

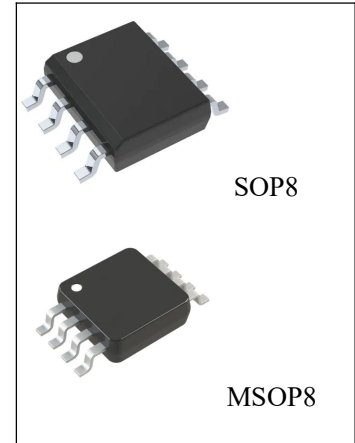
General Description

The D4890C is a Class-AB audio power amplifier designed for mobile phone, MID and other portable communication devices. It is capable of delivering 1.56 watts of continuous average power to an 8Ω BTL load with less than 10% distortion (THD+N) from a $5V_{DC}$ power supply.

The D4890C was designed specifically to provide high quality output power with a minimal amount of external components. It does not require output coupling capacitors or bootstrap capacitors. And with ultra low shutdown current, the D4890C is ideally suited for mobile phone , MID and other low voltage applications where minimal power consumption is a primary requirement.

The D4890C is unity-gain stable and can be configured by external gain-setting resistors.

The D4890C is available in SOP8 and MSOP8 package.



Features

- Improved PSRR at 217Hz & 1KHz 80dB(type)
- Power output at 5.0V, 10% THD+N, 8Ω 1.56W (type)
- Ultra low shutdown current $0.1\mu A$ (type)
- 2.2V—5.5V operation
- 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

Package Information

Part NO.	Order NO.	Package Description	Package Marking	Package Option
D4890C	D4890CF	SOP8	CHMC D4890C SXXXX	100/Tube 4000/Reel
D4890C	D4890CM	MSOP8	CHMC D4890C SXXXX	100/Tube 4000/Reel

CHMC:Trademark

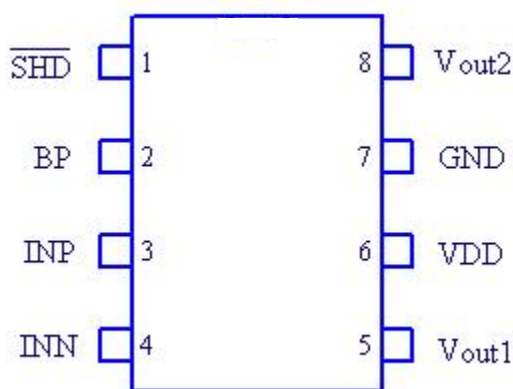
D4890C:Part NO.

SXXXX:Lot NO.

Applications

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

Pin Configuration



D4890C(SOP8/MSOP8)

Pin Description

No.	Pin Name	I/O	Description
1	$\overline{\text{SHD}}$	I	Shut-down Logical Control, '0' is active.
2	BP	I/O	Analog ground for inner OPAs. It's about a half of VDD.
3	INP	I	Positive Input
4	INN	I	Negative Input
5	Vout1	O	Negative BTL Output
6	VDD	I/O	Power Supply (2.2 – 5.5 V)
7	GND	I/O	Ground
8	Vout2	O	Positive BTL Output

Absolute Maximum Ratings

Parameter		Limit	Unit
Supply Voltage		-0.3~6	V
Input Voltage		-0.3V to $V_{DD}+0.3V$	V
Power Dissipation		See Dissipation Rating Table	
Junction Temperature		-40~150	°C
Storage Temperature		-65~150	°C
Thermal Resistance	$\theta_{JC}(MSOP8)$	56	°C/W
	$\theta_{JA}(MSOP8)$	190	
	$\theta_{JA}(SOP8)$	184	
Operating Temperature		-40~85	°C
Operating Supply Voltage		2.2~5.5	V

* Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Rating indicate conditions for which the device is functional, but do not guarantee specific performance limits.

Electrical Characteristics (The following specifications apply for the circuit shown in Figure 1, unless otherwise specified. Limits apply for $T_A = 25^\circ\text{C}$.)

$V_{DD} = 5V$

Symbol	Parameter	Test Conditions	Limit			Units
			Min.	Typ.	Max.	
I_{DD}	Quiescent Power Supply Current	$V_{IN} = 0V$, No Load		6	10	mA
I_{SD}	Shutdown Current	$V_{IN}=0V$, $V_{SHD}=GND$, No Load		1	20	μA
V_{SDIH}	Shutdown Voltage Input High		1.4		V_{DD}	V
V_{SDIL}	Shutdown Voltage Input Low		0		0.5	V
V_{OS}	Output Offset Voltage		-50	6	50	mV
THD+N	Total Harmonic Distortion+Noise	AVD=2, $20Hz \leq f \leq 20KHz$ $RL=8\Omega$, $PO=0.5W$		0.15		%
P_O	Output Power	THD+N $\leq 1\%$, $f=1KHz$, 8Ω Load		1.3		W
		THD+N $\leq 10\%$, $f=1KHz$, 4Ω Load		2.36		
PSRR	Power Supply Rejection Ratio		65	80		dB
T_{WU}	Wake-up time			100		ms

Typical Application

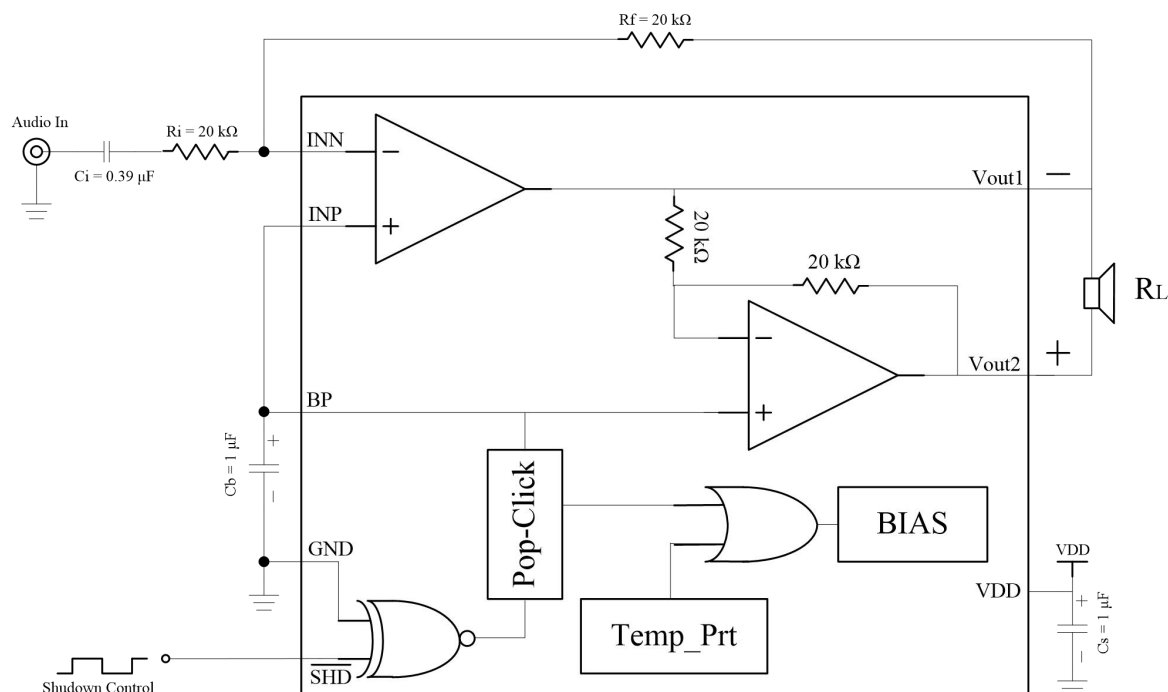


Fig 1. D4890C Typical Application Circuit

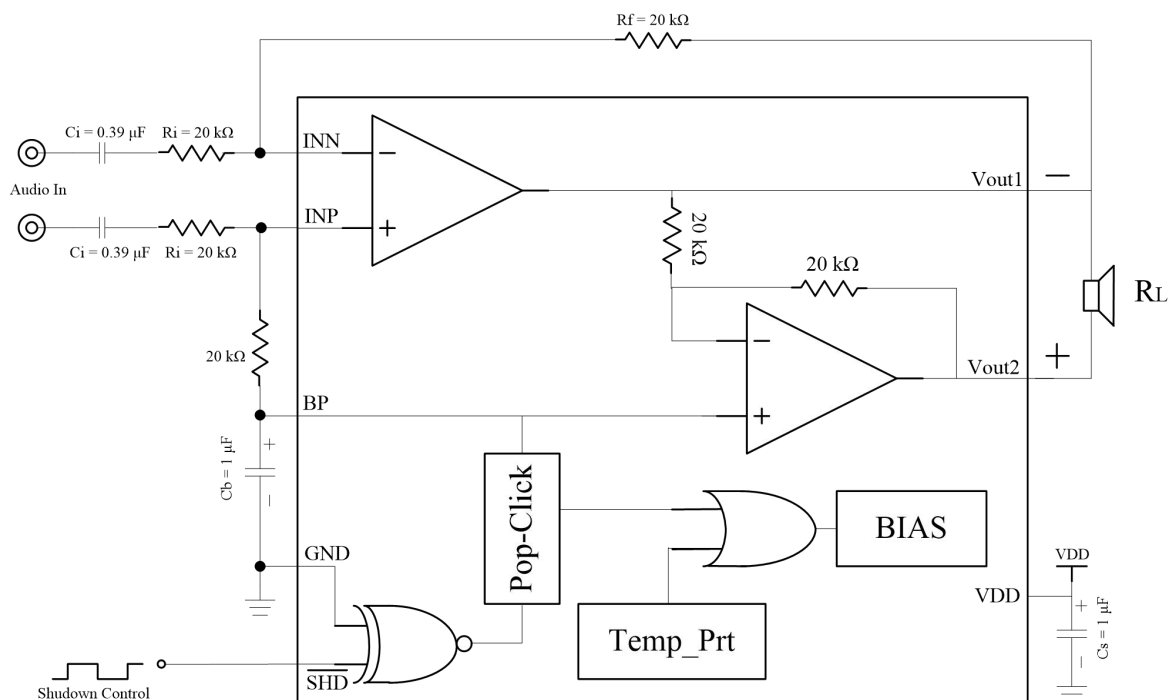
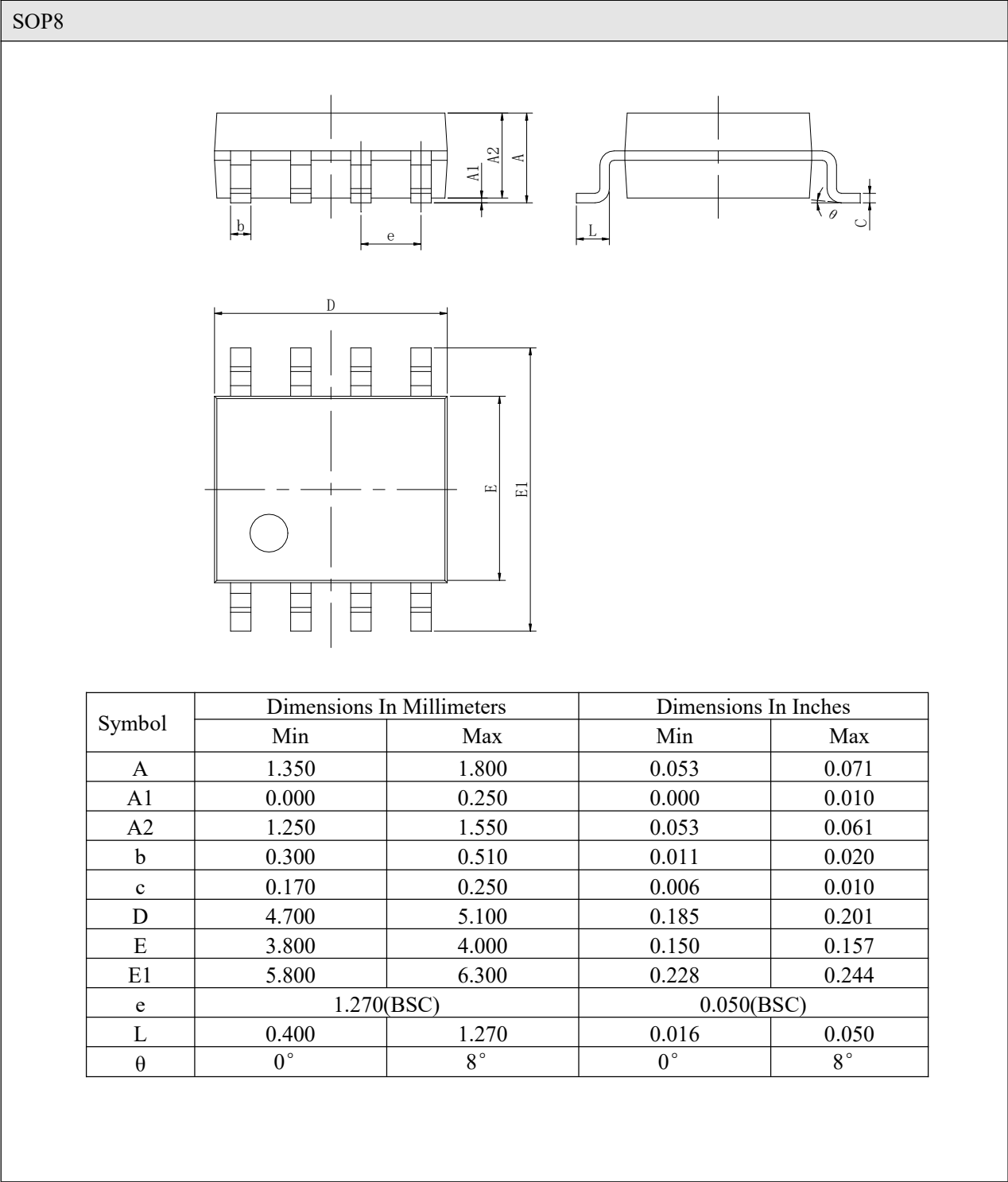


Fig 2. D4890C Differential Amplifier Configuration

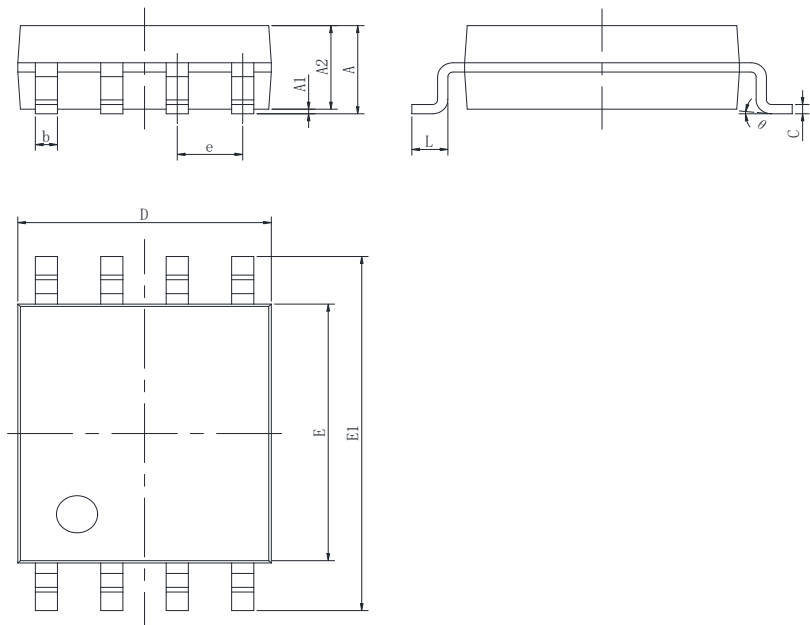
External Components Description

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 $fc = \frac{1}{2\pi Ri \times Ci}$.
Ci	Input coupling capacitor which blocks the DC voltage at the amplifiers input terminates. Also creates a high-pass filter with Ri at $fc = \frac{1}{2\pi Ri \times Ci}$.
Rf	Feedback resistance which sets the closed-loop gain in conjunction with Ri. The gain is $A_{VD} = 2 \times (\frac{Rf}{Ri})$.
Cs	Supply bypass capacitor which provides power supply filtering.
Cb	Bypass pin capacitor which provides half-supply filtering. Refer to the section.

Outline Drawing



MSOP8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
e	0.650(BSC)		0.026(BSC)	
L	0.400	0.800	0.016	0.031
θ	0°	6°	0°	6°

Statements

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