

# SHARP SERVICE MANUAL

CODE: 00ZCE126PSM/E

## MODEL CE-126P



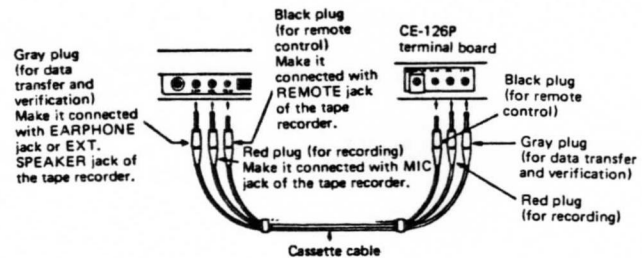
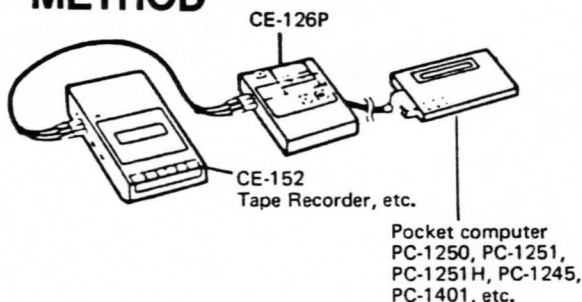
### PRODUCTS OUTLINE

The CE-126P printer is an optional printer with the cassette interface designed for use with the pocket computer models PC-1245, PC-1250, PC-1251, and PC-1401 (EL-5500).

### SPECIFICATIONS

- Printer type:** Dot matrix thermal printer (MTP-201), identical to the one used for the CE-125
- Printing positions:** 24 printing positions
- Print speed:** Approx. 0.8 lines/second
- Paper feed speed:** Approx. 0.8 lines/second
- Recording paper:** CPAPR1025CC05 (EA1250P, identical to the one used for the CE-125)  
Thermal recording paper (paper roll with outer diameter of 18 mm, maximum, and width of 58mm)
- Power supply:** Uses four UM3 (AA) dry cell batteries.  
Options:  
AC adaptor (EA-23E)  
NiCd battery (EA-27B) (use of the EA-23E for recharge)
- Power consumption:** 3 watts
- Battery life:**  
UM3: Approx. 2000 lines  
SUM3: Approx. 3000 lines  
EA-27B: Approx. 5000 lines  
(recharge time: about 15 hours)
- Physical dimensions:** 140.5(W) x 116(D) x 23(H) mm

### 3. TAPE RECORDER INTERFACING METHOD



- Use of the CE-125 Tape Recorder exclusively designed for the Pocket Computer is recommended.

#### Cassette Tape Recorder

The following is a description of the minimum tape recorder specifications necessary for interfacing with the CE-126P.

Item	Requirements
1. Recorder Type	Any tape recorder, standard cassette or micro-cassette recorder, may be used in accordance with the requirements outlined below.
2. Input Jack	The recorder should have a mini-jack input labeled "MIC". Never use the "AUX" jack.
3. Input Impedance	The input jack should be a low impedance input (200 ~ 1,000 OHM.)
4. Minimum Input Level	Below 3 mV or -50 dB.
5. Output jack	Should be a minijack labeled "EXT. (EXTernal speaker)", "MONITOR", "EAR (EAR-phone)" or equivalent.
6. Output impedance	Should be below 10 OHM.
7. Output level	Should be above 1V (practical maximum output above 100 mW)
8. Distortion	Should be within 15% within a range of 2 kHz through 4 kHz.
9. Wow and Flutter	0.3% maximum (W.R.M.S)
10. Other	Recorder motor should not fluctuate speed.

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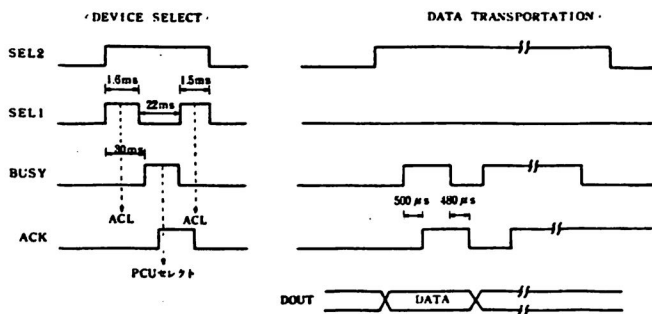
**NOTES:**

- Some of tape recorders may not operate properly owing to different specification or electrical characteristics affected by signal distortion, electrical noise, level drop-out caused after long years of use.
- When using the tape recorder fitted with the mixing feature, it needs to disable the mixing function for both recording and playback.
- Depending on the tape recorder used, better reading result may be attained when the red plug is unplugged from the MIC jack.
- As it may impede proper data transfer and verification depending on the position of the volume control, tone control, bass control, and treble control, try to find the optimum level by varying their positions.

**4. CIRCUIT DESCRIPTION**

The CE-126P has two microprocessors; the P-CPU by which data transfer is carried out with the host CPU (M-CPU) and the printer control PCU. Since the host CPU (PC-1245, 1250, 1251, 1401, (EL5500) have different CPU actions, the CE-126P CPU therefore performs different action.

M-CPU to P-CPU data transfer method (for PC-1245, 1250, 1251)



**4-1.**

What action should the P-CPU take prior to data transfer is dependent on the state of SEL1 and SEL2 from the M-CPU. (DEVICE SELECT)

SEL1	SEL2	Action
L	L	Nop
L	H	PCU select
H	L	Remote ON
H	H	ACL

**4-2.**

The following actions take place before data transfer.

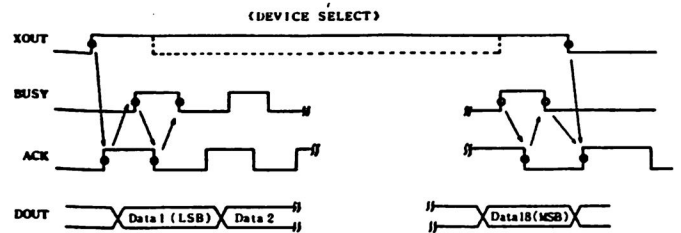
- (1) SEL1 goes low and SEL2 high.
- (2) BUSY from the M-CPU turns high level.
- (3) Upon receipt of BUSY, ACK of the P-CPU is set high and the data is received to the P-CPU.

Since the data is transferred in bit by bit serial mode, above steps (2) and (3) are repeated eight times to complete transfer of one data. For instance, those steps are repeated for 192 times (24 x 8) in order to transfer a 24 digits data. The print command, however, is sent out to the P-CPU at the end of the data in a form of the code "0D"

**4-3.**

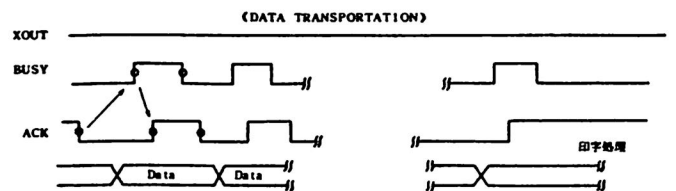
M-CPU to P-CPU data transfer method (for PC-1401, EL5500)

Since there are no SEL1 and SEL2 used for the PC-1401 and EL5500, DEVICE SELECT is dependent on the contents of data.



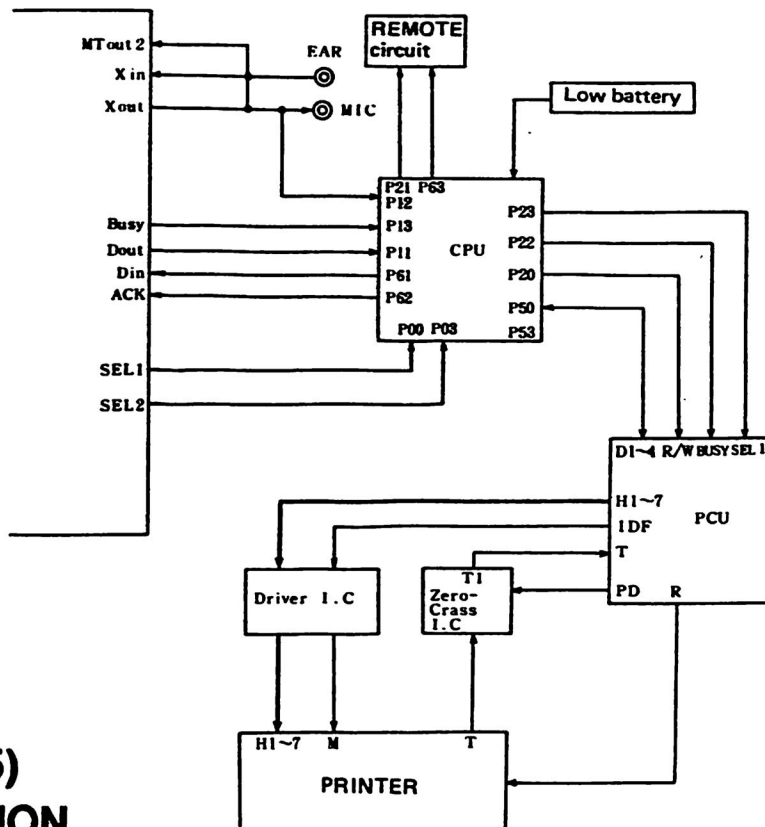
- (1) For DEVICE SELECT, XOUT becomes high.
- (2) As the P-CPU receives a high state of XOUT, it sends ACK to the M-CPU.
- (3) As the M-CPU receives ACK, it sends back BUSY.
- (4) Data is received to the P-CPU with a high state of BUSY. ACL, REMOTE ON, CPU select actions is carried out depending on the contents of data.

**4-4. Print data transfer**



XOUT goes low when the print data is transferred. Data transfer is done in a manner identical to those of the PC-1250.

## 5. BLOCK DIAGRAM



## 6. CPU (UPD7506G515) SIGNAL DESCRIPTION

Pin No.	Signal Name	In/Out	Description
P03	SEL2	In	Select
P00	SEL1	In	Select
P13	BUSY	In	Handshake, active high
P12	XOUT	In	Device select, active high
P11	DOUT	In	Data, active high
P10	DOUT	In	Printer error
P23	ACL/SEL1	Out	High: ACL Low: normal
P22	CS/SEL2	Out	High: chip select Low: non-select
P21	REMO2	Out	Remote off  Remote off pulse generation
P20	R/W	Out	High: read, "High to low transition: write
P43	P/S	In	Data transfer mode High: parallel Low: serial
P42	NORMAL PAPER/ THERMAL PAPER	In	PCU select High: normal paper PCU Low: thermal paper PCU
P41	LOW BATTERY	In	Low battery check High: normal Low: low battery
P40	ACK	In	Handshake (PCU to printer CPU)
P53	D3	In/Out	Data line between CPU and PCU MSB (High ..... 1, Low ..... 0)
P52	D2	In/Out	Data line between CPU and PCU (High ..... 1, Low ..... 0)
P51	D1	In/Out	Data line between CPU and PCU (High ..... 1, Low ..... 0)
P50	D0	In/Out	Data line between CPU and PCU LSB (High ..... 1, Low ..... 0)
P63	REMO1	Out	Remote on  Remote on pulse generation
P62	ACK	Out	Handshake (to host CPU), active high
P61	DIN	Out	Printer error (to host CPU)
P60	BUSY	Out	High: printer error Low: normal Handshake (printer CPU to PCU), active high

## 7. PCU (SC6994) SIGNAL DESCRIPTION

Pin No.	Signal Name	In/Out	Description
1	SEL2	In	Select
2	SEL1	In	Select
3	VDD	Out	Power supply
4	ACL		Not used
5	BUSY	In	High: chip select - - - - - Low: Non-select
6	R/W	In	High: read High to low transition: write
7 ~ 10	D4 ~ 1	In	Data input
11	STP		Not used
12	S	In	Data transfer mode select line High: serial input - - - - - Low: parallel input/output
13	24	In	Print digit select line High: 24 digits (GND connected) Low: 16 digits
14	IDF	Out	Printer motor drive signal
15	H7	Out	Printhead element on pulse
16	H6	Out	Printhead element on pulse
17	GND	In	Power supply
18 ~ 22	H5 ~ H1	Out	Printhead element on pulse
23	R	In	Printer reset (printhead home position detect)
24	PD	Out	Power down (in supply during printer operating cycle, otherwise, power is not supplied to the printer drive circuit).
25	T	In	Printer timing (generated from the tachogenerator of the motor)
26 ~ 28	TS1 ~ 3	In	Test pins
29	VP1	Out	Printer control circuit supply power
30 ~ 32	BC1 ~ 3	In/Out	PCU frequency control
33	CCK	Out	Clock test pin
34	HA	In	Not used → (Print density adjust pin...JA and JB pin connection varies according to the printhead rank).
35	HB		
36	HC	In	
37, 38	CL1, 2	In	Basic clock pulse control resistor fitting pin
39	PF	In	Paper feed key input
40	NP	In	GND Connected
41	ACL	In	All clear input
42	OP3	Out	ACL select (high when on)
43	OP2		Not used.
44	OP1		Not used.

## 8. SERVICE CAUTIONS

### 8-1. Cautions in exchanging the printer unit

In order to prevent print density variation caused by thermal head resistance variation, the printhead is classified into three ranks of A, B, and C, and the rank is indicated on the reverse side of the printer unit F.P.C. After exchange of the printer unit, relevant circuit change must be observed in accordance with the procedure mentioned below.

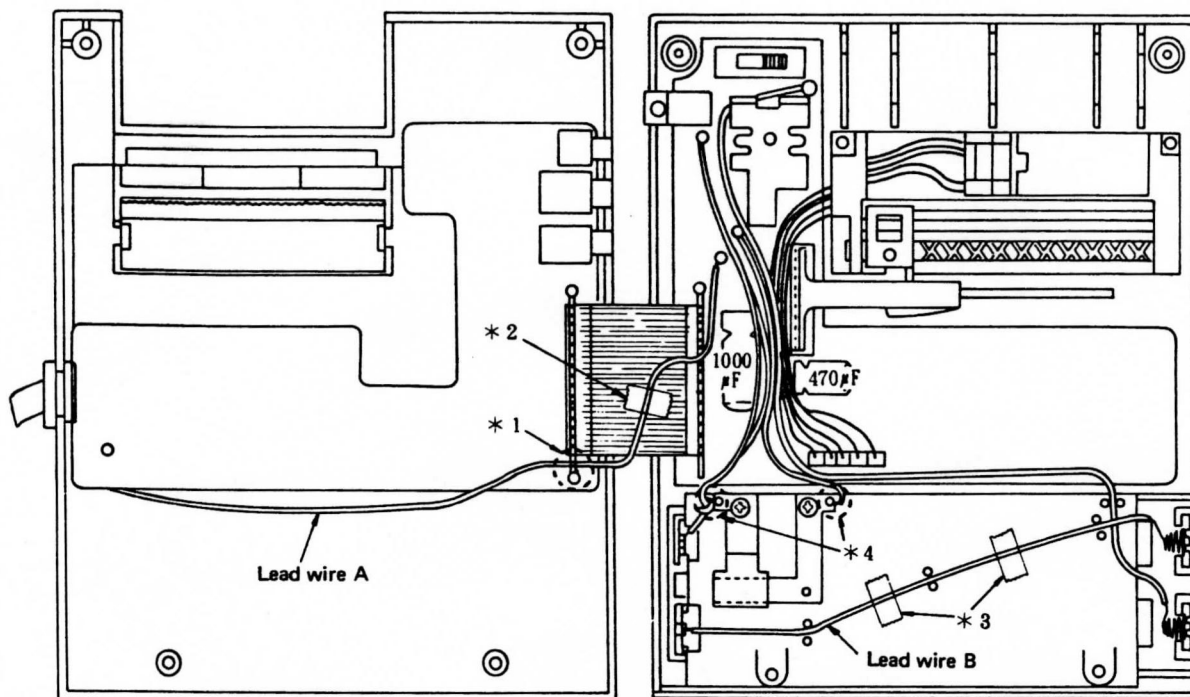
Short JA when the rank A printer is used.
Leave all open when the rank B printer is used.
Short JC when the rank C printer is used.

After the above procedure, adjust by means of the 20-Kohms potentiometer so that an optimum print quality is obtained. The circuit has been so designed as to attain the best result with the potentiometer set at its midway.

Therefore, existence of a remarkable print density variation might involve the following problems:

1. Drop in head performance
2. Quality change in the thermal recording paper
3. Throuble in the thermal control circuit

### 8-2. Threading lead wires



● Be sure to observe the following cautions in installing lead wire.

\*1,\*2: The lead wire A must be threaded under the cotton wire and fixed on the F.P.C. using the adhesive tape.

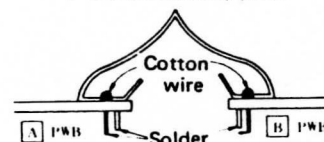
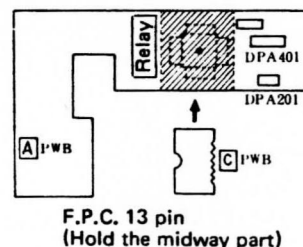
\*3: The lead wire B should be fixed with the adhesive tape along the rib of the bottom cabinet.

\*4: Do not allow the strayed lead wire and solder to extend out of the Ni-Cd battery terminal to the printer unit, when the lead wire is being soldered to the NiCd battery terminal.

(Unless lead wires A and B are threaded properly, it may cause to recharge the dry battery (UM3 or AA) because of slack lead wires, when the AC adaptor is used with dry batteries in installation.)

### 8-3. [C] Installing PWB

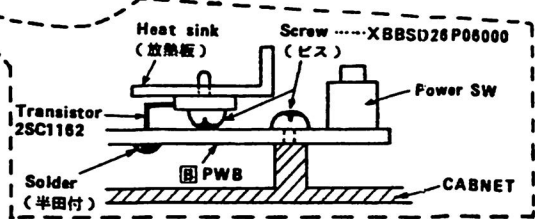
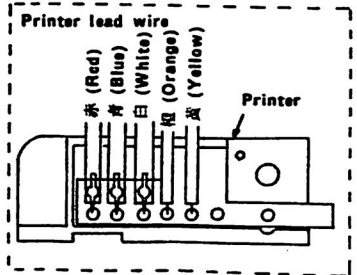
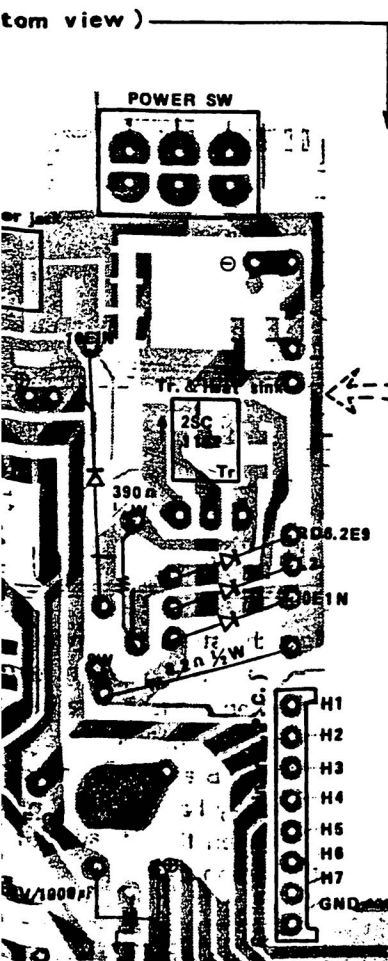
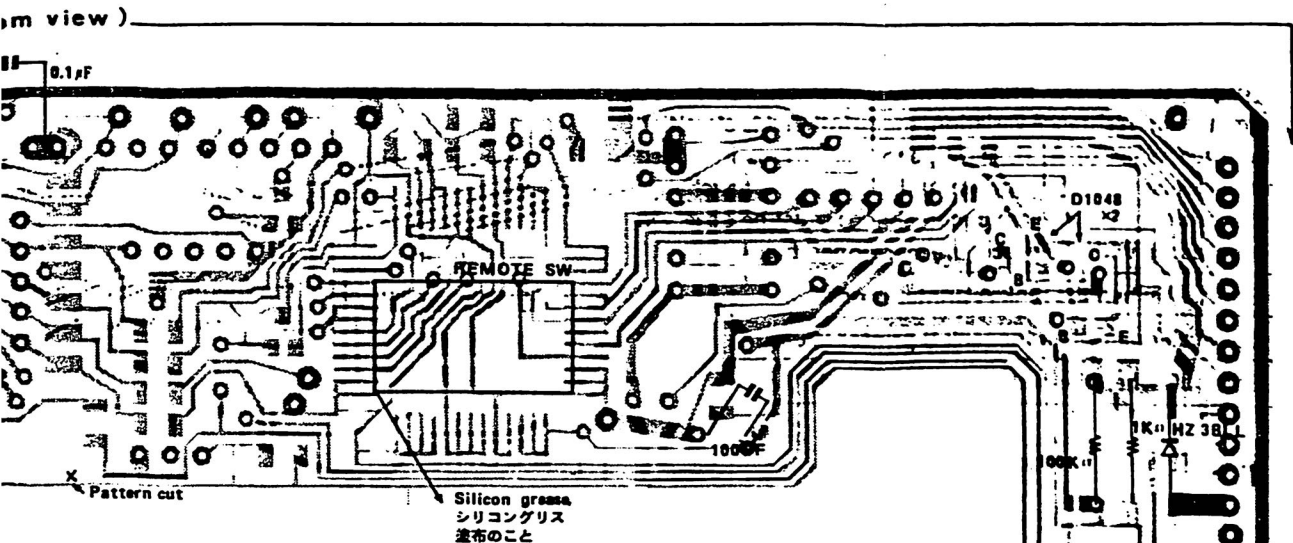
- (1) Set the lead wire to the given location of the [A] PWB and solder it.
- (2) As shown in the figure, apply the double tack adhesive tape over the CPU (UPD7506G) on the [A] PWB, then set the [C] PWB over it with the hole facing the relay.
- (3) After the installation of the [C] PWB, solder the lead wire to the [C] PWB.



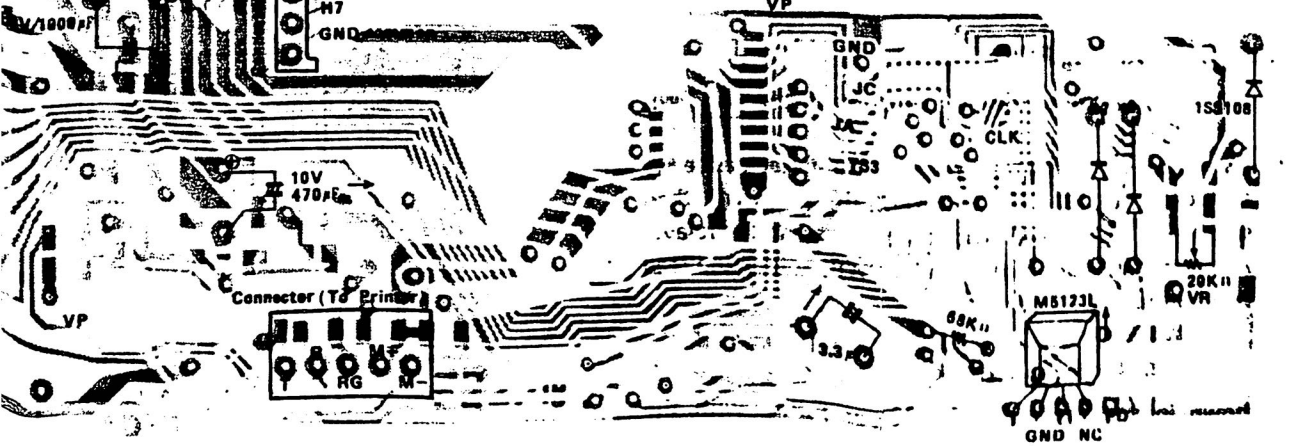
### 8-4. Connecting [A] with [B]

As shown in the figure, fix the 13-pin F.P.C. with the cotton wire. The cotton wire also has to be soldered in a same manner as the F.P.C.



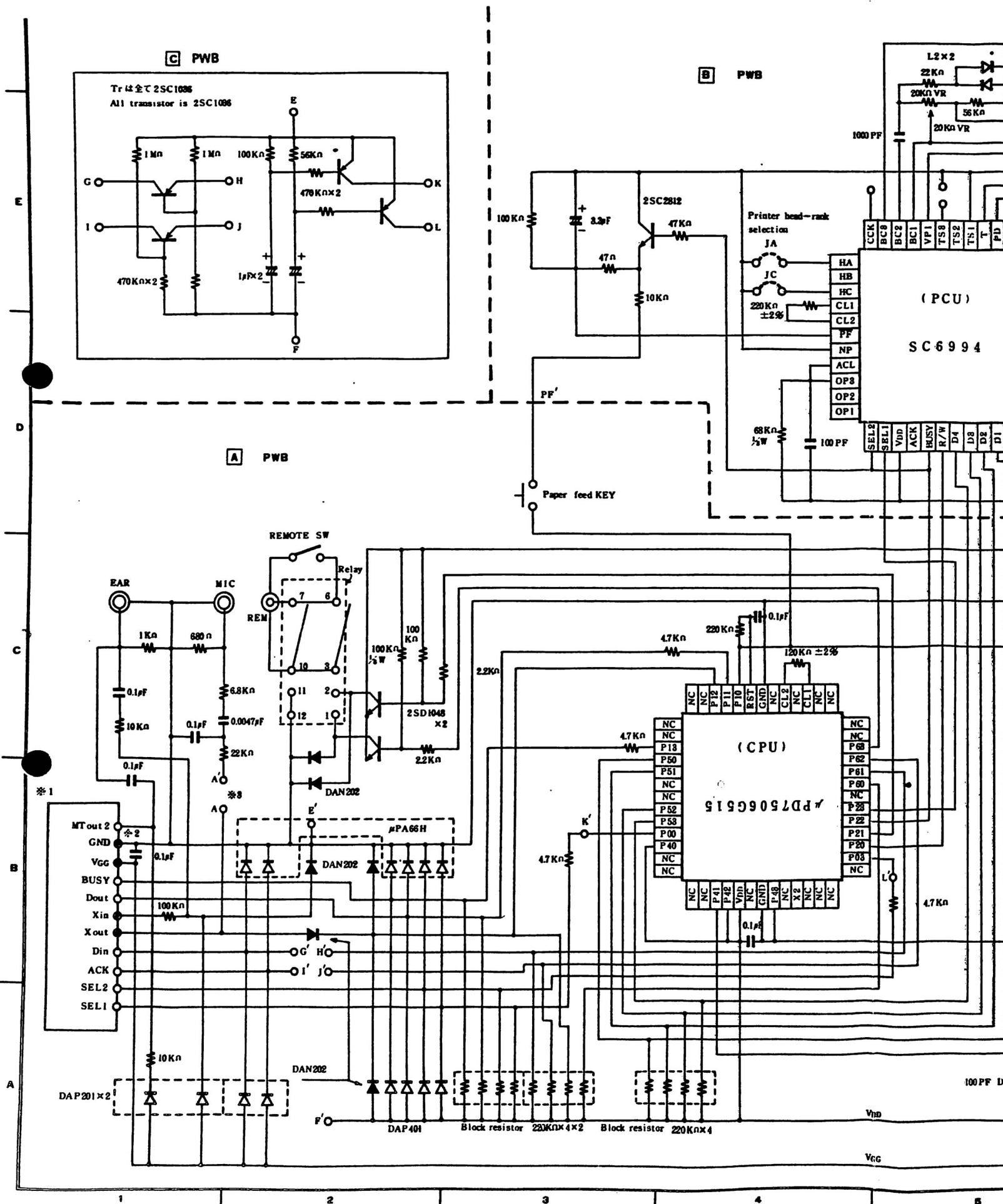


Chip transistor parts code	Tr name	hfe rank
RH-IX1010CCN1	A1179	M6, M7
RH-IX1012CCN1	C2812	L5, L6
RH-IX1009CCN1	B 815	B6, B7
RH-IX1004CCN1	A1036	HP, HQ, HR
RH-TX1015CCN1	D1044	X6, X7



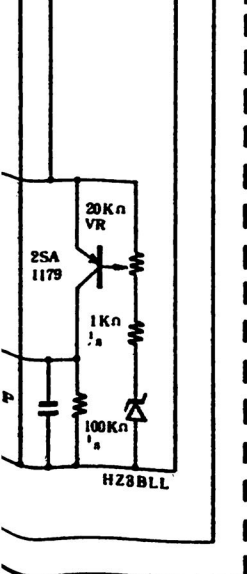
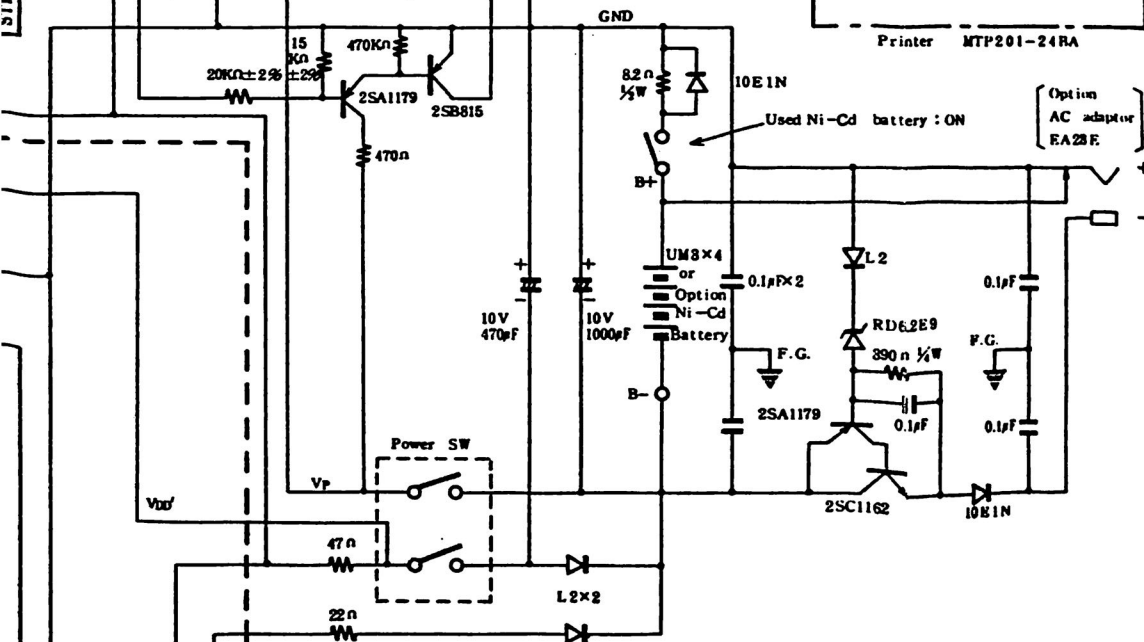
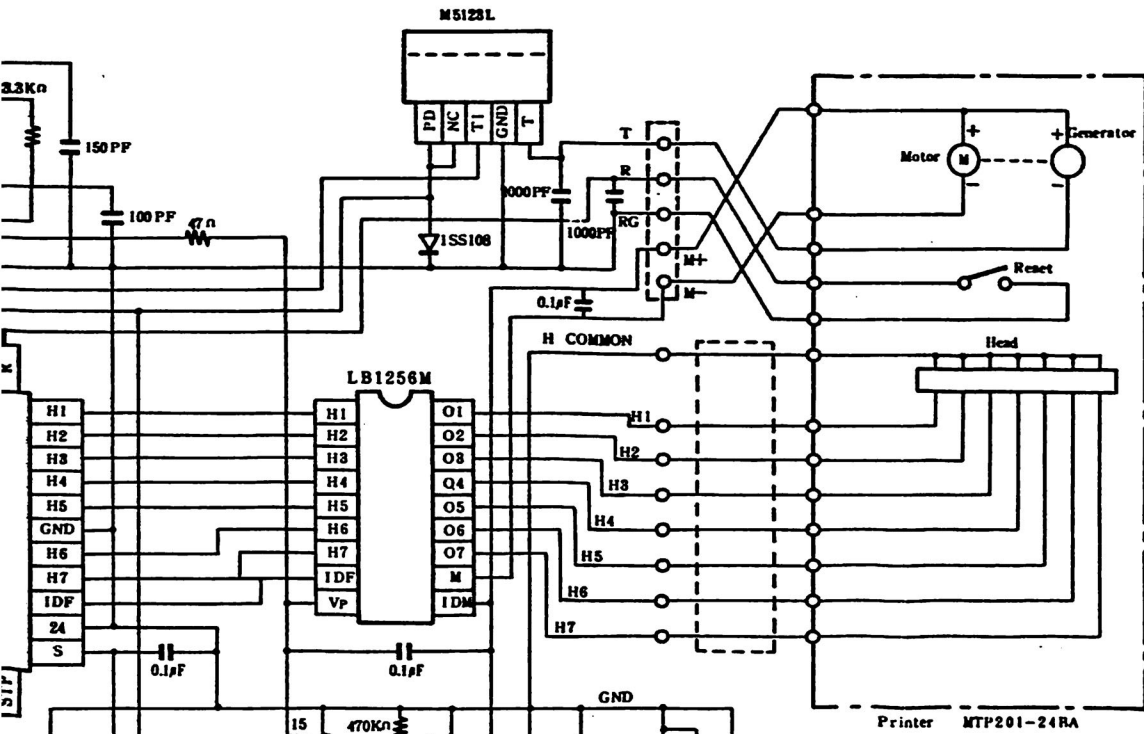
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# 10. CIRCUIT DIAGRAM



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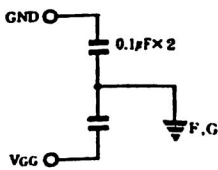




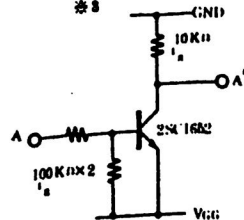
※1 11pin connector cable

MTOUT2	空色 (Sky blue)
Xin	青色 (Blue)
GND	桃色 (Pink)
Xout	紫色 (Purple)
SEL2	茶色 (Brown)
SEL1	赤色 (Red)
BUSY	黑色 (Black)
Dout	白色 (White)
Din	黄色 (Yellow)
ACK	橙色 (Orange)
Vcc	灰色 (Gray)

※2



※3



## 11. PARTS LIST &amp; GUIDE

## 1 Exteriors (外装機構部品)

NO.	PARTS CODE	PRICE RANK		NEW MARK	PART RANK	DESCRIPTION
		Ja	Ex			
1	GC0VA1363CCZZ	DF	AD		D	ペーパーカバー Paper cover
2	PCUT-1025CCZZ	DD	AC		D	ペーパーカッター Paper cutter
3	GCABB2761CCZZ	DS	AG	N	D	キャビウエ Top cabinet
4	JKNBZ1225CC01	DA	AA		C	スイッチ SW ツマミ Slide switch knob
5	QCNTM1042CCZZ	DA	AA		C	スライド SW コンタクト Slide switch terminal
6	JKNBZ1877CC01	DK	AE		C	キー トップ Key top (Paper feed key)
7	PGUMM1337CCZZ	DB	AB		B	ゴムスプリング Rubber spring
8	QCNW-1268CCZZ	FG	AT	N	C	11PIN コネクター ケーブル 11pin connector cable
9	TCAUK1217CCZZ	DA	AA	N	D	チュウイ ラベル Caution label (Japanese & English)
10	PHOG-1093CCZZ	DC	AB		D	11ピン コネクターケーブルヨウ ゴムキャップ Rubber cap for 11pin connector cable
11	XUBSD20P04000	DA	AA		C	ビス Screw
12	PSLDC1430CCZZ	DD	AC		C	シールドバン Shield
13	QTANZ1454CCZZ	DB	AB		C	デンチタンシ Battery terminal (⊖)
14	GCABA2762CCZZ	DS	AG		D	キャビソコ Bottom cabinet
15	GFTAB1189CC01	DD	AC		D	デンチ フタ Battery lid
16	PCUSS1227CCZZ	DA	AA	N	C	デンチオサエヨウ クッション Cushion
17	QTANZ1186CCZZ	DA	AA		B	デンチタンシ Battery terminal (⊕)
18	GLEGG1011CCZZ	DA	AA		B	ゴムアシ Rubber leg
19	XUBSF26P10000	DA	AA		C	ビス Screw
20	LX-BZ1120CCZZ	DA	AA		C	ビス Screw
21	QCNTM1062CCZZ	DB	AB	N	C	ニッカドヨウカドウ Ni-Cd terminal
22	QCNTF1061CCZZ	DB	AB	N	C	ニッカドヨウ コテイ Ni-Cd terminal
23	PSHEP1108CCZZ	DA	AA	N	C	SL-SW カクシイタ SL-SW spacer
24	PCUSG1228CCZZ	DA	AA	N	C	ラッカ タイサクゴム Rubber cushion
25	PCUSS1218CCZZ	DA	AA		C	プリンターヨウ Printer cushion
26	Ki-0B0081CCZZ	HL	BG		E	サーマルプリンター Thermal printer unit (MTP-201)
27	QCNCW1321CC03	DJ	AE		B	コネクター 5PIN Connector 5pin (with lead wire)

## 2 PWB unit (基板ユニット)

NO.	PARTS CODE	PRICE RANK		NEW MARK	PART RANK	DESCRIPTION
		Ja	Ex			
1	PRDARI035CCZZ	DE	AC	N	B	ホウネツバン Heat sink
2	PTPEH1224CCZZ	DA	AA	N	C	コテイテープ Adhesived tape (for C-PWB)
3	QCNCW1308CCA i	DE	AC		B	サーマルプリンター-FPCヨウ コネクター Connector for printer (8pin Black)
4	QCNCM1323CC0F	DB	AG		B	コネクター Connector (5pin Blue)
5	QCNW-1278CCZZ	DE	AC	N	B	F.P.C. (13pin)
6	QJAKC1003CCZZ	DH	AD		B	ジャック Jack (for AC adaptor)
7	QJAKC1013CCZZ	DD	AC		C	ジャック Jack (for MIC,EAR)
8	QJAKC1016CCZZ	DH	AC		B	ジャック Jack (for Remote)
9	QSW-S0075FCZZ	DL	AF		B	スライドスイッチ Slide switch
10	VCTYPU1NX104M	DB	AB		C	コンデンサー Capacitor (12WV 0.10μF)
11	RC-EZ108BCC1A	DE	AC		C	コンデンサー Capacitor (10V 1000μF)
12	RC-EZ477ACC1A	DD	AC		C	コンデンサー Capacitor (10V 470μF)
13	RC-SZ1007CCZZ	DL	AF		C	コンデンサー Capacitor (1μF)
14	RC-SZ1021CCZZ	DE	AC		C	コンデンサー Capacitor (10WV 3.3μF)
15	RH-iX1010CCZZ	DC	AB		B	トランジスター Transistor (A1179,M6)
16	RH-TX1015CCZZ	DD	AC		B	トランジスター Transistor (D1048,×6 ×7)
17	RH-TX1016CCZZ	DD	AC		B	トランジスター Transistor (C1652-PQR)
18	RMPTC4224QCKB	DY	AK		C	ブロックテイクウ Block resistor (1/8W 220KΩ×4 ±10%)
19	RRLYZ2400QCZZ	EN	AP		B	リレー Relay
20	RVR-M2415QCZZ	DF	AD		B	ボリウム Variable resistor
21	VCKYPU1HB101K	DA	AA		C	コンデンサー Capacitor (50WV 100pF)
22	VHDDS1588L2-1	DB	AB		B	ダイオード Diode (DS1588L2)
23	VHD1SS108//1	DB	AB		B	ダイオード Diode
24	VHD10E1N//1	DB	AB		B	ダイオード Diode (10E1N)
25	VHEHZ3BLL//1	DD	AC		B	ツェナーダイオード Zener diode
26	VHERD6.2E9//1	DB	AB		B	ツェナーダイオード Zener diode
27	VHiDAP201//1	DE	AC		B	ダイオードアレイ Diode array
28	VHiDAP401//1	DQ	AE		B	ダイオードアレイ Diode array
29	VHiLB1256MFP1	EA	AK		B	IC IC
30	VHiM5123L//1	DS	AG		B	IC IC M5123L
31	VHiUPA66H//1	DL	AF		B	ダイオードアレイ Diode array
32	VRD-ST2BY102J	DA	AA		C	テイクウ Resistor (1/8W 1.0KΩ ±5%)
33	VRD-ST2BY103J	DA	AA		C	テイクウ Resistor (1/8W 10KΩ ±5%)
34	VRD-ST2BY104J	DA	AA		C	テイクウ Resistor (1/8W 100KΩ ±5%)
35	VRD-ST2BY683J	DA	AA		C	テイクウ Resistor (1/8W 68KΩ ±5%)
36	VRD-ST2EY391J	DB	AA		C	カーボンテイクウ Resistor (1/4W 390Ω ±5%)
37	VRD-ST2HY8R2J	DA	AA		C	テイクウ Resistor (1/2W 8.2Ω ±5%)
38	VS2SC1162-CDC	DL	AE		B	トランジスター Transistor
39	XBBSD26P06000	DA	AA		C	ビス Screw
40	RC-CZ1021CCN1	DB	AB		C	コンデンサー Capacitor (0.1μF)
41	RC-CZ1031CCN1	DB	AB		C	コンデンサー Capacitor (1000PF)
42	RC-CZ1035CCN1	DB	AB		C	コンデンサー Capacitor (100pF)
43	RC-CZ1039CCN1	DB	AB		C	コンデンサー Capacitor (4700pF)

## 2 PWB unit (基板ユニット)

NO.	PARTS CODE	PRICE RANK		NEW MARK	PART RANK	DESCRIPTION	
		Ja	Ex				
44	RC-CZ1052CCN1	DB	AB		C	コンデンサー	Capacitor (150pF)
45	RH-DZ1008CCN1	DD	AC		B	ダイオードアレイ	Diode array (DAN202)
46	RH-iX1004CCN1	DH	AD		B	トランジスター	Transistor (A1036)
47	RH-iX1009CCN1	DD	AC		B	トランジスター	Transistor (B815,B6 B7)
48	RH-iX1010CCN1	DD	AC		B	トランジスター	Transistor (A1179,M6)
49	RH-iX1012CCN1	DD	AC		B	トランジスター	Transistor (C2812,L5 L6)
50	RR-KZ1051CCN1	DA	AA		C	テイコウ	Resistor (220KΩ ±2%)
51	RR-KZ1053CCN1	DA	AA		C	テイコウ	Resistor (120KΩ ±2%)
52	RR-KZ1066CCN1	DA	AA		C	テイコウ	Resistor (20KΩ ±2%)
53	RR-KZ1067CCN1	DA	AA		C	テイコウ	Resistor (15KΩ ±2%)
54	VHiD7506G-515	FJ	AU		B	IC	IC
55	VHiSC6994//-1	FC	AS		B	IC	IC
56	VRS-TP2BD102J	DA	AA		C	テイコウ	Resistor (1/8W 1.0KΩ ±5%)
57	VRS-TP2BD103J	DA	AA		C	テイコウ	Resistor (1/8W 10KΩ ±5%)
58	VRS-TP2BD104J	DA	AA		C	テイコウ	Resistor (1/8W 100KΩ ±5%)
59	VRS-TP2BD105J	DA	AA		C	テイコウ	Resistor (1/8W 1.0MΩ ±5%)
60	VRS-TP2BD220J	DA	AA		C	テイコウ	Resistor (1/8W 22Ω ±5%)
61	VRS-TP2BD222J	DA	AA		C	テイコウ	Resistor (1/8W 2.2KΩ ±5%)
62	VRS-TP2BD223J	DA	AA		C	テイコウ	Resistor (1/8W 22KΩ ±5%)
63	VRS-TP2BD224J	DA	AA		C	テイコウ	Resistor (1/8W 220KΩ ±5%)
64	VRS-TP2BD332J	DA	AA		C	テイコウ	Resistor (1/8W 3.3KΩ ±5%)
65	VRS-TP2BD470J	DA	AA		C	テイコウ	Resistor (1/8W 47Ω ±5%)
66	VRS-TP2BD471J	DA	AA		C	テイコウ	Resistor (1/8W 470Ω ±5%)
67	VRS-TP2BD472J	DA	AA		C	テイコウ	Resistor (1/8W 4.7KΩ ±5%)
68	VRS-TP2BD473J	DA	AA		C	テイコウ	Resistor (1/8W 47KΩ ±5%)
69	VRS-TP2BD474J	DA	AA		C	テイコウ	Resistor (1/8W 470KΩ ±5%)
70	VRS-TP2BD563J	DA	AA		C	テイコウ	Resistor (1/8W 56KΩ ±5%)
71	VRS-TP2BD681J	DA	AA		C	テイコウ	Resistor (1/8W 680Ω ±5%)
72	VRS-TP2BD682J	DA	AA		C	テイコウ	Resistor (1/8W 6.8KΩ ±5%)
	ユニット (Unit)						
900	DUNTK7627CCZZ	MV	BR	N	E	PWB ユニット	PWB unit

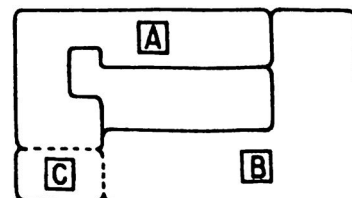
## 3 Accessory (付属品)

NO.	PARTS CODE	PRICE RANK		NEW MARK	PART RANK	DESCRIPTION	
		Ja	Ex				
1	SPAKA8215CCZZ	DM	AF	N	D	SET ヨウクッション	Packing cushion for set
2	SPAKA8216CCZZ	DE	AC	N	D	フゾクヨウクッション	Packing cushion for Accessories
3	SPAKC8217CCZZ	DR	AG	N	D	パッキングケース	Packing case (Japan)
	SPAKC8219CCZZ	DR	AF	N	D	パッキングケース	Packing case (Other country)
4	TiNSJ4040CCZZ	DP	AF	N	D	トリアツカイセツメイショ	Instruction book (Japan)
	TiNSE4041CCZZ	DY	AK	N	D	トリアツカイセツメイショ	Instruction book (U.S.A.)
	TiNSM4043CCZZ	EJ	AN	N	D	トリアツカイセツメイショ	Instruction book (E,F,G,S,I)
5	UBAGC1382CCZZ	DU	AG	N	D	ソフトケース	Soft case
6	QPLGJ1014CCZZ	FB	AR		D	カセットプラグ A	Cassette cable
7	CPAPR1025CC05	ZZ			S	ロールペーパー (5コ/1パック)	(Japan only)
	TLABH1955CCZZ	DB	AB			セツメイラベル	Operation label (Except Japan)

\* PWB unit

The PWB unit (DUNTK7627CCZZ) consists of **A**, **B**, and **C**, altogether.

PWB unit



Do not sale !

# SHARP

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