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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 ±18V/4Ω; the guaranteed output power at ±17V/4Ω 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 . . . . . ±22V
Input Voltage, V_i . . . . . V_s
Differential Input Voltage, V_i . . . . . ±15V
Output Peak Current (internally limited), I_O 3.5A
Power Dissipation ($T_C \leq +75°C$), P_{tot} 25W
Junction Temperature Range, T_J . . . . . –40° to +150°C
Storage Temperature Range, T_{stg} . . . . . –40° to +150°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . +3°C/W
Typical Thermal Shut–Down Temperature, T_{sd}
Junction . . . . . +140°C
Case . . . . . +105°C

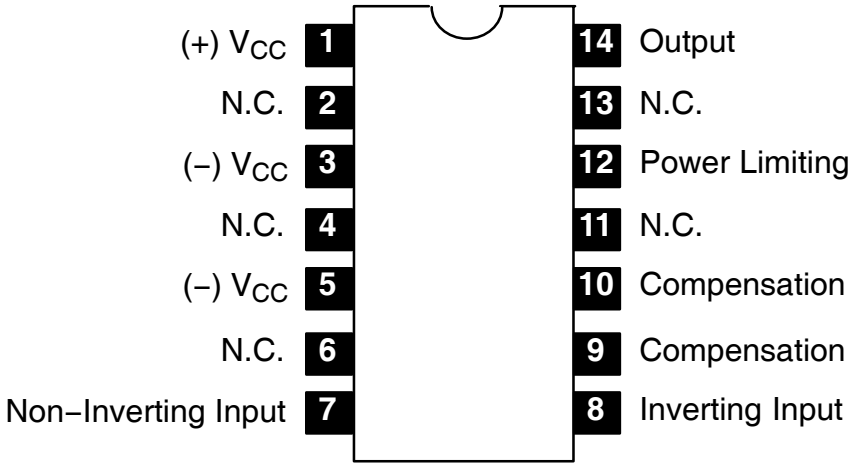
Electrical Characteristics: (V_S = ±17V, T_A = +25°C unless otherwise specified)

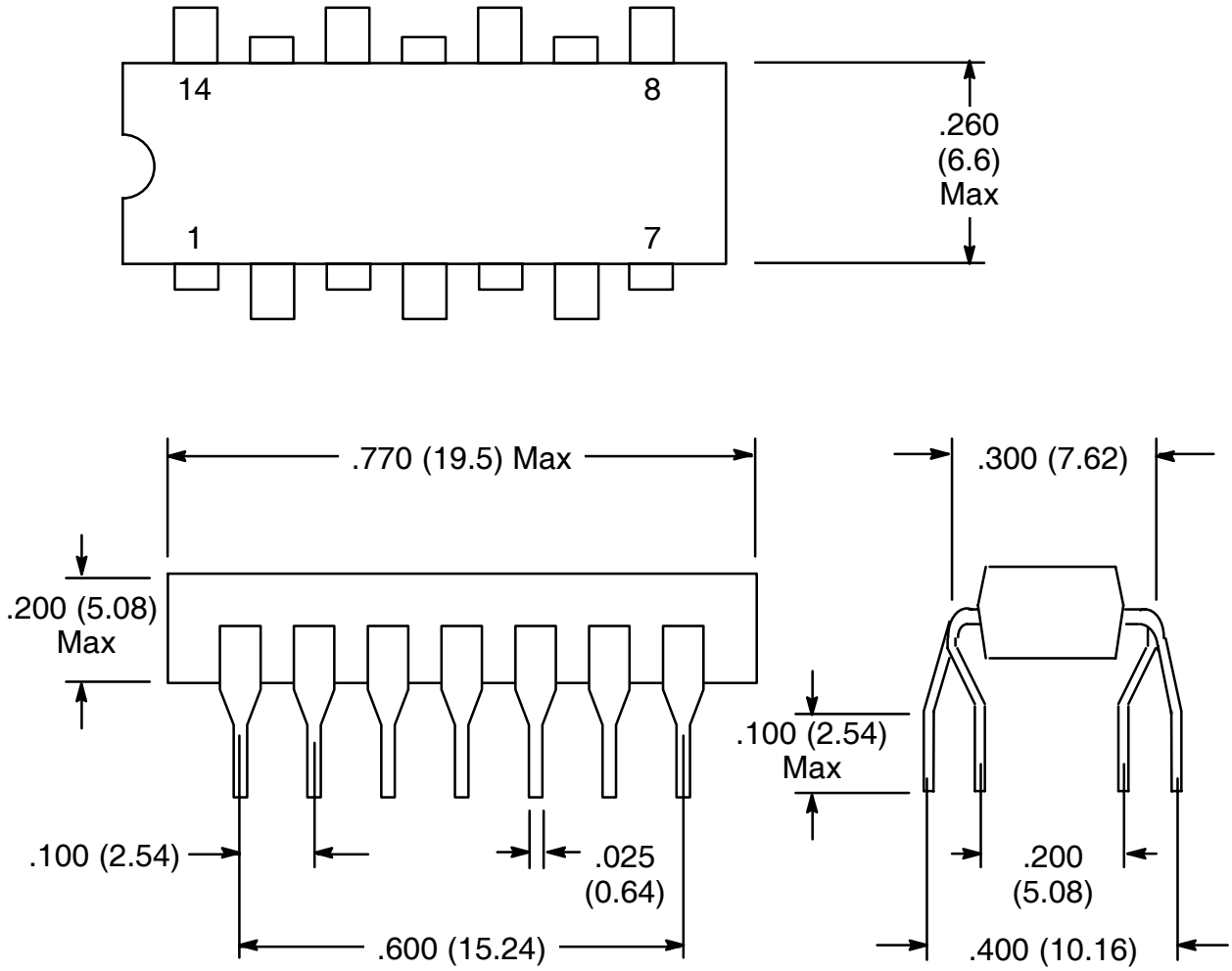
Parameter	Symbol	Test Conditions			Min	Typ	Max	Unit
Supply Voltage	V_S				±5	–	±22	V
Quiescent Drain Current	I_d	V_s = ±22V			–	60	–	mA
Input Bias Current	I_b				–	0.15	–	μA
Input Offset Voltage	V_{os}				–	5	–	mV
Input Offset Current	I_{os}				–	0.05	–	μA
Output Offset Voltage	V_{os}				–	10	100	mV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

Electrical Characteristics (Cont'd): (V_S = ±17V, T_A = +25°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 = 4Ω, V_S = ±17V	–	260	–	mV
			R_L = 8Ω, V_S = ±18V	–	380	–	mV
Frequency Response (–3dB)	β	R_L = 4Ω, C4 = 68pF		10 to 160k			Hz
Total Harminic Distortion	THD	P_O = 150mW to 15W, R_L = 4Ω, G_V = 30dB, $T_C \leq$ +70°C	f = 1kHz	–	0.2	–	%
			f = 40Hz to 15kHz	–	0.3	1.0	%
		P_O = 150mW to 15W, R_L = 8Ω, G_V = 30dB, V_S = ±18V, $T_C \leq$ +70°C	f = 1kHz	–	0.1	–	%
			f = 40Hz to 15kHz	–	0.25	–	%
Input Resistance (Pin7)	R_I			–	5	–	MΩ
Voltage Gain	G_V	R_L = 4Ω, f = 1kHz	Open Loop	–	100	–	dB
			Closed Loop	29.5	30.0	30.5	dB
Input Noise Voltage	e_N	R_L = 4Ω, β (–3dB) = 10Hz to 20kHz		–	4	–	μV
Input Noise Current	I_N			–	0.1	–	nA
Supply Voltage Rejection	SVR	R_L = 4Ω, G_V = 30dB, f_{ripple} = 100Hz		–	50	–	dB
Drain Current	I_d	P_O = 18.5W, R_L = 4Ω,		–	1	–	A
		P_O = 16.5W, V_S = ±18V, R_L = 8Ω,		–	0.7	–	A

Pin Connection Diagram




14
8
1
7
.260
(6.6)
Max
.770 (19.5) Max
.300 (7.62)
.200 (5.08)
Max
.100 (2.54)
Max
.100 (2.54)
.025
(0.64)
.200
(5.08)
.600 (15.24)
.400 (10.16)