



## NTE960 Integrated Circuit 3–Terminal Positive Voltage Regulator, 5V

The NTE960 fixed–voltage regulator is a monolithic integrated circuit in a TO220 type package designed for use in a wide variety of applications including local, on–card regulation. This regulator employs internal current limiting, thermal shutdown, and safe–area compensation. With adequate heat–sinking it can deliver output currents in excess of 1.0 ampere.

### Features:

- Output Current in Excess of 1.0 Ampere
- No External Components Required
- Internal Thermal Overload Protection
- Internal Short–Circuit Current Limiting
- Output Transistor Safe–Area Compensation

### Absolute Maximum Ratings: ( $T_A = +25^\circ\text{C}$ unless otherwise specified)

Input Voltage, $V_{in}$ .....	35Vdc
Power Dissipation ( $T_A = +25^\circ\text{C}$ ), $P_D$ .....	Internally Limited
Derate above $+25^\circ\text{C}$ .....	15.4mW/ $^\circ\text{C}$
Power Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	Internally Limited
Derate above $+75^\circ\text{C}$ .....	200mW/ $^\circ\text{C}$
Thermal Resistance, Junction–to–Ambient, $R_{thJA}$ .....	65 $^\circ\text{C}/\text{W}$
Thermal Resistance, Junction–to–Case, $R_{thJC}$ .....	5 $^\circ\text{C}/\text{W}$
Operating Junction Temperature Range, $T_J$ .....	–55 $^\circ$ to +150 $^\circ\text{C}$
Storage Junction Temperature Range, $T_{stg}$ .....	–65 $^\circ$ to +150 $^\circ\text{C}$

### Electrical Characteristics: ( $V_{in} = 10\text{V}$ , $I_O = 500\text{mA}$ , $T_J = 0^\circ$ to +125 $^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Output Voltage	$V_O$	$T_J = +25^\circ\text{C}$	4.8	5.0	5.2	V	
		$5\text{mA} \leq I_O \leq 1\text{A}$ , $P_O \leq 15\text{W}$ , $7\text{V} \leq V_{in} \leq 20\text{V}$	4.75	5.0	5.25	V	
Line Regulation	$\text{Reg}_{line}$	$T_J = +25^\circ\text{C}$ , Note 1	$7\text{V} \leq V_{in} \leq 25\text{V}$	–	7	100	mV
			$8\text{V} \leq V_{in} \leq 12\text{V}$	–	2	50	mV
Load Regulation	$\text{Reg}_{load}$	$T_J = +25^\circ\text{C}$ , Note 1	$5\text{mA} \leq I_O \leq 1.5\text{A}$	–	40	100	mV
			$250\text{mA} \leq I_O \leq 750\text{mA}$	–	15	50	mV

Note 1. Load and line regulation are specified at constant junction temperature. Changes in  $V_O$  due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

**Electrical Characteristics (Cont'd):** ( $V_{in} = 10V$ ,  $I_O = 500mA$ ,  $T_J = 0^\circ$  to  $+125^\circ C$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Quiescent Current	$I_B$	$T_J = +25^\circ C$	-	4.3	8.0	mA
Quiescent Current Change	$\Delta I_B$	$7V \leq V_{in} \leq 25V$	-	-	1.3	mA
		$5mA \leq I_O \leq 1A$	-	-	0.5	mA
Ripple Rejection	RR	$8V \leq V_{in} \leq 18V$ , $f = 120Hz$	-	68	-	dB
Dropout Voltage	$V_{in} - V_O$	$T_J = +25^\circ C$ , $I_O = 1A$	-	2	-	V
Output Noise Voltage	$V_n$	$T_A = +25^\circ C$ , $10Hz \leq f \leq 100kHz$	-	10	-	$\mu V/V_O$
Output Resistance	$r_O$	$f = 1kHz$	-	17	-	$m\Omega$
Short-Circuit Current Limit	$I_{sc}$	$T_A = +25^\circ C$ , $V_{in} = 35V$	-	0.2	-	A
Peak Output Current	$I_{max}$	$T_J = +25^\circ C$	-	2.2	-	A
Average Temperature Coefficient of Output Voltage	$TCV_O$		-	-1.1	-	$mV/^\circ C$

