP1	FFC-3AMEP1 FC Connector	225A3123P0030	1	
43					
44	CN1	D25S-LLD-hexagon (#4-40) Square-shaped connector	220A0121P0250	1	
45					
46	L1	FBA04HA900KF-00 Beads core	105A1222C1001	1	
47	2	DIC-252 PC Connector	224A3182P0020	1	

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