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NTE7186
Integrated Circuit
DMOS Audio Amplifier, 100W
with Mute/Stand–By

Description:

The NTE7186 is a monolithic integrated circuit in a 15–Lead Staggered SIP type package, intended for use as audio class AB amplifier in Hi–Fi field applications (Home Stereo, self powered loudspeakers, Top class TV). Thanks to a wide voltage range and to the high out current capability it is able to supply the highest power into both 4Ω and 8Ω loads. The built in muting function with turn on delay simplifies the remote operation avoiding switching on–off noises.

Features:

- Very High Operating Voltage Range (±50V)
- DMOS Power Stage
- High Output Power (100W @ THD = 10%, R_L = 8Ω, V_S = ±40)
- Muting/Stand–By Functions
- No Switch ON/OFF Noise
- Very Low Distortion
- Very Low Noise
- Short Circuit Protection
- Thermal Shutdown
- Clip Detector

Absolute Maximum Ratings:

Supply Voltage (No Signal), V_S . . . . . ±60V
$V_{STAND–BY}$ GND Voltage Referred to $–V_S$ (Pin8), V_1 . . . . . 90V
Input Voltage (Inverting) Referred to $–V_S$, V_2 . . . . . 90V
Maximum Differential Inputs, $V_2 – V_3$ . . . . . ±30V
Input Voltage (Non–Inverting) Referred to $–V_S$, V_3 . . . . . 90V
Signal GND Voltage Referred to $–V_S$, V_4 . . . . . 90V
Clip Detector Voltage Referred to $–V_S$, V_5 . . . . . 120V
Bootstrap Voltage Referred to $–V_S$, V_6 . . . . . 120V
Stand–by Voltage Referred to $–V_S$, V_9 . . . . . 120V
Mute Voltage Referred to $–V_S$, V_{10} 120V
Buffer Voltage Referred to $–V_S$, V_{11} 120V
Bootstrap Loader Voltage Referred to $–V_S$, V_{12} 100V
Output Peak Current, I_o 10A
Power Dissipation (T_C = +70°C), P_{tot} 50W
Operating Ambient Temperature Range, T_{op} . . . . . 0° to +70°C
Storange and Junction Temperature, T_{stg}, T_j . . . . . +150°C
Maximum Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 1.5°C/W

Electrical Characteristics: (V_S = ±40, R_L = 8Ω, R_g = 50Ω; T_A = +25°C, f = 1kHz unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Supply Range (No Signal)	V_S			±12	–	±50	V
Quiescent Current	I_q			–	30	–	mA
Input Bias Current	I_D			–	0.3	1	µA
Input Offset Voltage	V_{OS}			–10	–	10	mV
Input Offset Current	I_{OS}			–	–	0.2	µA
RMS Continuous Output Power	P_O	d = 1%	R_L = 4Ω, V_S = ±29V	–	80	–	W
		d = 10%		–	100	–	W
Total Harmonic Distortion	d	P_O = 5W, f = 1kHz		–	0.005	–	%
		P_O = 0.1 to 50W, f = 20Hz to 15kHz		–	–	0.1	%
Current Limiter Threshold	I_{SC}			–	6.5	–	A
Slew Rate	SR			–	15	–	V/µs
Open Loop Voltage Gain	G_V			–	80	–	dB
Closed Loop Voltage Gain (Note 1)	G_V			–	30	–	dB
Total Input Noise	e_N	A = Curve		–	1	–	µV
		f = 20Hz to 20kHz		–	2	5	µV
Input Resistance	R_i			100	–	–	kΩ
Supply Voltage Rejection	SVR	f = 100Hz, V_{ripple} = 0.5V_{rms}		–	75	–	dB
Thermal Protection	T_S	Device Muted		–	150	–	°C
		Device Shut Down		–	160	–	°C
Stand–By Function (Ref: to Pin1)							
Stand–By ON Threshold	V_{STon}			–	–	1.5	V
Stand–By OFF Threshold	V_{SToff}			3.5	–	–	V
Stand–By Attenuation	ATT_{st-by}			70	90	–	dB
Quiescent Current at Stand–By	$I_{q\ st-by}$			–	0.5	–	mA
Mute Function (Ref: to Pin 1)							
Mute ON Threshold	V_{Mon}			–	–	1.5	V
Mute OFF Threshold	V_{Moff}			3.5	–	–	V
Mute Attenuation	ATT_{mute}			60	80	–	dB
Clip Detector							
Duty Cycle	Duty	THD = 1%	R_L = 10KΩ to 5V	–	10	–	%
		THD = 10%		–	40	–	%
	I_{CLEAK}	P_O = 50W		–	–	1	µA
Slave Function Pin 4 (Ref: to Pin 8 –V_S)							
Slave Threshold	V_{Slave}			–	–	1	V
Master Threshold	V_{Master}			3	–	–	V

Note 1. $G_{Vmin} \geq$ 26dB.

Pin Connection Diagram
(Front View)