FCC ID:OUCG8D-365M

G8D-365M

Receiver, Tire Pressure Monitoring System

Table of contents

1. Constitution of the Tire Pressure Monitoring System for vehicle..... 2
2. User's manual (provisionally) 3
3. Block diagram 4
4. Specification 5
5. Features 6
6. PCB
   6.1 Circuit diagram 7
   6.2 Parts layout (front)..... 8
   6.3 Pattern layout (front)..... 9
   6.4 Parts layout (back)..... 10
   6.4 Pattern layout (back)..... 11
   6.5 Parts list 12
7. Connector 16
8. Photographs 17

1. Constitution of the Tire Pressure Monitoring System for vehicle

Tire Pressure Monitoring System is the system that receives the information, from transmitters installed at each tire, about the inflation pressure or temperature of tires detected by the sensor, so that the system can detect the abnormality of tires like fallen inflation pressure. This system consists of transmitter, receiving antenna, and receiver. The transmitter sends information of tire, read by the sensor, in the form of radio wave at constant intervals. The receiver is fixed inside the vehicle. If IG is OFF, it works intermittently to prevent the battery exhaustion. When the receiver detects the synchronous code and IG is ON, it runs continuously to receive the signals completely. If the received code is normal, the system will not inform the user. As shown below, in the case that the transmitter sends information that the tire is in abnormal condition, and that the receiver system has a trouble, the system will inform the user with lighting up Warning bulb.

TPMS Warning bulb is lit by the following situations.
Bulb disconnection detection output（The warning light is On for 3 sec. when IG=OFF→ON）
Tire air pressure warning output (Warning light is ON)
System warning output (Warning light is blinking)

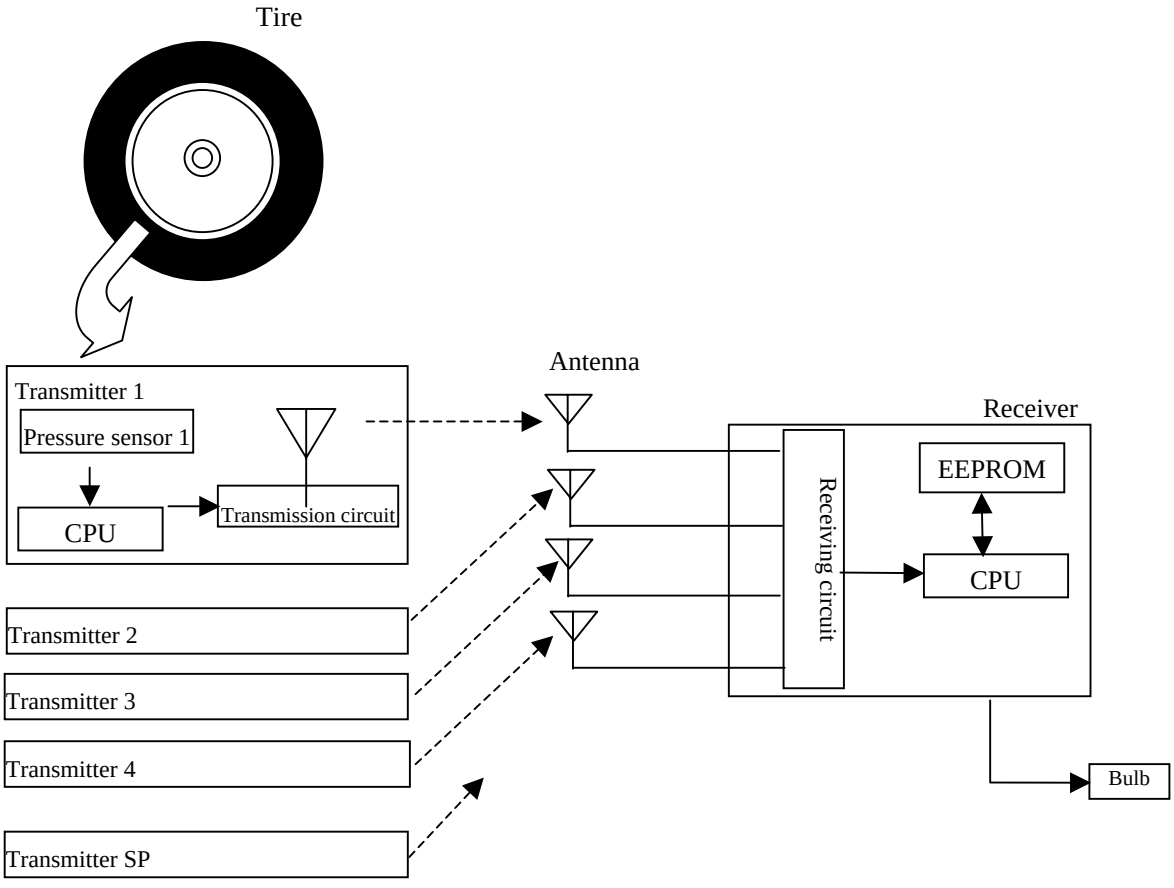
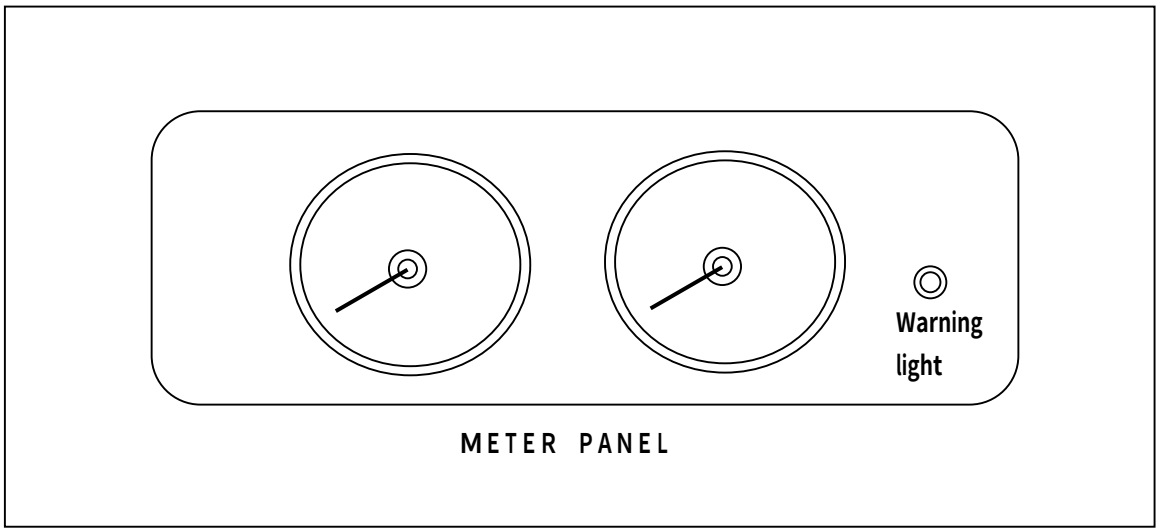


Figure 2-1 System Architecture

2. User's manual (provisionally)



Tire inflation pressure warning light

This light illuminates if the inflation pressure of any tire (except for compact spare tire) drops while the ignition key is in the "ON" position. It normally illuminates when the ignition key is turned to the "ON" position and goes off a few seconds later.

If the warning light illuminates while driving

Avoiding hard braking, hard steering, and high speeds, drive to the nearest gas station or authorize car dealer and adjust the tire inflation pressures.(except for compact spare tire)

If the warning light blinking while driving

It is thought abnormality of the device, go to the check to the nearest car dealer as soon as possible.

Whenever the tires and wheels are replaced with new ones

Tire inflation pressure sensors must be fitted on the new wheels and their ID codes must be programmed into the system. Have tire and wheel replacement performed by an authorized car dealer to avoid the risk of damaging the tire inflation pressure sensors.

CAUTION

- If the tire inflation pressure warning-light does not illuminate when the ignition key is turned to the "ON" position the system may be faulty.
- If the tire inflation pressure warning light illuminates while you are driving, avoid hard braking, hard steering, and high speeds. Otherwise, you could make the vehicle unstable and have a serious accident.
- The tire inflation pressure warning light may not illuminate immediately in the event of a tire blowout or rapid leak..

3. Block diagram

This is the block diagram concerning to the receiver.

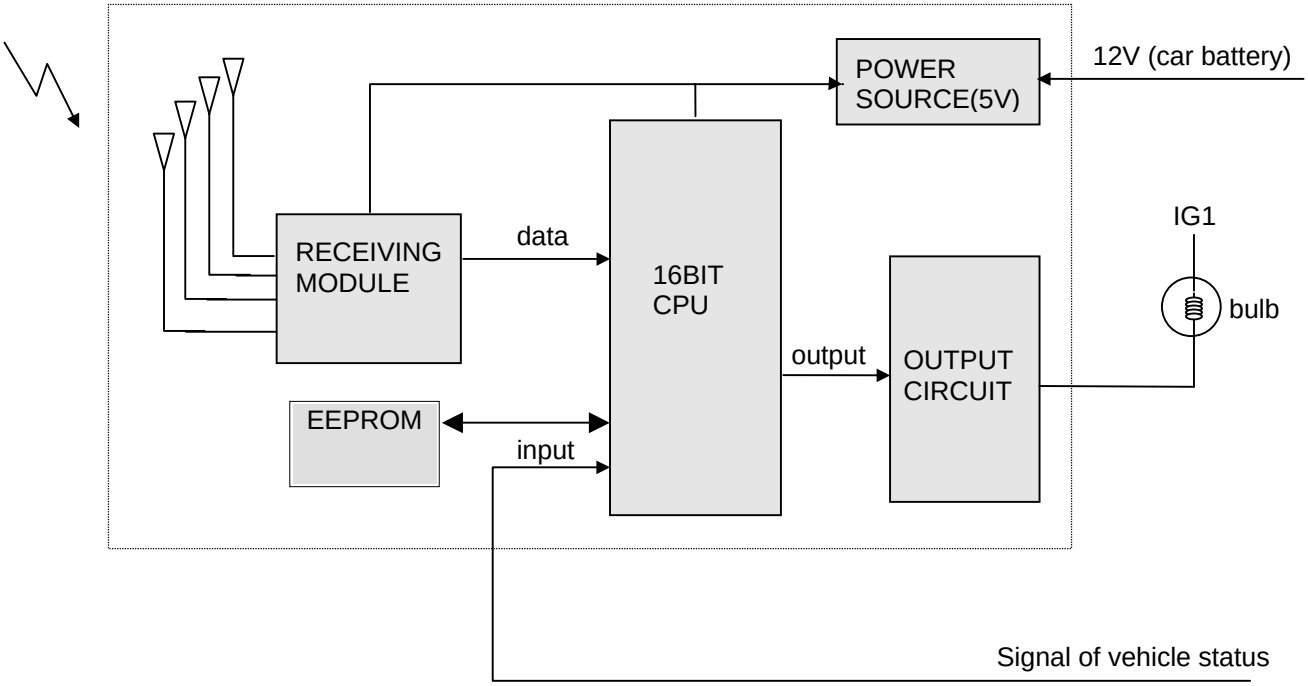


Figure 3.1 block diagram of the receiver

4. Specification

4.1 CPU

Type	M30102(16bit) Manufacturer: MITSUBISHI
ROM	24K bytes
RAM	1Kytes
Clock frequency	8.00MHz
Clock frequency generation	Crystal oscillator
Package	48pin QFP

4.2 RF block

Local clock frequency	325.7MHz
Frequency generation	Crystal resonator
Modulation	Single Superheterodyne
Bandwidth	±200KHz
Sensitivity	30dBuV

4.3 Others

Dimension	83mm×64mm×31mm
Weight	120g
Battery	Car Battery (DC 12V)
Operation Voltage	DC 12V, 20mA
Operation temperature	-30℃ ~ +80℃

5. Features

Battery saving

The receiver works intermittently to reduce the battery consumption. The microcomupter embedded on the receiver controlls the power supply for the RF circuit. In case of the microcomputer detects the wake-up signal during the power supplied, the microcomputer continue supplying the power until the data frame will be received.

6. PCB

6.1 Circuit diagram

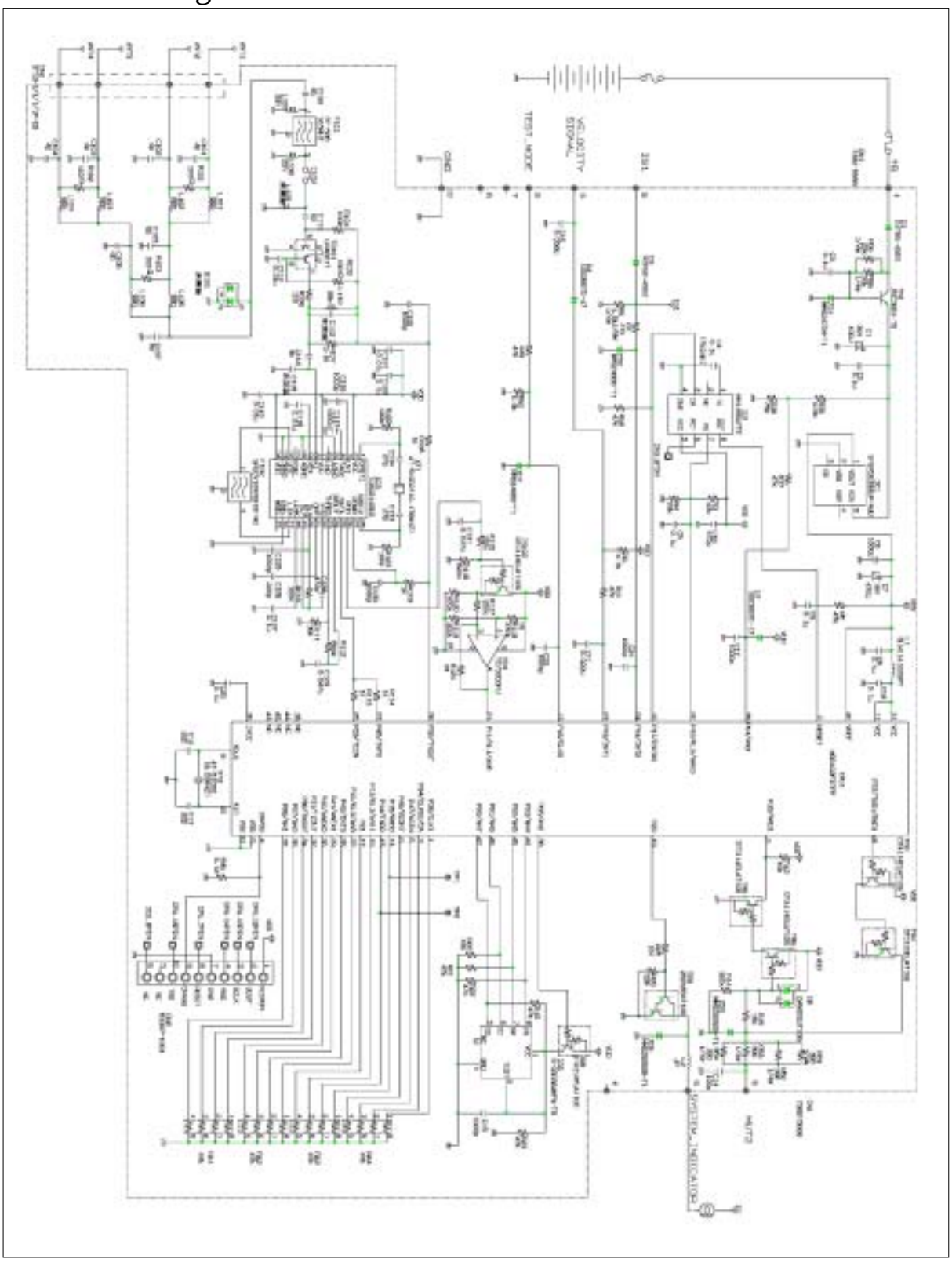


Figure 6.1 Circuit diagrams

6.2 Parts layout (front)

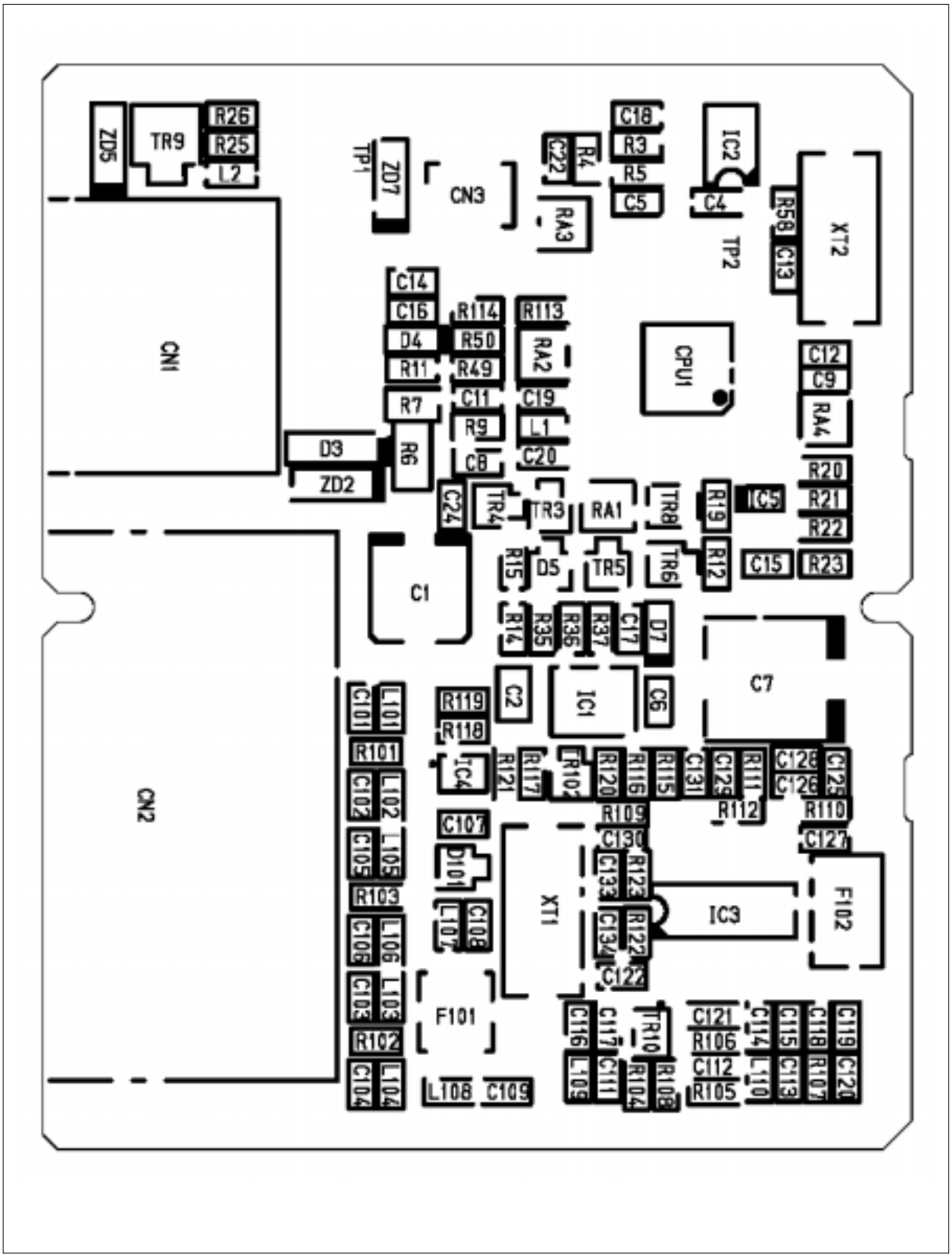


Figure 6.2 Parts layout (front)

6.3 Pattern layout (front)

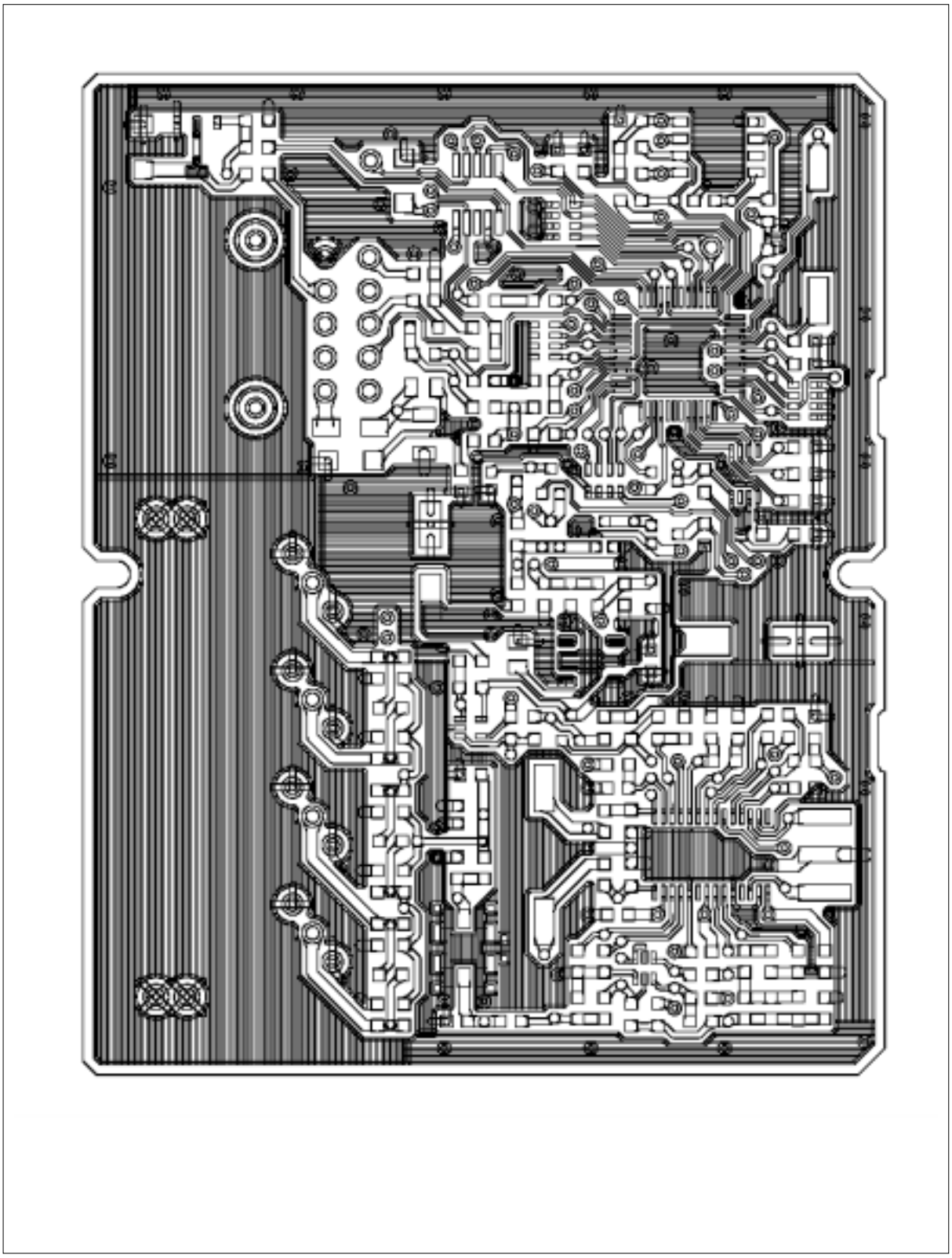
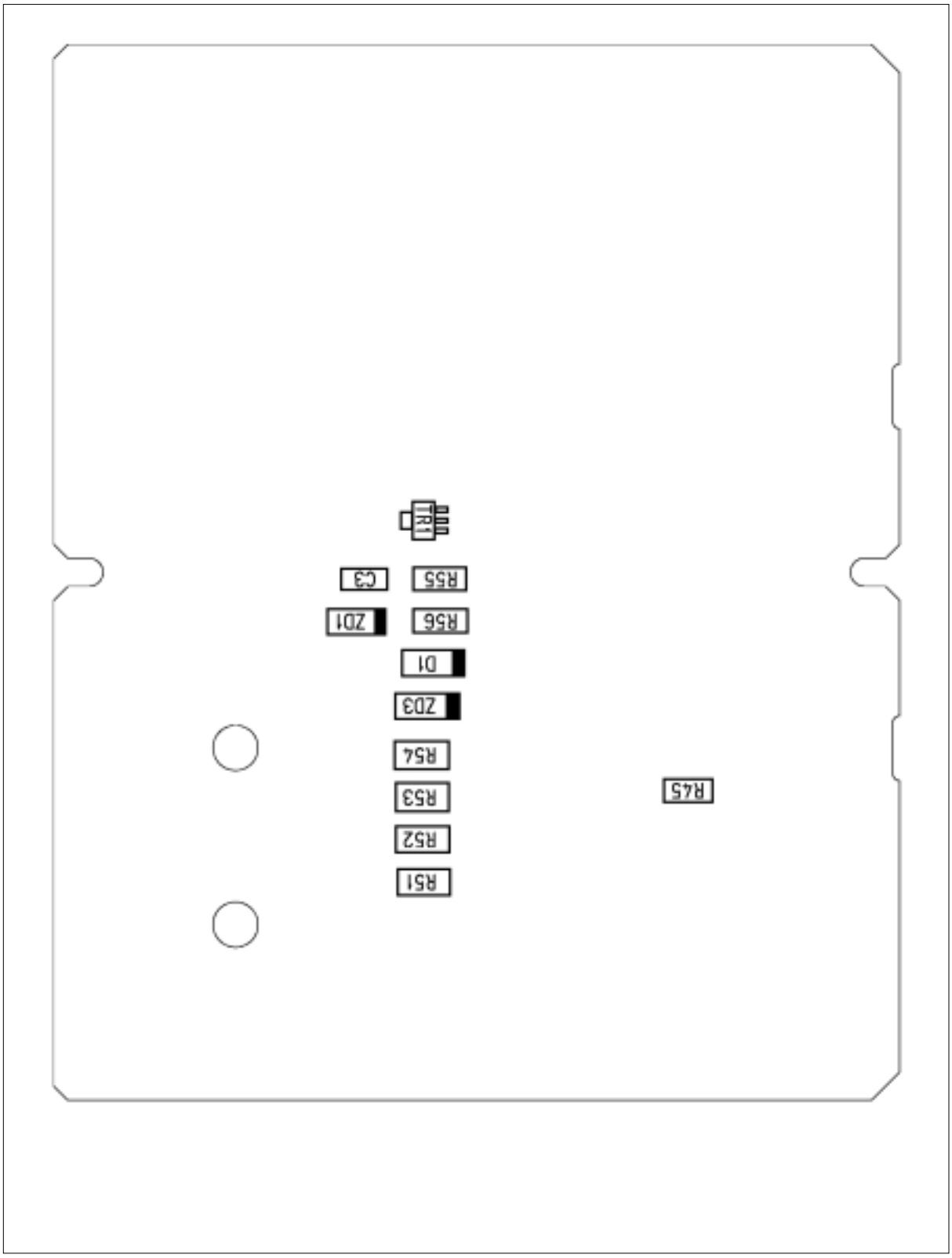


Figure 6.3 Pattern layout (front)

6.4 Parts layout (back)



6.5 Pattern layout (back)

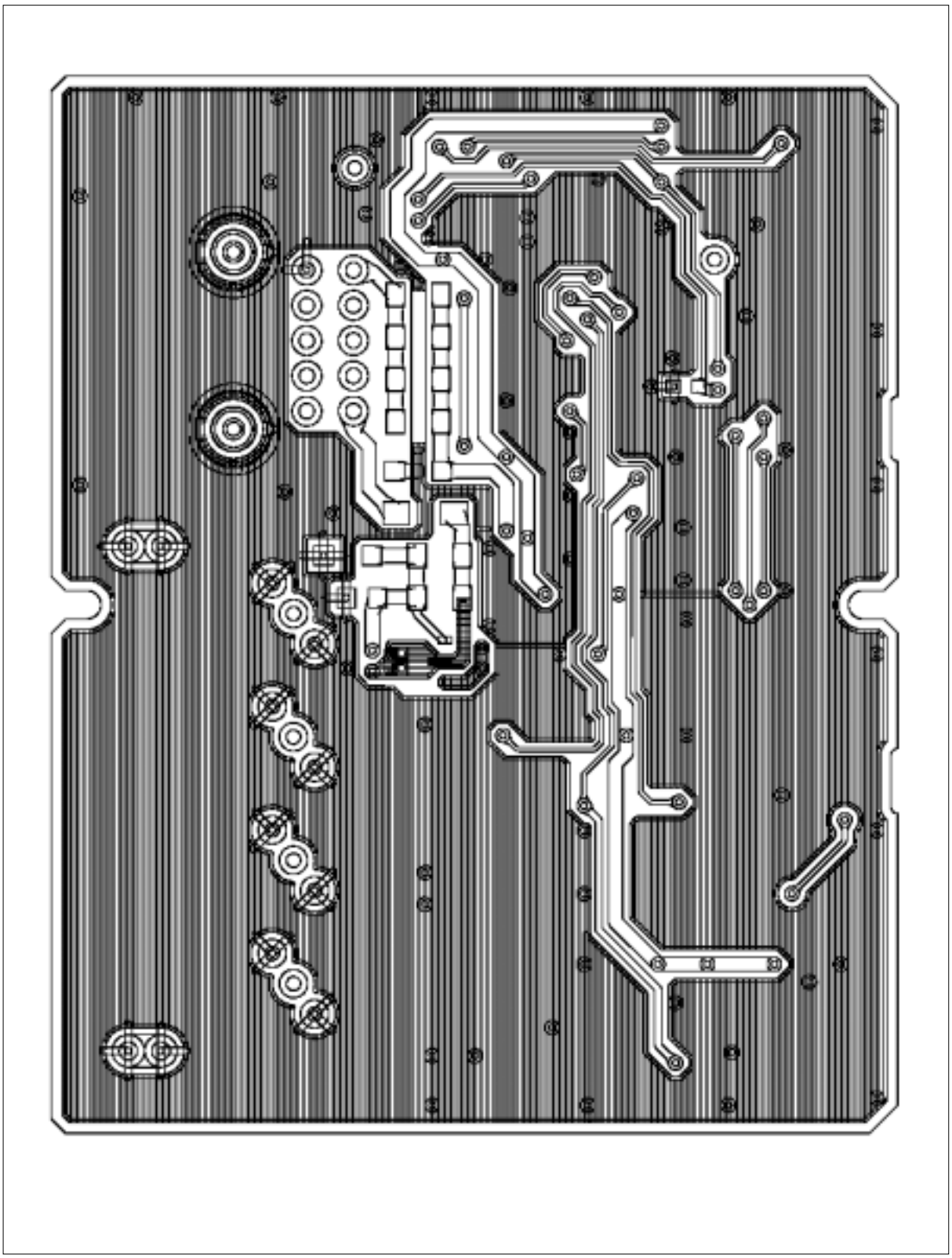


Figure 6.4 pattern layout (back)

6.6 Parts List

№	PART NAME	MANUFACTURE	QTY	TYPE	SPECIFICATION	REMARKS
1	CPU	Mitsubishi	1	M30102F3TFP		CPU1
2	Regulator IC	SEIKO Ins	1	S-875039BUP-ABD-T2		IC1
3	EEPROM IC	SEIKO Ins	1	S-93C66AMFN-TB	4K	IC5
4	OP-AMP	TOSHIBA	1	TC75S55FU-TE85L		IC4
5	Reception IC	Infinion technologies	1	TDA5211GEG		IC3
6	Reset IC	Mitsumi	1	MM1185AFFE		IC2
7	Resistor array	KOA	4	CN1J4TTD473J	47k	RA1,RA2,RA3,RA4
8	Chip resistor	*	5	RK16CAY100J-T1	100	R106,R101,R102, R103,R105
9	Chip resistor	*	6	RK16CAY100KJ-T1	100k	R104,R110,R115, R117,R122,R123
10	Chip resistor	*	2	RK16CAY10KJ-T1	10k	R12,R25
11	Chip resistor	*	1	RK16CAY160KJ-T1	160k	R14
12	Chip resistor	*	4	RK16CAY1KJ-T1	1k	R108,R109,R113, R114
13	Chip resistor	*	1	RK16CAY1MJ-T1	1M	R121
14	Chip resistor	*	1	RK16CAY15KJ-T1	15k	R15
15	Chip resistor	*	2	RK16CAY22KJ-T1	22k	R4,R26
16	Chip resistor	Matsushita	1	ERJ3EKF3303V	330k	R118
17	Chip resistor	*	1	RK16CAY39KJ-T1	39k	R111
18	Chip resistor	*	1	RK16CAY4.7KJ-T1	4.7k	R9
19	Chip resistor	*	2	RK16CAY470KJ-T1	470k	R35,R120
20	Chip resistor	*	11	RK16CAY47KJ-T1	47k	R3,R5,R11,R19,R20, R21,R22,R23,R37, R49,R58
21	Chip resistor	*	2	RK16CAY5.1KJ-T1	5.1k	R45,R107
22	Chip resistor	*	1	RK16CAY5.6KJ-T1	5.6k	R50
23	Chip resistor	*	1	RK16CAY560KJ-T1	560k	R112

№	PART NAME	MANUFACTURE	QTY	TYPE	SPECIFICATION	REMARKS
24	Chip resistor	*	1	RK16CAY75KJ-T1	75k	R36
25	Chip resistor	*	1	RK16CAY820KJ-T1	820k	R116
26	Chip resistor	*	1	RK32CAY1.5KJ-T1	1.5k	R6
27	Chip resistor	*	2	RK32CAY22KJ-T1	22k	R55,R56
28	Chip resistor	*	4	RK32CAY390J-T1	390	R51,R52,R53,R54
29	Multi-layer ceramic capacitor	Murata	1	GRK39CH101J50PT	100p	C14
30	Multi-layer ceramic capacitor	Murata	1	GRK39CH221J50PT	220p	C126
31	Multi-layer ceramic capacitor	Murata	2	GRK39CH270J50PT	27p	C133,C134
32	Multi-layer ceramic capacitor	Murata	4	GRK39R103K50PT	0.01u	C112,118,119,C121
33	Multi-layer ceramic capacitor	Murata	2	GRK39CH471J50PT	470p	C18,C128
34	Multi-layer ceramic capacitor	Murata	4	GRK39CH040C50PT	4p	C101,C102,C103, C104,
35	Multi-layer ceramic capacitor	Murata	4	GRK39CH080D50PT	8p	C105,C106,C107, C108
36	Multi-layer ceramic capacitor	Murata	2	GRK39CH220J50PT	22p	C12,C13
37	Multi-layer ceramic capacitor	Murata	9	GRK39R102K50PT	1000p	C6,C15,C17,C22,C24 C116,C117,C120, C130
38	Multi-layer ceramic capacitor	Murata	2	GRK40R104K50PT	0.1u	C2,C3
39	Multi-layer ceramic capacitor	Murata	8	GRK39R104K16PT	0.1u	C4,C5,C8,C9,C19, C20,C122,C127
40	Multi-layer ceramic capacitor	Murata	1	GRK39R223K50PT	0.022u	C11
41	Multi-layer ceramic capacitor	Murata	2	GRK39R473K25PT	0.047u	C129,C131
42	Multi-layer ceramic capacitor	Murata	1	GRK39R683K16PT	0.068u	C16
43	Multi-layer ceramic capacitor	Murata	1	GRK39R472K50PT	4700p	C125
44	Electrolytic capacitor	Nihon Chemikon	1	MVA35VC100MF80	100U	C1
45	Electrolytic capacitor	Nihon Chemikon	1	MVA16VC470MH10	470U	C7
46	Diode	Rohm	2	1SS355TE-17		D4,D7
47	Diode	Shindengen	1	D1F60-4063		D1

№	PART NAME	MANUFACTURE	QTY	TYPE	SPECIFICATION	REMARKS
48	Diode	Rohm	1	DAN202UT106		D5
49	Diode	Shindengen	1	M1F60-4063		D3
50	Transistor	Sanyo	1	2SC3651-TD		TR1
51	Transistor	Rohm	1	2SD1834T100		TR9
52	Digital transistor	Rohm	2	DTA114EUAT106		TR3,TR5
53	Digital transistor	Rohm	1	DTA114YUAT106		TR8
54	Digital transistor	Rohm	2	DTC114EUAT106		TR6,TR102
55	Digital transistor	Rohm	1	DTC123EUAT106		TR4
56	Transistor	NEC	1	uPA801T-T1		TR101
57	Zener diode	ONSEMICONDUCTOR	2	MMSZ4689-T1		ZD2,ZD7
58	Zener diode	ONSEMICONDUCTOR	1	MMSZ4704-T1		ZD1
59	Zener diode	ONSEMICONDUCTOR	2	MMSZ5252B-T1		ZD3,ZD5
60	SAW filter	Seiko Epson	1	FF-585	315MHZ	F101
61	Ceramic filter	Murata	1	SFECV10M7DF00-R0		F102
62	Inductor	Murata	2	LQP11A33NG00	33n	L107,L108
63	Inductor	Murata	7	LQP11A68NG00	68n	L101,L102.L103, L104,L105,L106, L110
64	Ferrite beads	Murata	1	BLM11A102SPT		L1
65	Crystal oscillator	Japan Radio	1	AT-51CD2	(8.00MHZ)	XT2
66	Crystal oscillator	Japan Radio	1	AT-51CD2	(10.176MHZ)	XT1
67	Connector	Yazaki	1	7382-5668		CN1
68	Connector	Hirose	1	GT13-1/1/1/1P-DS	4p	CN2
69	Connector	Molex	1	53307-1091	10p	CN3
70	Tapping screw		2	SWCH MFSN-PB	M3×6	Screw for CN1
71	PWB		1	CEM3		

№	PART NAME	MANUFACTURE	QTY	TYPE	SPECIFICATION	REMARKS
72	Label		1			
73	Case		1			
74	Cover		1			
75	Bracket		1	SECC		
76	ELEP coat					
77	Chip resistor	*	1	RK16CAY00-T1	0	C109
78	Multi-layer ceramic capacitor	Murata	1	GRK39CH060D50	6p	C111
79	Multi-layer ceramic capacitor	Murata	1	GRK39CJ030C50	3p	C114
80	Chip resistor	Matsushita	1	ERJ6GEYJ473V	47k	R7
81	Chip resistor	Matsushita	1	ERJ3EKF1603V	160k	R119

7. Connector

This is the pin assignment of the connector.

No.	I/O	Assignment	Memorandum
1	INPUT	Battery	12V
2	INPUT	TEST MODE	Active High
3	INPUT	Velocity Signal	
4		(not used)	
5	IN／OUT	K-line	Communication Line
6	INPUT	Ignition switch	Active High
7		(not used)	
8		(not used)	
9	OUTPUT	Indicator	Active Low
10		Ground	GND

8. Photographs

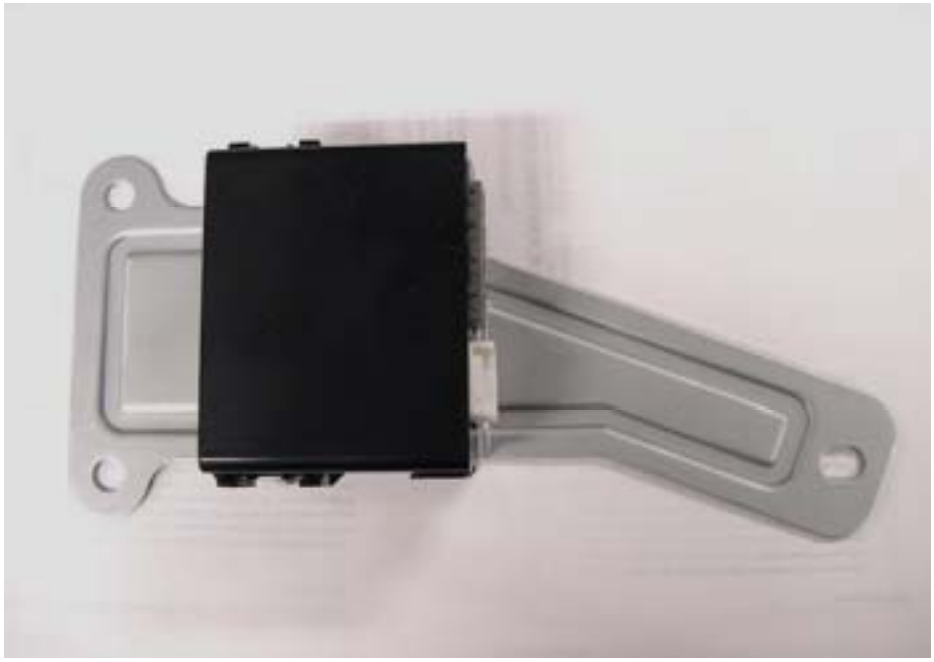


Figure 8.1 appearance (front view)

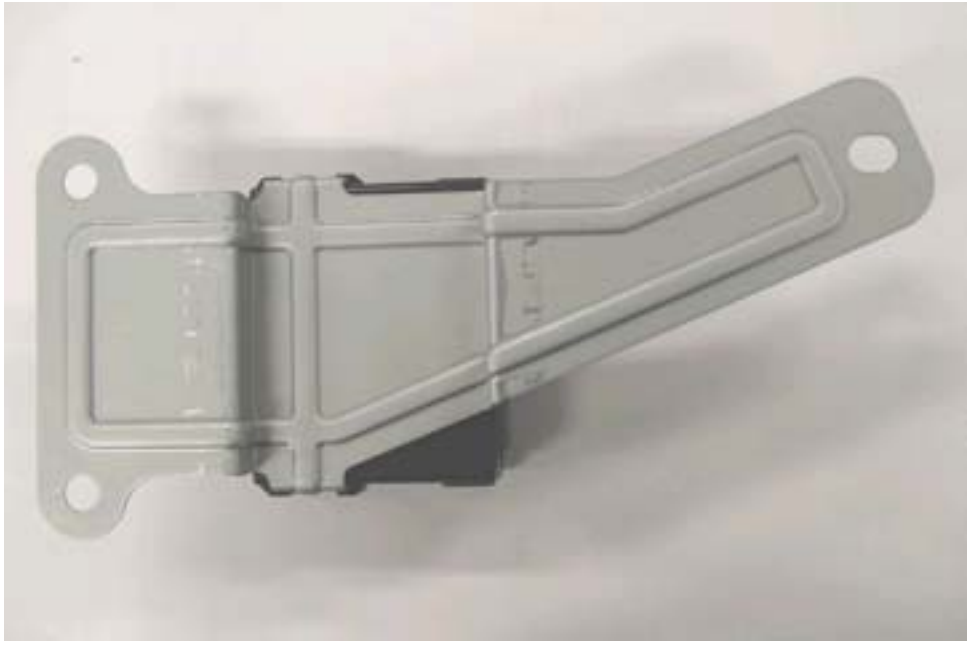


Figure 8.2 appearance (back view)

Figure 8.3 PCB assy (front view)

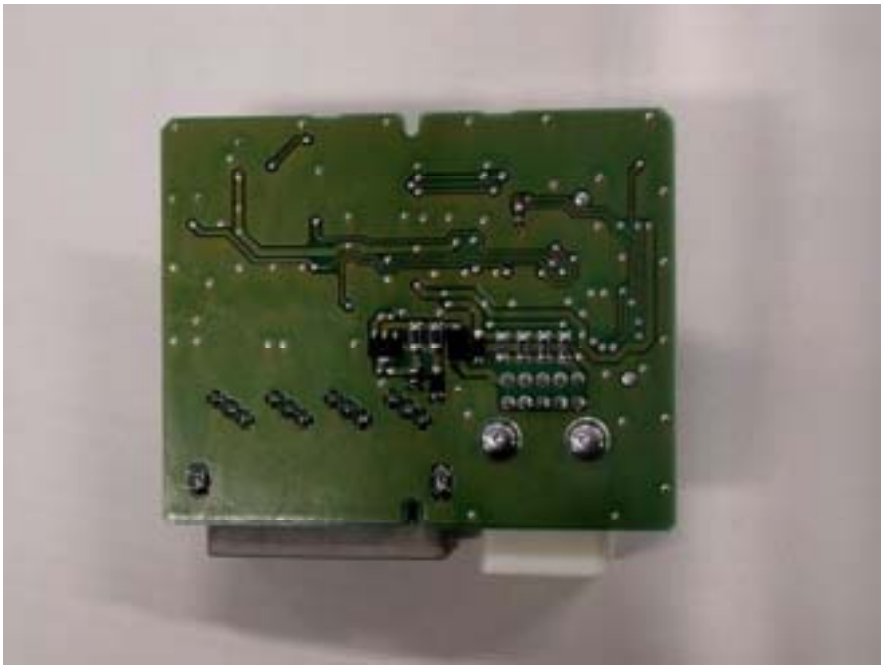


Figure 8.4 PCB assy (back view)

1. For USA

This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

2. For Canada

This device complies with Industry Canada Standard RSS-210.
Operation is subject to the following two conditions:
(1) this device may not cause interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of the device

The term "IC:" before the certification/registration number only signifies that the Industry Canada technical specifications were met.