6W STEREO CAR RADIO POWER AMPLIFIER

—YD1519

DESCRIPTION

The YD1519 is an integrated class-B dual output amplifier in a 9-lead single in-line (SIL) plastic medium power package. The device is primarily developed for car radio applications.

FEATURES

*Requires very few external components for Bridge Tied Load (BTL)
*Stereo or BTL application
*High output power
*Low offset voltage at output (important for BTL)
*Fixed gain
*Good ripple rejection
*Mute/stand-by switch
*Load dump protection
*AC and DC short-circuit-safe to ground and Vp
*Thermally protected
*Reverse polarity safe
*Capability to handle high energy on outputs (Vp=0V)
*No switch-on/switch-off plop
*Protected against electrostatic discharge
*Identical inputs (inverting and non-inverting)

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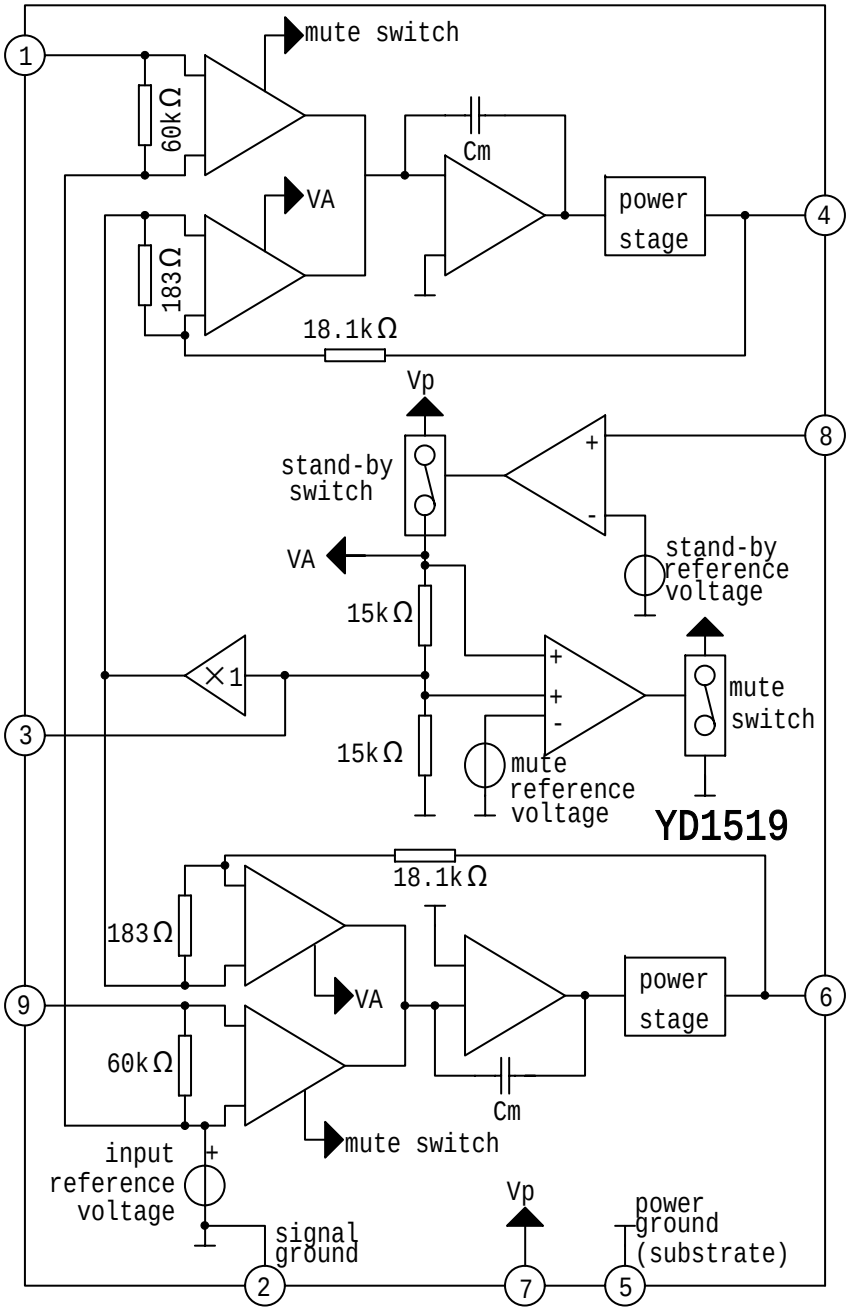
BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Tamb=25℃)

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNIT
Supply Voltage Operating	Vcc		18	V
Non-operating	Vcc		30	V
Load Dump Protected	Vp	During 50 ms; $t_r \geq 2.5$ms	45	V
AC And DC Shot-circuit-safe Voltage	Vpsc		18	V
Reverse Polarity	V_{PR}		6	V
Non-repetitive Peak Output Current	I_{OSM}		4	A
Repetitive Peak Output Current	I_{ORM}		2.5	A
Total Power Dissipation	Ptot	See Fig.2	15	W
Storage Temperature Range	Tstg		-55～+150	℃

ELECTRICAL CHARACTERISTICS

DC CHARACTERISTICS

(Vcc=14.4V, Tamb=25℃, stereo, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage Range	Vcc	Note 1	6.0	14.4	18.0	V
Total Quiescent Current	Itot			40	80	mA
DC Output Voltage	Vo	Note 2		6.95		V
DC Output Offset Voltage	|△V4-6|				250	mV
Switch-on Voltage Level	V_{ON}		8.5			V
Mute Condition	Vmute		3.3		6.4	V
Output Signal In Mute Position	Vo	V1=1V(max.); f=20 Hz to 15 KHz			20	mV
DC Output Offset Voltage	|△V4-6|				250	mV

Stand-by Condition	Vsb		0		2	V
DC Current In Stand-by Condition	Isb				100	μA
Switch-on Current	Isw			12	40	μA

AC CHARACTERISTICS

Vp=14.4V, R_L=4Ω, f=1KHz; Tamb=25℃, stereo, unless otherwise specified

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Power	Po	Note 3 THD=0.5% THD=10%	 4 5.5	 5 6.0		 W W
Output Power At Vcc=13.2V	Po	Note 3 THD=0.5% THD=10%		 3.5 4.8		 W W
Total Harmonic Distortion	THD	Po =1W		0.1		%
Low Frequency Roll-off	f_L	Note 4 -3dB		 45		 Hz
High Frequency Roll-off	f_H	-3dB	20			KHz
Closed Loop Voltage Gain	Gv		39	40	41	dB
Supply Voltage Ripple Rejection ON ON Mute Stand-by	 RR RR RR RR	 Notes 5 and 6 Notes 5 and 7 Notes 5,6 and 7 Notes 5,6 and 7	 40 45 45 80			 dB dB dB dB
Input Impedance	Zi		50	60	75	kΩ
Noise Output Voltage(RMS value) ON ON Mute	 Vno(rms) Vno(rms) Vno(rms)	Note 8 Rs=0Ω Rs=10KΩ Note 9		 150 250 120	 500	 μV mV μV
Channel Separation	α	Rs=10KΩ	40			dB
Channel Unbalance	|△Gv|			0.1	1	dB

AC CHARACTERISTICS

(Vp=14.4V, R_L=8Ω, f=1KHz, Tamb=25℃; BTL, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Power	Po	Note 3 THD=0.5% THD=10%	 8 11	 10 12		 W W
Output Power At Vp=13.2V	Po	Note 3 THD=0.5% THD=10%		 7.5 10		 W W
Total Harmonic Distortion	THD	Po =1W		0.1		%
Power Bandwidth	Bw	THD=0.5%; Po=-1dB; w.r.t. 15W		35 to 15000		Hz
Low Frequency Roll-off	f_L	Note 4 -3dB		45		Hz
High Frequency Roll-off	f_H	-3dB	20			KHz
Closed Loop Voltage Gain	Gv		45	46	47	dB
Supply Voltage Ripple Rejection ON ON Mute Stand-by	 RR RR RR RR	 Notes 5 and 6 Notes 5 and 7 Notes 5, 6 and 7 Notes 5, 6 and 7	 34 48 48 80			 dB dB dB dB
Input Impedance	|Zi|		25	30	38	kΩ
Noise Output Voltage(RMS value) ON ON Mute	 Vno(rms) Vno(rms) Vno(rms)	Note 8 Rs=0Ω Rs=10KΩ Note 9		 200 350 180	 700	 μV μV μV

Notes to the characteristics

1、 The circuit is DC adjusted at Vp=6V to 18V and AC operating at Vp=8.5V to 18V.

2、 At 18V<Vp<30V the DC output voltage ≤Vp/2

3、 Output power is measured directly at the output pins of the IC.

4、 Frequency response externally fixed.

5、 Ripple rejection measured at the output with a source impedance of 0Ω (maximum ripple amplitude of 2V)

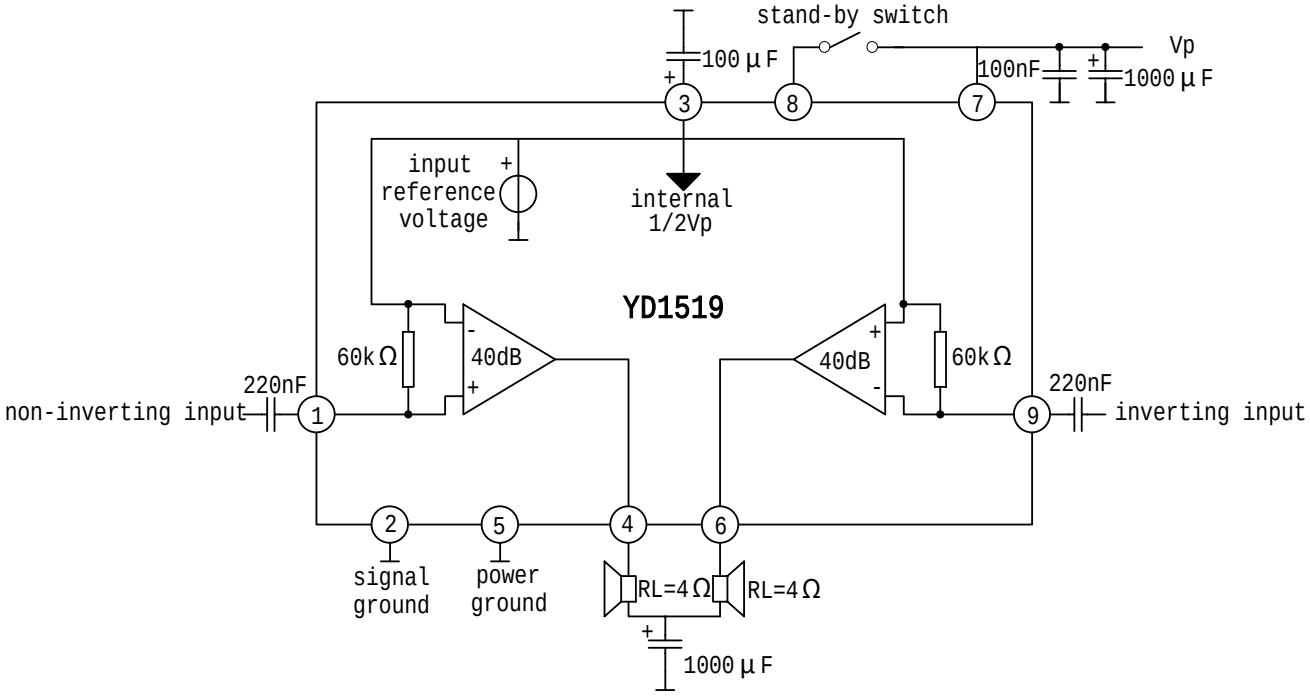
6、 Frequency f=100Hz.

7、 Frequency between 1 kHz and 10kHz.

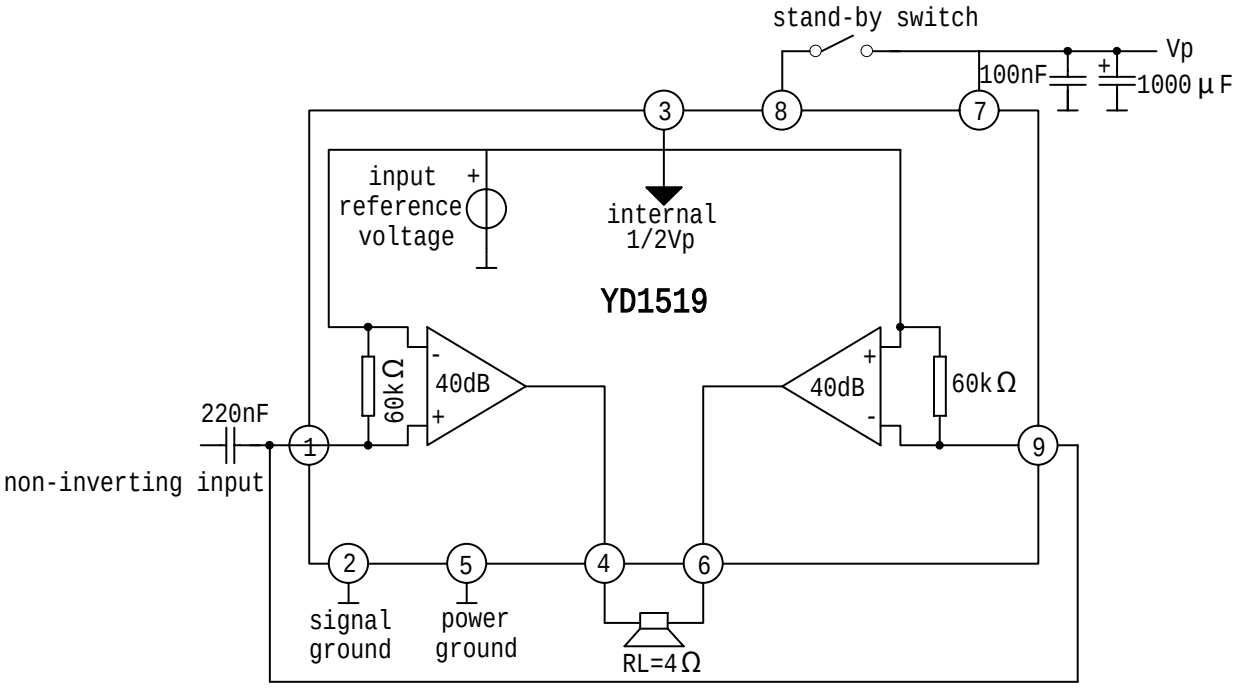
8、 Noise voltage measured in a bandwidth to 20Hz to 20kHz.

9、 Noise output voltage independent of Rs (Vl=0V).

APPLICATION CIRCUIT



Stereo application circuit diagram



BTL application circuit diagram

OUTLINE DRAWING