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NTE1925

3 Terminal Negative Voltage Regulator

-24V, 1.5A

TO-3 Type Package

Description:

The NTE1925 is a negative 3-terminal voltage regulator in a TO-3 type package suitable for numerous applications including local, on-card regulation requiring up to 1.5A. This device features thermal shut-down and current limiting making the NTE1925 remarkably rugged.

Although designed primarily as a fixed voltage regulator, this device can be used with external components to obtain adjustable voltages and currents.

Features:

- Internal Thermal Overload Protection
- Output Transistor Safe Area Protection
- Internal Short Circuit Current Limit
- No External Components Required

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

| | |
|---|-------------------------------------|
| Input Voltage, V_{IN} | -40V |
| Internal Power Dissipation ($T_A = +25^\circ\text{C}$), P_D | Internally Limited |
| Derate Above 25°C | 22.2mW/ $^\circ\text{C}$ |
| Internal Power Dissipation ($T_C = +25^\circ\text{C}$), P_D | Internally Limited |
| Derate Above 25°C | 182mW/ $^\circ\text{C}$ |
| Operating Junction Temperature Range, T_J | 0° to $+150^\circ\text{C}$ |
| Storage Temperature Range, T_{stg} | -65° to $+150^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Case, R_{thJC} | 5.5 $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction-to-Ambient, R_{thJA} | 45 $^\circ\text{C}/\text{W}$ |

Electrical Characteristics: ($0^\circ \leq T_J \leq +125^\circ\text{C}$, $V_{IN} = -33\text{V}$, $I_O = 0.5\text{A}$ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|-----------------|---------------------|---|-------|-------|-------|------|
| Output Voltage | V_O | $T_J = +25^\circ\text{C}$ | -23 | -24 | -25 | V |
| | | $5\text{mA} \leq I_O \leq 1\text{A}$, $-38\text{V} \leq V_{IN} \leq -27\text{V}$, $P_O \leq 15\text{W}$ | -22.8 | -24.0 | -25.2 | V |
| Line Regulation | Reg_{line} | $T_J = +25^\circ\text{C}$, $-38\text{V} \leq V_{IN} \leq -27\text{V}$, Note 1 | - | 118 | 480 | mV |
| | | $T_J = +25^\circ\text{C}$, $-36\text{V} \leq V_{IN} \leq -30\text{V}$, Note 1 | - | 70 | 240 | mV |
| Load Regulation | Reg_{load} | $T_J = +25^\circ\text{C}$, $5\text{mA} \leq I_O \leq 1.5\text{A}$, Note 1 | - | 150 | 480 | mV |
| | | $T_J = +25^\circ\text{C}$, $250\text{mA} \leq I_O \leq 750\text{mA}$, Note 1 | - | 85 | 240 | mV |

Note 1. Load and line regulation are specified at constant junction temperature. Change in V_O due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

Electrical Characteristics (Cont'd): ($0^{\circ} \leq T_J \leq +125^{\circ}\text{C}$, $V_{IN} = -27\text{V}$, $I_O = 0.5\text{A}$ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|------------|--|-----|------|-----|------------------------------|
| Input Bias Current | I_B | $T_J = +25^{\circ}\text{C}$ | - | 4.5 | 8.0 | mA |
| Input Bias Current Change | I_B | $-38\text{V} \leq V_{IN} \leq -27\text{V}$ | - | - | 1.0 | mA |
| | | $5\text{mA} \leq I_O \leq 1.5\text{A}$ | - | - | 0.5 | mA |
| Output Noise Voltage | V_n | $T_A = +25^{\circ}\text{C}$, $f = 10\text{Hz}$ to 100kHz | - | 170 | - | μV |
| Ripple Rejection Ratio | RR | $I_O = 20\text{mA}$, $f = 120\text{Hz}$ | - | 56 | - | dB |
| Dropout Voltage | | $T_J = +25^{\circ}\text{C}$, $I_O = 1\text{A}$ | - | 2.0 | - | V |
| Peak Output Current | I_{Omax} | $T_J = +25^{\circ}\text{C}$ | 1.3 | 2.5 | 3.3 | A |
| Average Temperature Coefficient of Output Voltage | | $I_O = 5\text{mA}$ | - | -1.0 | - | $\text{mV}/^{\circ}\text{C}$ |

Note 2. Load and line regulation are specified at constant junction temperature. Change in V_O due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

