



ELECTRONICS, INC.

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## NTE1389 Integrated Circuit Dual, Audio Power Amplifier, 20W

### **Description:**

the NTE1389 is an audio power amplifier in a 12-Lead SIP type package specifically designed for car stereo applications. Typically, it provides 23W output power at 14.4V and 20W at 13.2V on a 4 Ohm load.

This device can be used without capacitors because it incorporates the original short circuit protection which protects output power transistors and a speaker at the same time when the output terminal is shorted to ground.

### **Features:**

- Can be used as OCL Connection
- Very Low Output Offset Voltage
- High Output Power
- Very Low Distortion
- Very Low Number of External Low Size Components, Very Simple Mounting System with no Electrical isolation Between the package and the Heat Sink
- Low Thermal Resistance
- Provides the Following Protective Circuits:
  - Load Dump Protection
  - Output Thermal Short Circuit Protection
  - Thermal Shutdown Protection
  - Speaker Protection

### **Absolute Maximum Ratings:** ( $T_A = +25^{\circ}\text{C}$ unless otherwise specified)

Supply Voltage (Note 1), $V_{CC\text{surge}}$ .....	40V
Quiescent Supply Voltage (Note 2), $V_{CC1}$ .....	25V
Operational Supply Voltage, $V_{CC2}$ .....	18V
Peak Circuit Current, $I_{CC\text{peak}}$ .....	4.5A
package Dissipation, $P_D$ .....	20W
Operating Temperature Range (Note 2), $T_{opr}$ .....	$-30^{\circ}$ to $+75^{\circ}\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-55^{\circ}$ to $+150^{\circ}\text{C}$

Note 1. Pulse Width = 200ms,  $T_{\text{rise}} \geq 1\text{ms}$ .

Note 2. Using an aluminum heat sink,  $R_{\text{thCA}} = 4^{\circ}\text{C/W}$ .

**Recommended Operating Conditions:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage Range	$V_{CC}$		9.5	–	16	V
Load Impedance	$R_L$		3.2	–	16	$\Omega$

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$ ,  $V_{CC} = 13.2\text{V}$ ,  $R_L = 4\Omega$ ,  $f = 1\text{kHz}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Quiescent Current	$I_{CC}$	$v_{in} = 0$	–	90	180	mA
Output Offset Voltage	$V_{offset}$	$v_{in} = 0$	–	–	$\pm 150$	mV
Output Power	$P_O$	$V_{CC} = 14.4\text{V}$ THD = 10%	–	23	–	W
		$V_{CC} = 13.2\text{V}$ THD = 10%	16	20	–	W
Voltage Gain	$A_V$	$V_{in} = 2.45\text{mV}$	53	55	56	dB
Total Harmonic Distortion	THD	$P_O = 2\text{W}$	–	0.15	1.0	%
Output Noise Level	$v_n$	$R_G = 0$ , BW = 20Hz to 20kHz	–	0.65	–	mV
Supply Voltage Rejection Ratio	SVRR	$R_G = 0$ , $f_{ripple} = 100\text{Hz}$ , $v_{ripple} = 0.5\text{V}$	–	45	–	dB
Input Resistance	$R_i$		–	45	–	k $\Omega$
Rolloff Frequency, High	$f_H$	$A_V = -3\text{dB}$ from 1kHz Ref.	–	90	–	kHz
Rolloff Frequency, Low	$f_L$		–	15	–	Hz

**Pin Connection Diagram**  
(Front View)



