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NTE1954

Integrated Circuit

Positive 3 Terminal Voltage Regulator,

Low Dropout Voltage, 12V, 1A

Description:

The NTE1954 positive voltage regulator features the ability to source 1A of output current with a dropout voltage of typically 0.5V and a maximum of 1V over the entire temperature range. Furthermore, a quiescent current reduction circuit has been included which reduces the ground current when the differential between the input voltage and the output voltage exceeds approximately 3V. The quiescent current with 1A of output current and an input-output differential of 5V is therefore only 30mA. High quiescent currents only exist when the regulator is in the dropout mode ($V_{IN} - V_{OUT} \leq 3V$).

Features:

- Dropout Voltage: 0.5V (Typ) @ $I_O = 1A$
- Output Current in Excess of 1A
- Reverse Battery Protection
- Internal Short Circuit Current Limit

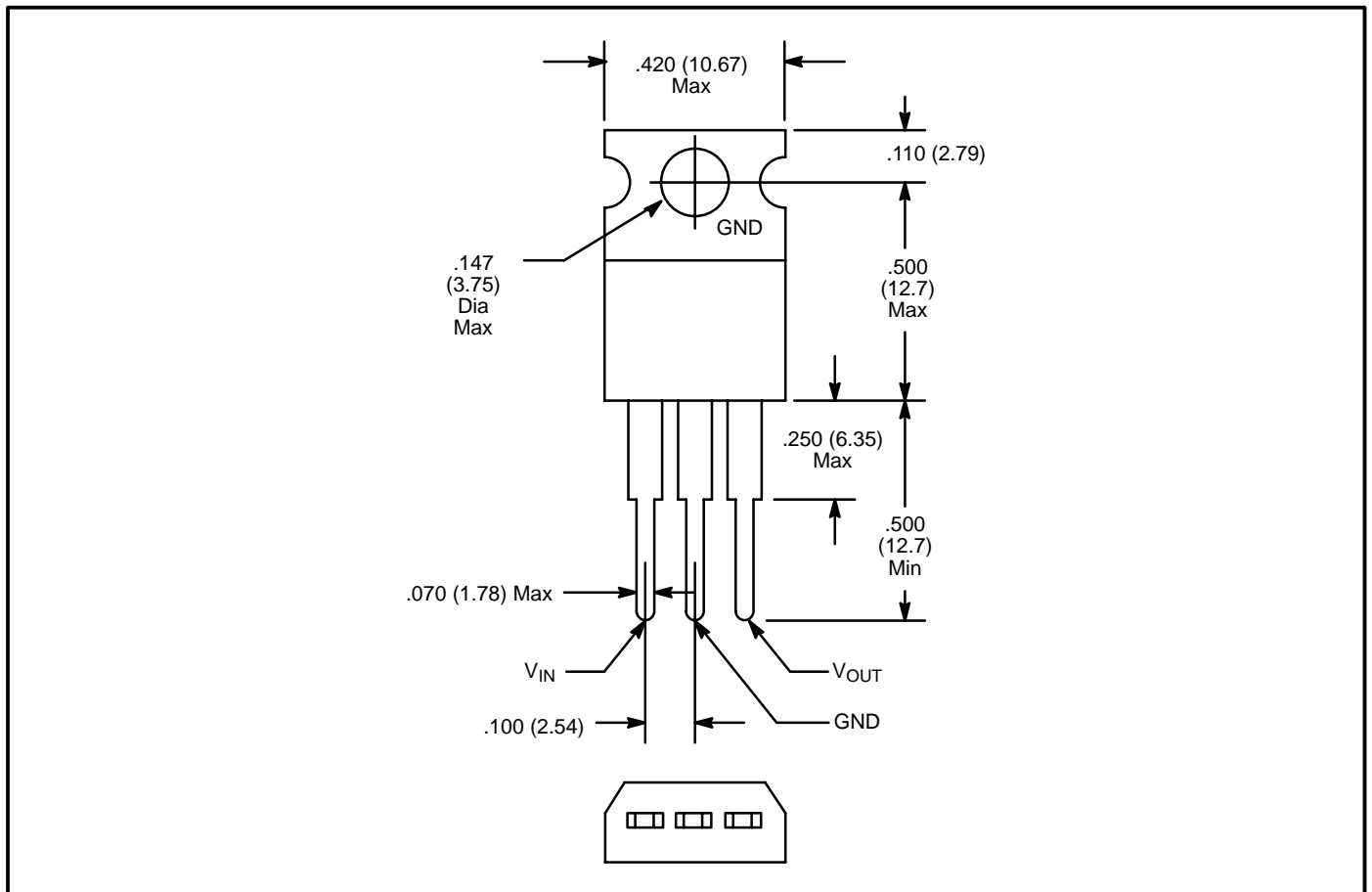
Absolute Maximum Ratings: ($T_A = +25^\circ C$ unless otherwise specified)

| | |
|---|--------------------|
| Input Voltage, V_I | |
| Survival Voltage ($\leq 100ms$) | 60V |
| Operational Voltage | 26V |
| Internal Power Dissipation (Note 1), P_D | Internally Limited |
| maximum Junction Temperature, T_J | +150°C |
| Operating Temperature Range, T_A | -40° to +125°C |
| Storage Junction Temperature Range, T_{stg} | -65° to +150°C |
| Lead Temperature (During Soldering, 10sec max), T_L | +230°C |

Note 1. Thermal resistance without a heatsink for junction-to-case temperature is 3°C/W. Thermal resistance case-to-ambient is 50°C/W

Electrical Characteristics: ($V_{IN} = 17V$, $I_O = 1A$, $C_{OUT} = 22\mu F$, $C_O = 0.1\mu F$, $T_J = +25^\circ C$ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--|--------------|---|-------|-------|-------|---------------|
| Output Voltage | V_{OUT} | $5mA \leq I_O \leq 1A$ | 11.64 | 12.00 | 12.36 | V |
| Line Regulation | Reg_{line} | $14V \geq V_{IN} \geq 26V$, $I_O = 5mA$ | - | 20 | 120 | mV |
| Load Regulation | Reg_{load} | $50mA \leq I_O \leq 1A$ | - | 55 | 120 | mV |
| Output Impedance | Z_O | 100mADC and 20mA _{rms} , $f_o = 120Hz$ | - | 80 | - | MΩ |
| Quiescent Current | | $14V \geq V_{IN} \geq 26V$, $I_O = 5mA$ | - | 10 | 15 | mA |
| | | $V_{IN} = 17V$, $I_O = 1A$ | - | 30 | 45 | mA |
| Output Noise Voltage | V_n | 10Hz – 100kHz, $I_O = 5mA$ | - | 360 | - | μV_{rms} |
| Ripple Rejection | RR | $f_o = 120Hz$, $1V_{rms}$, $I_l = 100mA$ | 54 | 66 | - | dB |
| Long Term Stability | S | | - | 48 | - | mV/1000Hr |
| Dropout Voltage | $V_{IN}-V_O$ | $I_O = 1A$ | - | 0.5 | 0.8 | V |
| | | $I_O = 100mA$ | - | 110 | 150 | mA |
| Short Circuit Current | I_{SC} | | 1.6 | 1.9 | - | A |
| Maximum Line Transient | | $V_O \leq 13V$, $R_O = 100\Omega$, $T \leq 100ms$ | 60 | 75 | - | V |
| Maximum Operational Input Voltage | | | 26 | 31 | - | V_{dc} |
| Reverse Polarity Input Voltage DC | | $R_O = 100\Omega$ | -15 | -30 | - | V |
| Reverse Polarity Input Voltage Transient | | $T \leq 100ms$, $R_O = 100\Omega$ | -50 | -75 | - | V |



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