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NTE1909
Integrated Circuit
Negative 3 Terminal Voltage Regulator, –24V, 100mA

Description:

The NTE1909 is a negative 3–terminal voltage regulator in a TO92 type package suitable for numerous applications requiring up to 100mA. This device features thermal shutdown and current limiting making the NTE1909 remarkably rugged. In most applications, no external components are required for operation.

The NTE1909 is useful for on–card regulation or any other application where a regulated negative voltage at a modest current level is needed. This device offers a substantial advantage over the common resistor/zener diode approach.

Features:

- Internal Short–Circuit Current Limiting
- Internal Thermal Overload Protection
- No External Components Required

Absolute Maximum Ratings:

Input Voltage, V_I . . . . . –40V
Internal Power Dissipation (Note 1), P_D . . . . . Internally Limited
Operating Junction Temperature Range, T_{opr} . . . . . 0° to +70°C
Maximum Junction Temperature, T_J . . . . . +125°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C
Lead Temperature (During Soldering, 10sec), T_L . . . . . +300°C

Note 1. Thermal resistance, junction–to–ambient is 180°C/W when mounted with 0.4” leads on a PC board and 160°C/W when mounted with .250” leads on a PC board.

Electrical Characteristics: (V_I = –33V, I_O = 40mA, C_I = 0.33µF, C_O = 0.1µF, 0° ≤ T_J ≤ +125°C, Note 2 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	V_O	T_J = +25°C	–23.0	–24.0	–25.0	V
		–38V ≤ V_I ≤ –27V, 1mA ≤ I_O ≤ 100mA	–22.8	–24.0	–25.2	V
Line Regulation	Reg_{line}	T_J = +25°C, –38V ≤ V_I ≤ –27V	–	–	350	mV

Electrical Characteristics (Cont'd): (V_I = –33V, I_O = 40mA, C_I = 0.33µF, C_O = 0.1µF, 0° ≤ T_J ≤ +125°C, Note 2 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Load Regulation	Reg_{load}	T_J = +25°C, 1mA ≤ I_O ≤ 100mA	–	–	200	mV
Quiescent Current	I_B	T_J = +125°C	–	–	6	mA
Quiescent Current Change	ΔI_B	With line, –38V ≤ V_I ≤ –28V	–	–	1.5	mA
		With load, 1mA ≤ I_O ≤ 40mA	–	–	0.1	mA
Output Noise Voltage	V_n	T_J = +25°C, f = 10Hz to 10kHz	–	200	–	µV
Ripple Rejection	RR	–35V ≤ V_I ≤ –29V, f = 120Hz	31	47	–	dB
Dropout Voltage	V_{DO}	T_J = +25°C, I_O = 40mA	–	1.7	–	V

Note 2. To ensure constant junction temperature, low duty cycle pulse testing is used.