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## **NTE990 Integrated Circuit Dual Audio Power Amplifier**

**Description:**

The NTE990 is a monolithic dual power amplifier designed to deliver 2W/channel continuous into 8Ω loads. The NTE990 is designed to operate with a low number of external components, and still provide flexibility for use in stereo phonographs, tape records and AM–FM stereo receivers, etc. Each power amplifier is biased from a common internal regulator to provide high power supply rejection, and output Q point centering. The NTE990 is internally compensated for all gains greater than 10.

**Features:**

- 2W/channel
- –65 dB Ripple Rejection, Output Referred
- –65 dB Channel Separation, Output Referred
- Wide Supply Range: 6V to 24V
- Very Low Cross–Over Distortion
- Low Audio Band Noise
- AC Short Circuit Protected
- Internal Thermal Shutdown

**Applications:**

- Multi–Channel Audio Systems
- Stereo Phonographs
- Tape Recorders and Players
- AM–FM Radio Receivers
- Servo Amplifiers
- Intercom Systems
- Automotive Products

**Absolute Maximum Ratings:**

Supply Voltage, $V_{CC}$ .....	26V
Input Voltage, $V_I$ .....	$\pm 0.7V$
Operating Junction Temperature, $T_J$ .....	+150°C
Operating Temperature Range, $T_{opr}$ .....	0° to +70°C
Storage Temperature Range, $T_{stg}$ .....	–65° to +150°C
Lead Temperature (During Soldering, 10sec), $T_L$ .....	+300°C

**Electrical Characteristics:** ( $V_S = 20V$ ,  $T_A = +25^\circ C$ ,  $R_L = 8\Omega$ ,  $A_V = 50$  (34 dB) unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Unit	
Total Supply Current	$P_O = 0W$	–	25	50	mA	
Output Power	THD = 10%	2.0	–	–	W/Ch	
Total Harmonic Distortion	$f = 1kHz$ , $V_S = 14V$	$P_O = 50mW/Ch$	–	0.075	–	%
		$P_O = 500mW/Ch$	–	0.045	–	%
		$P_O = 1W/Ch$	–	0.055	–	%
Output Swing	$R_L = 8\Omega$	–	$V_S - 6$	–	$V_{P-P}$	
Channel Separation	$C_F = 50\mu F$ , $C_{IN} = 0.1\mu F$ , $f = 1kHz$ , Output Referred	$V_S = 20V$ , $V_O = 4V_{rms}$	–50	–70	–	dB
		$V_S = 7V$ , $V_O = 0.5V_{rms}$	–	–60	–	dB
Power Supply Rejection Ratio	$C_F = 50\mu F$ , $C_{IN} = 0.1\mu F$ , $f = 120Hz$ , Output Referred	$V_S = 20V$ , $V_{ripple} = 1V_{rms}$	–50	–65	–	dB
		$V_S = 7V$ , $V_{ripple} = 0.5V_{rms}$	–	–40	–	dB
Equivalent Noise Input	$R_S = 0$ , $C_{IN} = 0.1\mu F$ , BW = 20Hz to 20kHz, Output Noise Wideband		–	2.5	–	$\mu A$
		$R_S = 0$ , $C_{IN} = 0.1\mu F$ , $A_V = 200$	–	0.8	–	mV
Open Loop Gain	$R_S = 0$ , $f = 100kHz$ , $R_L = 8\Omega$	–	70	–	dB	
Input Offset Voltage		–	15	–	mV	
Input Bias Current		–	50	–	nA	
Input Impedance	Open Loop	–	4	–	$M\Omega$	
DC Output Level	$V_S = 20V$	9	10	11	V	
Slew Rate		–	2.0	–	$V/\mu s$	
Power Bandwidth		–	65	–	kHz	
Current Limit		–	1.0	–	A	

Note 1 For operation at ambient temperature greater than  $+25^\circ C$ , the NTE990 must be derated based on a maximum  $150^\circ C$  junction temperature using a thermal resistance which depends upon device mounting techniques..



