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NTE7163 **Integrated Circuit** **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 Circuit 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 $f = 10Hz$)	4.5A
Non-Repetitive ($t = 100\mu s$)	5.5A
Total Power Dissipation ($T_C = +70^\circ$), 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: ($V_S = 14.4V$, $f = 1KHz$, $R_g = 600\Omega$, $R_L = 4\Omega$, $T_A = +25^\circ C$ 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	$f = 100Hz$ $V_r = 1V_{rms}$	50	75	–	dB
High Cut-Off Frequency	f_{ch}	$P_o = 0.5W$	80	200	–	kHz
Input Impedance	R_i		70	100	–	k Ω
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}	$V_{St-By} = 1.5V$ 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 $\geq 80dB$; $P_{Oref} = 4W$	–	–	6.5	V
		Amp: Play, Att $< 0.1dB$; $P_o = 0.5W$	–	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)

25	HSD
24	P-GND4
23	Output 4 (-)
22	Mute
21	Output 4 (+)
20	V _{CC}
19	Output 3 (-)
18	P-GND3
17	Output 3 (+)
16	AC-GND
15	Input 3
14	Input 4
13	S-GND
12	Input 2
11	Input 1
10	SVR
9	Output 1 (+)
8	P-GND1
7	Output 1 (-)
6	V _{CC}
5	Output 2 (+)
4	ST-BY
3	Output 2 (-)
2	P-GND2
1	TAB

