



BCT8890

2.2W BTL Output Class AB Audio Power Amplifier

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GENERAL DESCRIPTION

The BCT8890 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 BCT8890 is available in 8-pin MSOP8 /DFN3x3-8L/DFN2x2-8L 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, VCC=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 MSOP8/DFN3x3-8L/DFN2x2-8L package

APPLICATIONS

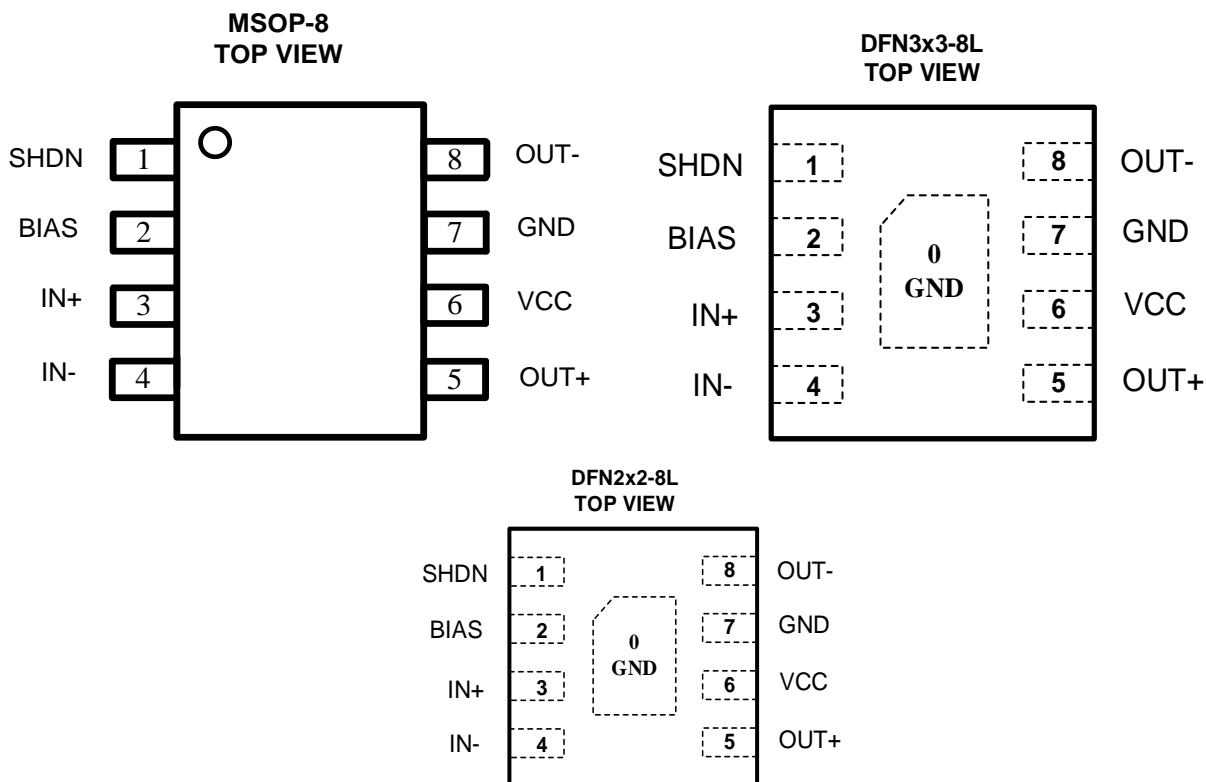
- PDAs
- Portable Instrumentation

ORDERING INFORMATION

Order Number	Package Type	Temperature Range	Marking	QTY/Reel
BCT8890EMA-TR	MSOP8	-40°C to +85°C	 8890 XXXXX	4000
BCT8890EGA-TR	DFN3x3-8L	-40°C to +85°C	 8890 XXXXX	3000
BCT8890ELA-TR	DFN2x2-8L	-40°C to +85°C	8890 XXXXX	3000

Note: "XXXXXX" of Marking is batch code.

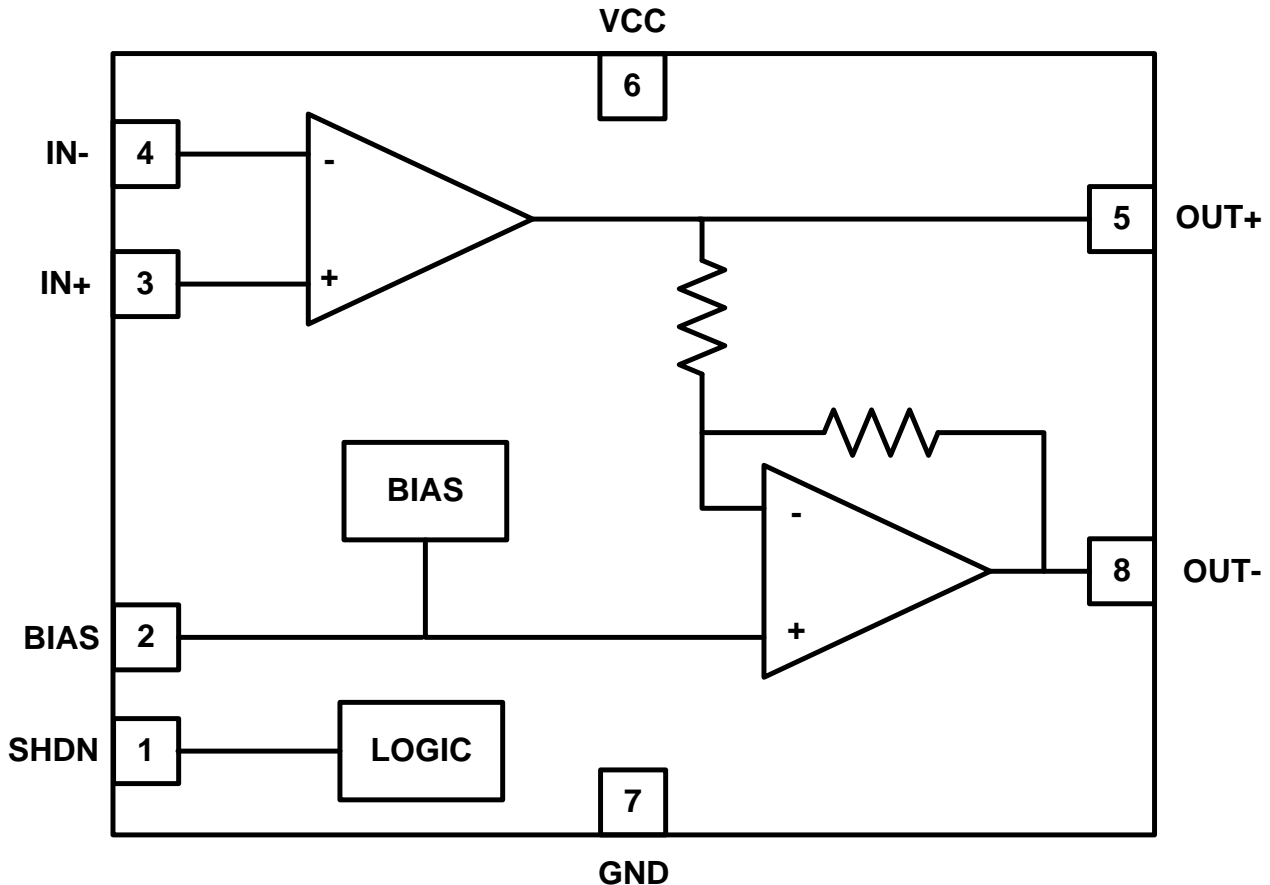
PIN CONFIGURATION (TOP VIEW)



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):	
MSOP8(derate 215°C/W)	.....0.58W
DFN3x3-8L (derate 95°C/W)	.....1.32W
DFN2x2-8L (derate 140°CW)	..... 0.82W
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

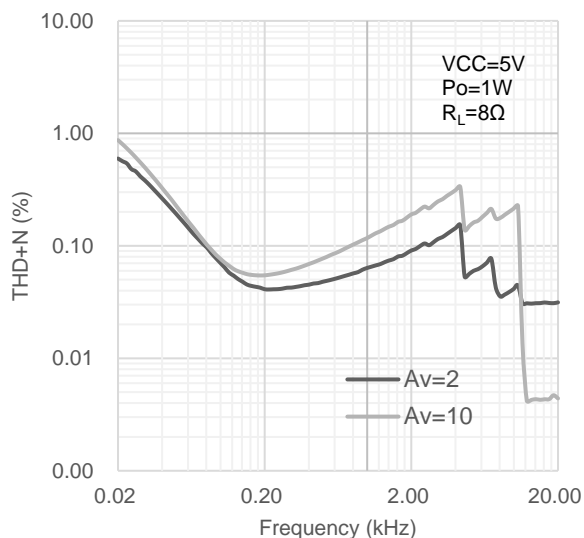
(VCC=5V, GND=0, SHDN=GND, TA=+25°C, CBIAS=1uF, RIN=RFB=20KΩ, IN+=BIAS, RL>=4Ω)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
ICC	Supply Current	No input signal, no load, SHDN=GND		2.5	6	mA
ISHDN	Shutdown Mode Current	No input signal, RL=8ohms, SHDN=VCC			1	uA
Voo	Output Offset Voltage	No input signal, RL=8ohms			±10	mV
Po	Output Power	THD=1%, f=1KHz, RL=8Ω		1.1		W
		THD=10%, f=1KHz, RL=8Ω		1.5		
		THD=1%, f=1KHz, RL=4Ω		1.8		W
		THD=10%, f=1KHz, RL=4Ω		2.2		
THD+N	Total Harmonic Distortion + Noise	Po=1.0 W, Av=2, 20Hz<F<20kHz, RL=8Ω		0.1	0.2	%
PSRR	Power Supply Rejection Ratio	RL=8Ω, Av=2, Vripple=200mVpp, Input Grounded	f=217Hz	55	62	dB
			f=1kHz	55	64	
TWU	Wake-Up Time	CBIAS=1uF		100		ms
TSHDN	Shut Down time			0.2		us
VIH	SHDN High Input Voltage		1.3			V
VIL	SHDN Low Input Voltage				0.4	V

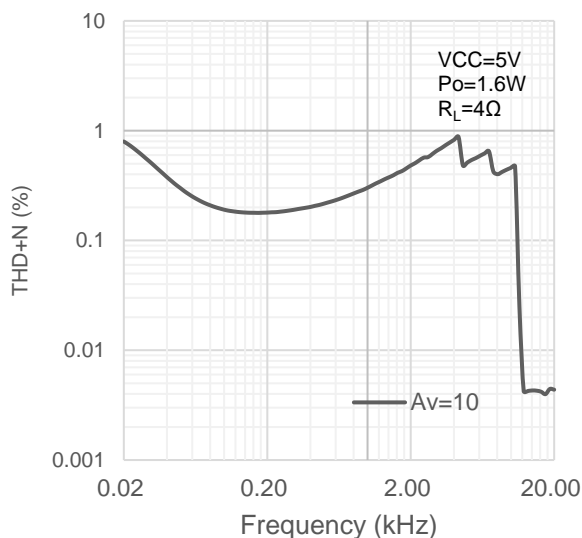
PERFORMANCE CHARACTERISTICS

Test condition: $T_A=25^{\circ}\text{C}$, $V_{CC}=5.0\text{V}$, $R_L=8\Omega+33\mu\text{H}$, $f=1\text{kHz}$ (unless otherwise noted)

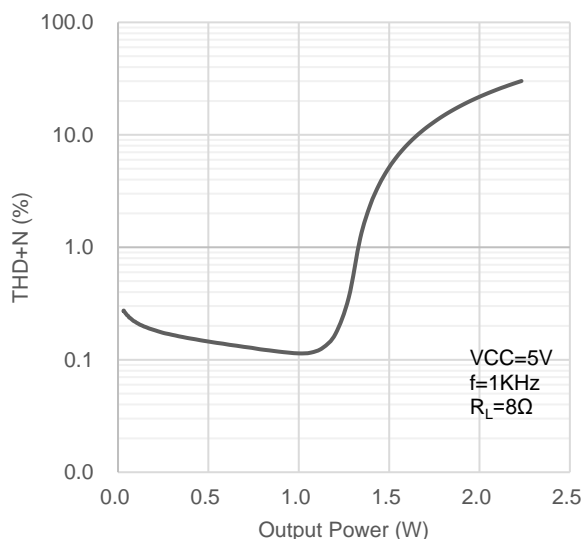
THD+N vs FREQUENCY



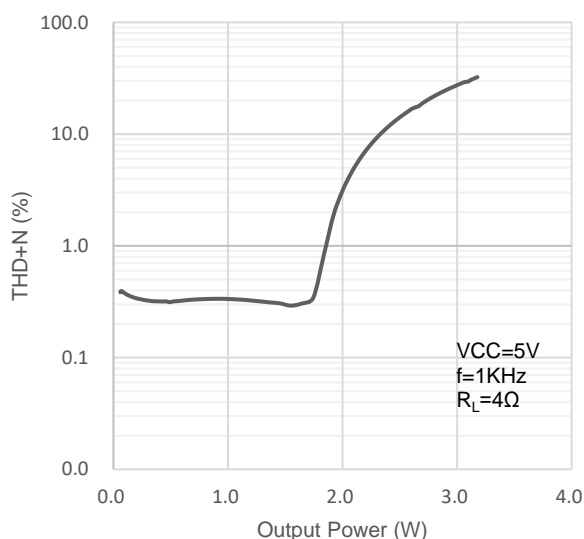
THD+N vs FREQUENCY



THD+N vs OUTPUTPOWER



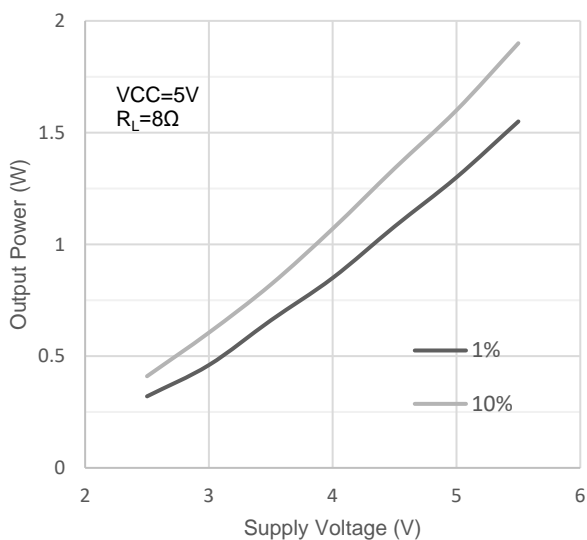
THD+N vs OUTPUTPOWER



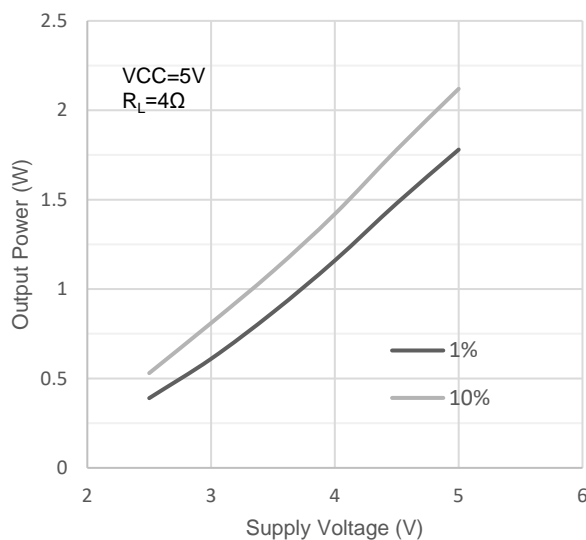
PERFORMANCE CHARACTERISTICS (Continued)

Test condition: $T_A=25^{\circ}\text{C}$, $V_{CC}=5.0\text{V}$, $R_L=8\Omega+33\mu\text{H}$, $f=1\text{kHz}$ (unless otherwise noted)

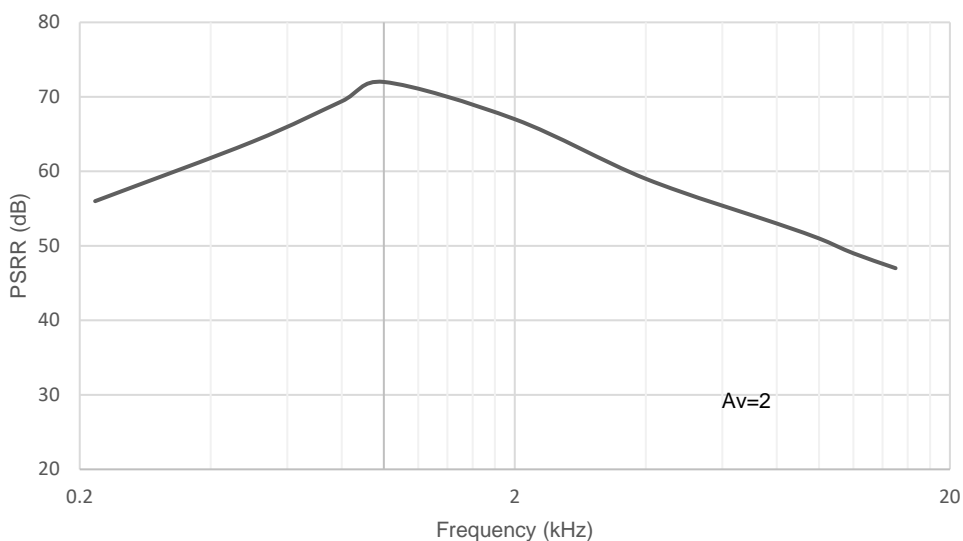
Output Power vs Supply Voltage



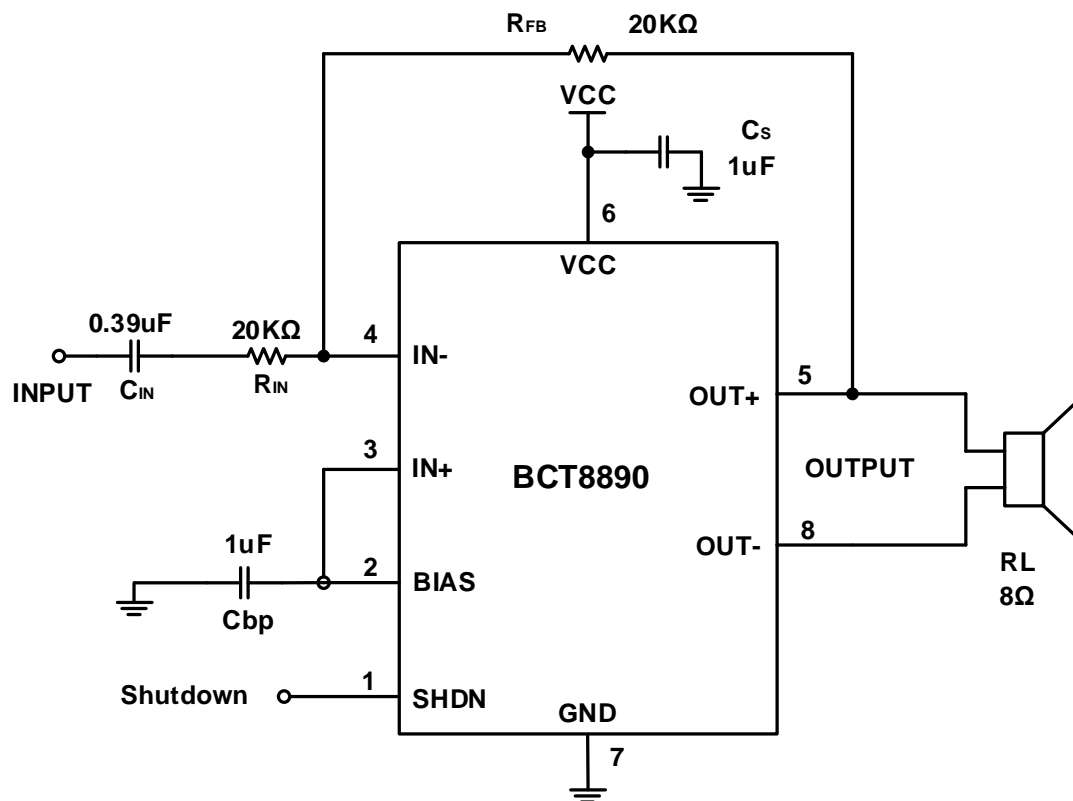
Output Power vs Supply Voltage



PSRR



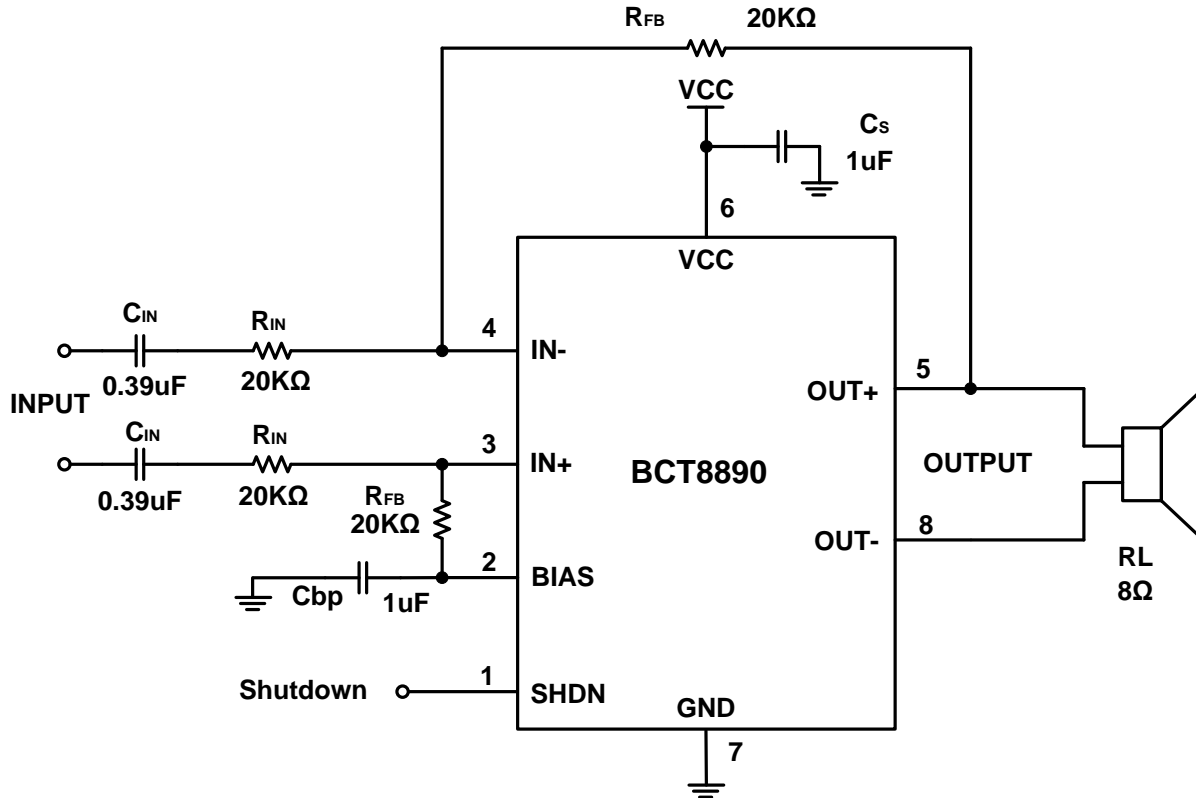
TYPICAL APPLICATION CIRCUIT



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

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

TYPICAL APPLICATION CIRCUIT

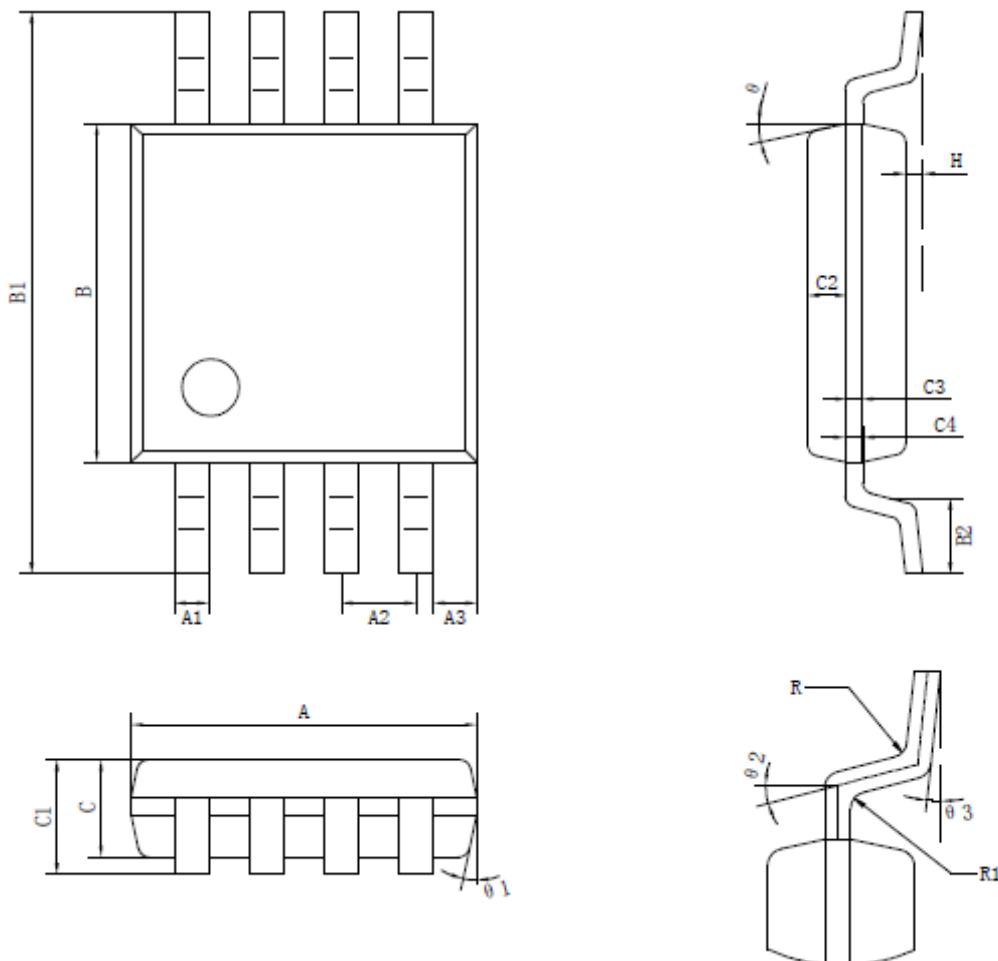


Note1: Gain $A_v = 2 R_{FB} / R_{IN}$

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

PACKAGE OUTLINE DIMENSIONS

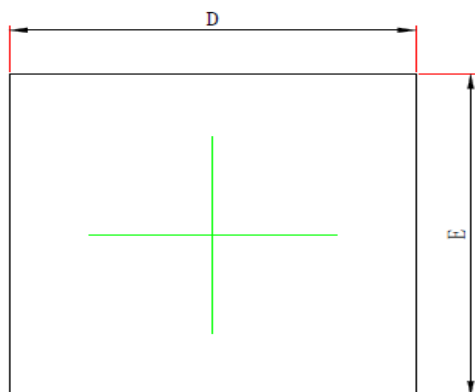
MSOP8



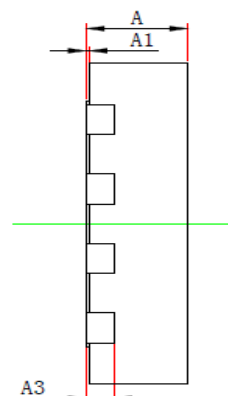
Symbol	Min	Max	Symbol	Min	Max
A	2.90	3.10	C3	0.152 Typ	
A1	0.28	0.35	C4	0.15	0.23
A2	0.65 Typ		H	0.00	0.09
A3	0.375 Typ		θ	12 ° Typ	
B	2.90	3.10	$\theta 1$	12 ° Typ	
B1	4.70	5.10	$\theta 2$	14 ° Typ	
B2	0.45	0.75	$\theta 3$	0°	6°
C	0.75	0.95	R	0.15 Typ	
C1	0.75	1.10	R1	0.15 Typ	
C2	0.328 Typ				

MSOP8 Surface Mount Package

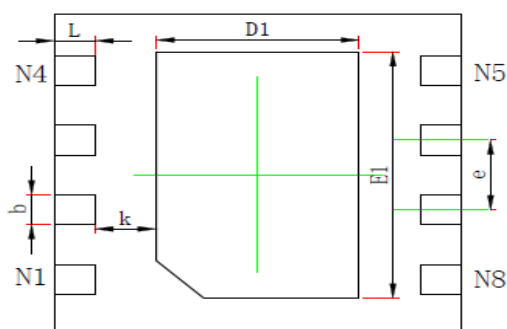
DFN3x3-8L



TOP VIEW



SIDE VIEW

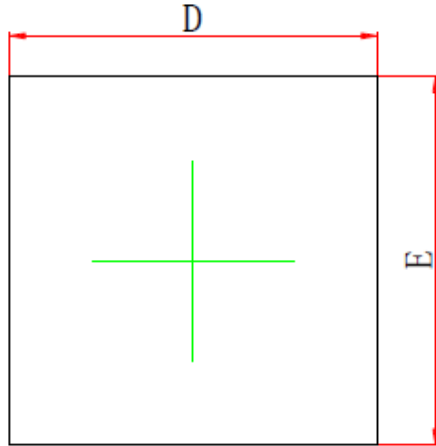


BOTTOM VIEW

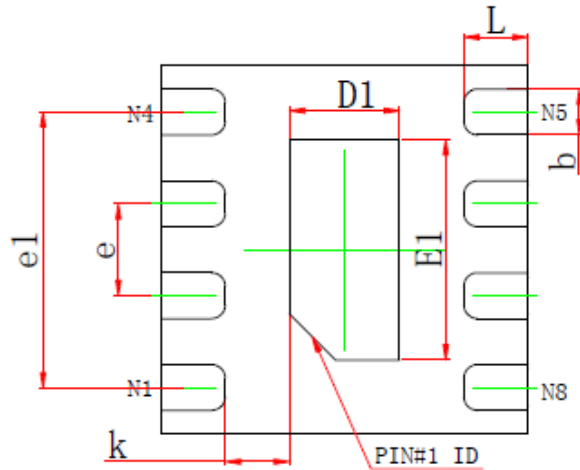
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	2.950	3.050	0.116	0.120
E	2.950	3.050	0.116	0.120
D1	1.450	1.550	0.057	0.061
E1	2.250	2.350	0.089	0.093
b	0.230	0.330	0.009	0.013
k	0.450REF.		0.018REF.	
e	0.650BSC.		0.026BSC.	
L	0.250	0.350	0.010	0.014

DFN3x3-8L Surface Mount Package

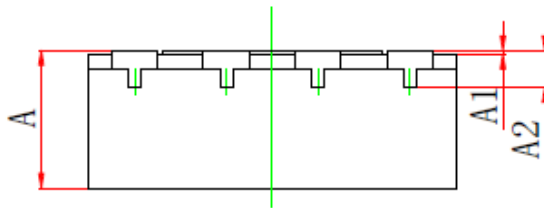
DFN2x2-8L



TOP VIEW
[顶视图]



BOTTOM VIEW
[背视图]



SIDE VIEW
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203REF.		0.008REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.550	0.650	0.022	0.026
E1	1.150	1.250	0.045	0.049
b	0.200	0.300	0.008	0.012
e	0.500BSC.		0.020BSC.	
e1	1.450	1.550	0.057	0.061
k	0.300	0.400	0.012	0.016
L	0.300	0.400	0.012	0.016

DFN2x2-8L Surface Mount Package



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