ELECTRONICS, INC.
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NTE959
Linear Integrated Circuit
Voltage Regulator, Negative, –18V, 1A

Description:

The NTE959 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°C unless otherwise specified)

Input Voltage, V_{IN} . . . . . –35V
Internal Power Dissipation, P_D . . . . . Internally Limited
Derate Above +25°C . . . . . 15.4mW/°C
Internal Power Dissipation (T_C = +25°C), P_D . . . . . Internally Limited
Derate Above +75°C . . . . . 200mW/°C
Maximum Junction Temperature Range, T_J . . . . . –55° to +150°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C
Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . 65°C/W
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 5°C/W

Electrical Characteristics: (V_{IN} = –27V, I_O = 500mA, T_J = 0° to +125°C unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Output Voltage	V_O	T_J = +25°C		–17.3	–18.0	–18.7	V
		5mA ≤ I_O ≤ 1A, P_O ≤ 15W, –33V ≤ V_{IN} ≤ –21V		–17.1	–18.0	–18.9	V
Line Regulation	Reg_{Line}	T_J = +25°C, Note 1	–33V ≤ V_{IN} ≤ –21V	–	25	360	mV
			–30V ≤ V_{IN} ≤ –24V	–	10	180	
Load Regulation	Reg_{Load}	T_J = +25°C, Note 1	5mA ≤ I_O ≤ 1.5A	–	55	360	mV
			250mA ≤ I_O ≤ 750mA	–	22	180	

Electrical Characteristics: (V_{IN} = –27V, I_O = 500mA, T_J = 0° to +125°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Quiescent Current	I_B	T_J = +25°C	–	4.5	8.0	mA
Quiescent Current Change	ΔI_B	–33V ≤ V_{IN} ≤ –21V	–	–	1.0	mA
		5mA ≤ I_O ≤ 1A	–	–	0.5	
Ripple Rejection	RR	32V ≤ V_{IN} ≤ 21V, f = 120Hz	–	57	–	dB
Dropout Voltage	$V_{IN} – V_O$	T_J = +25°C, I_O = 1A	–	2.0	–	V
Output Noise Voltage	V_n	T_A = +25°C, 10Hz ≤ f ≤ 100kHz	–	10	–	$\mu V/V_O$
Output Resistance	r_O	f = 1kHz	–	19	–	mΩ
Short–Circuit Current Limit	I_{sc}	T_A = +25°C, V_{IN} = 35V	–	0.2	–	A
Peak Output Current	I_{max}	T_J = +25°C	–	2.2	–	A
Average Temperature Coefficient of Output Voltage	TCV_O		–	–1.1	–	mV/°C

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 spearately. Pulse testing with low duty cycle is used.