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## NTE1923

### 3 Terminal Negative Voltage Regulator

### -18V, 1.5A

**Description:**

The NTE1923 is a negative 3-terminal voltage regulator in a TO3 type package suitable for numerous applications including local, on-card regulation requiring up to 1.5A. This device features thermal shutdown and current limiting making the NTE1920 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, $V_{IN}$ .....	-35V
Internal Power Dissipation ( $T_A = +25^\circ\text{C}$ ), $P_D$ .....	Internally Limited
Derate Above $25^\circ\text{C}$ .....	22.2mW/ $^\circ\text{C}$
Internal Power Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	Internally Limited
Derate Above $25^\circ\text{C}$ .....	182mW/ $^\circ\text{C}$
Operating Junction Temperature Range, $T_J$ .....	$0^\circ$ to $+150^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ 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:** ( $0^\circ \leq T_J \leq +125^\circ\text{C}$ ,  $V_{IN} = -27\text{V}$ ,  $I_O = 0.5\text{A}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	$V_O$	$T_J = +25^\circ\text{C}$	-17.3	-18.0	-18.7	V
		$5\text{mA} \leq I_O \leq 1\text{A}$ , $-33\text{V} \leq V_{IN} \leq -21\text{V}$ , $P_O \leq 15\text{W}$	-17.1	-18.0	-18.9	V
Line Regulation	$\text{Reg}_{line}$	$T_J = +25^\circ\text{C}$ , $-33\text{V} \leq V_{IN} \leq -21\text{V}$ , Note 1	-	90	360	mV
		$T_J = +25^\circ\text{C}$ , $-30\text{V} \leq V_{IN} \leq -24\text{V}$ , Note 1	-	50	180	mV
Load Regulation	$\text{Reg}_{load}$	$T_J = +25^\circ\text{C}$ , $5\text{mA} \leq I_O \leq 1.5\text{A}$ , Note 1	-	110	360	mV
		$T_J = +25^\circ\text{C}$ , $250\text{mA} \leq I_O \leq 750\text{mA}$ , Note 1	-	55	180	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	$I_B$	$-33\text{V} \leq V_{IN} \leq -21\text{V}$	-	-	1.0	mA
		$5\text{mA} \leq I_O \leq 1.5\text{A}$	-	-	0.5	mA
Output Noise Voltage	$V_n$	$T_A = +25^{\circ}\text{C}$ , $f = 10\text{Hz to } 100\text{kHz}$	-	110	-	$\mu\text{V}$
Ripple Rejection Ratio	RR	$I_O = 20\text{mA}$ , $f = 120\text{Hz}$	-	59	-	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.

