



ELECTRONICS, INC.
 44 FARRAND STREET
 BLOOMFIELD, NJ 07003
 (973) 748-5089

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° to $+150^\circ\text{C}$ |
| Ambient Temperature Range, T_A | 0° to $+70^\circ\text{C}$ |
| Storage Temperature Range, T_{stg} | -40° to $+150^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Tab, $R_{th(j-tab)}$ | 3°C/W |
| Thermal Resistance, Junction-to-Ambient, $R_{th(j-amb)}$ | 40°C/W |

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

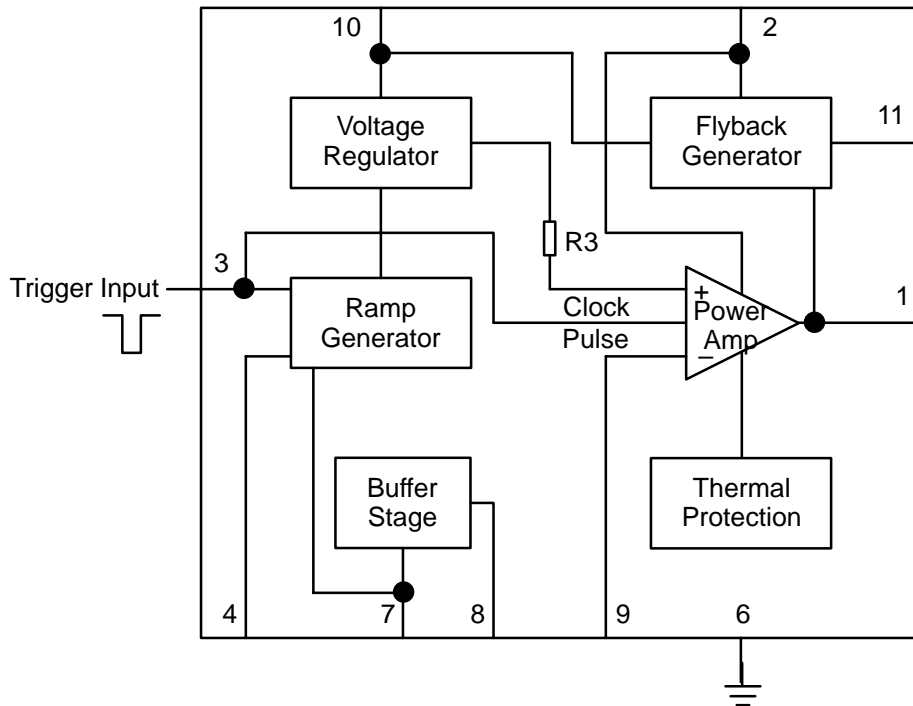
| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|--------------|-----------------------------------------|------|------|------|-------------|
| Quiescent Current (Pin2) | I_2 | $I_1 = 0, I_{11} = 0$ | – | 16 | 36 | mA |
| Quiescent Current (Pin10) | I_{10} | $I_1 = 0, I_{11} = 0$ | – | 15 | 30 | mA |
| Ramp Generator Bias Current | $-I_7$ | $V_7 = 0$ | – | – | 0.6 | μA |
| Ramp Generator Current | $-I_7$ | $V_7 = 0, -I_4 = 20\mu A$ | 18.6 | 20 | 21.6 | μA |
| 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/ μA |
| 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 | μA |
| Trigger Input Width | t_3 | Note 2 | 20 | 60 | Th | μs |

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

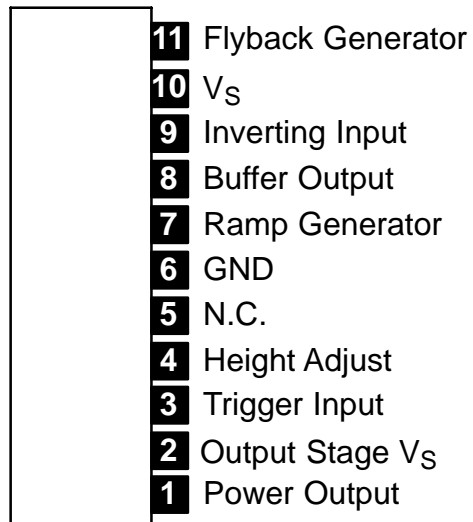
| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|-------------------------------------------|----------|-------------------|-----|------|-----|------------|
| Operating Supply Range | V_S | | 10 | – | 30 | V |
| Peak-to-Peak Operating Current Range | I_l | | 0.4 | – | 2.5 | A |
| Supply 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 | – | $^\circ C$ |

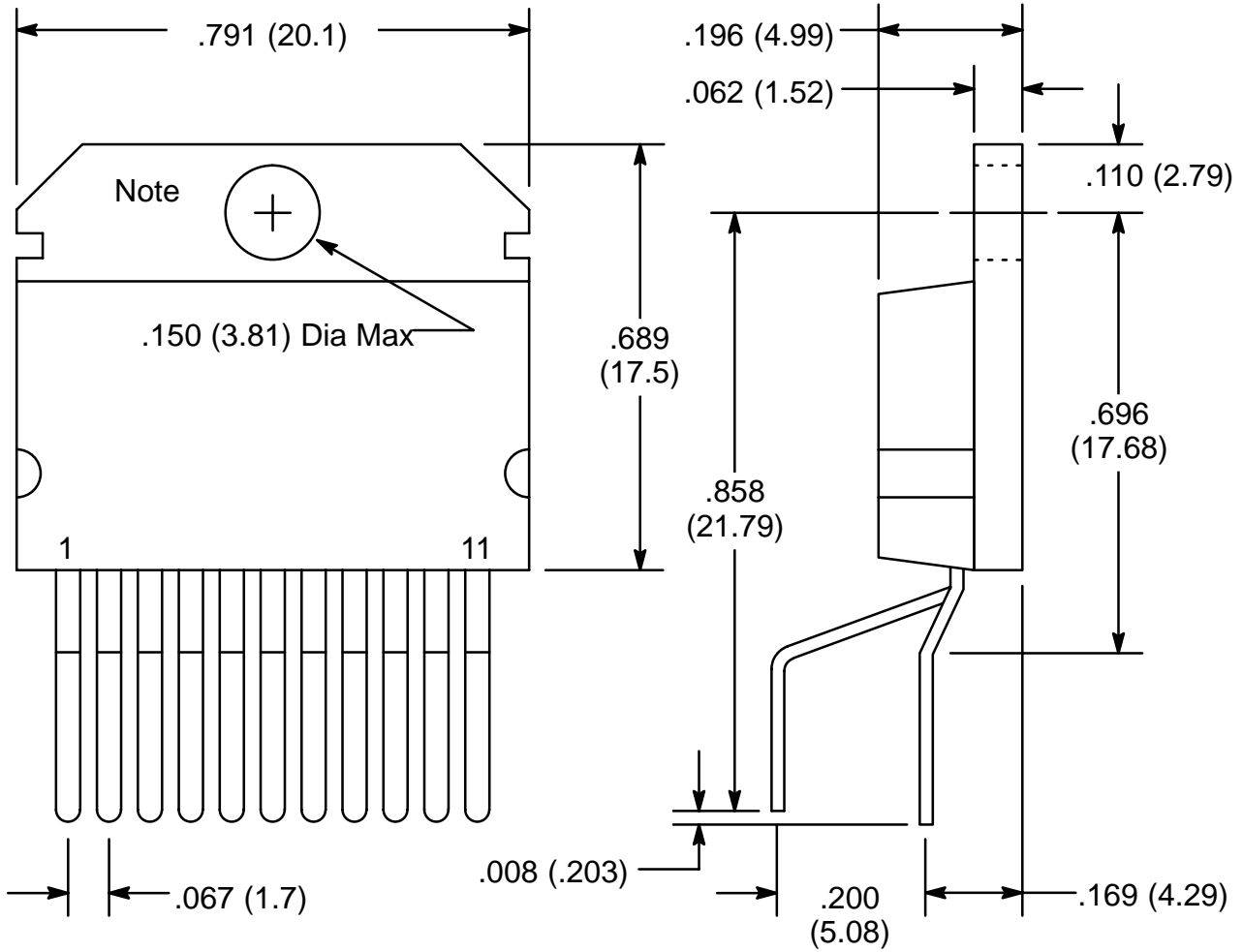
Note 1: The trigger input circuit can accept, optionally, positive and negative going input pulses.

Block Diagram



Pin Connection Diagram (Front View)





NOTE: Tab connected o Pin6