

NTE1920

3 Terminal Positive Voltage Regulator

18V, 1.5A

Description:

The NTE1920 is a positive 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°C 22.5mW/ $^\circ\text{C}$
 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 -55° 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 $^\circ\text{C/W}$

Electrical Characteristics: ($-55^\circ \leq T_J \leq +150^\circ\text{C}$, $V_{IN} = 27\text{V}$, $I_O = 0.5\text{A}$ 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
		$5\text{mA} \leq I_O \leq 1\text{A}$, $22\text{V} \leq V_{IN} \leq 33\text{V}$, $P_O \leq 15\text{W}$	17.1	18.0	18.9	V
Line Regulation	Reg_{line}	$T_J = +25^\circ\text{C}$, $21\text{V} \leq V_{IN} \leq 33\text{V}$, Note 1	—	7	180	mV
		$T_J = +25^\circ\text{C}$, $24\text{V} \leq V_{IN} \leq 30\text{V}$, Note 1	—	4	90	mV
Load Regulation	Reg_{load}	$T_J = +25^\circ\text{C}$, $5\text{mA} \leq I_O \leq 1.5\text{A}$, Note 1	—	35	180	mV
		$T_J = +25^\circ\text{C}$, $250\text{mA} \leq I_O \leq 750\text{mA}$, Note 1	—	12	90	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): ($-55^{\circ} \leq T_J \leq +125^{\circ}\text{C}$, $V_{IN} = 27\text{V}$, $I_O = 0.5\text{A}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Quiescent Current	I_Q	$T_J = +25^{\circ}\text{C}$	–	3.5	6.0	mA
Quiescent Current Change	I_Q	$22\text{V} \leq V_{IN} \leq 33\text{V}$	–	0.3	0.8	mA
		$5\text{mA} \leq I_O \leq 1\text{A}$	–	0.04	0.50	mA
Output Noise Voltage	V_n	$T_A = +25^{\circ}\text{C}$, $f = 10\text{Hz}$ to 100kHz	–	10	40	μV
Output Resistance	r_O	$f = 1\text{kHz}$	–	19	–	$\text{m}\Omega$
Short Circuit Current Limit	I_{sc}	$T_A = +25^{\circ}\text{C}$, $V_{IN} = 35\text{V}$	–	0.2	1.2	A
Ripple Rejection Ratio	RR	$22\text{V} \leq V_{IN} \leq 33\text{V}$, $f = 120\text{Hz}$	59	65	–	dB
Dropout Voltage		$T_J = +25^{\circ}\text{C}$, $I_O = 1\text{A}$	–	2.0	2.5	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			–	± 2.3	–	$\text{mV}/^{\circ}\text{C}$

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.

