



1.5W Audio Power Amplifier with Shutdown Mode

DESCRIPTOIN

The GA4890 is a bridge-connected audio power amplifier capable of delivering typically 1.1W of continuous average power to an 8Ω load with 1% (THD) from a 5V power supply. Audio power amplifiers were designed specifically to provide high quality output power with a minimal amount of external components. Since the GA4890 does not require output coupling capacitors, bootstrap capacitors, or snubber networks, it is optionally suited for low-power portable systems. The M4890S features an externally controlled, low-power consumption shutdown mode, as well as an internal thermal shutdown protection mechanism. The unity-gain stable GA4890 can be configured by external gain-setting resistors.

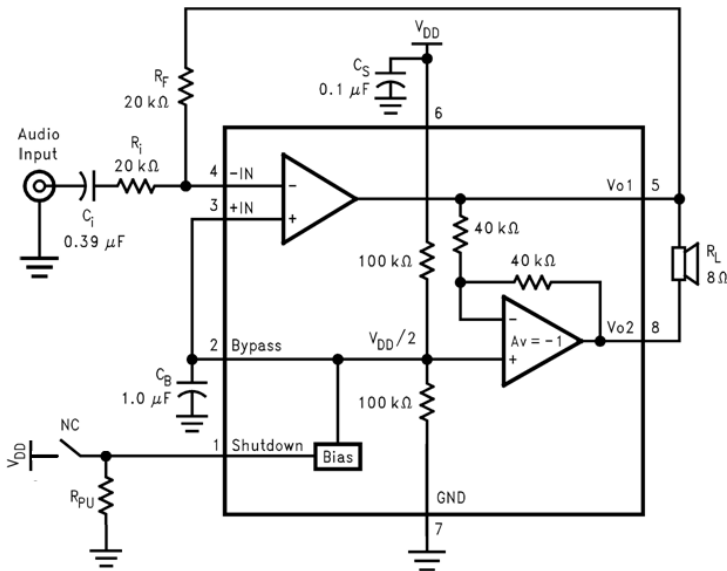
FEATURES

- Output power at 10% THD+N at 1 kHz into 8Ω is 1.5W(TYP)
- THD at 1 kHz at 1.1W continuous average output power into 8Ω is 1%(MAX)
- No output coupling capacitors, bootstrap capacitors, or snubber circuits are necessary
- Small Outline(MSOP) or SOP packaging
- Unity-gain stable
- External gain configuration capability

APPLICATIONS

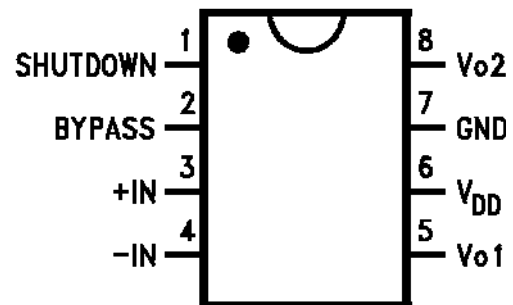
- Notebook PC
- LCD Monitors
- Pocket PC

TYPICAL APPLICATION



PACKAGE

Top View (MSOP8/SOP8)



Absolute Maximum Ratings

Supply voltage, V_{DD} -----	6V
Input voltage, V_I -----	-0.3 V to $V_{DD} + 0.3$ V
Operating free-air temperature range, T_A -----	-40°C to 85° C
Operating junction temperature range, T_J -----	-40°C to 150°C
Storage temperature range, T_{stg} -----	-65°C to 150°C



External Components Description

Components		Functional Description
1.	R_i	Inverting input resistance which sets the closed-loop gain in conjunction with R_f . This resistor also forms a high pass filter with C_i at $f_c = 1/(2\pi R_i C_i)$.
2.	C_i	Input coupling capacitor which blocks the DC voltage at the amplifiers input terminals. Also creates a highpass filter with R_i at $f_c = 1/(2\pi R_i C_i)$. Refer to the section, Proper Selection of External Components, for an explanation of how to determine the value of C_i .
3.	R_f	Feedback resistance which sets the closed-loop gain in conjunction with R_i .
4.	C_S	Supply bypass capacitor which provides power supply filtering. Refer to the Power Supply Bypassing section for information concerning proper placement and selection of the supply bypass capacitor.
5.	C_B	Bypass pin capacitor which provides half-supply filtering. Refer to the section, Proper Selection of External Components, for information concerning proper placement and selection of C_B .

Electrical Characteristics

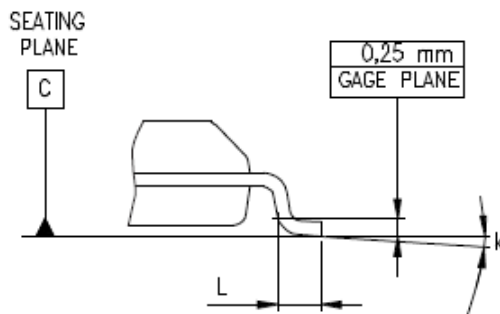
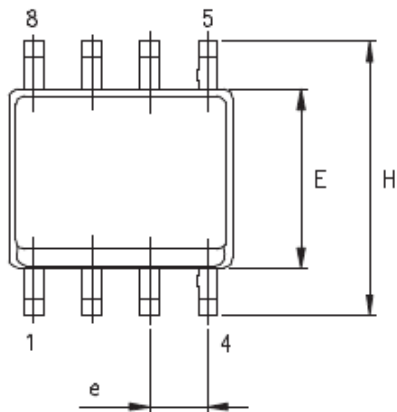
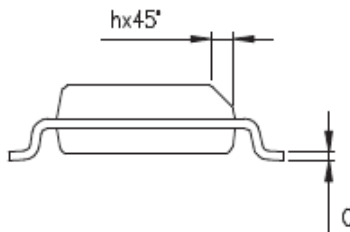
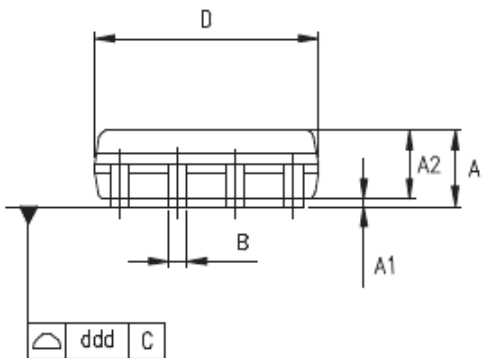
The following specifications apply for $V_{DD} = 5V$ unless otherwise specified. Limits apply for $T_A = 25^\circ C$

Symbol	Parameter	Conditions	GA4890		Units (Limits)
			Typical	Limit	
V_{DD}	Supply Voltage			2.0 5.5	V (min) V (max)
I_{DD}	Quiescent Power Supply Current	$V_{IN} = 0V, I_O = 0A, \text{No Load}$	3.7		mA (max)
		$V_{IN} = 0V, I_O = 0A, 8\Omega \text{ Load}$	3.8		mA (max)
I_{SD}	Shutdown Current	$V_{SHUTDOWN} = 0$	0	1	μA (max)
V_{OS}	Output Offset Voltage	$V_{IN} = 0V$	4	50	mV (max)
P_O	Output Power	THD = 1% (max); $f = 1 \text{ kHz}$	1.10	1.0	W (min) W
		THD+N = 10%; $f = 1 \text{ kHz}$	1.5		
THD+N	Total Harmonic Distortion+Noise	$P_O = 1 \text{ Wrms}; A_{VD} = 2;$ $f = 20 \text{ Hz} - 20 \text{ kHz}$	0.25		%
PSRR	Power Supply Rejection Ratio	$V_{DD} = 4.9V \text{ to } 5.1V$	65		dB
T_{WU}	Start-up Time		90		ms



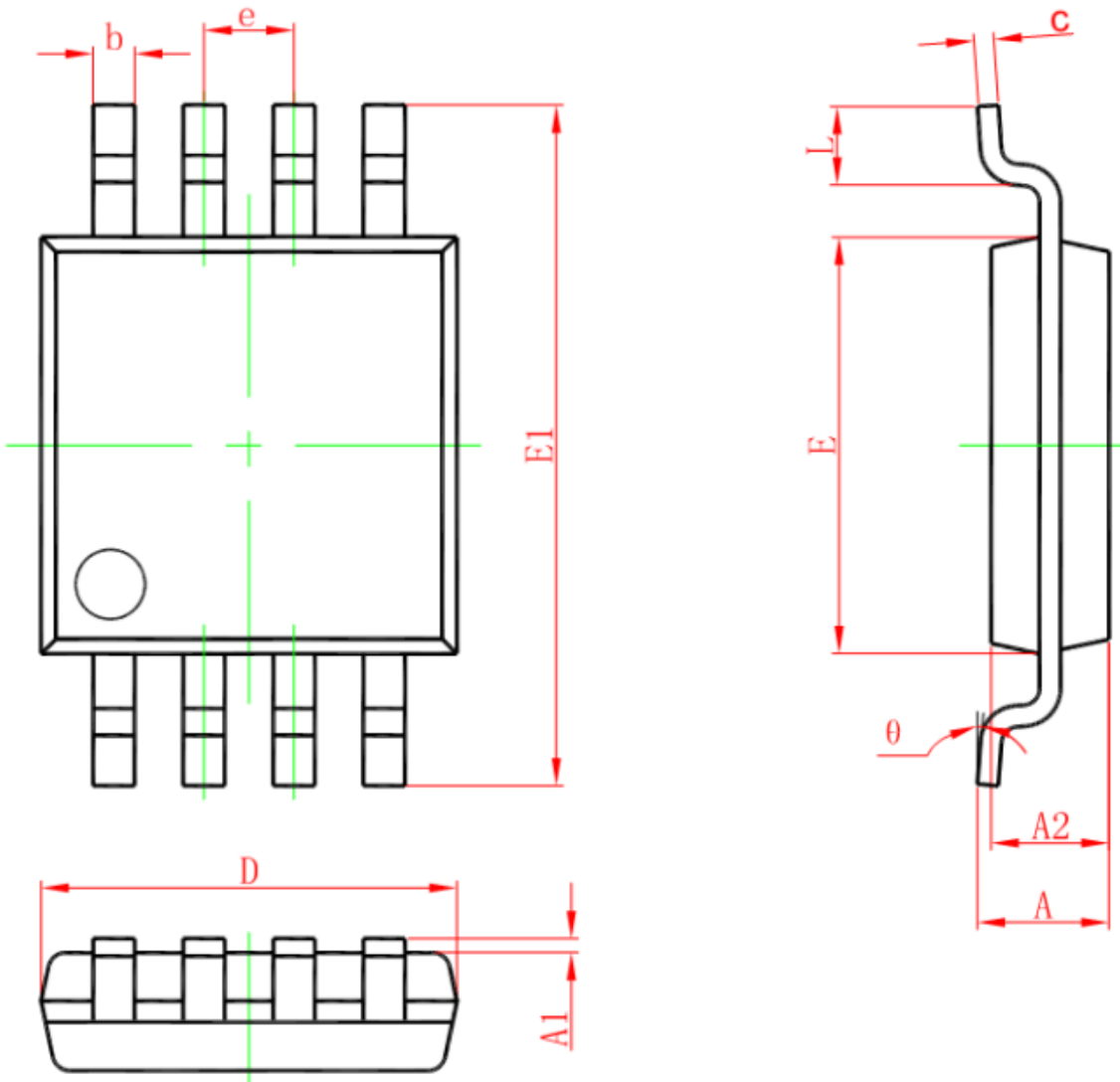
Package Information (SOP-8)

DIM.	mm.			inch		
	MI	TY	MAX.	MI	TYP	MAX.
A	1.35		1.75	0.053		0.069
A1	0.10		0.25	0.04		0.010
A2	1.10		1.65	0.043		0.065
B	0.33		0.51	0.013		0.020
C	0.19		0.25	0.007		0.010
D	4.80		5.00	0.189		0.197
E	3.80		4.00	0.150		0.157
e		1.27			0.050	
H	5.80		6.20	0.228		0.244
h	0.25		0.50	0.010		0.020
L	0.40		1.27	0.016		0.050
k	8°					
ddd			0.1			0.04





MSOP-8



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	0.650(BSC)		0.026(BSC)	
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
L	0.400	0.800	0.016	0.031
theta	0°	6°	0°	6°