



SGM61410/SGM61411

600mA, 1.2MHz/600kHz, 45V Step-Down Converters

GENERAL DESCRIPTION

The SGM61410 is a high frequency Synchronously Rectified Buck Converter. It provides 1A current output with current mode control for fast loop response and compensation inside.

The wide 4.5V to 45V input range accommodates a variety of step-down applications, including those in an automotive input environment. A 12 μ A shutdown mode quiescent current allows use in battery-powered applications. High power conversion efficiency over a wide load range is achieved by scaling down the switching frequency at light load condition to reduce the switching and gate driving losses.

The frequency fold-back helps prevent inductor current runaway during startup and thermal shutdown provides reliable, fault tolerant operation. By switching at 1.2MHz, the SGM61410 is able to prevent EMI (Electromagnetic Interference) noise problems, such as those found in AM radio, ADSL and PLC applications.

SGM61410 is available in the Green SOT-23-6 package. It is rated over the -40°C to +105°C temperature range.

TYPICAL APPLICATION

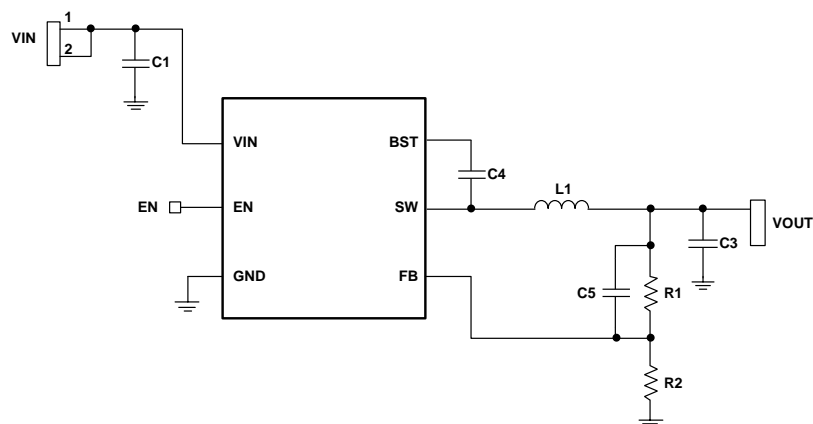


Figure 1. Typical Application Circuit

FEATURES

- 1 μ A Shutdown Current (12 μ A Quiescent Current)
- Wide 4.5V to 45V Operating Input Voltage Range
- Synchronously Rectified 1A Current Output.
- SGM61410: 1.2MHz Switching Frequency
- SGM61411: 600kHz Switching Frequency
- Compensation Inside
- Internal Soft-Start
- Output Adjustable from 0.8V to 20V
- Cycle-by-cycle current limit and Short-circuit protection
- Output OVP and Thermal Shutdown
- Available in Green SOT-23-6 Package
- -40°C to +125°C Operating Temperature Range

APPLICATIONS

High Voltage Power Conversion
 Automotive Systems
 Industrial Power Systems
 Distributed Power Systems
 Battery Powered Systems
 Power meter

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM61410	SOT-23-6	-40°C to +105°C			
SGM61411	SOT-23-6	-40°C to +105°C			

NOTE: XXXX = Date Code. 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 Input Voltage.....	45V
EN Pin, VCP Pin.....	7V
Power Dissipation, P _D @ T _A = +25°C	
SOT-23-6.....	W
Package Thermal Resistance	
SOT-23-6, θ _{JA}	88°C/W
Junction Temperature.....	+155°C
Storage Temperature Range.....	-65°C to +145°C
Lead Temperature (Soldering, 10s).....	+260°C
ESD Susceptibility	
HBM.....	V
MM.....	V

RECOMMENDED OPERATING CONDITIONS

Supply Input Voltage.....	4.5V to 45V
Junction Temperature Range.....	-40°C to +125°C
Ambient Temperature Range.....	-40°C to +105°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.

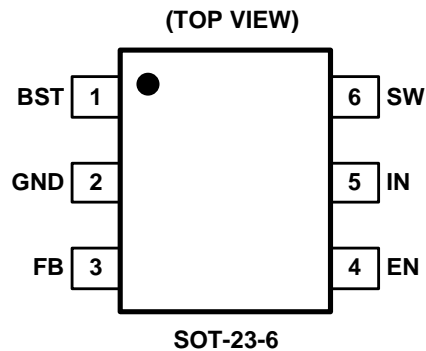
ESD SENSITIVITY CAUTION

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

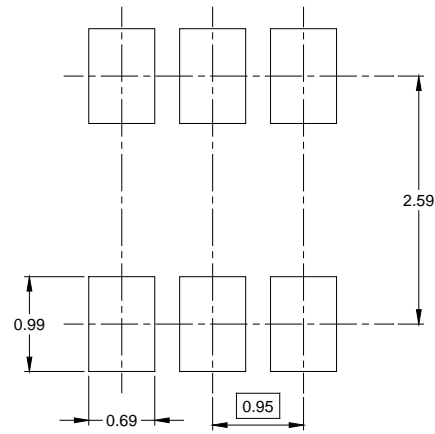
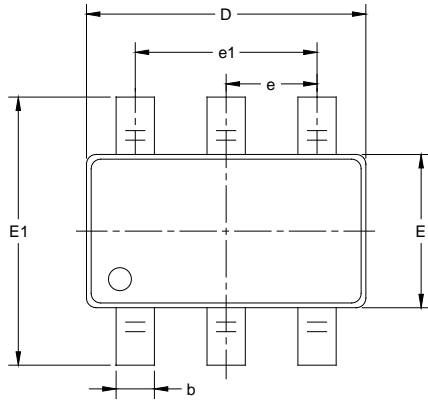


PIN DESCRIPTION

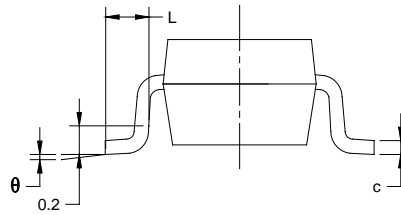
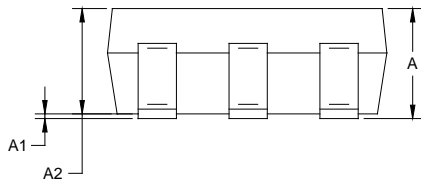
PIN	NAME	FUNCTION
1	BST	Bootstrap. This pin is used to provide a drive voltage, higher than the input voltage, to the topside power switch. Place a 0.1 μ F boost capacitor as close as possible to the IC. Do not place a resistor in series with this pin.
2	GND	Ground. Voltage reference for the regulated output voltage. Requires special layout considerations.
3	FB	Feedback. Sets the output voltage. The SGM61410 regulates the FB pin to 0.8V. Connect the feedback resistor divider tap to this pin. And when the voltage is higher 150mV the SGM61410 support a output OVP
4	EN	Enable Pin. Pull EN above 1.2V to turn the device ON. For automatic enable, connect to V_{IN} using a 100k Ω resistor.
5	VIN	Supply Voltage. The SGM61410 operates from a 4.5V to 45V unregulated input. Requires C1 to prevent large voltage spikes from appearing at the input.
6	SW	The SW pin is the output of the internal power switches. Connect this pin to the inductor and boost capacitor. This node should be kept small on the PCB for good performance.

PACKAGE OUTLINE DIMENSIONS

SOT-23-6



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°