

3. Block diagram

This is the block diagram concerning to the transmitter (G8D-522M-A)

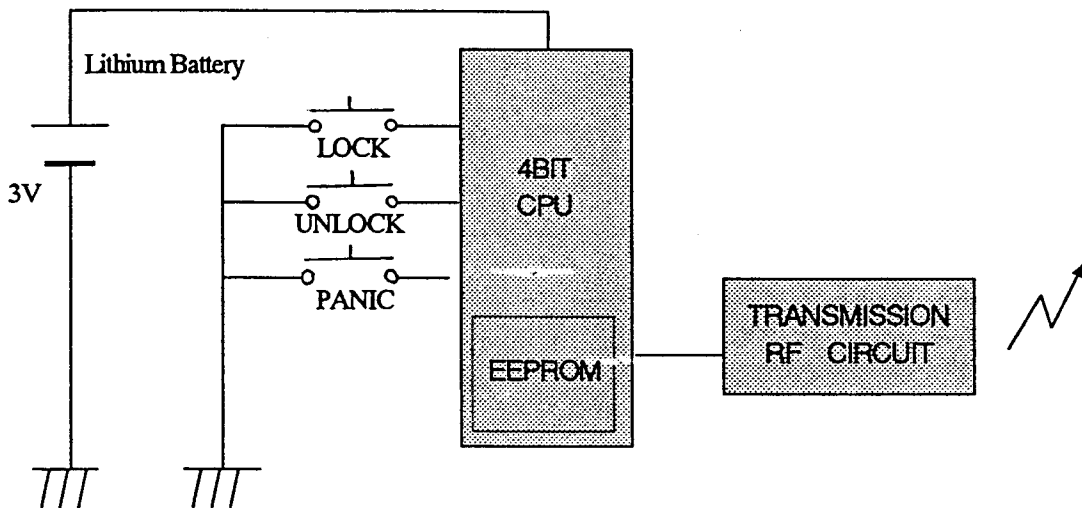


figure 3.1 block diagram of the transmitter

4. Specification

4.1 CPU

Type	uPD754144GS(4bit) Manufacturer: NEC Corporation
ROM	4096 × 8bit(4kbytes)
RAM	128 × 4bit
EEPROM	16 × 8bit
Clock frequency	500KHz
Clock frequency generation	CR oscillation
Package	20pin SSOP

4.2 RF block

Nominal frequency	315MHz
Frequency generation	SAW resonator
Modulation	ASK(A1D)
Bit transmission rate	1000bps or 500bps
Duty cycle	0.5
Antenna	PCB pattern type

4.3 Others

Dimension	53.5mm × 30mm × 12mm
Weight	20g
Battery	Lithium cell (CR2032) Manufacturer: MATSUSHITA Battery corporation etc.
Operation Voltage	DC 3V, 10mA
Operation Temperature	-20°C ~ +60°C

5. Features

5.1 Transmission frame

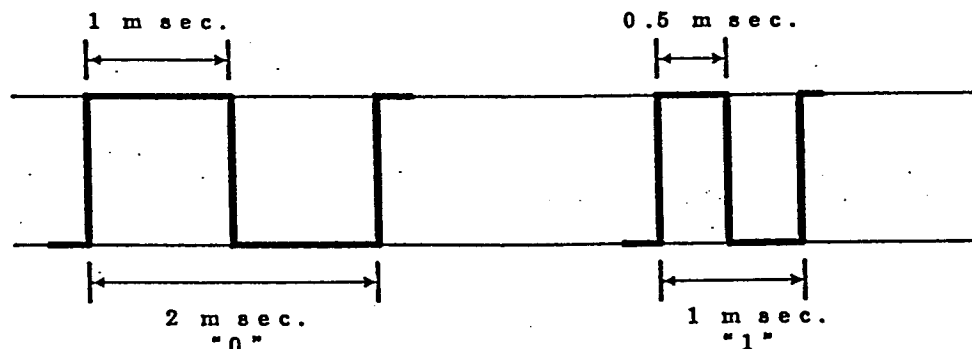
The transmission begins immediately in case of LOCK or UNLOCK or PANIC button is pressed. The transmission frame consists of the six data frame.

The transmission data frame consists of 63 bits length. The first 8 bits comprise the synchronous region. The second 50 bits are the vehicle identification region. The third 4 bits are for each button function. The last 1 bit make up the ending region.

16 million different identification codes are available. The security code is always changed in case of any of the buttons is pressed. The transmission time is typically 600 milliseconds.

The following figure explains the code and timing chart of each function:

LOCK	:	"1110" (E)
UNLOCK	:	"1101" (D)
TRUNK	:	"0110" (6)
PANIC	:	"1011" (B)



5.2 Battery saving

To prevent the battery exhaustion, the micro-computer of the transmitter is usually inactive. When the button will be pressed, the micro-computer wakes up immediately and judges which button is pressing. Then the micro-computer constructs the transmission frame and radiates it from the antenna. After transmitting, the micro-computer switches stand-by mode by itself.

6. PCB

6.1 Circuit diagram

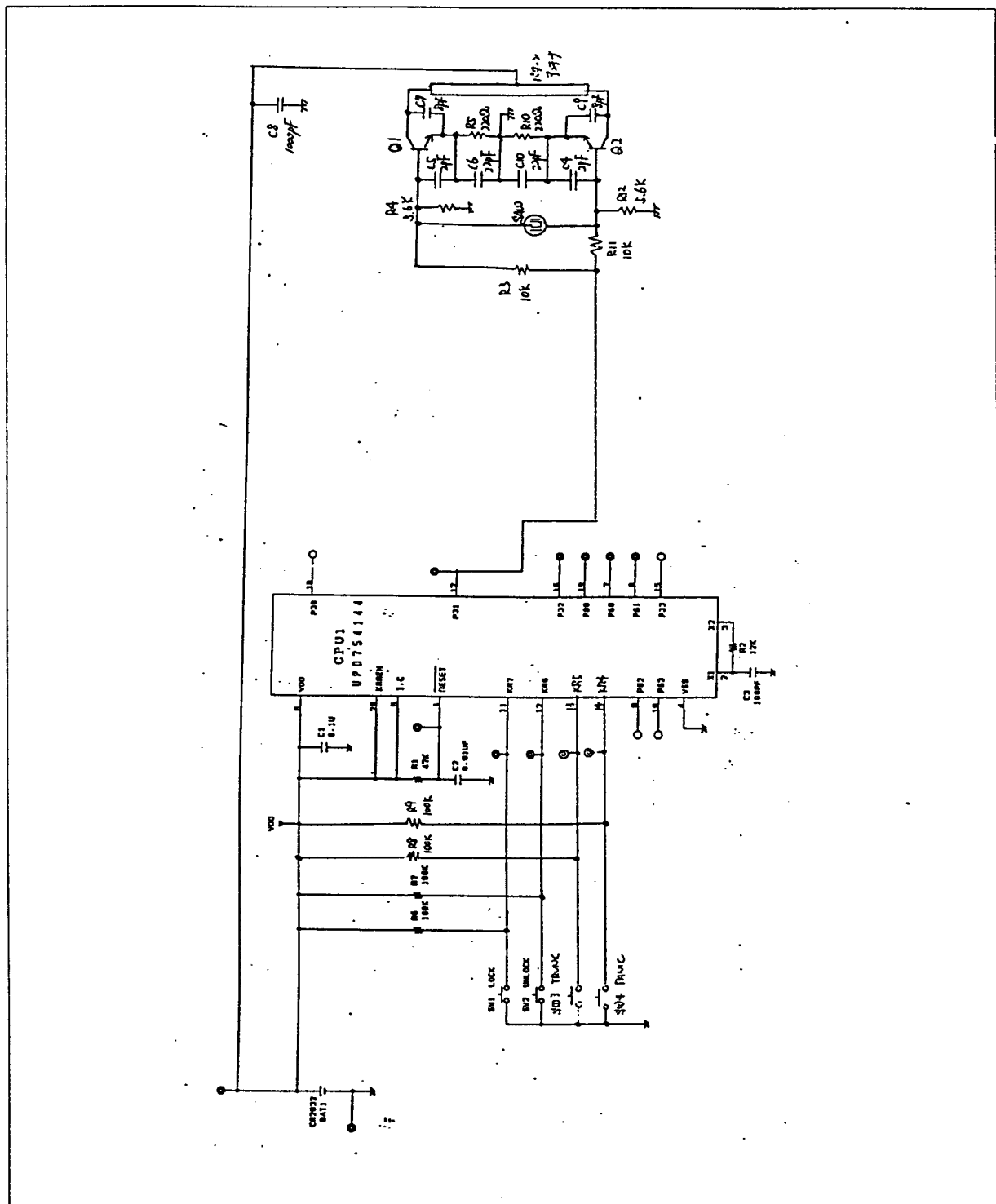


figure 6.1 Circuit diagram

6.2 Parts layout

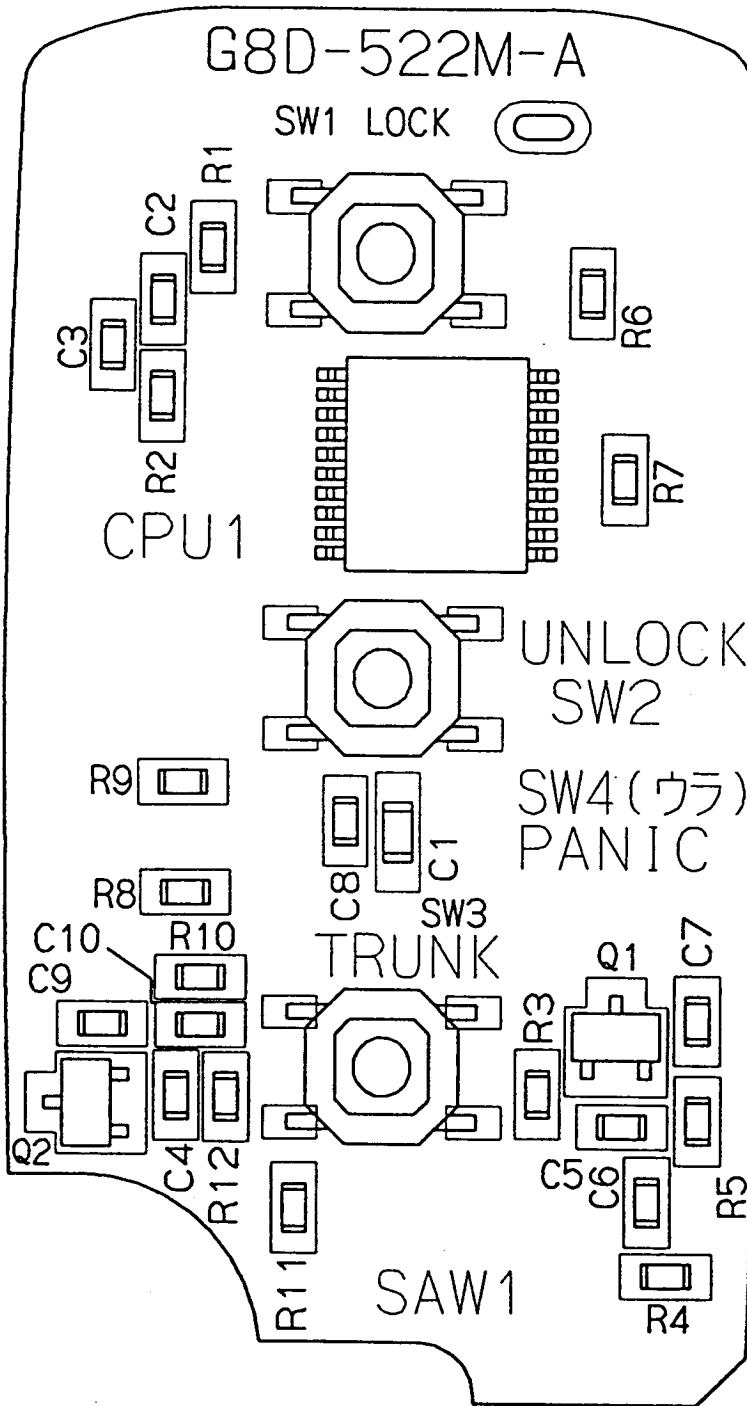


figure 6.2.1 Electrical parts layout (front)

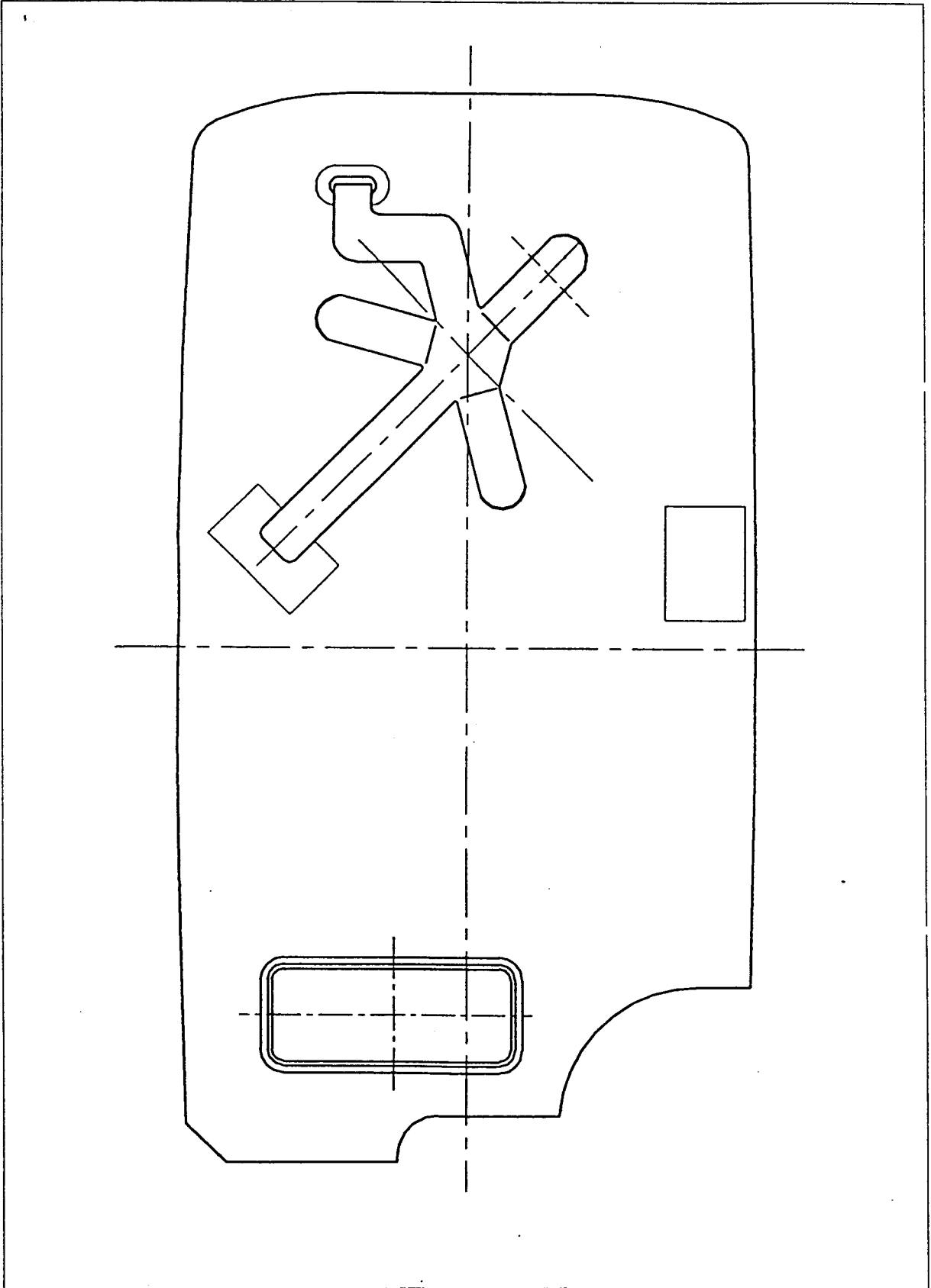


figure 6.2.2 Electrical Parts layout (back)

6.3 Printed circuit pattern

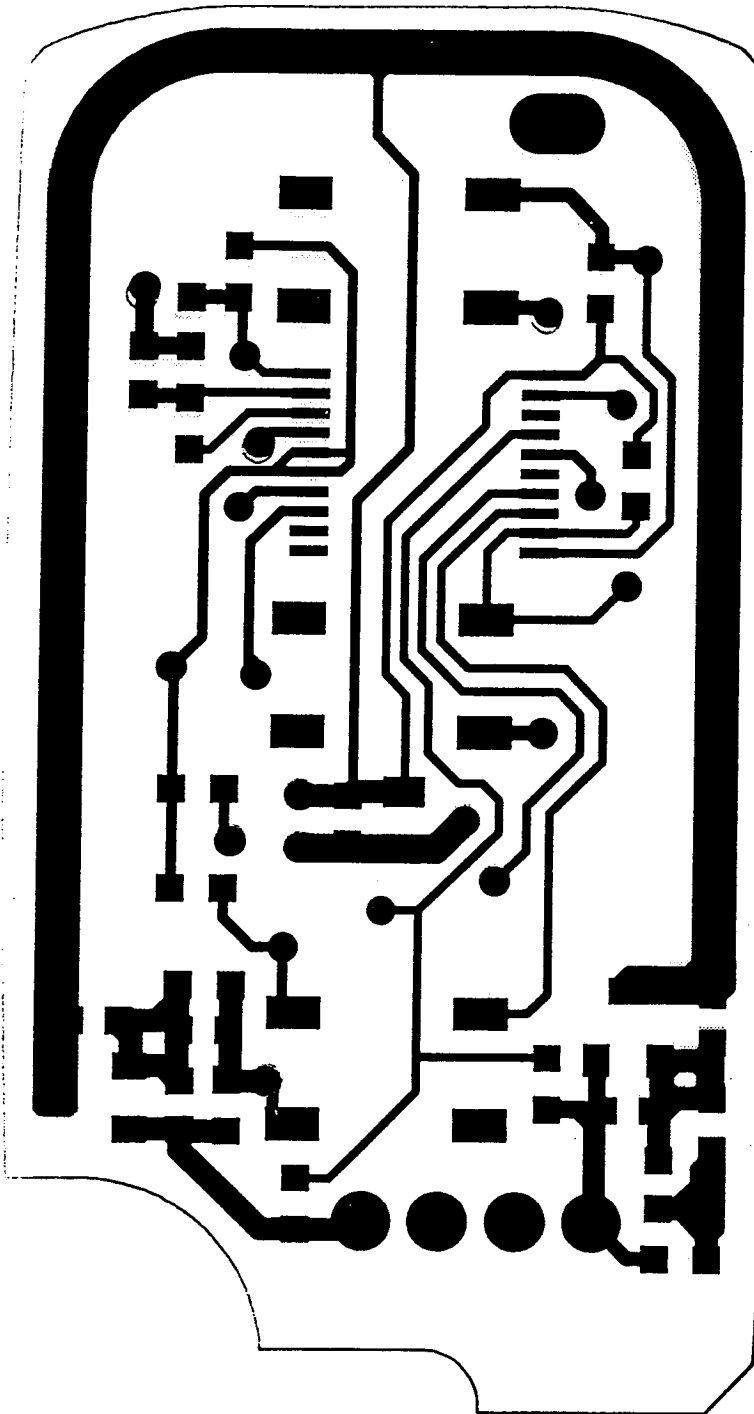


figure 6.3.1 Printed circuit pattern (front)

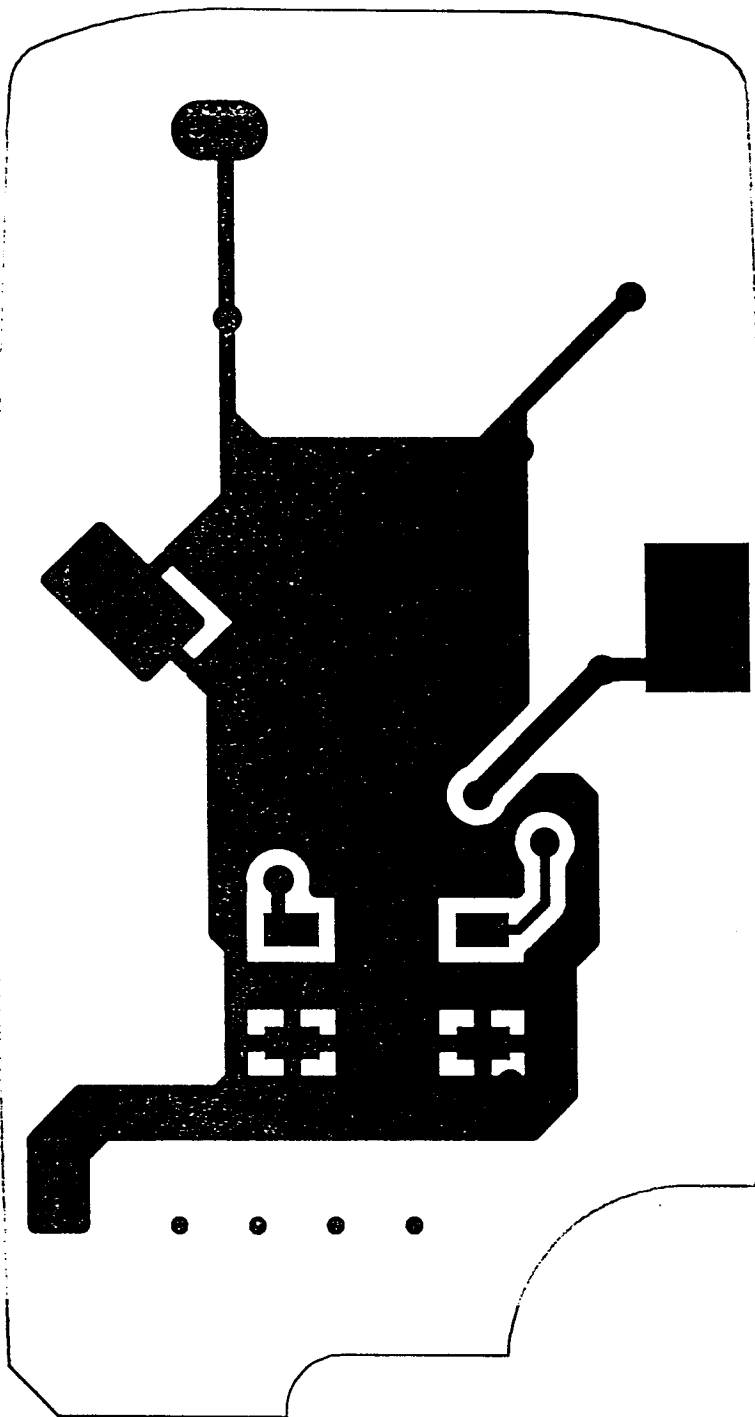


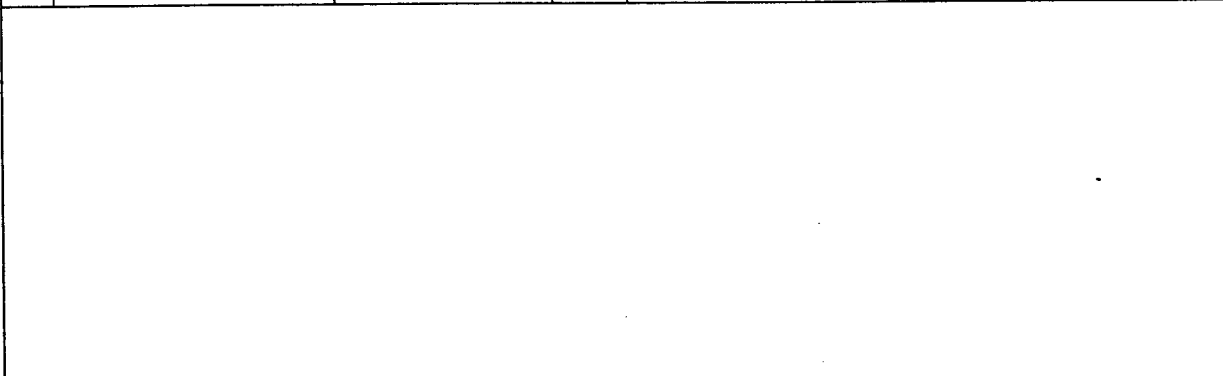
figure 6.3.2 Printed circuit pattern (back)

6.4 Parts List

No	PARTS NAME	MANUFACTURER	QTY	TYPE	SPECIFICATION	REMARK
1	PWB	SANWA	1	FCL-CEM318D208	t=0.8	
2	CPU	NEC	1	μPD754144GS	20PIN,VSOP	CPU1
3	SAW RESONATOR	MURATA	1	SAR315.00MB18X200		SAW1
4	TORANSISTOR	TOSHIBA	2	2SC3124(TE85L)		Q1,Q2
5	MULTI-LAYER CERAMIC CAPACITOR		1	CKM-L20FILE104Z-T2	0.1μF,25V	C1
6	↑		1	CKM-L16RIH103K-T2	0.01μF,50V	C2
7	↑		1	CCM-L16CHI101J-T2	100pF,50V	C3
8	↑		2	CCM-L16C11H030C-T2	3pF,50V	C4,C5
9	↑		2	CCM-L16CHI1220J-T2	22pF,50V	C6,C10
10	↑		2	CCM-L16CHI1080D-T2	8pF, 50V	C7,C9
11	↑		1	CCM-L16CHI102K-T2	1000pF,50V	C8
12	RESISTOR		1	RK16CAY47KJ-T1	47K,1/16W	R1
13	↑		1	RK16CBZ12KF-T1	12K,±1%	R2
14	↑		2	RK16CAY10KJ-T1	10K,1/16W	R3,R11
15	↑		1	RK16CAY5.6KJ-T1	5.6K,1/16W	R4,R12
16	↑		2	RK16CAY220J-T1	220Ω,1/16W	R5,R10
17	↑		3	RK16CAY100KJ-T1	100K,1/16W	R6,7,8
18	TACT SWITCH	ALPS	3	SKOGAD	260gf	SW1,2,3
19	CASE UPPER	TOYO	1	PC	BLACK	
20	CASE LOWER	↑	1	PC	↑	

					DESIGNED	CHECKED	APPLICATION TRANSMITTER PARTS LIST
					APPROVED	/	DWG No.
SYM	DATE	E/C CONTENTS	E/C No.	SIGN	SHEET No 1/2		DESIGN for G8D-522M-A

No	PARTS NAME	MANUFACTURER	QTY	TYPE	SPECIFICATION	REMARK
21	RUBBER	SHINETU POLYMER	1	KE961-U		
22	TERMINAL(+)	SYOUSHIN	1	C5210R-H	t=0.15	
23	TERMINAL(-)	↑	1	C5210R-H	t=0.15	
24	KEY RING	COLD PARTS	1	PBW		
25	BATTERY	MATUSHITA	1	CR2032		
26	KNOB LOCK	SANSYU MOLD	1	ABS	BLACK	
27	KNOB UNLOCK	↑	1	ABS	↑	
28	KNOB PANIC	↑	1	ABS	ORANGE	
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					DESIGNED	CHECKED	APPLICATION TRANSMITTER PARTS LIST
					APPROVED	/	DWG No.
							DESIGN for
SYM	DATE	E/C CONTENTS	E/C No.	SIGN	SHEET No 2/2		G8D-522M-A