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NTE1869 & NTE1869SM Integrated Circuit 3 Terminal Variable Voltage Regulator

Description:

The NTE1869 and NTE1869SM are semiconductor integrated circuits designed for general-purpose output voltage regulation. A high-performance variable output voltage regulator with small input-output voltage differences can be made in combination with externally connected PNP transistors. These devices include a reference voltage circuit, error amplifier, and driver, and the output voltage can be set freely by externally connected resistors, and a small, compact power supply circuit can be achieved making the device suitable for use in small electronic equipment, such as car stereo, radio cassette recorder and portable stereo equipment.

Features:

- Wide Operating Voltage Range: $V_{IN} = 3.5V$ to $36V$, $V_O = 1.5V$ to $33V$
- Output Voltage can be Freely Set by Externally Connected Resistors
- Built-In ASO Protection and Thermal Cutoff Circuits
- Available in 2 Package Styles:
 - NTE1869 (Giant TO92 Type)
 - NTE1869SM (SOT-89 Surface Mount)

Applications:

- Car Stereo Equipment
- Radio Cassette Recorder
- Portable Stereo
- Other General Electronic Equipment

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

Input Voltage, V_{IN}	36V
Drive Current, I_D	30mA
Input-Output Voltage Difference, $V_I - V_O$	30V
Power Dissipation, P_D	
NTE1869	900mW
NTE1869SM	500mW
Operating Temperature Range, T_{opr}	-20° to $+75^\circ C$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ C$

Recommended Operating Conditions:

Supply Voltage Range, V_{IN}	3.5V to 30V
Rated Supply Voltage, V_O	1.5V to 25V

Electrical Characteristics: ($T_A = +25^\circ\text{C}$, $V_i = 15\text{V}$, $V_o = 12\text{V}$, $I_L = 200\text{mA}$, $C_{\text{REF}} = 1\mu\text{F}$, $R_1 = 4.3\text{k}\Omega$, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage	V_{IN}	Between Pin1 and Pin2	3.5	–	36	V
Output Voltage	V_o	$R_2 \square 0.82\text{k}\Omega$ to $108\text{k}\Omega$	1.5	–	33	V
Minimum Input–Output Voltage Difference	$V_i - V_o$		–	0.2	–	V
Reference Voltage	V_{REF}	Between Pin3 and Pin2	1.20	1.26	1.32	V
Input Regulation	$R_{\text{eg-In}}$	$V_i = 15\text{V}$ to 20V	–	0.02	0.1	%/V
Load Regulation	$R_{\text{eg-L}}$	$I_L = 10\text{mA}$ to 200mA	–	0.02	0.1	%
Bias Current	I_B	$I_L = 0$ (disregarding the current in resistors R_1, R_2)	–	1.7	3.0	mA
Temperature Coefficient of Output Voltage	TC_{V_o}	$T_A = 0^\circ$ to $+75^\circ\text{C}$	–	0.02	–	%/°C
Ripple Rejection Ratio	RR	$f = 120\text{Hz}$	–	68	–	dB
Output Noise Voltage	V_{NO}	$f = 20\text{Hz}$ to 100kHz	–	33	–	μV_{rms}

