TM-2540R
TM-2541R

Automatic Blood Pressure Monitor

MAINTENANCE MANUAL

A&D Company, Limited

WM:PD4000017

Contents

1. Introduction

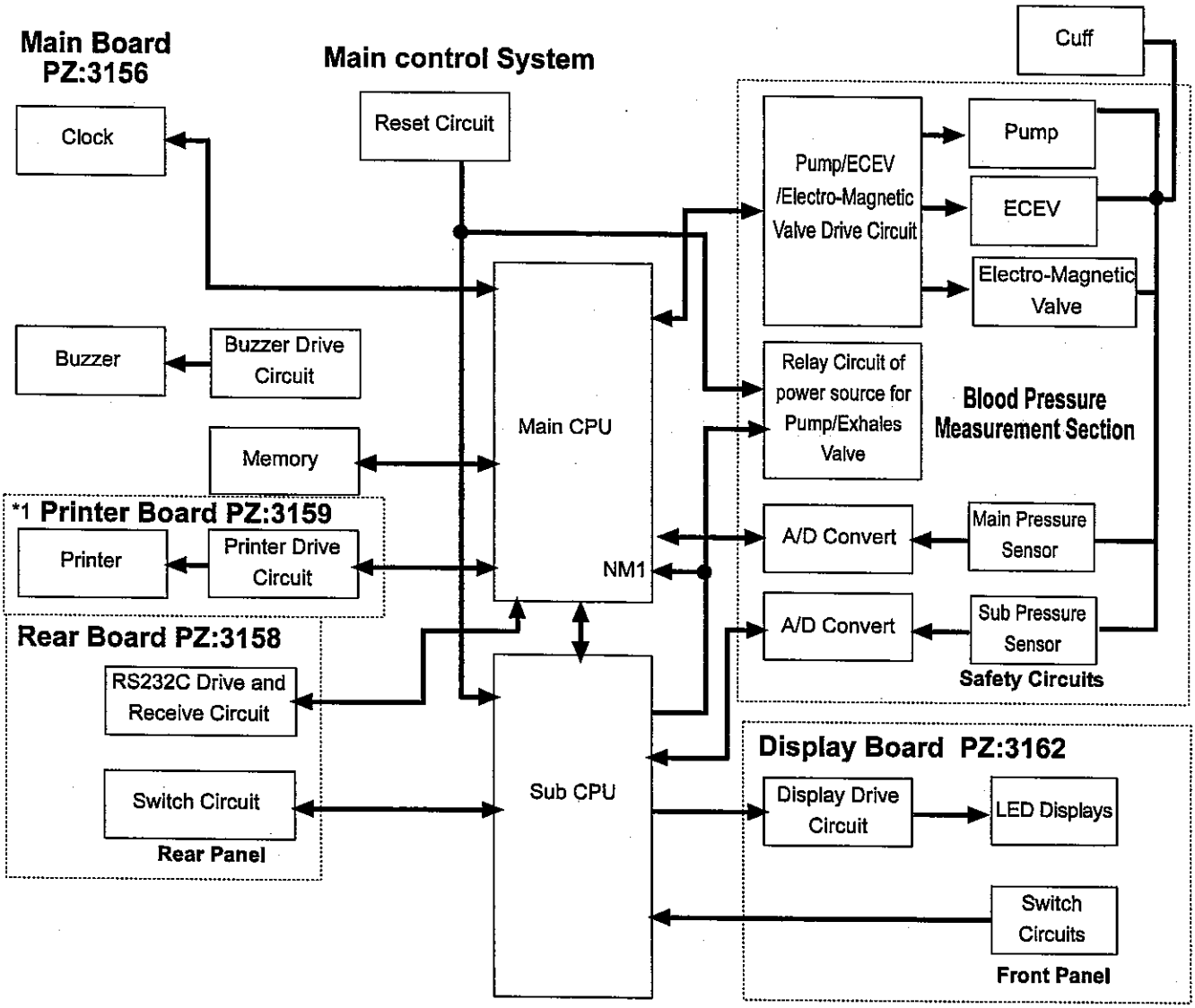
1 - 1 About this manual

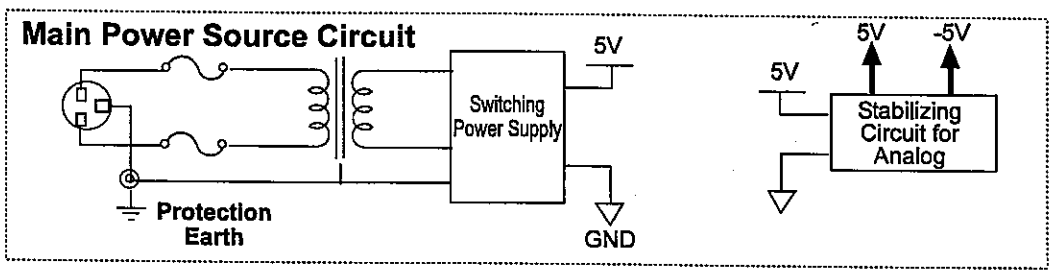
This maintenance manual is to be used by qualified service personnel only. Please note that the specifications in this manual are different from those of the product when shipped.

1 - 2 List of tools used

1. Multimeter: DC voltage= 20V max. (Resolution=1mV)
   DC current= 300mA max.(Resolution=1uA)
2. Manometer: 0 to 330 mmHg
3. Pressure generator: 0 to 330 mmHg
4. 500-cc tank
5. Air hose plug for inspection
6. Air hose
7. Artificial limb with soft surface
8. Power source for board checking DC 5V
9. Cables for board checking between power source and board

2. Block Diagram





*1:TM2541R only

This device is composed of the main power source circuit, the main control system section and blood pressure measurement section.

The main CPU in the main control system controls the blood pressure measurement circuit and determines the blood pressure.

The main CPU outputs the measurement data to the display block, the printer block, and the external communication block. The blood pressure is measured according to the following procedures. The cuff is pressurized to a fixed pressure and the CPU controls deflation speed afterwards. The main CPU extracts the pulse of pressure in the cuff under deflation with the pressure sensor and determines the blood pressure from the trend pattern of obtained pulse pressures.

The description of each blocks

(1) Main power source circuit block

The block is composed of an AC inlet, fuses, a main power switch, a switching power supply and a DC/DC converter. The switching power supply outputs DC 5V and DC/DC converter outputs ± 5V for analog circuits.

(2) Main control system block

The block includes main CPU, 2Mbit Flash memory, 256Kbit SRAM, Reset circuit, clock and sub CPU. The main CPU(H8/510) controls all systems. Reset circuit is used to monitor the voltage of power source to prevent an abnormal operation in the system. The clock circuit transmits clock data to the main CPU. The SRAM and the clock circuit are supported by a backup Lithium battery. The sub CPU(TMP47P860DF) controls the safety circuit. When a cuff pressure is over 330 mmHg for adult or 165 mmHg for neonate, then the CPU makes the electro-magnetic valve to be open and to release the cuff pressure.

The CPU controls the display block and the switch circuit on the front panel. CPU controls followings for safety.

Automatic inflation control

The maximum inflation value is 300mmHg for adult or 150 mmHg for neonate and automatic rapid air release is taking place if pressure exceeds 320mmHg for adult or 160 mmHg for neonate.

Automatic exhaust control

Measurement time is limited at 90 seconds. Air release process will occur if the time exceeds 90 seconds.

Automatic measurement control

If a measurement error is occurred, re-measurement is started after about 5 seconds. The total measurement time is limited at 180 seconds.

Minimum interval setting is one minute. But next measurement is made minimum 30 seconds

after the completion of previous measurement.

(3) Blood pressure measurement section

- **A/D Conversion Block**

The pressure in cuff is converted into electric signal by semiconductor type pressure sensors. The signals are amplified and converted to digital signals by each A/D conversion circuits.

Cuff pressure inflation/deflation blocks

Pressurization:

Pressurization is done with built-in micro pump. The micro pump drive is controlled by the main CPU through the driving circuit.

Depressurization:

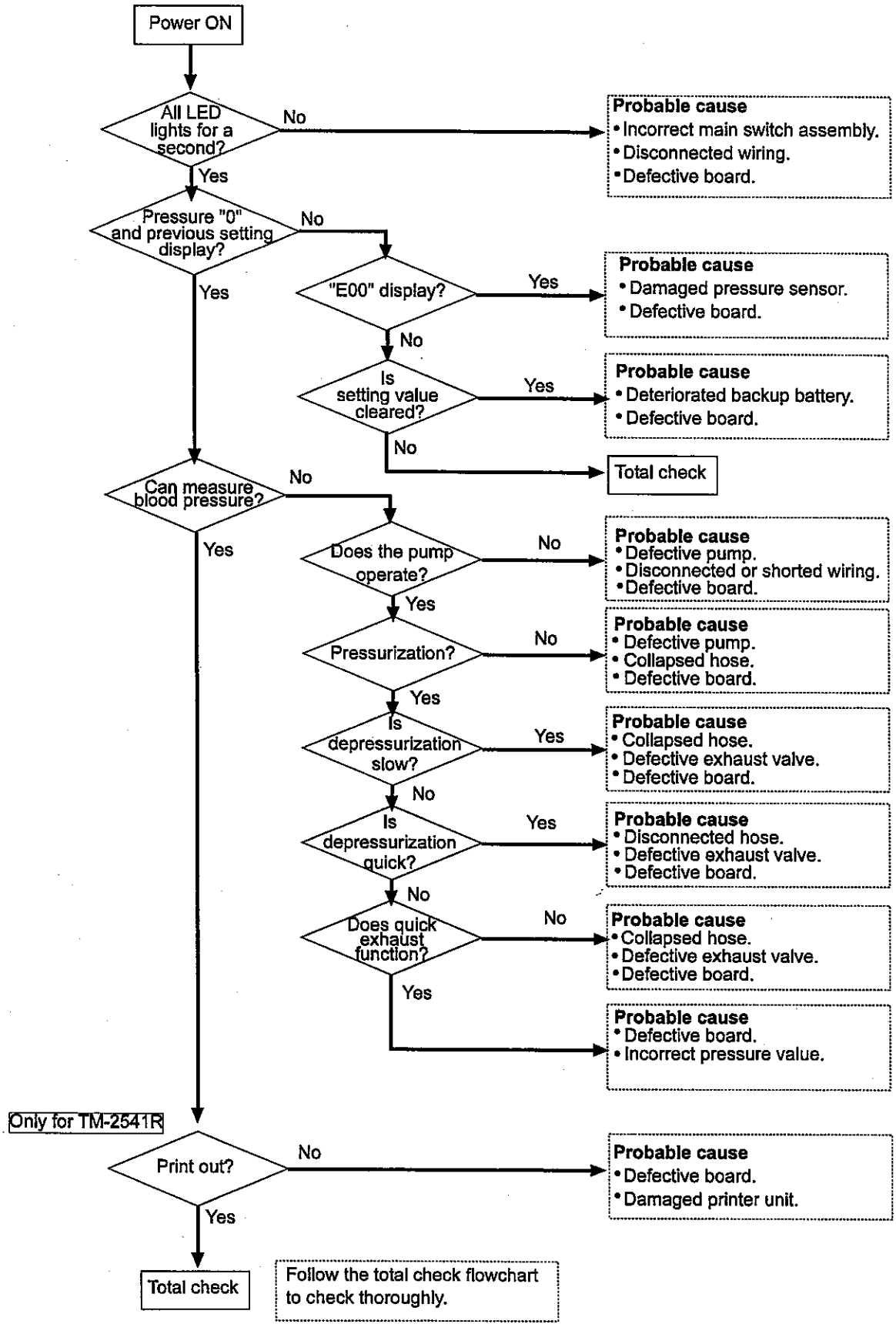
Depressurization is made by the electro-ceramic exhaust valve(ECEV). The main CPU calculates exhaust speed and maintain exhaust speed by adjusting the clearance of valve via controlling voltage of its driven circuit. The valve is kept open position while measurement is not in place.

Air release:

Air release(rapid air exhaust) is performed by the electro-magnetic valve. While blood pressure measurement, the valve is closed by the main CPU. In the case of power off, the valve becomes to be open.

3. Flowchart

3-1 Diagnosis flowchart



3-2 Items to be checked

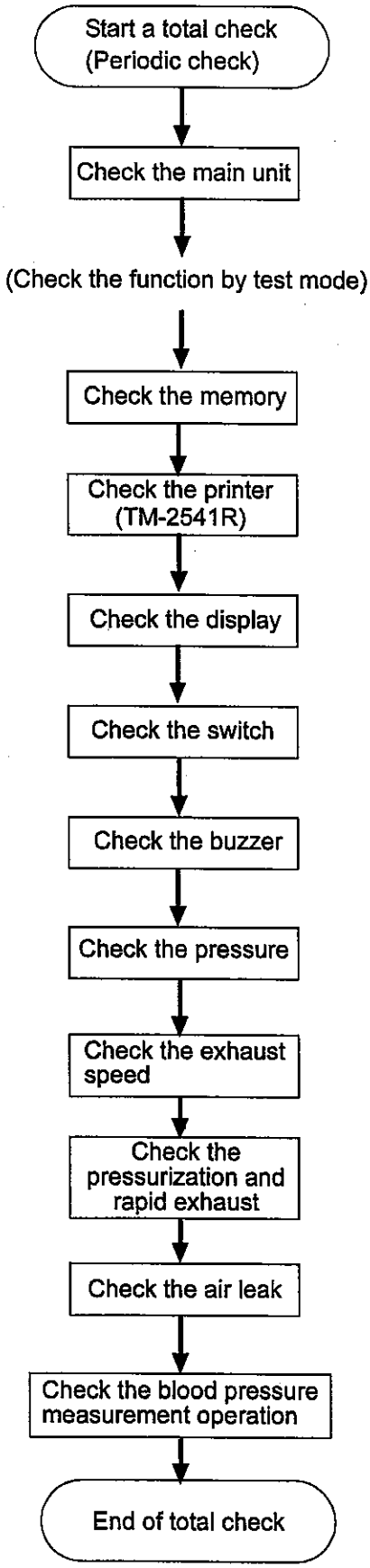
Problem	Remedy
No display	• Check the fuse. • Check the main power switch assembly. • Check the voltage of switching power supply
Incorrect display	• Check the board voltage. • Check the LED for any damage. • Check the pressure sensor.
The keys do not function	• Check the wiring between the main PCB and the rear PCB. • Check the switch contact for continuity.
The back-up battery do not last long	• Check the consumption current.
No pressurization	• Check for collapsed or disconnected hose. • Check the pump. • Check the exhaust valve wiring. • Check for air leakage.
Incorrect pressurization	• Check for collapsed or disconnected hose. Check the exhaust valve wiring. • Check for air leakage • Check the constant exhaust speed.

Caution on assembly

- Due to the compactness of the TM2540R/41R portable bedside monitor, much care is required for connecting internal tubing and wiring. Especially, use care when installing the exhaust valve.

- When the monitor is opened and repaired, close the case and be sure to follow "3-3 total check flow chart" to check the monitor.

3-3 Total check flowchart



4. Test Procedure

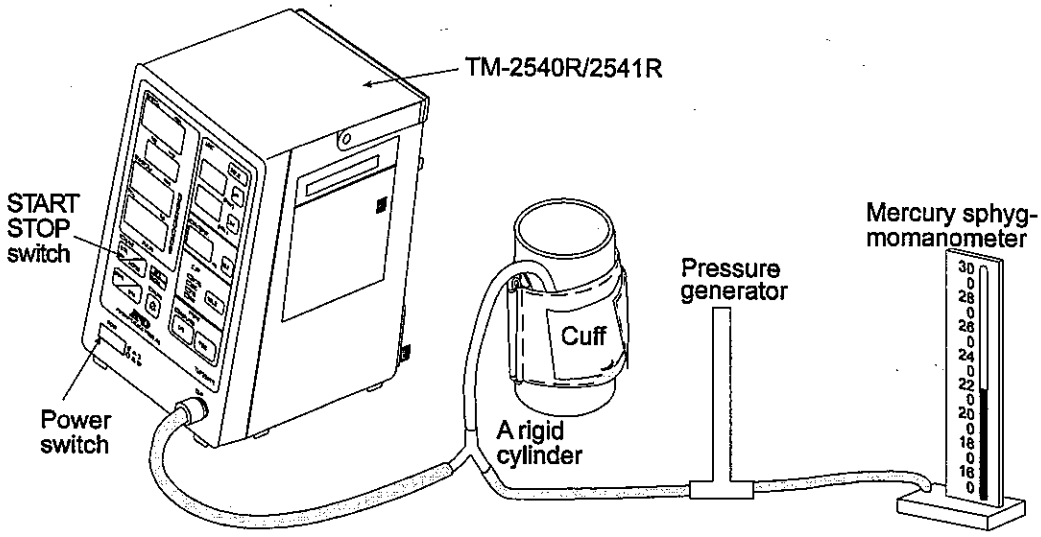


Fig.1 Pressure Accuracy Check Chart

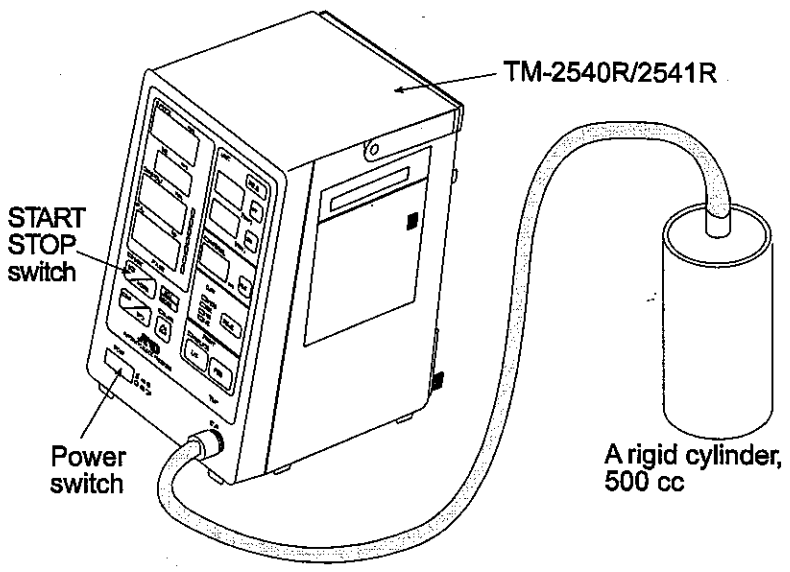


Fig.2 Air Check Chart

<table>
<tr><th></th><th>Check process</th><th>Contents of Inspection</th></tr>
<tr><td>(1)</td><td>Board Check</td><td>
1. Over view check
・Make sure the main board, display board, rear board and printer board to all parts mounting should be a correct.
2. Voltages check
・Set the DC power supply voltage to 5.5±0.1V.
・Connect the power source cable to the main board and check the voltages of each test points within specification.
TP18 : GND
TP19 : 4.50～5.50V
TP24 : 4.75～5.25V
TP5 : -4.75～-5.25V
TP15 : 3.90～4.10V
・Set the DC power supply "OFF".
Check the voltage of TP1.
TP1 : larger than 3.0V
</td></tr>
<tr><td>(2)</td><td>Basic Function Check</td><td>
1. Function check
・While holding down the interval setting switch, press the [POWER] switch.
"L00" appears in the systolic blood pressure display.
・Check the memory test (RAM).
Press the alarm off switch until "L02" appears. Press the [START/STOP] switch. Make sure to the mean blood pressure display should be "000".
・Check the printer function. (TM-2541R only)
Press the alarm off switch and "L03" appears. Press the [START/STOP] switch. Make sure that the printing result is correct.
・Check the display function
Press the alarm off switch and "L04" appears. Press the [START/STOP] switch. Make sure that all display is good.
・Check the switch function
Press the alarm off switch and "L06" appears. Press the [START/STOP] switch.
When each switch is pressed, make sure the next number is displayed on the mean blood pressure, diastolic blood pressure and pulse rate displays.
<table>
<tr><th>Switch</th><th>Mean BP</th><th>Slide Switch</th><th>Dia BP</th><th>Pulse</th></tr>
<tr><td>[STAT/NORMAL]</td><td>1</td><td>Display/sound</td><td></td><td></td></tr>
<tr><td>[START/STOP]</td><td>2</td><td>[on/on]</td><td>d1</td><td></td></tr>
<tr><td>[ALARM OFF]</td><td>3</td><td>[on/on]</td><td>d2</td><td></td></tr>
<tr><td>[LIMIT SELECT]</td><td>4</td><td>[off/off]</td><td>d3</td><td></td></tr>
<tr><td>[UPPER]</td><td>5</td><td>Auto print</td><td></td><td></td></tr>
<tr><td>[LOWER]</td><td>6</td><td>[off]</td><td></td><td>P1</td></tr>
<tr><td>[INTERVAL SELECT]</td><td>7</td><td>[LIST]</td><td></td><td>P2</td></tr>
<tr><td>[CUFF PRESS.SELECT]</td><td>8</td><td>[GRAPH]</td><td></td><td>P3</td></tr>
<tr><td>[FEED]</td><td>9</td><td>[TREND]</td><td></td><td>P4</td></tr>
<tr><td>[LIST]</td><td>10</td><td>[PATIENT]</td><td></td><td></td></tr>
<tr><td>[CLOCK SELECT]</td><td>11</td><td>[ADULT]</td><td></td><td>ADULT LED</td></tr>
<tr><td>[CLOCK SET]</td><td>12</td><td>[NEONATE]</td><td></td><td>NEONATE LED</td></tr>
</table>
Press the alarm off switch twice.
・Check the alarm function
Press the alarm off switch and "L08" appears. Press the [START/STOP] switch.
Make sure that the buzzer sound is normal.
</td></tr>
</table>

	Check process	Contents of Inspection
(3)	Pressure Accuracy Check	· Set the reference manometer, pressure generator and the cuff. · In the test mode, press the alarm off switch until "L11" appears. Press the [START/STOP] switch. The pressure value is displayed in the "MEAN" display part. · At the pressures of 150 and 300 mmHg, make sure that the pressure accuracy is within ±3mmHg.
(4)	Air Check	· Set the 500cc tank. **1. Constant exhaust check** · In the test mode, press the alarm off switch until "L14" appears. Press the [START/STOP] switch. · After constant exhausting, the "DIASTOLIC" display value should be 5.0±1.5mmHg/second. **2. Inflation and quick exhaust time check** · Press the alarm off switch until "L15" appears. Press the [START/STOP] switch. · Inflate air pressure up to 300 mmHg, do the quick exhaust after waiting several times. · After quick exhausting, check to the "MEAN" display should be less than 10 seconds when the inflation is up to 300 mmHg and the "DIASTOLIC" display should be less than 3 seconds when the deflation is down 300 to 500mmHg. **3. Total leak check** · Press the alarm off switch until "L16" appears. Press the [START/STOP] switch. · Inflate air pressure up to 300 mmHg, do the quick exhaust after waiting about 90 seconds. · After quick exhausting, check to the "DIASTOLIC" display should be less than 15 mmHg/minute.
(5)	Actual Measurement Check	· Connect the cuff to the products. · Press the [START/STOP] switch and measure one's blood pressure. Make sure that the measurement is complete.

5. Repairing

5-1 Adjusting the pressure

(1) Connecting the air generator

Make sure that the air socket cover is inserted into the air connector for verification located on the rear of the pressure generator. Connect the pressure generator air tube to the cuff connection of the device.

(2) Adjusting zero and span

1. While holding down the [INTERVAL measurement] switch, turn on the [POWER] switch to be in the test mode.
2. Press the [ALARM OFF] switch to show "L11" in the systolic blood pressure display.
3. Press the [START/STOP] switch.
4. Set the pressure generator to 0.0 mmHg.
5. Press the [INTERVAL measurement] switch. Confirm that each display shows zero as follows.
   Mean blood pressure display : " 0." (Displays the whole number portion of the main sensor)
   Diastolic blood pressure display : " 00" (Displays up to two decimal places of the main sensor)
   Pulse rate display : " 0" (Displays the whole number portion of the safety circuit sensor)
6. Set the pressure generator to 300.0 mmHg.
7. Using the VR1, adjust the pressures shown in the mean and diastolic blood pressure displays.
8. Using the VR2, adjust the pressure shown in the pulse rate display.
9. Set the pressure generator to 0.0 mmHg.
10. Repeat the procedure from step 5 until zero and span are obtained.
11. Turn off the [POWER] switch.

5-2 Adjusting the ECEV

(1) Connect a 500-cc tank to the cuff connection.

(2) Press the [ALARM OFF] switch to show "L23" in the systolic blood pressure display. Press the [START/STOP] switch.

(3) The pump pressurizes, exhausts the air first at a constant speed, then quickly.

(4) Adjust the value shown in the mean blood pressure display to be within 170±10.

1. When the value is greater than 170±10 :

   Using a screwdriver, turn the speed adjusting screw on the ECEV counterclockwise.

2. When the value is less than 170±10 :

   Using a screwdriver, turn the speed adjusting screw on the ECEV clockwise.

(5) Repeat the procedure from step 2 until the specified value is obtained. After adjustment, repeat steps 2 and 3 two or three times to make sure that the displayed values are within the specifications.

(6) Make sure that the value shown in the diastolic blood pressure display is 120 or less.

5-3 Checking the constant exhaust

(1) Press the [ALARM OFF] switch to show "L14" in the systolic blood pressure display. Press the [START/STOP] switch.

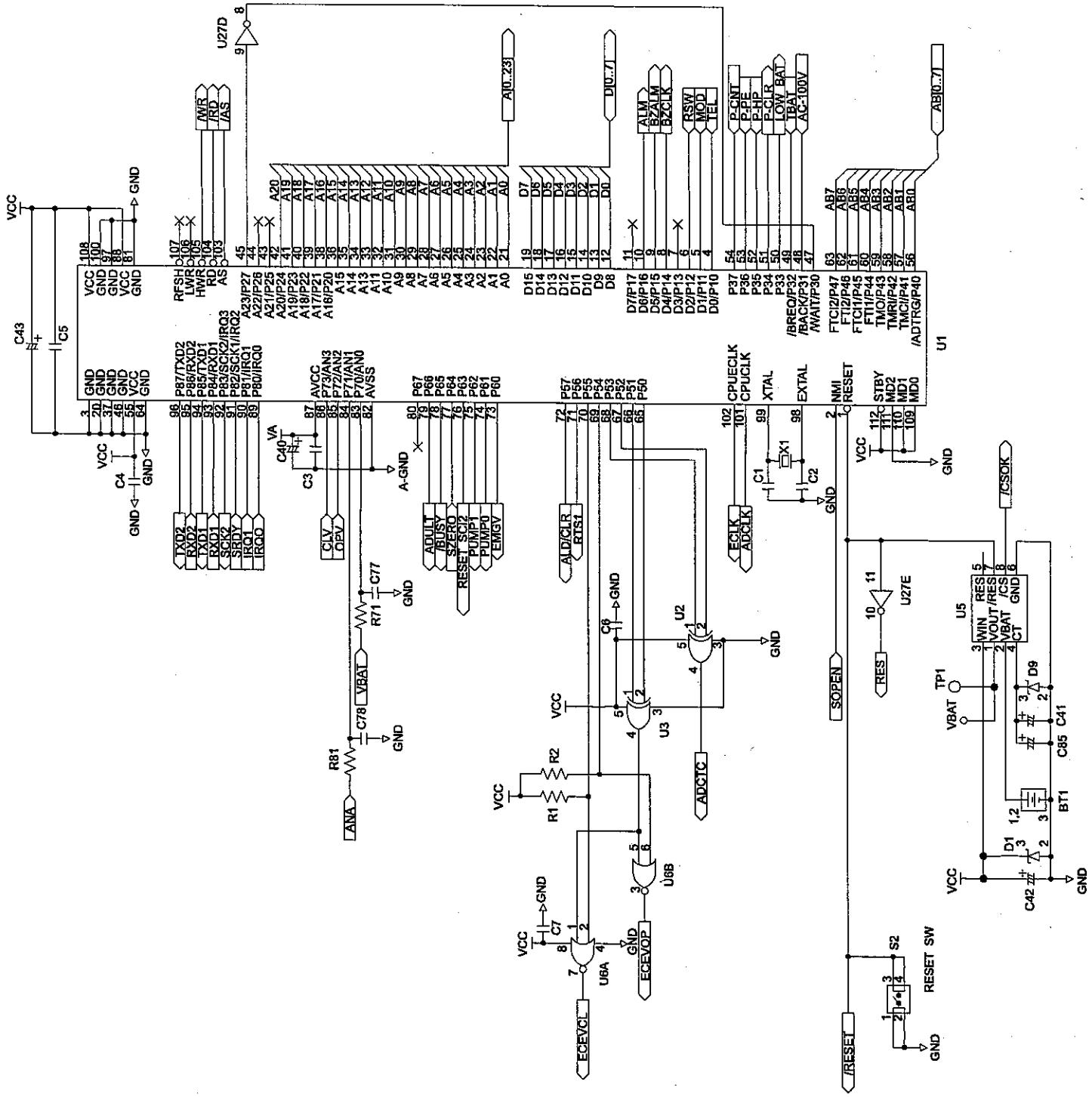
(2) The pump pressurizes, exhausts the air first at a constant speed, them quickly.

(3) Make sure that the value shown in the diastolic blood display is within 5.0±1.0.

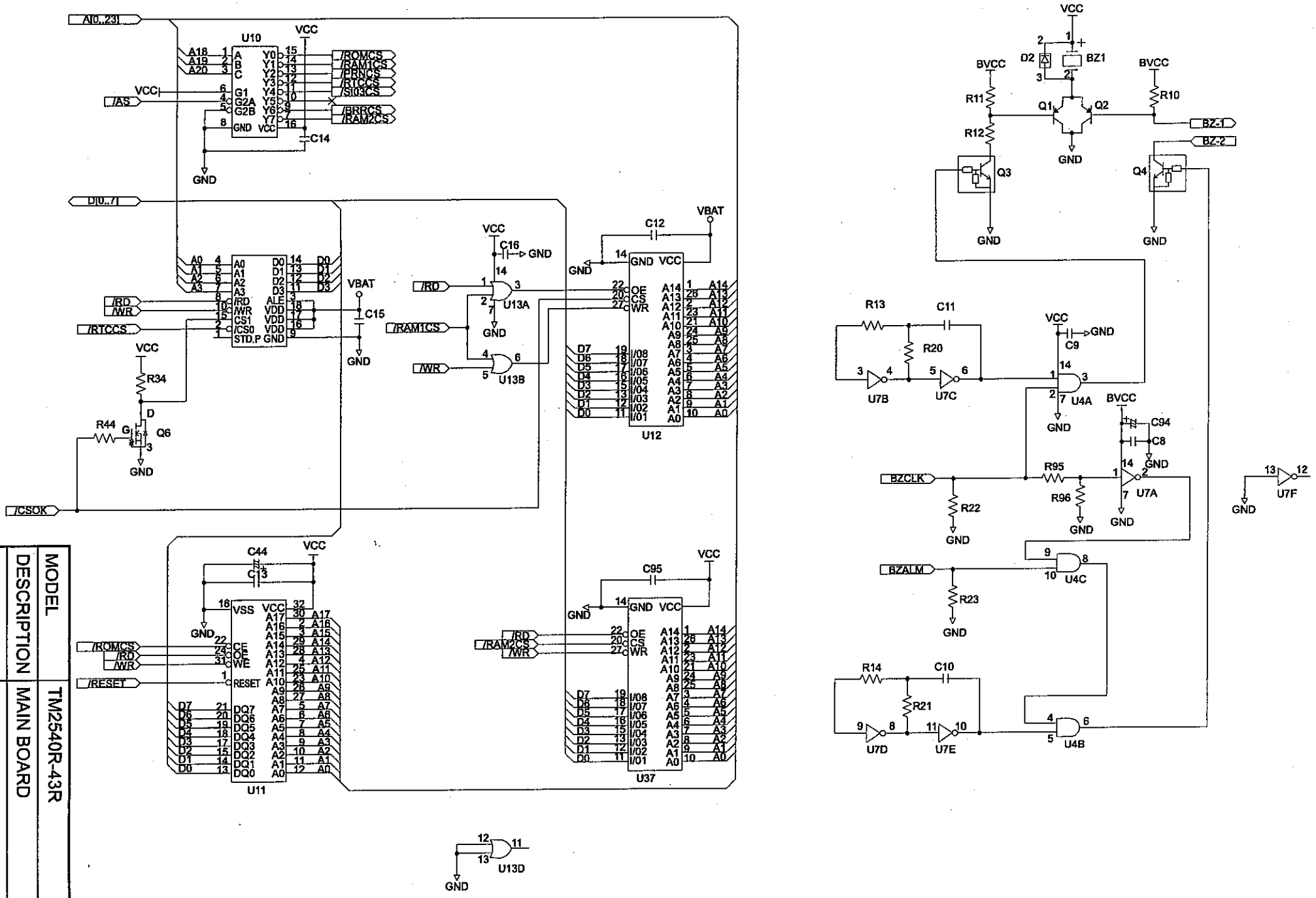
6. Error Codes

Error Code	Meaning	Action
E00	Zero point error in the pressure sensor.	Exhaust air from the cuff and turn on the power supply again. See 4(1) Board check and 4(3) Pressure Accuracy Check.
E11	Cannot be pressurized.	Check the cuff and air tube for correct connection or check them for being folded. See 4(4) Air Check.
E12	Pressurizing speed is too slow.	
E13	Pressurizing speed is too fast.	Check the patient (adult/neonate) for correct selection or check the air tube for being folded. See 4(4) Air Check.
E21	Measurement time is too long. Constant exhausting speed is too slow. Detection of excessive pressure.	Check the cuff and air tube for correct connection or check them for being folded. See 4(4) Air Check.
E22	Exhaust speed is too fast.	
E42	Insufficient pressurization.	Check for physical movement.
E43	No pulse is acquired.	Check the cuff for correct placement or check the patient for physical movement or for irregular pulse. See 4(4) Air Check.
E44	Physical movement has been detected.	
E45	The diastolic blood pressure cannot be determined.	
E46	The mean blood pressure cannot be determined.	
E48	The systolic blood pressure cannot be determined.	
E61	The pulse rate cannot be determined.	
E63	The blood pressure value is inappropriate.	

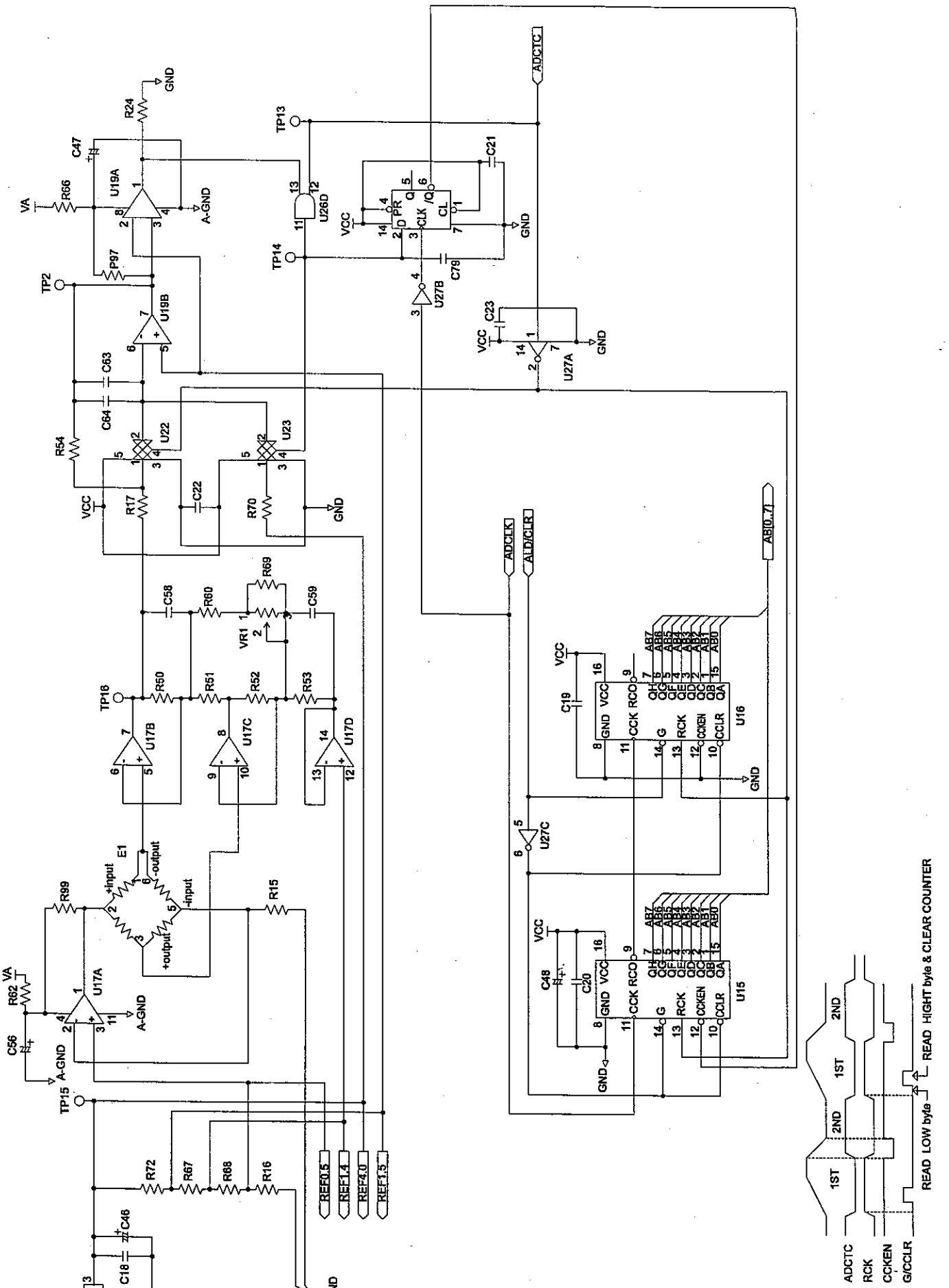
7. Circuit Diagram



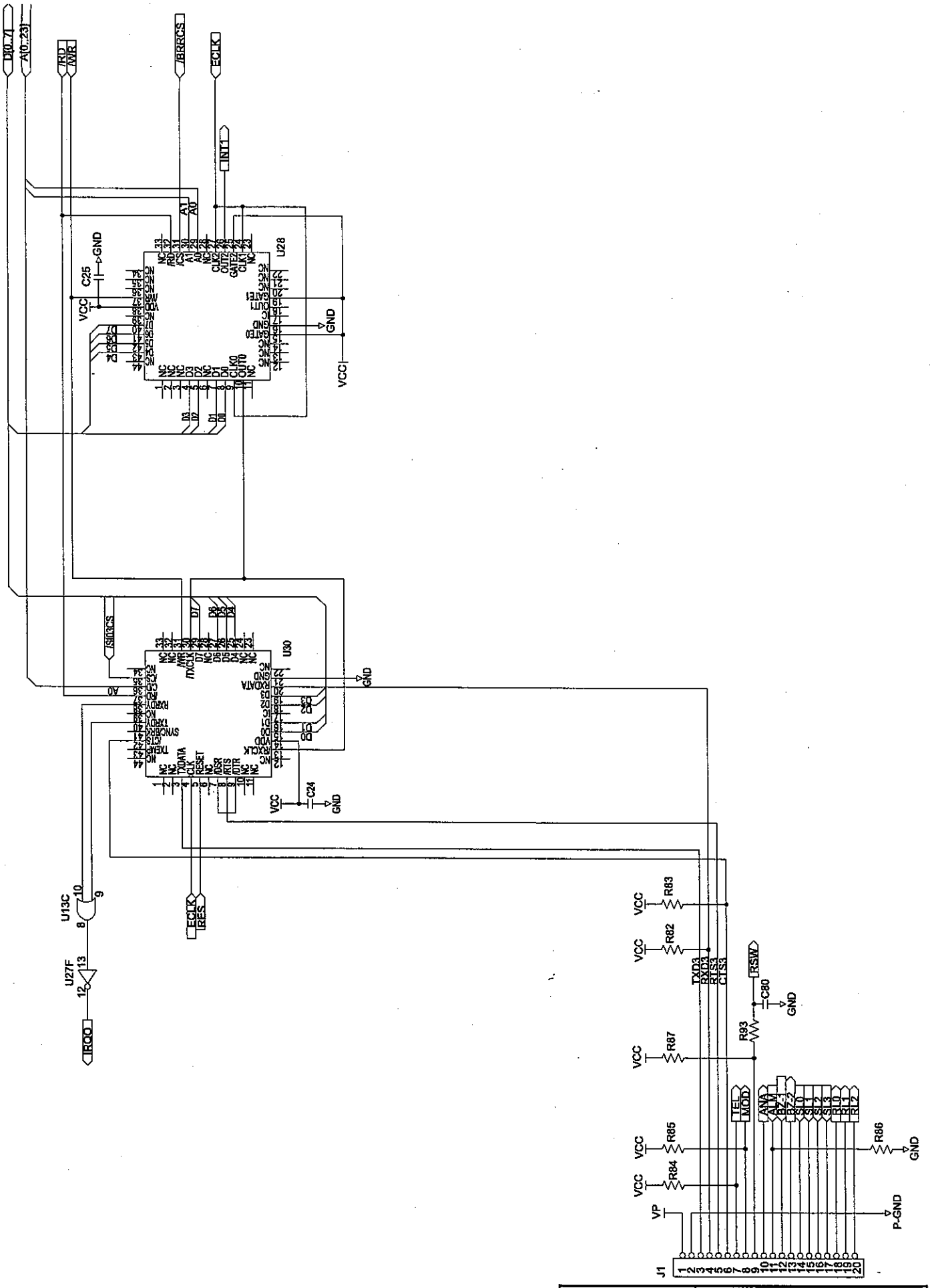
MODEL	TM2540R-43R
DESCRIPTION	MAIN BOARD
STOCK No.	PZ:3156
DRWG. No.	ME-QD-EC3-000299(1/6)



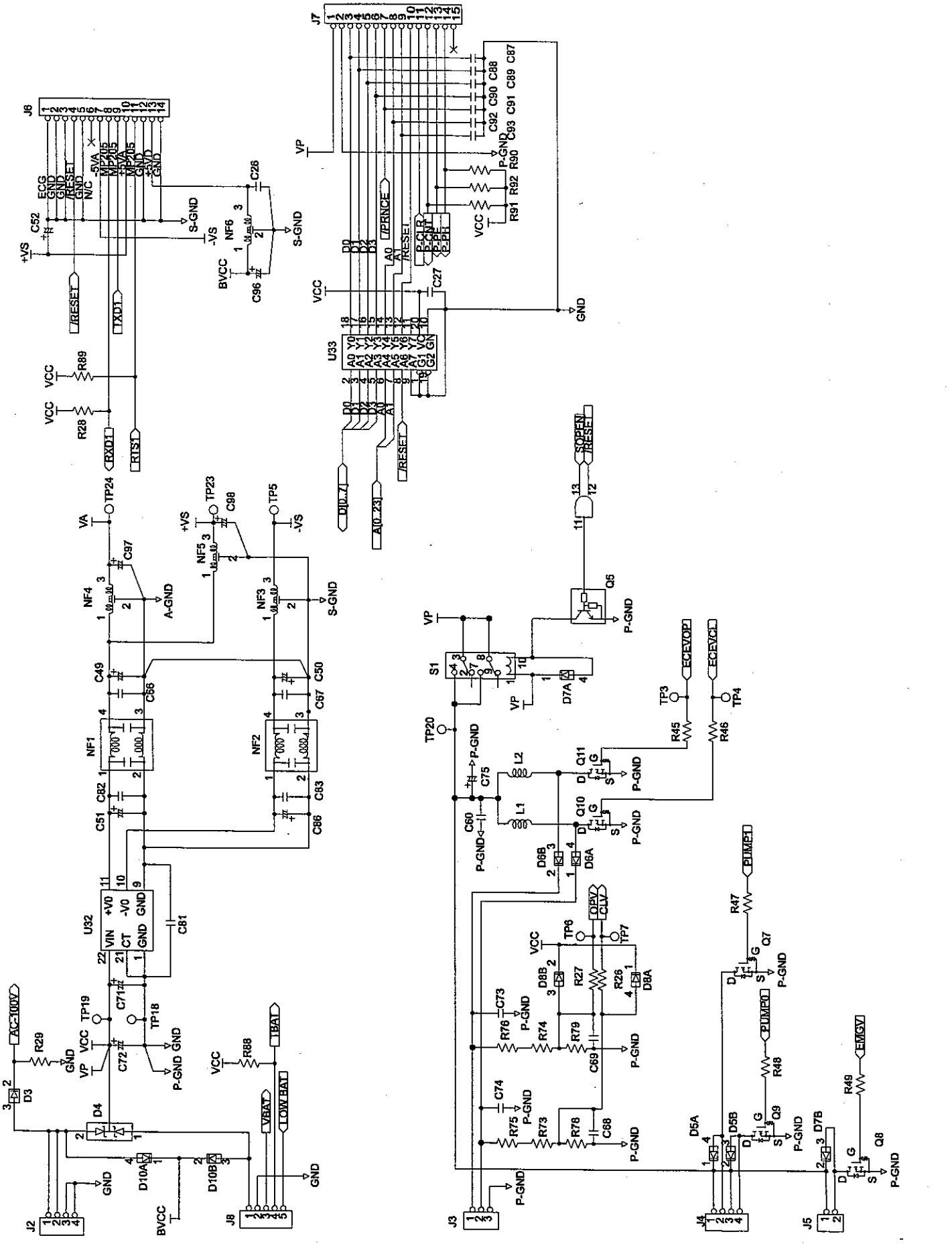
MODEL	TM2540R-43R
DESCRIPTION	MAIN BOARD
STOCK No.	PZ:3156
DRWG. No.	ME-QD-EC3-000299(2/6)



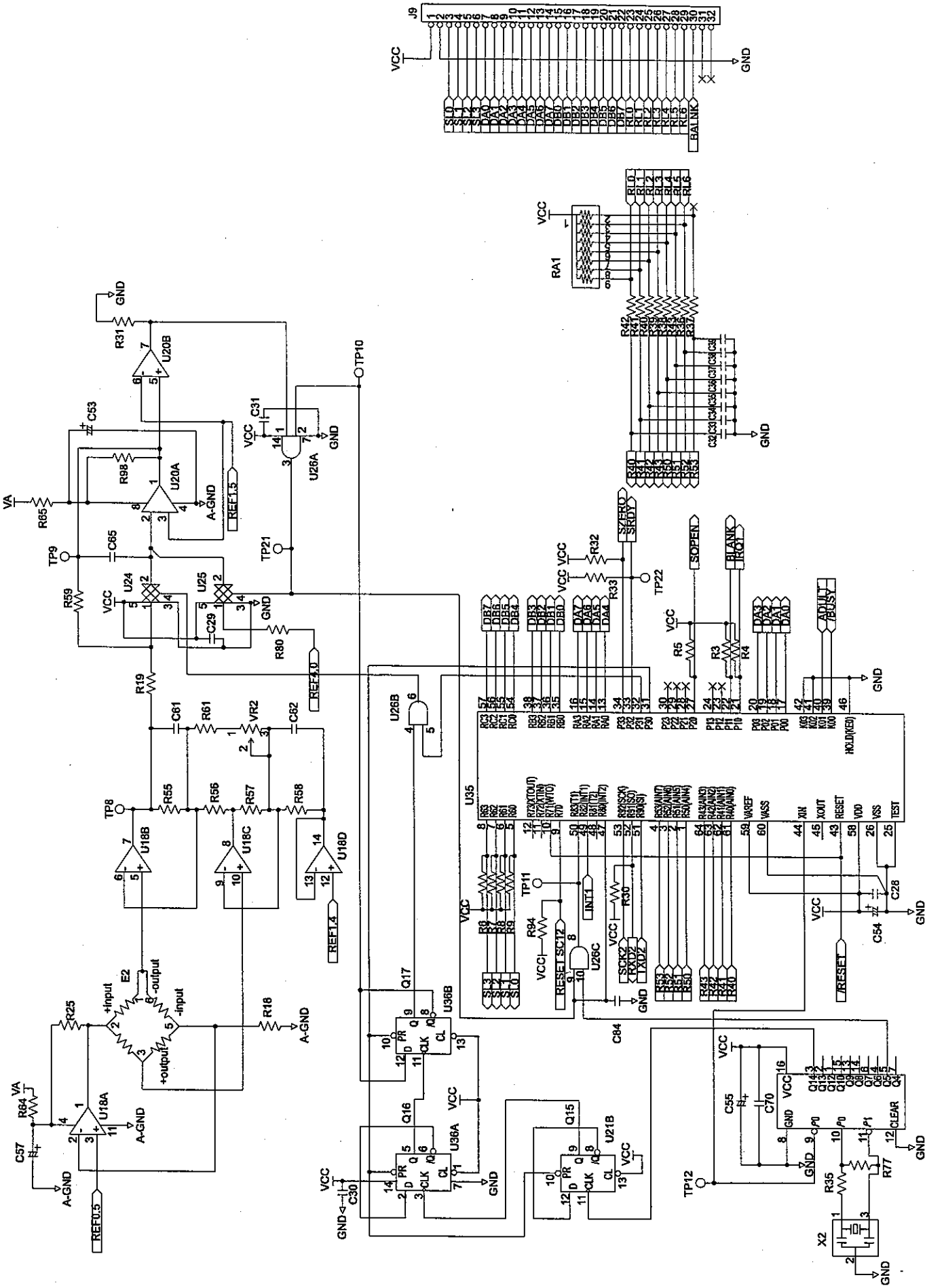
MODEL	TM2540R-43R
DESCRIPTION	MAIN BOARD
STOCK No.	PZ:3156
DRWG. No.	ME-QD-EC3-000299(3/6)



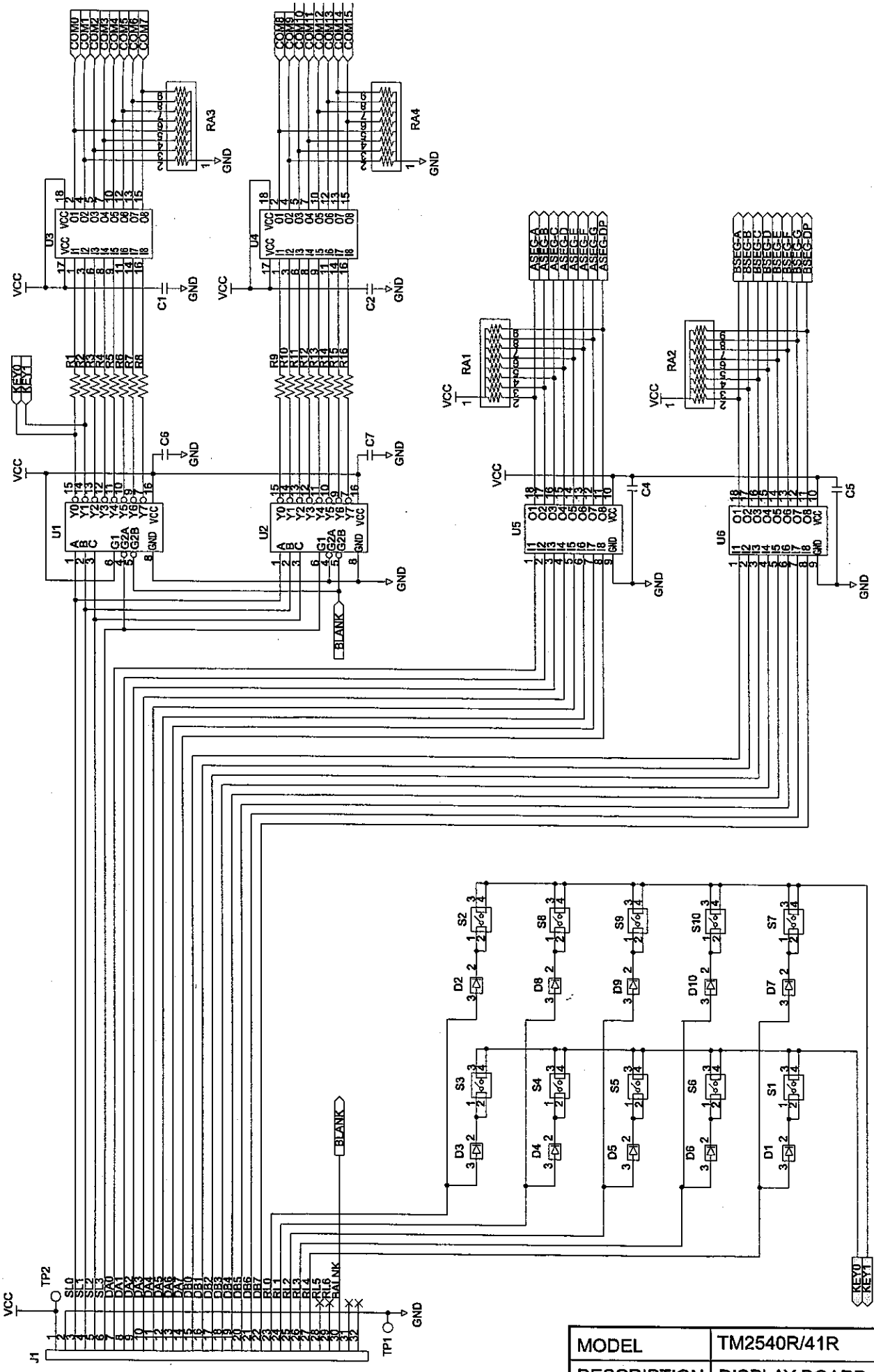
MODEL	TM2540R-43R
DESCRIPTION	MAIN BOARD
STOCK No.	PZ:3156
DRWG. No.	ME-QD-EC3-000299(4/6)



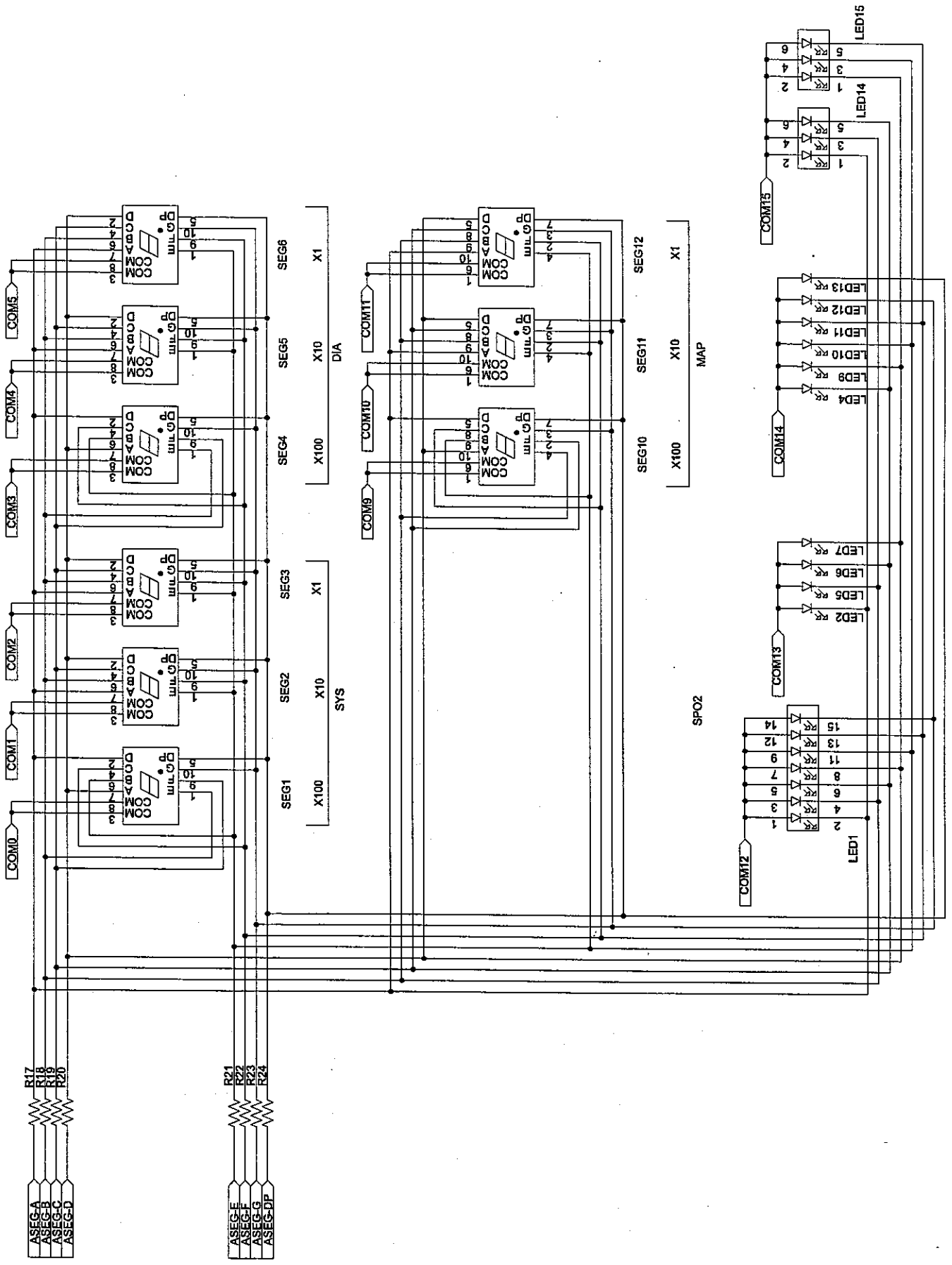
MODEL	TM2540R-43R
DESCRIPTION	MAIN BOARD
STOCK No.	PZ:3156
DRWG. No.	ME-QD-EC3-000299(5/6)



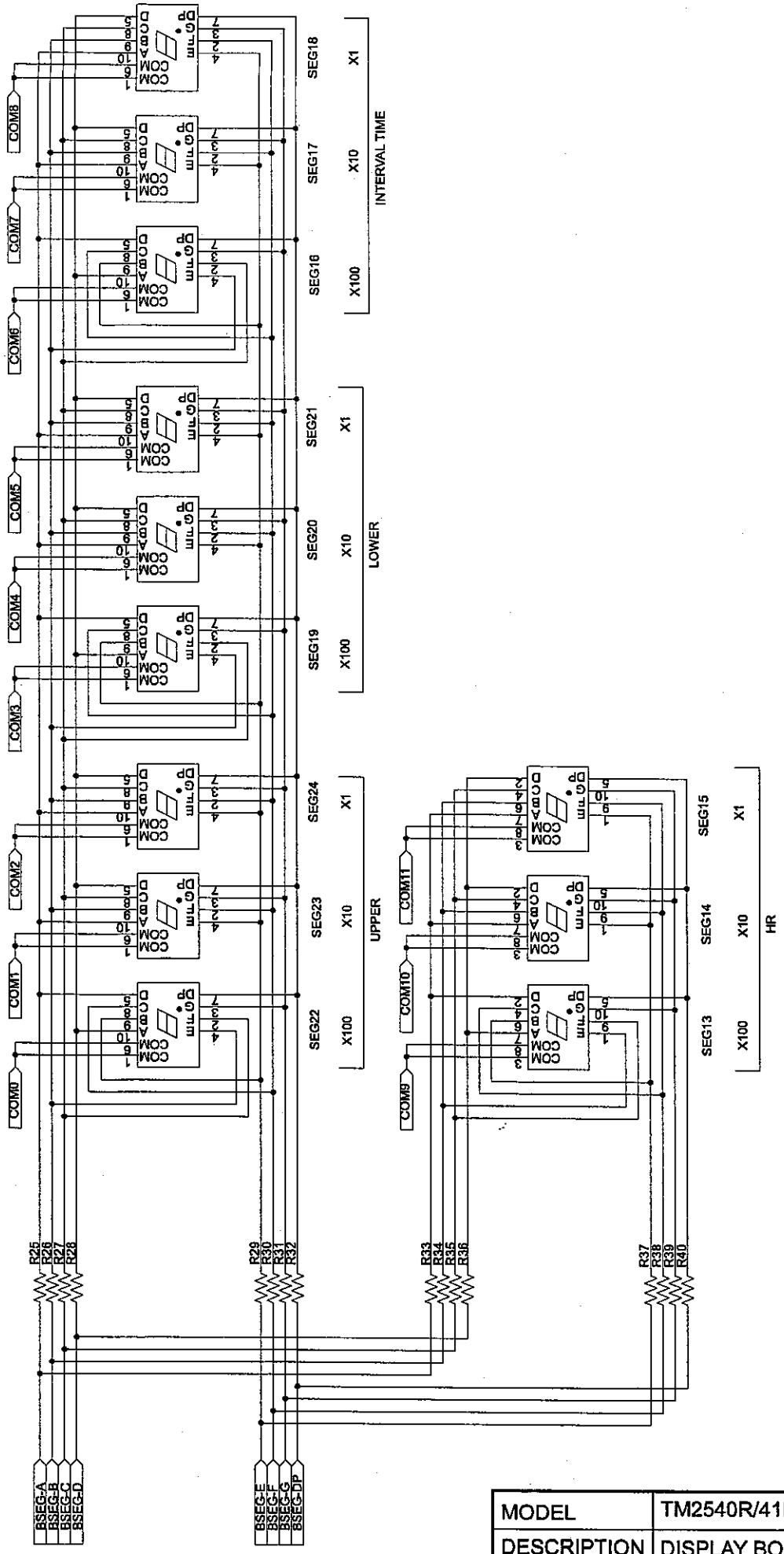
MODEL	TM2540R-43R
DESCRIPTION	MAIN BOARD
STOCK No.	PZ:3156
DRWG. No.	ME-QD-EC3-000299(6/6)



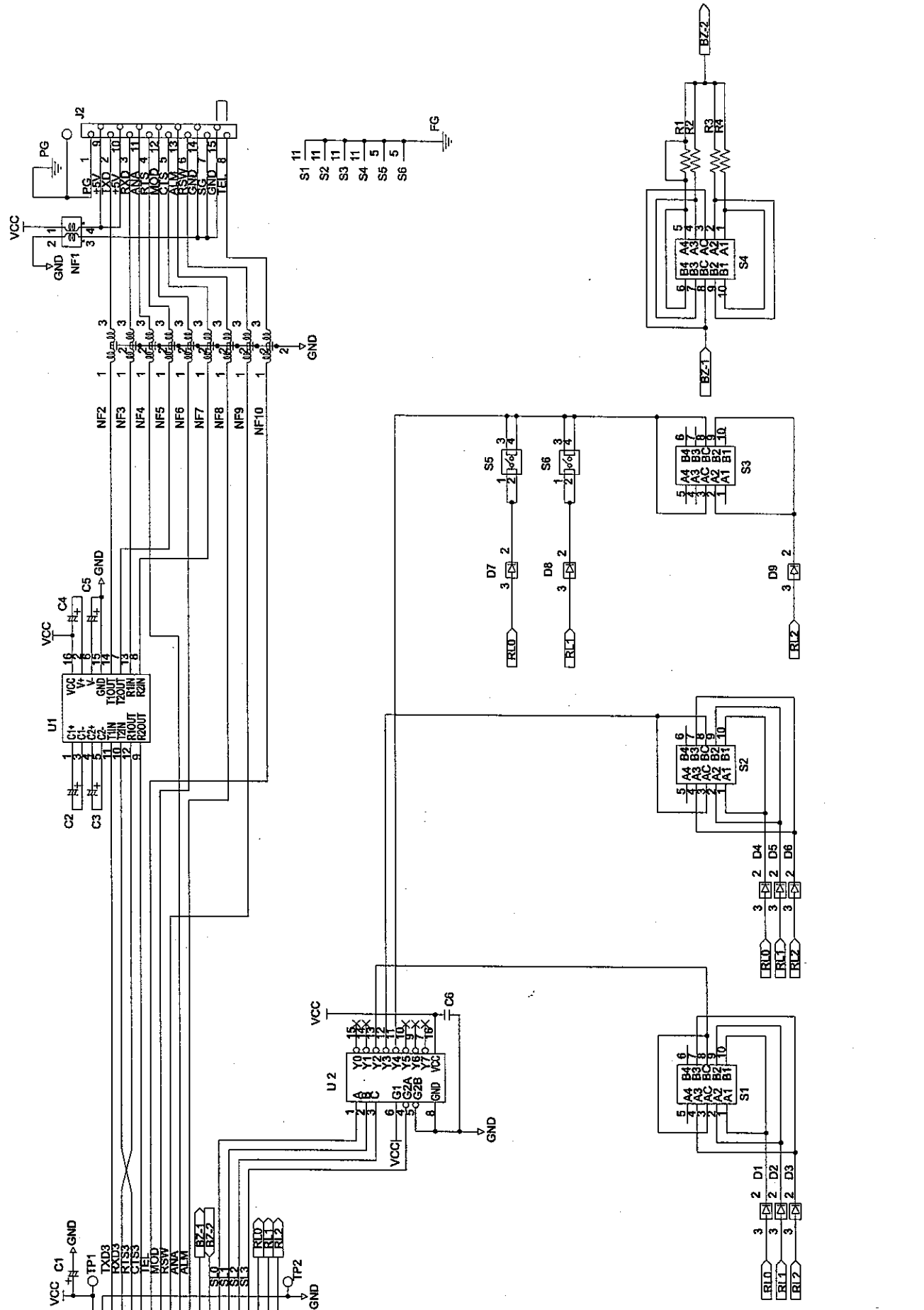
MODEL	TM2540R/41R
DESCRIPTION	DISPLAY BOARD
STOCK No.	PZ:3162
DRWG. No.	ME-QD-EC3-000305(1/3)



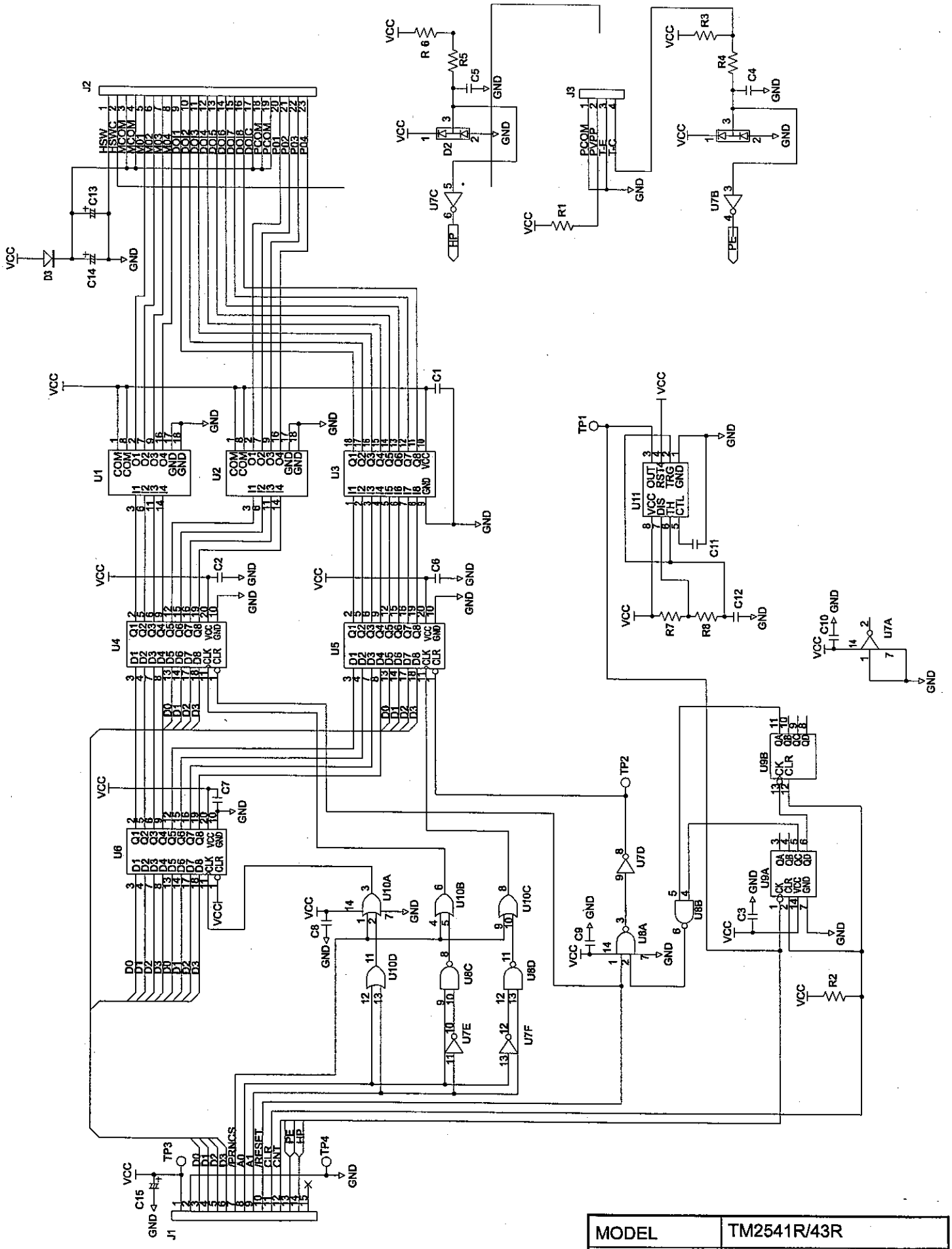
MODEL	TM2540R/41R
DESCRIPTION	DISPLAY BOARD
STOCK No.	PZ:3162
DRWG. No.	ME-QD-EC3-000305(2/3)



MODEL	TM2540R/41R
DESCRIPTION	DISPLAY BOARD
STOCK No.	PZ:3162
DRWG. No.	ME-QD-EC3-000305(3/3)



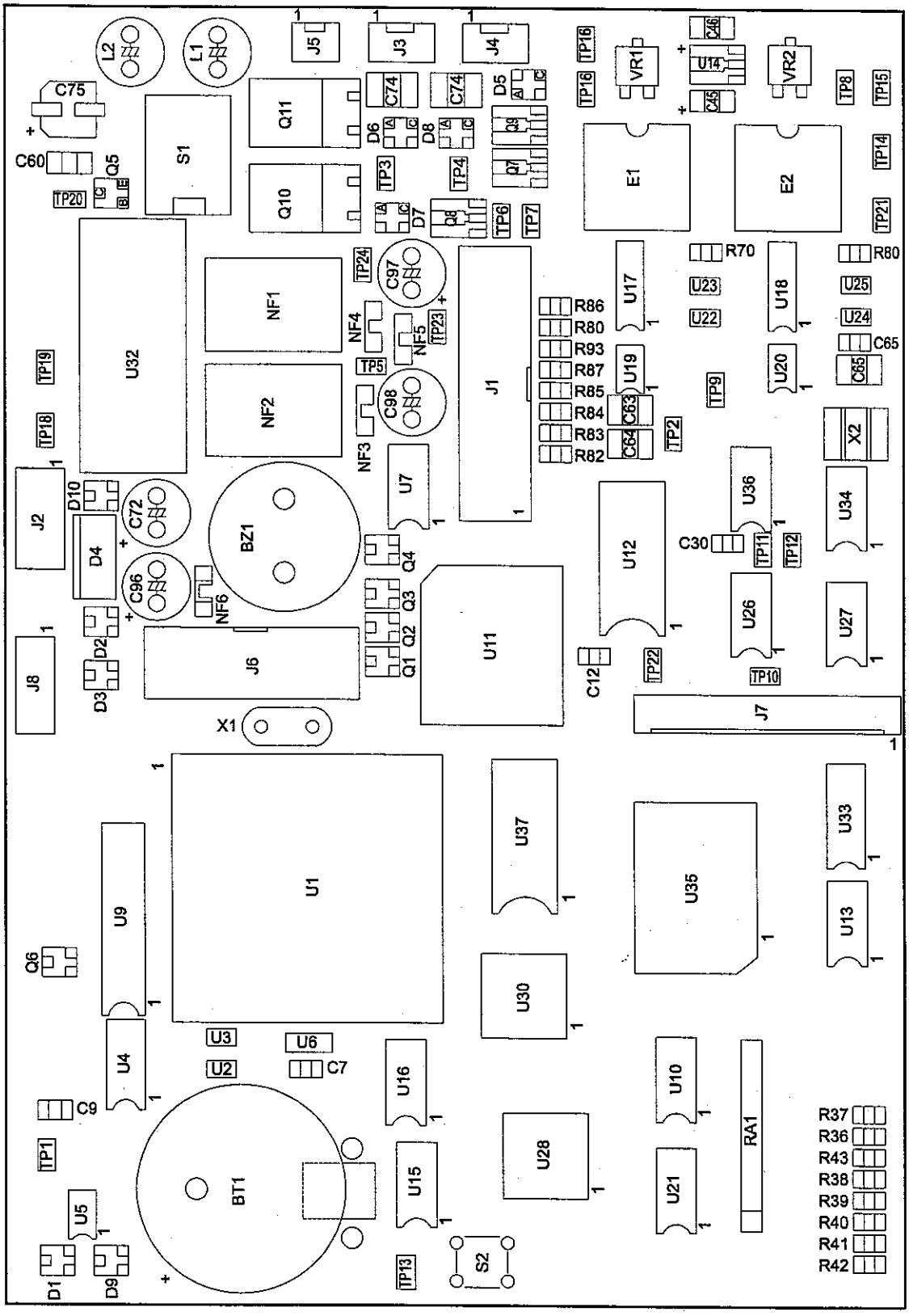
MODEL	TM2540R-43R
DESCRIPTION	REAR BOARD
STOCK No.	PZ:3158
DRWG. No.	ME-QD-EC3-000301



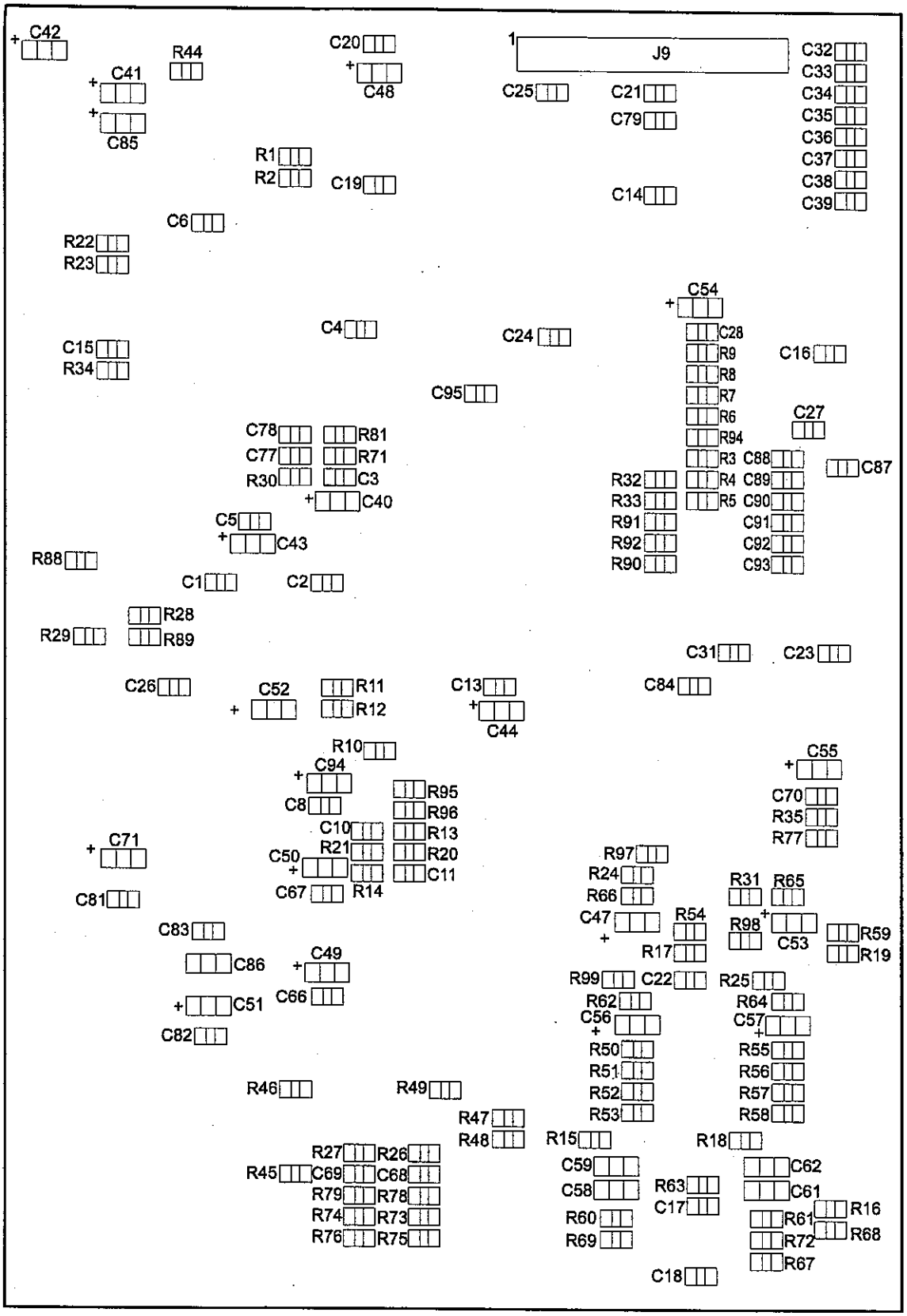
MODEL	TM2541R/43R
DESCRIPTION	PRINTER BOARD
STOCK No.	PZ:3159
DRWG. No.	ME-QD-EC3-000302

8. Parts Layout (Parts List)

8-1 PZ:3156 Parts Layout



MODEL	TM254XR
DESCRIPTION	———
STOCK No.	PZ:3156
DRWG. No.	ME-QD-KZ3-000068E(1/5)



MODEL	TM254XR
DESCRIPTION	———
STOCK No.	PZ:3156
DRWG. No.	ME-QD-KZ3-000068E(2/5)

Circuit Symbol	Part No.	Part Name (Maker)	Q'TY
C3,4,5,6,7,8,9,12,13,14,15,16, 17,18,19,20,21,22,23,24,25,26, 27,28,29,30,31,66,67,68,69,70, 77,78,79,80,81,82,83,84,95	CC:0.1U25V-C	Multilayer Ceramic Capacitors	41
C10,11,87,88,89,90,91,92,93	CC:0.001U-C	Multilayer Ceramic Capacitors	9
C73,74	CC:C70R2E104KR	Multilayer Ceramic Capacitors	2
C63,64,65	CM:HU1C104J-C	FILM CAPACITOR	3
C58,59,60,61,62	CC:1U16V-C	Multilayer Ceramic Capacitors	5
C1,2	CC:22P-C	Multilayer Ceramic Capacitors	2
C72,96,97,98	CK:SME16VB220		4
C40,41,42,43,44,45,46,47,48, 49,50,51,52,53,54,55,56,57,71, 85,86,94	CT:1A4R7-C	TANTALUM CAPACITOR	22
C75	CK:X00-D47UM		1
RA1	RN:IHR-8-103MA		1
VR1,2	RV:ST-4B102		2
R68	RF:2D3.9KRF	RESISTOR	1
R10,11,12,18,25,96,99	RC:1/10W1001F	RESISTOR	7
R15,16	RF:2D1KRF	RESISTOR	2
R17	RF:2D15KRF	RESISTOR	1
R73,74,75,76	RC:1/10W2004F	RESISTOR	4
R13,14,77	RC:1/10W1004F	RESISTOR	3
R21	RC:1/10W1603F	RESISTOR	1
R55,56,57,58	RC:1/10W3301F	RESISTOR	4
R50,51,52,53	RF:2D3.3KRF	RESISTOR	4
R19	RC:1/10W1243F	RESISTOR	1
R34,35,36,37,38,39,40,41,42, 43,93	RC:1/1W4701F	RESISTOR	11
R72	RF:2D2.7KRF	RESISTOR	1
R20	RC:1/10W2703F	RESISTOR	1
R22,23,24,26,27,29,30,31,32, 33	RC:1/10W1002F	RESISTOR	10
R62,63,64,65,66	RC:1/10W10R0F	RESISTOR	5
R80	RC:1/10W1203F	RESISTOR	1
R78,79	RC:1/10W3902F	RESISTOR	2
R70	RF:2D37.4KRF	RESISTOR	1
R44,45,46,47,48,49,71,81	RC:1/10W1000F	RESISTOR	8

MODEL	TM254XR
DESCRIPTION	----------
STOCK No.	PZ:3156
DRWG No.	ME-QD-KZ3-000068E(3/5)

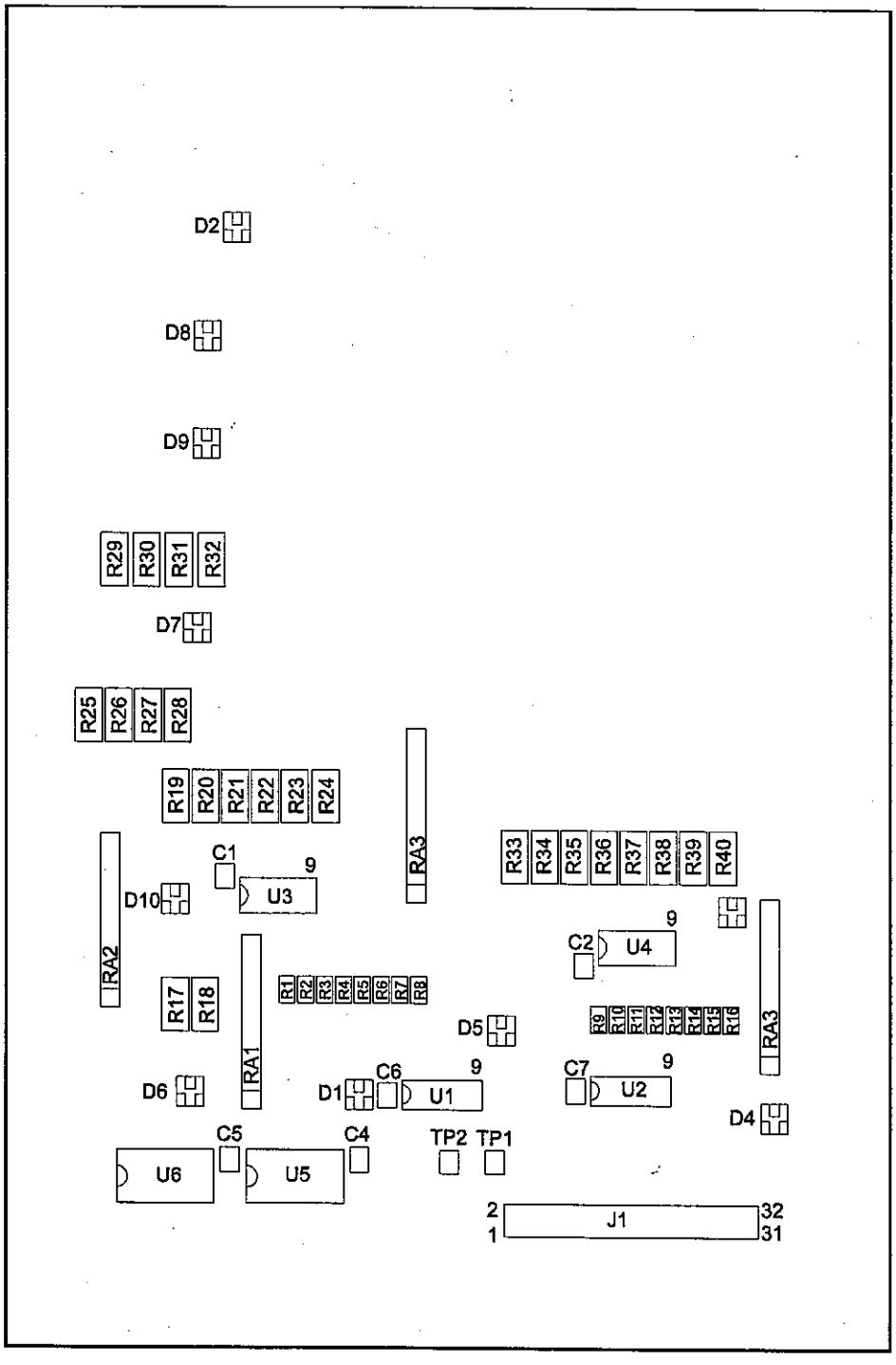
Circuit Symbol	Part No.	Part Name (Maker)	Q'TY
R67	RF:2D200RRF	RESISTOR	1
R1,2,3,4,5,6,7,8,9,94	RC:1/10W4703F	RESISTOR	10
R61	RC:1/10W5600F	RESISTOR	1
R60	RF:2D560RRF	RESISTOR	1
R28,82,83,84,85,86,87,88,89, 90,91,92	RC:1/10W1003F	RESISTOR	12
L1,2	LL:LHL08NB102J	INDUCTOR	2
D2,3	DI:1SS187-C	DIODE	2
D5,6,7,8	DI:1SS306	DIODE	4
D4	DI:CTB24L		1
D1	DZ:RD5.6MB-C	DIODE	1
BT1	EB-CR2450-HE4		1
BZ1	ET:SD161210		1
E1,2	ET:SP20C-G501U		2
J6	JI:CL616-0162-7	CONNECTOR	1
J1	JI:20PA-2.54DSA	CONNECTOR	1
J5	JI:2P-S2T2-EF	CONNECTOR	1
J3	JI:3P-S2T2-EF	CONNECTOR	1
J4	JI:4P-ST2-EF	CONNECTOR	1
J7	JI:15P-S2T2-EF	CONNECTOR	1
J2	JT:B4B-XH-A	CONNECTOR	1
J8	JI:05P-S2T2-EF	CONNECTOR	1
J9	JI:A3C-32DA2DSA	CONNECTOR	1
NF1,2	NF:DFD-104S	NOISE FILTER	2
NF3,4,5,6	NF:EXCCET102U	NOISE FILTER	4
Q6	QF:K1133	FIELD EFFECT TRANSISTOR	1
Q10,11	QF:K1152S	FIELD EFFECT TRANSISTOR	2
Q7,8,9	QF:K1483-C	FIELD EFFECT TRANSISTOR	3
Q1,2	QT:A1162Y-C	TRANSISTOR	2
Q3,4,5	QT:FA1L4M-C	TRANSISTOR	3
S1	SL:EA2-5		1
TP18	TM:RST00000C		1
	06:4003272		1
D10	DI:1SS319-C	DIODE	1
D9	DZ:RD2.7MB-C	DIODE	1
U1	UC:HD6415108F10		1
U17,18	UA:C324G		2

MODEL	TM254XR
DESCRIPTION	----------
STOCK No.	PZ:3156
DRWG No.	ME-QD-KZ3-000068E(4/5)

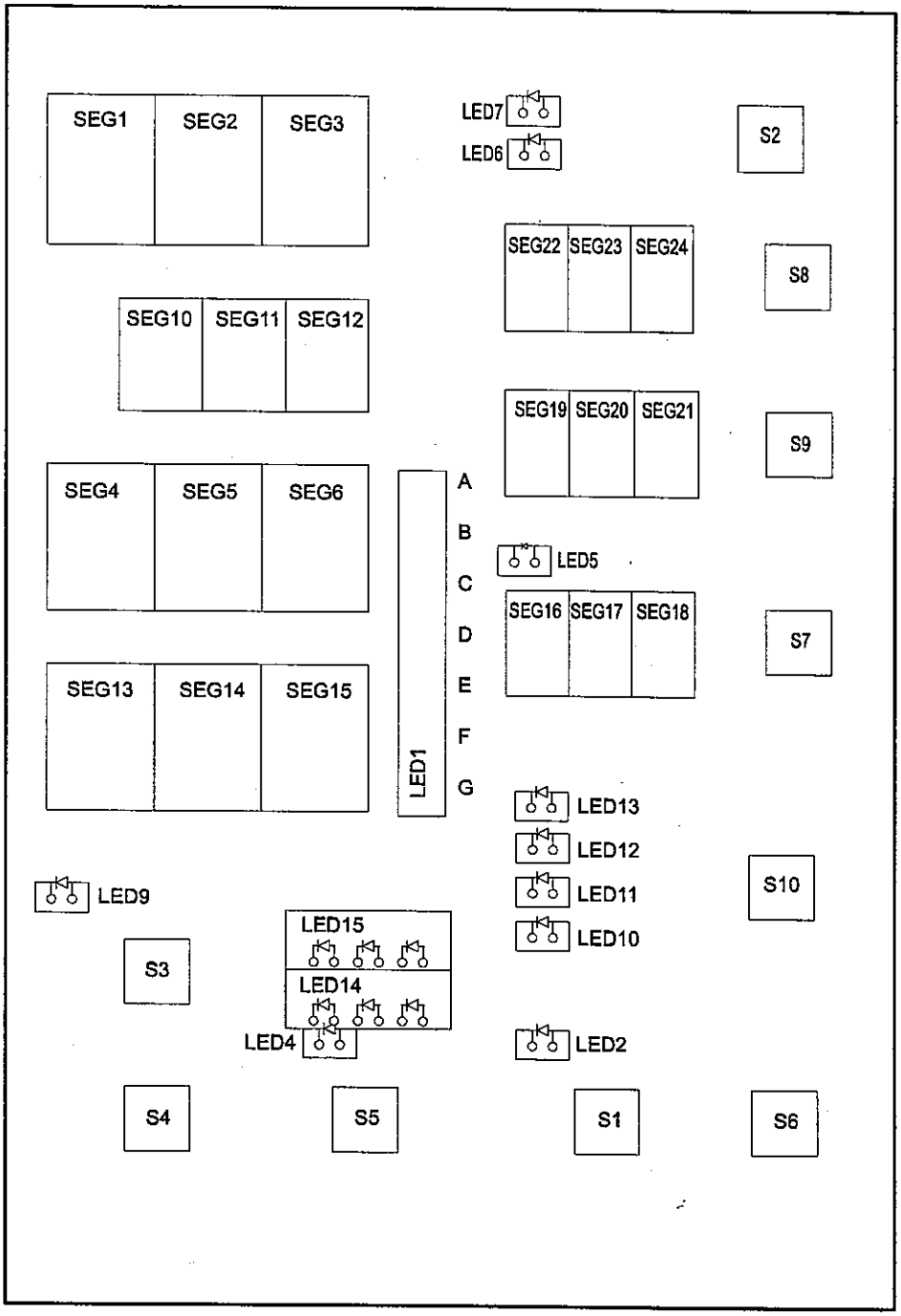
Circuit Symbol	Part No.	Part Name (Maker)	Q'TY
U19,20	UA:C4572G		2
U5	UA:M62021FP		1
U22,23,24,25	UC:7S66FU	INVERTOR	4
U2,3	UC:7S86FU	INVERTOR	2
U6	UC:7W02FU	INVERTOR	1
U30	UC:D71051G		1
U28	UC:D71054G		1
U7,27	UC:HC04F	INVERTOR	2
U4,26	UC:HC08F	INVERTOR	2
U13	UC:HC32F	INVERTOR	1
U21,36	UC:HC74F	INVERTOR	2
U10	UC:HC138F	INVERTOR	1
U33	UC:HC541F	INVERTOR	1
U15,16	UC:HC590AF	INVERTOR	2
U34	UC:HC4060F	INVERTOR	1
U12	UC:D43256AGU-15		1
U9	UC:62421A		1
U14	UR:81240AG		1
U32	MP:CHG-0505DC		1
X1	XT:AT51-20.000M		1
X2	XT:EF0V4004E0		1
U11	UC:TM2540R-002		1
U35	UC:TM2540R-A001		1

MODEL	TM254XR
DESCRIPTION	----------
STOCK No.	PZ:3156
DRWG No.	ME-QD-KZ3-000068E(5/5)

8-2 PZ:3162 Parts Layout



MODEL	TM2540R/41R
DESCRIPTION	———
STOCK No.	PZ:3162/PZ:3162EX
DRWG. No.	ME-QD-KZ3-000317A(1/3)

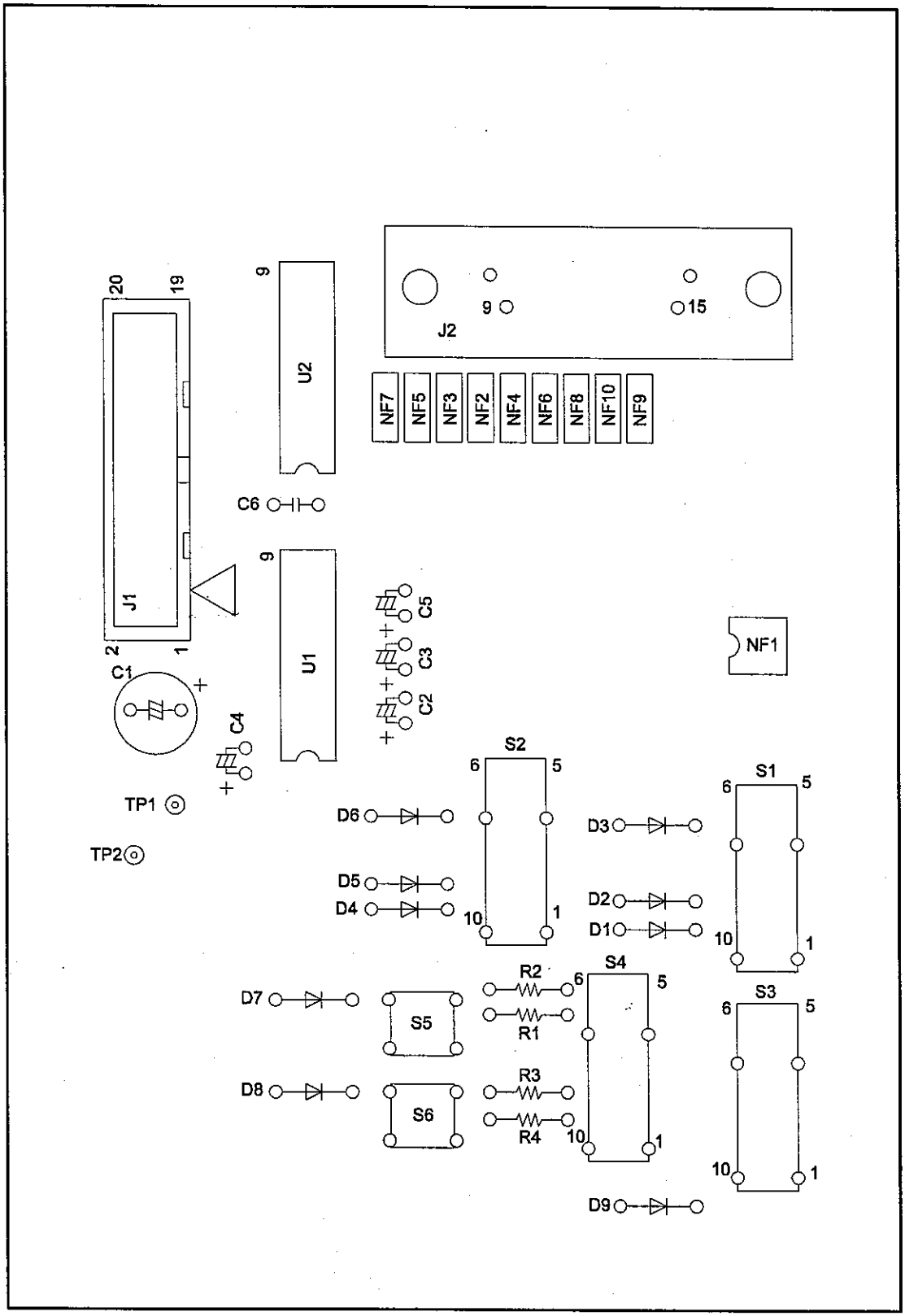


MODEL	TM2540R/41R
DESCRIPTION	———
STOCK No.	PZ:3162/PZ:3162-EX
DRWG. No.	ME-QD-KZ3-000317A(2/3)

Circuit Symbol	Part No.	Part Name (Maker)	Q'TY
C1,2,4,5,6,7	CC:0.1U25V-C	Multilayer Ceramic Capacitors	6
R1,2,3,4,5,6,7,8,9,10,11,12,13, 14,15,16	RC:1/10W1001F	RESISTOR	16
R33,34,35,36,37,38,39,40	RC:1/2W10RJ	RESISTOR	8
R17,18,19,20,21,22,23,24	RC:1/2W47RJ	RESISTOR	8
R25,26,27,28,29,30,31,32	RC:1/2W101J	RESISTOR	8
J1	JI:A3B-32PA2DSA	CONNECTOR	1
D1,2,3,4,5,6,7,8,9,10	DI:1SS187-C	DIODE	10
LDE1	DL:GL107H12		1
SEG1,2,3,4,5,6	DL:HDSP-5551		6
SEG13,14,15	DL:HDSP-5701		3
SEG16,17,18,19,20,21,22,23,24	DL:HDSP-7511		9
SEG10,11,12	DL:HDSP-F301		3
LED4	DL:HLMP-T200		1
LED5,9,10,11,12,13	DL:HLMP-T500		6
LED14,15	DL:MU04-5102		2
S2,3,4,5,6,7,8,9,10	SK:TM1-01/0010	SWITCH	9
TP1,2	TM:RCT00000C		2
U1,2	UC:HC138F		2
U3,4	UF:TD62M8600F		2
U5,6	UF:TD62381FEL		2
RA1,2,3,4	RN:IHR-8-472MA		4

MODEL	TM2540R/41R
DESCRIPTION	----------
STOCK No.	PZ:3162/PZ:3162-EX
DRWG No.	ME-QD-KZ3-000317A(3/3)

8-3 PZ:3158 Parts Layout

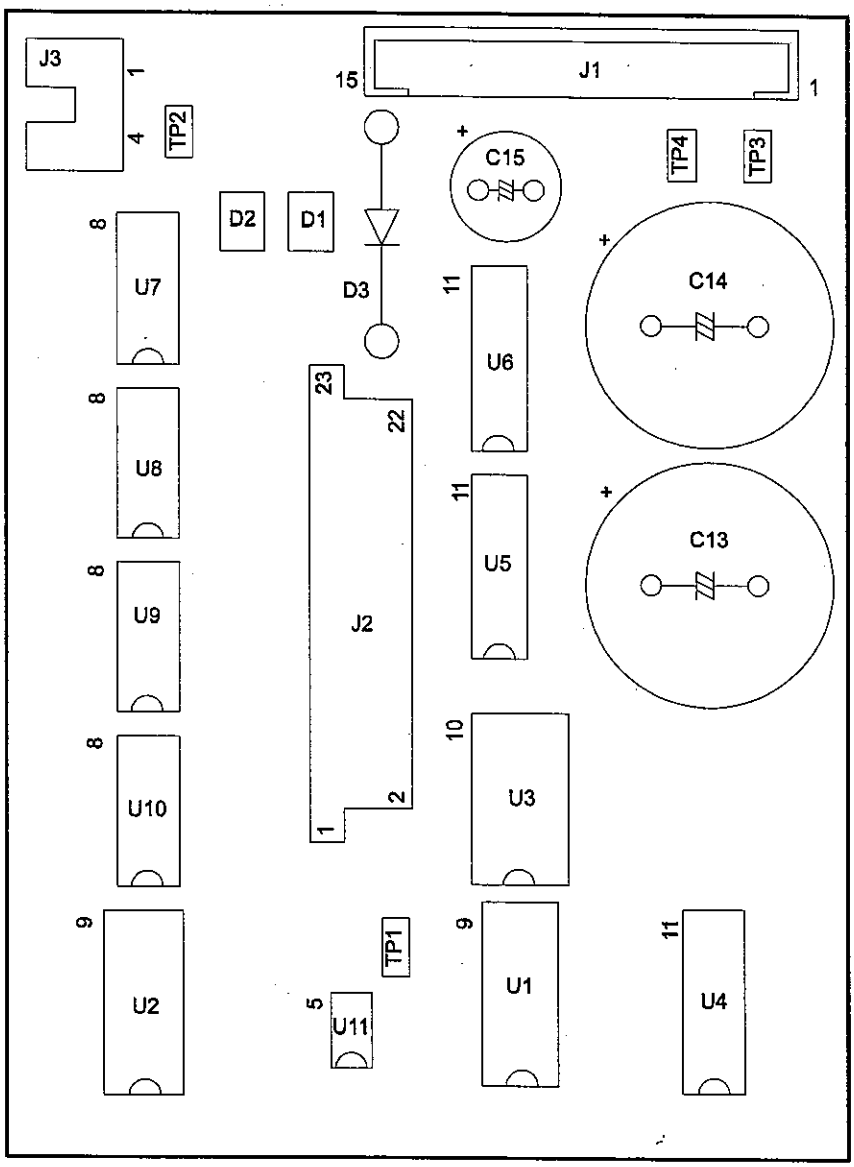


MODEL	TM254XR
DESCRIPTION	———
STOCK No.	PZ:3158
DRWG. No.	ME-QD-KZ3-000315A(1/2)

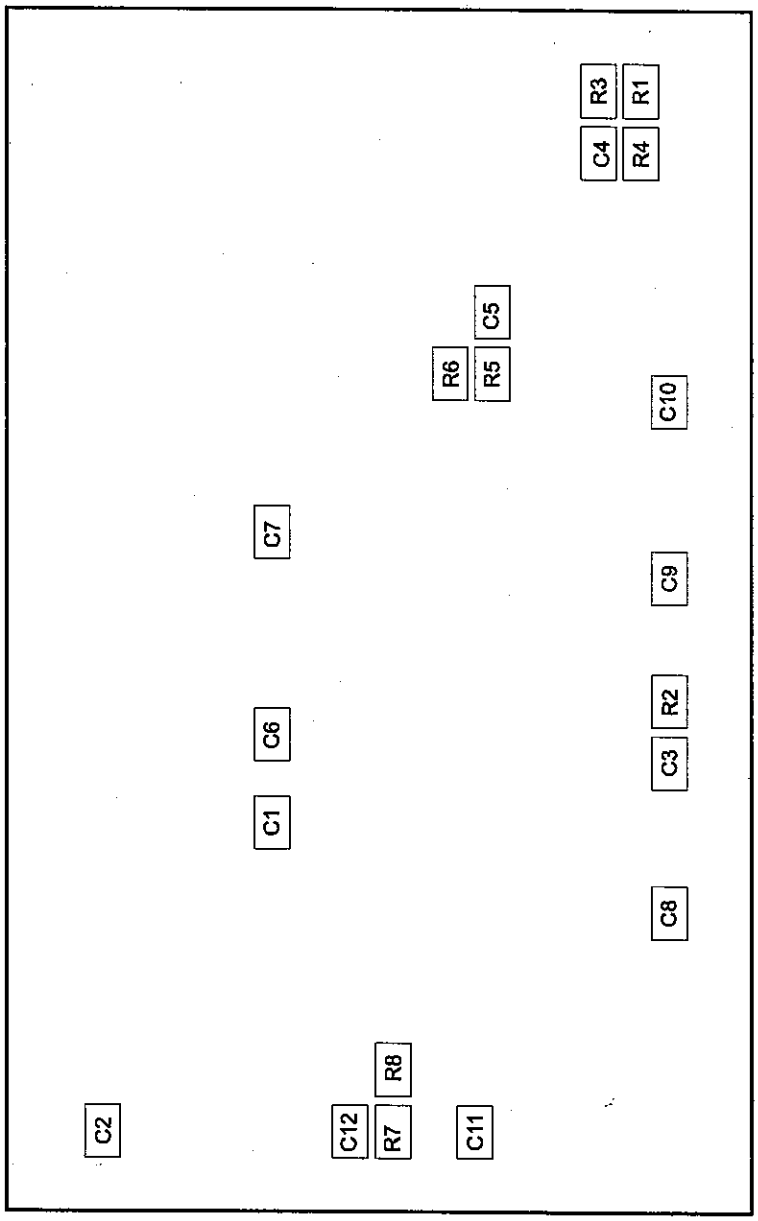
Circuit Symbol	Part No.	Part Name (Maker)	Q'TY
C6	CC:FK26Y5V104T		1
C1	CK:SME16VB220		1
C2,3,4,5	CT:1E010	TANTALUM CAPACITOR	4
R3	RM:RNM1.5KF		1
R2	RM:RNM430RF		1
J1	JI:20PA-2.54DSA	CONNECTOR	1
J2	JI:674J015-L/F	CONNECTOR	1
D1,2,3,4,5,6,7,8,9	DI:1SS133	DIODE	9
NF2,3,4,5,6,7,8,9,10	NF:EXCEMT103DT	NOISE FILTER	9
NF1	NF:ZJY51R5-2P	NOISE FILTER	1
S5,6	SP:SKHHPP	SWITCH	2
S2,3,4	SS:MSS224-001	SWITCH	3
TP1,2	TM:LC-2-G-0		2
U1	UC:MAX232CPE		1
U2	UC:HC138		1

MODEL	TM254XR
DESCRIPTION	----------
STOCK No.	PZ:3158
DRWG No.	ME-QD-KZ3-000315A(2/2)

8-4 PZ:3159 Parts Layout



MODEL	TM2541R/43R
DESCRIPTION	———
STOCK No.	PZ:3159
DRWG. No.	ME-QD-KZ3-000316(1/3)

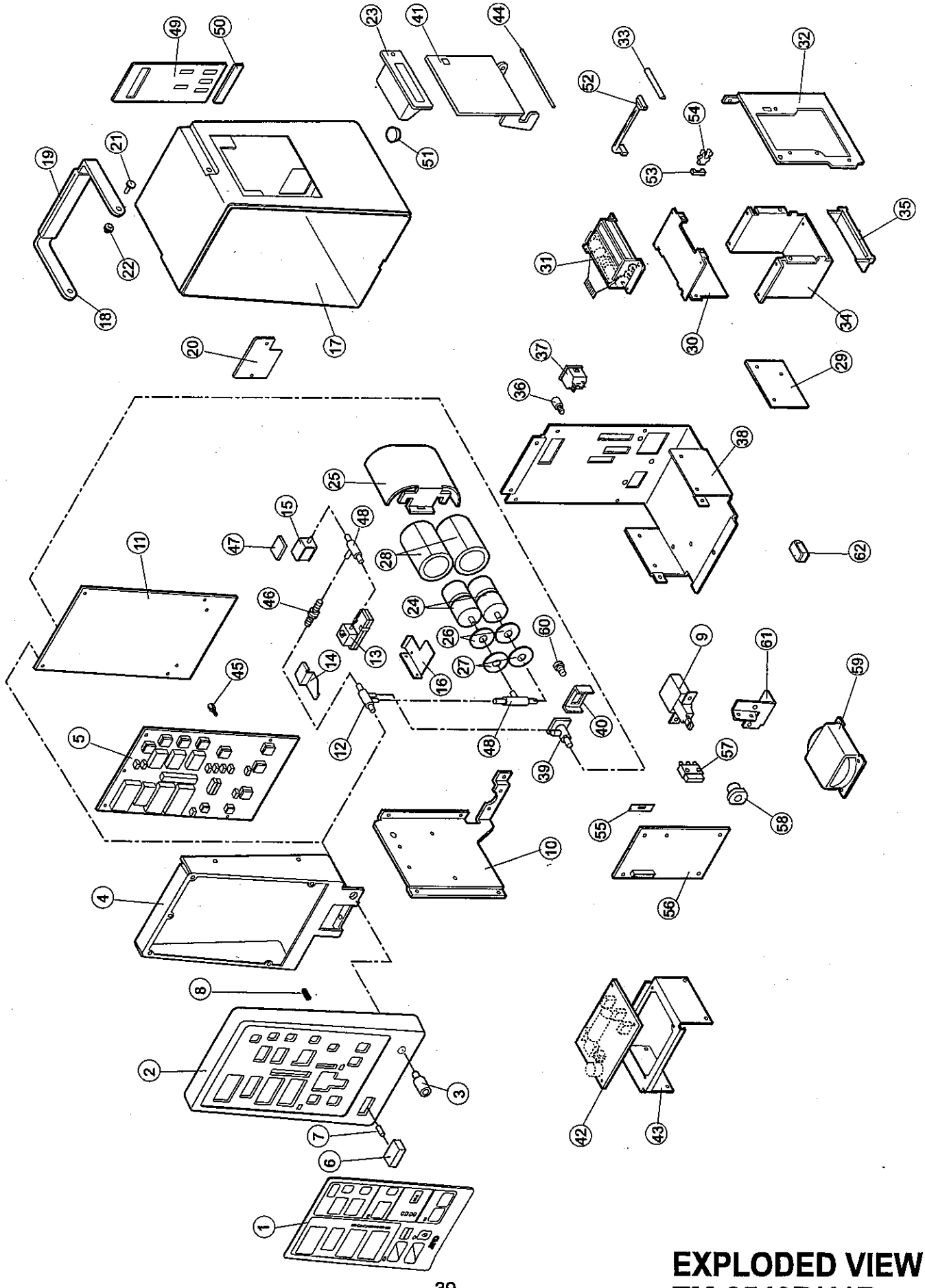


MODEL	TM2541R/43R
DESCRIPTION	———
STOCK No.	PZ:3159
DRWG. No.	ME-QD-KZ3-000316(2/3)

Circuit Symbol	Part No.	Part Name (Maker)	Q'TY
C1,2,3,4,5,6,7,8,9,10,11,12	CC:0.1U25V-C	Multilayer Ceramic Capacitors	12
C15	CK:SME16VB220		1
C13,14	CK:URS1A682MHA		2
R4,5	RC:1/10W1001F	RESISTOR	2
R6	RC:1/10W1002F	RESISTOR	1
R1	RC:1/10W1000F	RESISTOR	1
R3	RC:1/10W3300F	RESISTOR	1
R2	RC:1/10W4703F	RESISTOR	1
J2	JE:5597-23APB	CONNECTOR	1
D1,2	DI:1SS226-C	DIODE	2
D3	DI:RK44	DIODE	1
J3	JI:4P-S2L2-EF	CONNECTOR	1
J1	JI:15P-S2T2-EF	CONNECTOR	1
TP1,2,3,4	TM:RCT00000C		4
U8	UC:HC00F		1
U7	UC:HC14F		1
U10	UC:HC32F		1
U4,5,6	UC:HC273F		3
U9	UC:HC393F		1
U1,2	UA:TD62064AF		2
U3	UF:TD62381FEL		1
U11	UC:D5555G		1
R7,8	RC:1/10W5100F	RESISTOR	2

MODEL	TM2541/43R
DESCRIPTION	----------
STOCK No.	PZ:3159
DRWG No.	ME-QD-KZ3-000316(3/3)

9. Exploded View (Parts List)



EXPLODED VIEW
TM-2540R/41R

9-1 Exploded View Parts List (TM2540R)

No	Parts No.	Parts Name	Q'ty
1	08:3002211	Front Sheet	1
2	07:3002133	Front Panel	1
3	05:4003176	Nipple(Cuff Connector)	1
4	04:2000241	Front Chassis	1
5	PZ:3162-EX	Display Board	1
6	07:4003175	Power Switch Key Top	1
7	05:4003441	Switch Shaft	1
8	04:4003173	Spring	1
9	SP:SDDF A3-1A-1	Power Switch	1
10	04:3002092A	Left Side Chassis	1
11	PZ:3156	Main Board	1
12	07:U43213	Air Plug W	1
13	ET:C43446	ECEV	1
14	04:4003160	Valve Holder	1
15	ET:TDS-V05B-753	Electro-Magnetic Valve	1
16	04:4003159	Valve Chassis	1
17	07:2000240A	Rear Case	1
18	02:4003182	Handle	1
19	07:4003183	Handle Cover(upper)	1
	07:4003184	Handle Cover(lower)	1
20	08:4005335	Rating Plate	1
21	05:4005170	Handle Shaft	2
22	07:4003186	Handle Collar	2
24	ET:P05G	Pump	2
25	04:4003157	Pump Chassis	1
26	00:C41444	Filter Seal	2
27	07:C41443	Filter	2
28	06:4003158	Pump Cushion	2
32	04:3001185	Printer Chassis	1
36	TM:S-Q0204-02	Ground Terminal	1
37	JS:4301.0503	AC Inlet	1
	JS:4301.1403	Fuse Holder	1
	FS:EAWK-500MA	Fuse	2
38	04:2000240A	Main Chassis	1
39	06:U42731A	Air Socket	1
40	04:4005169A	Air Socket Chassis	1
42	MP:JAK05-3R0	Switching Power Supply	1
43	04:4005168	Power Supply Chassis	1
45	10:SQ-6	Spacer	4
46	PA:B49566	Air Filter	1
47	06:4003162	Valve Cushion	1
48	07:U41096A	Air Plug T	2
49	08:3002215	Rear Sheet	1
50	08:4003280	Fuse Rating Plate	1
51	10:K11W	Rubber Foot	4
54	10:NO-1677	Latch	1
55	07:4003187	Sheet	3
56	PZ:3158	Rear Board	1
57	SP:SS-5GL	Limit Switch	1
58	07:4003448	Switch Cap	1
59	TF:456	Transformer	1
60	05:4003165	Air Socket Cap	1
61	04:4005167	Switch Chassis	1
62	JA:HDEB-9P	Interface Connector	1

9-2 Exploded View Parts List (TM2541R)

No	Parts No.	Parts Name	Q'ty
1	08:3002101	Front Sheet	1
2	07:3002133	Front Panel	1
3	05:4003176	Nipple(Cuff Connector)	1
4	04:2000241	Front Chassis	1
5	PZ:3162-EX	Display Board	1
6	07:4003175	Power Switch Key Top	1
7	05:4003441	Switch Shaft	1
8	04:4003173	Spring	1
9	SP:SDDF A3-1A-1	Power Switch	1
10	04:3002092A	Left Side Chassis	1
11	PZ:3156	Main Board	1
12	07:U43213	Air Plug W	1
13	ET:C43446	ECEV	1
14	04:4003160	Valve Holder	1
15	ET:TDS-V05B-753	Electro-Magnetic Valve	1
16	04:4003159	Valve Chassis	1
17	07:2000242	Rear Case	1
18	02:4003182	Handle	1
19	07:4003183	Handle Cover(upper)	1
	07:4003184	Handle Cover(lower)	1
20	08:4005337	Rating Plate	1
21	05:4005170	Handle Shaft	2
22	07:4003186	Handle Collar	2
23	07:3001188		1
24	ET:P05G	Pump	2
25	04:4003157	Pump Chassis	1
26	00:C41444	Filter Seal	2
27	07:C41443	Filter	2
28	06:4003158	Pump Cushion	2
29	PZ:3159	Printer Board	1
30	04:3001186	Printer Table	1
31	EP:STP211-192	Printer	1
32	04:3001185	Printer Chassis	1
33	07:4003179	Photo Interrupter Hold Rod	1
34	04:3001187	Paper Holder	1
35	07:4003180A	Paper Cover Shaft Holder	1
36	TM:S-Q0204-02	Ground Terminal	1
37	JS:4301.0503	AC Inlet	1
	JS:4301.1403	Fuse Holder	1
	FS:EAWK-500MA	Fuse	2
38	04:2000240A	Main Chassis	1
39	06:U42731A	Air Socket	1
40	04:4005169A	Air Socket Chassis	1
41	07:4003188	Paper Cover	1
42	MP:JAK05-3R0	Switching Power Supply	1
43	04:4005168	Power Supply Chassis	1
44	05:4003189	Shaft for Paper Cover	1
45	10:SQ-6	Spacer	4
46	PA:B49566	Air Filter	1
47	06:4003162	Valve Cushion	1
48	07:U41096A	Air Plug T	2
49	08:3002095	Rear Sheet	1
50	08:4003280	Fuse Rating Plate	1
51	10:K11W	Rubber Foot	4
52	DF:GP2L01F	Photo Interrupter	1
	KO:964-04S020	Photo Interrupter Cable	1

53	04:4003178	Spacer for Latch	1
54	10:NO-1677	Latch	1
55	07:4003187	Sheet	3
56	PZ:3158	Rear Board	1
57	SP:SS-5GL	Limit Switch	1
58	07:4003448	Switch Cap	1
59	TF:456	Transformer	1
60	05:4003165	Air Socket Cap	1
61	04:4005167	Switch Chassis	1
62	JA:HDEB-9P	Interface Connector	1

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