ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089

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 . . . . . ±18V
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 = +90°C), P_{tot} 20W
Operating 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
Min. Thermal Shut–Down Junction Temperature ($V_S = \pm 14V$, P_{tot} = 12W, T_A = +25°C), T_{sd} +110°C

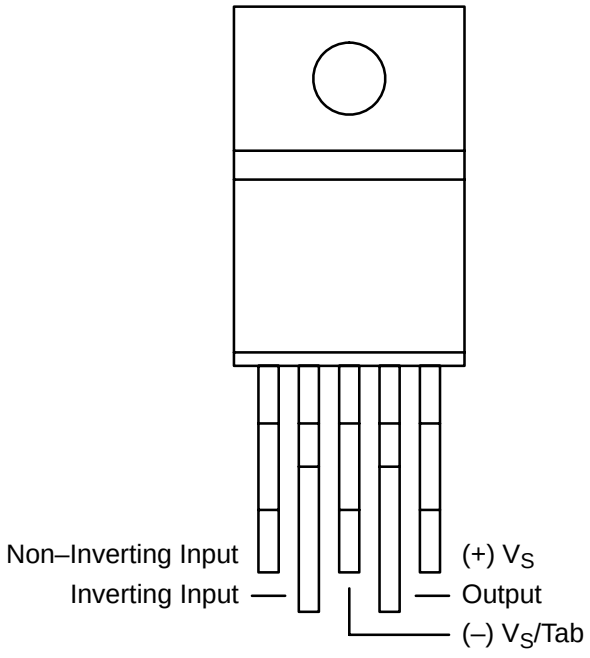
Electrical Characteristics: ($V_S = \pm 14V$, T_A = +25°C unless otherwise specified)

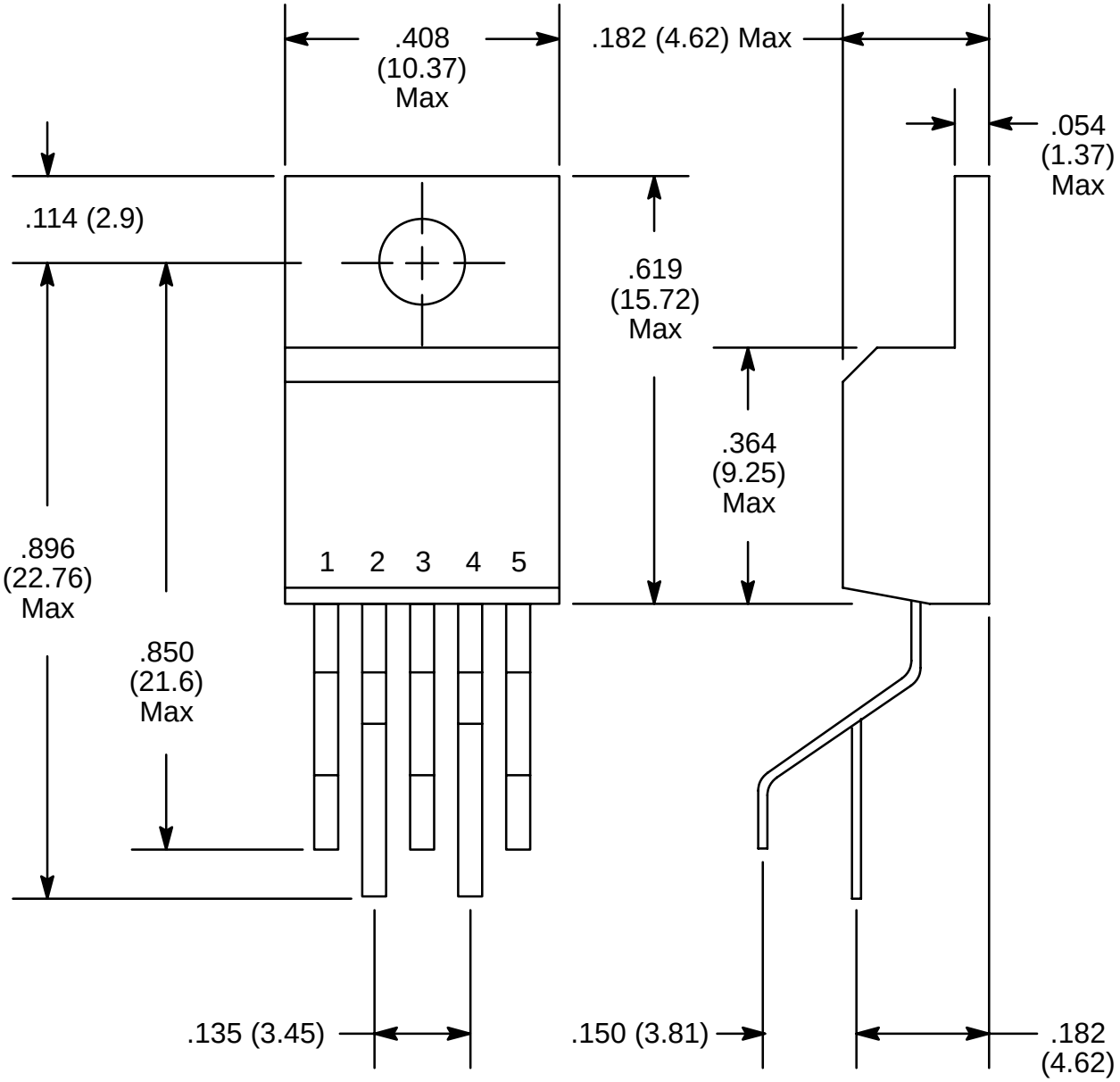
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_S		±6	–	±18	V
Quiescent Drain Current	I_d	$V_S = \pm 18V$	–	40	60	mA
Input Bias Current	I_b	$V_S = \pm 18V$	–	0.2	2.0	µA
Input Offset Voltage	V_{OS}	$V_S = \pm 18V$	–	±2	±20	mV
Input Offset Current	I_{OS}	$V_S = \pm 18V$	–	±20	±200	nA
Output Offset Voltage	V_{OS}	$V_S = \pm 18V$	–	±2.5	±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 = ±14V, T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Frequency Response (–3dB)	B	P_O = 12W, G_V = 30dB, R_L = 4Ω	10 to 140,000			Hz
Input Sensitivity	V_i	G_V = 30dB, f = 1kHz, P_O = 12W, R_L = 4Ω	–	215	–	mV
		G_V = 30dB, f = 1kHz, P_O = 8W, R_L = 8Ω	–	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 = 4Ω, f = 40 to 15000Hz	–	0.2	0.5	%
		P_O = 0.1 to 8W, G_V = 30dB, R_L = 8Ω, f = 40 to 15000Hz	–	0.1	0.5	%
Input Noise Voltage	e_N	B = 22Hz to 22kHz, R_L = 4Ω	–	3	10	µV
Input Noise Current	I_N	B = 22Hz to 22kHz, R_L = 4Ω	–	80	200	pA
Input Resistance (Pin1)	R_I		0.5	5.0	–	MΩ
Supply Voltage Rejection	SVR	R_L = 4Ω, R_g = 22kΩ, G_V = 30dB, f_{ripple} = 100Hz, V_{ripple} = 0.5V_{eff}	40	50	–	dB
Drain Current	I_d	P_O = 14W, R_L = 4Ω	–	900	–	mA
		P_O = 9W, R_L = 8Ω	–	500	–	mA

Pin Connection Diagram
(Front View)




.408
(10.37)
Max
.182 (4.62) Max
.054
(1.37)
Max
.114 (2.9)
.619
(15.72)
Max
.364
(9.25)
Max
.896
(22.76)
Max
1 2 3 4 5
.850
(21.6)
Max
.135 (3.45)
.150 (3.81)
.182
(4.62)