

## 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)

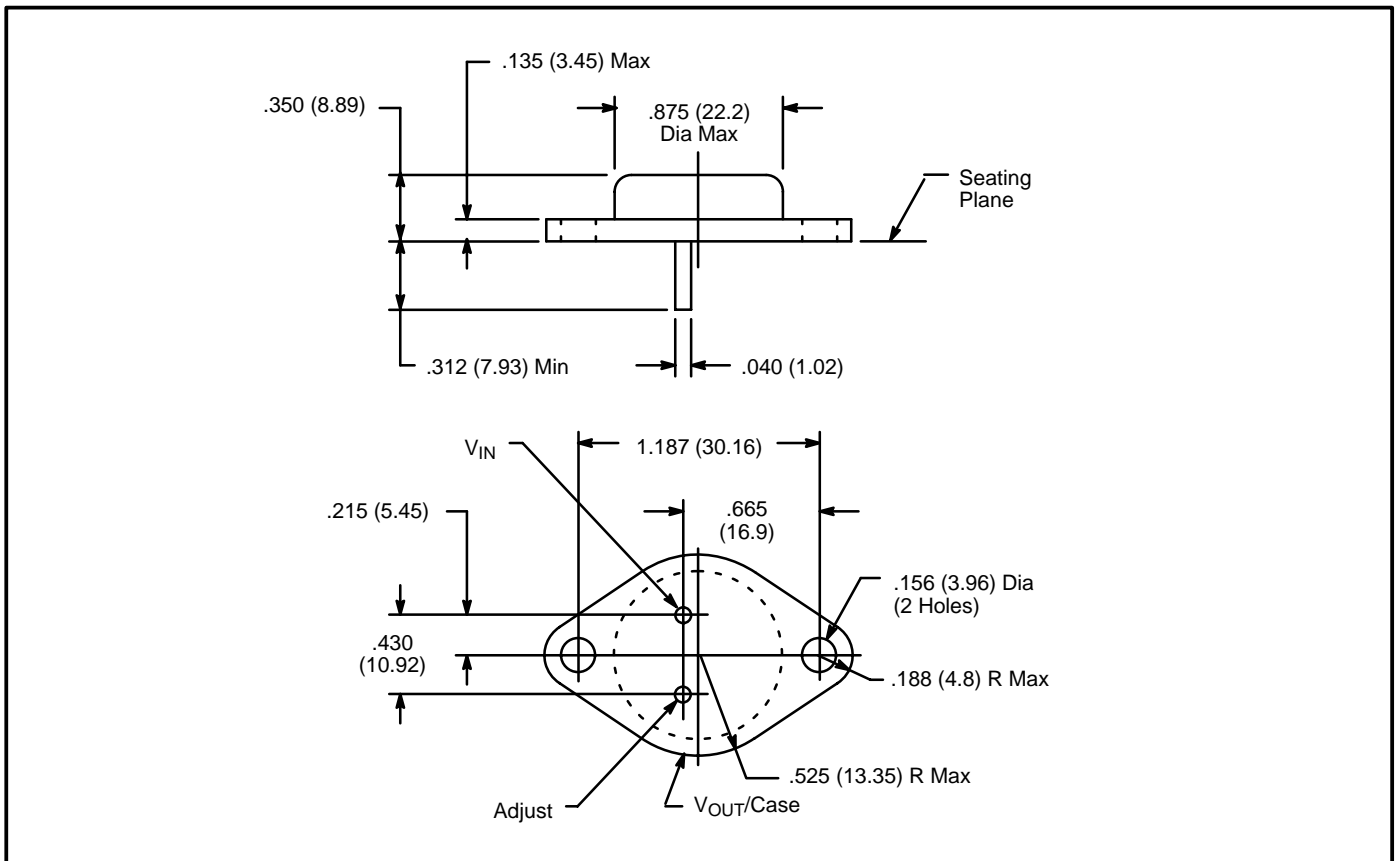
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Line Regulation	$Reg_{line}$	$T_A = +25^\circ C$ , $3V \leq V_I - V_O \leq 35V$ , Note 1	-	0.005	0.030	%/V
Load Regulation	$Reg_{load}$	$V_O \leq 5V$	-	5	25	mV
		$V_O \geq 5V$				

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	$\mu A$
Adjustment Pin Current Change	$\Delta I_{Adj}$	$10mA \leq I_L \leq 3A$ , $3V \leq (V_I - V_O) \leq 35V$	-	0.2	5.0	$\mu A$
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.



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