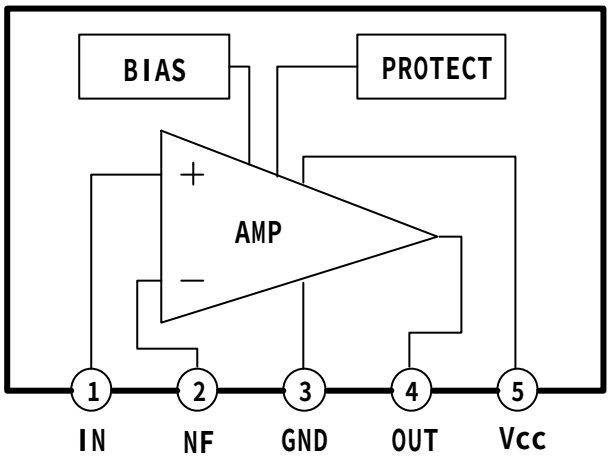
1. Overview

The HD2003 is a monolithic integrated circuit intended for use as audio power amplifier. The device provides high output current capability with low harmonic and cross-over distortion. Its features are:

- Few peripheral components required
- High reliability and stability
- Protection against AC and DC short
- TO-220-5

2. Block Diagram and Pin Description

2. 1 Block Diagram



2. 2 Pin Description

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	IN-	Negative Input	4	OUT	Output
2	IN+	Positive Input	5	V_{CC}	V_{CC}
3	GND	Ground			

3. Electrical Characteristics

3. 1 Absolute Maximum Ratings

Unless otherwise specified, T_{amb}= 25℃

Parameter	Symbol	Value	Unit
DC Supply Voltage	V_{CC-1}	28	V
Operating Supply Voltage	V_{CC-2}	18	V
Power Dissipation at T_{CASE}=90℃	P_D	20	W
Storage and Junction Temperature	T_{stg} , T_j	-40~150	℃

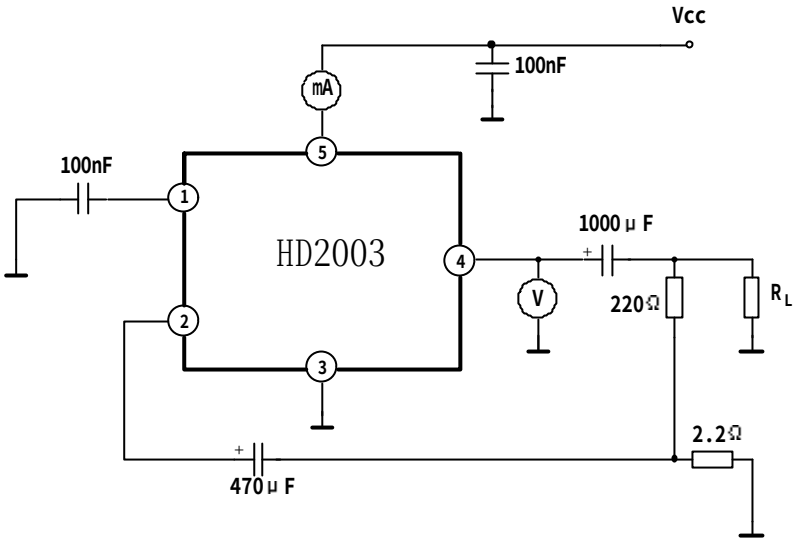
3. 2 Electrical Characteristics

Unless otherwise specified, T_{amb}= 25℃, V_{CC}=14.4V

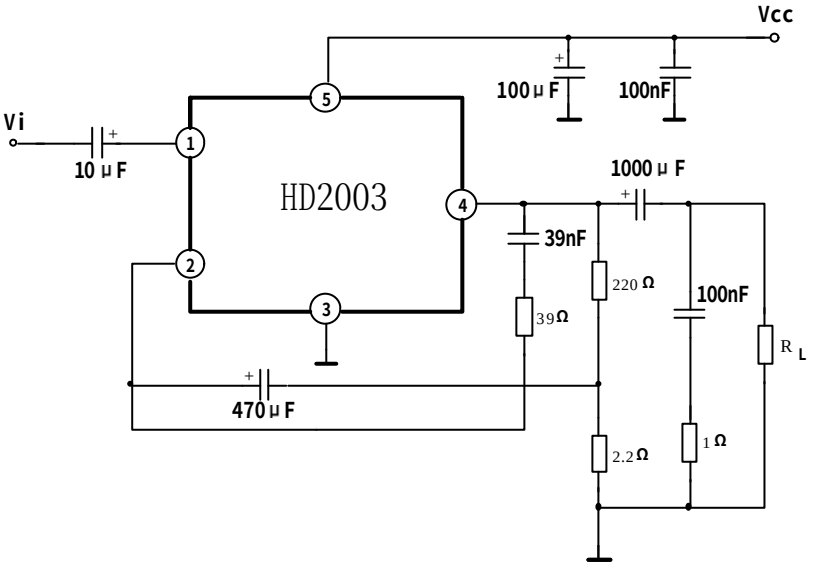
Parameter	Symbol	Test Conditions	Value			Unit
			Min	Typ	Max	
DC Characteristics, refer to DC test circuit						
Supply Voltage	V_{CC}		8		18	V
Quiescent Current (pin5)	V_{OQ}			44	50	mA
Quiescent Output Voltage(pin4)	V_O		6.1	6.9	7.7	V
AC Characteristics, refer to AC test circuit, G_V=40dB, f=1kHz						
Input Saturation Voltage	V_{IS}		300			mV
THD	THD	P_O=1W, R_L=4Ω		0.15	1	%
Output Power	P_O	R_L=4Ω	5.5	6		W
		R_L=2Ω	8.4	10		
		R_L=3.2Ω		7.5		
		R_L=1.6Ω		12		
Input Sensitivity	V_I	P_O==0.5W, R_L =4Ω		14		mW
		P_O==6W, R_L =4Ω		55		
		P_O==0.5W, R_L =2Ω		10		
		P_O==10W, R_L =2Ω		50		
Frequency Response	F_r	P_O =1W, R_L =4Ω	40 ~ 15000			Hz
Input Resistance	R_I		70	150		kΩ
Supply Voltage Rejection	SVR	f=100Hz, Rg=10kΩ V_{ripple}=0.5V,R_L=4Ω	30	36		dB
Closed Loop Voltage Gain	G_V	P_O==0.5W, R_L =4Ω	39.3	40	40.3	dB
Open Loop Voltage Gain	G_V	f=1kHz		80		dB
		f=10kHz		60		
Efficiency	η	P_O =6W, R_L=4Ω		69		%
		P_O =10W, R_L =4Ω		65		
Input Noise Voltage	Vn			1	5	μV
Input Noise Current	In			60	200	pA

4. Test Circuit

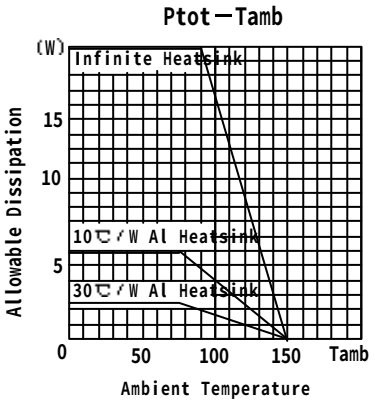
4.1 DC Test Circuit

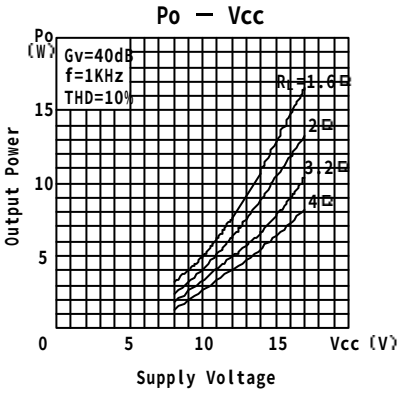


4. 2 AC Test Circuit



5. Characteristics Curve





6. Package Dimensions