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## NTE969

### Linear Integrated Circuit

### Voltage Regulator, Negative, -15V, 1A

**Description:**

The NTE969 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:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Input Voltage, $V_{IN}$ .....	-35V
Internal Power Dissipation, $P_D$ .....	Internally Limited
Derate Above $+25^\circ\text{C}$ .....	15.4mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient, $R_{thJA}$ .....	65 $^\circ\text{C}/\text{W}$
Internal Power Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	Internally Limited
Derate Above $+25^\circ\text{C}$ .....	200mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient ( $T_C = +25^\circ\text{C}$ ), $R_{thJA}$ .....	5 $^\circ\text{C}/\text{W}$
Maximum Junction Temperature Range, $T_J$ .....	-55 $^\circ$ to +150 $^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	-65 $^\circ$ to +150 $^\circ\text{C}$

**Electrical Characteristics:** ( $V_{IN} = -23\text{V}$ ,  $I_O = 500\text{mA}$ ,  $0^\circ\text{C} \leq T_J \leq +125^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Output Voltage	$V_O$	$T_J = +25^\circ\text{C}$	-14.4	-15.0	-15.6	V	
		$5\text{mA} \leq I_O \leq 1\text{A}$ , $P_O \leq 15\text{W}$ , $-17.5\text{V} \leq V_{IN} \leq -30\text{V}$	-14.25	-	-15.75	V	
Line Regulation	$\text{Reg}_{Line}$	$T_J = +25^\circ\text{C}$	$-17.5\text{V} \leq V_{IN} \leq -30\text{V}$	-	57	300	mV
			$-20\text{V} \leq V_{IN} \leq -26\text{V}$	-	27	150	

**Electrical Characteristics:** ( $V_{IN} = -23V$ ,  $I_O = 500mA$ ,  $0^{\circ}C \leq T_J \leq +125^{\circ}C$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Load Regulation	Reg <sub>Load</sub>	$T_J = +25^{\circ}C$				
		$5mA \leq I_O \leq 1.5A$	–	68	300	mV
		$250mA \leq I_O \leq 750mA$	–	25	150	
Quiescent Current	$I_B$	$T_J = +25^{\circ}C$	–	4.4	8.0	mA
Quiescent Current Change	$\Delta I_B$	$-17.5V \leq V_{IN} \leq -30V$	–	–	1.0	mA
		$5mA \leq I_O \leq 1A$	–	–	0.5	
Ripple Rejection	RR	$I_O = 20mA$ , $f = 120Hz$	–	60	–	dB
Dropout Voltage	$V_{IN} - V_O$	$T_J = +25^{\circ}C$ , $I_O = 1A$	–	2	–	V
Output Noise Voltage	$V_n$	$T_A = +25^{\circ}C$ , $10Hz \leq f \leq 100kHz$	–	90	–	$\mu V/V_O$
Output Resistance	$r_O$	$f = 1kHz$	–	19	–	$m\Omega$
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	$TCV_O$		–	-1.0	–	$mV/^{\circ}C$

