



BIPOLAR ANALOG INTEGRATED CIRCUIT

μ PC1378H

VERTICAL DEFLECTION CIRCUIT OF COLOR TV

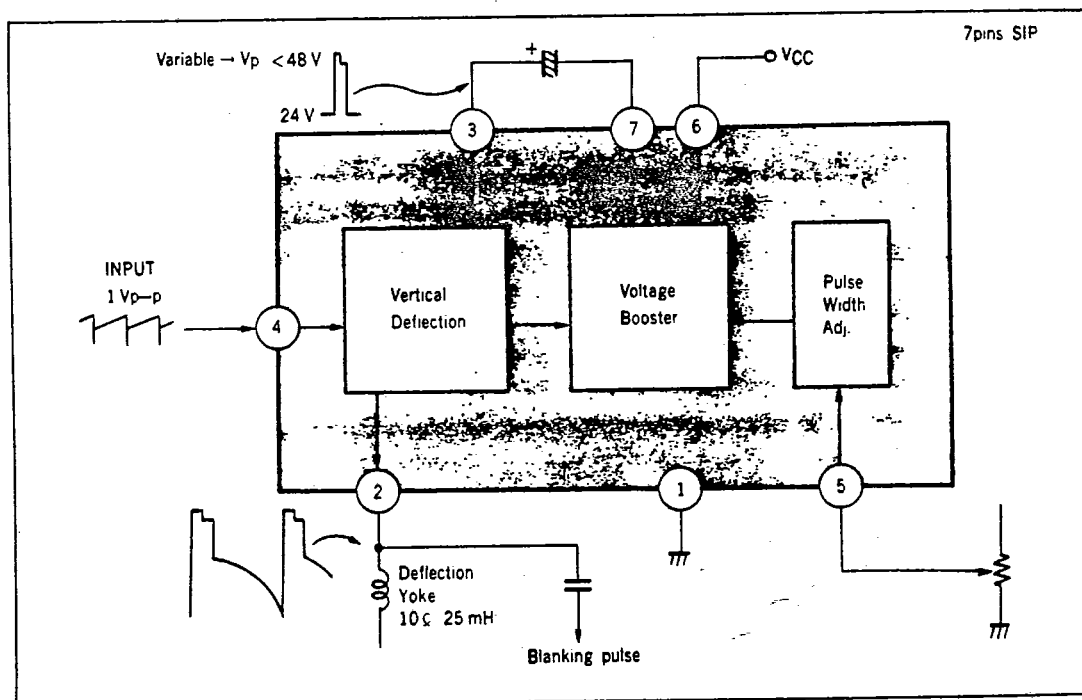
The μ PC1378H is a vertical deflection circuit suitable for color CRTs from 9 inches 90° deflection angle to 20 inches 100° deflection angle.

It is available for any color TV using IC or discrete components in the vertical ramp generator.

FEATURES

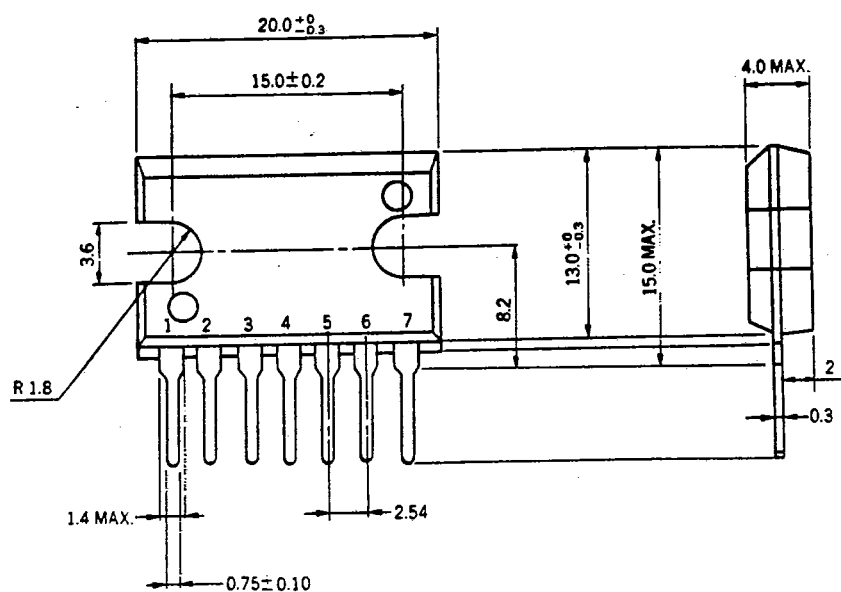
- The voltage booster circuit realizes particular high efficiency (24 V, 170 mA at 20 inches 100 degrees deflection angle set).
- Able to couple with any ramp generator, as it needs only ramp signal.
- Blanking pulse width is variable with a external bias circuit.

BLOCK DIAGRAM

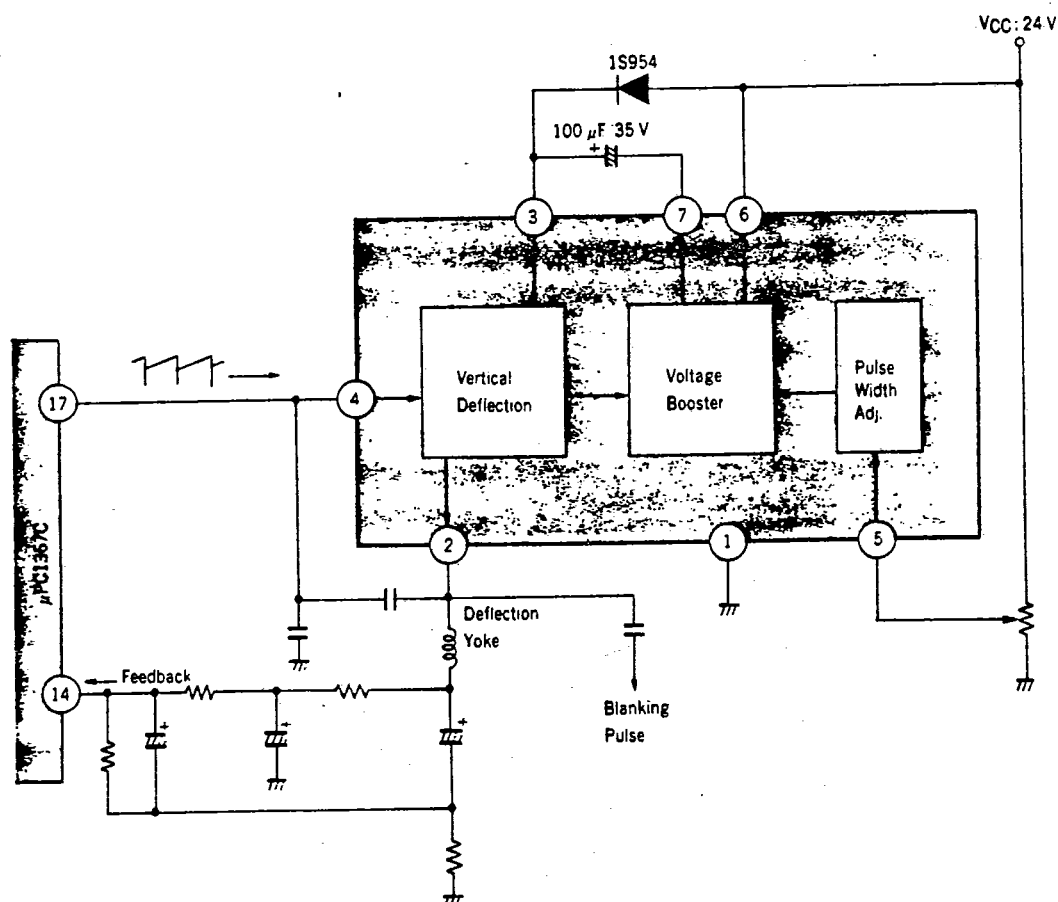


NEC ELECTRON DEVICE

PACKAGE DIMENSIONS (Unit : mm)

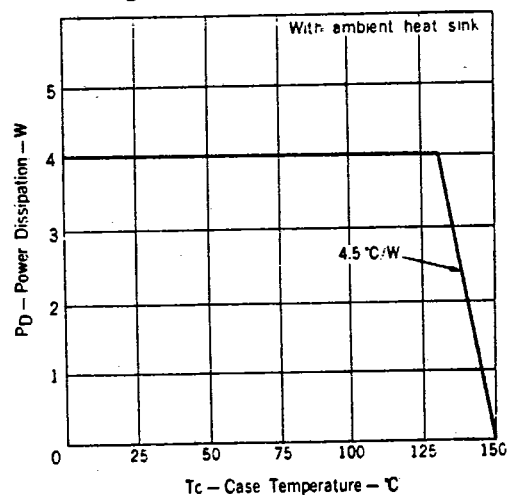


APPLICATION



NEC ELECTRON DEVICE**μPC1378H****ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)**

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	$^\circ\text{C}$	
Storage Temperature	T_{stg}	-40 to +150	$^\circ\text{C}$	
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

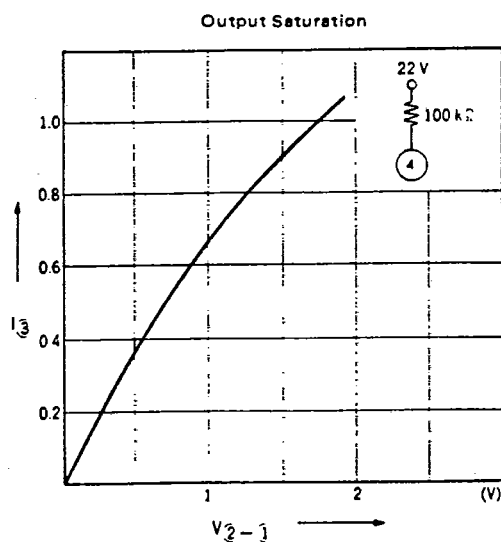
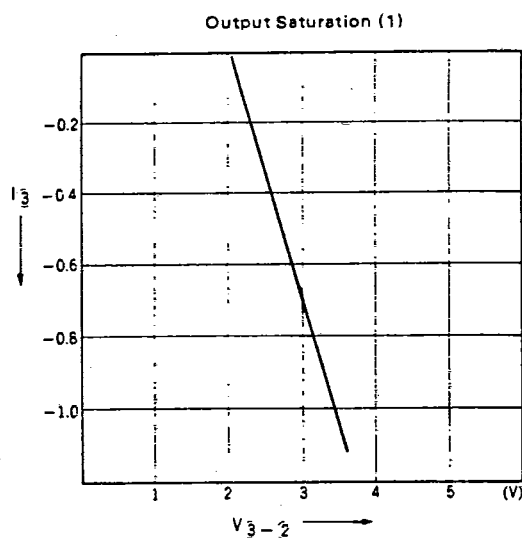
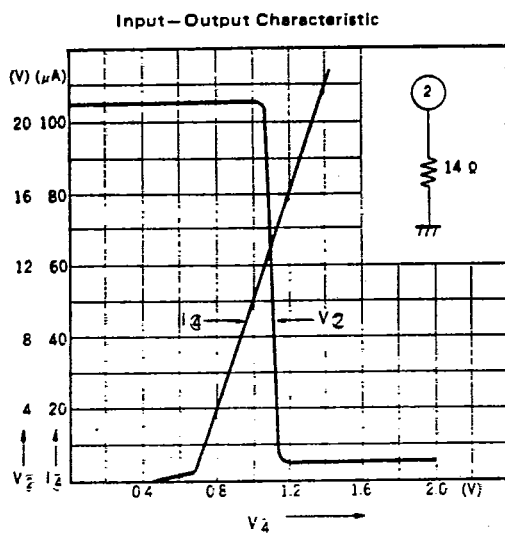
 $P_D - T_c$ CHARACTERISTIC

μPC1378H**NEC** ELECTRON DEVICE**ELECTRICAL CHARACTERISTICS (T_a=25 °C, V_{CC}=24 V)**

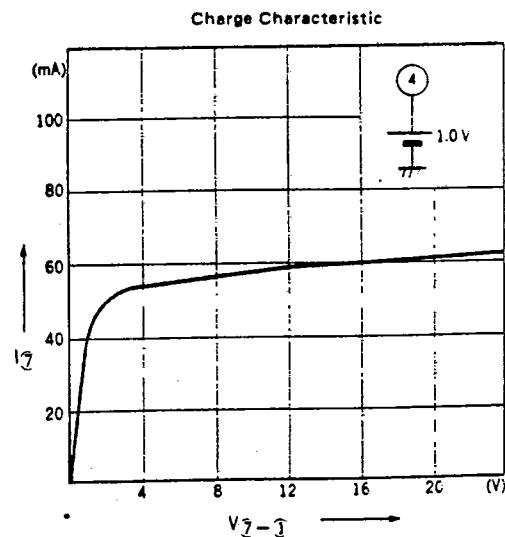
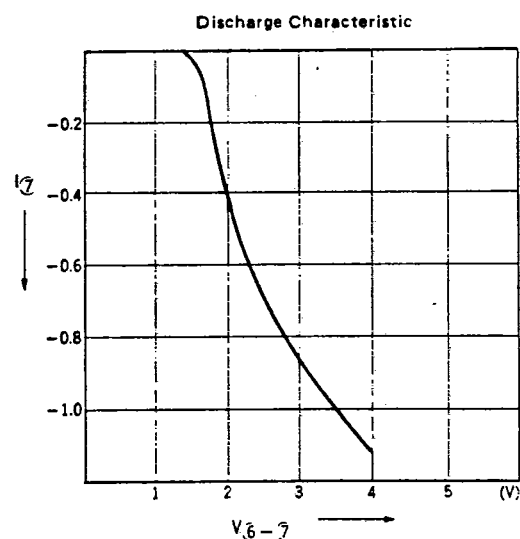
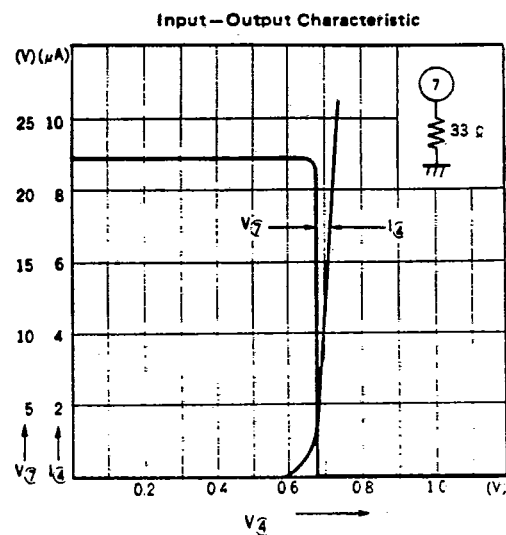
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	PIN	CONDITION
Power Supply Current Drain	I _{CC}	130	150	170	mA	3+6	Standard Operation
Output Current	I _{DEF}	850	1000	1150	mA	2	Standard Operation
Output DC Voltage	V _{ODC}	12.1	12.6	13.1	V	2	Standard Operation
Retrace Pulse Voltage - 1	V _{2p(1)}	47		55	V	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



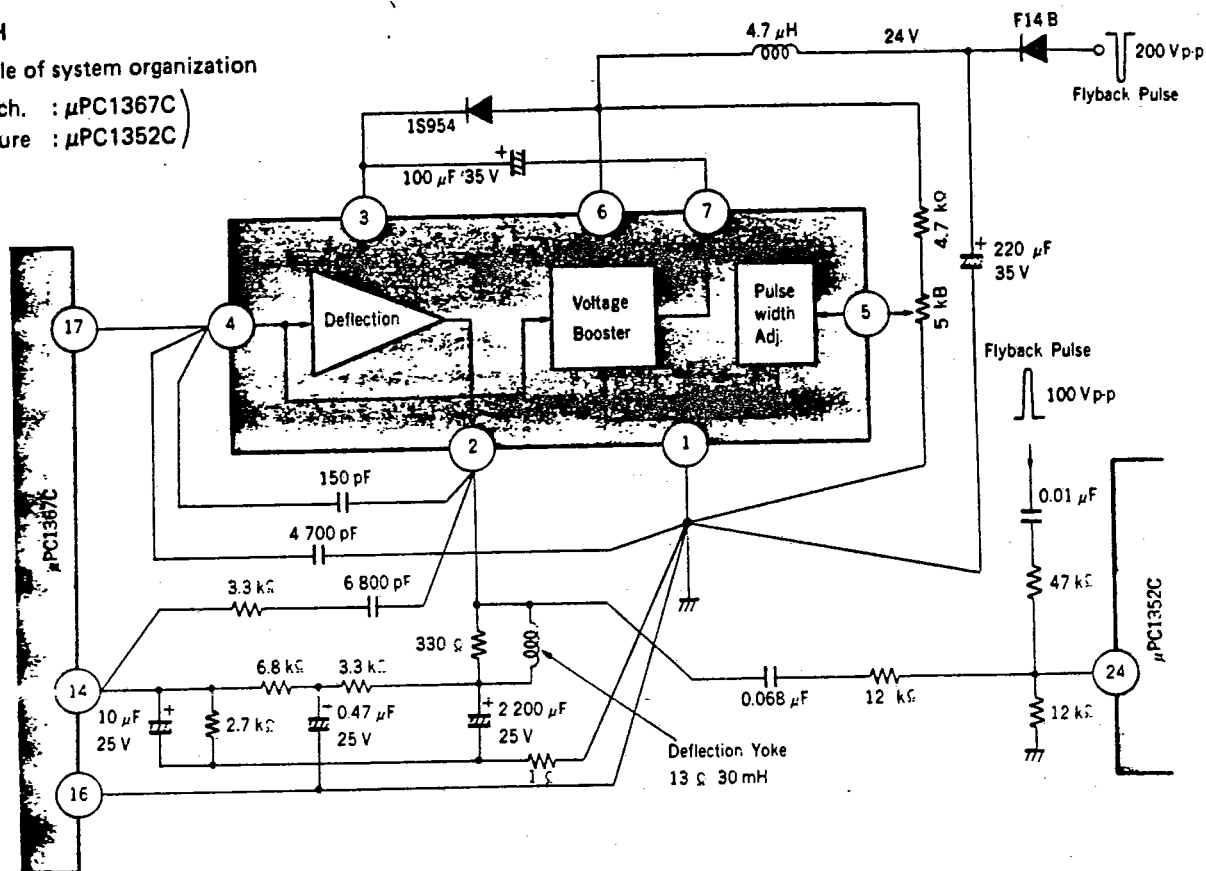
2. Voltage Booster



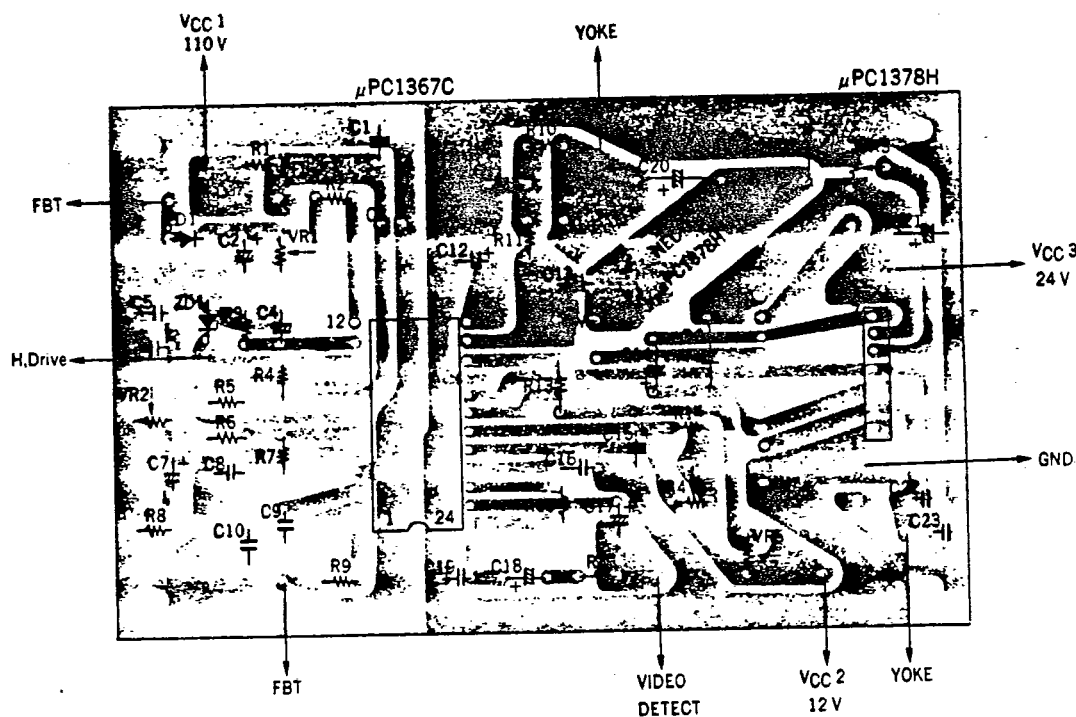
μPC1378H

Example of system organization

(Synchronisation : μ PC1367C)
(Picture : μ PC1352C)



PRINT PATTERN AND LAYOUT



JUMP : μ PC1367C Pin ⑭ - 3.3 k Ω - 6 800 pF - μ PC1378H Pin ②

COMPONENTS

R1	8.2 k Ω	3 W	C1	10 μ F	150 V
R2	1 k Ω	1/4 W	C2	10 μ F	50 V
R3	12 k Ω	1/4 W	C3	0.01 μ F	
R4	2.2 k Ω	1/4 W	C4	3.3 μ F	16 V
R5	4.7 k Ω	1/4 W	C5	10 000 pF	
R6	1.8 k Ω	1/4 W	C6	5 600 pF	
R7	33 k Ω	1/4 W	C7	1 μ F	16 V
R8	3.9 k Ω	1/4 W	C8	0.01 μ F	
R9	100 k Ω	1/4 W	C9	0.1 μ F	
R10	3.3 k Ω	1/4 W	C10	0.01 μ F	
R11	6.8 k Ω	1/4 W	C11	0.47 μ F	16 V
R12	2.7 k Ω	1/4 W	C12	0.47 μ F	16 V (Tantalum)
R13	91 k Ω	1/4 W	C13	10 μ F	25 V (Tantalum)
R14	6.8 k Ω	1/4 W	C14	100 μ F	35 V
R15	2 M Ω	1/4 W	C15	3.3 μ F	16 V (Tantalum)
R16	470 Ω	1/4 W	C16	0.027 μ F	
R17	1 Ω	1/4 W	C17	10 μ F	16 V
VR1	10 k Ω		C18	2.2 μ F	16 V
VR2	2 k Ω		C19	1 500 pF	
VR3	10 k Ω		C20	2 200 μ F	25 V
VR4	10 k Ω		C21	100 μ F	35 V
VR5	300 k Ω		C22	220 pF	
			C23	0.022 μ F	
			D1	1S953	
			D2	1S954	
			ZD1	RD6.2E	