



**ELECTRONICS, INC.**  
 44 FARRAND STREET  
 BLOOMFIELD, NJ 07003  
 (973) 748-5089

## NTE961 Linear Integrated Circuit Voltage Regulator, Negative, 5V, 1A

**Description:**

The NTE961 voltage regulator employs current limiting, thermal shutdown, and safe-area compensation which makes it remarkably rugged under most operating conditions. With adequate heat-sinking they can deliver output currents in excess of 1.0 amperes.

**Features:**

- No External Components Required
- Internal Thermal Overload Protection
- Internal Short-Circuit Current Limiting
- Output Transistor Safe-Area Compensation

**Absolute Maximum Ratings:**

Input Voltage,  $V_{IN}$  ..... -35V  
 Input-Output Differential ..... 25V  
 Internal Power Dissipation (Note 1),  $P_D$  ..... Internally Limited  
 Operating Junction Temperature Range,  $T_J$  ..... 0° to +125°C  
 Storage Temperature Range,  $T_{stg}$  ..... -65° to +150°C  
 Lead Temperature (Soldering, 10sec.),  $T_L$  ..... +230°C

Note 1. For calculations of junction temperature rise due to power dissipation, thermal resistance junction to ambient ( $\theta_{JA}$ ) is 50°C/W (no heat sink) and 5°C/W (infinite heat sink).

**Electrical Characteristics:** ( $V_{OUT} = 5V$ ,  $V_{IN} = -10V$ ,  $0^\circ C \leq T_J \leq +125^\circ C$ ,  $I_O = 500mA$ ,  
 $C_{IN} = 2.2\mu F$ ,  $C_{OUT} = 1\mu F$ ,  $P_D \leq 1.5W$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	$V_O$	$T_J = +25^\circ C$ ,	-4.8	-5.0	-5.2	V
		$5mA \leq I_O \leq 1A$ , $P \leq 15W$	-4.75	-	-5.25	V
			(-20 $\leq V_{IN} \leq -7$ )			V

**Electrical Characteristics Cont'd):** ( $V_{OUT} = 5V$ ,  $V_{IN} = -10V$ ,  $0^{\circ}C \leq T_J \leq +125^{\circ}C$ ,  $I_O = 500mA$ ,  $C_{IN} = 2.2\mu F$ ,  $C_{OUT} = 1\mu F$ ,  $P_D \leq 1.5W$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Line Regulation	$\Delta V_O$	$T_J = +25^{\circ}C$ , Note 2	-	8	50	mV
			$(-25 \leq V_{IN} \leq -7)$			V
			-	2	15	mV
			$(-12 \leq V_{IN} \leq -8)$			V
Load Regulation	$\Delta V_O$	$T_J = +25^{\circ}C$	-	15	100	mV
		Note 2	$5mA \leq I_O \leq 1.5A$	-	5	50
Quiescent Current	$I_Q$	$T_J = +25^{\circ}C$	-	1	2	mA
Quiescent Current Change	$\Delta I_Q$	With Line	-	-	0.5	mA
		$(-25 \leq V_{IN} \leq -7)$			V	
		With Load, $5mA \leq I_O \leq 1A$	-	-	0.5	mA
Output Noise Voltage	$V_n$	$T_A = +25^{\circ}C$ , $10Hz \leq f \leq 100Hz$	-	125	-	$\mu V$
Ripple Rejection		$f = 120Hz$	54	66	-	dB
			$(-18 \leq V_{IN} \leq -8)$			V
Dropout Voltage		$T_J = +25^{\circ}C$ , $I_O = 1A$	-	1.1	-	V
Peak Output Current	$I_{OMAX}$	$T_J = +25^{\circ}C$	-	2.2	-	A
Average Temperature Coefficient of Output Voltage		$I_O = 5mA$ , $0^{\circ}C \leq T_J \leq 100^{\circ}C$	-	0.4	-	$mV/^{\circ}C$

Note 2. Regulation is measured at a constant junction temperature by pulse testing with a low duty cycle. Changes in output voltage due to heating effects must be taken into account.

