NTE1911
3 Terminal Adjustable Negative Voltage Regulator
−1.2V to −37V, 1.5A

Description:

The NTE1911 is an adjustable 3–terminal negative voltage regulator capable of supplying in excess of 1.5A over an output voltage range of −1.2V to 37V. This regulator is exceptionally easy to apply, requiring only 2 external resistors to set the output voltage and 1 output capacitor for frequency compensation. The circuit design has been optimized for excellent regulation and low thermal transients. Further, if features internal current limiting, thermal shutdown and safe–area compensation, making the, virtually blowout–proof against overloads.

The NTE1911 serves a wide variety of applications including local on–card regulation, programmable–output voltage regulation or precision current regulation.

Features:

* Output Voltage Adjustable from −1.2V to −37V
* 1.5A Output Current Guaranteed, −55°C to +150°C
* Line Regulation Typically 0.01%/V
* Load Regulation Typically 0.3%
* Excellent Thermal Regulation, 0.002%/W
* 77dB Ripple Rejection
* Excellent Rejection of Thermal Transients
* 50ppm/°C Temperature Coefficient
* Temperature–Independent Current Limit
* Internal Thermal Overload Protection

Absolute Maximum Ratings:

Power Dissipation, P_D 20W
Input–Output Voltage Differential, V_{I-O} 40V
Operating Junction Temperature Range, T_J . . . . 0° to +125°C
Storage Temperature Range, T_{stg} . . . . −65° to +150°C
Lead Temperature (Soldering, 10 sec), T_L . . . . 300°C

Electrical Characteristics: (Note 1)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Line Regulation	Reg_{line}	T_A = +25°C, 3V ≤ $V_I - V_O$ ≤ 40V, Note 2	–	0.01	0.04	%/V
		3V ≤ $V_I - V_O$ ≤ 40V, Note 2	–	0.02	0.07	%/V

Note 1. Unless otherwise noted, these specifications apply: 0° ≤ T_J ≤ +125°C, ($V_I - V_O$) = 5V, P_{max} = 20W, and I_{MAX} = 1.5A.

Note 2. Load and line regulation are specified at constant junction temperature. Pulse testing with a low duty cycle is used. Change in V_O because of heating effects is covered under the Thermal Regulation specification.

Electrical Characteristics (Cont'd): (Note 1)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Load Regulation	Reg$_{load}$	$V_O \leq 5V$, Note 2	$T_A = +25°C$, $10mA \leq I_O \leq 1.5A$	–	15	50	mV
			$10mA \leq I_O \leq 3A$	–	20	70	mV
		$V_O \geq 5V$, Note 2	$T_A = +25°C$, $10mA \leq I_O \leq 1.5A$	–	0.3	1.0	%
			$10mA \leq I_O \leq 3A$	–	0.3	1.5	%
Thermal Regulation	Reg$_{therm}$	$T_A = +25°C$, Pulse = 10ms		–	0.003	0.04	%V$_O$/W
Adjustment Pin Current	I$_{Adj}$			–	65	100	μA
Adjustment Pin Current Change	ΔI$_{Adj}$	$T_A = +25°C$, $10mA \leq I_L \leq 1.5A$, $2.5V \leq (V_I - V_O) \leq 40V$, $P \leq 20W$		–	0.2	5.0	μA
Reference Voltage	V$_{ref}$	$10mA \leq I_O \leq 1.5A$, $3V \leq (V_I - V_O) \leq 40V$, $P \leq 20W$, $T_A = +25°C$, Note 3		1.20	1.25	1.30	V
		$10mA \leq I_O \leq 1.5A$, $3V \leq (V_I - V_O) \leq 40V$, $P \leq 20W$, Note 3		1.213	1.250	1.287	V
Temperature Stability	T$_S$	$0° \leq T_J \leq +125°C$		–	0.6	–	%V$_O$
Minimum Load Current	I$_{Lmin}$	$V_I - V_O \leq 10V$		–	1.5	6.0	mA
		$V_I - V_O \leq 40V$		–	2.5	10	mA
Maximum Output Current Limit	I$_{max}$	$V_I - V_O \leq 15V$, $P \leq 20W$		1.5	2.2	–	A
		$V_I - V_O \leq 40V$, $P \leq 20W$, $T_A = +25°C$		0.15	0.4	–	A
RMS Noise, % of V$_O$	N	$T_A = +25°C$, $10Hz \leq f \leq 10kHz$		–	0.003	–	%V$_O$
Ripple Rejection Ratio	RR	$V_O = 10V$, $f = 120Hz$, $C_{Adj} = 0$		–	60	–	dB
		$V_O = 10V$, $f = 120Hz$, $C_{Adj} = 10μF$		66	77	–	dB
Long Term Stability	S	$T_A = +125°C$, 1000 Hours		–	0.3	1.0	%/1.0k

Note 1. Unless otherwise noted, these specifications apply: $0° \leq T_J \leq +125°C$, $(V_I - V_O) = 5V$, $P_{max} = 20W$, and $I_{MAX} = 1.5A$.

Note 2. Load and line regulation are specified at constant junction temperature. Pulse testing with a low duty cycle is used. Change in V_O because of heating effects is covered under the Thermal Regulation specification.

Note 3. C_{Adj}, when used, is connected between the adjustment pin and GND.