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## NTE1903 Integrated Circuit Negative 3 Terminal Voltage Regulator, -12V, 100mA

**Description:**

The NTE1903 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 NTE1903 remarkably rugged. In most applications, no external components are required for operation. The NTE1903 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,  $V_I$  ..... -35V  
 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:** ( $V_I = -19V$ ,  $I_O = 40mA$ ,  $C_I = 0.33\mu F$ ,  $C_O = 0.1\mu F$ ,  $0^\circ \leq T_J \leq +125^\circ C$ , Note 2 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	$V_O$	$T_J = +25^\circ C$	-11.5	-12.0	-12.5	V
		$-27V \leq V_I \leq -14.8V$ , $1mA \leq I_O \leq 100mA$	-11.4	-12.0	-12.6	V
Line Regulation	$Reg_{line}$	$T_J = +25^\circ C$ , $-27V \leq V_I \leq -14.6V$	-	-	45	mV

**Electrical Characteristics (Cont'd):** ( $V_I = -19V$ ,  $I_O = 40mA$ ,  $C_I = 0.33\mu F$ ,  $C_O = 0.1\mu F$ ,  $0^\circ \leq T_J \leq +125^\circ C$ , Note 2 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Load Regulation	$Reg_{load}$	$T_J = +25^\circ C$ , $1mA \leq I_O \leq 100mA$	-	-	100	mV
Quiescent Current	$I_B$	$I_O = 100mA$	-	2	6	mA
Quiescent Current Change	$\Delta I_B$	With line, $-27V \leq V_I \leq -14.8V$	-	-	0.25	mA
		With load, $1mA \leq I_O \leq 40mA$	-	-	0.1	mA
Output Noise Voltage	$V_n$	$T_J = +25^\circ C$ , $f = 10Hz$ to $10kHz$	-	96	-	$\mu V$
Ripple Rejection	RR	$-25V \leq V_I \leq -15V$ , $f = 120Hz$	52	-	-	dB
Input Voltage Required to Maintain Line Regulation	$TCV_O$	$T_J = +25^\circ C$	-	-	-14.5	V

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

