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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	$T_A = +25^{\circ}\text{C}$, $f = 10\text{Hz to } 100\text{kHz}$	-	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.

