

GENERAL DESCRIPTION

The SGM48013C is a high-speed gate driver capable of effectively driving MOSFET and IGBT power switches. It allows for up to 8A source and 13A sink peak currents at $V_{DD} = 20V$. The SGM48013C provides a comprehensive set of protection features such as thermal shutdown protection and under-voltage lockout. It operates with a wide supply range of 4.5V to 20V.

The SGM48013C is available in a Green SOT-23-5 package. It operates over a temperature range of $-40^{\circ}C$ to $+125^{\circ}C$.

APPLICATIONS

- Power MOSFETs
- IGBT Driving for Power Supplies
- Motor Drivers

FEATURES

- Simple and Reliable
- 8A Source and 13A Sink Peak Currents
- Wide Supply Voltage Range: 4.5V to 20V
- Fast Propagation Delay: 30ns (TYP)
- Fast Rise Time: 7ns (TYP)
- Fast Fall Time: 8ns (TYP)
- Ringing Suppression
- Negative Voltage Capability on IN Pin:
 - 10V when $(V_{DD} - V_{IN}) \leq 22V$
- Negative Voltage Capability on OUT Pin:
 - 5V (Pulse < 500ns)
- Protection Features
 - ♦ Thermal Shutdown Protection
 - ♦ Under-Voltage Lockout
- $-40^{\circ}C$ to $+125^{\circ}C$ Operating Temperature Range
- Available in a Green SOT-23-5 Package

TYPICAL APPLICATIONS

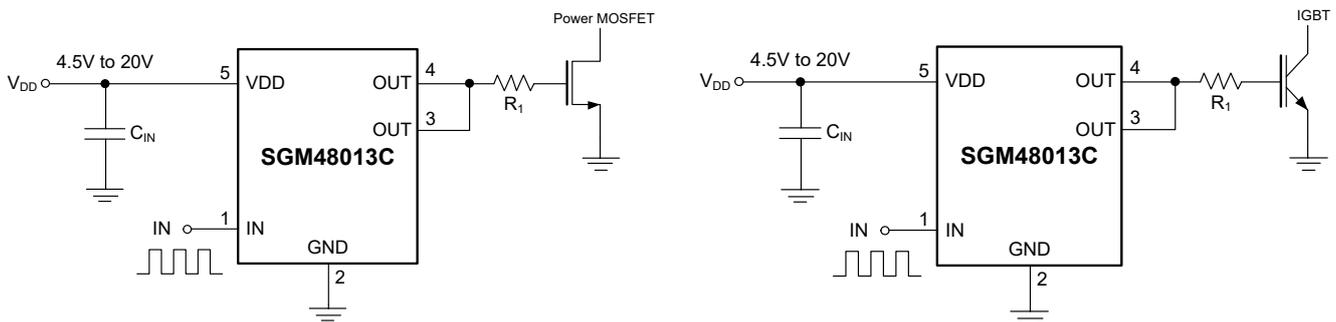


Figure 1. Typical Application Circuits

Power MOSFET and IGBT Gate Driver with Comprehensive Protections

SGM48013C

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM48013C	SOT-23-5	-40°C to +125°C	SGM48013CXN5G/TR	031XX	Tape and Reel, 3000

MARKING INFORMATION

NOTE: XX = Date Code.

YYY X X

└── Date Code - Week

└── Date Code - Year

└── Serial Number

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

VDD	-0.3V to 22V
Continuous IN, when (V _{DD} - V _{IN}) ≤ 22V	
.....	-10V to V _{DD} + 0.3V
Continuous OUT (DC).....	-0.3V to V _{DD} + 0.3V
Pulse OUT (Pulse < 500ns)	-5V to V _{DD} + 0.3V
Power Dissipation, P _D @ T _A = +25°C	
SOT-23-5	0.67W
Package Thermal Resistance	
SOT-23-5, θ _{JA}	185°C/W
Junction Temperature	+150°C
Storage Temperature Range.....	-65°C to +150°C
Lead Temperature (Soldering, 10s).....	+260°C
ESD Susceptibility	
HBM.....	8000V
CDM	1000V

RECOMMENDED OPERATING CONDITIONS

Supply Voltage Range	4.5V to 20V
Operating Junction Temperature Range.....	-40°C to +125°C

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.

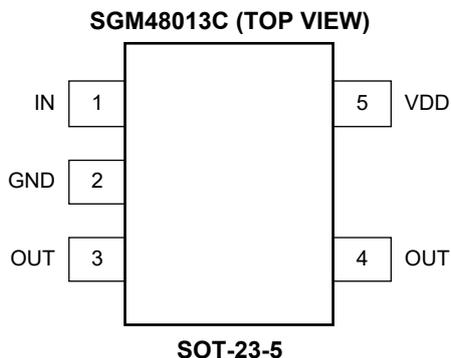
ESD SENSITIVITY CAUTION

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.

PIN CONFIGURATION



PIN DESCRIPTION

PIN	NAME	I/O	FUNCTION
1	IN	I	Non-Inverting Input. OUT pins are held low if IN is floating.
2	GND	G	Ground. All signals are referenced to this pin.
3, 4	OUT	O	Source/Sink Current Output of Driver.
5	VDD	P	Supply Input. Place a 4.7 μ F decoupling capacitor between this pin and GND pin close to the device.

NOTE:

P: power supply, I: input, O: output, G: ground.

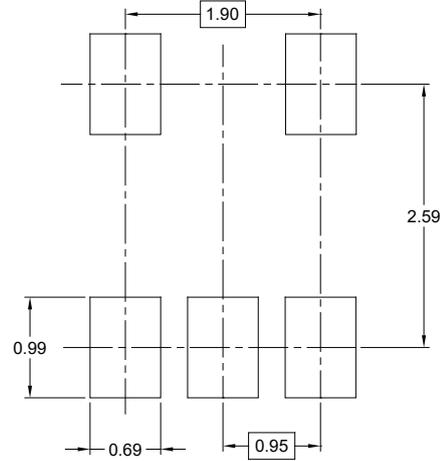
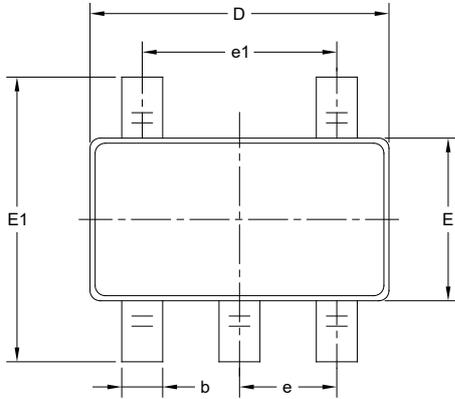
FUNCTION TABLE

IN	OUT
L	L
H	H
Floating	L

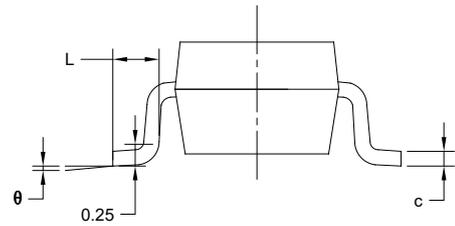
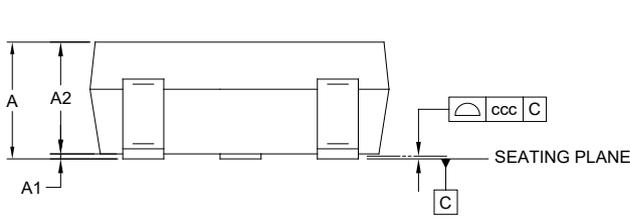
PACKAGE INFORMATION

PACKAGE OUTLINE DIMENSIONS

SOT-23-5



RECOMMENDED LAND PATTERN (Unit: mm)



Symbol	Dimensions In Millimeters		
	MIN	MOD	MAX
A	-	-	1.450
A1	0.000	-	0.150
A2	0.900	-	1.300
b	0.300	-	0.500
c	0.080	-	0.220
D	2.750	-	3.050
E	1.450	-	1.750
E1	2.600	-	3.000
e	0.950 BSC		
e1	1.900 BSC		
L	0.300	-	0.600
θ	0°	-	8°
ccc	0.100		

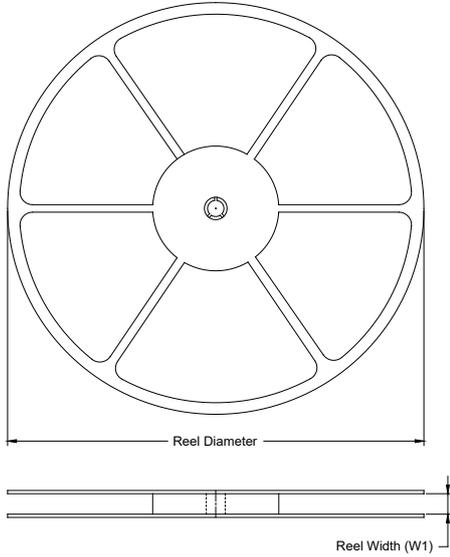
NOTES:

1. This drawing is subject to change without notice.
2. The dimensions do not include mold flashes, protrusions or gate burrs.
3. Reference JEDEC MO-178.

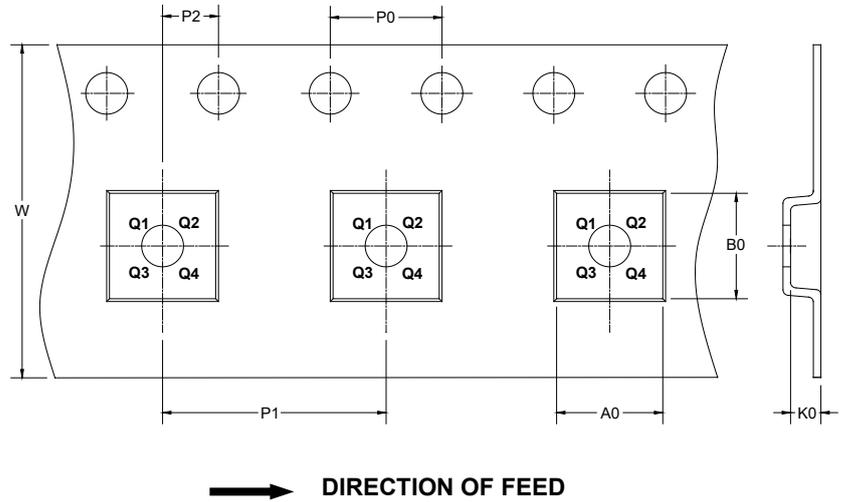
PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



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

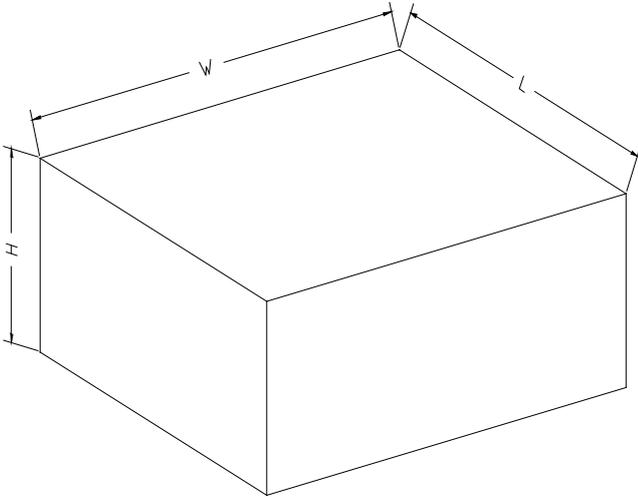
KEY PARAMETER LIST OF TAPE AND REEL

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

DD0001

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