DESCRIPTION

The A2222 is a dual bridge-connected audio power amplifier which, when connected to a 5V supply, will deliver 2.2W to a 4Ω load or 2.5W to a 3Ω load with less than 1.0% THD+N. In addition, the headphone input pin allows the amplifiers to operate in single-ended mode to drive stereo headphones.

Boomer audio power amplifiers were designed specifically to provide high quality output power from a surface mount package while requiring few external components. To simplify audio system design, the A2222 combines dual bridge speaker amplifiers and stereo headphone amplifiers on one chip.

The A2222 features an externally controlled, low-power consumption shutdown mode, a stereo headphone amplifier mode, and thermal shutdown protection. It also utilizes circuitry to reduce “clicks and pops” during device turn-on.

The A2222 is available in SOP16 package.

ORDERING INFORMATION

Package Type	Part Number	
SOP16	M16	A2222M16R
		A2222M16VR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products Suffix “ V “ means Halogen free Package		

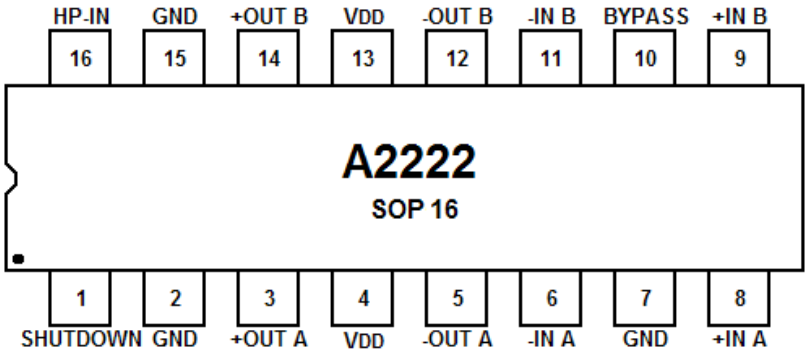
FEATURES

- Stereo headphone amplifier mode
- “Click and pop” suppression circuitry
- Unity-gain stable
- Thermal shutdown protection circuitry
- Power Output @1% THD+N & V_{DD}=5V
  R_L=8Ω 1.1W(TYP.)
- Single-ended mode THD+N@75mW into 32Ω
  0.5%(Max)
- Shutdown current 0.7uA(TYP.)
- Supply Voltage 2.0V~5.5V
- Available in SOP16 package.

APPLICATION

- Multimedia monitors
- Portable and desktop computers
- Portable televisions

PIN DESCIPTION



TOP VIEW

Pin #	Symbol	I/O	Functions
1	SHUTDOWN	I	Shout-down Logical Control, '1' is active.
2,7,15	GND	I/O	Ground
3	+OUTA	O	Positive Output (Channel A)
4,13	V_{DD}	I/O	Power
5	-OUTA	O	Negative Output (Channel A)
6	-INA	I	Negative Signal Input (Channel A)
8	+INA	I	Positive Signal Input (Channel A)
9	+INB	I	Positive Signal Input (Channel B)
10	BYPASS	I/O	Internal DC reference, Connected with Bypass Capacitor.
11	-INB	I	Negative Signal Input (Channel B)
12	-OUTB	O	Negative Output (Channel B)
14	+OUTB	O	Positive Output (Channel B)
16	HP-IN	I	HP-IN Function Control, '1' is active.

ABSOLUTE MAXIMUM RATINGS

V_{DD}, Supply Voltage	-0.3V to 6V
V_{IN}, Input Voltage	-0.3V to V_{DD}+0.3V
Power Output	Internal limit
Junction Temperature	-150℃
T_{STG}, Storage Temperature	-65℃ to +150℃
ESD Susceptibility	2000V

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

OPERATING RATINGS

Temperature Range	$T_{MIN} \le T_A \le T_{MAX}$	$-40°C \le T_A \le 85°C$
Supply Voltage		$2.0V \le V_{DD} \le 5.5V$

ELECTRICAL CHARACTERISTICS

V_{DD} = 5V Unless otherwise specified. Limits apply for T_A = 25°C

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply Voltage	V_{DD}		2.0		5.5	V
Quiescent Power Supply Current	I_{DD}	V_{IN} = 0V,I_O=0A ,HP-IN = 0V,	6	11.5	20	mA
		V_{IN} = 0V,I_O=0A ,HP-IN = 5V,		5.8		
Shutdown Current	I_{SD}	$V_{SHUTDOWN}$ = 5V		0.7	2	uA
Headphone Voltage Input High	V_{IH}		4			V
Headphone Voltage Input Low	V_{IL}				0.8	V

ELECTRICAL CHARACTERISTICS FOR BRIDGED-MODE OPERATION

V_{DD} = 5V Unless otherwise specified. Limits apply for T_A = 25°C

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Offset Voltage	V_{OS}	V_{IN} = 0V		5	50	mV
Output Power	P_O	THD+N=1%, f=1kHz,R_L=8Ω	1.0	1.1		W
		THD+N=10%, f=1kHz, R_L=8Ω		1.5		
		THD+N=1%,f=1kHz, R_L=32Ω		0.34		
Total Harmonic Distortion + Noise	THD+N	A_{VD}=2, 20Hz ≦ f ≦ 20kHz, R_L=8Ω,P_O=1W		0.3		%
Power Supply Rejection Ratio	PSRR	V_{DD}=5V , V_{RIPPLE} = 200mV_{P-P} , C_{BP}=1μF, R_L=8Ω		67		dB
Channel Separation	X_{TALK}	f=1kHz,C_{BP}=1μF		90		dB
Signal To Noise Ratio	SNR	V_{DD}=5V, R_L=8Ω,P_O=1.1mW		98		dB

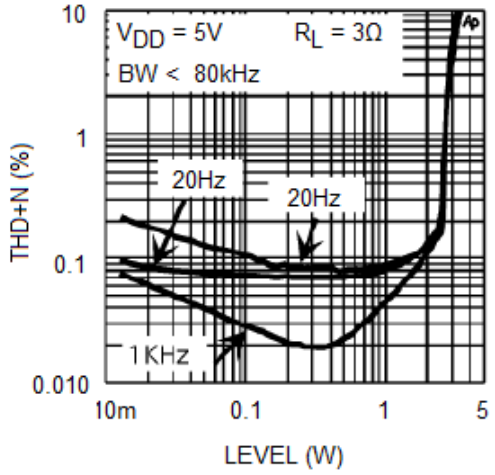
ELECTRICAL CHARACTERISTICS FOR SINGLE-ENDED OPERATION

V_{DD} = 5V Unless otherwise specified. Limits apply for T_A = 25°C

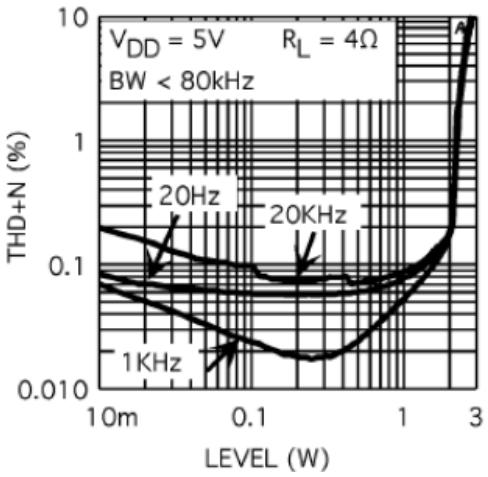
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Power	P_O	THD+N=0.5%, f=1kHz,R_L=32Ω	75	85		mW
		THD+N=1%, f=1kHz, R_L=8Ω		340		
		THD+N=10%,f=1kHz, R_L=8Ω		440		
Output Offset Voltage	V_{OS}	V_{IN}=0V	5	50		mV
Total Harmonic Distortion + Noise	THD+N	A_V=-1, 20Hz≦f≦20kHz, R_L=32Ω,P_O=75mW		0.2		%
Power Supply Rejection Ratio	PSRR	f=1kHz, V_{RIPPLE} = 200Mv_{RMS} , C_B=1μF		52		dB
Channel Separation	X_{TALK}	f=1kHz,C_{BP}=1μF		60		dB
Signal To Noise Ratio	SNR	V_{DD}=5V, R_L=8Ω,P_O=340mW		95		dB

TYPICAL PERFORMANCE CHARACTERISTICS

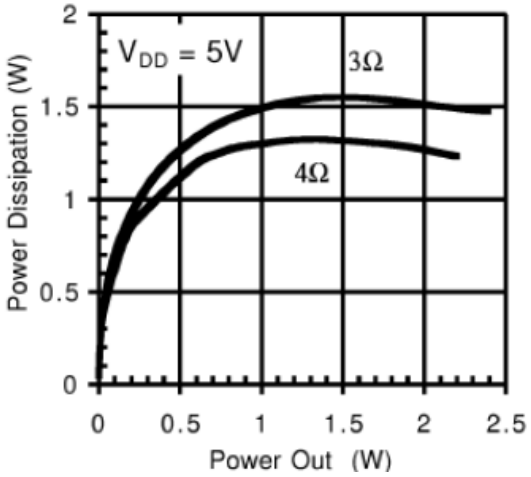
1. THD+N vs. Output Power



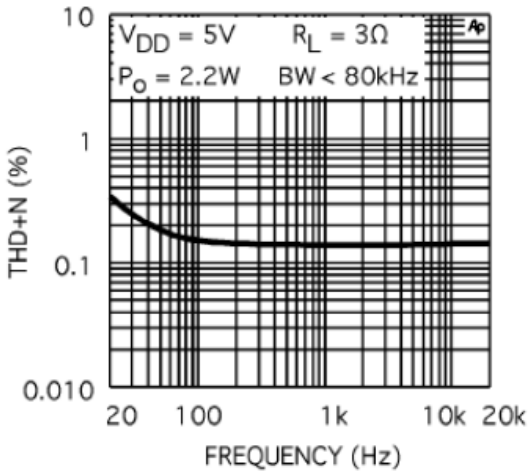
2. THD+N vs. Output Power



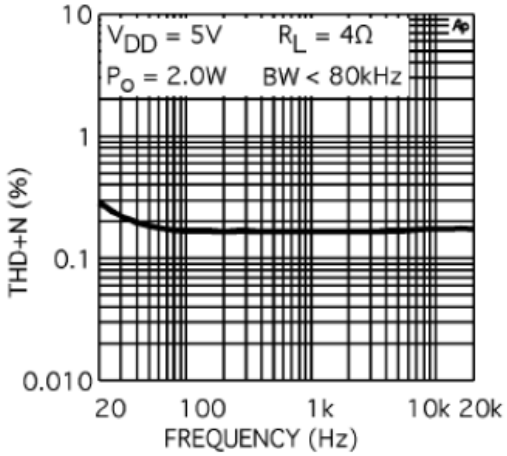
3. Power Dissipation vs. Power Output



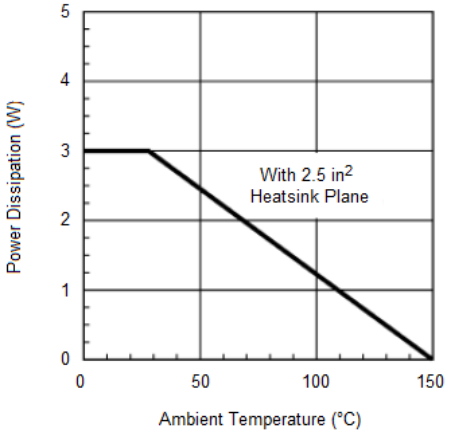
4. THD+N vs. Frequency



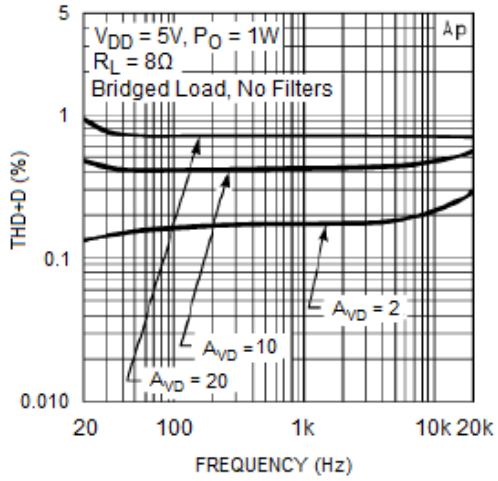
5. THD+N vs. Frequency



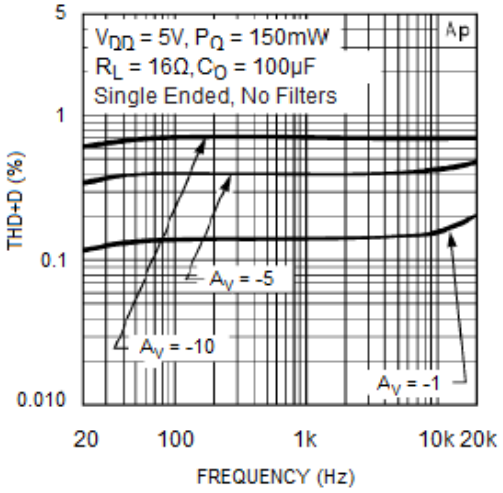
6. Power Derating Curve



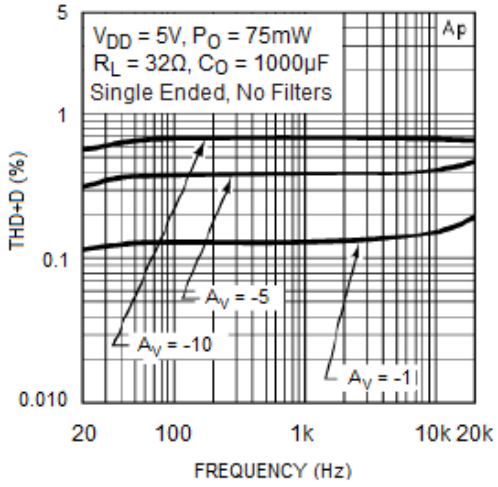
7. THD+N vs. Frequency



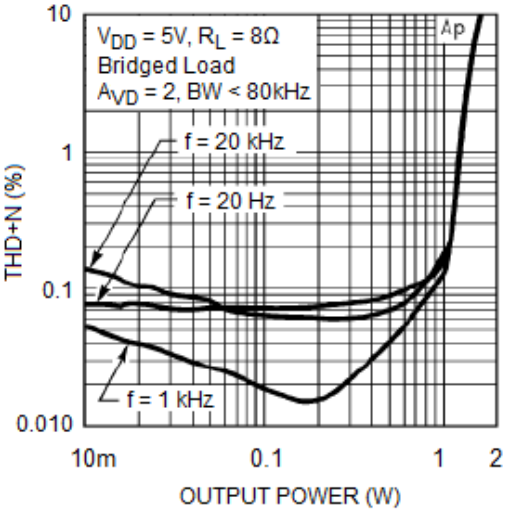
8. THD+N vs. Frequency



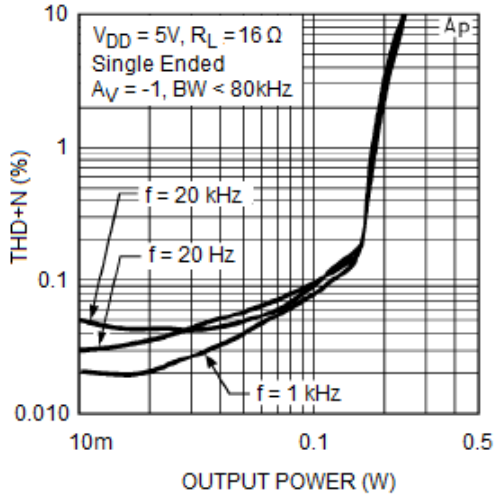
9. THD+N vs. Frequency



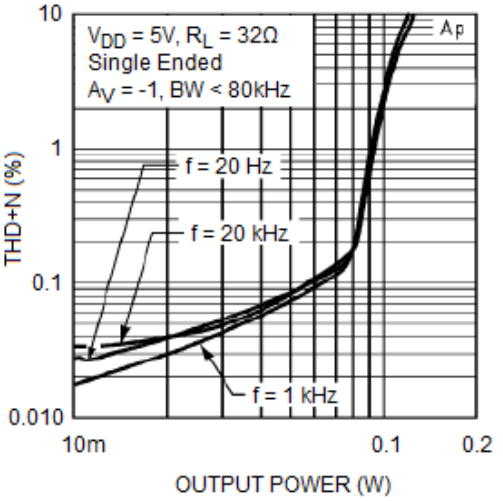
10. THD+N vs. Output Power



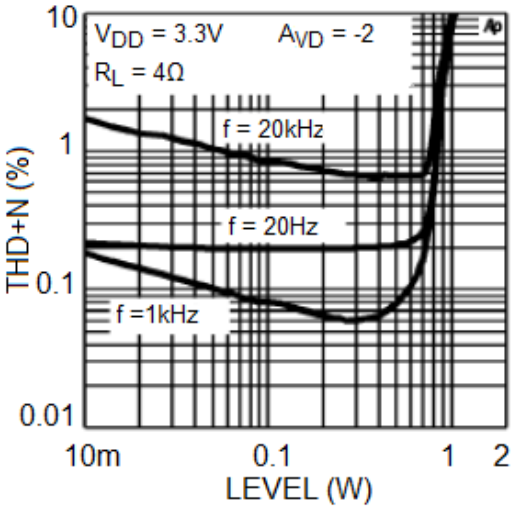
11. THD+N vs. Output Power



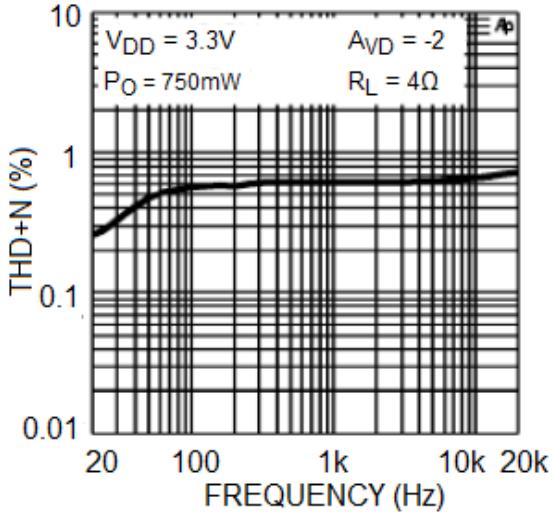
12. THD+N vs. Output Power



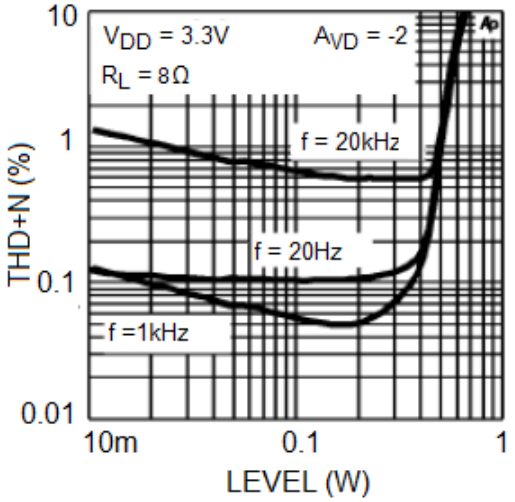
13. THD+N vs. Output Power



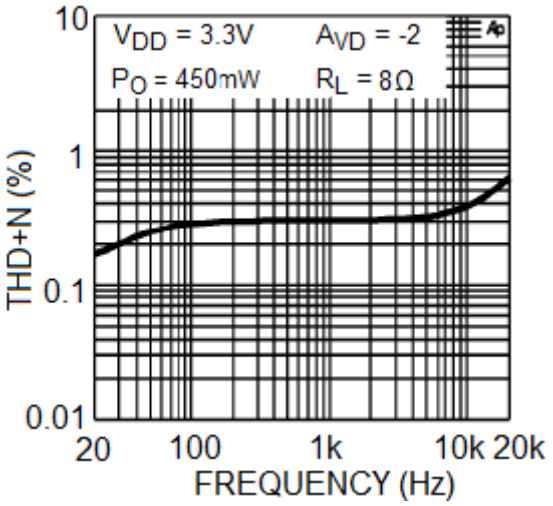
14. THD+N vs. Frequency



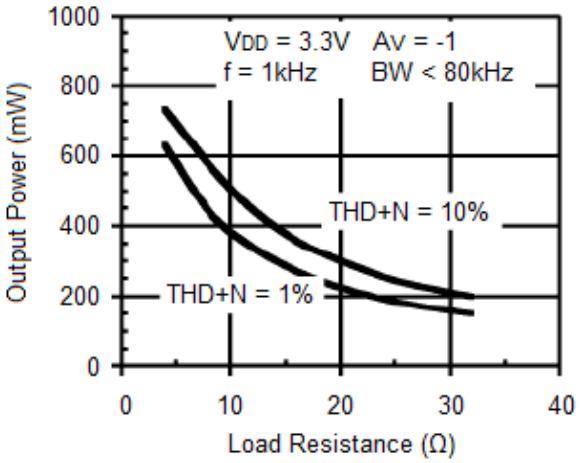
15. THD+N vs. Output Power



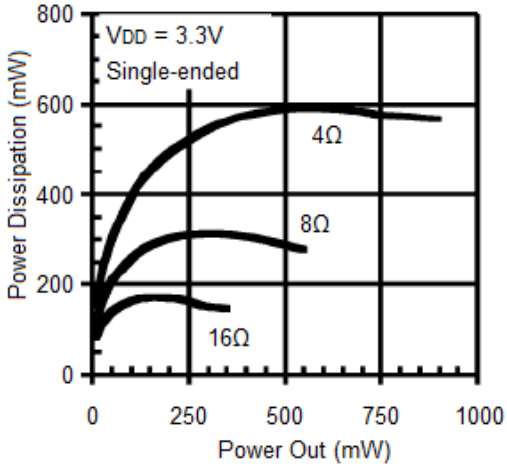
16. THD+N vs. Frequency



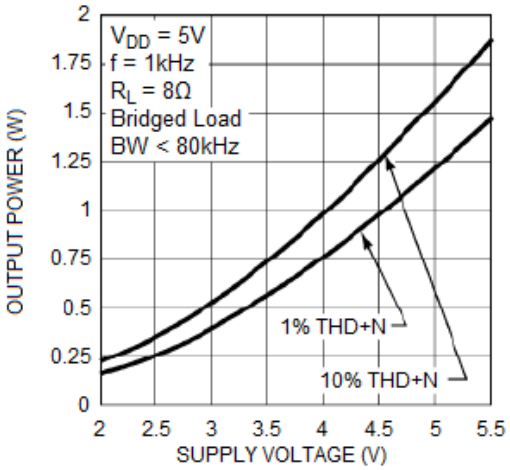
17. Output Power vs. Load Resistance



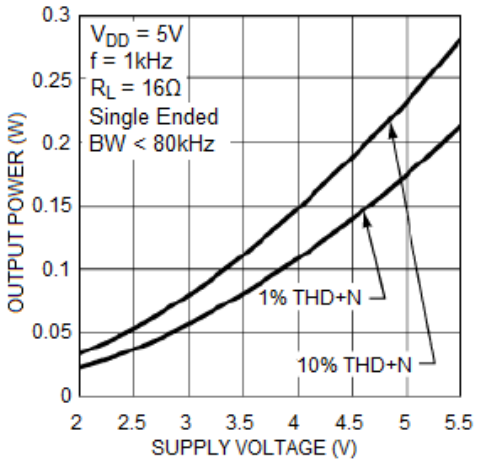
18. Power Dissipation vs. Supply Voltage



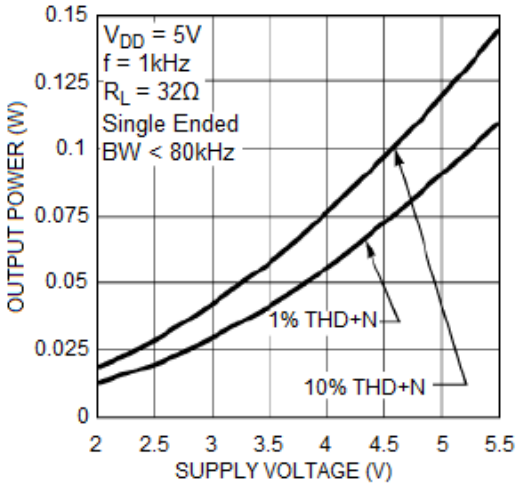
19. Output Power vs. Supply Voltage



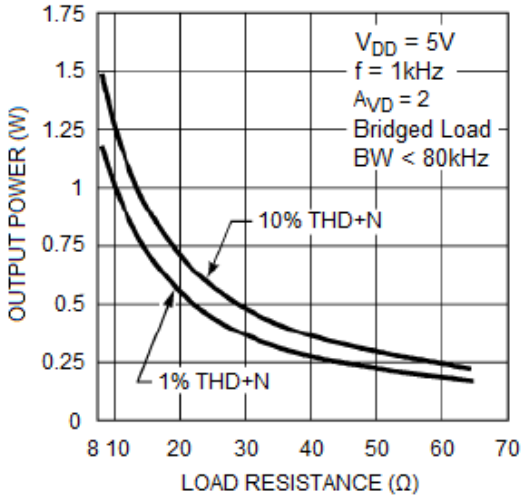
20. Output Power vs. Supply Voltage



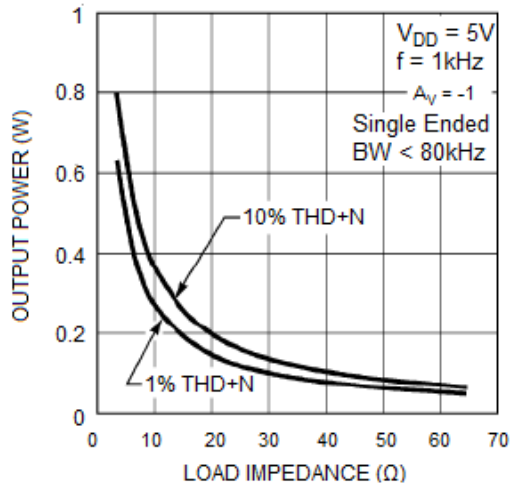
21. Output Power vs. Supply Voltage



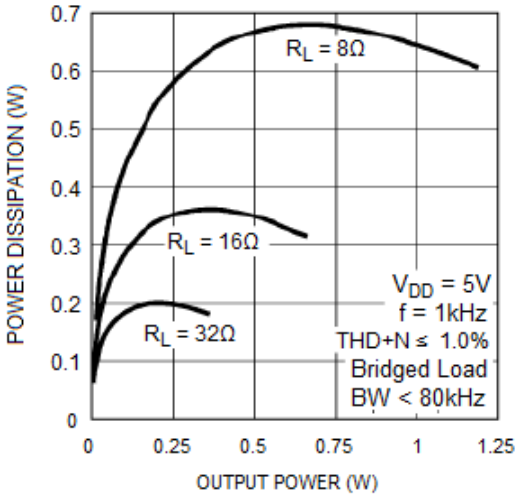
22. Output Power vs. Load Resistance



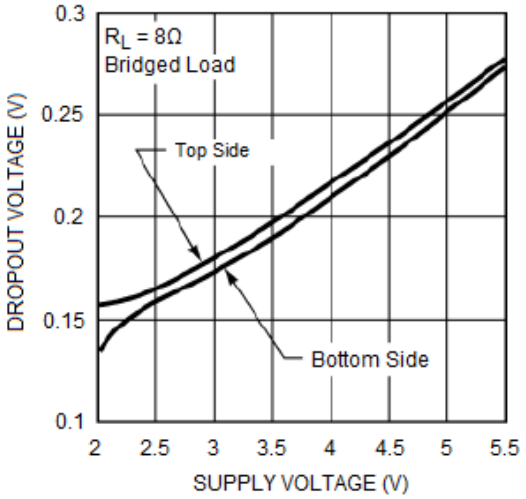
23. Output Power vs. Load Resistance



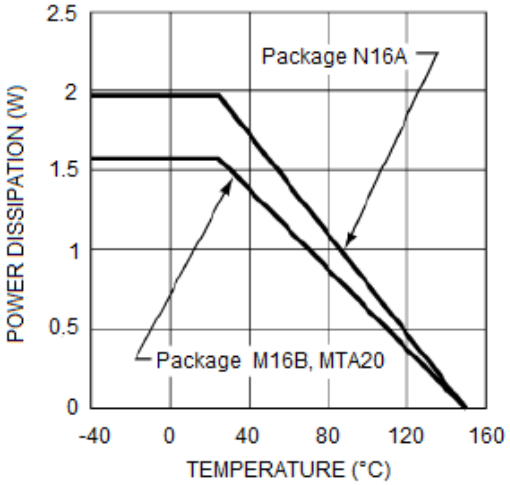
24. Power Dissipation vs. Output Power



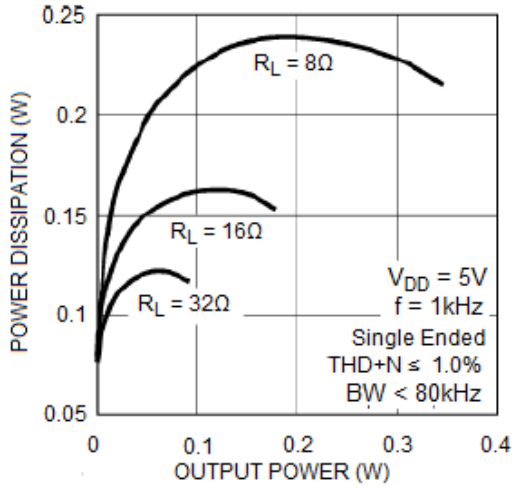
25. Dropout Voltage vs. Supply Voltage



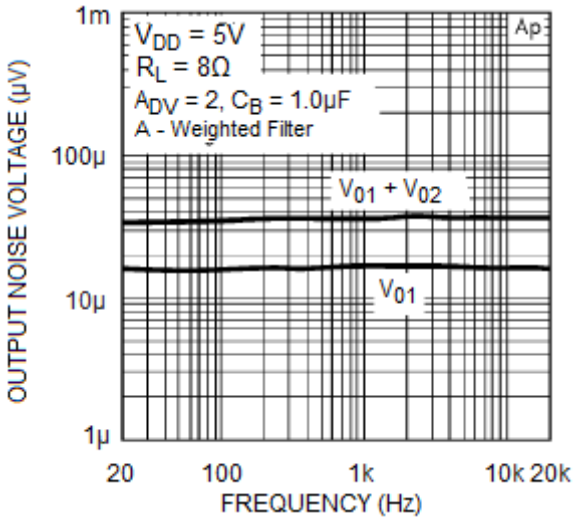
26. Power Derating Curve



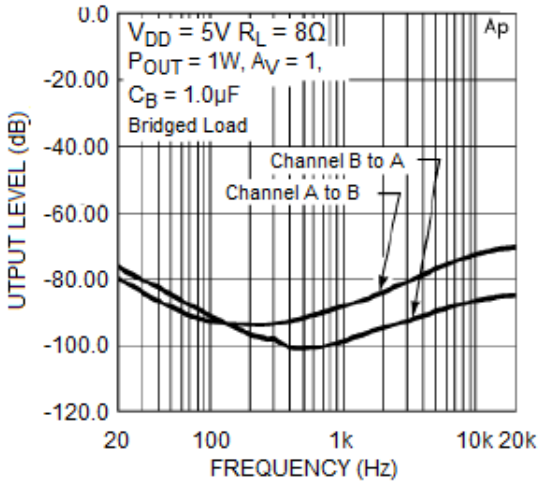
27. Power Dissipation vs. Output Power



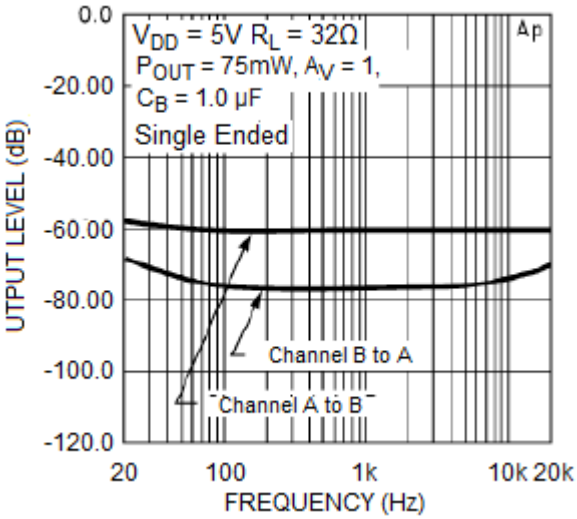
28. Noise Floor



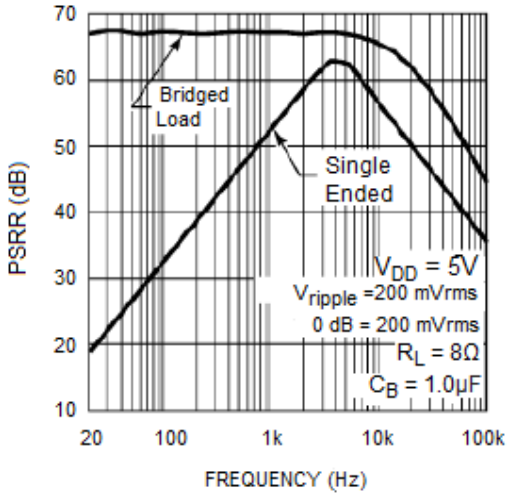
29. Channel Separation



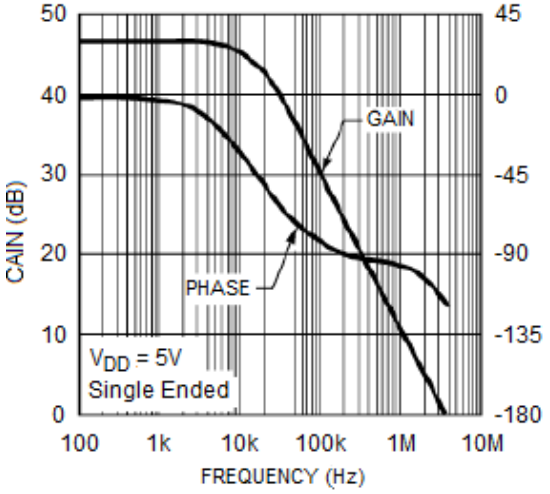
30. Channel Separation



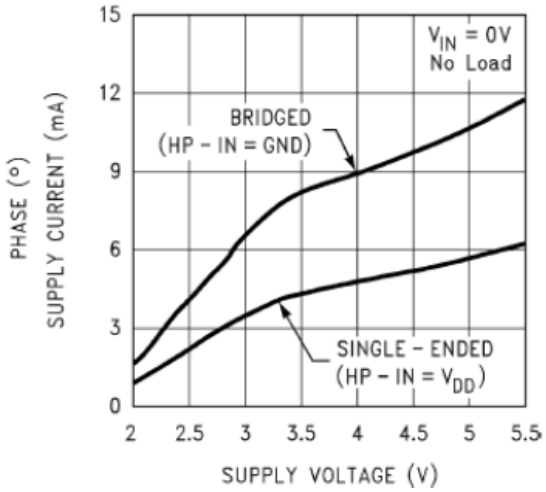
31. Power Supply Rejection Ratio



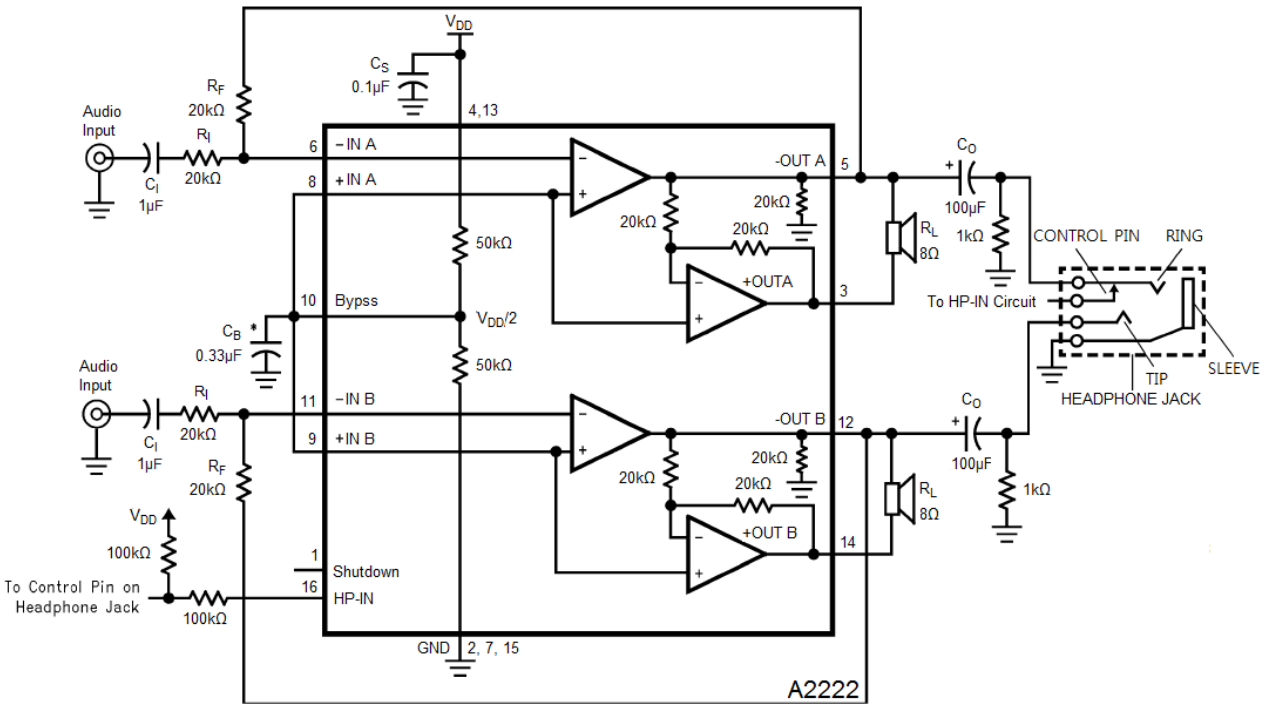
32. Open Loop Frequency Response



33. Supply Current vs. Supply Voltage

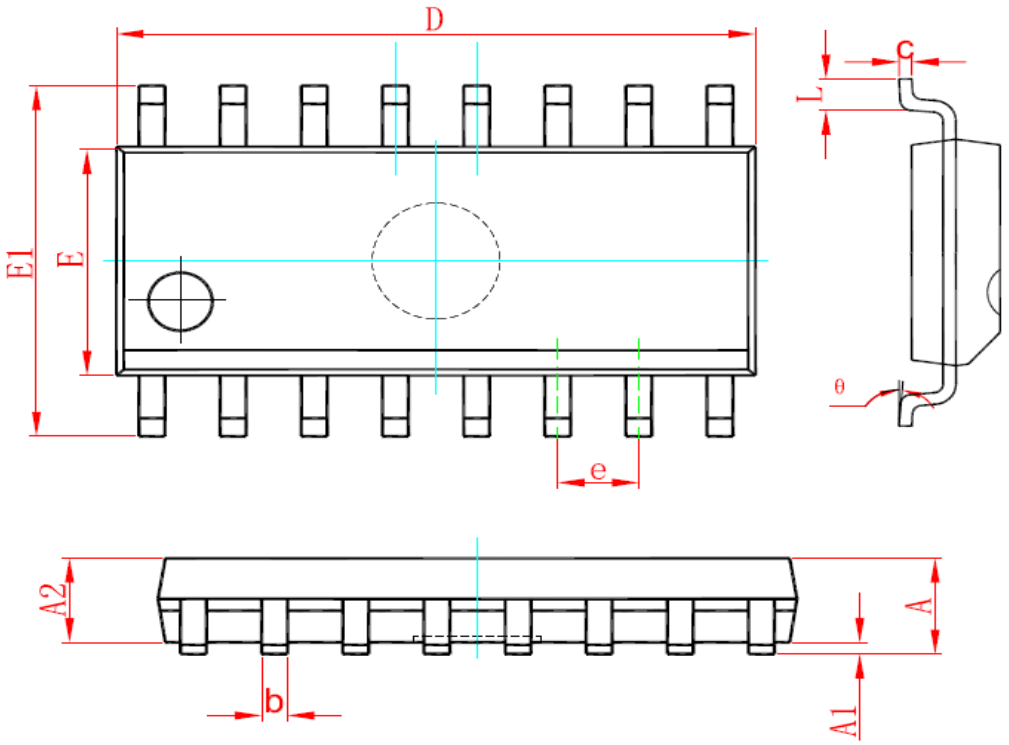


BLOCK DIAGRAM



PACKAGE INFORMATION

Dimension in SOP16 (Unit: mm)



Symbol	Min	Max
A	1.350	1.750
A1	0.100	0.250
A2	1.350	1.550
b	0.330	0.510
c	0.170	0.250
D	9.800	10.200
E	3.800	4.000
E1	5.800	6.200
e	1.270(BSC)	
L	0.400	1.270
θ	0°	8°

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