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NTE7163
Intergrated Circut
4 x 40W Quad Bridge Car Radio Amplifier

Description:

The NTE7163 is a new technology class AB audio power amplifier in a 25−Lead Staggered SIP type package designed for high end car radio applications. Thanks to the PNP/NPN output configuration the NTE7163 allows a rail to rail output voltage swing with no need of bootstrap capacitors. The extremely reduced components count allows very compact sets.

Features:

- High Output Power Capability
  - 4 x 45W/4Ω Max
  - 4 x 40W/4Ω EIAJ
  - 4 x 28W/4Ω @ 14.4V, 1KHz, 10%
  - 4 x 24W/4Ω @ 13.2V, 1KHz, 10%
- Low Distortion
- Low Output Noise
- ST−BY Function
- Mute Function
- Automute at Min. Supply Voltage Detection
- Low External Component Count:
  - Internally Fixed Gain (26dB)
  - No External Compensation
  - No Bootstrap Capacitors

Protections:

- Output Short Circut to GND, To V_S, Across the Load
- Very Inductive Loads
- Overrating Chip Temperature with Soft Thermal Limiter
- Load Dump Voltage
- Fortuitous Open GND

Absolute Maximum Ratings:

Operating Supply Voltage, V_{CC} 18V
DC Supply Voltage, $V_{CC\,(DC)}$ 28V
Peak Supply Voltage (t = 50ms), $V_{CC\,(pk)}$ 50V
Output Peak Current, I_O
  Repetitive (Duty Cycle 10% at f = 10H_z) 4.5A
  Non−Repetitive (t = 100µs) 5.5A
Total Power Dissipation (T_C = +70°), P_{tot} 80W
Operating Junction Temperature, T_j . . . . . +150°C
Storage Temperature Range, T_{stg} . . . . . − 55° to +150°C
Thermal Resistance, Junction−to−Case, R_{thJC} . . . . . 1°C/W

Electrical Characteristics: (V_S = 14.4V, f = 1KHz, R_g = 600Ω, R_L = 4Ω, T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Quiescent Current	I_{q1}	$R_L = \infty$	−	190	350	mA
Output Offset Voltage	V_{OS}	Play Mode	−	−	±80	mV
During Mute ON/OFF Output Offset Voltage	dV_{OS}		−	−	±80	mV
Voltage Gain	G_V		25	26	27	dB
Channel Gain Unbalance	dG_V		−	−	±1	dB
Output Power	P_O	V_S = 13.2V; THD= 10%	22	24	−	W
		V_S = 13.2V; THD = 0.8%	16.5	18	−	W
		V_S = 14.4V, THD = 10%	26	28	−	W
EIAJ Output Power	$P_{O\ EIAJ}$	V_S = 13.7, Note 1	37.5	40	−	W
Max. Output Power	$P_{O\ max.}$	V_S = 14.4V, Note 1	43	45	−	W
Total Harmonic Distortion	THD	P_O = 4W	−	0.04	0.15	%
Output Noise	e_{no}	"A" Weighted	−	50	70	µV
		BW = 20Hz to 20kHz	−	70	100	µV
Supply Voltage Rejection	SVR	f = 100Hz V_r = 1Vrms	50	75	−	dB
High Cut−Off Frequency	f_{ch}	Po = 0.5W	80	200	−	kHz
Input Impedance	R_i		70	100	−	kΩ
Cross Talk	C_r	f = 1kHz, P_O = 4W	60	70	−	dB
		f = 10kHz, P_O = 4w	−	60	−	dB
St−By Current Consumption	I_{SB}	V_{ST-BY} = 1.5V	−	−	50	µA
St−By Pin Current	I_{pin4}	VSt−By = 1.5V to 3.5V	−	−	±10	µA
St−By Out Threshold Voltage	$V_{SB\ out}$	Amp: ON	3.5	−	−	V
ST−By In Threshold Voltage	$V_{SB\ in}$	AMP: OFF	−	−	1.5	V
Mute Attenuation	A_M	P_{Oref} = 4W	80	90	−	dB
Mute Out Threshold Voltage	$V_{M\ out}$	Amp: Play	3.5	−	−	V
Mute In Threshold Voltage	$V_{M\ in}$	Amp: Mute	−	−	1.5	V
V_S Automute Threshold	$V_{AM\ in}$	Amp: Mute, Att ≥ 80dB; P_{Oref} = 4W	−	−	6.5	V
		Amp: Play, Att < 0.1dB; Po = 0.5W	−	7.6	8.5	V
Muting Pin Current	I_{pin22}	V_{MUTE} = 1.5V (Sourced Current)	5	11	20	µA
		V_{MUTE} = 3.5V	−5	−	20	µA

Note 1. Saturated square wave output.

Pin Connection Diagram
(Front View)