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NTE1287 Integrated Circuit Linear, Audio Power Amp, 20 Watt Includes Thermal Shutdown

Description:

The NTE1287 is a monolithic integrated operational amplifier in a 14-lead quad in-line plastic package, intended for use as a low frequency class B power amplifier. Typically it provides 20W output power (d = 1%) at $\pm 18V/4\Omega$; the guaranteed output power at $\pm 17V/4\Omega$ is 15W. The NTE1287 provides high output current (up to 3.5A) and has very low harmonic and cross-over distortion. Further, the device incorporates an original (and patented) short circuit protection system, comprising an arrangement for automatically limiting the dissipated power so as to keep to working point of the output transistors within their safe operating area. A conventional thermal shut-down system is also included.

Absolute Maximum Ratings:

Supply Voltage, V_S	$\pm 22V$
Input Voltage, V_i	V_S
Differential Input Voltage, V_i	$\pm 15V$
Output Peak Current (internally limited), I_O	3.5A
Power Dissipation ($T_C \leq +75^\circ C$), P_{tot}	25W
Junction Temperature Range, T_J	-40° to $+150^\circ C$
Storage Temperature Range, T_{stg}	-40° to $+150^\circ C$
Thermal Resistance, Junction-to-Case, R_{thJC}	$+3^\circ C/W$
Typical Thermal Shut-Down Temperature, T_{sd}	
Junction	$+140^\circ C$
Case	$+105^\circ C$

Electrical Characteristics: ($V_S = \pm 17V$, $T_A = +25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit		
Supply Voltage	V_S		± 5	-	± 22	V		
Quiescent Drain Current	I_d	$V_S = \pm 22V$	-	60	-	mA		
Input Bias Current	I_b		-	0.15	-	μA		
Input Offset Voltage	V_{os}		-	5	-	mV		
Input Offset Current	I_{os}		-	0.05	-	μA		
Output Offset Voltage	V_{os}		-	10	100	mV		
Output Power	P_O	THD = 1%, $G_V = 30dB$, $f = 40Hz$ to $15kHz$, $T_C \leq +70^\circ C$	$R_L = 4\Omega$	$V_S = \pm 17V$	15.0	18.5	-	W
				$V_S = \pm 18V$	-	20.0	-	W
			$R_L = 8\Omega$		-	16.5	-	W
		THD = 10%, $G_V = 30dB$, $f = 1kHz$ $T_C \leq +70^\circ C$	$R_L = 4\Omega$, $V_S = \pm 17V$	-	24	-	W	
	$R_L = 8\Omega$, $V_S = \pm 18V$	-	20	-	W			

Electrical Characteristics (Cont'd): ($V_S = \pm 17V$, $T_A = +25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit	
Input Sensitivity	V_I	$G_V = 30dB$, $f = 1kHz$, $P_O = 15W$	$R_L = 4\Omega$, $V_S = \pm 17V$	-	260	-	mV	
			$R_L = 8\Omega$, $V_S = \pm 18V$	-	380	-	mV	
Frequency Response (-3dB)	β	$R_L = 4\Omega$, $C_4 = 68pF$		10 to 160k			Hz	
Total Harmonic Distortion	THD	$P_O = 150mW$ to $15W$, $R_L = 4\Omega$, $G_V = 30dB$, $T_C \leq +70^\circ C$	$f = 1kHz$	-	0.2	-	%	
			$f = 40Hz$ to $15kHz$	-	0.3	1.0	%	
			$P_O = 150mW$ to $15W$, $R_L = 8\Omega$, $G_V = 30dB$, $V_S = \pm 18V$, $T_C \leq +70^\circ C$	$f = 1kHz$	-	0.1	-	%
				$f = 40Hz$ to $15kHz$	-	0.25	-	%
Input Resistance (Pin7)	R_I			-	5	-	M Ω	
Voltage Gain	G_V	$R_L = 4\Omega$, $f = 1kHz$	Open Loop	-	100	-	dB	
			Closed Loop	29.5	30.0	30.5	dB	
Input Noise Voltage	e_N	$R_L = 4\Omega$, β (-3dB) = 10Hz to 20kHz		-	4	-	μV	
Input Noise Current	I_N			-	0.1	-	nA	
Supply Voltage Rejection	SVR	$R_L = 4\Omega$, $G_V = 30dB$, $f_{ripple} = 100Hz$		-	50	-	dB	
Drain Current	I_d	$P_O = 18.5W$, $R_L = 4\Omega$,		-	1	-	A	
		$P_O = 16.5W$, $V_S = \pm 18V$, $R_L = 8\Omega$,		-	0.7	-	A	

Pin Connection Diagram



