



# SGM48000/SGM48001/SGM48002

## High Speed, Dual Power MOSFET Drivers

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### GENERAL DESCRIPTION

The SGM48000/1/2 series are dual-channel low-side drivers with typical 2A source and sink current capability. Inverting and non-inverting inputs are both available and three combinations can be chosen for flexible logic application.

The rise time and fall time of SGM48000/1/2 are matched to be 12ns and 13ns respectively, which allows the pulse widths to deliver to the outputs with minimum timing errors and clock skew issues. Unique technique is integrated to achieve minimum overlap of the outputs, which reduces the dynamic switching losses.

The SGM48000/1/2 are available in Green SOIC-8 and TDFN-2×2-8L packages. They operate over an ambient temperature range of -40°C to +125°C.

### FEATURES

- Improved Response Times
- Matched Rise and Fall Times
- Reduced Clock Skew between Dual Channels
- Low Output Impedance
- Output is at LOW under UVLO Protection
- High Noise Immunity
- Improved Clocking Rate
- Low Supply Current
- Wide Operating Voltage Range
- -40°C to +125°C Operating Temperature Range
- Available in Green SOIC-8 and TDFN-2×2-8L Packages

### APPLICATIONS

Driving Power Devices  
DC/DC Converters  
Switch Mode Power Supplies  
Motor Control  
Class D Switching Amplifiers

**PACKAGE/ORDERING INFORMATION**

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM48000	SOIC-8	-40°C to +125°C	SGM48000XS8G/TR	SGM 48000XS8 XXXXX	Tape and Reel, 2500
	TDFN-2×2-8L	-40°C to +125°C	SGM48000XTDE8G/TR	SYA XXXX	Tape and Reel, 3000
SGM48001	SOIC-8	-40°C to +125°C	SGM48001XS8G/TR	SGM 48001XS8 XXXXX	Tape and Reel, 2500
	TDFN-2×2-8L	-40°C to +125°C	SGM48001XTDE8G/TR	SV8 XXXX	Tape and Reel, 3000
SGM48002	SOIC-8	-40°C to +125°C	SGM48002XS8G/TR	SGM 48002XS8 XXXXX	Tape and Reel, 2500
	TDFN-2×2-8L	-40°C to +125°C	SGM48002XTDE8G/TR	SV9 XXXX	Tape and Reel, 3000

**MARKING INFORMATION**

NOTE: XXXX = Date Code. XXXXX = Date Code and Vendor Code.

SOIC-8

**XXXXX**

Vendor Code  
 Date Code - Week  
 Date Code - Year

TDFN-2×2-8L

**YYY** — Serial Number  
**XXXX**

Date Code - Week  
 Date Code - Year

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**

VCC to GND ..... -0.3V to 28V  
 INA, INB to GND ..... -0.3V to V<sub>CC</sub> + 0.3V  
 Combined Peak Output Current..... 4A  
 Junction Temperature ..... +150°C  
 Package Thermal Resistance  
 SOIC-8, θ<sub>JA</sub> ..... 132°C/W  
 TDFN-2×2-8L, θ<sub>JA</sub> ..... 118°C/W  
 Storage Temperature Range ..... -65°C to +150°C  
 Lead Temperature (Soldering, 10sec) ..... +260°C  
 ESD Susceptibility  
 HBM..... 6000V  
 MM..... 200V

**RECOMMENDED OPERATING CONDITIONS**

Supply Voltage Range ..... 4.5V to 26.5V  
 Operating 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.

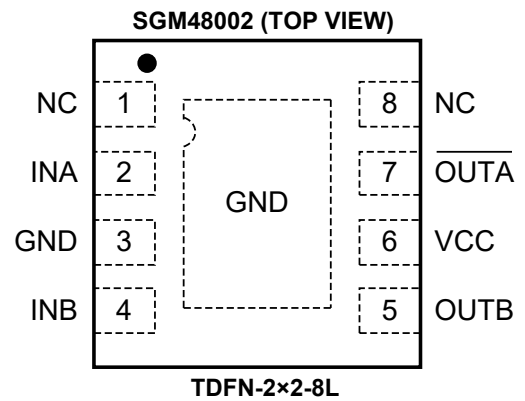
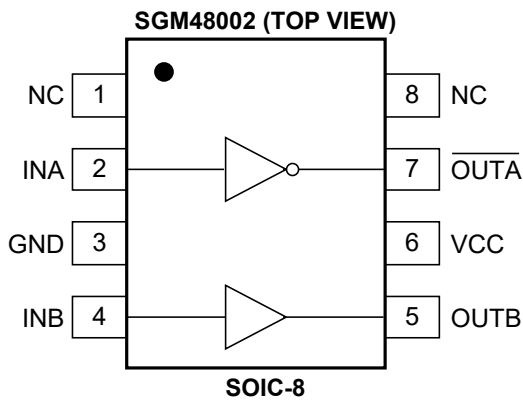
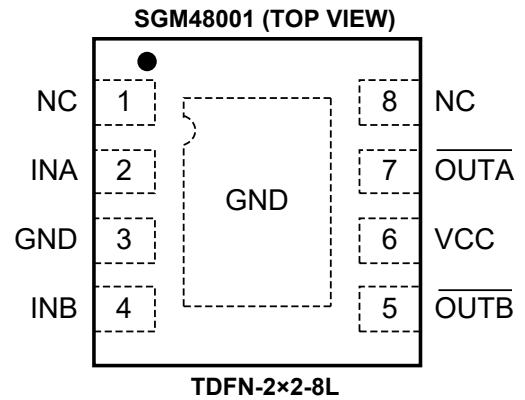
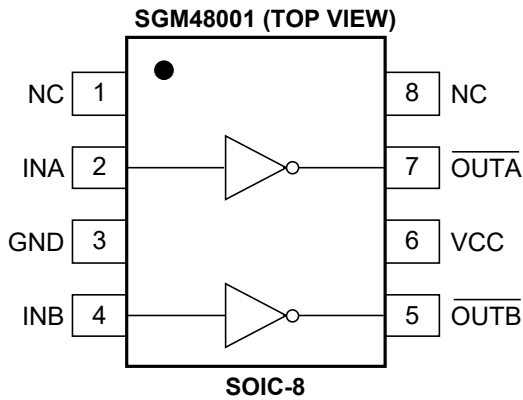
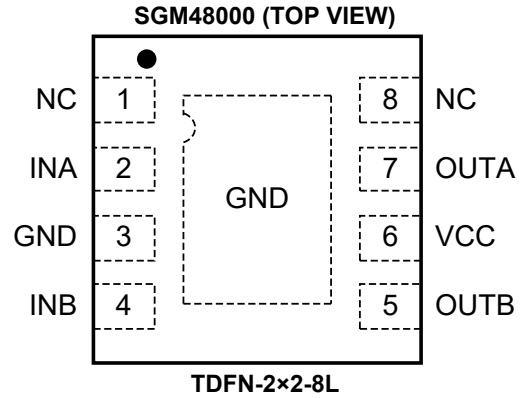
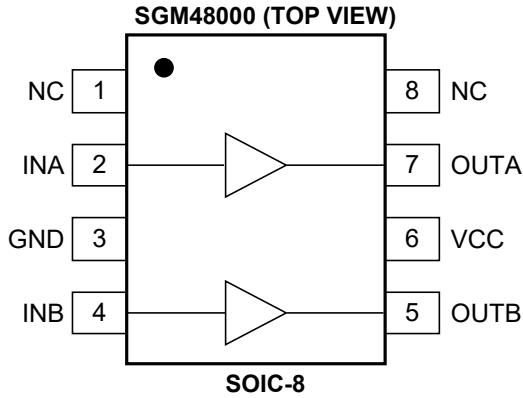
**ESD SENSITIVITY CAUTION**

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 CONFIGURATIONS**



**PIN DESCRIPTION**

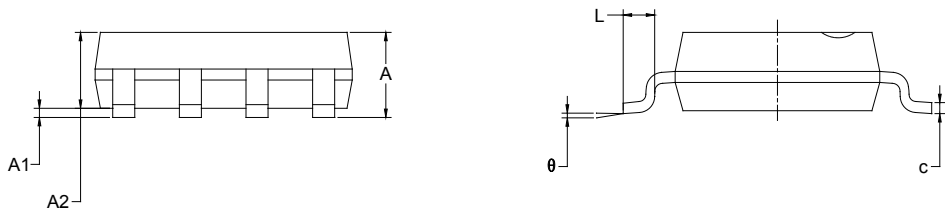
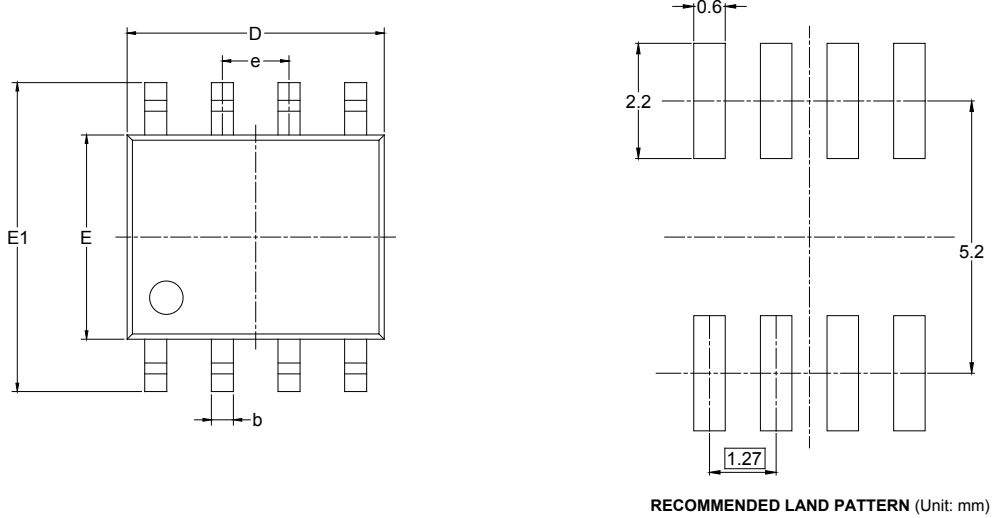
PIN		NAME	FUNCTION
TDFN-2x2-8L	SOIC-8		
1, 8	1, 8	NC	No Connection.
2	2	INA	Input for Channel A. Non-inverting input in SGM48000, inverting input in SGM48001, and inverting input in SGM48002. OUTA/OUTA is held LOW if INA is unbiased or floating.
3	3	GND	Ground. All signals referenced to this pin.
4	4	INB	Input for Channel B. Non-inverting input in SGM48000, inverting input in SGM48001, and non-inverting input in SGM48002. OUTB/OUTB is held LOW if INB is unbiased or floating.
5	5	OUTB/OUTB	Output of Channel B.
6	6	VCC	Supply Input.
7	7	OUTA/OUTA	Output of Channel A.
Exposed Pad	—	GND	Exposed pad should be soldered to PCB board and connected to GND.

**FUNCTION TABLE**

INA	INB	SGM48000		SGM48001		SGM48002	
		OUTA	OUTB	OUTA	OUTB	OUTA	OUTB
L	L	L	L	H	H	H	L
L	H	L	H	H	L	H	H
H	L	H	L	L	H	L	L
H	H	H	H	L	L	L	H
Floating	Floating	L	L	L	L	L	L

PACKAGE OUTLINE DIMENSIONS

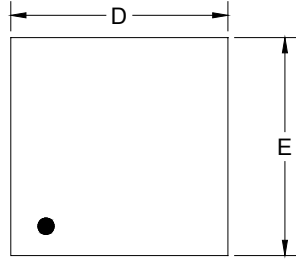
SOIC-8



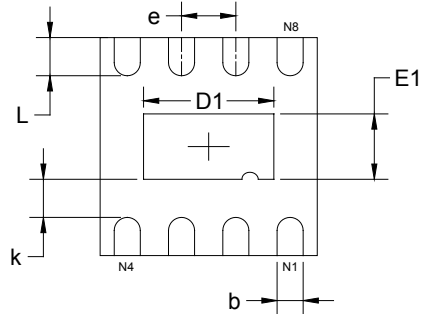
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.27 BSC		0.050 BSC	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

PACKAGE OUTLINE DIMENSIONS

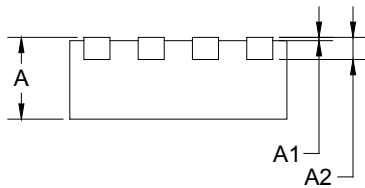
TDFN-2x2-8L



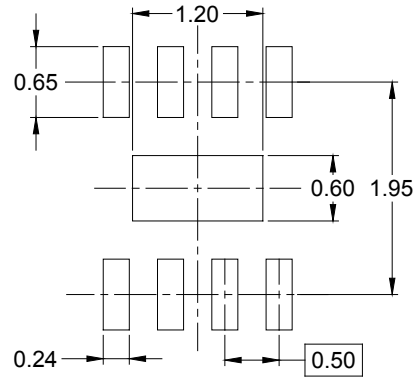
TOP VIEW



BOTTOM VIEW



SIDE VIEW



RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203 REF		0.008 REF	
D	1.900	2.100	0.075	0.083
D1	1.100	1.300	0.043	0.051
E	1.900	2.100	0.075	0.083
E1	0.500	0.700	0.020	0.028
k	0.200 MIN		0.008 MIN	
b	0.180	0.300	0.007	0.012
e	0.500 TYP		0.020 TYP	
L	0.250	0.450	0.010	0.018

## 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
SOIC-8	13"	12.4	6.40	5.40	2.10	4.0	8.0	2.0	12.0	Q1
TDFN-2x2-8L	7"	9.5	2.30	2.30	1.10	4.0	4.0	2.0	8.0	Q1

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
13"	386	280	370	5

DD0002