

GENERAL DESCRIPTION

The SGM4890 is a fully-integrated audio power amplifier which operates from 2.5V to 5.5V supply voltage. It can deliver 1.1W into an 8Ω BTL load from 5V supply at THD+N = 1%. It is designed for portable application that needs low-component count.

The SGM4890 has a low power consumption shutdown mode and thermal shutdown protection.

The SGM4890 is applied to low power portable systems. Output coupling capacitors or bootstrap capacitors are not needed.

The SGM4890 provides an externally controlled gain (with resistors), as well as an externally controlled turn-on time (with the bypass capacitor) for maximum flexibility.

The SGM4890 is available in a Green MSOP-8 package. It operates over an ambient temperature range of -40°C to +85°C.

FEATURES

- **Supply Voltage Range: 2.5V to 5.5V**
- **1.1W into 8Ω BTL Load from 5V Power Supply at THD+N = 1% (Typical, per Channel)**
- **Shutdown Current: 0.01μA (TYP)**
- **High PSRR**
- **Fast Turn-On Time**
- **Unity-Gain Stable**
- **Thermal Shutdown Protection**
- **-40°C to +85°C Operating Temperature Range**
- **Available in a Green MSOP-8 Package**

APPLICATIONS

Mobile Phones

TVs

GPS

Portable Systems

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM4890	MSOP-8	-40°C to +85°C	SGM4890YMS/TR	SGM4890 YMS XXXXX	Tape and Reel, 4000

NOTE: XXXXX = Date Code and Vendor Code.

Green (RoHS & HSF): SG Micro Corp defines "Green" to mean Pb-Free (RoHS compatible) and free of halogen substances. If you have additional comments or questions, please contact your SGMICRO representative directly.

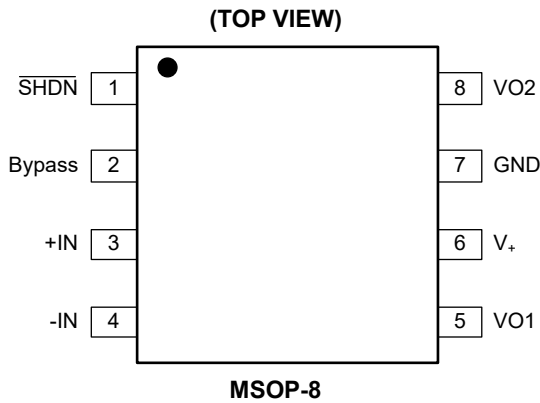
ABSOLUTE MAXIMUM RATINGS

Supply Voltage.....6V
 Input Voltage.....-0.3V to (V+) + 0.3V
 Storage Temperature Range-65°C to +150°C
 Junction Temperature.....+150°C
 Lead Temperature Range (Soldering, 10s).....+260°C
 ESD Susceptibility
 HBM.....2000V
 MM.....200V

RECOMMENDED OPERATING CONDITIONS

Supply Voltage Range2.5V to 5.5V
 Operating Temperature Range-40°C to +85°C

PIN CONFIGURATION



OVERSTRESS CAUTION

Stresses beyond those listed in Absolute Maximum Ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect reliability. Functional operation of the device at any conditions beyond those indicated in the Recommended Operating Conditions section is not implied.

ESD SENSITIVITY CAUTION

This integrated circuit can be damaged if ESD protections are not considered carefully. 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 even small parametric changes could cause the device not to meet the published specifications.

DISCLAIMER

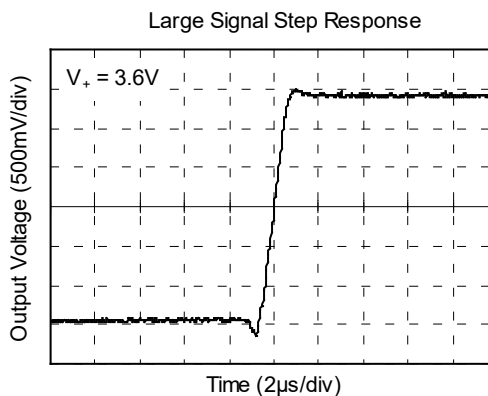
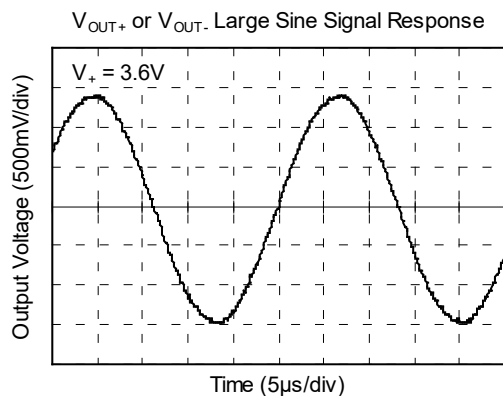
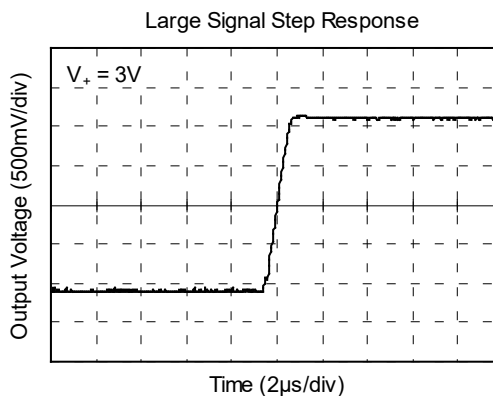
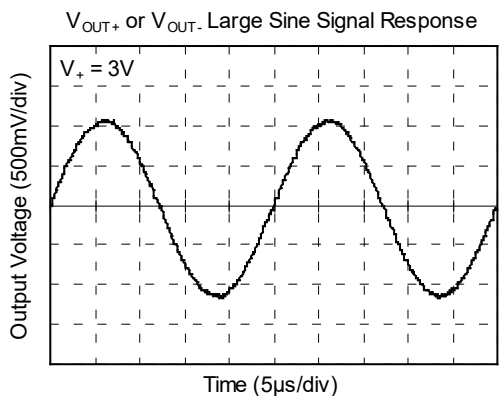
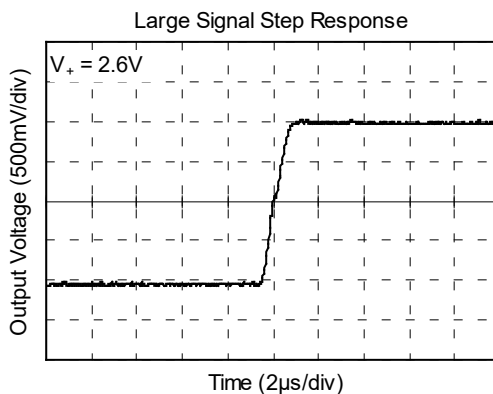
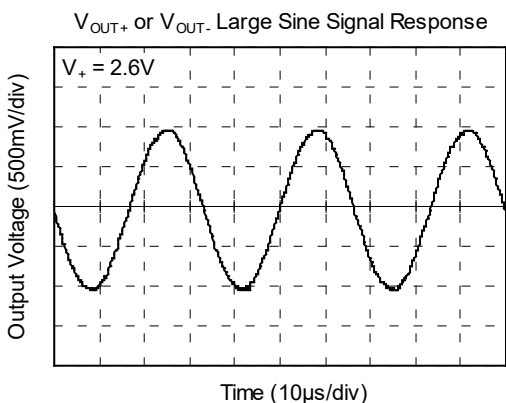
SG Micro Corp reserves the right to make any change in circuit design, or specifications without prior notice.

ELECTRICAL CHARACTERISTICS

(T_A = +25°C, unless otherwise specified.)

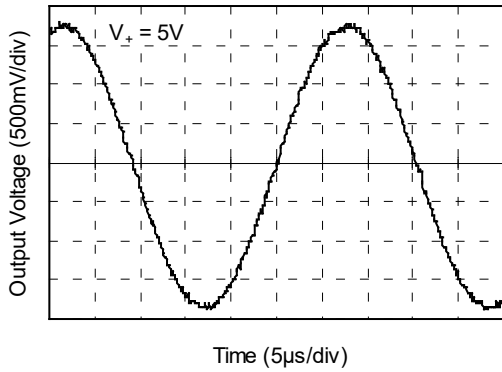
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS	
Quiescent Power Supply Current	I _Q	V _{IN} = 0V, I _O = 0A	V ₊ = +5.0V, No Load		4	8	mA
			V ₊ = +5.0V, 8Ω Load		6	10	
			V ₊ = +3.6V, No Load		3.7		
			V ₊ = +3.6V, 8Ω Load		5.7		
			V ₊ = +3.0V, No Load		3.5	7	
			V ₊ = +3.0V, 8Ω Load		5.5	9	
			V ₊ = +2.6V, No Load		3.3		
			V ₊ = +2.6V, 8Ω Load		5.3		
Shutdown Current	I _{SD}	V _{SHUTDOWN} = 0V		0.01	4.0	μA	
Shutdown Voltage Input High	V _{SDIH}		1.2			V	
Shutdown Voltage Input Low	V _{SDIL}				0.4	V	
Output Offset Voltage	V _{OS}			1	50	mV	
Output Power (8Ω)	P _O	f = 1kHz, THD+N = 1%	V ₊ = +5.0V		1.10		W
			V ₊ = +3.6V		0.58		
			V ₊ = +3.0V		0.40		
			V ₊ = +2.6V		0.30		
Total Harmonic Distortion + Noise	THD+N	P _O = 0.4Wrms, f = 1kHz		0.01		%	
Power Supply Rejection Ratio	PSRR	f = 217Hz	V ₊ = +5.0V		-66		dB
			V ₊ = +3.6V		-63		
			V ₊ = +3.0V		-63		
			V ₊ = +2.6V		-62		
		f = 1kHz	V ₊ = +5.0V		-72		
			V ₊ = +3.6V		-68		
			V ₊ = +3.0V		-66		
			V ₊ = +2.6V		-64		
Wake-Up Time	T _{WU}	C _{BYPASS} = 1μF	V ₊ = +5.0V		110		ms
			V ₊ = +3.6V		110		
			V ₊ = +3.0V		100		
			V ₊ = +2.6V		100		
Shutdown Time	T _{SDT}	8Ω Load	V ₊ = +5.0V		10		μs
			V ₊ = +3.6V		16		
			V ₊ = +3.0V		17.8		
			V ₊ = +2.6V		17.8		

TYPICAL PERFORMANCE CHARACTERISTICS

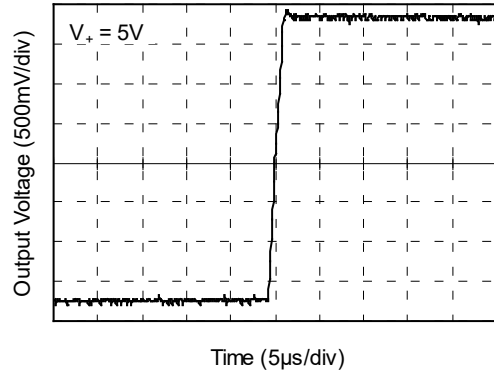


TYPICAL PERFORMANCE CHARACTERISTICS (continued)

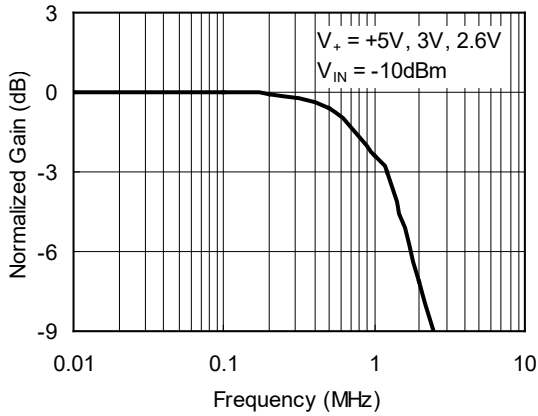
V_{OUT+} or V_{OUT-} . Large Sine Signal Response



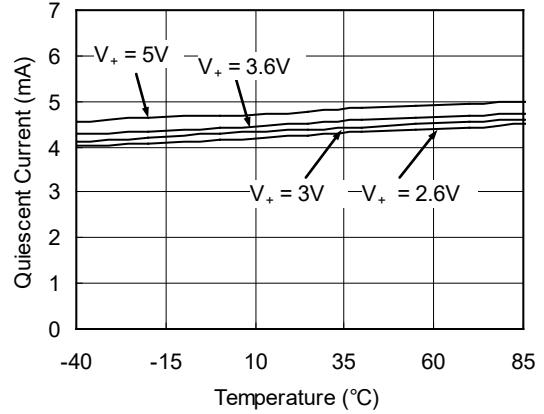
Large Signal Step Response



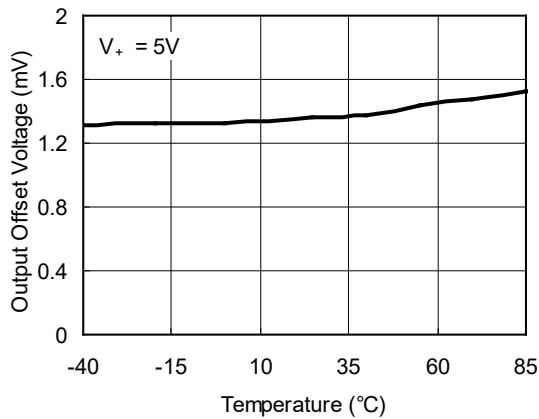
Small Signal Frequency Response



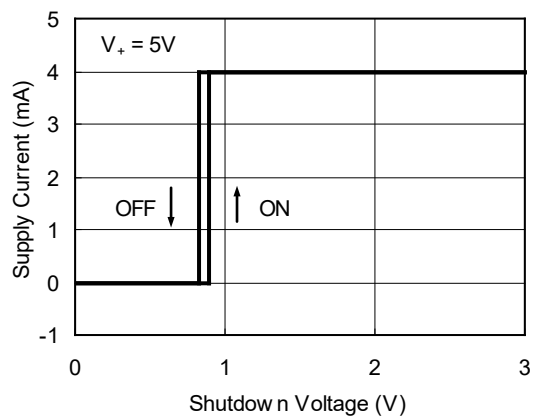
Quiescent Current vs. Temperature



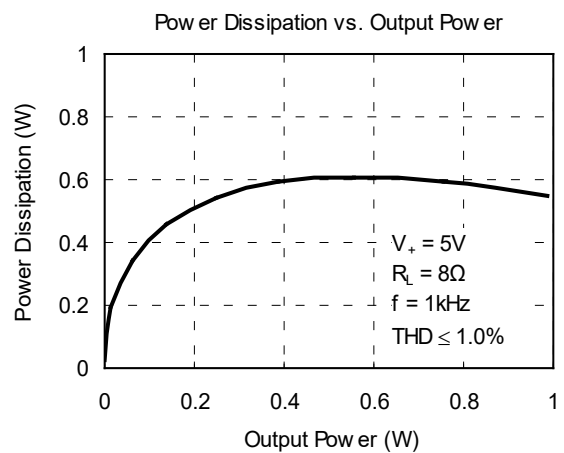
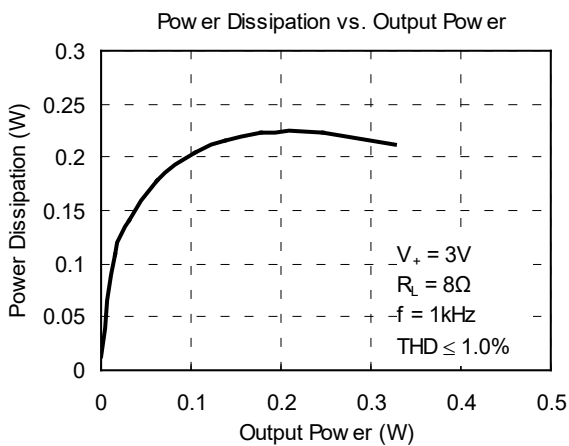
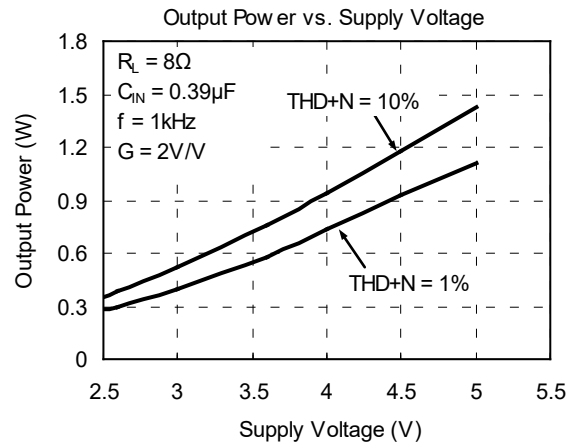
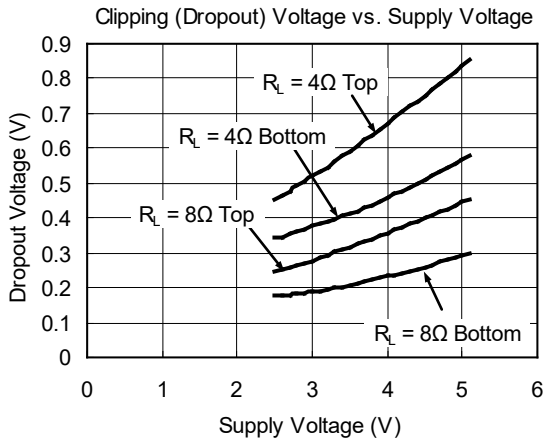
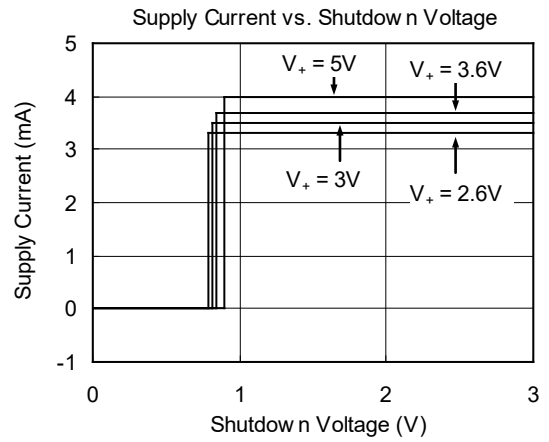
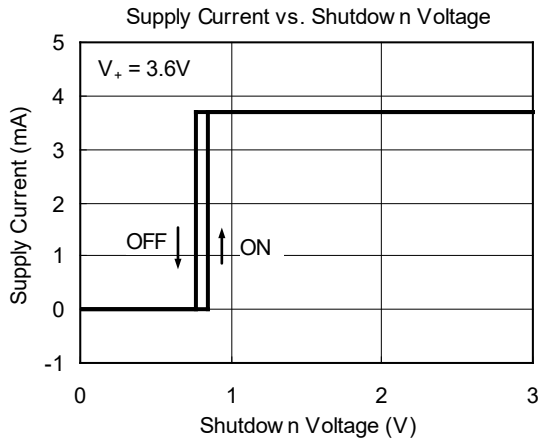
Output Offset Voltage vs. Temperature



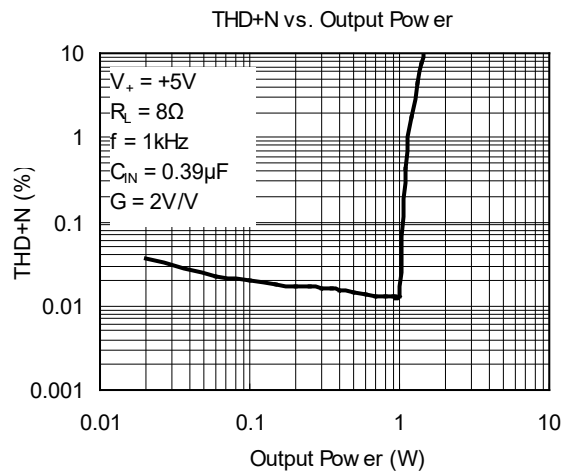
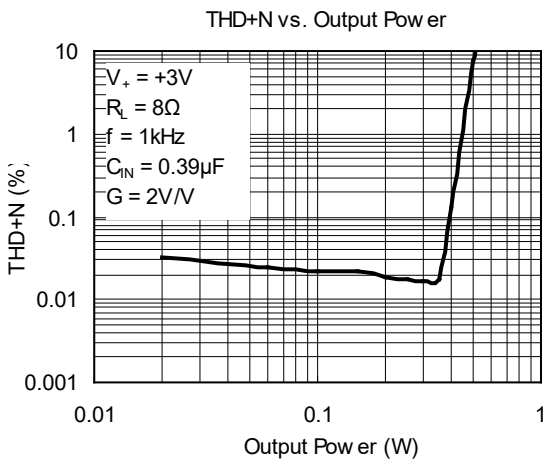
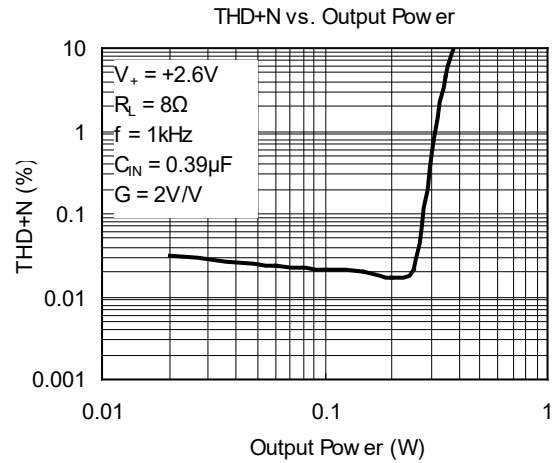
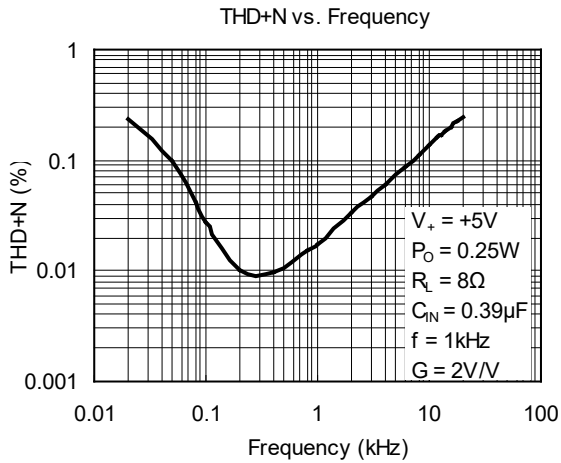
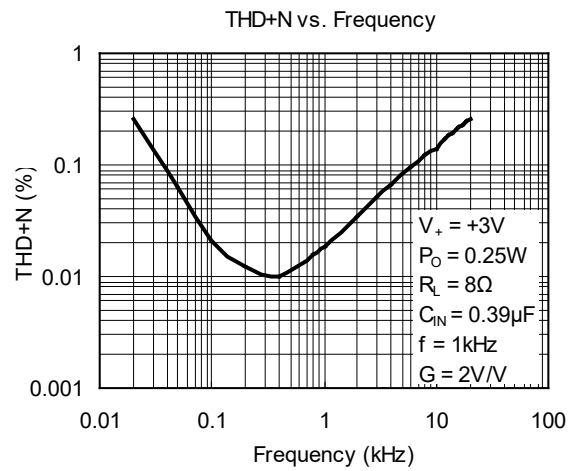
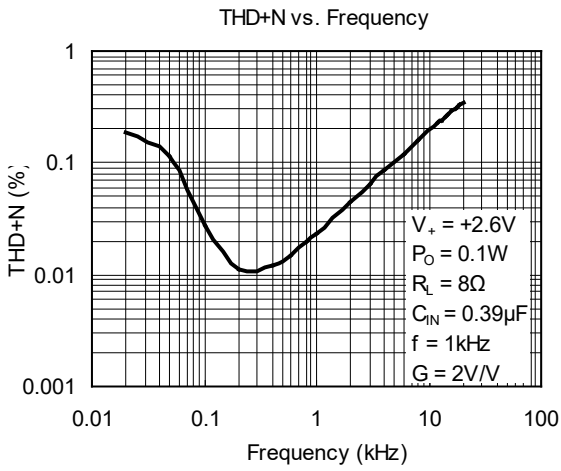
Supply Current vs. Shutdown Voltage



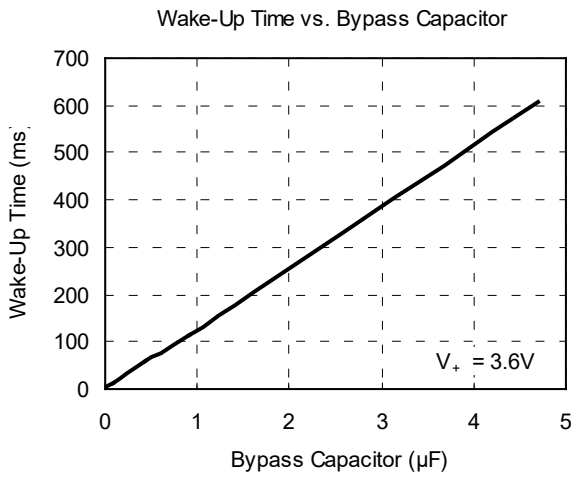
TYPICAL PERFORMANCE CHARACTERISTICS (continued)



TYPICAL PERFORMANCE CHARACTERISTICS (continued)



TYPICAL PERFORMANCE CHARACTERISTICS (continued)



REVISION HISTORY

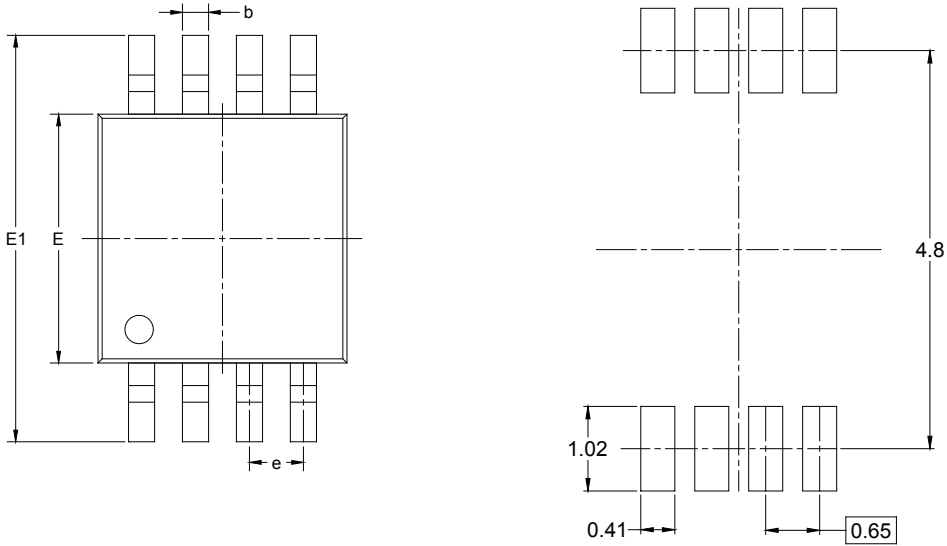
NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

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Updated Package/Ordering Information section.....	2

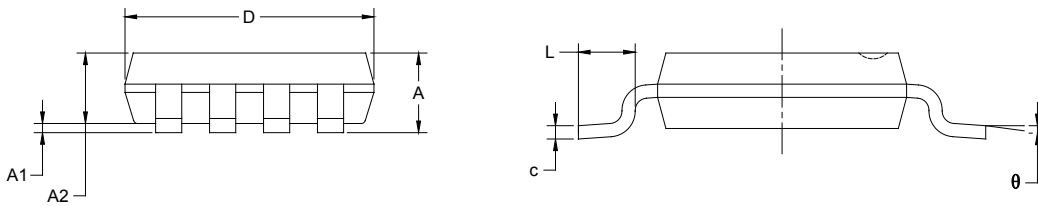
JANUARY 2014 – REV.A.4 to REV.B	Page
Deleted WLCSP-1.5×1.5-9B package.....	All

PACKAGE OUTLINE DIMENSIONS

MSOP-8



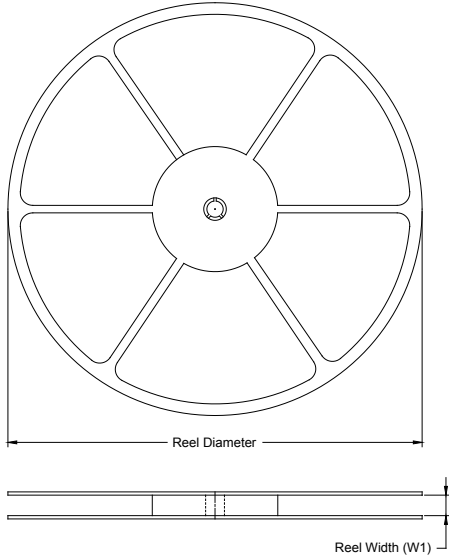
RECOMMENDED LAND PATTERN (Unit: mm)



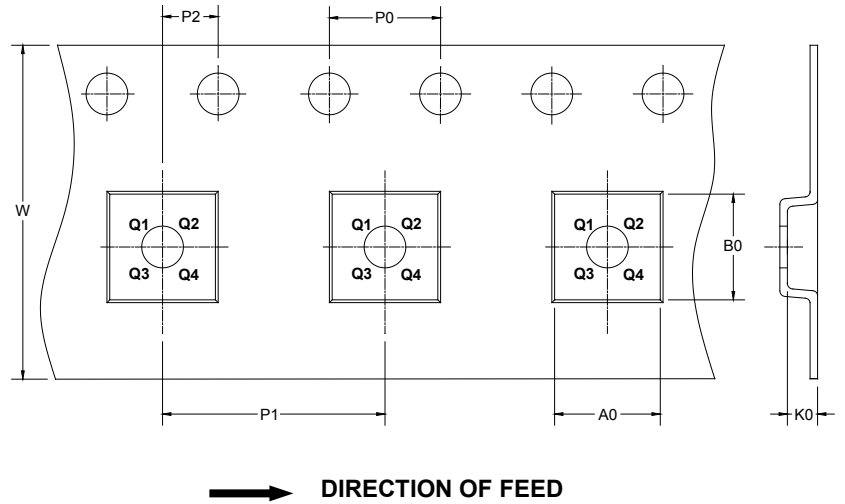
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
e	0.650 BSC		0.026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

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
MSOP-8	13"	12.4	5.20	3.30	1.50	4.0	8.0	2.0	12.0	Q1

000001

PACKAGE INFORMATION

CARTON BOX DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF CARTON BOX

Reel Type	Length (mm)	Width (mm)	Height (mm)	Pizza/Carton
13"	386	280	370	5

DD0002