



BIPOLAR ANALOG INTEGRATED CIRCUIT

μ PC1378H

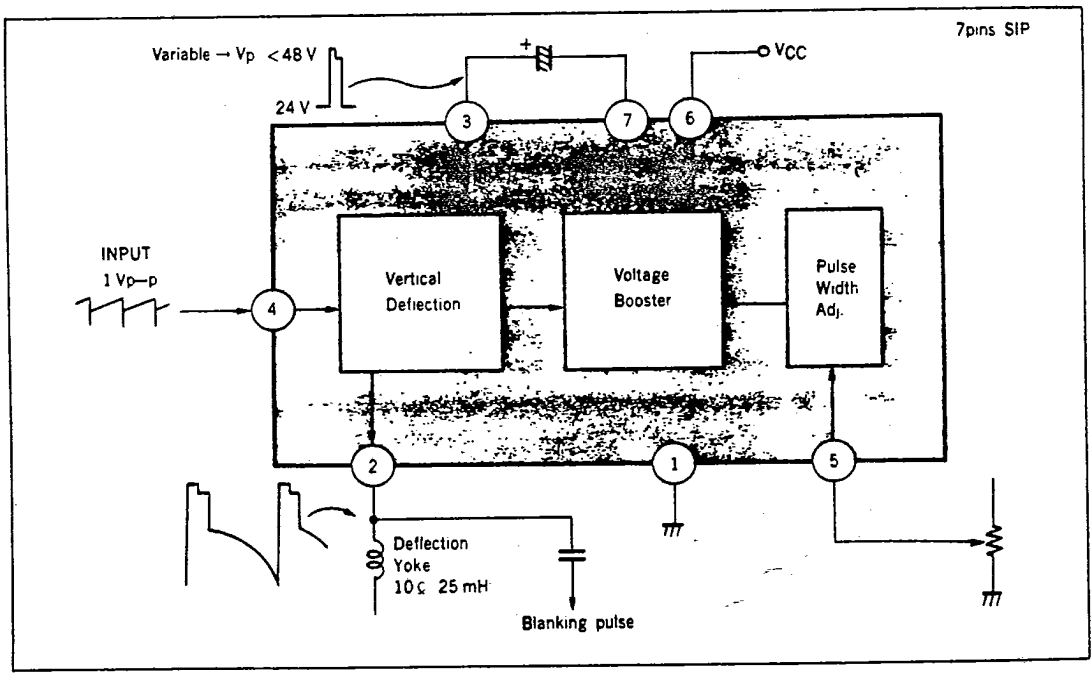
VERTICAL DEFLECTION CIRCUIT OF COLOR TV

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

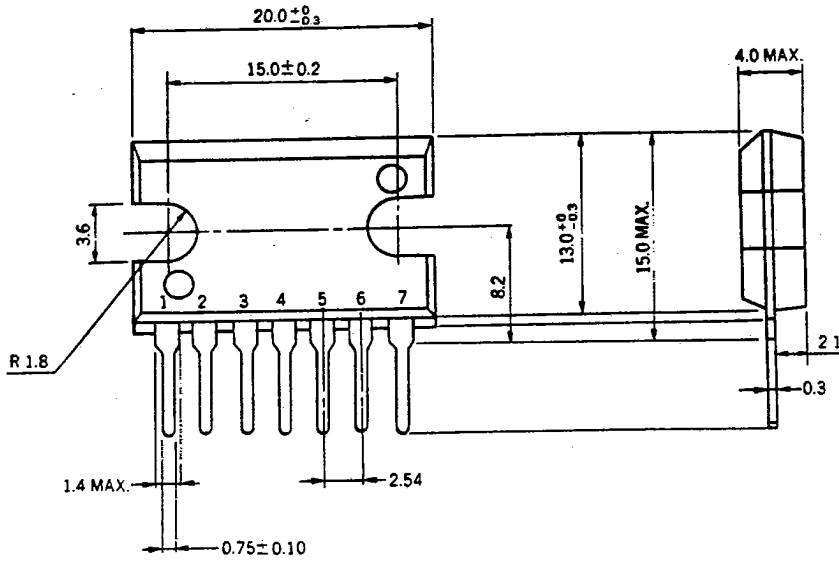


NEC cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement.

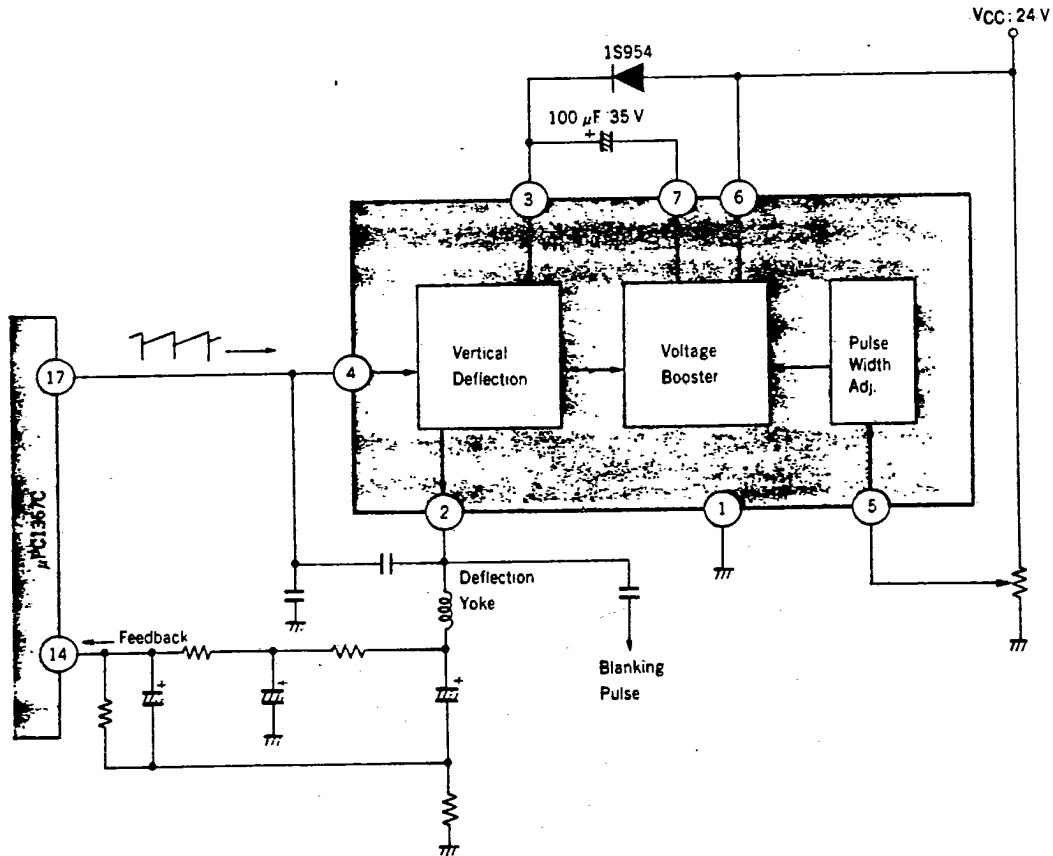
Nippon Electric Co., Ltd.

μPC1378H

PACKAGE DIMENSIONS (Unit : mm)

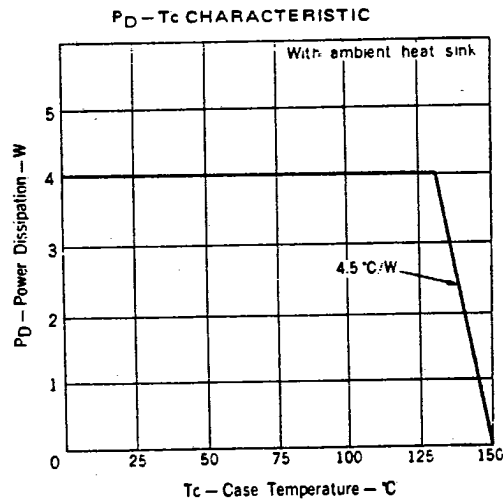


APPLICATION



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



μ PC1378H

NEC ELECTRON DEVICE

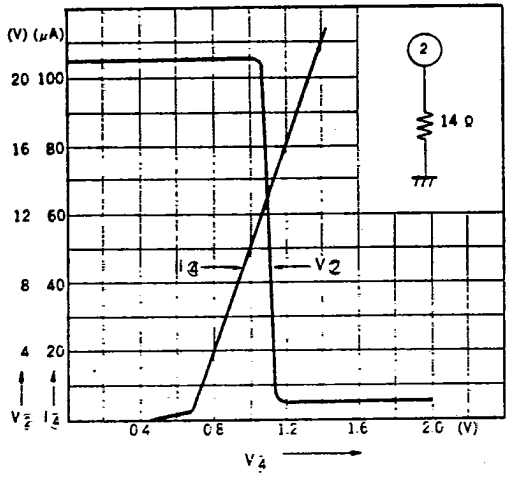
ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$, $V_{CC}=24\text{V}$)

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	$V_5=0\text{V}$
Retrace Pulse Voltage - 2	$V_{2p(2)}$	38		45	V	2	$V_5=8\text{V}$
Retrace Pulse Width - 1	$T_{2p(1)}$	800	950	1100	μs	2	$V_5=0\text{V}$
Retrace Pulse Width - 2	$T_{2p(2)}$	1050	1200	1350	μs	2	$V_5=8\text{V}$
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 M Ω - Pin 4 24 V - 1.2 k Ω - 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 M Ω - Pin 4
Booster Charging Current - 2	$I_7(2)$	50	80	110	mA	7	$V_4=1.0\text{V}$
Output Saturation - 1	$V_{S2-1(1)}$		0.9	1.5	V	2	24 V - 220 k Ω - Pin 4 24 V - 33 Ω - Pin 2
Output Saturation - 2	$V_{S2-1(2)}$		0.9	1.5	V	2	$V_4=2.0\text{V}$ 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 k Ω - Pin 4
Voltage Gain	A_{VO}	25	35	45	dB		$f_{in}=1\text{kHz}$, $R_L=1\ \Omega$
Input Resistance	R_{in}	4.5	5.5	6.5	k Ω	4	$V_{4DC}=1.1\text{V}$
J-C Thermal Resistance	θ_{j-c}			4.5	$^\circ\text{C/W}$		With ambient heat sink

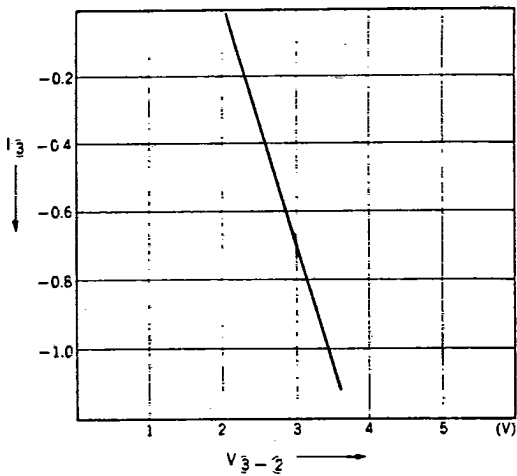
TYPICAL CHARACTERISTICS

1. Deflection Amplifier

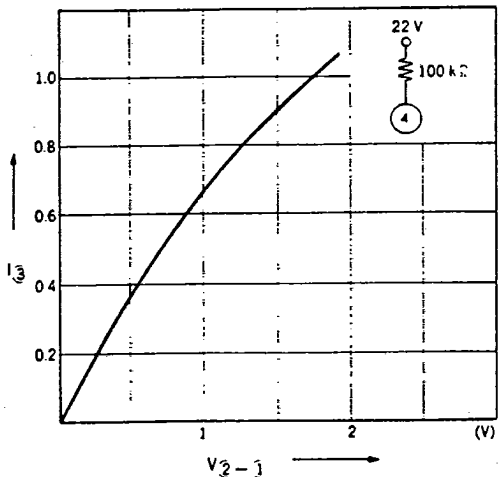
Input-Output Characteristic



Output Saturation (1)

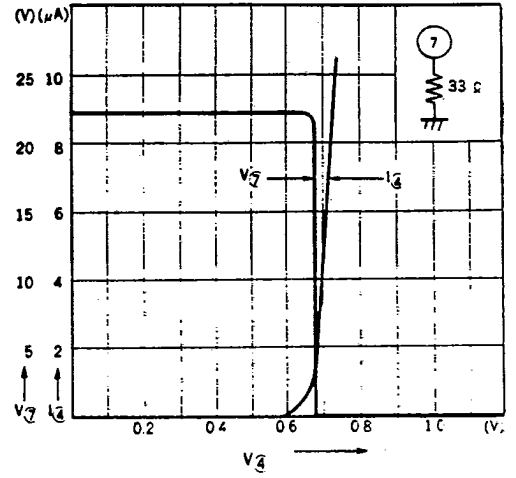


Output Saturation

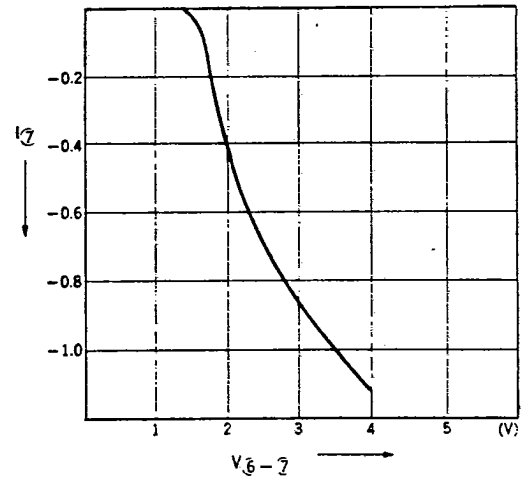


2. Voltage Booster

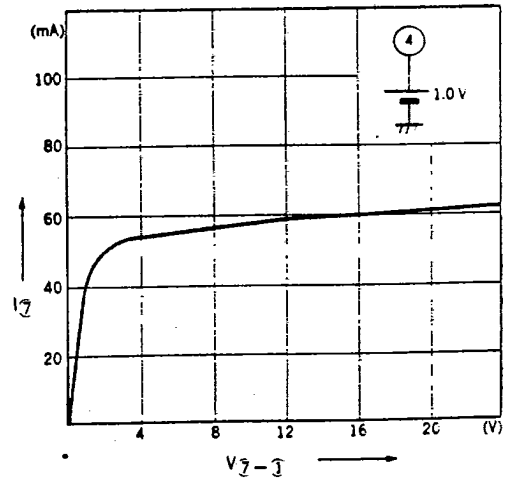
Input-Output Characteristic



Discharge Characteristic



Charge Characteristic

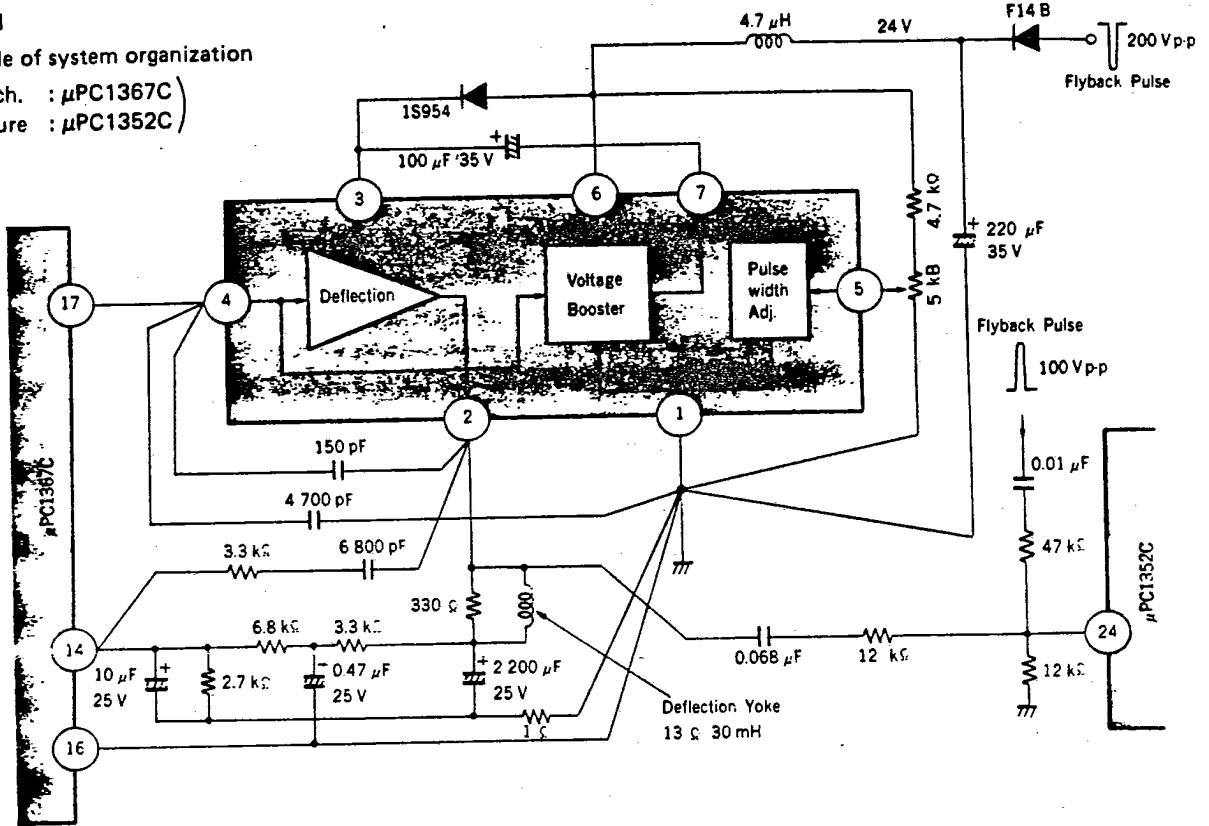


μPC1378H

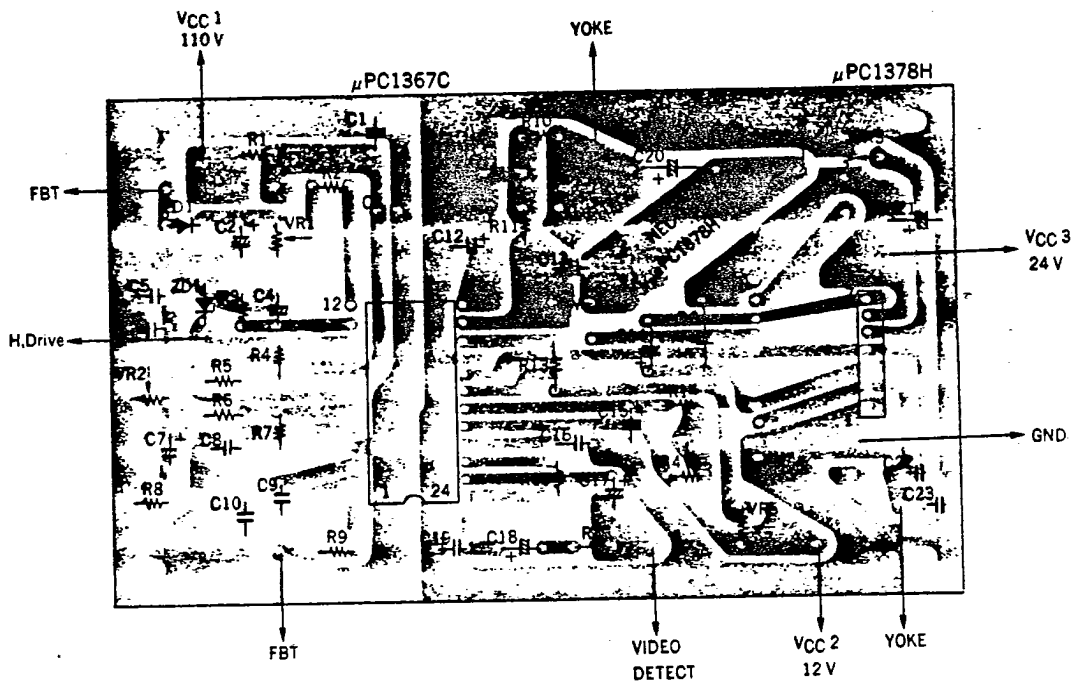
μPC1378H

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