



SGM4890

1.1W Audio Power Amplifier

GENERAL DESCRIPTION

The SGM4890 is a 1.1W, fully integrated, audio power amplifier. It is designed to maximize audio performance in portable applications such as mobile phone. The portable application requires audio power amplifier has minimum of external components and can operate from a single 2.5V to 5.5V power supply. SGM4890 is capable of delivering 1.1W of continuous output power with typically 1% distortion (THD+N) when it drives an 8Ω speaker from a 5.0V power supply.

The SGM4890 features a low power consumption shutdown mode, which is achieved by driving the shutdown pin with a logic low. Additionally, the SGM4890 features an internal thermal shutdown protection mechanism.

The SGM4890 does not require output coupling capacitors or bootstrap capacitors, and therefore is ideally suited for mobile phone and other low voltage applications where minimal power consumption is a primary requirement.

For maximum flexibility, the SGM4890 provides an externally controlled gain (with resistors), as well as an externally controlled turn-on time (with the bypass capacitor). When using a 1μF bypass capacitor, it offers 110ms wake-up time when V_+ is equal to 5.0V.

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

FEATURES

- Ideal for Notebook Computers, PDAs, and Other Small Portable Audio Devices
- 1.1W into 8Ω BTL Load from 5V Supply at THD+N = 1% (TYP)
- Excellent PSRR: Direct Connection to Battery
- Fast Turn-On Time
- Unity Gain Stable
- 2.5V to 5.5V Operation
- Shutdown Current: 0.01μA (TYP)
- Shutdown Pin is Compatible with 1.8V Logic
- -40°C to +85°C Operating Temperature Range
- Available in Green MSOP-8 Package

APPLICATIONS

Portable Systems
MP3 Players
Mobile Phone
PDAs
GPS

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 Range..... -0.3V to (V₊) + 0.3V
 Junction Temperature+150°C
 Storage Temperature Range.....-65°C to +150°C
 Lead Temperature (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

OVERSTRESS CAUTION

Stresses beyond those listed may cause permanent damage to the device. Functional operation of the device at these or any other conditions beyond those indicated in the operational section of the specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

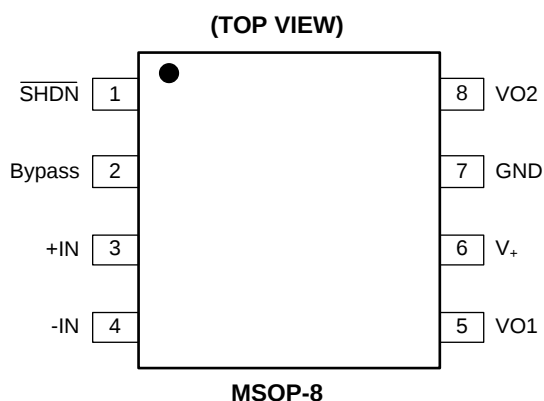
ESD SENSITIVITY CAUTION

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.

DISCLAIMER

SG Micro Corp reserves the right to make any change in circuit design, specification or other related things if necessary without notice at any time.

PIN CONFIGURATION

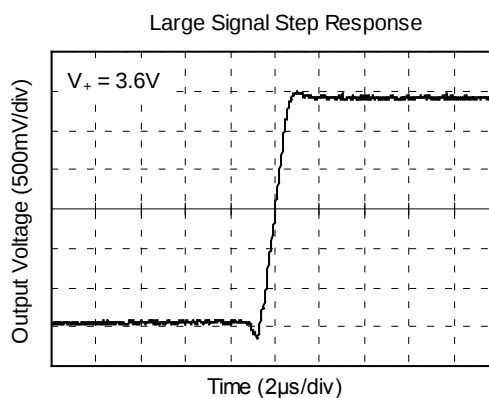
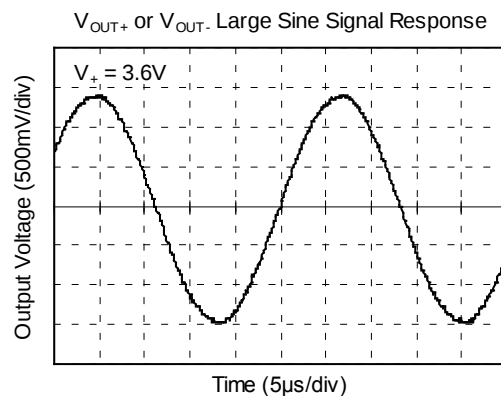
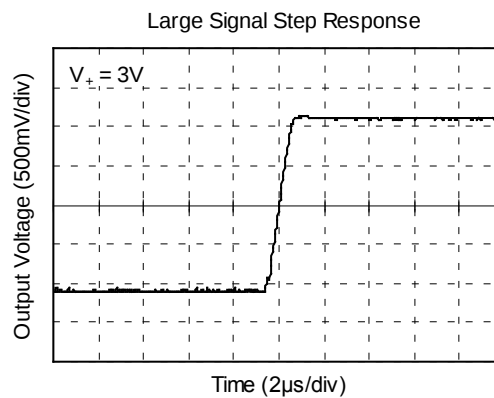
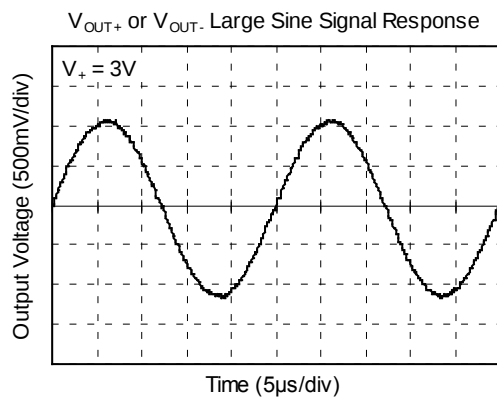
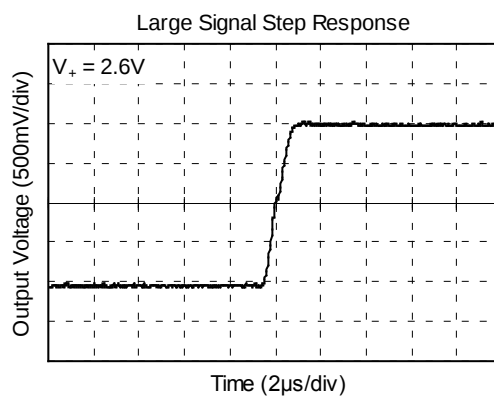
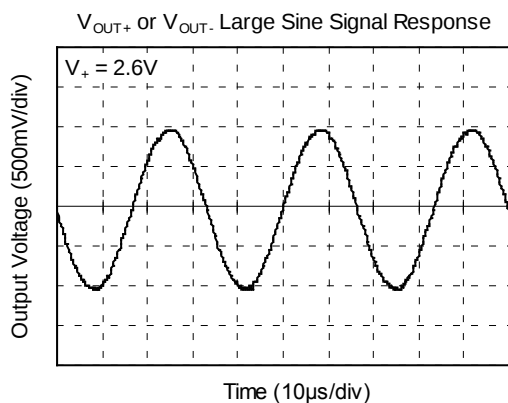


ELECTRICAL CHARACTERISTICS

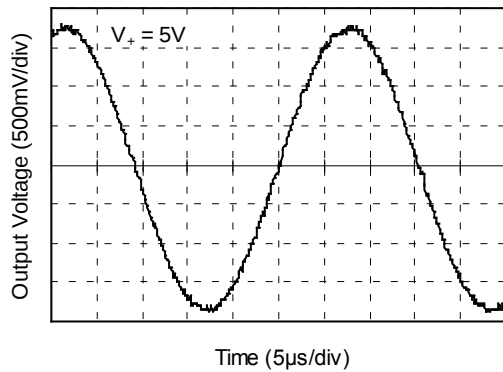
(T_A = +25°C, unless otherwise specified.)

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 = 0.4W _{rms} , 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		

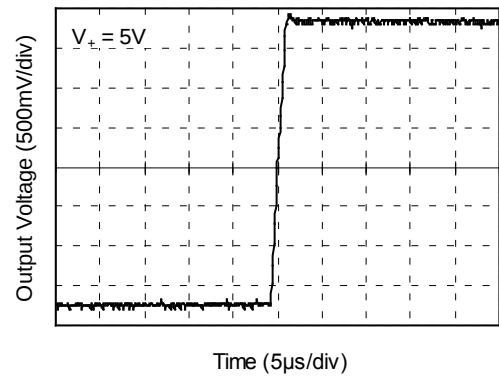
TYPICAL PERFORMANCE CHARACTERISTICS



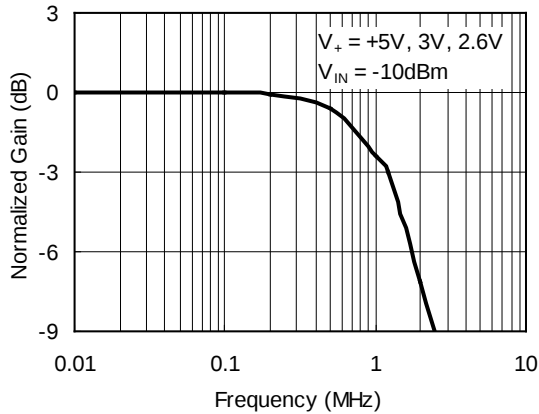
TYPICAL PERFORMANCE CHARACTERISTICS (continued)

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

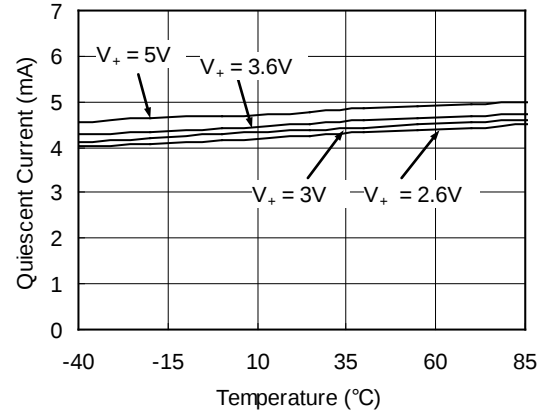
Large Signal Step Response



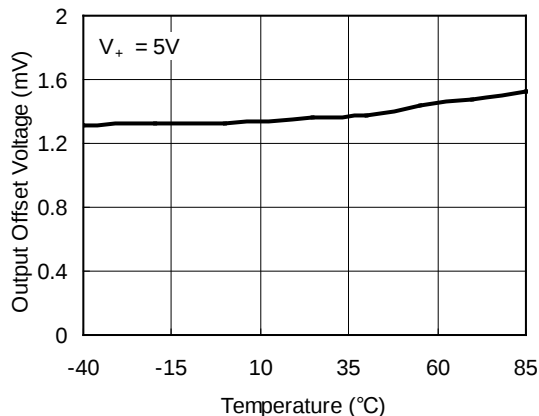
Small Signal Frequency Response



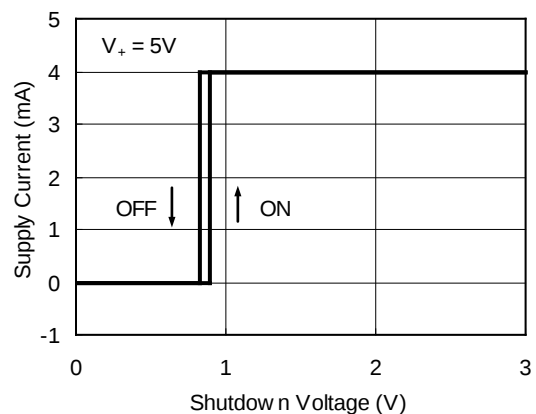
Quiescent Current vs. Temperature



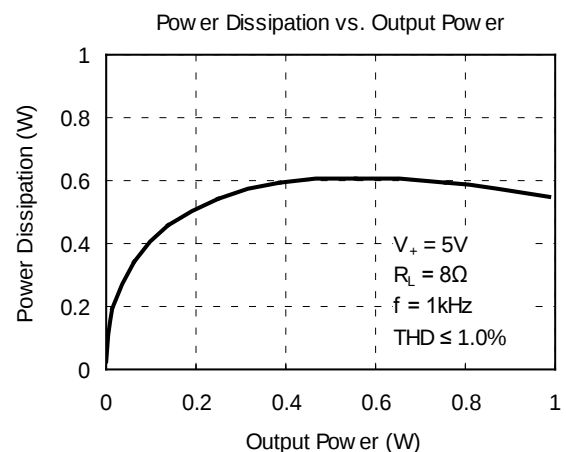
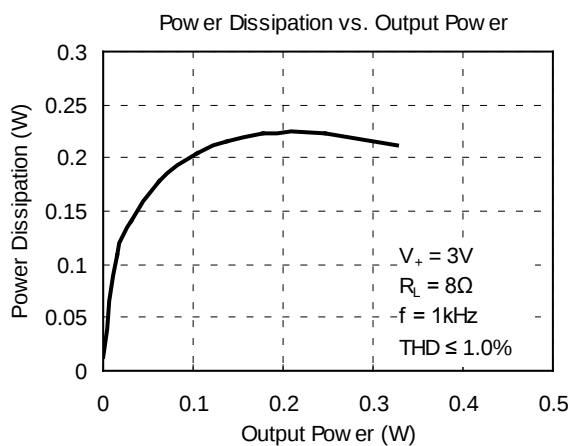
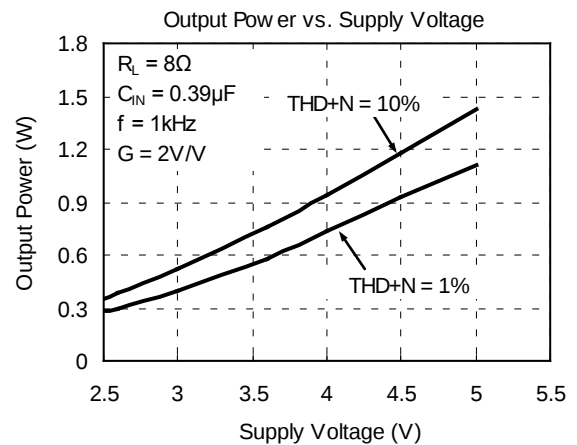
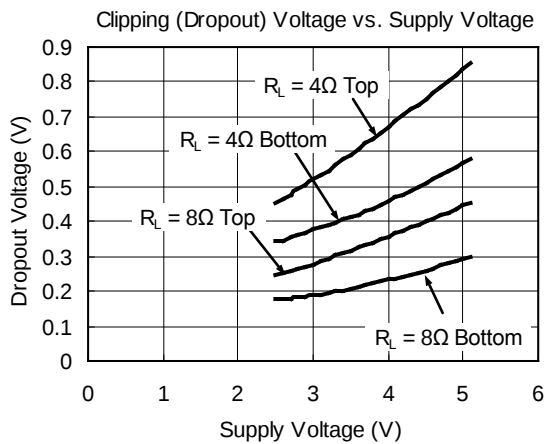
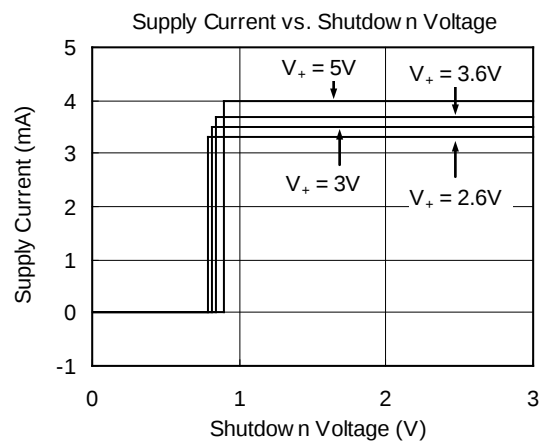
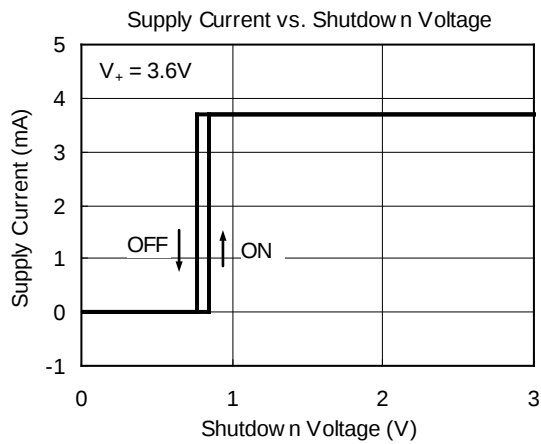
Output Offset Voltage vs. Temperature



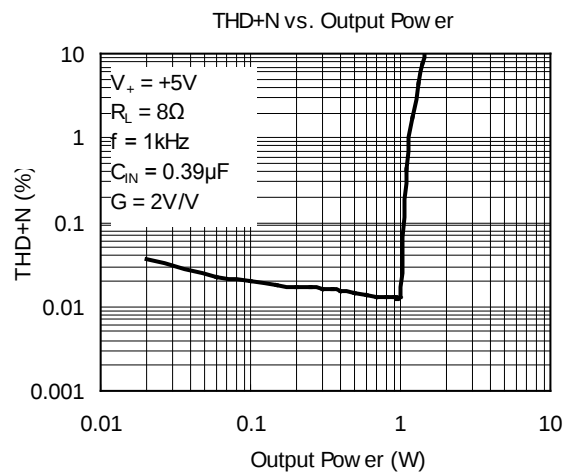
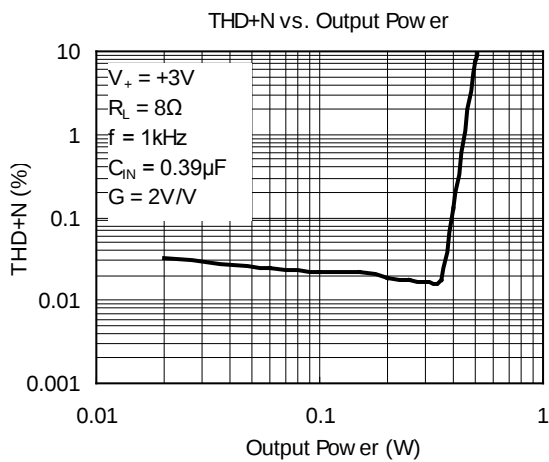
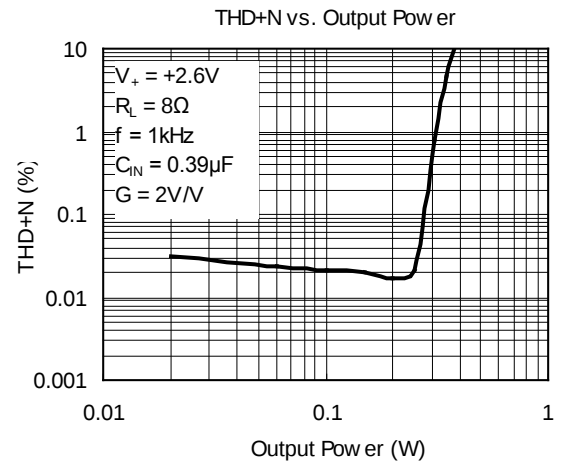
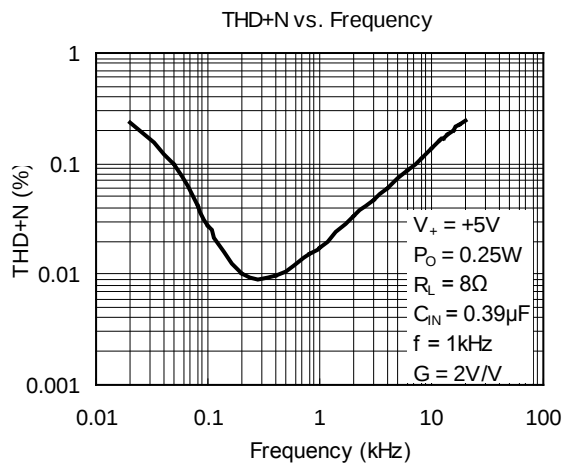
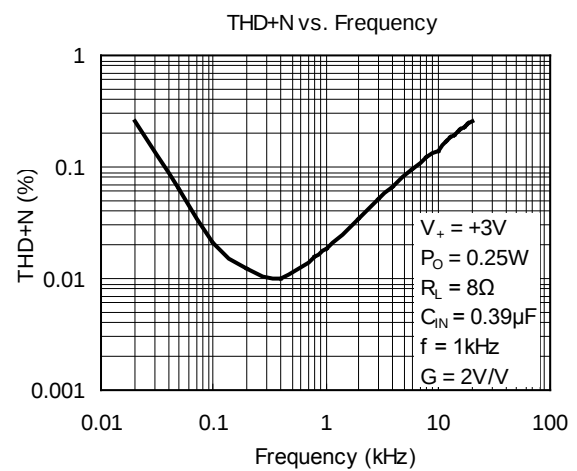
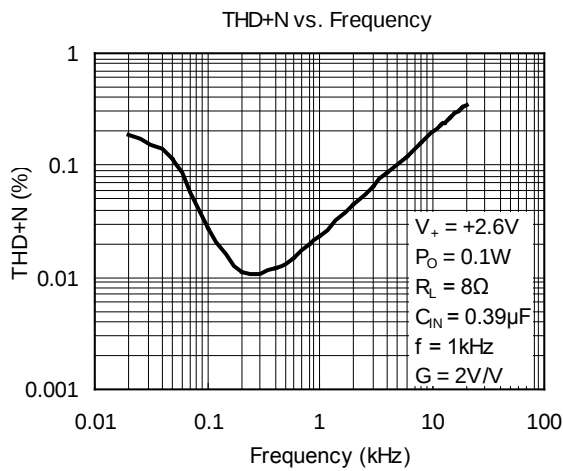
Supply Current vs. Shutdown Voltage



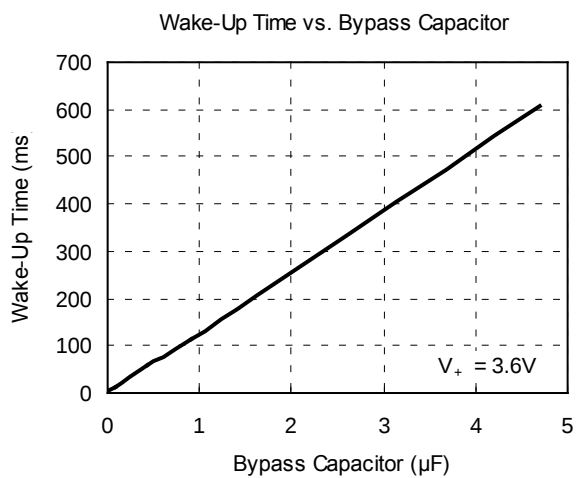
TYPICAL PERFORMANCE CHARACTERISTICS (continued)



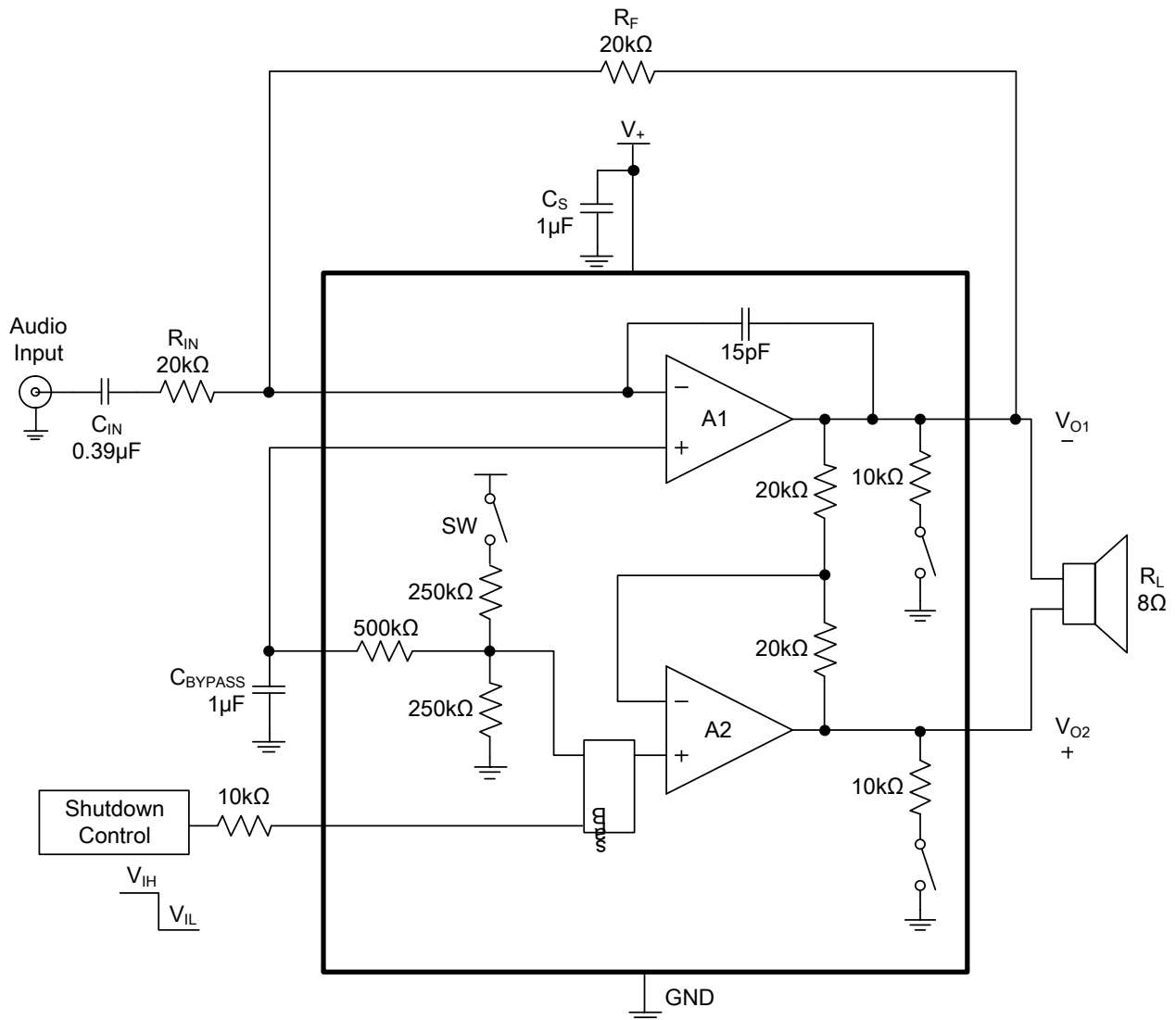
TYPICAL PERFORMANCE CHARACTERISTICS (continued)



TYPICAL PERFORMANCE CHARACTERISTICS (continued)



TYPICAL APPLICATION

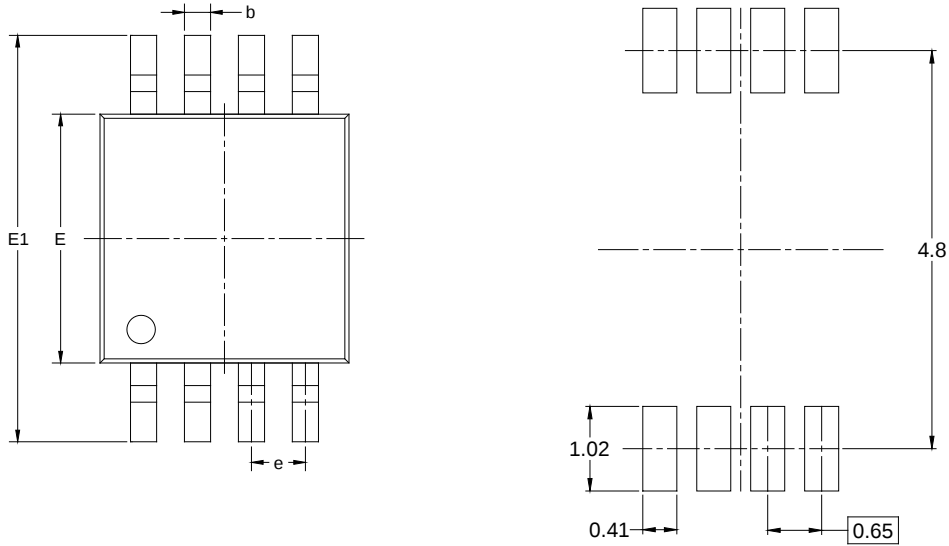


NOTE:

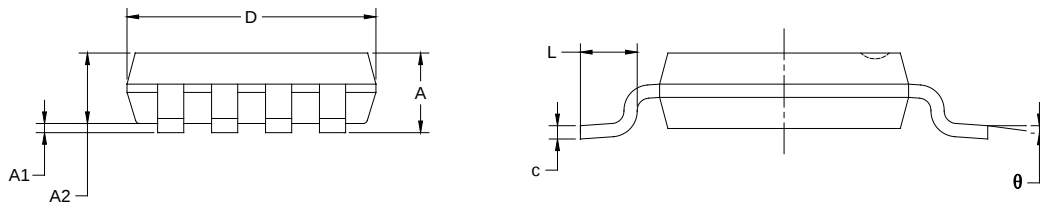
1. A 10kΩ resistor must be serially connected to $\overline{\text{SHDN}}$ pin.

PACKAGE OUTLINE DIMENSIONS

MSOP-8



RECOMMENDED LAND PATTERN (Unit: mm)

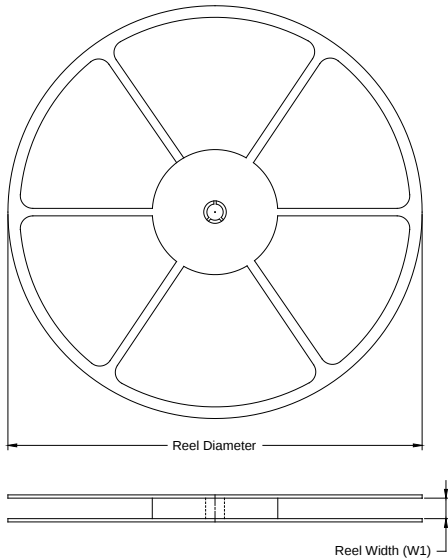


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
e	0.650 BSC		0.026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

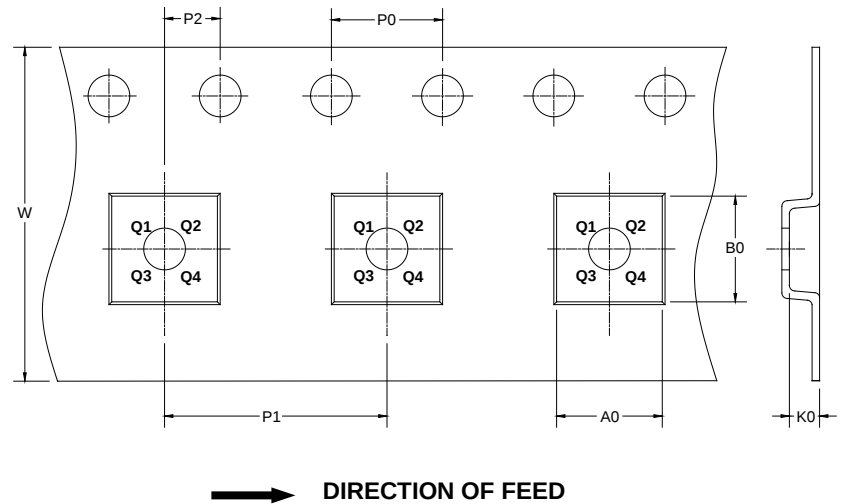
PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



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

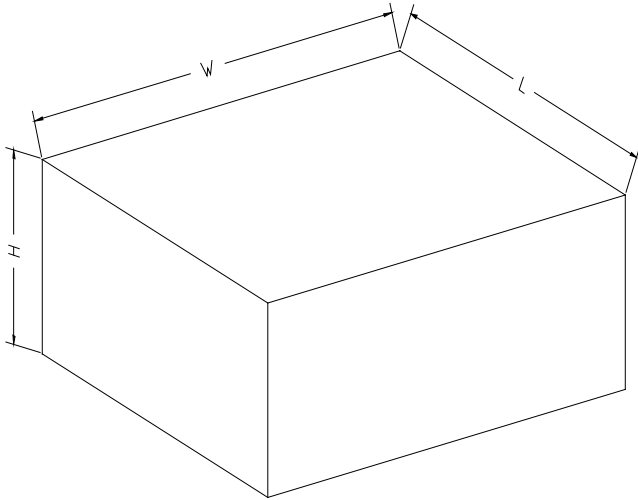
KEY PARAMETER LIST OF TAPE AND REEL

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