PRELIMINARY SPECIFICATION

NEC
ELECTRON DEVICE

BIPOLAR ANALOG INTEGRATED CIRCUIT
μPC1378H

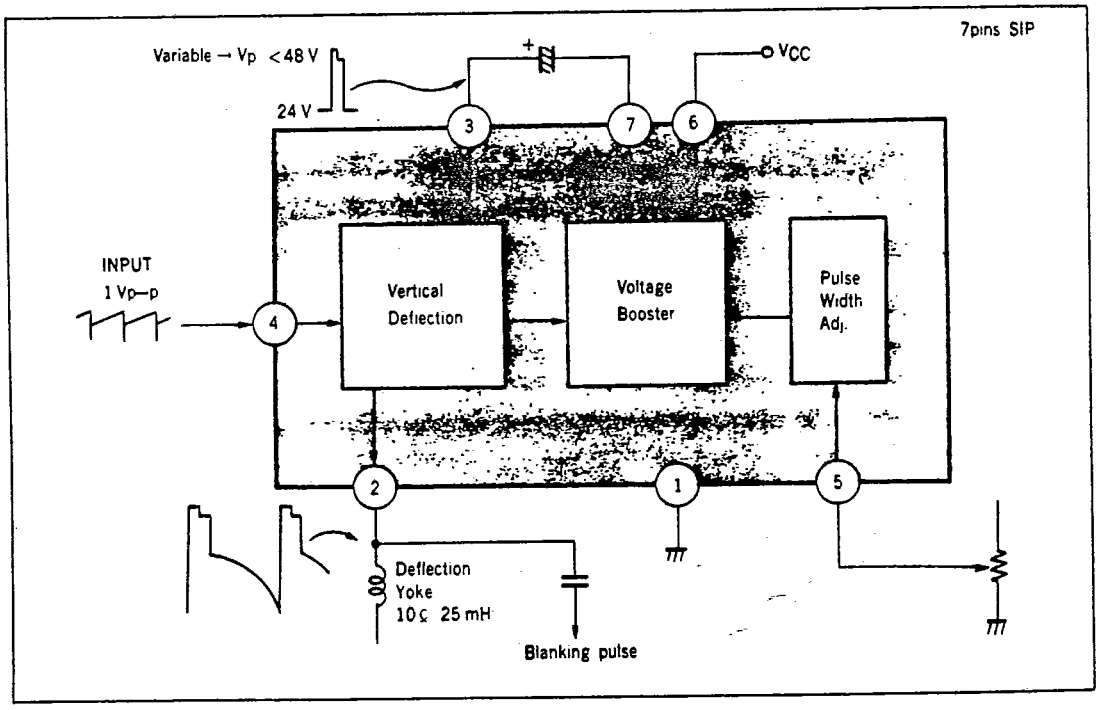
VERTICAL DEFLECTION CIRCUIT OF COLOR TV

The μPC1378H is a vertical deflection circuit suitable for color CRTs from 9 inches 90° deflection angle to 20 inches 100° deflection angle.
It is available for any color TV using IC or descrete components in the vertical ramp generator.

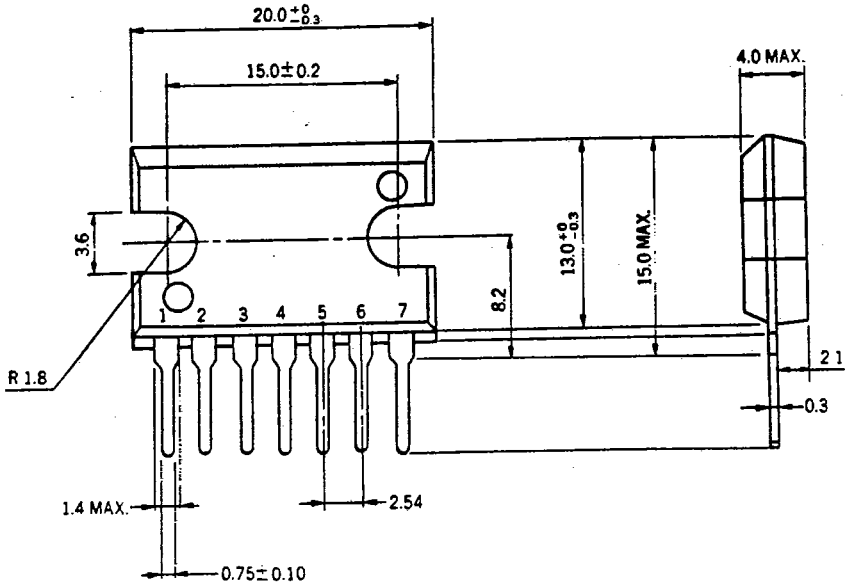
FEATURES

- The voltage booster circuit realizes particular high efficiency (24 V, 170 mA at 20 inches 100 degrees deflection angle set).
- Able to couple with any ramp generator, as it needs only ramp signal.
- Blanking pulse width is variable with a external bias circuit.

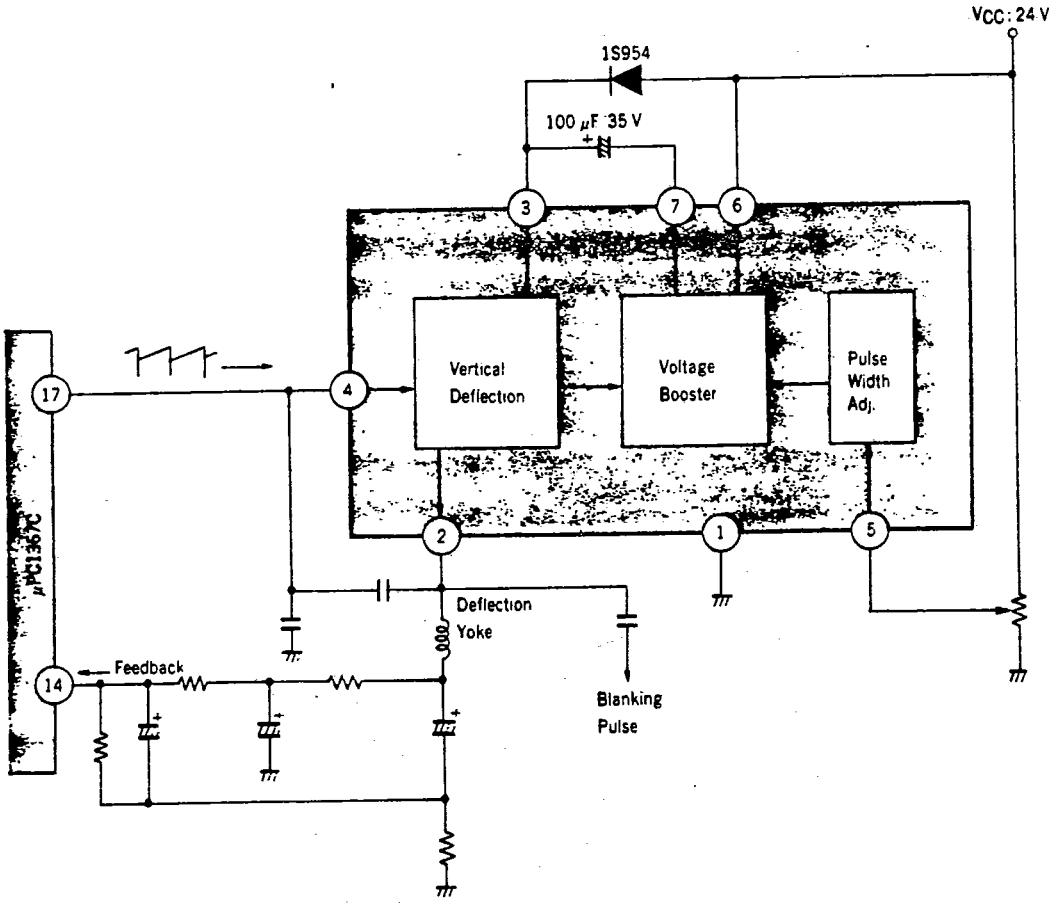
BLOCK DIAGRAM



PACKAGE DIMENSIONS (Unit : mm)



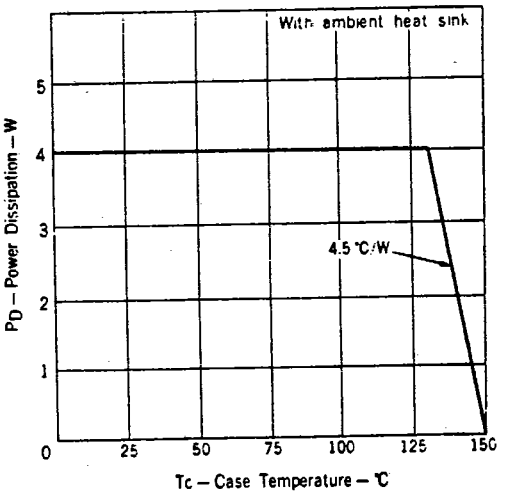
APPLICATION



ABSOLUTE MAXIMUM RATINGS (Ta=25 °C)

Power Supply Voltage	V_{CC}	27	V	
Power Supply Current Drain	I_{CC}	350	mA	
Power Dissipation	P_D	4.0	W	
Junction Temperature	T_j	+150	°C	
Storage Temperature	T_{stg}	−40 to +150	°C	
Output Current	I_{DEF}	−1.0 to +1.0	A	Pin 2
Terminal 3 Voltage	V_3	60	V	Pin 3
Input Voltage	V_4	2.0	V	Pin 4
Input Current	I_4	5	mA	Pin 4
Pulse Adjust Voltage	V_5	0 to V_6	V	Pin 5
Terminal 6 Voltage	V_6	27	V	Pin 6
Booster Output Current	I_B	−1.0 to +0.2	A	Pin 7

P_D – Tc CHARACTERISTIC



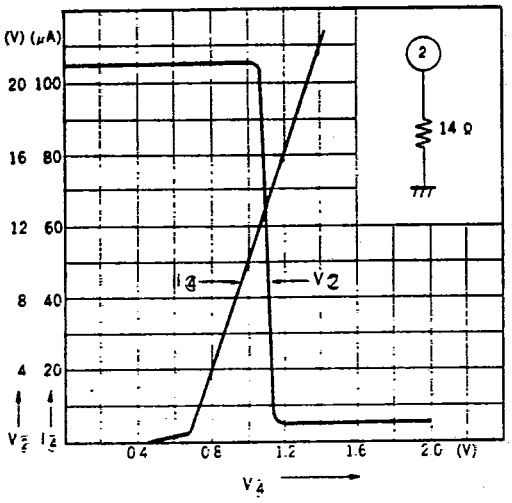
ELECTRICAL CHARACTERISTICS (T_a=25 °C, V_{CC}=24 V)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	PIN	CONDITION
Power Supply Current Drain	I_{CC}	130	150	170	mA	3+6	Standard Operation
Output Current	I_{DEF}	850	1000	1150	mA	2	Standard Operation
Output DC Voltage	V_{ODC}	12.1	12.6	13.1	V	2	Standard Operation
Retrace Pulse Voltage – 1	$V_{2p(1)}$	47		55	V	2	V_5=0 V
Retrace Pulse Voltage – 2	$V_{2p(2)}$	38		45	V	2	V_5=8 V
Retrace Pulse Width – 1	$T_{2p(1)}$	800	950	1100	μs	2	V_5=0 V
Retrace Pulse Width – 2	$T_{2p(2)}$	1050	1200	1350	μs	2	V_5=8 V
Idling Current	I_Q	20	35	50	mA	3	I_3, No Output
Booster Charging Saturation	V_{S7-1}		1.5	2.0	V	7	24 V – 2 MΩ – Pin 4 24 V – 1.2 kΩ – Pin 7
Booster Discharging Saturation	V_{S6-7}	1.5	2.5	4.0	V	7	Pin 4 = Open Pin 1 – 33 Ω – GND.
Booster Charging Current – 1	$I_{7(1)}$	50	80	110	mA	7	24 V – 2 MΩ – Pin 4
Booster Charging Current – 2	$I_{7(2)}$	50	80	110	mA	7	V_4=1.0 V
Output Saturation – 1	$V_{S2-1(1)}$		0.9	1.5	V	2	24 V – 220 kΩ – Pin 4 24 V – 33 Ω – Pin 2
Output Saturation – 2	$V_{S2-1(2)}$		0.9	1.5	V	2	V_4=2.0 V 24 V – 33 Ω – Pin 2
Output Saturation – 3	V_{S3-2}	2.0	3.0	4.5	V	2	Pin 4 = Open Pin 2 – 33 Ω – GND.
Input Saturation	V_{S4}	1.0	2.0	3.0	V	4	24 V – 220 kΩ – Pin 4
Voltage Gain	A_{VO}	25	35	45	dB		f_{in}=1 kHz, R_L=1 Ω
Input Resistance	R_{in}	4.5	5.5	6.5	kΩ	4	V_{4DC}=1.1 V
J-C Thermal Resistance	θ_{j-c}			4.5	°C/W		With ambient heat sink

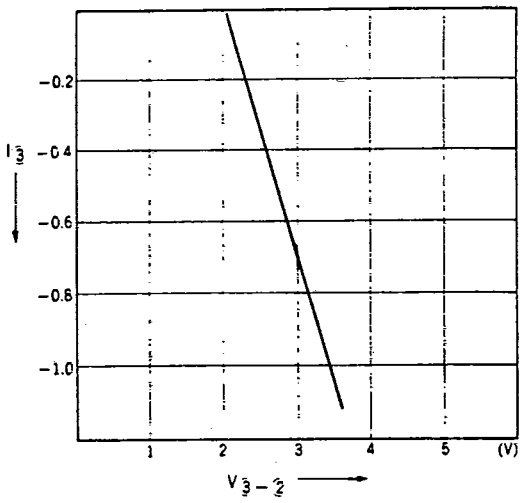
TYPICAL CHARACTERISTICS

1. Deflection Amplifier

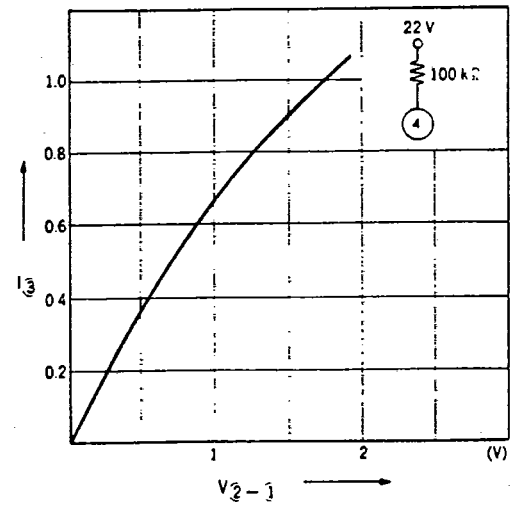
Input—Output Characteristic



Output Saturation (1)

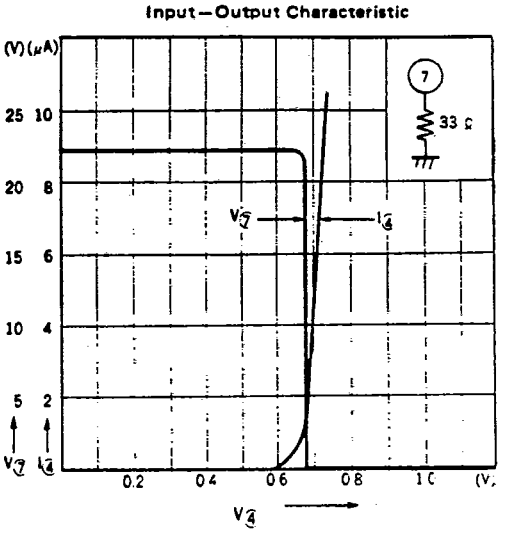


Output Saturation

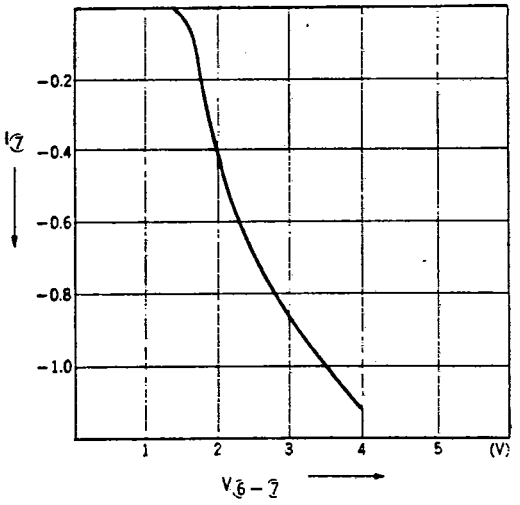


2. Voltage Booster

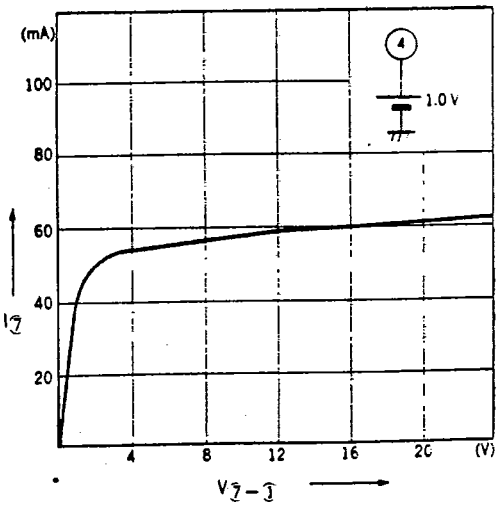
Input—Output Characteristic



Discharge Characteristic



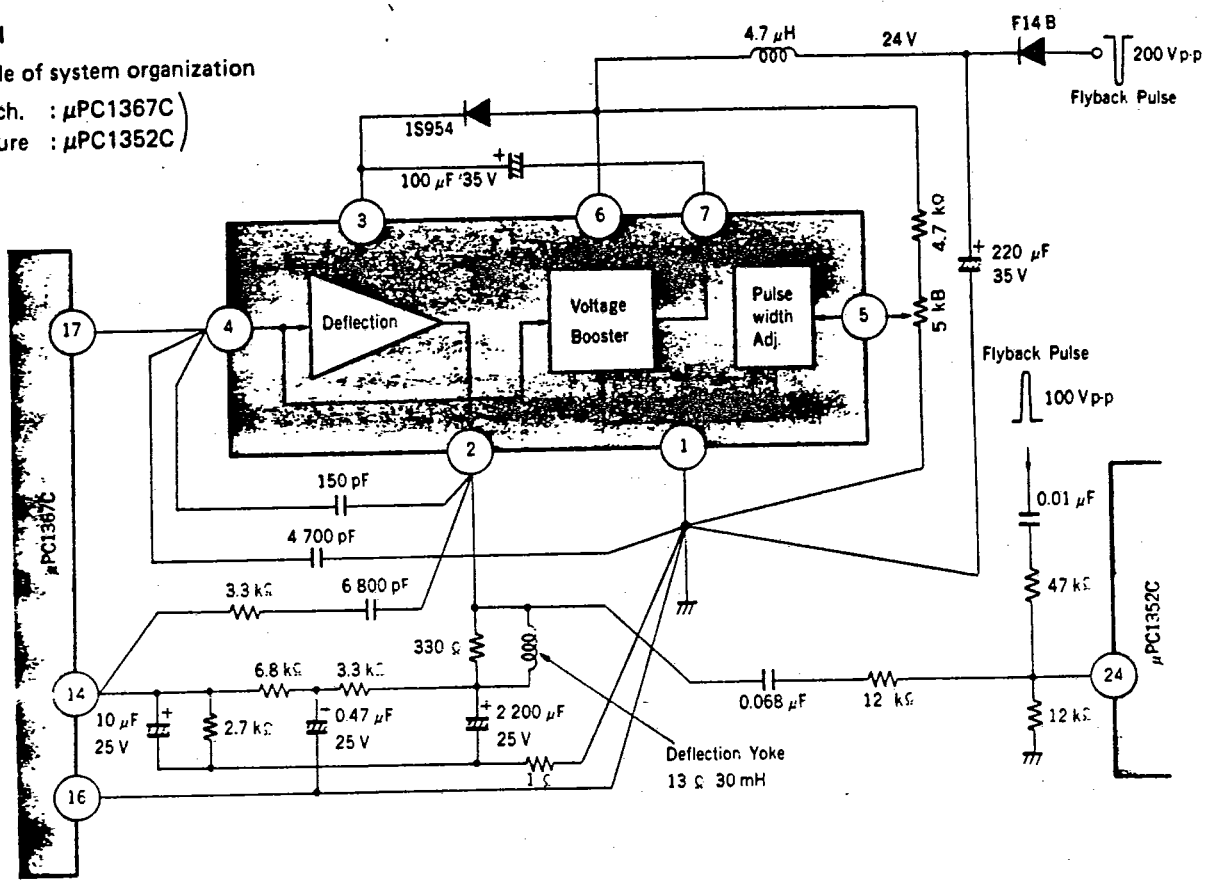
Charge Characteristic



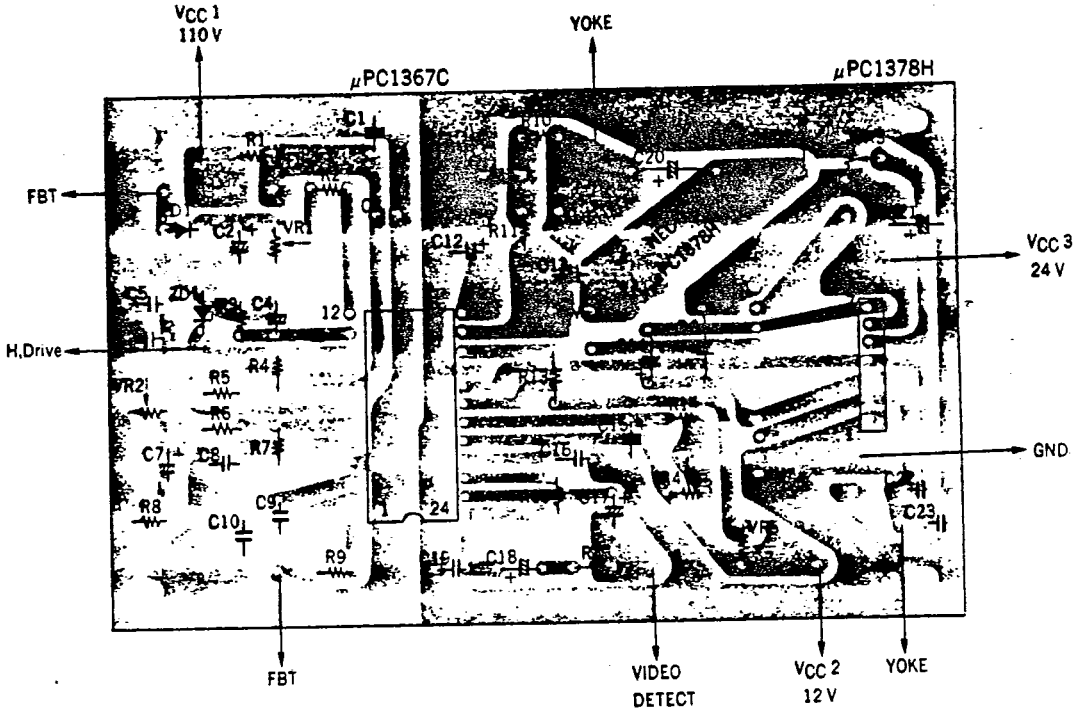
μPC1378H

Example of system organization

(Synch. : μPC1367C
Picture : μPC1352C)



PRINT PATTERN AND LAYOUT



JUMP : μPC1367C Pin ⑭ – 3.3 kΩ – 6 800 pF – μPC1378H Pin ②

COMPONENTS

R1	8.2 kΩ	3 W
R2	1 kΩ	1/4 W
R3	12 kΩ	1/4 W
R4	2.2 kΩ	1/4 W
R5	4.7 kΩ	1/4 W
R6	1.8 kΩ	1/4 W
R7	33 kΩ	1/4 W
R8	3.9 kΩ	1/4 W
R9	100 kΩ	1/4 W
R10	3.3 kΩ	1/4 W
R11	6.8 kΩ	1/4 W
R12	2.7 kΩ	1/4 W
R13	91 kΩ	1/4 W
R14	6.8 kΩ	1/4 W
R15	2 MΩ	1/4 W
R16	470 Ω	1/4 W
R17	1 Ω	1/4 W
VR1	10 kB	
VR2	2 kB	
VR3	10 kB	
VR4	10 kB	
VR5	300 kB	

C1	10 μF	150 V
C2	10 μF	50 V
C3	0.01 μF	
C4	3.3 μF	16 V
C5	10 000 pF	
C6	5 600 pF	
C7	1 μF	16 V
C8	0.01 μF	
C9	0.1 μF	
C10	0.01 μF	
C11	0.47 μF	16 V
C12	0.47 μF	16 V (Tantalum)
C13	10 μF	25 V (Tantalum)
C14	100 μF	35 V
C15	3.3 μF	16 V (Tantalum)
C16	0.027 μF	
C17	10 μF	16 V
C18	2.2 μF	16 V
C19	1 500 pF	
C20	2 200 μF	25 V
C21	100 μF	35 V
C22	220 pF	
C23	0.022 μF	
D1	1S953	
D2	1S954	
ZD1	RD6.2E	