

NTE970

Linear Integrated Circuit

3-Terminal Adjustable Positive Voltage Regulator

1.2V to 33V, 3A

Description:

The NTE970 is an adjustable 3-terminal positive voltage regulator in a TO3 type package capable of supplying in excess of 3 Amps over a 1.2V to 33V output range.

Features:

- Adjustable Output Down to 1.2V
- Guaranteed 3A Output Current
- Line Regulation Typically 0.005%/V
- Load Regulation Typically 0.1%
- Thermal Regulation
- Current Limit Constant with Temperature

Absolute Maximum Ratings:

Input-Output Voltage Differential, $V_I - V_O$ 35V
 Power Dissipation, P_D Internally Limited
 Operating Junction Temperature Range, T_J 0° to +125°C
 Storage Temperature Range, T_{stg} -65° to +150°C
 Thermal Resistance, Junction-to-Case, R_{thJC} 2.5°C/W
 Lead Temperature (During Soldering, 10sec), T_L +300°C

Electrical Characteristics: ($V_I - V_O = 5V$, $I_O = 1.5A$, $P_{max} = 30W$, $0^\circ \leq T_J \leq +125^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Line Regulation	Reg_{line}	$T_A = +25^\circ C$, $3V \leq V_I - V_O \leq 35V$, Note 1	—	0.005	0.030	%/V
Load Regulation	Reg_{load}	$V_O \leq 5V$	—	5	25	mV
		$V_O \geq 5V$	—	0.1	0.5	% V_O

Note 1. Regulation is measured at constant junction temperature. Change in output voltage due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

Electrical Characteristics (Cont'd): ($V_I - V_O = 5V$, $I_O = 1.5A$, $P_{max} = 30W$, $0^\circ \leq T_J \leq +125^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Thermal Regulation	Reg_{therm}	$T_A = +25^\circ C$, Pulse = 20ms	—	0.002	—	% V_O/W
Adjustment Pin Current	I_{Adj}		—	50	100	μA
Adjustment Pin Current Change	ΔI_{Adj}	$10mA \leq I_L \leq 3A$, $3V \leq (V_I - V_O) \leq 35V$	—	0.2	5.0	μA
Reference Voltage	V_{ref}	$10mA \leq I_O \leq 3A$, $3V \leq (V_I - V_O) \leq 35V$, $P \leq 30W$	1.20	1.25	1.30	V
Line Regulation	Reg_{line}	$3V \leq (V_I - V_O) \leq 35V$, Note 1	—	0.02	0.07	%/V
Load Regulation	Reg_{load}	$V_O \leq 5V$	—	20	70	mV
		$V_O \geq 5V$	—	0.3	1.5	% V_O
Temperature Stability	T_S	$0^\circ \leq T_J \leq +125^\circ C$	—	1	—	% V_O
Minimum Load Current	I_{Lmin}	$V_I - V_O = 35V$	—	3.5	10	mA
Maximum Output Current Limit	I_{max}	$V_I - V_O \leq 10V$	3.0	4.5	—	A
		$V_I - V_O = 30V$	—	1.0	—	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	$V_O = 10V$, $f = 120Hz$	—	65	—	dB
		$C_{Adj} = 10\mu F$	66	86	—	dB
Long Term Stability	S	$T_A = +125^\circ C$	—	0.3	1.0	%/1.0k

Note 1. Regulation is measured at constant junction temperature. Change in output voltage due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

