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NTE7119
Integrated Circuit
22W BTL (2 x 11W) Stereo Power Amplifier

Description:

The NTE7119 integrated circuit is a class–B dual output amplifier in a 9–Lead SIP type package designed primarily for use in car radio applications. This device contains two identical amplifiers with differential input stages. The gain of each amplifier is fixed at 40dB.

Features:

- Stereo or BTL Application
- Few External Components for BTL
- High Output Power
- Low Offset Voltage at Output
- Fixed Gain
- Good Ripple Rejection
- Mute/Stand–by Switch
- Load Dump Protection
- Thermally Protected
- Reverse Polarity Safe
- Ability to Handle High Energy on Outputs
- No Switch–ON/OFF Pop
- Low Thermal Resistance
- Short Circuit Protected

Absolute Maximum Ratings:

Supply Voltage, V_P
- Operatring 18V
- Non–Operating 30V
- Load Dump Protected (during 50ms, $t_r \geq 2.5$ms) 45V

AC and DC Short–Circuit Safe Voltage, V_{PSC} 18V
Reverse Polarity, V_{PR} 6V
Energy Handling Capability at Outputs (V_P = 0V) 200mJ
Non–Repetitive Peak Output Current, I_{OSM} 6A
Repetitive Peak Output Current, I_{ORM} 4A
Total Power Dissipation, P_{tot} 25W
Crystal Temperature, T_C . . . . . +150°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C

DC Characteristics: (V_P = 14.4V, T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply						
Supply Voltage Range	V_P	Note 1	6.0	14.4	18.0	V
Total Quiescent Current	I_{tot}		–	40	80	mA
DC Output Voltage	V_O	Note 2	–	6.95	–	V
DC Output Offset Voltage	$\|\Delta V_{4-6}\|$		–	–	250	mV
Mute/Stand–by Switch						
Switch–ON Voltage Level	V_{ON}		8.5	–	–	V
Mute Condition	V_{mute}		3.3	–	6.4	V
Output Signal in Mute Position	V_O	V_I = 1V (max), f = 20Hz to 15kHz	–	–	20	mV
DC Output Offset Voltage	$\|\Delta V_{4-6}\|$		–	–	250	mV
Stand–by Condition	V_{sb}		0	–	2	V
DC Current in Stand–by Condition	I_{sb}		–	–	100	µA
Switch–ON Current	I_{sw}		–	12	40	µA

Note 1. The circuit is DC adjusted at V_P = 6V to 18V and AC operating at V_P = 8.5V to 18V.
Note 2. At 18V < V_P < 30V the DC output voltage ≤ V_P/2.

AC Characteristics: (V_P = 14.4V, R_L = 4Ω, f = 1kHz, T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Stereo Application						
Output Power	P_O	THD = 0.5%, Note 3	4	5	–	W
		THD = 10%, Note 3	5.5	6.0	–	W
		THD = 0.5%, R_L = 2Ω, Note 3	7.5	8.5	–	W
		THD = 10%, R_L = 2Ω, Note 3	10	11	–	W
Total Harmonic Distortion	THD	P_O = 1W	–	0.1	–	%
Low Frequency Roll–Off	f_L	–3dB, Note 4	–	45	–	Hz
High Frequency Roll–Off	f_H	–1dB, Note 4	20	–	–	kHz
Closed Loop Voltage Gain	G_V		39	40	41	dB
Supply Voltage Ripple Rejection	RR					
ON		Note 5, Note 6	40	–	–	dB
		Note 5, Note 7	45	–	–	dB
Mute		Note 5, Note 6, Note 7	45	–	–	dB
Standby		Note 5, Note 6, Note 7	80	–	–	dB
Input Impedance	$\|Z_i\|$		50	60	75	kΩ
Noise Output Voltage (RMS Value)	$V_{no(rms)}$					
ON		R_S = 0Ω, Note 8	–	150	–	µV
		R_S = 10kΩ, Note 8	–	250	500	µV
Mute		Note 9	–	120	–	µV
Channel Separation	α	R_S = 10kΩ	40	–	–	dB
Channel Unbalance	$\|\Delta G_V\|$		–	0.1	1	dB

Note 3. Output power is measured directly at the output pins of the IC.
Note 4. Frequency response externally fixed.
Note 5. Ripple rejection measured at the output with a source impedance of 0Ω (maximum ripple amplitude of 2V)
Note 6. Frequency f = 100Hz.
Note 7. Frequency between 1kHz and 10kHz.
Note 8. Noise voltage measured in a bandwidth of 20Hz to 20kHz.
Note 9. Noise output voltage independent of R_S (V_I = 0V).

AC Characteristics: (V_P = 14.4V, R_L = 4Ω, f = 1kHz, T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
BTL Application						
Output Power	P_O	THD = 0.5%, Note 3	15	17	–	W
		THD = 10%, Note 3	20	22	–	W
		THD = 0.5%, V_P = 13.2V, Note 3	–	13	–	W
		THD = 10%, V_P = 13.2V, Note 3	–	17.5	–	W
Total Harmonic Distortion	THD	P_O = 1W	–	0.1	–	%
Power Bandwidth	B_W	THD = 0.5%, P_O = –1dB, w.r.t 15W	35 to 15,000			Hz
Low Frequency Roll–Off	f_L	–1dB, Note 4	–	45	–	Hz
High Frequency Roll–Off	f_H	–1dB, Note 4	20	–	–	kHz
Closed Loop Voltage Gain	G_V		45	46	47	dB
Supply Voltage Ripple Rejection	RR					
ON		Note 5, Note 6	34	–	–	dB
		Note 5, Note 7	48	–	–	dB
Mute		Note 5, Note 6, Note 7	48	–	–	dB
Standby		Note 5, Note 6, Note 7	80	–	–	dB
Input Impedance	$\|Z_i\|$		25	30	38	kΩ
Noise Output Voltage (RMS Value)	$V_{no(rms)}$					
ON		R_S = 0Ω, Note 8	–	200	–	μV
		R_S = 10kΩ, Note 8	–	350	700	μV
Mute		Note 9	–	180	–	μV

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Note 6. Frequency f = 100Hz.
Note 7. Frequency between 1kHz and 10kHz.
Note 8. Noise voltage measured in a bandwidth of 20Hz to 20kHz.
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Pin Connection Diagram
(Front View)