DESCRIPTION

The A2008 is a Class-AB audio power amplifier designed for mobile phone, MID and other portable communication devices. It can deliver 1.1 watts of continuous average power to an 8Ω BTL load with less than 1% distortion (THD+N) from a $5V_{DC}$ power supply.

The A2008 was designed specifically to provide high quality output power with a minimal number of external components. It does not require output coupling capacitors or bootstrap capacitors. And with ultra-low shutdown current, the A2008 is ideally suited for mobile phone, MID and other low voltage applications where minimal power consumption is a primary requirement.

With special pop-click eliminating circuit, the A2008 provides perfect pop-click characteristic during turn-on and turn-off transitions.

The A2008 is unity-gain stable and can be configured by external gain-setting resistors.

The A2008 is available in SOP8 Package.

FEATURES

- PSRR 60dB@ 217 Hz & 1KHz
- Power output 1.7W @5.0V, 10%THD+N, 4Ω
- Power output 1.1W @5.0V, 1% THD+N, 8Ω
- Ultra-low shutdown current: 0.5 uA (typ.)
- Operation Voltage: 2.2V – 5.5V
- Improved circuitry eliminates pop-click noise during turn-on and turn-off transitions
- No output coupling capacitors, snubber networks or bootstrap capacitors required
- Unity-gain stable
- External gain configuration capability
- Available in SOP8 package

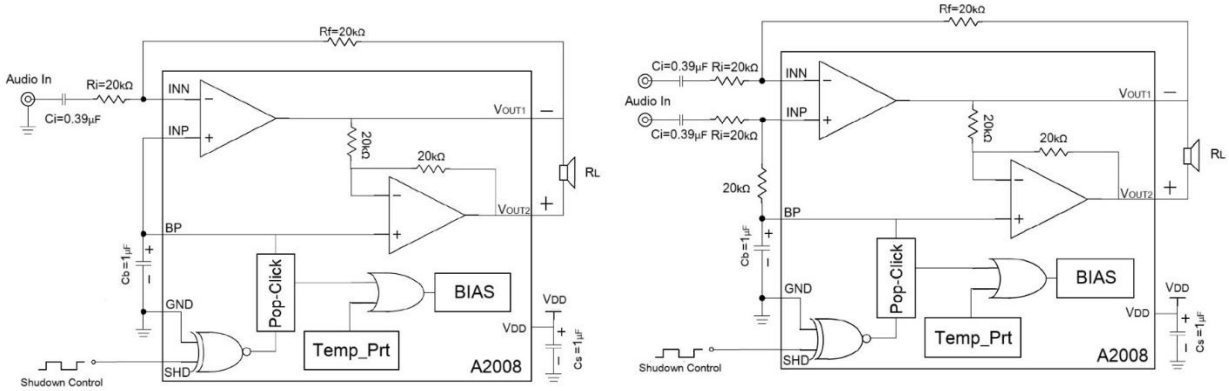
APPLICATION

- MID
- Wireless handsets
- Portable electronic devices
- PDAs, Handheld computers

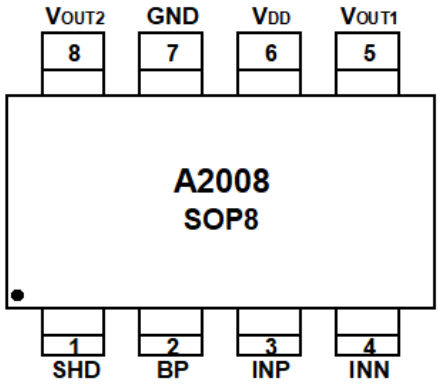
ORDERING INFORMATION

Package Type	Part Number	
SOP8 SPQ: 4,000pcs/Reel	M8	A2008M8VR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products		

TYPICAL APPLICATION



PIN DESCIPTION



SOP8, M8

Top View

Pin #	Symbol	I/O	Functions
1	SHD	I	Shut-down Logical Control, '1' is active.
2	BP	I/O	Analog ground for inner OPAs. It's about a half of V_{DD}
3	INP	I	Positive Input
4	INN	I	Negative Input
5	V_{OUT1}	O	Negative BTL Output
6	V_{DD}	I/O	Power Supply (2.2 – 5.5 V)
7	GND	I/O	Ground
8	V_{OUT2}	O	Positive BTL Output

EXTERNAL COMPONENTS DESCRIPTION

Components	Functional Description
Ri	Inverting input resistance which sets the closed-loop gain in conjunction with Rf. This resistor also forms a high pass filter with Ci at fc = 1/(2πRi*Ci).
Ci	Input coupling capacitor which blocks the DC voltage at the amplifiers input terminates. Also creates a high-pass filter with Ri at fc = 1/(2πRi*Ci).
Rf	Feedback resistance which sets the closed-loop gain in conjunction with Ri. The gain is A_{VD}=2*(Rf/Ri).
Cs	Supply bypass capacitor which provides power supply filtering.
Cb	Bypass pin capacitor which provides half-supply filtering. Refer to the section.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage	-0.3V~6.0V
Input Voltage	-0.3V~V_{DD}+0.3V
Junction Temperature	-40℃~+150℃
Storage Temperature	-65℃~+150℃
Thermal Resistance	
θ_{JA}(SOP8)	184℃/W

Stresses above 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 in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

OPERATING RATINGS

Parameter	Value
Temperature Range	−40°C ≤ T_A ≤ 85°C
Supply Voltage	2.2V ≤ V_{DD} ≤ 5.5V

ELECTRICAL CHARACTERISTICS

The following specifications apply for the circuit shown in Figure 1, unless otherwise specified.
Limits apply for T_A = 25℃.

V_{DD} = 5V

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Quiescent Power Supply Current	I_{DD}	V_{IN} = 0V, 8Ω Load	-	3.5	8.0	mA
		V_{IN} = 0V, No Load	-	3.0	7.0	
Shutdown Current	I_{SD}	V_{IN}=0V, V_{SHD}=V_{DD}, No Load	-	0.5	-	μA
Shutdown Voltage Input High	V_{SDIH}		1.3	-	-	V
Shutdown Voltage Input Low	V_{SDIL}		-	-	0.8	V
Output Offset Voltage	V_{OS}		-50	6.0	50	mV
Total Harmonic Distortion + Noise	THD+N	Po=0.5Wrms, f=1KHz	-	0.05	-	%
Output Power	P_O	THD+N<=1%, f=1kHz, 8Ω Load	0.9	1.1	-	W
Power Supply Rejection Ratio	PSRR	Input terminated with 10Ω, $V_{DDRIPPLE}$=0.2V_{P-P}, f=217Hz	50	60	-	dB
		Input terminated with 10Ω, $V_{DDRIPPLE}$=0.2V_{P-P}, f=1kHz	51	61	-	dB
Wake-up Time	T_{WU}		-	100	-	ms

V_{DD} = 3V

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Quiescent Power Supply Current	I_{DD}	V_{IN} = 0V, 8Ω Load	-	2.3	7	mA
		V_{IN} = 0V, No Load	-	1.9	6	
Shutdown Current	I_{SD}	V_{IN}=0V, V_{SHD}=V_{DD}, No Load	-	0.5	-	μA
Shutdown Voltage Input High	V_{SDIH}		1.0	-	-	V
Shutdown Voltage Input Low	V_{SDIL}		-	-	0.6	V
Output Offset Voltage	V_{OS}		-50	6	50	mV
Total Harmonic Distortion + Noise	THD+N	Po=0.25Wrms, f=1kHz	-	0.06	-	%
Output Power	P_O	THD+N<=1%, f=1kHz, 8Ω Load	-	310	-	mW
Power Supply Rejection Ratio	PSRR	Input terminated with 10Ω, $V_{DDRIPPLE}$=0.2V_{P-P}, f=217Hz	53	65	-	dB
		Input terminated with 10Ω, $V_{DDRIPPLE}$=0.2V_{P-P}, f=1kHz	54	66	-	dB
Wake-up Time	T_{WU}		-	90	-	ms

TYPICAL APPLICATION CIRCUIT

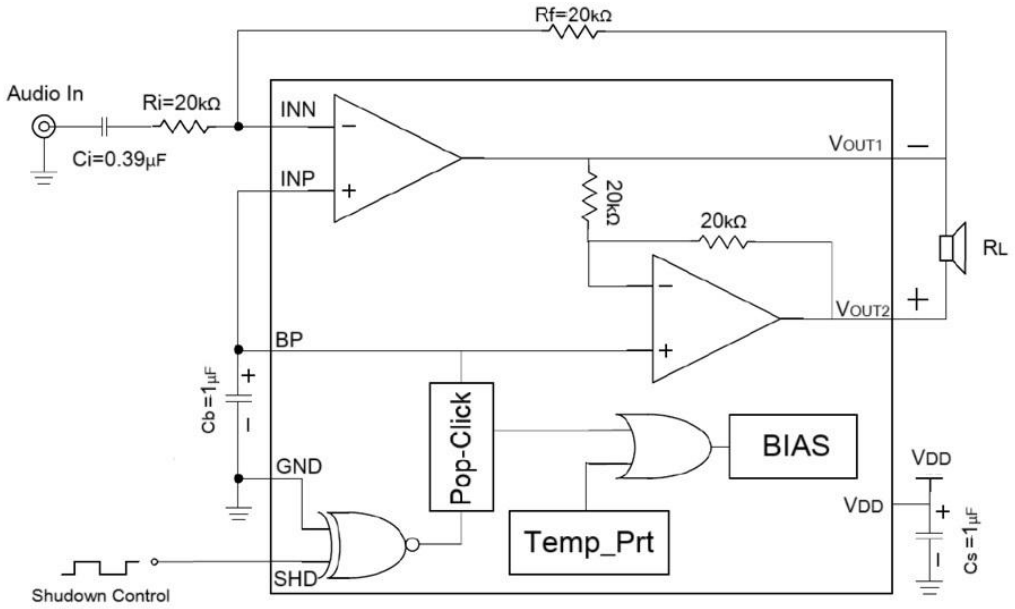


Figure 1. A2008 Typical Application Circuit

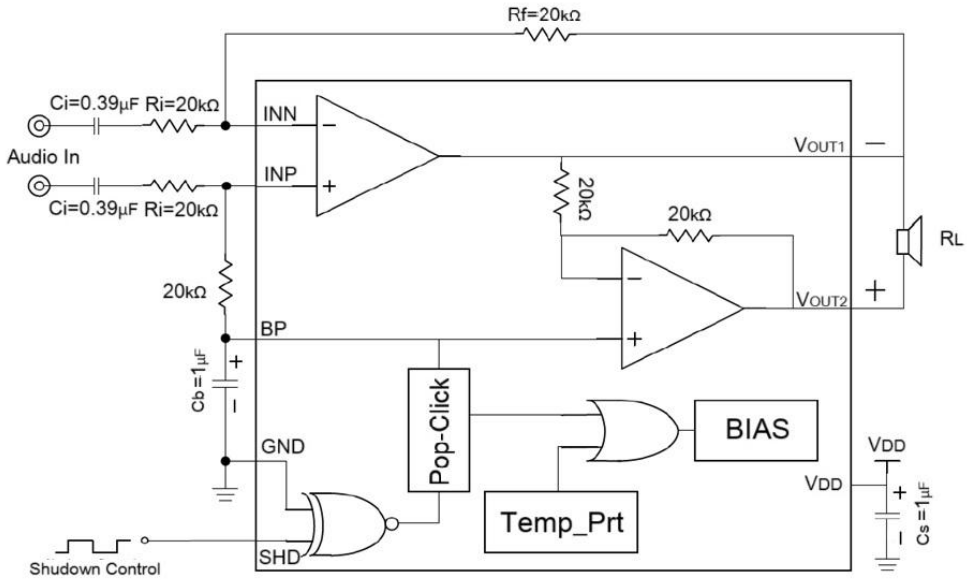
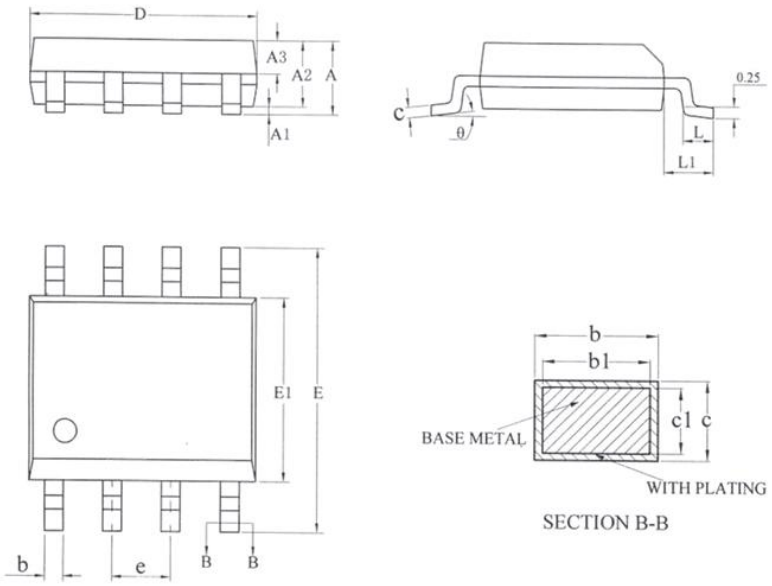


Figure 2. A2008 Differential Amplifier Configuration

PACKAGE INFORMATION

Dimension in SOP8 (Unit: mm)



Symbol	Min.	Max.
A	-	1.770
A1	0.080	0.280
A2	1.200	1.600
A3	0.550	0.750
b	0.390	0.480
b1	0.380	0.430
c	0.210	0.260
c1	0.190	0.210
D	4.700	5.100
E	5.800	6.200
E1	3.700	4.100
e	1.270 BSC.	
L	0.500	0.800
L1	1.050 BSC.	
θ	0°	8°

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