



# BCT8002

## 2.2W BTL Output Class AB Audio Power Amplifier

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#### GENERAL DESCRIPTION

The BCT8002 audio power amplifier is ideal for portable audio devices with internal speakers. A bridge-tied load (BTL) architecture minimizes external component count, while providing high-quality audio reproduction. The device is available as adjustable gain amplifier, reducing component count.

A low-power shutdown mode disables the bias generator and amplifiers, reducing quiescent current consumption to less than 1uA. This device feature Broadchip's industry-leading, comprehensive click-and-pop suppression that reduces audible clicks and pops during startup and shutdown.

The BCT8002 is available in 8-pin SOP8 package. This device operates over the -40°C to +85°C extended temperature range.


#### FEATURES

- 2.5V to 5.5V Single-Supply Operation
- PO at 10% THD+N, f=1KHz, V<sub>DD</sub>=5V  
RL=8 Ω 1.5W(Typ.)  
RL=4 Ω 2.2W(Typ.)
- Less than 1uA Low-Power Shutdown Mode
- 64dB PSRR at 1KHz
- Temperature Range: -40°C to 85°C
- No Audible Clicks or Pops at Power-Up/Down
- Available in SOP-8 package

#### APPLICATIONS

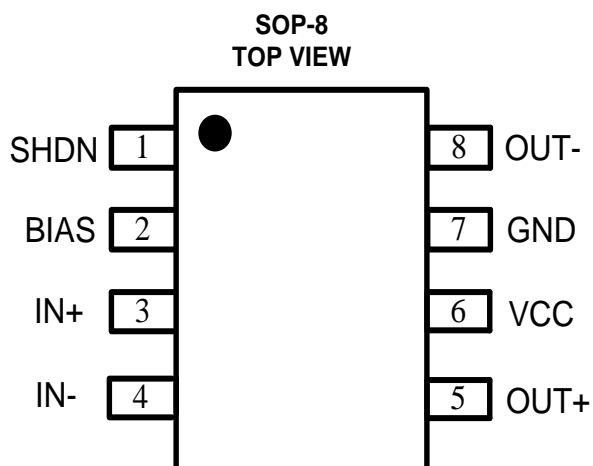
- PDAs
- Portable Instrumentation

#### ORDERING INFORMATION

Order Number	Package Type	Temperature Range	Marking	QTY/Reel
BCT8002EOA-TR	SOP8	-40°C to +85°C	 8002 XXXXX	4000

Note: "XXXXX" of Marking is batch code.

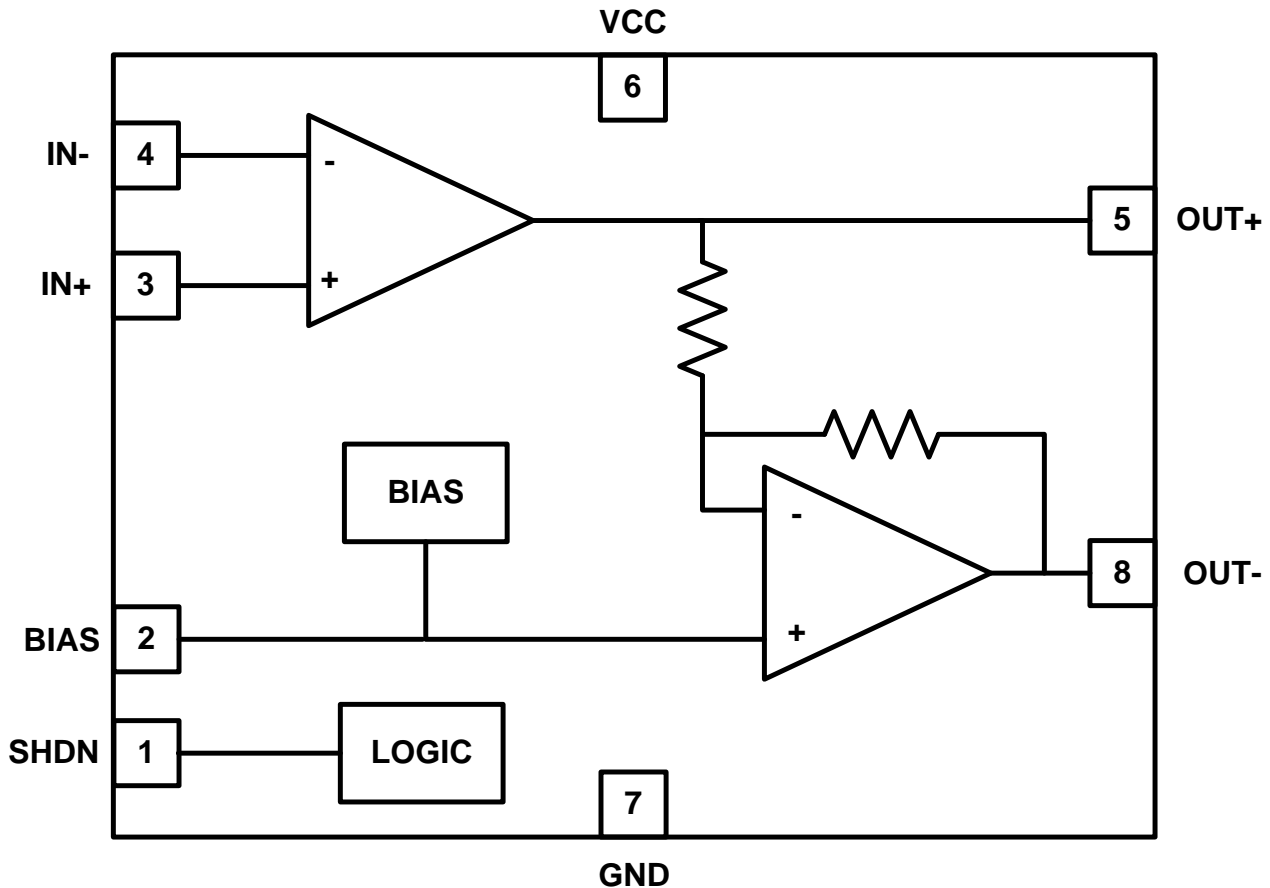
#### PIN CONFIGURATION (TOP VIEW)



#### PIN DESCRIPTION

Pin	Name	Function
1	SHDN	Shutdown Input, Active-High
2	BIAS	DC Bias Bypass Capacitor Connection, Bypass BIAS to ground with a 1uF capacitor.
3	IN+	Noninverting Input
4	IN-	Inverting Input
5	OUT+	Bridge Amplifier Positive Output
6	VCC	Power Supply, Bypass Vcc with a 1uF capacitor to ground.
7	GND	Ground
8	OUT-	Bridge Amplifier Negative Output.

#### BLOCK DIAGRAM



#### ABSOLUTE MAXIMUM RATINGS

Supply Voltage (VCC to GND)	.....6V
All Other Pins	..... - 0.3V to (VCC + 0.3V)
Continuous Power Dissipation (TA = +25°C): SOP8 (derate 165°C/W)	.....0.76W
Operating Temperature Range	.....-40°C to +85°C
Junction Temperature	.....+150°C
Storage Temperature Range	.....-65°C to +150°C
Lead Temperature (soldering, 10s)	.....+260°C
ESD Susceptibility (HBM)	.....2KV

#### Note 1:

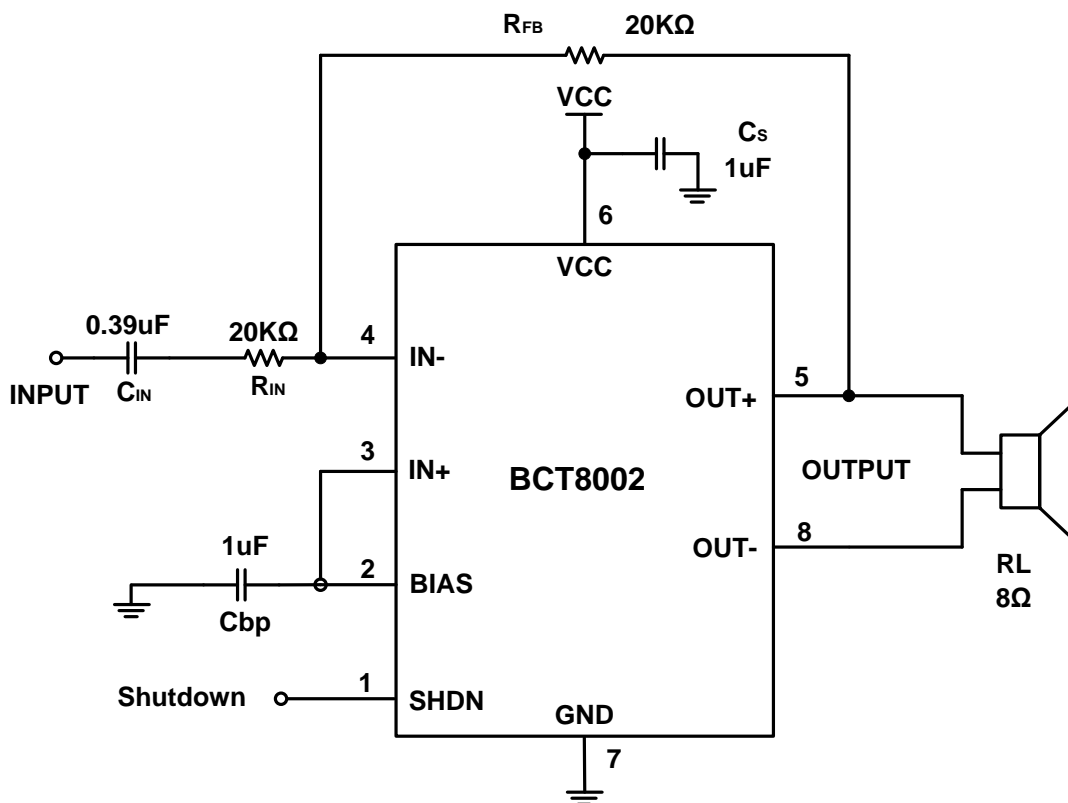
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## DC ELECTRICAL CHARACTERISTICS

(V<sub>CC</sub>=5V, GND=0, SHDN= GND, T<sub>A</sub>=+25°C, C<sub>BIAS</sub>=1uF, R<sub>IN</sub>=R<sub>FB</sub>=20KΩ, IN+=BIAS, R<sub>L</sub>>=4Ω)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
I <sub>CC</sub>	Supply Current	No input signal, no load SHDN=GND		2.5	6	mA
I <sub>SHDN</sub>	Shutdown Mode Current	No input signal, R <sub>L</sub> =8ohms, SHDN=V <sub>CC</sub>			1	uA
V <sub>OO</sub>	Output Offset Voltage	No input signal, R <sub>L</sub> =8ohms			±10	mV
P <sub>O</sub>	Output Power	THD=1%, f=1KHz, R <sub>L</sub> =8Ω		1.1		W
		THD=10%, f=1KHz, R <sub>L</sub> =8Ω		1.5		
		THD=1%, f=1KHz, R <sub>L</sub> =4Ω		1.8		W
		THD=10%, f=1KHz, R <sub>L</sub> =4Ω		2.2		
THD+N	Total Harmonic Distortion + Noise	P <sub>O</sub> =1.0 W Av=2, 20Hz<F<20kHz, R <sub>L</sub> =8Ω		0.1	0.2	%
PSRR	Power Supply Rejection Ratio	R <sub>L</sub> =8Ω, Av=2, V <sub>ripple</sub> = 200mVpp, Input Grounded	f=217Hz	55	62	dB
			f=1kHz	55	64	
T <sub>WU</sub>	Wake-Up Time	C <sub>BIAS</sub> =1uF		100		ms
T <sub>SHDN</sub>	Shut Down time			0.2		us
V <sub>IH</sub>	SHDN High Input Voltage		1.3			V
V <sub>IL</sub>	SHDN Low Input Voltage				0.4	V

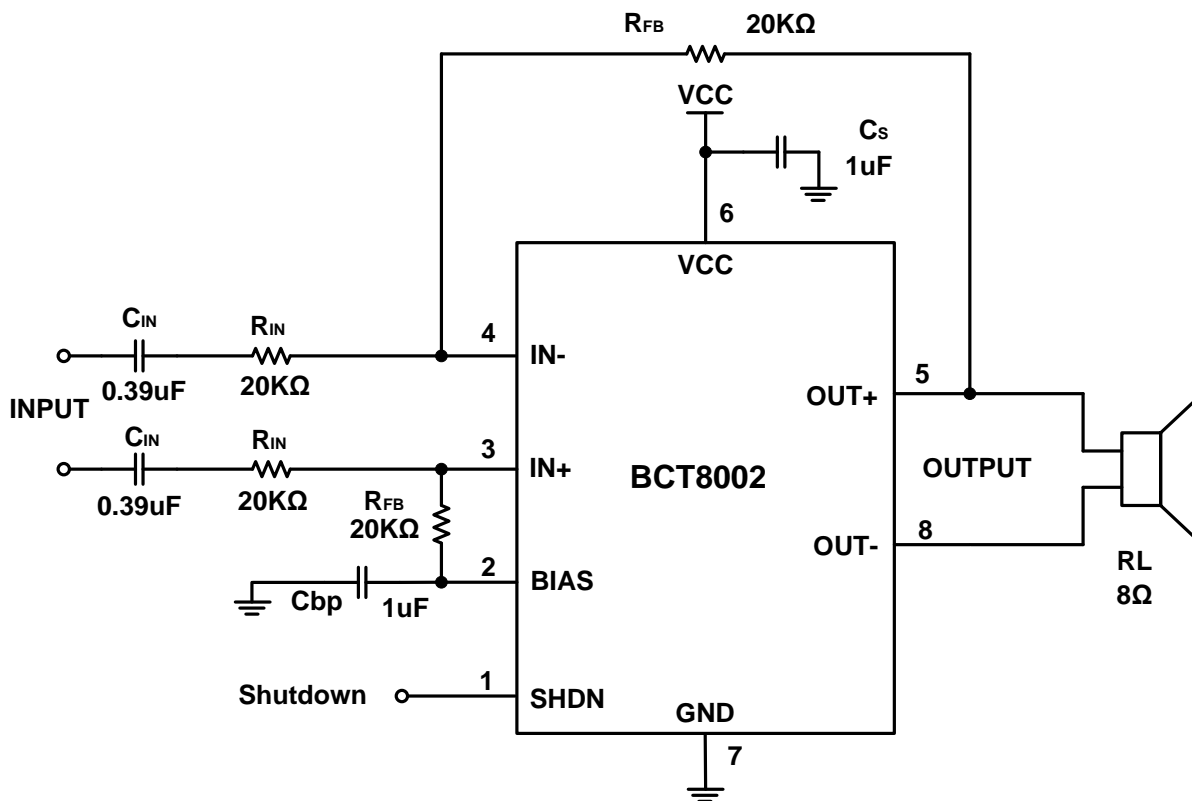
#### TYPICAL APPLICATION CIRCUIT



Note1: Gain  $A_v = 2 R_{FB}/R_{IN}$

Note2: High Pass Frequency  $f = 1 / (2\pi C_{IN} R_{IN})$

### TYPICAL APPLICATION CIRCUIT

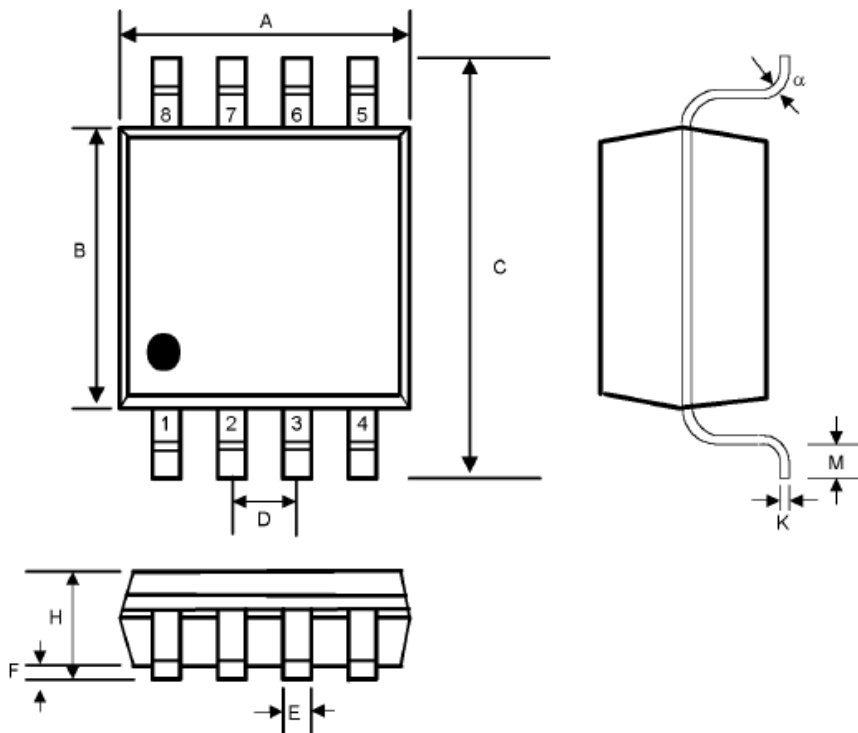


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Note2: High Pass Frequency  $f = 1 / (2\pi C_{IN} R_{IN})$

## PACKAGE OUTLINE DIMENSIONS

SOP8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.80	5.00	0.188	0.197
B	3.80	4.00	0.149	0.158
C	5.80	6.20	0.228	0.244
D	1.27 BSC		0.050 BSC	
E	0.33	0.51	0.013	0.020
F	0.10	0.25	0.004	0.010
H	1.35	1.75	0.053	0.069
K	0.19	0.25	0.007	0.010
M	0.40	1.27	0.016	0.050
$\alpha$	0°	8°	0°	8°