

18W CAR RADIO POWER AMPLIFIER—YD1028

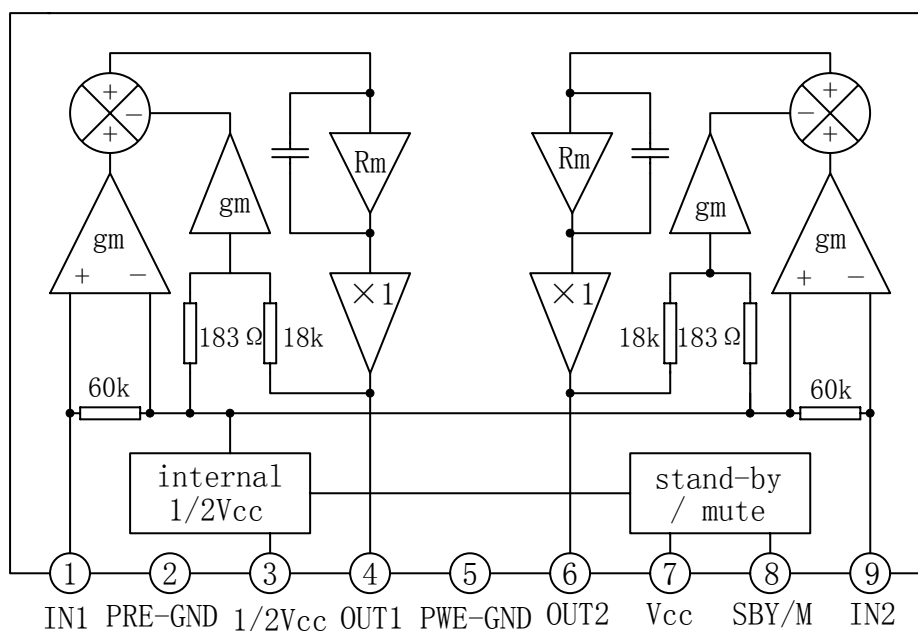
DESCRIPTION

The YD1028 is an integrated class-B dual output amplifier in a 9-lead single in-line (TO220Z9) plastic 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, Fixed gain, Good ripple rejection;
- *Identical inputs (inverting and non-inverting), Low offset voltage at output (important for BTL);
- *Mute/stand-by switch, No switch-on/switch-off plop;
- *Load dump protection, AC and DC short-circuit-safe to ground and V_{cc} , Thermally protected;
- *Reverse polarity safe;
- *Capability to handle high energy on outputs ($V_{cc}=0V$);
- *Protected against electrostatic discharge.

BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS ($T_{amb}=25^{\circ}\text{C}$)

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNIT
Supply Voltage Operating	V _{cc}		18	V
Non-operating	V _{cc}		20	V
AC And DC Shot-circuit-safe Voltage	V _{ccsc}		18	V
Reverse Polarity	V _{ccr}		6	V
Non-repetitive Peak Output Current	I _{OSM}		4	A
Repetitive Peak Output Current	I _{ORM}		2.5	A
Total Power Dissipation	P _D	Infinite Heat Sink	20	W
		No Heat Sink	4.0	
Operating Temperature	T _{opr}		-20~+75	°C
Storage Temperature	T _{stg}		-55~+150	°C

ELECTRICAL CHARACTERISTICS**DC CHARACTERISTICS**(V_{cc}=13.2V, T_{amb}=25°C, BTL, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage Range	V _{cc}		6.0	13.2	18.0	V
Total Quiescent Current	I _{ccq}			40	60	mA
DC Output Voltage	V _o			6.2		V
DC Output Offset Voltage	ΔV_{4-6}	Operating/Mute			250	mV
Switch-on Voltage Level	V _{ON}	Operating	8.5			V
Mute Condition	V _{mute}	Mute	3.3		6.4	V
Stand-by Condition	V _{st-by}	Stand-by			2.0	V
DC Current in Stand-by	I _{ccsb}	V ₈ ≤ 2.0V			100	μ A
Control Current in Stand-by	I _{8sb}	V ₈ ≤ 2.0V		12	40	μ A

AC CHARACTERISTICS

(Vcc=13.2V, R_L=4 Ω, f=1KHz, Tamb=25°C; BTL, unless otherwise specified)

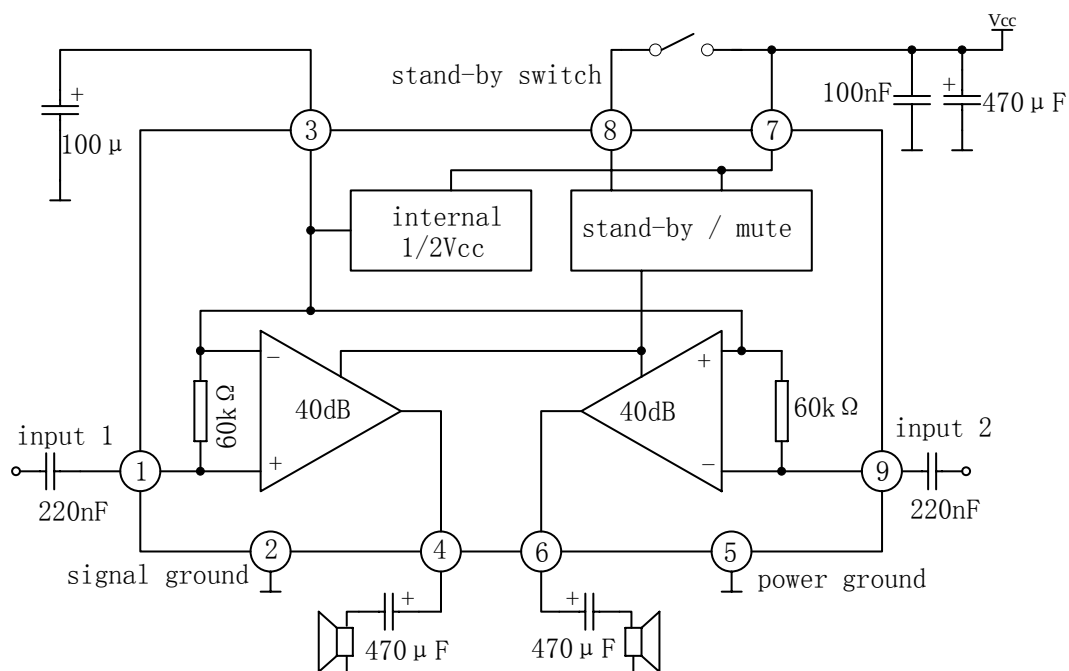
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Power	Po	THD=1.0%	12	13		W
		THD=10%	16	18		W
Closed Loop Voltage Gain	Gv		45	46	47	dB
Total Harmonic Distortion	THD	Po =1W		0.1		%
Output Signal In Mute Position	Vo	Vin=1V(max.); f=20 Hz to 15 kHz			40	mV
Low Frequency Roll-off	f _L	-3dB		45		Hz
High Frequency Roll-off	f _H	-3dB	20			kHz
Supply Voltage Ripple Rejection	RR	ON, Vr=2Vp-p, Rg=0, fr=100Hz	34			dB
		ON, Vr=2Vp-p, Rg=0, fr=1kHz~10kHz	48			dB
		Mute Vr=2Vp-p, Rg=0, fr=100Hz,	48			dB
		Stand-by 1kHz~10kHz	80			dB
Input Impedance	Zi		25	30	38	k Ω
Noise Output Voltage (RMS value)	Vno	ON, Rg=0 Ω , BPF=20Hz~20kHz		200		μ V
		ON, Rs=10k Ω BPF=20Hz~20kHz		350	700	μ V
		Mute, BPF=20Hz~20kHz		180		μ V

AC CHARACTERISTICS

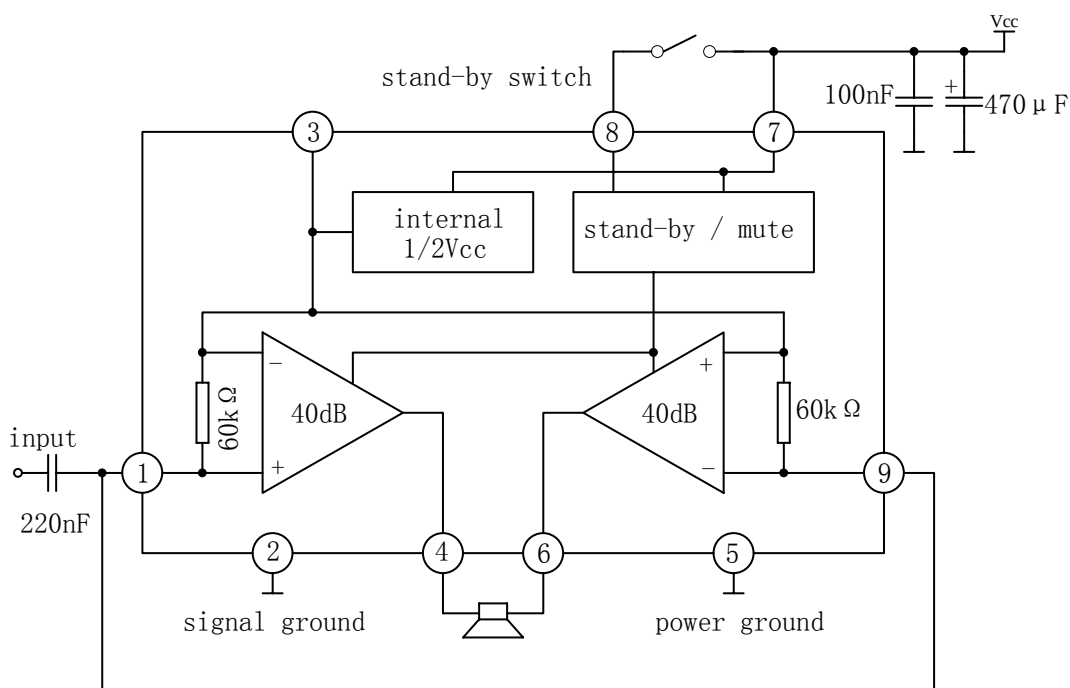
V_{cc}=13.2V, R_L=2 Ω, f=1KHz; Tamb=25℃, stereo, unless otherwise specified

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Power	Po	THD=1.0%		8.0		W
		THD=10%		9.0		W
Output Power (V _{cc} =14.4V)	Po	R _L =4 Ω, THD=1.0%	4.8	5.0		W
		R _L =4 Ω, THD=10%	5.8	6.2		W
Closed Loop Voltage Gain	Gv		39	40	41	dB
Total Harmonic Distortion	THD	Po =1W		0.1		%
Output Signal In Mute Position	Vo	Vin=1V(max.); f=20 Hz to 15 kHz			20	mV
Low Frequency Roll-off	f _L	-3dB		45		Hz
High Frequency Roll-off	f _H	-3dB	20			kHz
Supply Voltage Ripple Rejection	RR	ON, Vr=2Vp-p, Rg=0, fr=100Hz	40			dB
		ON, Vr=2Vp-p, Rg=0, fr=1kHz~10kHz	45			dB
		Mute Vr=2Vp-p, Rg=0, fr=100Hz,	45			dB
		Stand-by 1kHz~10kHz	80			dB
Input Impedance	Zi		50	60	75	k Ω
Noise Output Voltage (RMS value)	Vno	ON, Rg=0 Ω, BPF=20Hz~20kHz		150	500	μ V
		ON, Rs=10k Ω BPF=20Hz~20kHz		250		μ V
		Mute, BPF=20Hz~20kHz		120		μ V
Channel Separation	α	Rs=10k Ω	40			dB
Channel Unbalance	ΔGv			0.1	1	dB

APPLICATION CIRCUIT



Stereo application circuit diagram



BTL application circuit diagram

OUTLINE DRAWING

Unit: inch / mm

