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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 ±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°C
Storage Temperature Range, T_{stg} . . . . . –65°C to +150°C
Lead Temperature (Soldering, 10 sec), T_L . . . . . +265°C

Electrical Characteristics: (0° ≤ T_J ≤ +125°C, V_{IN} = 12V, I_O = 40mA, C_{IN} = 0.33µF, C_O = 0.1µF, Note 1 unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Output Voltage	V_O	T_J = +25°C		5.95	6.20	6.45	V
Line Regulation	$V_{R(LINE)}$	T_J = +25°C	8.5V ≤ V_I ≤ 20V	–	65	175	mV
			9.0V ≤ V_I ≤ 20V	–	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): ($0° \le T_J \le +125°C$, $V_{IN} = 12V$, $I_O = 40mA$, $C_{IN} = 0.33\mu F$, $C_O = 0.1\mu F$, Note 1 unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Load Regulation	$V_{R(LOAD)}$	$T_J = +25°C$	$1mA \le I_O \le 100mA$	–	13	80	mV
			$1mA \le I_O \le 40mA$	–	6	40	mV
Output Voltage (Note 2)	V_O	$8.5V \le V_I \le 20V$	$1mA \le I_O \le 40mA$	5.9	–	6.5	V
		$8.5V \le V_I \le V_{Max}$	$1mA \le I_O \le 70mA$	5.9	–	6.5	V
Quiescent Current	I_Q			–	2.0	5.5	mA
Quiescent Current Change With Line	ΔI_Q	$8.0V \le V_I \le 20V$		–	–	1.5	mA
With Load		$1mA \le I_O \le 40mA$		–	–	0.1	mA
Noise	N_O	$T_A = +25°C$, $10Hz \le f \le 100kHz$		–	50	–	µV
Ripple Rejection	$\Delta V_I/\Delta V_O$	$f = 120Hz$, $10V \le V_I \le 20V$, $T_J = +25°C$		40	46	–	dB
Dropout Voltage	V_{DO}	$T_J = +25°C$		–	1.7	–	V
Peak Output/Output Short Circuit Current	I_{pk}/I_{OS}	$T_J = +25°C$		–	140	–	mA
Average Temperature Coefficient of Output Voltage	$\Delta V_O/\Delta T$	$I_O = 5mA$		–	–0.75	–	mV/°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 ≤ 0.75W.