

NTE964 Integrated Circuit 3–Terminal Positive Voltage Regulator, 8V

The NTE964 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. Although designed primarily as a fixed voltage regulator, this device can be used with external components to obtain adjustable voltages and currents.

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: ($V_{in} = 14\text{V}$, $I_O = 500\text{mA}$, $T_J = 0^\circ$ to +125 $^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Output Voltage	V_O	$T_J = +25^\circ\text{C}$	7.7	8.0	8.3	V	
		$5\text{mA} \leq I_O \leq 1\text{A}$, $P_O \leq 15\text{W}$, $10.5\text{V} \leq V_{in} \leq 23\text{V}$	7.6	8.0	8.4	V	
Line Regulation	Reg_{line}	$T_J = +25^\circ\text{C}$, Note 1	$10.5\text{V} \leq V_{in} \leq 25\text{V}$	–	12	160	mV
			$11\text{V} \leq V_{in} \leq 17\text{V}$	–	5	80	mV
Load Regulation	Reg_{load}	$T_J = +25^\circ\text{C}$, Note 1	$5\text{mA} \leq I_O \leq 1.5\text{A}$	–	45	160	mV
			$250\text{mA} \leq I_O \leq 750\text{mA}$	–	16	80	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): ($V_{in} = 14V$, $I_O = 500mA$, $T_J = 0^\circ$ 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	ΔI_B	$10.5V \leq V_{in} \leq 25V$	-	-	1.0	mA
		$5mA \leq I_O \leq 1A$	-	-	0.5	mA
Ripple Rejection	RR	$11.5V \leq V_{in} \leq 21.5V$, $f = 120Hz$	-	62	-	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	$f = 1kHz$	-	18	-	$m\Omega$
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		-	-0.8	-	$mV/^\circ C$

