

## NTE1380 Integrated Circuit Audio Power Amplifier, 14W

### **Description:**

The NTE1380 is a monolithic integrated circuit in a 5-Lead TO220 type package intended for use as an audio class AB amplifier. Typically, it provides 14W output power (THD = 0.5%) at  $V_S = \pm 14V/4\Omega$ . This device provides high output current and has very low harmonic and cross-over distortion. Further, the NTE1380 incorporates a short circuit protection system comprising an arrangement for automatically limiting the dissipated power so as to keep the working point of the output transistors within their safe operating area. A thermal shut-down system is also included.

### **Absolute Maximum Ratings:**

Supply Voltage, $V_S$ .....	$\pm 18V$
Input Voltage, $V_I$ .....	$V_S$
Differential Input Voltage, $V_I$ .....	$\pm 15V$
Output Peak Current (Internally Limited), $I_O$ .....	3.5A
Power Dissipation ( $T_C = +90^\circ C$ ), $P_{tot}$ .....	20W
Operating Junction Temperature Range, $T_J$ .....	$-40^\circ$ to $+150^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-40^\circ$ to $+150^\circ C$
Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	$3^\circ C/W$
Min. Thermal Shut-Down Junction Temperature ( $V_S = \pm 14V$ , $P_{tot} = 12W$ , $T_A = +25^\circ C$ ), $T_{sd}$	$+110^\circ C$

### **Electrical Characteristics:** ( $V_S = \pm 14V$ , $T_A = +25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	$V_S$		$\pm 6$	–	$\pm 18$	V
Quiescent Drain Current	$I_d$	$V_S = \pm 18V$	–	40	60	mA
Input Bias Current	$I_b$	$V_S = \pm 18V$	–	0.2	2.0	$\mu A$
Input Offset Voltage	$V_{OS}$	$V_S = \pm 18V$	–	$\pm 2$	$\pm 20$	mV
Input Offset Current	$I_{OS}$	$V_S = \pm 18V$	–	$\pm 20$	$\pm 200$	nA
Output Offset Voltage	$V_{OS}$	$V_S = \pm 18V$	–	$\pm 2.5$	$\pm 22$	mV
Output Power	$P_O$	THD = 0.5%, $G_V = 30dB$ , $f = 40$ to $15000Hz$ , $R_L = 4\Omega$	12	14	–	W
		THD = 0.5%, $G_V = 30dB$ , $f = 40$ to $15000Hz$ , $R_L = 8\Omega$	8	9	–	W
		THD = 10%, $G_V = 30dB$ , $f = 1kHz$ , $R_L = 4\Omega$	–	18	–	W
		THD = 10%, $G_V = 30dB$ , $f = 1kHz$ , $R_L = 8\Omega$	–	11	–	W

**Electrical Characteristics (Cont'd):** ( $V_S = \pm 14V$ ,  $T_A = +25^\circ C$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Frequency Response (-3dB)	B	$P_O = 12W$ , $G_V = 30dB$ , $R_L = 4\Omega$	10 to 140,000			Hz
Input Sensitivity	$V_i$	$G_V = 30dB$ , $f = 1kHz$ , $P_O = 12W$ , $R_L = 4\Omega$	-	215	-	mV
		$G_V = 30dB$ , $f = 1kHz$ , $P_O = 8W$ , $R_L = 8\Omega$	-	250	-	mV
Voltage Gain	$G_V$	$f = 1kHz$ , Open Loop	-	90	-	dB
		$f = 1kHz$ , Closed Loop	29.5	30.0	30.5	dB
Total Harmonic Distortion	THD	$P_O = 0.1$ to $12W$ , $G_V = 30dB$ , $R_L = 4\Omega$ , $f = 40$ to $15000Hz$	-	0.2	0.5	%
		$P_O = 0.1$ to $8W$ , $G_V = 30dB$ , $R_L = 8\Omega$ , $f = 40$ to $15000Hz$	-	0.1	0.5	%
Input Noise Voltage	$e_N$	$B = 22Hz$ to $22kHz$ , $R_L = 4\Omega$	-	3	10	$\mu V$
Input Noise Current	$I_N$	$B = 22Hz$ to $22kHz$ , $R_L = 4\Omega$	-	80	200	pA
Input Resistance (Pin1)	$R_I$		0.5	5.0	-	$M\Omega$
Supply Voltage Rejection	SVR	$R_L = 4\Omega$ , $R_g = 22k\Omega$ , $G_V = 30dB$ , $f_{ripple} = 100Hz$ , $V_{ripple} = 0.5V_{eff}$	40	50	-	dB
Drain Current	$I_d$	$P_O = 14W$ , $R_L = 4\Omega$	-	900	-	mA
		$P_O = 9W$ , $R_L = 8\Omega$	-	500	-	mA

**Pin Connection Diagram**  
(Front View)



