

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, it 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}	$T_A = +25^\circ\text{C}$, $3V \leq V_I - V_O \leq 40V$, Note 2	–	0.01	0.04	%/V
		$3V \leq V_I - V_O \leq 40V$, Note 2	–	0.02	0.07	%/V

Note 1. Unless otherwise noted, these specifications apply: $0^\circ \leq T_J \leq +125^\circ\text{C}$, $(V_I - V_O) = 5V$, $P_{max} = 20W$, 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	$T_A = +25^\circ C, 10mA \leq I_O \leq 1.5A$	–	15	50	mV
			$10mA \leq I_O \leq 3A$	–	20	70	mV
		$V_O \geq 5V$, Note 2	$T_A = +25^\circ C, 10mA \leq I_O \leq 1.5A$	–	0.3	1.0	%
			$10mA \leq I_O \leq 3A$	–	0.3	1.5	%
Thermal Regulation	Reg _{therm}	$T_A = +25^\circ C$, Pulse = 10ms	–	0.003	0.04	%V _O /W	
Adjustment Pin Current	I _{Adj}		–	65	100	μA	
Adjustment Pin Current Change	ΔI _{Adj}	$T_A = +25^\circ C, 10mA \leq I_L \leq 1.5A$, $2.5V \leq (V_I - V_O) \leq 40V, P \leq 20W$	–	0.2	5.0	μA	
Reference Voltage	V _{ref}	$10mA \leq I_O \leq 1.5A, 3V \leq (V_I - V_O) \leq 40V$, $P \leq 20W, T_A = +25^\circ C$, 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	$0^\circ \leq T_J \leq +125^\circ C$	–	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	
		$V_I - V_O \leq 40V, P \leq 20W, T_A = +25^\circ C$	0.15	0.4	–	A	
RMS Noise, % of V _O	N	$T_A = +25^\circ C, 10Hz \leq f \leq 10kHz$	–	0.003	–	%V _O	
Ripple Rejection Ratio	RR	$V_O = 10V, f = 120Hz, C_{Adj} = 0$	–	60	–	dB	
		$V_O = 10V, f = 120Hz, C_{Adj} = 10\mu F$	66	77	–	dB	
Long Term Stability	S	$T_A = +125^\circ C$, 1000 Hours	–	0.3	1.0	%/1.0k	

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

