



SGM4895

1.1W Fully Differential Audio Power Amplifier

GENERAL DESCRIPTION

The SGM4895 is a fully differential audio power amplifier that is designed for portable communication device applications and demanding applications in mobile phones. It is capable of delivering 1.1W of continuous average power to an 8Ω BTL load with less than 1% distortion (THD+N) from a 5V battery voltage. It operates from 2.5V to 5.5V power supply.

The SGM4895 features a low-power consumption shutdown mode. To facilitate this, Shutdown may be enabled by logic low. Additionally, the SGM4895 features an internal thermal shutdown protection mechanism.

The SGM4895 contains advanced pop & click circuitry, a minimal count of external components and low-power shutdown mode. All these features make SGM4895 ideal for wireless handsets and other low voltage applications where minimal power consumption is a primary requirement.

The SGM4895 is available in Pb-free CSP-9, DFN-8 (3mm × 3mm), MSOP-8 packages. It operates over an ambient temperature range of -40°C to +85°C.

FEATURES

- **Fully Differential Amplifier**
- **Excellent PSRR: Direct Connection to the Battery**
- **1.1W to 8Ω BTL Load from 5V Supply at THD+N < 1% (TYP)**
- **2.5V to 5.5V Operation**
- **Low Shutdown Current**
- **Shutdown Pin is Compatible with 1.8V Logic**
- **Improved Pop & Click Circuitry**
- **Thermal Overload Protection Circuitry**
- **No Output Coupling Capacitors, Bootstrap Capacitors Required**
- **External Gain Configuration Capability**
- **-40°C to +85°C Operating Temperature Range**
- **Pb-Free CSP-9, DFN-8, MSOP-8 Packages**

APPLICATIONS

Portable Systems
Wireless Handsets
Mobile Phone
Handheld Computers
PDAs
GPS

PACKAGE/ORDERING INFORMATION

MODEL	ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION	MARKING INFORMATION
SGM4895	SGM4895YG/TR	CSP-9	Tape and Reel, 3000	4895YG
	SGM4895YDB8/TR	DFN-8 (3.0mm×3.0mm)	Tape and Reel, 3000	SGM4895DB
	SGM4895YMS8/TR	MSOP-8	Tape and Reel, 3000	SGM4895YMS8

ABSOLUTE MAXIMUM RATINGS

Supply Voltage.....6V
 Input Voltage -0.3V to (V₊) + 0.3V
 Storage Temperature Range -65°C to +150°C
 Junction Temperature.....150°C
 Operating Temperature Range.....-40°C to +85°C
 Lead Temperature Range (Soldering 10 sec)
260°C

NOTES

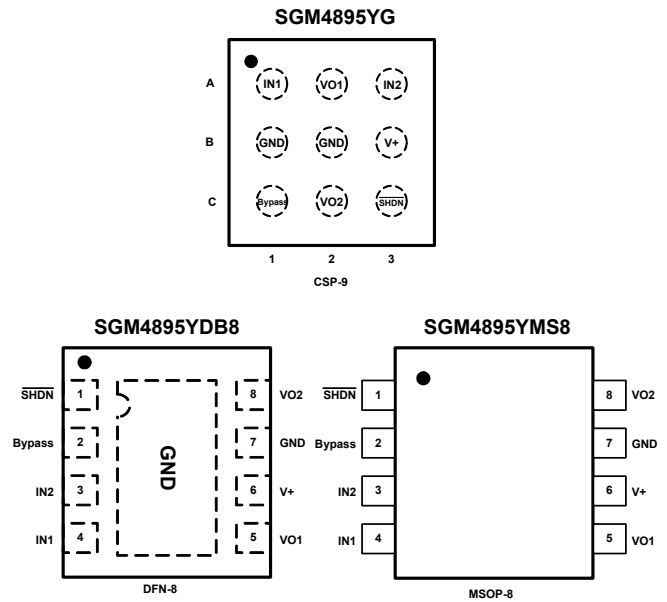
1. Stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only; functional operation of the device at these or any other conditions above those indicated in the operational section of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

CAUTION

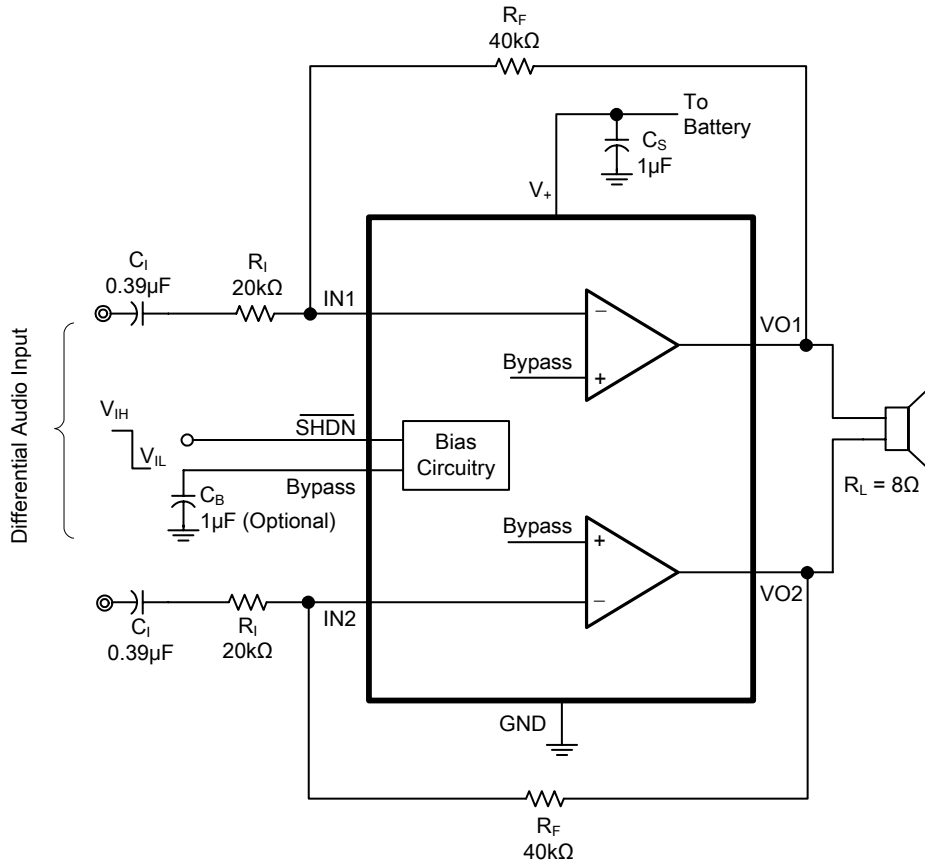
This integrated circuit can be damaged by ESD if you don't pay attention to ESD protection. SGMICRO recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

PIN CONFIGURATIONS (Top View)



TYPICAL APPLICATION



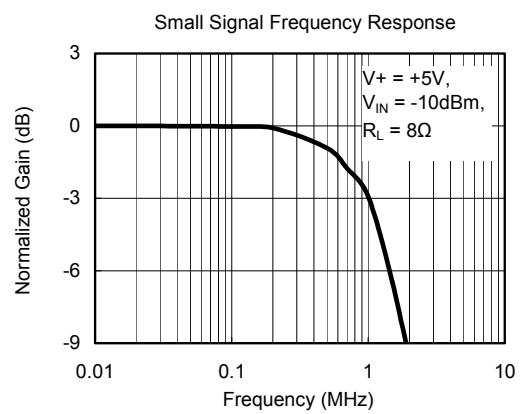
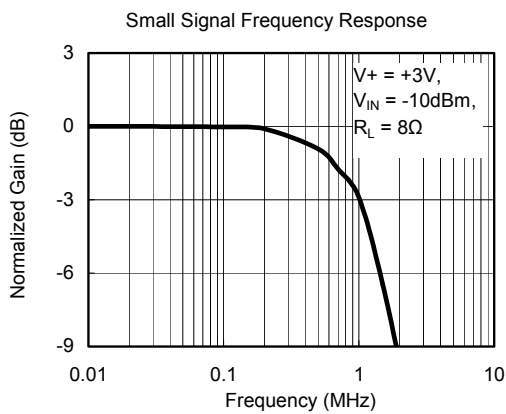
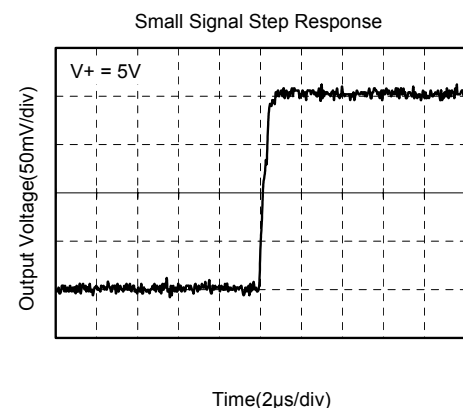
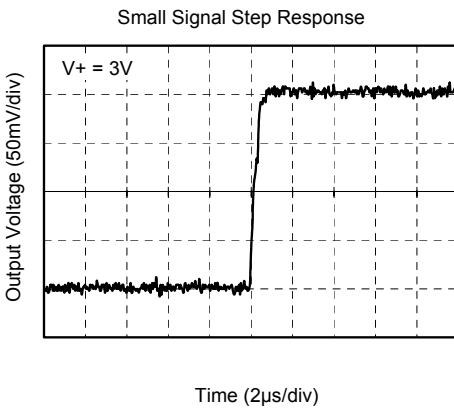
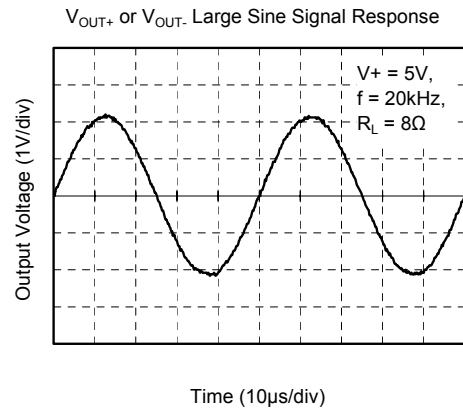
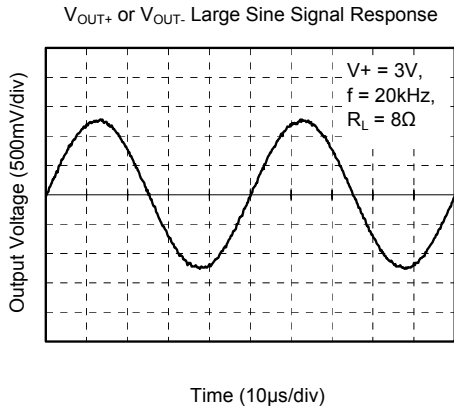
ELECTRICAL CHARACTERISTICS(The following AC specifications apply for 8Ω load, $A_V = 1V/V$, $T_A = 25^\circ\text{C}$, unless otherwise specified.)

PARAMETER	SYMBOL	CONDITIONS	SGM4895			UNITS
			MIN	TYP	MAX	
Supply Voltage	V_+		2.5		5.5	V
Shutdown Current	I_{SD}	$V_{IN} = 0V, V_{SHDN} = GND, V_+ = 5.0V$		0.05	1	μA
		$V_{IN} = 0V, V_{SHDN} = GND, V_+ = 3.3V$		0.04	1	
		$V_{IN} = 0V, V_{SHDN} = GND, V_+ = 2.6V$		0.04		
Output Offset Voltage	V_{OS}	$V_{IN} = 0V, V_{SHDN} = V_+ = 5.0V$	-10	1.00	10	mV
		$V_{IN} = 0V, V_{SHDN} = V_+ = 3.3V$	-10	1.00	10	
		$V_{IN} = 0V, V_{SHDN} = V_+ = 2.6V$		1.00		
Quiescent Power Supply Current	I_Q	$V_{IN} = 0V, I_O = 0A,$ $V_{SHDN} = V_+$	$V_+ = 5.0V, \text{No Load}$	4.90	6	mA
			$V_+ = 5.0V, 8\ \Omega \text{ Load}$	5.20	8	
			$V_+ = 3.3V, \text{No Load}$	4.30	5.5	
			$V_+ = 3.3V, 8\ \Omega \text{ Load}$	4.70	7.5	
			$V_+ = 2.6V, \text{No Load}$	4.20		
			$V_+ = 2.6V, 8\ \Omega \text{ Load}$	4.30		
Shutdown Voltage Input High	V_{SDIH}		1.2			V
Shutdown Voltage Input Low	V_{SDIL}			0.4		
Output Power	P_O	$f = 1\text{kHz},$ $\text{THD+N} < 1\%$	$V_+ = 5.0V$	1.10		W
			$V_+ = 3.6V$	0.60		
			$V_+ = 3.0V$	0.40		
			$V_+ = 2.6V$	0.30		
Total Harmonic Distortion + Noise	THD+N	$P_O = 0.6W_{rms}, f = 1\text{kHz}, V_+ = 5.0V$		0.01		%
Power Supply Rejection Ratio	PSRR	$f = 217\text{Hz (Note 1)}$	$V_+ = 5.0V$	-80		dB
			$V_+ = 3.6V$	-88		
			$V_+ = 3.0V$	-96		
			$V_+ = 2.6V$	-92		
		$f = 1\text{kHz (Note 1)}$	$V_+ = 5.0V$	-74		
			$V_+ = 3.6V$	-80		
			$V_+ = 3.0V$	-82		
			$V_+ = 2.6V$	-80		
Common Mode Rejection Ratio	CMRR	$f = 217\text{Hz}, V_{CM} = 200\text{mV}_{PP}, V_+ = 5.0V \text{ (Note 2)}$		-70		dB
Wake-Up Time	T_{WU}	$C_B = 1\ \mu\text{F}$	$V_+ = 5.0V$	115		ms
			$V_+ = 3.6V$	100		
			$V_+ = 3.0V$	100		
			$V_+ = 2.6V$	90		
Shutdown Time	T_{SDT}		$V_+ = 5.0V$	15.0		μs
			$V_+ = 3.6V$	16.8		
			$V_+ = 3.0V$	18.8		
			$V_+ = 2.6V$	18.8		

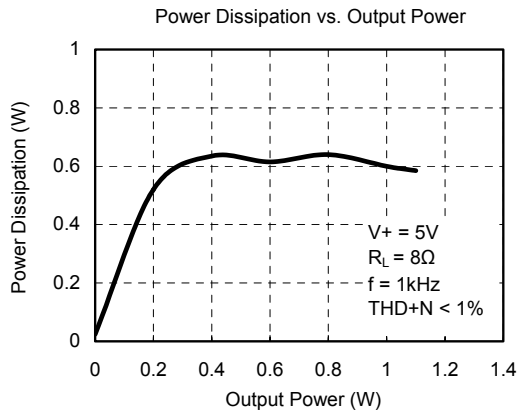
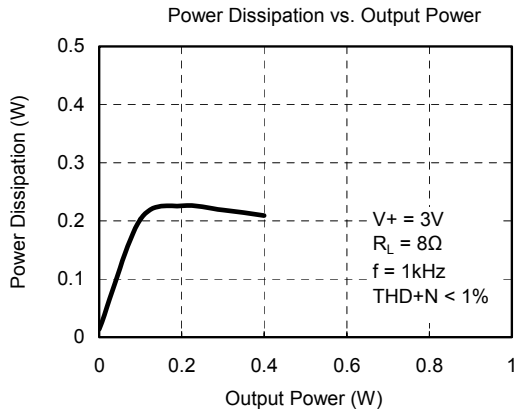
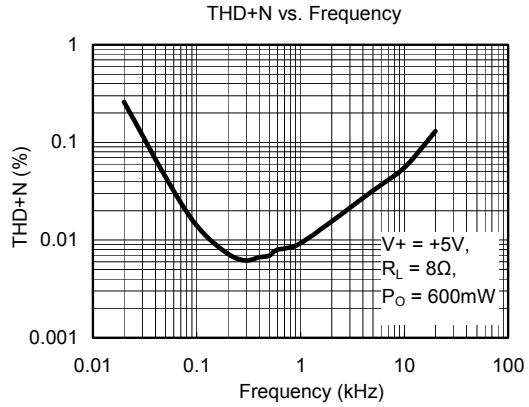
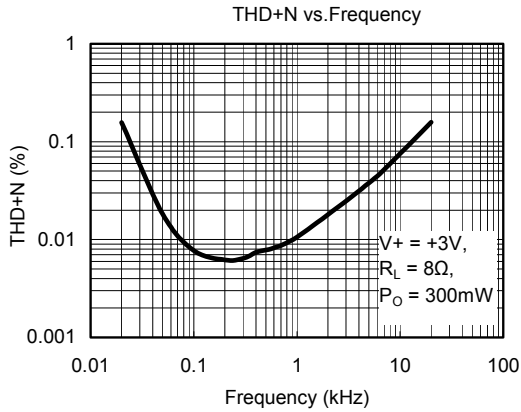
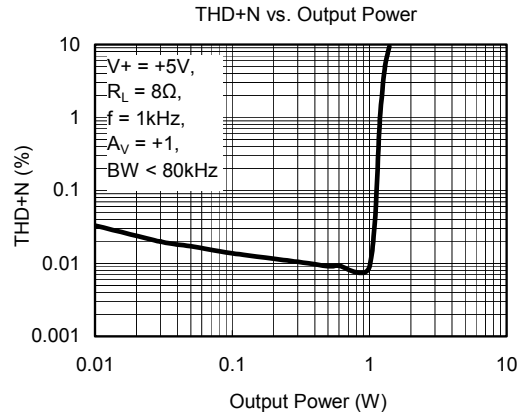
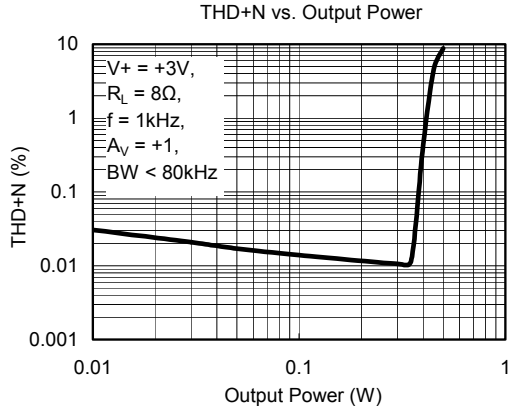
Specifications subject to changes without notice.

Note 1: 10Ω terminated input.**Note 2:** CMRR is affected by the matching between external gain-setting resistor ratios.

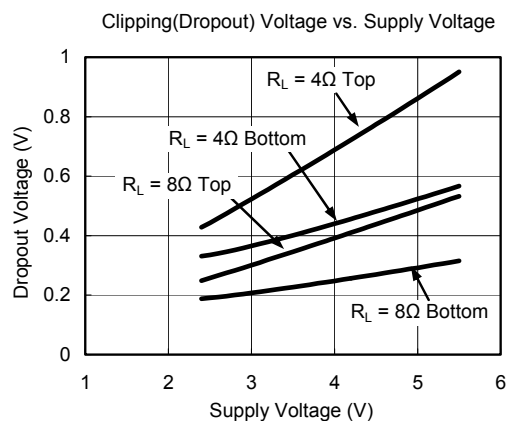
TYPICAL PERFORMANCE CHARACTERISTICS



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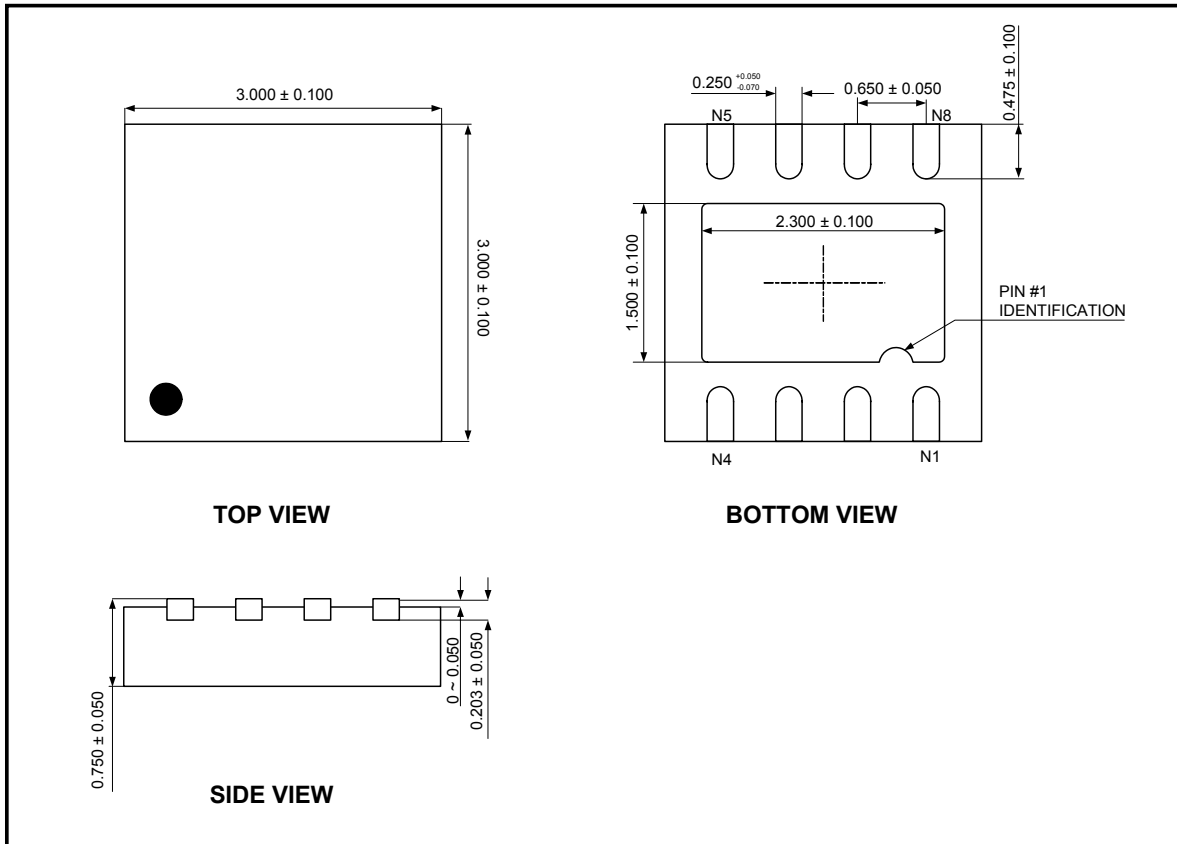


TYPICAL PERFORMANCE CHARACTERISTICS



PACKAGE OUTLINE DIMENSIONS

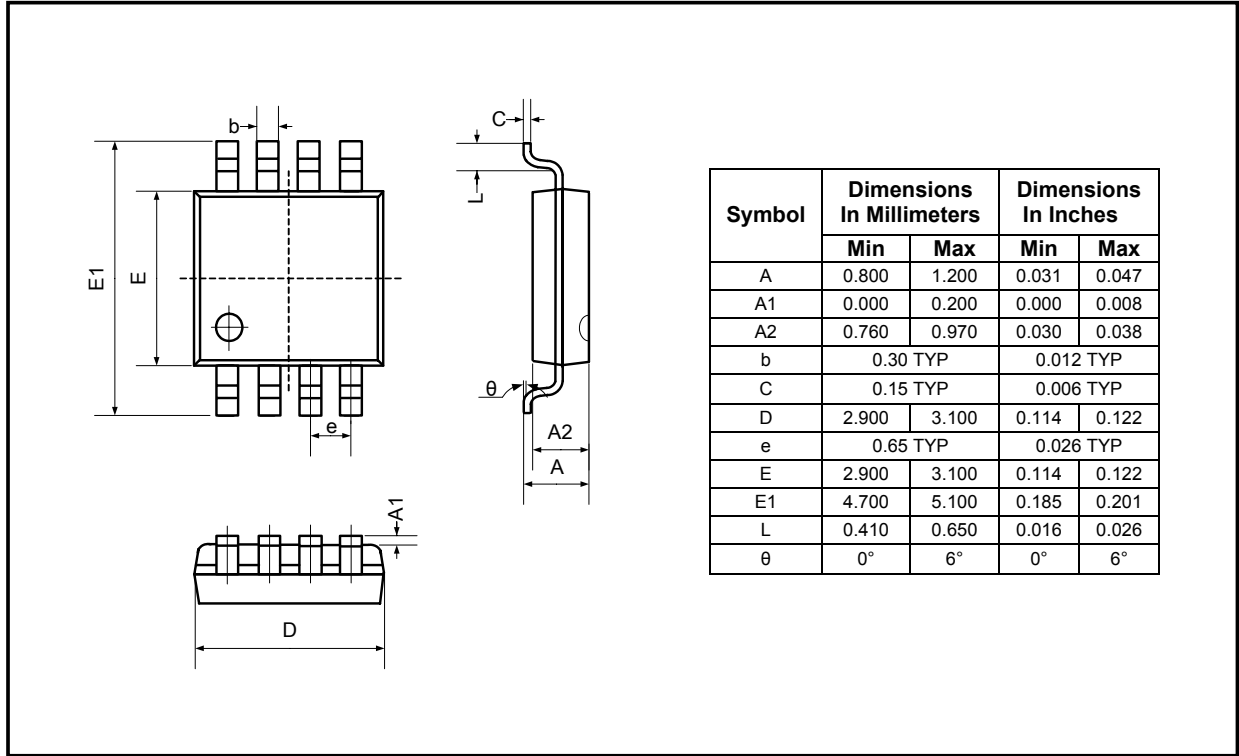
DFN-8 (3mm × 3mm)



Note: All linear dimensions are in millimeters.

PACKAGE OUTLINE DIMENSIONS

MSOP-8



05/2008 REV. A

SGMICRO is dedicated to provide high quality and high performance analog IC products to customers. All SGMICRO products meet the highest industry standards with strict and comprehensive test and quality control systems to achieve world-class consistency and reliability.

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