SGM4812
132mW Differential Input, Stereo Audio Power Amplifier

GENERAL DESCRIPTION

The SGM4812 is a stereo audio power amplifier with differential inputs. Operating on a single 5V power supply, it delivers 132mW of continuous RMS power per channel into a 16Ω loads with less than 0.1% THD+N. Amplifier gain is externally configured by means of two resistors per input channel and does not require external compensation.

The SGM4812 is designed to maximize audio performance in portable communication device applications such as mobile phone. The portable application requires audio power amplifier has minimum of external components and can operate from a single 2.7V to 5.5V power supply.

The SGM4812 features an externally controlled, active-high, micropower consumption shutdown mode. Additionally, the SGM4812 features an internal thermal shutdown and short circuit protection mechanism.

The SGM4812 is available in MSOP-10 package. It operates over an ambient temperature range of -40°C to +85°C.

FEATURES

- **Dual Channel, Differential Inputs**
- **132mW into 16Ω Load from 5V Power Supply at THD+N = 0.1% Typical (per Channel)**
- **82mW into 32Ω Load from 5V Power Supply at THD+N = 0.1% Typical (per Channel)**
- **2.7V to 5.5V Operation**
- **Thermal Shutdown and Short Circuit Protection**
- **Internal Pop Reduction Circuitry**
- **Internal Mid-Rail Generation**
- **Low Shutdown Current: 0.36μA (TYP) at 5V**
- **Shutdown Pin is compatible with 1.8V Logic**
- **-40°C to +85°C Operating Temperature Range**
- **Available in Green MSOP-10 Package**

APPLICATIONS

Portable Electronic Systems
Notebook Computers
Mobile Phones
PDAs
GPS

PACKAGE/ORDERING INFORMATION

MODEL	ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION	MARKING INFORMATION
SGM4812	SGM4812YMS10/TR	MSOP-10	Tape and Reel, 3000	SGM4812YMS10

ABSOLUTE MAXIMUM RATINGS

Supply Voltage……..……6V
Input Voltage…….. -0.3V to (V_+ + 0.3V)
Storage Temperature Range……. -65℃ to +150℃
Junction Temperature……150℃
Operating Temperature Range……. -40℃ to +85℃
Lead Temperature Range (Soldering 10 sec)
……260℃
ESD Susceptibility
HBM……..4000V
MM……..400V

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.

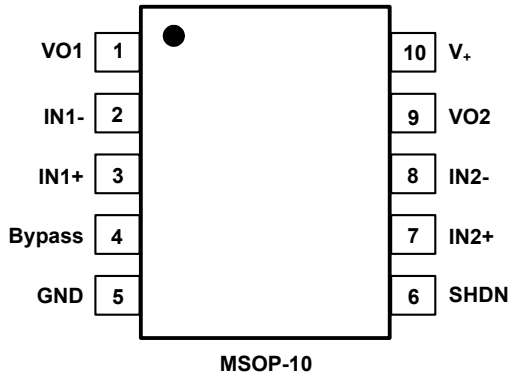
CAUTION

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.

SGMICRO reserves the right to make any change in circuit design, specification or other related things if necessary without notice at any time. Please contact SGMICRO sales office to get the last datasheet.

PIN CONFIGURATION (Top View)

SGM4812YMS10

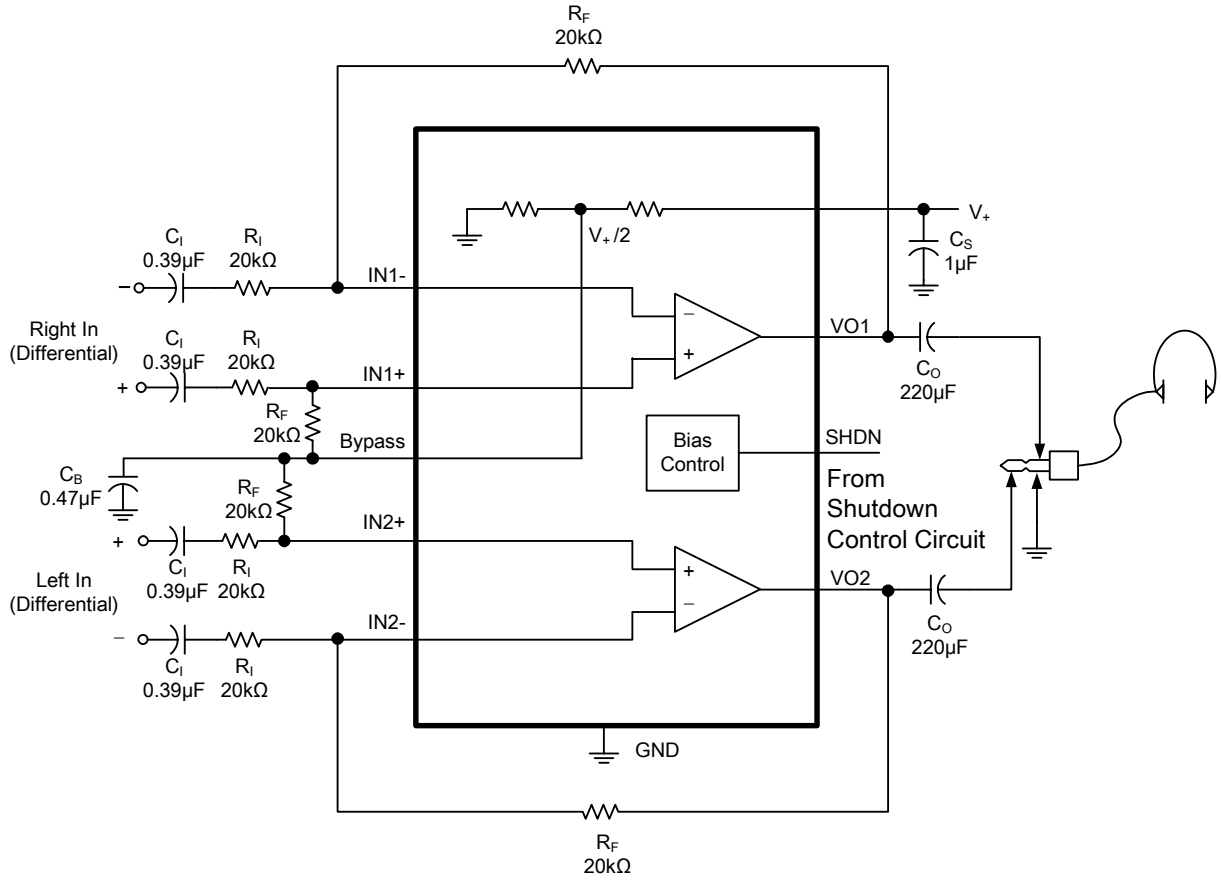


MSOP-10

ELECTRICAL CHARACTERISTICS: T_A = 25℃

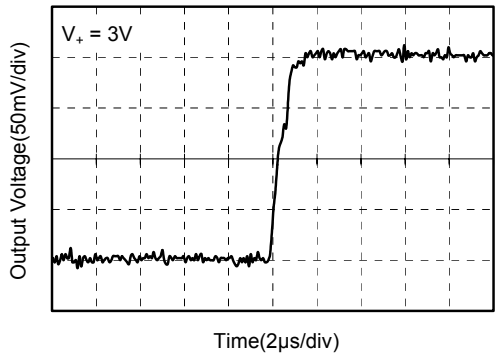
PARAMETER	SYMBOL	CONDITIONS			SGM4812			UNITS
					MIN	TYP	MAX	
Supply Voltage	V_+				2.7		5.5	V
Shutdown Current	I_{SD}	V_{IN} = 0V, V_{SHDN} = V_+	V_+ = 5V			0.36	2	μA
			V_+ = 3.3V			0.13	2	
			V_+ = 2.7V			0.07		
Output Offset Voltage	V_{OS}	V_{IN} = 0V			-15	2	15	mV
Quiescent Power Supply Current	I_Q	V_{IN} = 0V, I_O = 0A		V_+ = 5V		1.86	2.6	mA
				V_+ = 3.3V		1.58	2.5	
				V_+ = 2.7V		1.50		
Shutdown Voltage Input High	V_{SDIH}				1.8			V
Shutdown Voltage Input Low	V_{SDIL}						0.4	
Power Supply Rejection Ratio	PSRR	V_+ = 3.2V to 3.4V				74		dB
		V_+ = 4.9V to 5.1V				70		
Output Power (per Channel)	P_O	f = 1kHz THD+N = 0.1%	V_+ = 5V	R_L = 16Ω		132		mW
				R_L = 32Ω		82		
			V_+ = 3.3V	R_L = 16Ω		46		
				R_L = 32Ω		34		
			V_+ = 3.0V	R_L = 16Ω		34		
				R_L = 32Ω		27		
			V_+ = 2.7V	R_L = 16Ω		22		
				R_L = 32Ω		21		
Total Harmonic Distortion + Noise	THD+N	P_O = 60mW, V_+ = 5V, R_L = 32Ω, f = 20Hz to 20kHz				0.07		%
Power Supply Rejection Ratio	PSRR	f = 217Hz, R_L = 32Ω, Input 10Ω Grounded (C_{BYPASS} = 0.47μF)		V_+ = 5V		-55		dB
				V_+ = 3.3V		-55		
				V_+ = 3.0V		-55		
				V_+ = 2.7V		-55		
		f = 1kHz, R_L = 32Ω, Input 10Ω Grounded (C_{BYPASS} = 0.47μF)		V_+ = 5V		-71		
				V_+ = 3.3V		-71		
				V_+ = 3.0V		-71		
				V_+ = 2.7V		-71		
Wake - up Time	T_{WU}	V_+ = 5V, C_{BYPASS} = 0.47μF				1.8		s
Signal - to - Noise Ratio	SNR	V_+ = 5V, R_L = 32Ω, P_O = 60mW, BW < 80KHz				-96		dB
Crosstalk	X_{talk}	V_+ = 5V, R_L = 32Ω, P_O = 60mW, f = 1kHz				-75		dB

TYPICAL APPLICATION



TYPICAL PERFORMANCE CHARACTERISTICS

Small Signal Step Response



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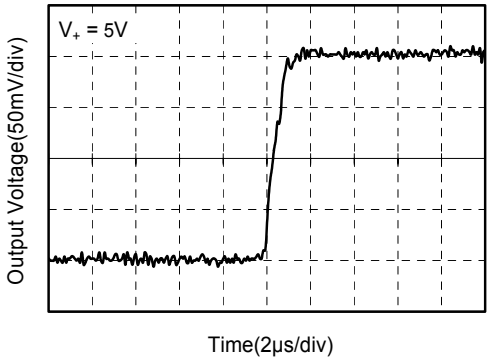
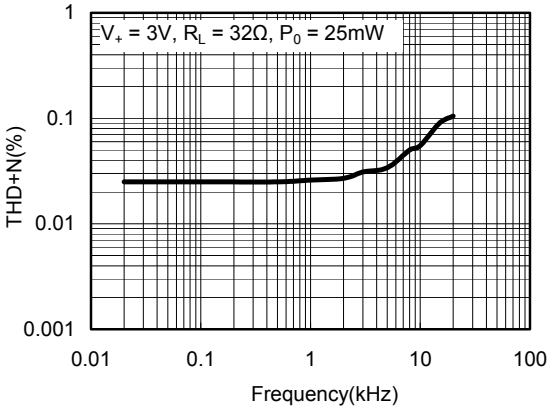


THD+N vs.Frequency



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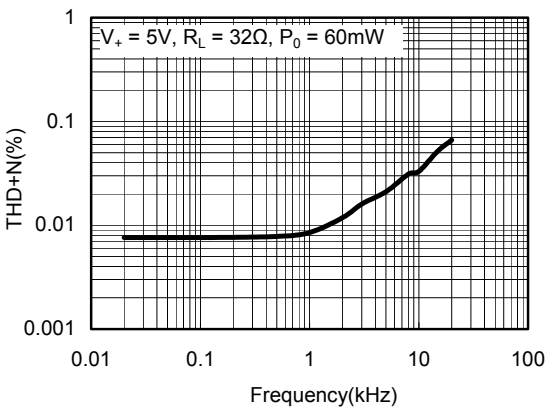

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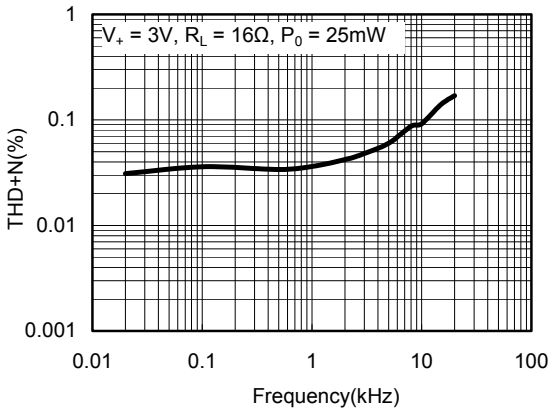
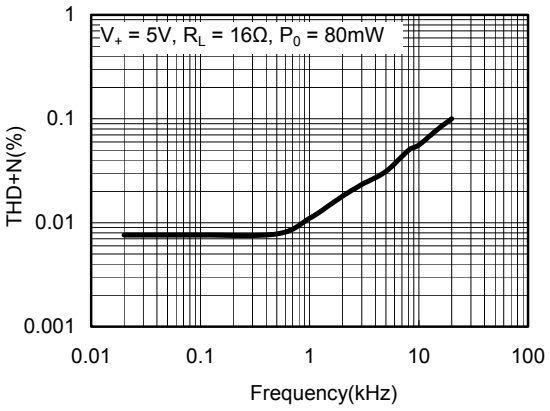
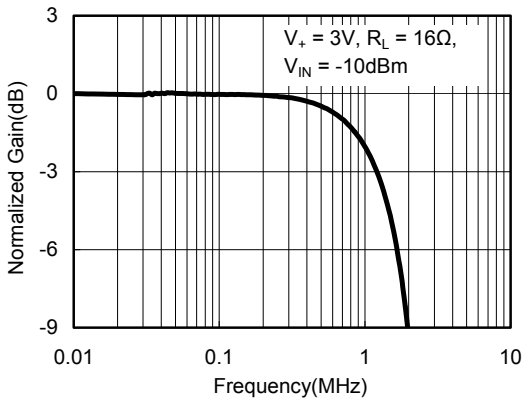


THD+N vs.Frequency



TYPICAL PERFORMANCE CHARACTERISTIC

Small Signal Frequency Response



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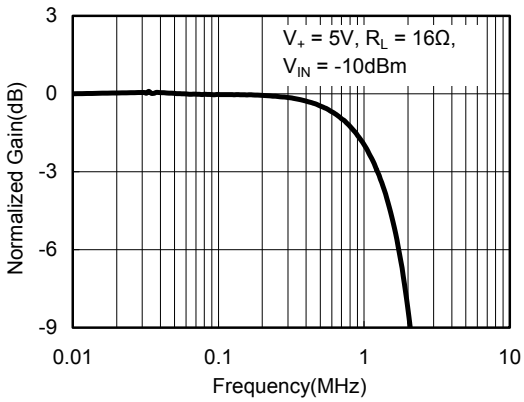

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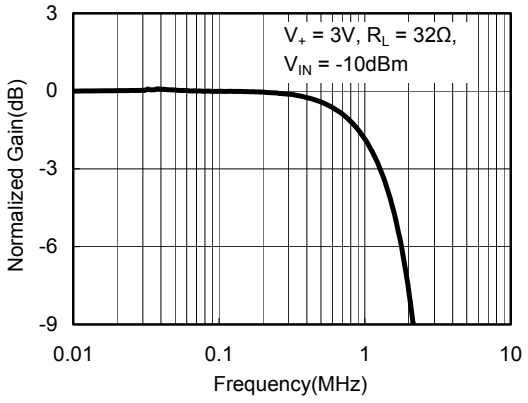

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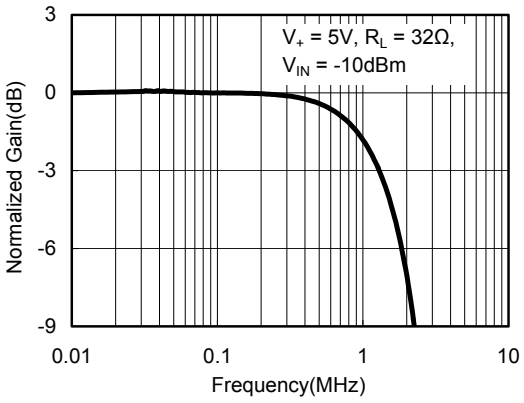
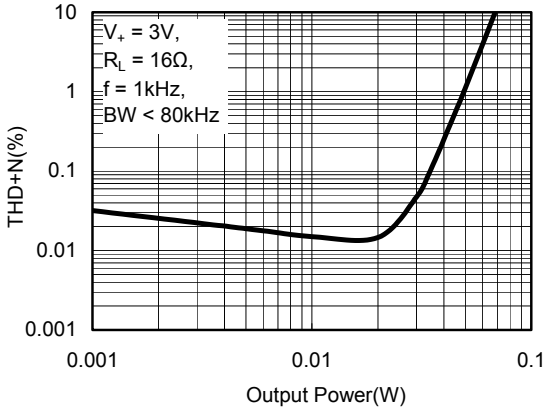


THD+N vs.Output Power per Channel



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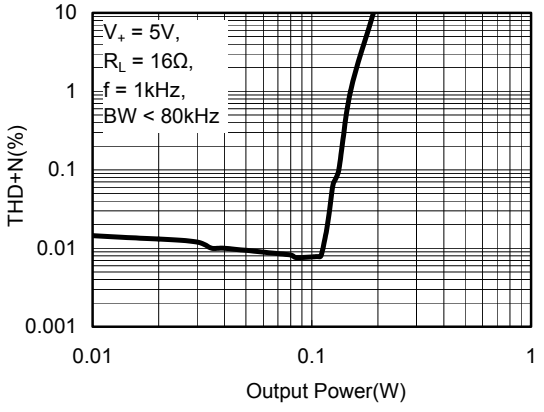
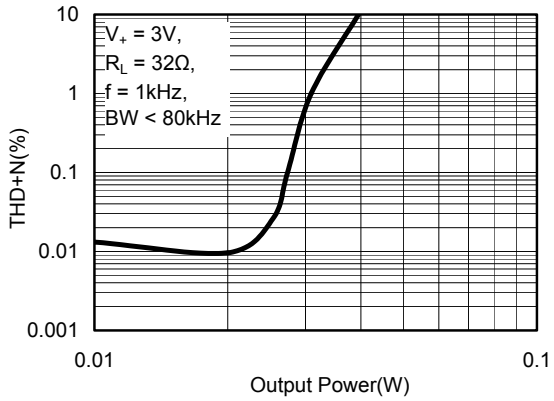


TYPICAL PERFORMANCE CHARACTERISTICS

THD+N vs.Output Power per Channel



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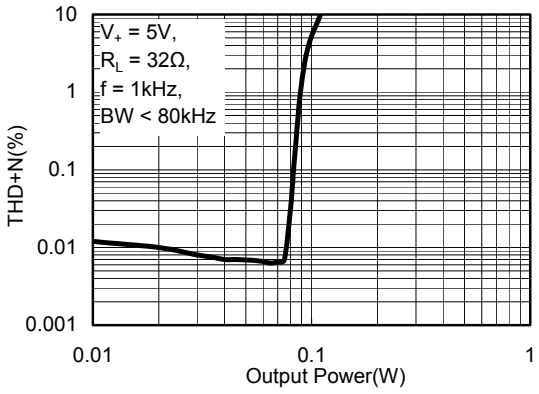
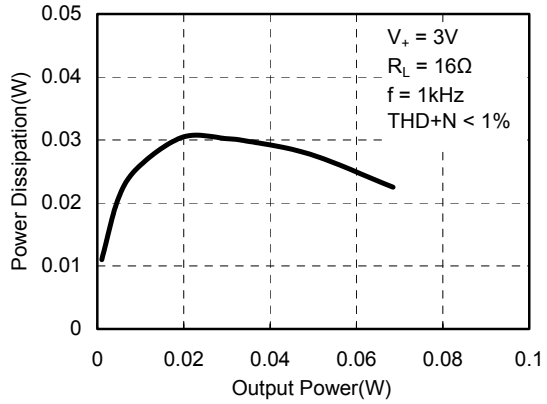


Power Dissipation vs.Output Power per Channel



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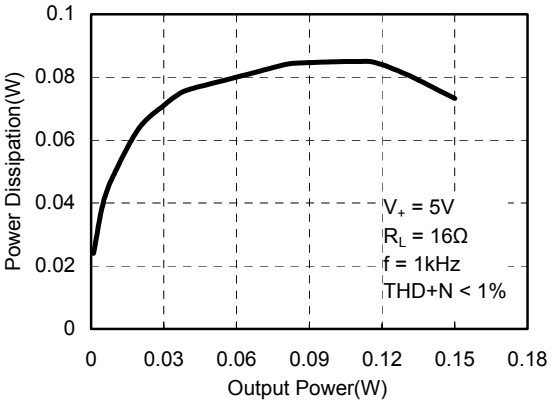

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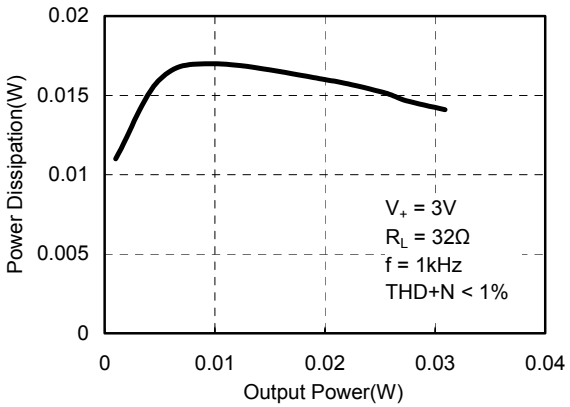

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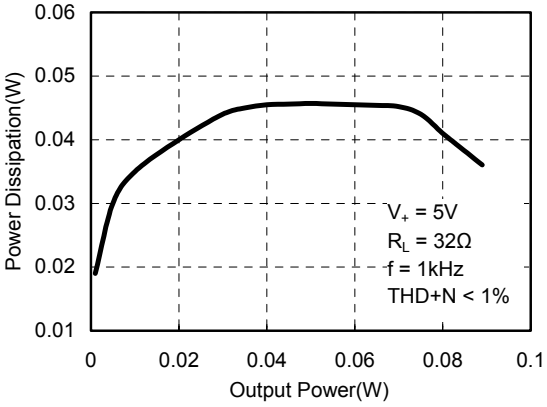
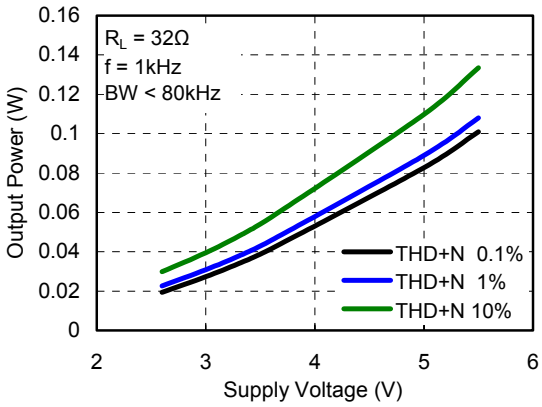


TYPICAL PERFORMANCE CHARACTERISTICS

Output Power vs. Supply Voltage



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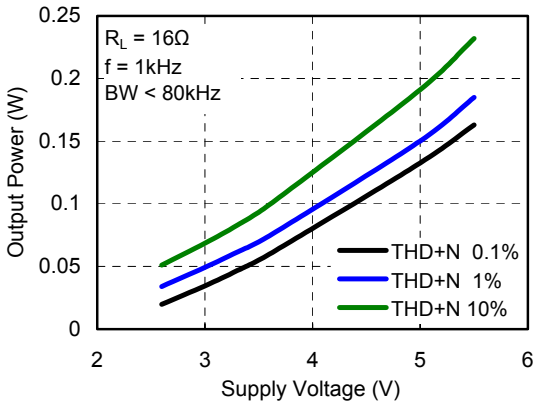
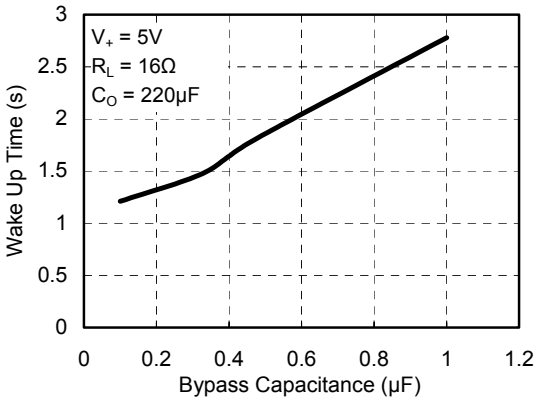
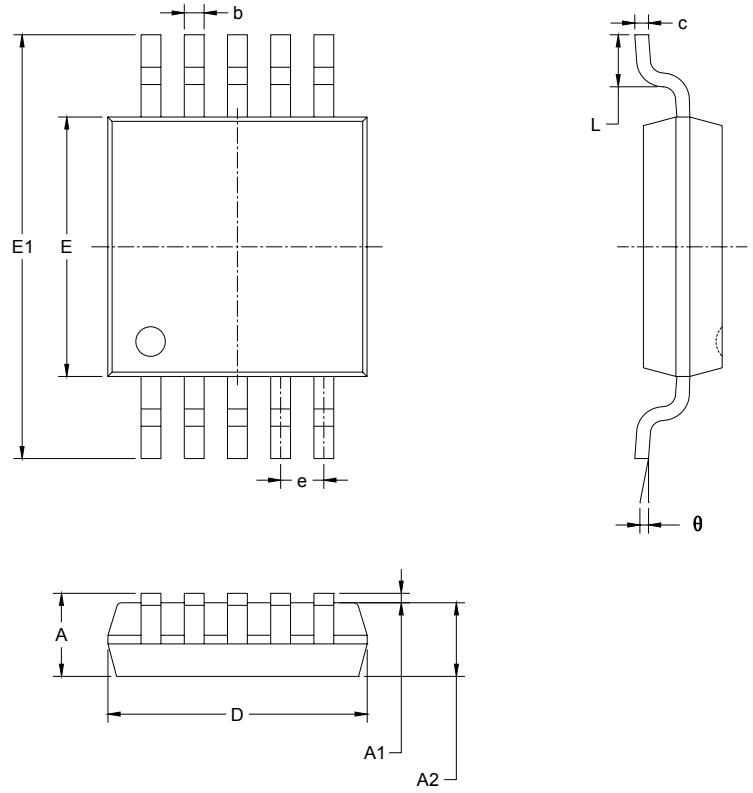


Wake Up Time vs. Bypass Capacitance



PACKAGE OUTLINE DIMENSIONS

MSOP-10



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	0.180	0.280	0.007	0.011
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	0.500 BSC		0.020 BSC	
L	0.400	0.800	0.016	0.031
θ	0°	6°	0°	6°

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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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