

POWER AMPLIFIER FOR HEADPHONE STEREOS—YD7000

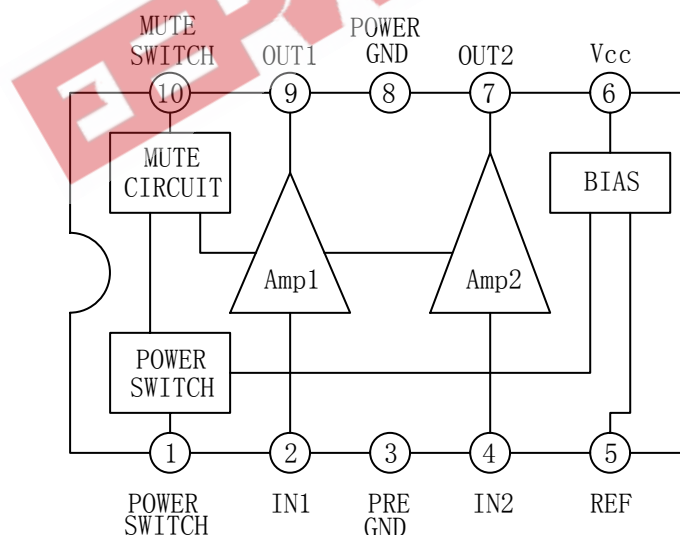
DESCRIPTION

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.
- *16 Ω 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 ($T_{amb}=25^{\circ}\text{C}$)

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V _{cc}	4.5	V
Allowable Power Dissipation	P _D	300	mW
Operating Temperature	T _{opr}	-20~+75	°C
Storage Temperature	T _{stg}	-40~+125	°C

RECOMMENDED OPERATING CONDITIONS ($T_{amb}=25^{\circ}\text{C}$)

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V _{cc}	3.0	V
Operating Voltage Range	V _{cc}	1.6~4.0	V
Recommended Load Resistance	R _L	16~32	Ω

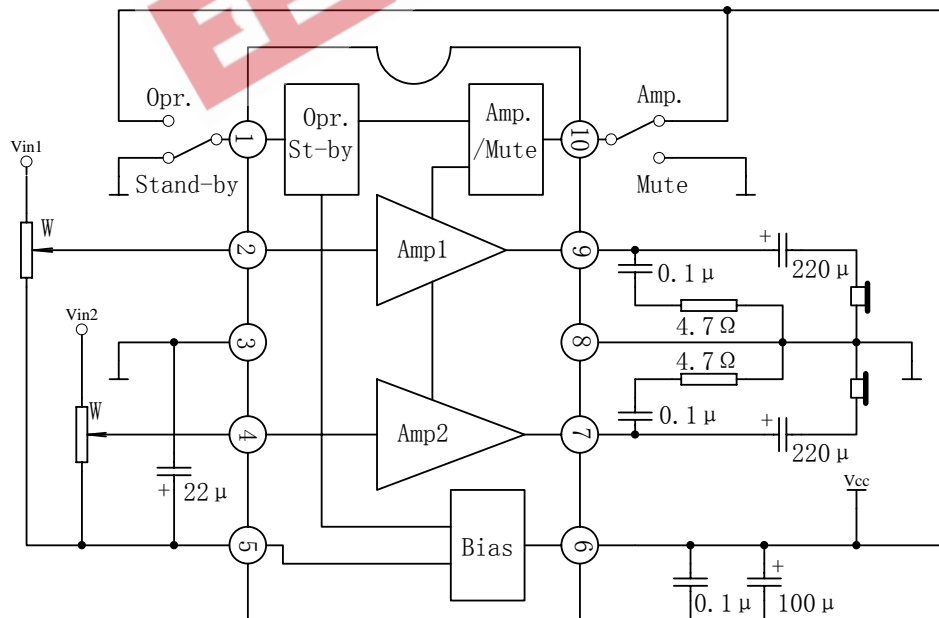
ELECTRICAL CHARACTERISTICS

($T_{amb}=25^{\circ}\text{C}$, R_L=16 Ω, R_g=600 Ω, See specified Test Circuit.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Quiescent Current	I _{cco(1)}	V _{cc} =2.4V, quiescent		5.4	10	mA
	I _{cco(2)}	V _{cc} =4.5V, pin10→GND		1.1	2.0	mA
	I _{cco(3)}	V _{cc} =4.5V, pin1→GND			1.0	μA
Voltage Gain	G _{v(1)}	V _{cc} =2.4V, f=1kHz, V _o =-10dBm	30	32	34	dB
	G _{v(2)}	V _{cc} =1.6V, f=1kHz, V _o =-20dBm	29	32	34	dB
Voltage Gain Difference	ΔG _{v(1)}	V _{cc} =2.4V, f=1kHz, V _o =-10dBm			1.0	dB
	ΔG _{v(2)}	V _{cc} =1.6V, f=1kHz, V _o =-20dBm			1.0	dB
Total Harmonic Distortion	THD	V _{cc} =2.0V, f=1kHz, P _o =1mW		0.5	1.5	%
Output Power	P _o	V _{cc} =3.0V, f=1kHz, THD=10%	20	40		mW

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Crosstalk	CT	$V_{CC}=2.4V, f=100Hz, R_g=1K \Omega$ $V_o=-10dB$	40	50		dB
Ripple Rejection	SVRR	$V_{CC}=1.6V, f=100Hz, R_g=1 K \Omega$ $V_R=-20dBm, BPF=100Hz$	45	60		dB
Output Noise Voltage	V_{NO}	$V_{CC}=4.5V, R_g=1 K \Omega$ $BPF=20Hz \sim 20kHz$		62	100	μV
Power OFF Effect	$V_{O(off)}$	$V_{CC}=1.6V, f=100Hz, pin1 \rightarrow GND,$ $V_{IN}=-10dB$			-80	dB
Muting Effect	$V_{O(MT)}$	$V_{CC}=1.6V, f=100Hz, pin10 \rightarrow GND,$ $V_{IN}=-10dB$			-80	dB
Power ON Current Sensitivity	$I_1(on)$	$V_{CC}=1.5V, V_5 \geq 0.85V$		0.05	1.0	μA
Power OFF Voltage Sensitivity	$V_1(off)$	$V_{CC}=1.5V, V_5 \leq 0.1V$	0.5	0.6		V
Muting OFF Current Sensitivity	$I_{10(off)}$	$V_{CC}=1.5V, V_5 \geq 0.85V$		0.2	1.0	μA
Muting ON Voltage Sensitivity	$V_{10(on)}$	$V_{CC}=1.5V, V_5 \leq 0.1V$	0.5	0.65		V

APPLICATION CIRCUIT



OUTLINE DRAWING

