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NTE1942
Integrated Circuit
Positive Adjustable Voltage Regulator, 2.85V to 36V, 2A

Description:

The NTE1942 is an integrated circuit for voltage and current programmable regulation. Current limiting, power limiting, thermal shutdown, and input overvoltage protection (up to 60V) make the NTE1942 virtually blowout proof. The NTE1942 can be used to replace fixed voltage regulators when high output voltage precision is required.

Features:

- Adjustable Output Current Up to 2A (Guaranteed Up to T_J = +150°C)
- Adjustable Output Voltage Down to 2.85V
- Input Overvoltage Protection (Up to 60V, 10ms)
- Short Circuit Protection
- Output Transistor S.O.A. Protection
- Thermal Overload Protection
- Low Bias Current On Regulation Terminal
- Low Standby Current Drain

Absolute Maximum Ratings:

DC Input Voltage, V_i 40V
Peak Input Voltage (10ms), V_i 60V
In–Out Operating Differential Voltage, ΔV_{i-o} 32V
Output Current, I_o . . . . . internally limited
Power Dissipation, P_{tot} . . . . . internally limited
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C
Operating Junction Temperature Range, T_J . . . . . –25° to +150°C
Maximum Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . +3°C/W
Maximum Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . +50°C/W

Electrical Characteristics: (T_J = –25° to +150°C unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
GENERAL							
Quiescent Drain Current (Pin3)	I_d	V_i = 20V, T_J = +25°C		–	4.2	9.2	mA
Output Noise Voltage	e_N	$V_o = V_{ref}$, I_o = 10mA, B = 1MHz		–	80	–	µV
VOLTAGE REGULATION LOOP							
Reference Voltage (Pin4)	V_{ref}	V_i = 20V, I_o = 10mA, T_J = +25°C		2.65	2.77	2.85	V
Average Temperature Coefficient of Reference Voltage	$\frac{\Delta V_{ref}}{\Delta T}$	V_i = 20V, I_o = 10mA	T_J = –25° to +125°C	–	–0.25	–	mV/°C
			T_J = +125° to +150°C	–	–1.5	–	mV/°C
Output Voltage Range	V_o	I_o = 10mA, T_J = +25°C		2.85	–	36	V
Voltage Load Regulation	$\frac{\Delta V_o}{V_o}$	ΔI_o =2.0A, Note 1		–	0.15	1.0	%
		ΔI_o =1.5A, Note 1		–	1.0	0.5	%
Supply Voltage Rejection Ratio	SVR	V_o = 5V, I_o = 500mA, $\Delta V_i = 100V_{pp}$, f = 100Hx, Note 2		60	70	–	dB
Line Regulation	$\frac{\Delta V_i}{\Delta V_o}$	V_o = 5V, I_o = 500mA, V_i = 8V to 18V, T_J = +25°C		54	70	–	dB
Output Impedance	Z_o	V_i = 10V, $V_o = V_{ref}$, I_o = 0.5A, f = 100Hz			1.5×10^{-3}		Ω
Drop–out Voltage between Pin1 and Pin5		I_o = 1.5A, $\frac{\Delta V_o}{V_o} \leq 2\%$		–	2.0	2.5	V
Bias Current at Pin4	I_4	T_J = +25°C		–	3	10	µA
Average Temperature Coefficient (Pin4)	$\frac{\Delta I_4}{\Delta T \bullet I_4}$			–	–0.5	–	%/°C
CURRENT REGULATION LOOP							
Current Limit Sense Voltage between Pin5 and Pin2	V_{SC}	V_i = 10V, $V_o = V_{ref}$, T_J = +25°C		–	0.45	–	V
Average Temperature Coefficient of V_{SC}				–	0.03	–	%/°C
Current Load Regulation	$\frac{\Delta I_o}{I_o}$	V_i = 10V, ΔV_o = 3V	I_o = 0.5A	–	1.4	–	%
			I_o = 1.0A	–	1.0	–	%
			I_o = 1.5A	–	0.9	–	%
Short Circuit Current	I_{sc}	$V_i - V_o$ = 14V, Pin2 and Pin5 short circuited		2.0	2.5	3.6	A

Note 1. A load step of 2A can be applied provided that the input–output differential voltage is lower than 20V.

Note 2. The same performance can be maintained at higher output levels if a bypassing capacitor is provided between Pin2 and Pin4.

Pin Connection Diagram