

NTE988 Integrated Circuit Positive 3 Terminal Voltage Regulator, 100mA

Description:

The NTE988 is a 3-terminal positive voltage regulator in a TO92 type package and employs internal current-limiting and thermal shutdown, making it essentially indestructible. If adequate heat sinking is provided, this device can deliver up to 100mA output current. The NTE988 is intended for use as a fixed voltage regulator in a wide range of applications including local (on-card) regulation for elimination of noise and distribution problems associated with single-point regulation. In addition, this device can be used with power pass elements to make a high current voltage regulator. When used as a Zener diode/resistor combination replacement, the NTE988 offers an effective output impedance improvement of typically two orders of magnitude, along with lower quiescent current and lower noise.

Features:

- Output Current up to 100mA
- No External Components
- Internal Thermal Overload Protection
- Internal Short Circuit Current-Limiting
- Output Voltage Tolerance of $\pm 5\%$ over the Temperature Range

Absolute Maximum Ratings:

Input Voltage, V_{IN} 35V
 Internal Power Dissipation, P_D Internally Limited
 Operating Junction Temperature Range, T_A 0°C to $+125^\circ\text{C}$
 Storage Temperature Range, T_{stg} -65°C to $+150^\circ\text{C}$
 Lead Temperature (Soldering, 10 sec), T_L $+265^\circ\text{C}$

Electrical Characteristics: ($0^\circ \leq T_J \leq +125^\circ\text{C}$, $V_{IN} = 12\text{V}$, $I_O = 40\text{mA}$, $C_{IN} = 0.33\mu\text{F}$, $C_O = 0.1\mu\text{F}$, Note 1 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Output Voltage	V_O	$T_J = +25^\circ\text{C}$	5.95	6.20	6.45	V	
Line Regulation	$V_{R(LINE)}$	$T_J = +25^\circ\text{C}$	$8.5\text{V} \leq V_I \leq 20\text{V}$	–	65	175	mV
			$9.0\text{V} \leq V_I \leq 20\text{V}$	–	55	125	mV

Note 1. The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represents pulse test conditions with junction temperatures as indicated at the initiation of the tests.

Electrical Characteristics (Cont'd): ($0^\circ \leq T_J \leq +125^\circ\text{C}$, $V_{IN} = 12\text{V}$, $I_O = 40\text{mA}$, $C_{IN} = 0.33\mu\text{F}$, $C_O = 0.1\mu\text{F}$, Note 1 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Load Regulation	$V_{R(\text{LOAD})}$	$T_J = +25^\circ\text{C}$				
		$1\text{mA} \leq I_O \leq 100\text{mA}$	–	13	80	mV
Output Voltage (Note 2)	V_O	$8.5\text{V} \leq V_I \leq 20\text{V}$				
		$1\text{mA} \leq I_O \leq 40\text{mA}$	–	6	40	mV
Quiescent Current	I_Q		–	2.0	5.5	mA
Quiescent Current Change With Line	ΔI_Q	$8.0\text{V} \leq V_I \leq 20\text{V}$	–	–	1.5	mA
		$1\text{mA} \leq I_O \leq 40\text{mA}$	–	–	0.1	mA
With Load						
Noise	N_O	$T_A = +25^\circ\text{C}$, $10\text{Hz} \leq f \leq 100\text{kHz}$	–	50	–	μV
Ripple Rejection	$\Delta V_I / \Delta V_O$	$f = 120\text{Hz}$, $10\text{V} \leq V_I \leq 20\text{V}$, $T_J = +25^\circ\text{C}$	40	46	–	dB
Dropout Voltage	V_{DO}	$T_J = +25^\circ\text{C}$	–	1.7	–	V
Peak Output/Output Short Circuit Current	I_{pk}/I_{OS}	$T_J = +25^\circ\text{C}$	–	140	–	mA
Average Temperature Coefficient of Output Voltage	$\Delta V_O / \Delta T$	$I_O = 5\text{mA}$	–	–0.75	–	$\text{mV}/^\circ\text{C}$

Note 1. The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represents pulse test conditions with junction temperatures as indicated at the initiation of the tests.

Note 2. Power Dissipation $\leq 0.75\text{W}$.

