POWER AMPLIFIER

FOR HEADPHONE STEREOS—YD7000

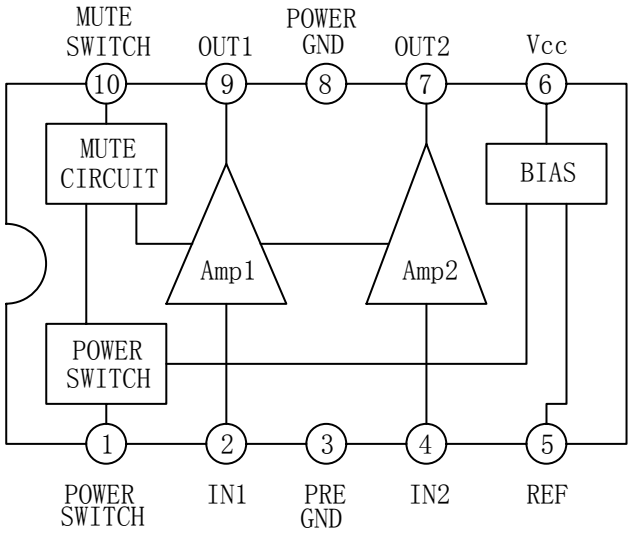
DESCRIPTION

The YD7000 is a low power audio amplifier integrated circuit for headphone. It provides differential speaker outputs to maximize output swing at low supply voltages.

FEATURES

*Low current consumption.
*16Ω load drive capability.
*Excellent reduced voltage characteristics.
*Excellent power supply ripple rejection.
*Minimum number of external pares required (no input capacitor, feedback capacitor required).
*Applicable to radio sets because of high voltage gain.
*Less harmonic interference in radio band.
*On-chip power switch function, muting function.

BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS (Tamb=25℃)

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	Vcc	4.5	V
Allowable Power Dissipation	P_D	300	mW
Operating Temperature	Topr	-20～+75	℃
Storage Temperature	Tstg	-40～+125	℃

RECOMMENDED OPERATING CONDITIONS (Tamb=25℃)

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	Vcc	3.0	V
Operating Voltage Range	Vcc	1.6～4.0	V
Recommended Load Resistance	R_L	16～32	Ω

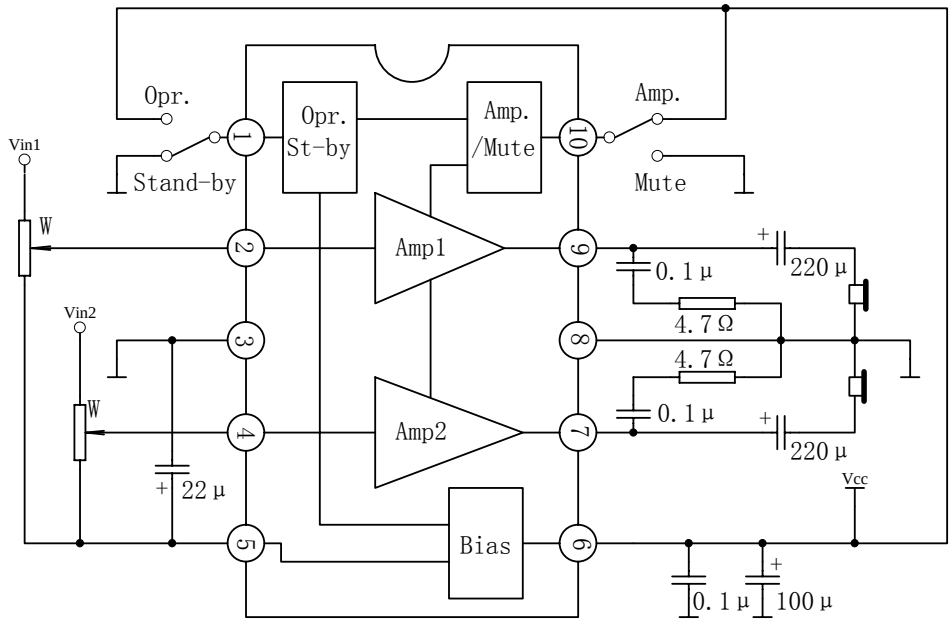
ELECTRICAL CHARACTERISTICS

(Tamb=25℃, RL=16Ω, Rg=600Ω, See specified Test Circuit.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Quiescent Current	Icco(1)	Vcc=2.4V, quiescent		5.4	10	mA
	Icco(2)	Vcc=4.5V, pin10→GND		1.1	2.0	mA
	Icco(3)	Vcc=4.5V, pin1→GND			1.0	μA
Voltage Gain	Gv(1)	Vcc=2.4V, f=1kHz, Vo=-10dBm	30	32	34	dB
	Gv(2)	Vcc=1.6V, f=1kHz, Vo=-20dBm	29	32	34	dB
Voltage Gain Difference	Δ Gv(1)	Vcc=2.4V, f=1kHz, Vo=-10dBm			1.0	dB
	Δ Gv(2)	Vcc=1.6V, f=1kHz, Vo=-20dBm			1.0	dB
Total Harmonic Distortion	THD	Vcc=2.0V, f=1kHz,Po=1mW		0.5	1.5	%
Output Power	Po	Vcc=3.0V, f=1kHz, THD=10%	20	40		mW

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Crosstalk	CT	Vcc=2.4V, f=100Hz, Rg=1K Ω Vo=-10dB	40	50		dB
Ripple Rejection	SVRR	Vcc=1.6V, f=100Hz, Rg=1 K Ω V_R=-20dBm, BPF=100Hz	45	60		dB
Output Noise Voltage	V_{NO}	Vcc=4.5V, Rg=1 K Ω BPF=20Hz～20kHz		62	100	μ V
Power OFF Effect	V_O(off)	Vcc=1.6V, f=100Hz, pin1→GND, V_{IN}=-10dB			-80	dB
Muting Effect	V_O(MT)	Vcc=1.6V, f=100Hz, pin10→GND, V_{IN}=-10dB			-80	dB
Power ON Current Sensitivity	I_1(on)	Vcc=1.5V, V5≧0.85V		0.05	1.0	μ A
Power OFF Voltage Sensitivity	V_1(off)	Vcc=1.5V, V5≦0.1V	0.5	0.6		V
Muting OFF Current Sensitivity	I_{10}(off)	Vcc=1.5V,V5≧0.85V		0.2	1.0	μ A
Muting ON Voltage Sensitivity	V_{10}(on)	Vcc=1.5V, V5≦0.1V	0.5	0.65		V

APPLICATION CIRCUIT



OUTLINE DRAWING