

GENERAL DESCRIPTION

The SGM8198 is a single, high-side, high speed, current shunt monitor that operates from 2.7V to 36V single supply, consuming only 65 μ A quiescent current. The device also features a wide common mode voltage range from 2.7V to 36V. Therefore, either side of the shunt current can be connected to the power supply, and the error is minimized.

The SGM8198 is designed to set any gain from 1 to 100 or more with one external resistor. Differential input voltage can be converted into output current, and the output current is converted back to voltage through load resistance. The device is very suitable for applications in many circuits requiring current shunt measurement or level shifting.

The SGM8198 is available in a Green SOT-23-5 package. It is specified for the -40 $^{\circ}$ C to +125 $^{\circ}$ C temperature range.

FEATURES

- **High-side Current Measurement**
- **Wide Supply Voltage Range: 2.7V to 36V**
- **Wide Input Common Mode Voltage: 2.7V to 36V**
- **Low Quiescent Current: 65 μ A (TYP)**
- **Set Gain with One External Resistor**
- **-40 $^{\circ}$ C to +125 $^{\circ}$ C Operating Temperature Range**
- **Available in a Green SOT-23-5 Package**

APPLICATIONS

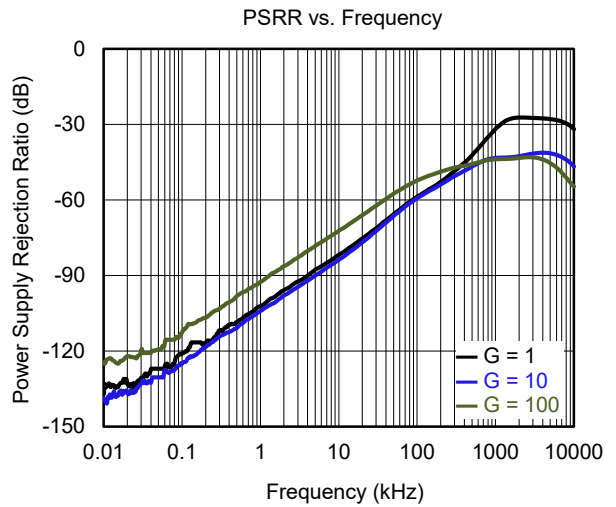
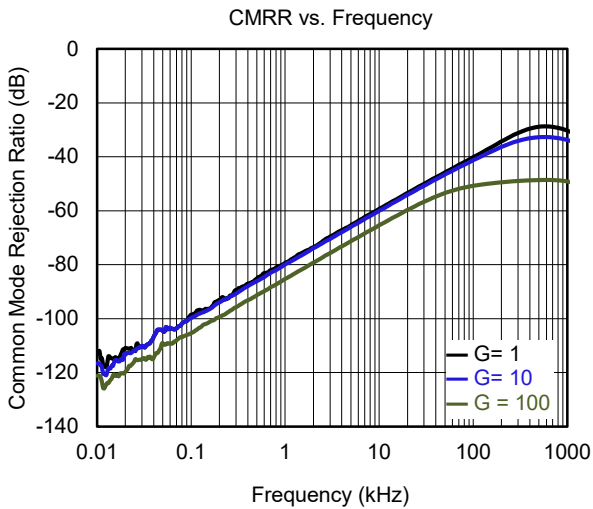
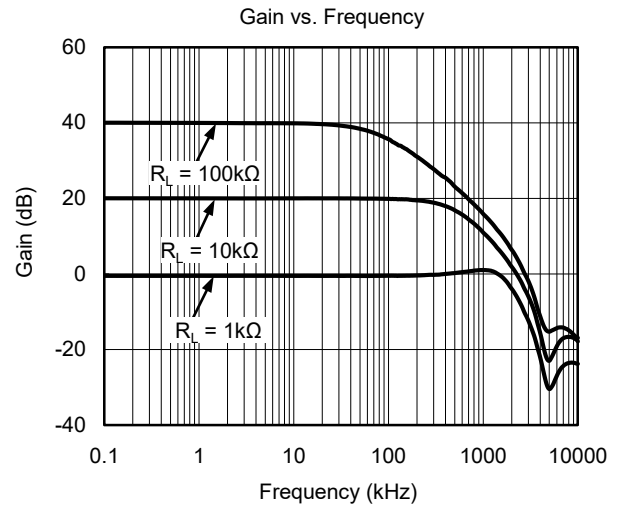
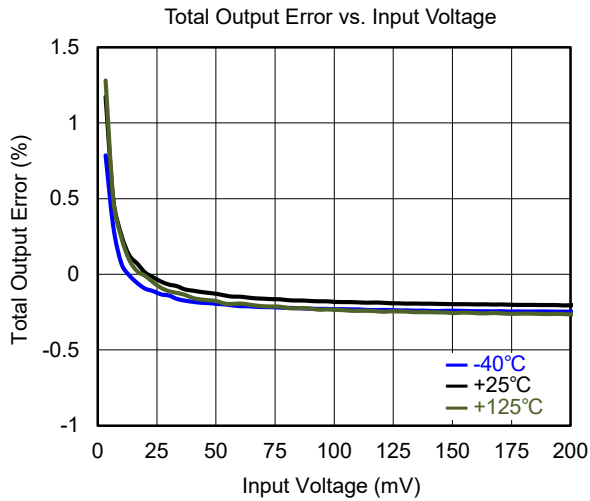
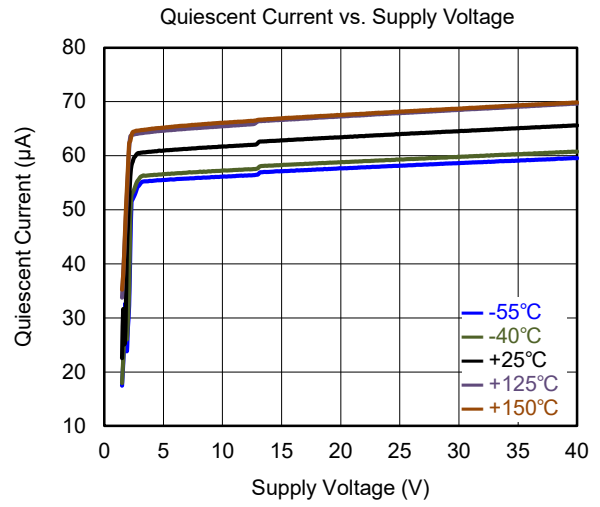
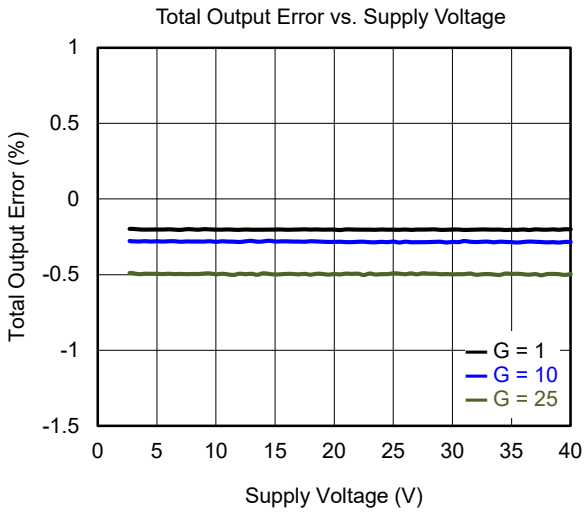
Current Shunt Measurements
Energy Managements
Battery Chargers
Portable Equipment
Servers

ELECTRICAL CHARACTERISTICS(At $T_A = -40^\circ\text{C}$ to $+125^\circ\text{C}$, $V_{CC} = 5\text{V}$, $V_{IN+} = 12\text{V}$ and $R_L = 1\text{k}\Omega$, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Input Characteristics						
Full-Scale Sense Voltage		$V_{SENSE} = V_{IN+} - V_{IN-}$		100	500	mV
Input Offset Voltage RTI	V_{OS}	$V_{IN+} = 2.7\text{V}$ to 36V		± 30	± 550	μV
Input Offset Voltage Drift	$\Delta V_{OS}/\Delta T$			1		$\mu\text{V}/^\circ\text{C}$
Input Bias Current	I_B			16		μA
Input Common Mode Voltage Range	V_{CM}		2.7		36	V
Common Mode Rejection Ratio	CMRR	$V_{IN+} = 2.7\text{V}$ to 36V , $V_{SENSE} = 50\text{mV}$	104	140		dB
Output Characteristics						
Transconductance	g_m	$V_{SENSE} = 10\text{mV}$ to 150mV	990	1000	1010	$\mu\text{A}/\text{V}$
Transconductance vs. Temperature	$\Delta g_m/\Delta T$	$V_{SENSE} = 10\text{mV}$ to 150mV		10		$\text{nA}/^\circ\text{C}$
Nonlinearity Error	INL	$V_{SENSE} = 10\text{mV}$ to 150mV		± 0.01	± 0.13	%
Total Output Error		$V_{SENSE} = 100\text{mV}$		± 0.25	± 1.8	%
Output Voltage		Swing to power supply, V_{CC}	$V_{CC} - 1.85$	$V_{CC} - 1.6$		V
		Swing to common mode, V_{CM}	$V_{CM} - 1.25$	$V_{CM} - 1$		
Power Supply						
Operating Voltage Range	V_{CC}		2.7		36	V
Quiescent Current	I_Q	$V_{SENSE} = 0$, $I_{OUT} = 0$		65	90	μA
Power Supply Rejection Ratio	PSRR	$V_{CC} = 2.7\text{V}$ to 36V , $V_{SENSE} = 50\text{mV}$		0.1	5	$\mu\text{V}/\text{V}$
Frequency Response						
Bandwidth	BW	$R_L = 10\text{k}\Omega$		480		kHz
		$R_L = 20\text{k}\Omega$		270		
Settling Time to 0.1%		5V step, $R_L = 10\text{k}\Omega$		15		μs
		5V step, $R_L = 20\text{k}\Omega$		15		
Noise						
Total Output Current Noise		BW = 100kHz		6		nA_{RMS}
Output Current Noise Density				20		$\text{pA}/\sqrt{\text{Hz}}$

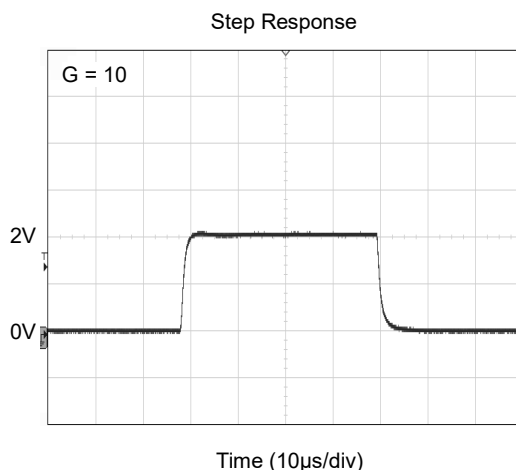
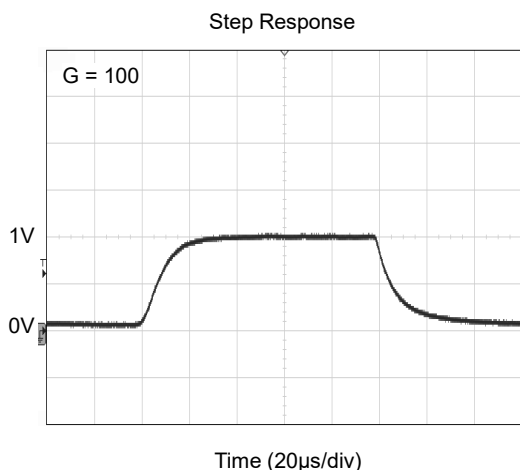
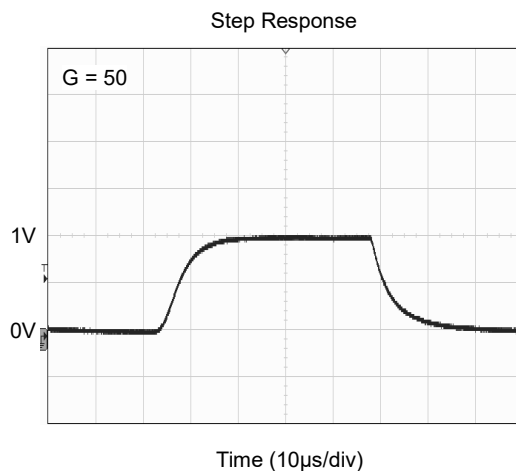
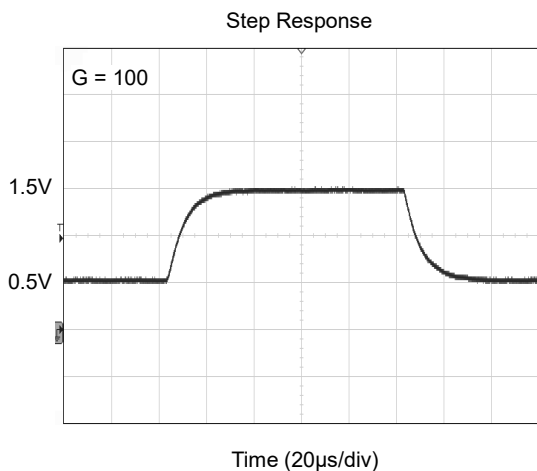
TYPICAL PERFORMANCE CHARACTERISTICS

At $T_A = +25^\circ\text{C}$, $V_{CC} = 5\text{V}$, $V_{IN+} = 12\text{V}$ and $R_L = 1\text{k}\Omega$, unless otherwise noted.



TYPICAL PERFORMANCE CHARACTERISTICS (continued)

At $T_A = +25^\circ\text{C}$, $V_{CC} = 5\text{V}$, $V_{IN+} = 12\text{V}$ and $R_L = 1\text{k}\Omega$, unless otherwise noted.



REVISION HISTORY

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

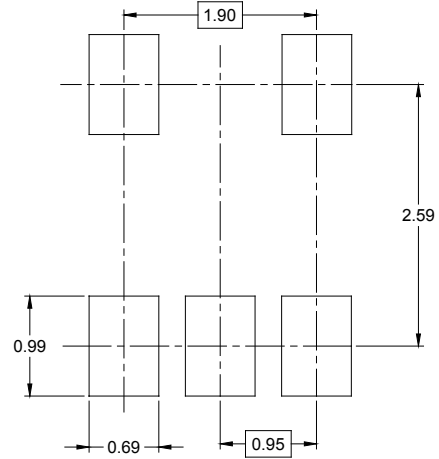
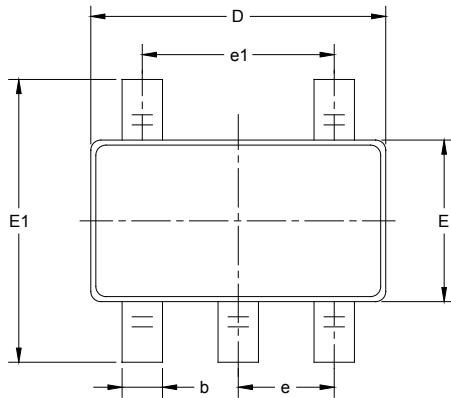
JANUARY 2021 – REV.A.1 to REV.A.2	Page
Updated Absolute Maximum Ratings section.....	2

AUGUST 2019 – REV.A to REV.A.1	Page
Updated Electrical Characteristics section.....	3

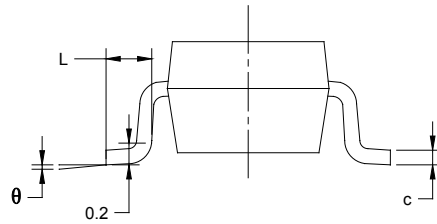
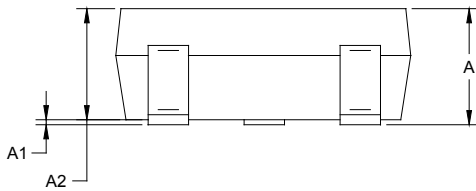
Changes from Original (DECEMBER 2018) to REV.A	Page
Changed from product preview to production data.....	All

PACKAGE OUTLINE DIMENSIONS

SOT-23-5



RECOMMENDED LAND PATTERN (Unit: mm)

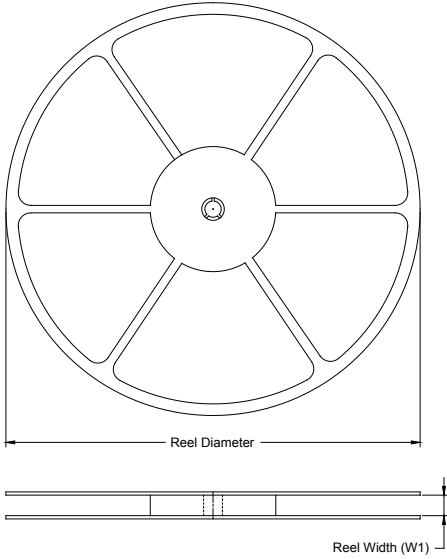


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 BSC		0.037 BSC	
e1	1.900 BSC		0.075 BSC	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

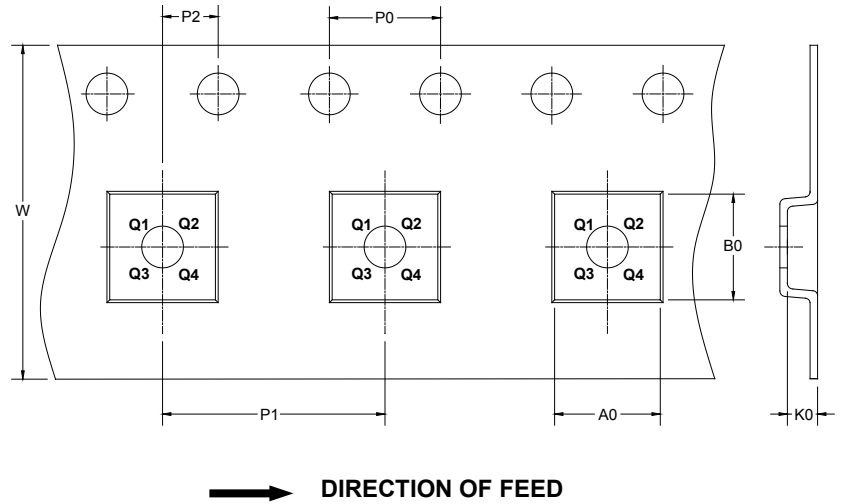
PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



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

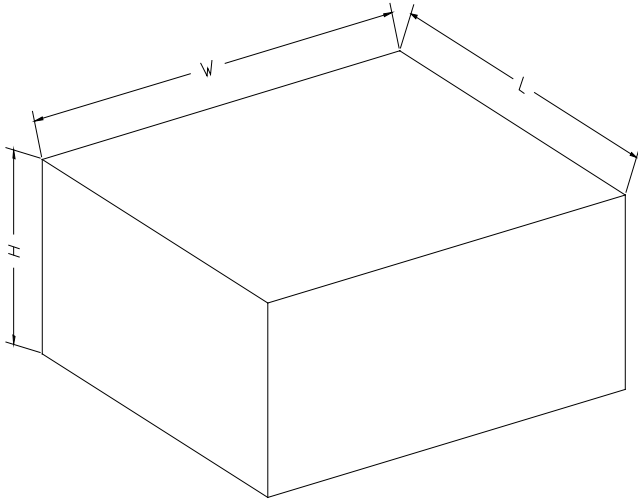
KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
SOT-23-5	7"	9.5	3.20	3.20	1.40	4.0	4.0	2.0	8.0	Q3

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
7" (Option)	368	227	224	8
7"	442	410	224	18

DD0002

单击下面可查看定价，库存，交付和生命周期等信息

[>>SGMICRO\(圣邦微电子\)](#)