



**ELECTRONICS, INC.**  
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## NTE1858 Integrated Circuit Vertical Deflection Circuit

**Description:**

The NTE1858 is a full performance and very efficient vertical deflection circuit in an 11-Lead SIP type package intended for direct drive of a TV picture tube in Color and B & W television as well as in Monitor and Data Displays.

**Features:**

- Ramp Generator
- Independent Amplitude Adjustment
- Buffer Stage
- Power Amplifier
- Flyback Generator
- Internal Reference Voltage
- Thermal Protection

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Supply Voltage, $V_S$ .....	35V
Flyback Peak Voltage, $V_1, V_2$ .....	65V
Trigger Input Voltage, $V_3$ .....	20V
Amplifier Input Voltage, $V_9$ .....	GND to $V_S$ V
Output Peak to Peak Current, $I_O$	
Non-Repetitive, $t = 2\text{ms}$ .....	6A
$t > 10\mu\text{s}$ .....	4A
Pin11 DC Current ( $V_1 < V_{10}$ ), $I_{11}$ .....	100mA
Pin11 Peak-to-Peak Current ( $t_{8y} < 1.5\text{ms}$ ) .....	3A
Total Power Dissipation ( $T_A = +60^\circ\text{C}$ ), $P_{tot}$ .....	30W
Junction Temperature Range, $T_j$ .....	$0^\circ$ to $+150^\circ\text{C}$
Ambient Temperature Range, $T_A$ .....	$0^\circ$ to $+70^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-40^\circ$ to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Tab, $R_{th(j-tab)}$ .....	$3^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient, $R_{th(j-amb)}$ .....	$40^\circ\text{C/W}$

**DC Electrical Characteristics:** ( $V_S = 35V$ ,  $T_A = 25^\circ C$  unless otherwise specified)

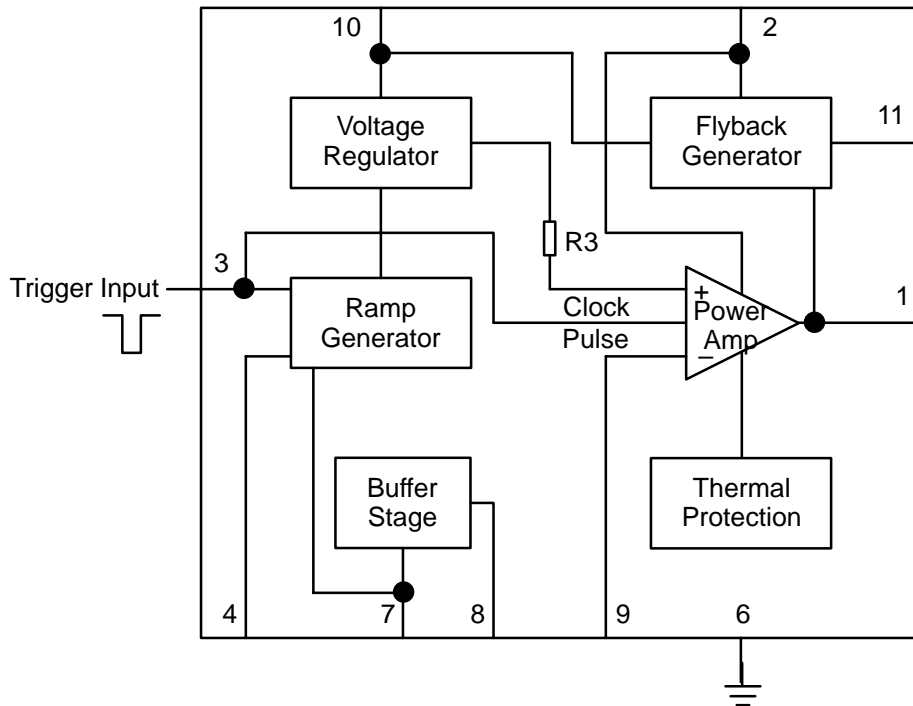
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Quiescent Current (Pin2)	$I_2$	$I_1 = 0, I_{11} = 0$	–	16	36	mA
Quiescent Current (Pin10)	$I_{10}$	$I_1 = 0, I_{11} = 0$	–	15	30	mA
Ramp Generator Bias Current	$-I_7$	$V_7 = 0$	–	–	0.6	$\mu A$
Ramp Generator Current	$-I_7$	$V_7 = 0, -I_4 = 20\mu A$	18.6	20	21.6	$\mu A$
Ramp Generator Linearity	$dI_7/I_7$	$V_6 = 0$ to 15V, $-I_4 = 20\mu A$	–	0.2	1	%
Quiescent Output Voltage	$V_1$	$R_a = 30k, R_b = 10k,$ $V_S = 35V$	17.0	17.8	18.6	V
		$R_a = 6.8k, R_b = 10k,$ $V_S = 15V$	7.2	7.6	7.8	V
Out Saturation Voltage to GND	$V_{1L}$	$I_1 = 0.5A$	–	0.5	1	V
		$I_1 = 1.2A$	–	1	1.4	V
Out Saturation Voltage to $V_S$	$V_{1H}$	$-I_1 = 0.5A$	–	1.1	1.6	V
		$-I_1 = 1.2A$	–	1.6	2.2	V
Reference Voltage	$V_4$	$-I_4 = 20\mu A$	6.3	6.6	6.9	V
Reference Voltage Drift versus $V_S$	$dV_4/dV_S$	$V_S = 10V$ to 35V	–	1	2	mV/V
Reference Voltage Drift versus $I_4$	$dV_4/dI_4$	$I_4 = 10\mu A$ to $30\mu A$	–	1.5	2	mV/ $\mu A$
Internal Reference Voltage	$V_r$		4.26	4.40	4.54	V
Diode Forward Voltage	$V_{D11-10}$	$I_O = 1.2A$	–	2.2	3.0	V
Diode Forward Voltage	$V_{D1-2}$	$I_O = 1.2A$	–	2.2	3.0	V
Output Stage Open Loop Gain	$G_V$	$f = 100Hz$	–	60	–	dB
Saturation Voltage ( $V_{10-11}$ )	$V_{IS}$	$-I_{11} = 1.2A$	–	1.5	2.5	V
Scanning Voltage (Pin11)	$V_{11}$	$I_{11} = 20mA$	–	1.7	3.0	V
Trigger Input Threshold	$V_3$	Note 1	2.6	3.0	3.4	V
Trigger Input Bias Current	$I_3$	$V_{IN} = V_3 \cdot 0.2V$	–	–	30	$\mu A$
Trigger Input Width	$t_3$	Note 2	20	60	Th	$\mu s$

**AC Electrical Characteristics:** ( $V_S = 24V$ ,  $T_A = 25^\circ C$  unless otherwise specified)

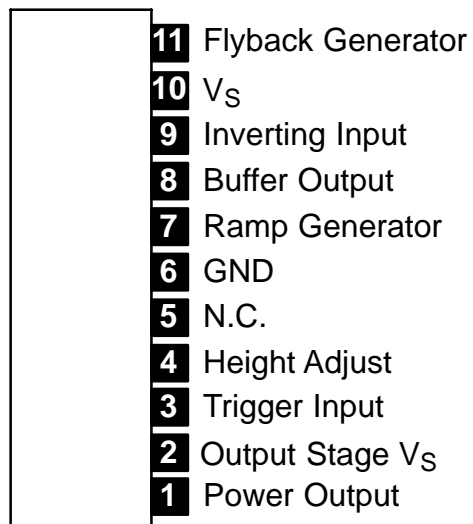
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Operating Supply Range	$V_S$		10	–	30	V
Peak-to-Peak Operating Current Range	$I_l$		0.4	–	2.5	A
Supply Current	$I_S$	$I_y = 2.4A_{PP}$	–	31.5	–	mA
Flyback Voltage	$V_1$	$I_y = 2.4A_{PP}$	–	51	–	V
Sawtooth Pedestal Voltage	$V_8$		–	1.85	–	V
Junction Temperature for Thermal Shutdown	$T_{js}$		–	145	–	$^\circ C$

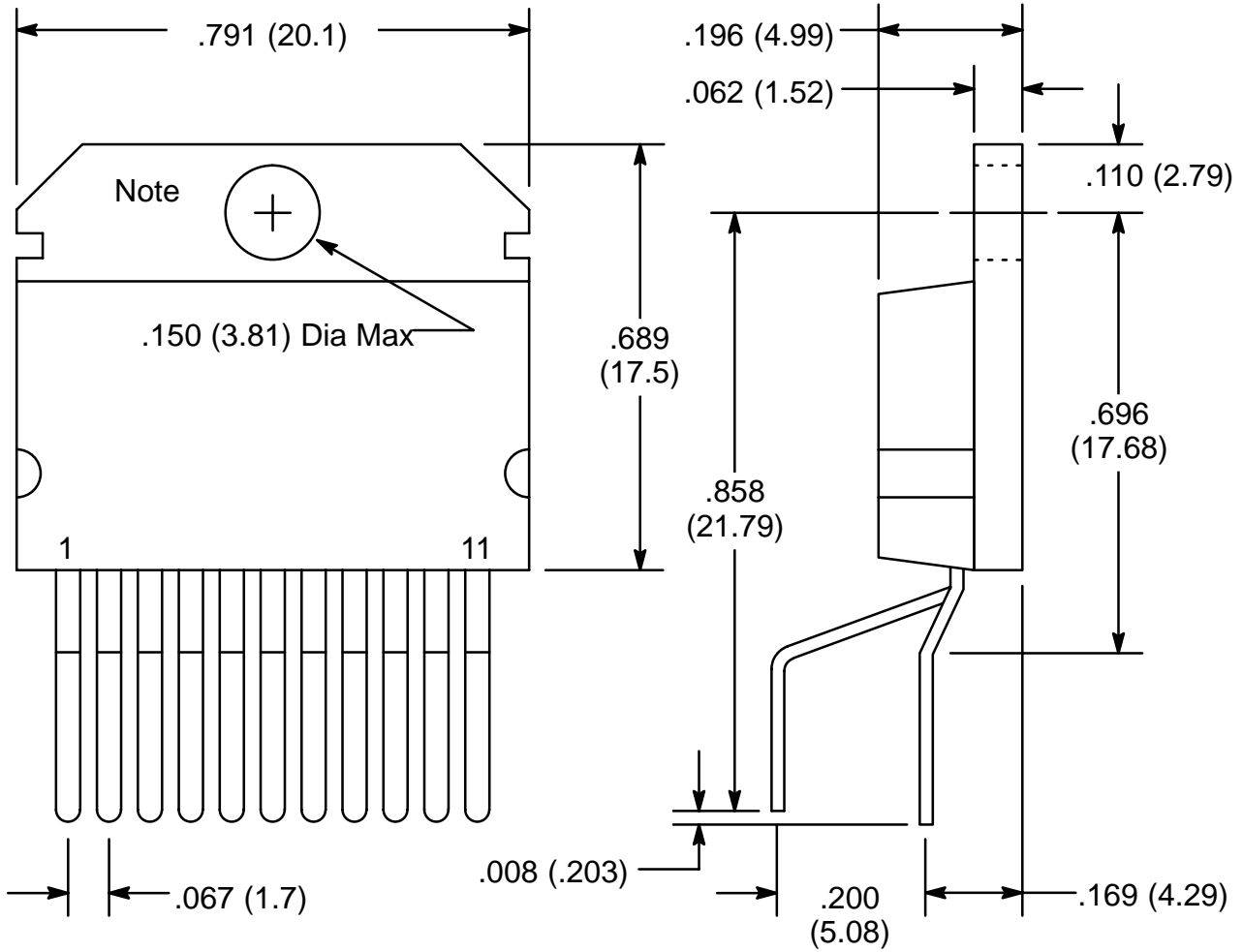
Note 1: The trigger input circuit can accept, optionally, positive and negative going input pulses.

### Block Diagram



### Pin Connection Diagram (Front View)





**NOTE:** Tab connected o Pin6