Advanced Analog Circuits

DUAL LOW VOLTAGE POWER AMPLIFIER AZ2822

General Description

The AZ2822 is a monolithic integrated dual power amplifier. it is intended for use in portable cassette players and radios as dual audio power amplifier.

This IC is available in standard DIP-8 package.

Features

- Supply Voltage Down to 1.8V
- Low Crossover Distortion
- Low Quiescent Current
- Bridge or Stereo Configuration
- Few External Components

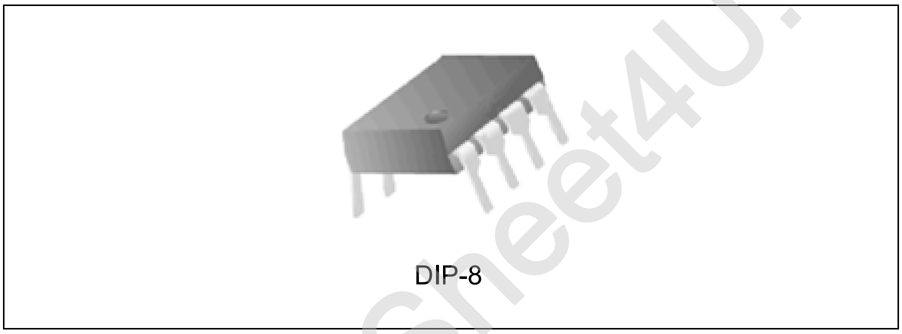


Figure 1. Package Type of AZ2822

Pin Configuration

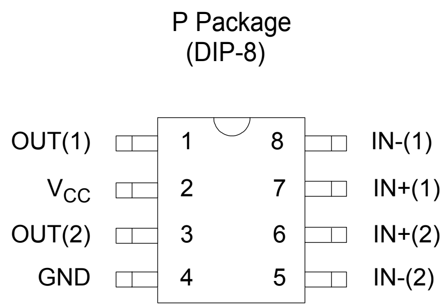


Figure 2. Pin Configuration of AZ2822 (Top View)

Pin Description

Pin Number	Pin Name	Function
1	OUT(1)	Output of amplifier 1
2	V_{CC}	Power supply for all internal circuits
3	OUT(2)	Output of amplifier 2
4	GND	Ground pin for all internal circuits
5	IN-(2)	Inverting input pin for amplifier 2
6	IN+(2)	Non-inverting input pin for amplifier 2
7	IN+(1)	Non-inverting input pin for amplifier 1
8	IN-(1)	Inverting input pin for amplifier 1

Functional Block Diagram

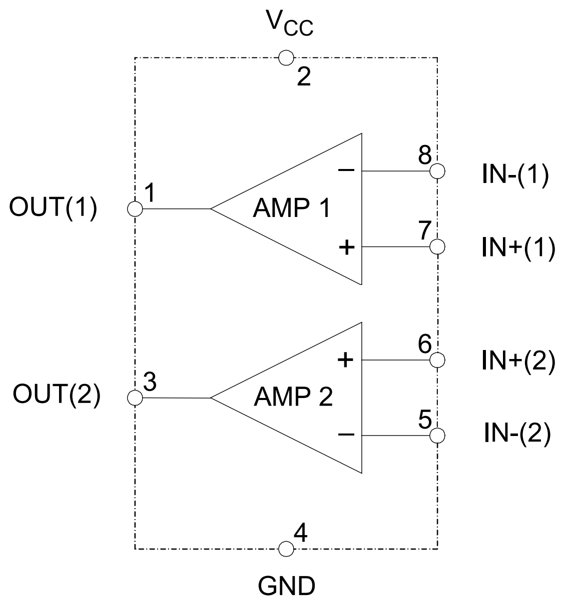
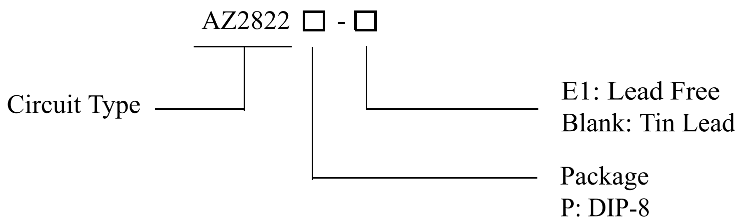


Figure 3. Functional Block Diagram of AZ2822

Ordering Information



Package	Temperature Range	Part Number		Marking ID		Packing Type
		Tin Lead	Lead Free	Tin Lead	LeadFree	
DIP-8	0 to 70^{o}C	AZ2822P	AZ2822P-E1	AZ2822P	AZ2822P-E1	Tube

The listed part numbers are used during the transition to lead-free products. After the transition completed, lead-free products will be considered as the "standard" and we will resume the original part numbers.

Absolute Maximum Ratings (Note 1)

Parameter		Symbol	Value		Unit
			Min	Max	
Supply Voltage		V_{CC}		15	V
Peak Output Current		I_O		1	A
Total Power Dissipation	T_A=50^{o}C	P_D		1	W
	T_{CASE}=50^{o}C			1.4	W
Storage Temperature		T_{STG}	-55	150	^{o}C

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Ambient Temperature	T_A	0	70	^{o}C

Electrical Characteristics

(V_{CC}=6V, T_A= 25°C, unless otherwise specified.)

Stereo (Test circuit of figure 4)

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Supply Voltage	V_{CC}			1.8		9	V
Quiescent Output Voltage	V_O	V_{CC}=6V			2.7		V
		V_{CC}=3V			1.2		
Quiescent Drain Current	I_D				6	9	mA
Input Bias Current	I_B				100		nA
Output Power (each channel) (f=1kHz,d=10%)	P_O	RL=32Ω	V_{CC}=9V		300		mW
			V_{CC}=6V	90	120		
			V_{CC}=4.5V		60		
			V_{CC}=3V	15	20		
			V_{CC}=2V		5		
		RL=16Ω	V_{CC}=6V	170	220		
		RL=8Ω	V_{CC}=9V		900		
			V_{CC}=6V	300	360		
		RL=4Ω	V_{CC}=6V	450	480		
			V_{CC}=4.5V		250		
			V_{CC}=3V		80		
Distortion(f=1kHz)	d	RL=32Ω, P_O=40mW			0.3		%
		RL=16Ω, P_O=75mW			0.3		
		RL=8Ω, P_O=150mW			1.0		
Closed Loop Voltage Gain	G_V	f=1kHz		36	40	41	dB
Channel Balance	ΔG_V					± 1	dB
Input Resistance	R_I	f=1kHz		100			kΩ
Total Input Noise	e_N	R_S=10kΩ, B=22Hz to 22kHz			3		μV
Supply Voltage Rejection	SVR	f=100Hz, C1=C2=100μF		24	28		dB
Channel Separation	C_S	f=1kHz			50		dB

Electrical Characteristics (Continued)

(V_{CC}=6V, T_A= 25°C, unless otherwise specified.)

Bridge (Test circuit of figure 5)

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Supply Voltage	V_{CC}			1.8		9	V
Output Offset Voltage (between the outputs)	V_{OS}	RL=8Ω		-50		50	mV
Quiescent Drain Current	I_D	RL=∞			6	9	mA
Input Bias Current	I_B				100		nA
Output Power (each channel) (f=1kHz,d=10%)	P_O	RL=32Ω	V_{CC}=9V		1000		mW
			V_{CC}=6V	320	400		
			V_{CC}=4.5V		200		
			V_{CC}=3V	50	65		
			V_{CC}=2V		8		
		RL=16Ω	V_{CC}=9V		2000		
			V_{CC}=6V		800		
			V_{CC}=3V		120		
		RL=8Ω	V_{CC}=6V	900	1100		
			V_{CC}=4.5V		540		
			V_{CC}=3V		170		
		RL=4Ω	V_{CC}=4.5V		600		
			V_{CC}=3V	200	230		
			V_{CC}=2V		60		
Distortion(f=1kHz)	d	P_O=0.5W, RL=8Ω, f=1kHz			1		%
Closed Loop Voltage Gain	G_V	f=1kHz		36	40	41	dB
Input Resistance	R_I	f=1kHz		100			kΩ
Total Input Noise	e_N	R_S=10kΩ, B=22Hz to 22kHz			4		μV
Supply Voltage Rejection	SVR	f=100Hz			40		dB
Power Bandwidth (-3dB)	B	P_O=1W, RL=8Ω			26		kHz

Electrical Characteristics (Continued)

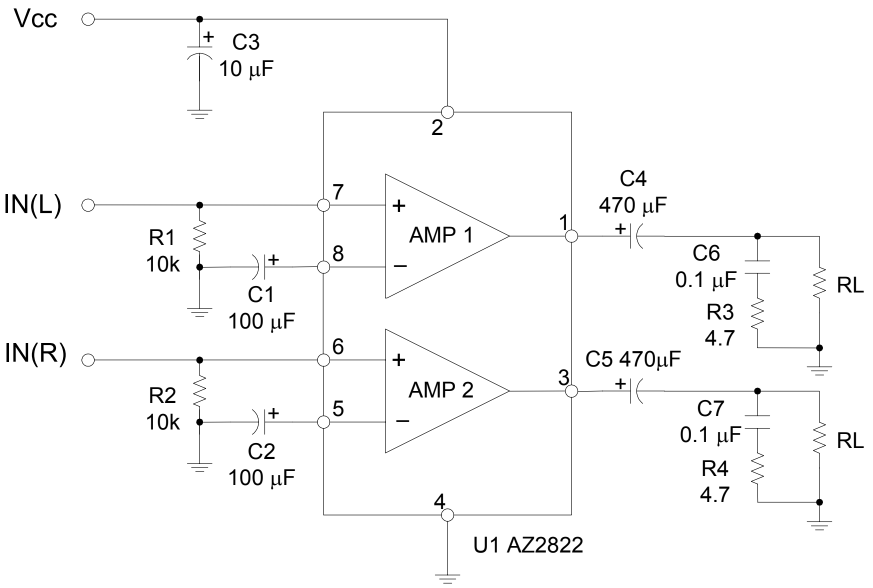


Figure 4. Test Circuit for Stereo Configuration

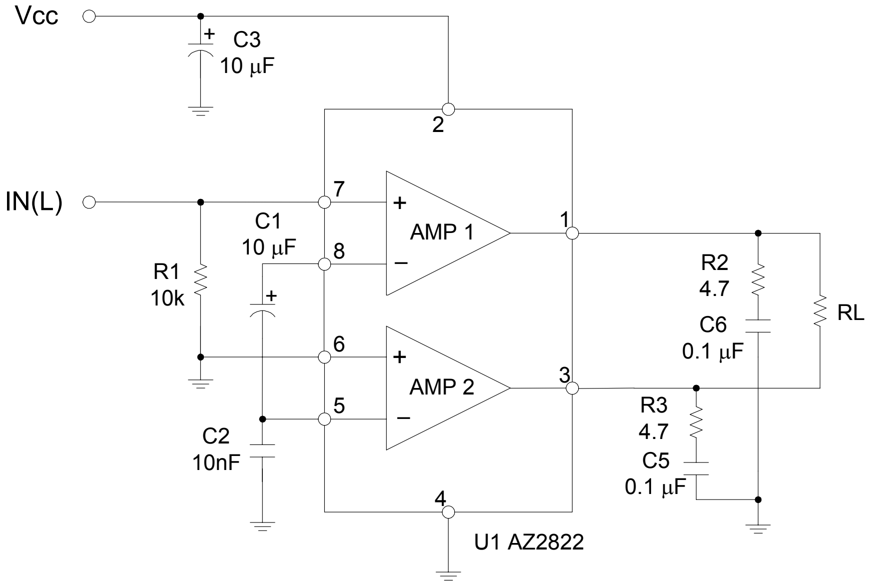


Figure 5. Test Circuit for Bridge Configuration

Typical Performance Characteristics

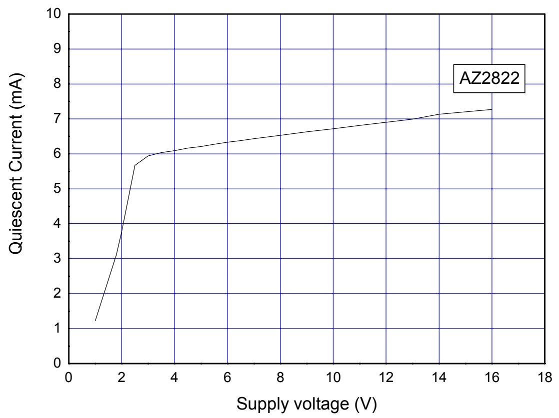


Figure 6. Quiescent Current vs. Supply Voltage

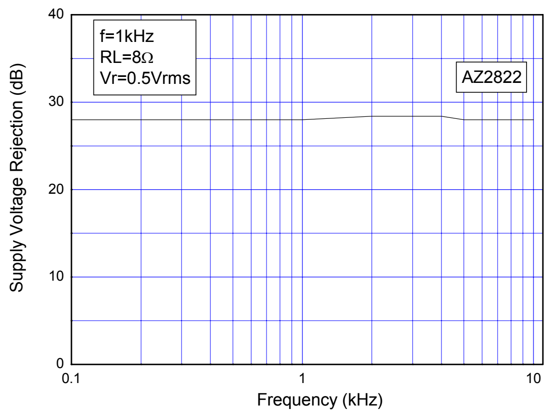


Figure 7. Supply Voltage Rejection vs. Frequency (Stereo)

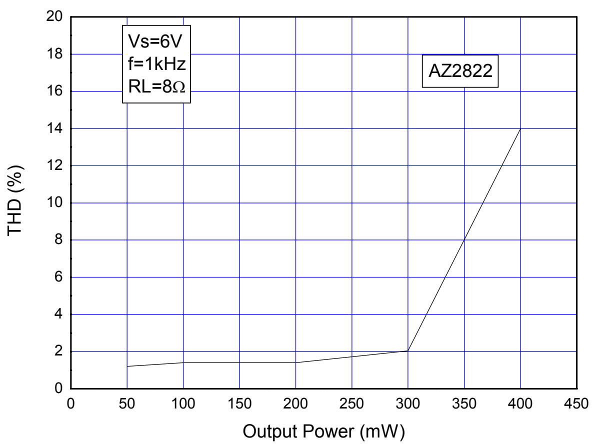


Figure 8. Distortion vs. Output Power (Stereo)

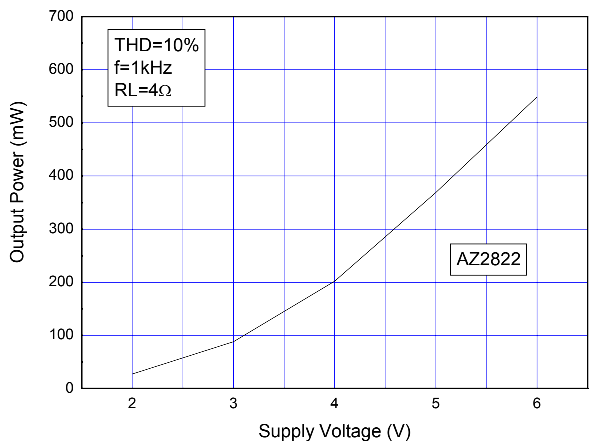


Figure 9. Output Power vs. Supply Voltage

Typical Performance Characteristics (Continued)

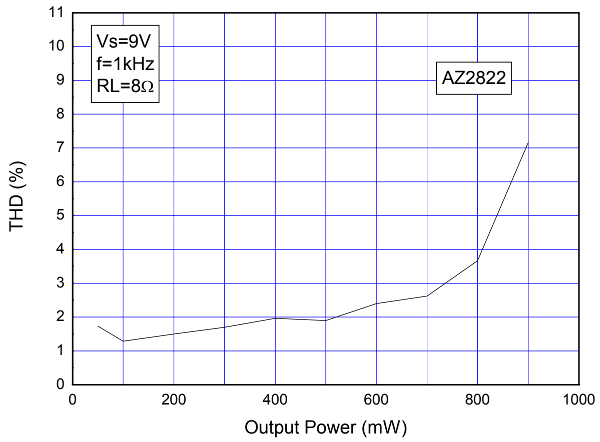


Figure 10. Distortion vs. Output Power (Stereo)

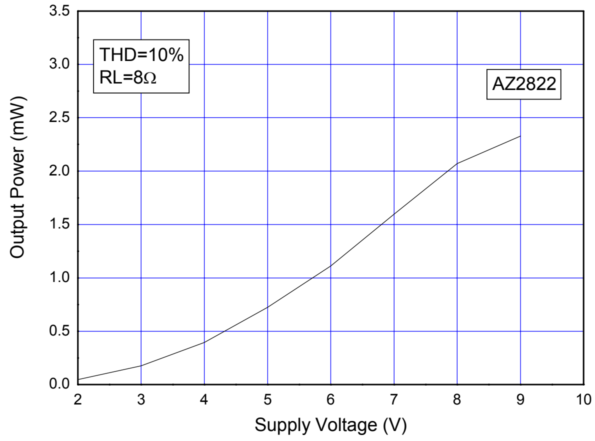


Figure 11. Output Power vs. Supply Voltage (Bridge)

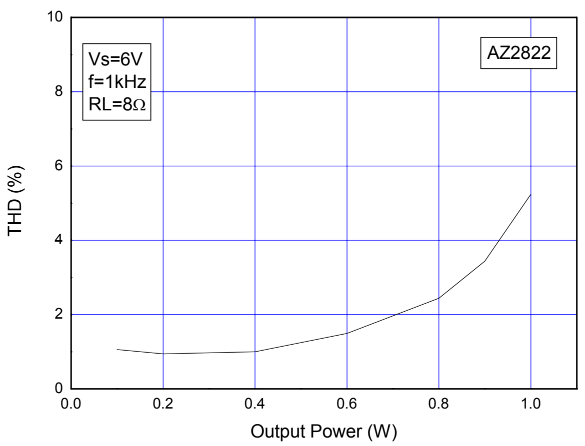


Figure 12. Distortion vs. Output Power (Bridge)

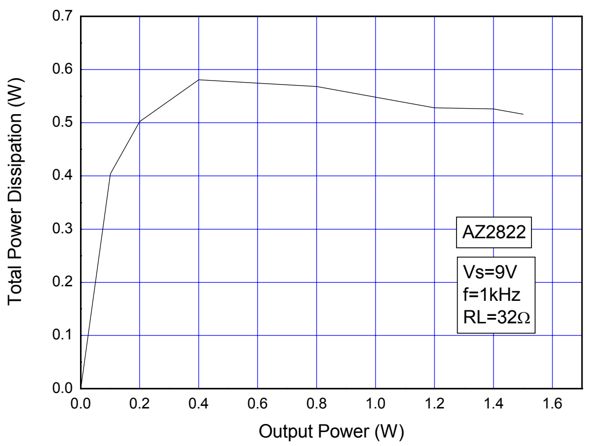


Figure 13. Total Power Dissipation vs. Output Power (Bridge)

Typical Performance Characteristics (Continued)

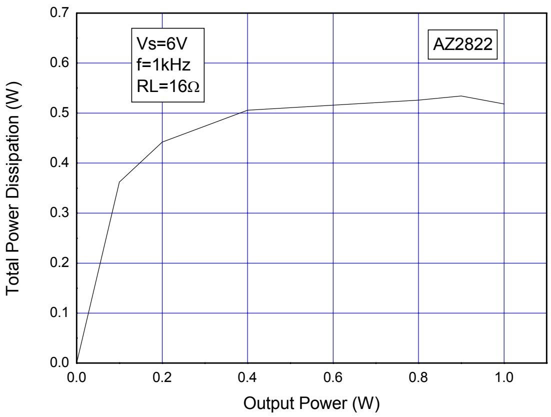


Figure 14. Total Power Dissipation vs. Output Power (Bridge)

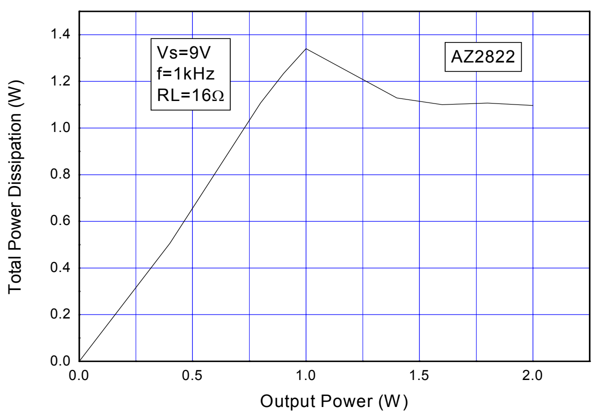


Figure 15. Total Power Dissipation vs. Output Power (Bridge)

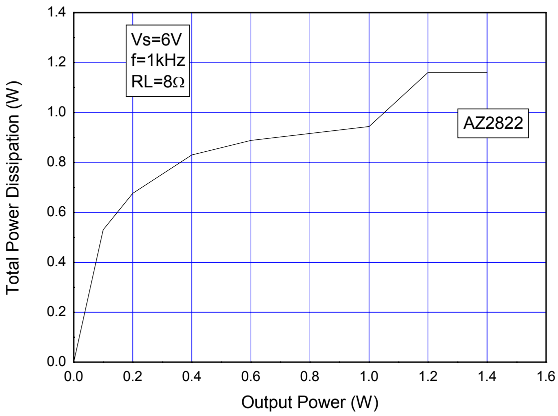


Figure 16. Total Power Dissipation vs. Output Power (Bridge)

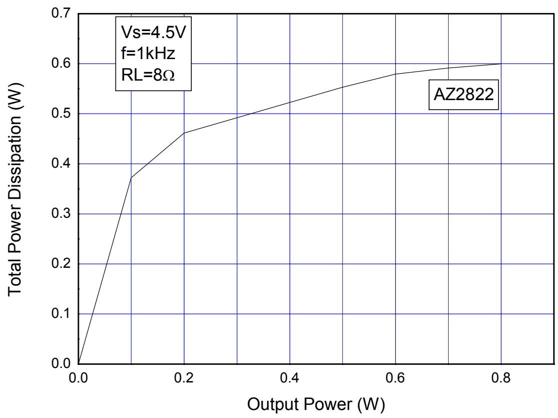


Figure 17. Total Power Dissipation vs. Output Power (Bridge)

Typical Performance Characteristics (Continued)

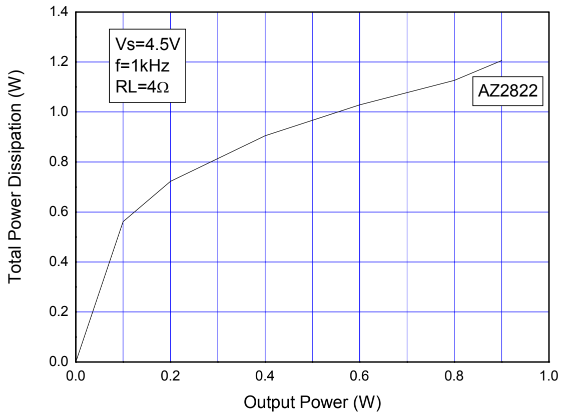


Figure 17. Total Power Dissipation vs. Output Power (Bridge)

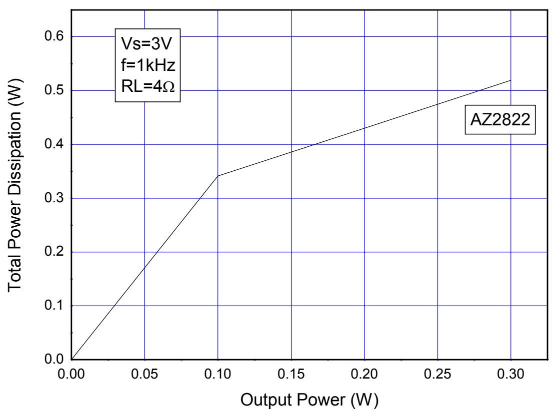


Figure 18. Total Power Dissipation vs. Output Power (Bridge)

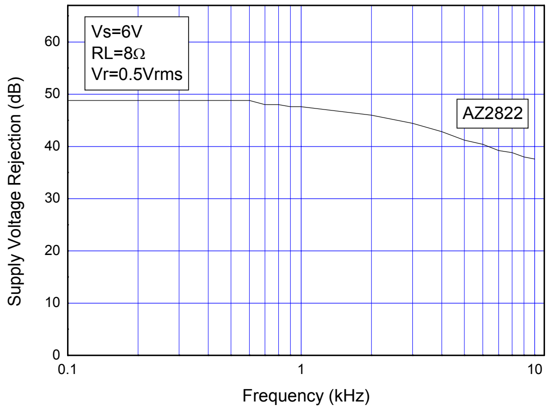
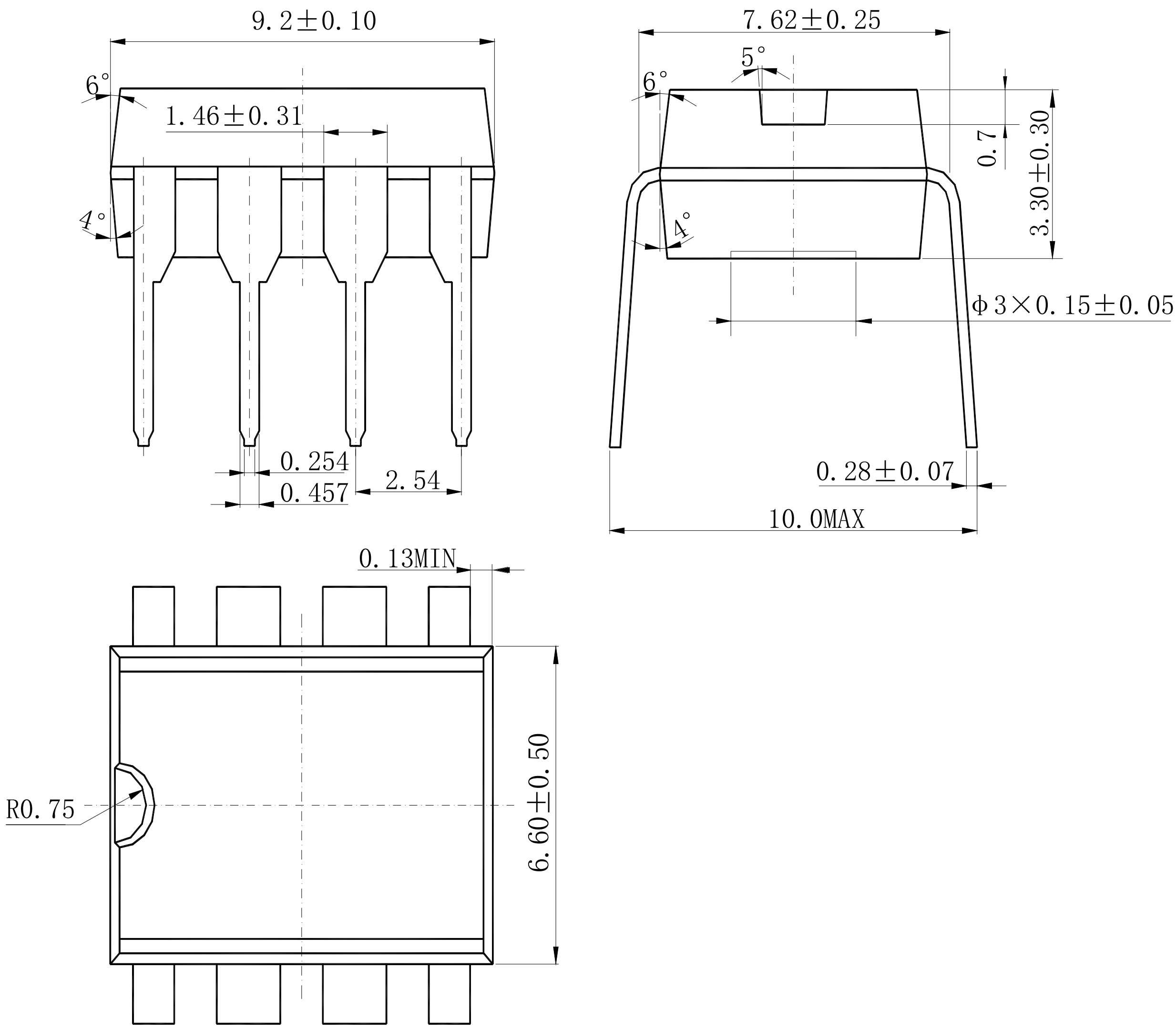


Figure 19. Supply Voltage Rejection vs. Frequency (Bridge)

Mechanical Dimensions

DIP-8 **Unit: mm**



BCD Semiconductor Manufacturing Limited

http://www.bcdsemi.com

BCD Semiconductor Corporation

3170 De La Cruz Blvd, Suite # 105 Santa Clara, CA 95054-2411, U.S.A Tel : +1-408-988 6388, Fax : +1-408-988 6386

Shanghai SIM-BCD Semiconductor manufacturing Co., Ltd.

800 Yi Shan Road, Shanghai 200233, PRC Tel: +86-21-6485-1491, Fax: +86-21-5450-0008

Advanced Analog circuits (Shanghai) Corporation

8F, B Zone, 900 Yi Shan Road, Shanghai 200233, PRC Tel: +86-21-6495 9539, Fax: +86-21-6485 9673

BCD Semiconductor (Taiwan) company Limited

Room 2210, 22nd Fl, 333, Keelung Road, Sec. 1, TaiPei (110), Taiwan Tel: +886-2-2758 6828, Fax: +886-2-2758 6892