

GENERAL DESCRIPTION

The SGM4546 is matched dual-channel high speed, high sound pressure level (SPL) piezo-sounder driver which is integrated boost DC/DC to achieve high driven voltage. The unique circuit design provides excellent performance for delivering 2A peak current to highly capacitive loads.

To reduce problems with time and clock skew, SGM4546 is a good choice, with matching delays and maintaining integrity of input to output pulse-widths. Matching rise/fall delay times improve the drive capability and speed. Non-overlapping drive technology is used to minimize the dynamic switching loss.

In order to get higher volume sound from piezo-Sounder, boost DC/DC is integrated to provide high driven voltage. The tiny packages make the device very suitable for space limited applications.

The SGM4546 is available in Green TDFN-3×3-14L and TSSOP-16 (Exposed Pad) packages. It operates over an ambient temperature range of -40°C to +85°C.

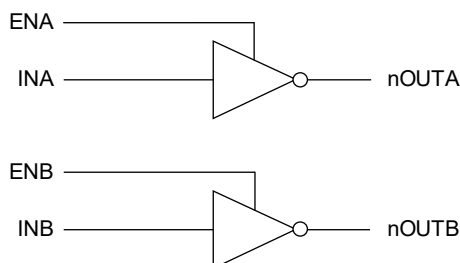
FEATURES

- Integrated Boost DC/DC to Achieve 26V (MAX) Driven Voltage
- 2A Peak Driven Current to Drive Capacitive Loads
- Power Supply Voltage Range: 1.8V to 5.5V
- High Speed Driver
- Very Short Rise Time and Fall Time
- Improved Response Times
- Matched Rise Time and Fall Time
- Independent Enable Control for Each Channel
- Reduced Clock Skew between Dual Channels
- Output is at Low under UVLO Protection, Enable Pin Floating or Disable Status
- High Noise Immunity
- Improved Clocking Rate
- Low Supply Current and Output Impedance
- -40°C to +85°C Operating Temperature Range
- Available in Green TSSOP-16 (Exposed Pad) and TDFN-3×3-14L Packages

APPLICATION

Piezo-Sounder Driver

LOGIC SYMBOL



FUNCTION TABLE

ENA	ENB	INA	INB	nOUTA	nOUTB
H	H	L	L	H	H
H	H	L	H	H	L
H	H	H	L	L	H
H	H	H	H	L	L
L	L	H/L	H/L	L	L
Floating	Floating	H/L	H/L	L	L

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM4546	TDFN-3×3-14L	-40°C to +85°C	SGM4546YTDK14G/TR	SGM 4546DK XXXXX	Tape and Reel, 4000
	TSSOP-16 (Exposed Pad)	-40°C to +85°C	SGM4546YPTS16G/TR	SGM4546 YPTS16 XXXXX	Tape and Reel, 4000

MARKING INFORMATION

NOTE: XXXXX = Date Code and Vendor Code.

XXXXX

Vendor Code
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

Input Supply Voltage (Boost DC/DC)..... -0.3V to 6V
 EN and FB Pin Voltages..... -0.3V to V_{IN}
 SW Switch Voltage..... 40V
 VCC to GND..... -0.3V to 28V
 ENA, ENB to GND..... -0.3V to 6V
 INA, INB to GND..... -0.3V to $V_{CC} + 0.3V$
 Combined Peak Output Current..... 4A
 Package Thermal Resistance
 TDFN-3×3-14L, θ_{JA} 80°C/W
 TSSOP-16 (Exposed Pad), θ_{JA} 50°C/W
 Junction Temperature..... +150°C
 Storage Temperature Range..... -65°C to +150°C
 Lead Temperature (Soldering, 10s)..... +260°C
 ESD Susceptibility
 HBM..... 4000V
 MM..... 200V
 CDM..... 1000V

RECOMMENDED OPERATING CONDITIONS

Operating Temperature Range..... -40°C to +85°C
 Operating Junction Temperature Range..... -40°C to +125°C
 Input Voltage Range..... 1.8V to 5.5V

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.

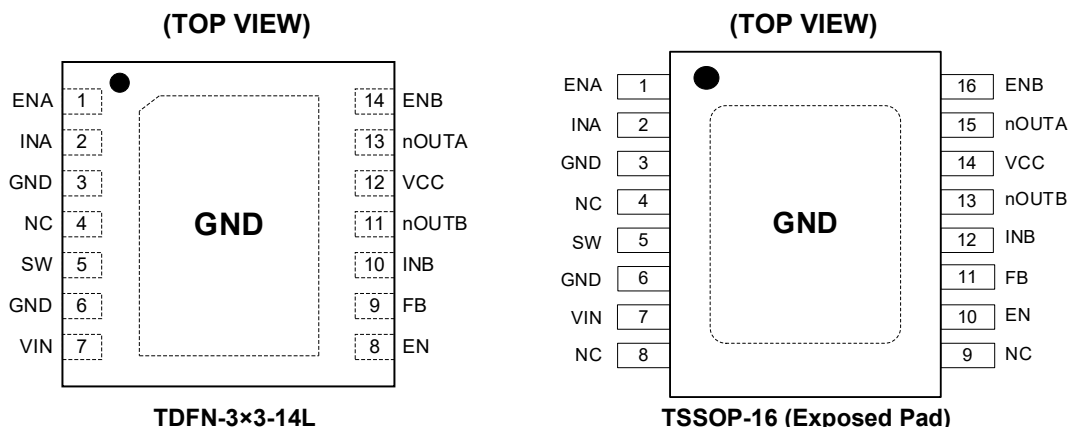
ESD SENSITIVITY CAUTION

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

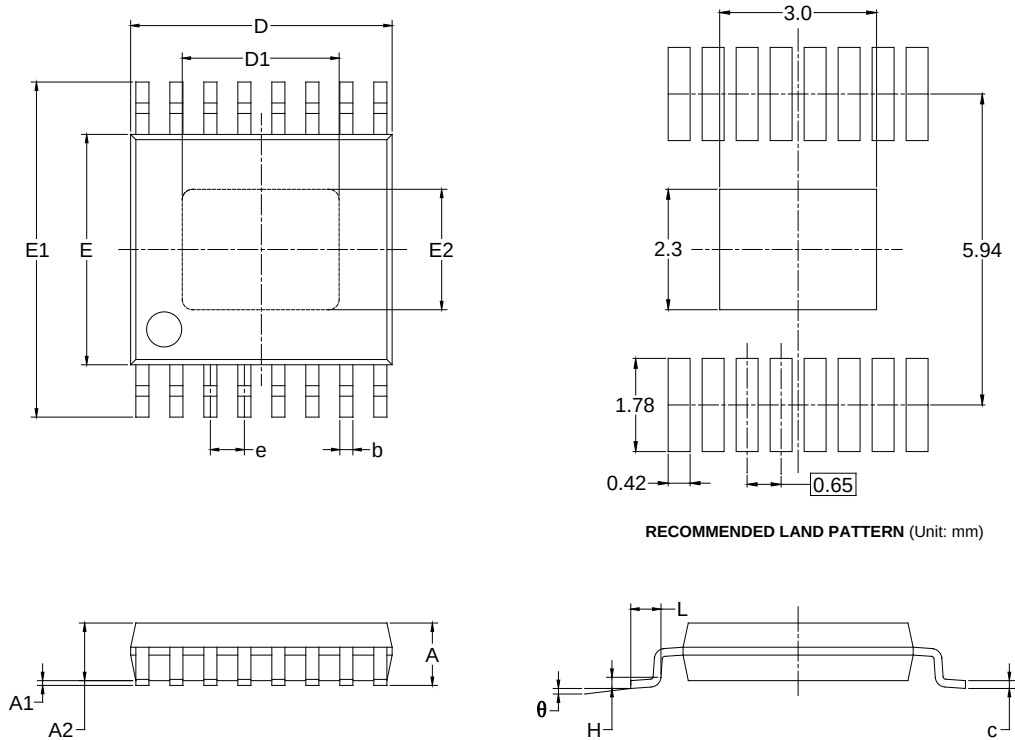


PIN DESCRIPTION

PIN		NAME	FUNCTION
TDFN-3x3-14L	TSSOP-16 (Exposed Pad)		
1	1	ENA	Enable Input for Channel A. A high signal on this pin will enable the channel A output. Logic low or floating will disable the output of channel A, regardless of the INA logic is high or low.
2	2	INA	Input for Channel A. Inverting channel input.
3, 6	3, 6	GND	Ground.
4	4, 8, 9	NC	No Connection.
5	5	SW	Switch Node. Drain connection of internal power MOSFET. Connect it to the inductor and Schottky diode.
7	7	VIN	Power Supply. Must be closely decoupled to GND with a capacitor.
8	10	EN	Enable Pin. When the EN pin is pulled to ground, the device will be shut down, and the supply current will be less than 1μA. Do not leave it floating.
9	11	FB	Feedback Pin. An external resistor divider programs the output voltage.
10	12	INB	Input for Channel B. Inverting channel input.
11	13	nOUTB	Output of Channel B.
12	14	VCC	Supply Input of Driver.
13	15	nOUTA	Output of Channel A.
14	16	ENB	Enable Input for Channel B. A high signal on this pin will enable the channel B output. Logic low or floating will disable the output of channel B, regardless of the INB logic is high or low.
Exposed Pad	Exposed Pad	GND	Ground.

PACKAGE OUTLINE DIMENSIONS

TSSOP-16 (Exposed Pad)



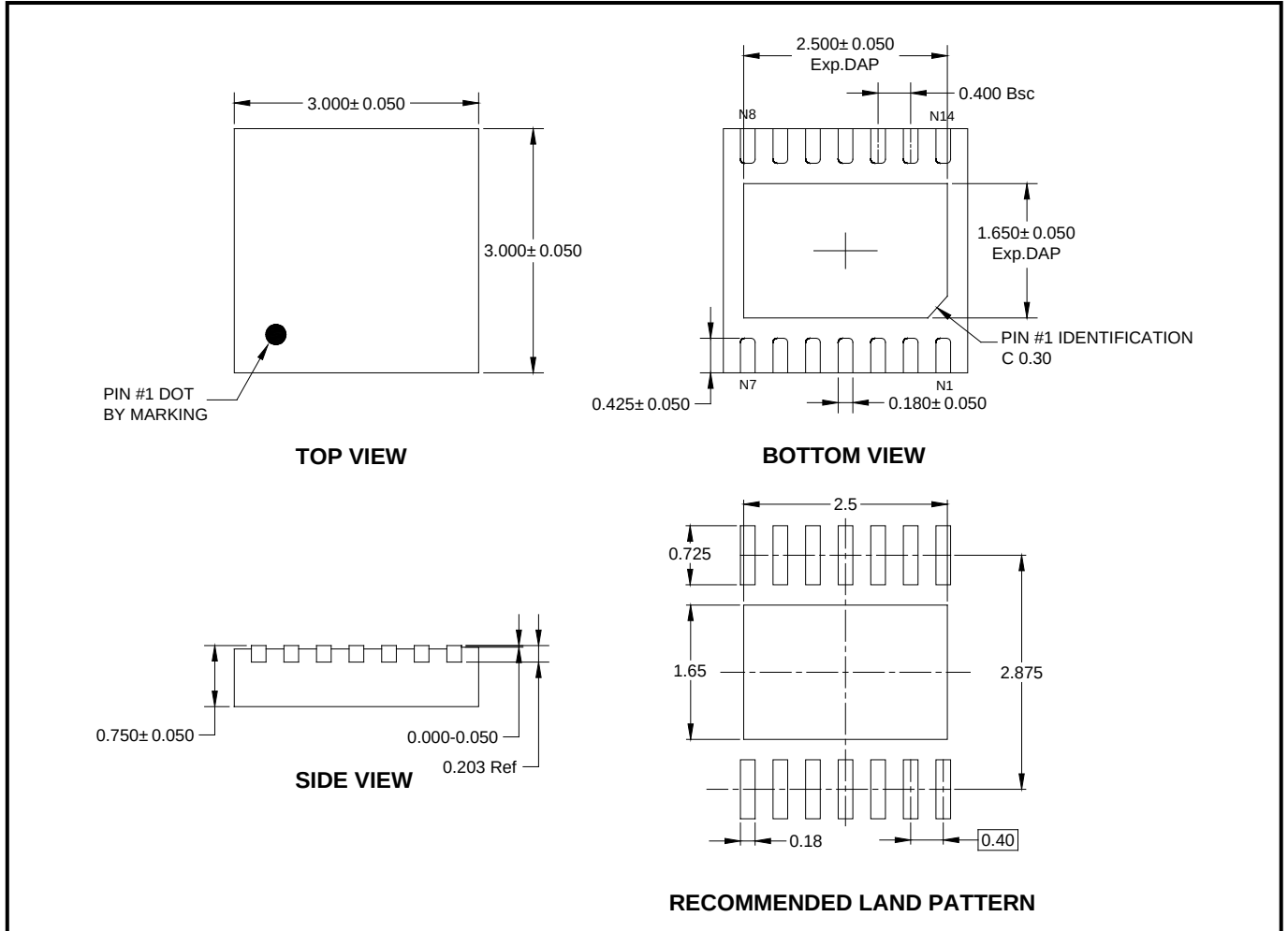
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A		1.100		0.043
A1	0.050	0.150	0.002	0.006
A2	0.800	1.000	0.031	0.039
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
D	4.900	5.100	0.193	0.201
D1	2.900	3.100	0.114	0.122
E	4.300	4.500	0.169	0.177
E1	6.250	6.550	0.246	0.258
E2	2.200	2.400	0.087	0.094
e	0.650 BSC		0.026 BSC	
L	0.500	0.700	0.02	0.028
H	0.25 TYP		0.01 TYP	
θ	1°	7°	1°	7°

NOTES:

1. Body dimensions do not include mode flash or protrusion.
2. This drawing is subject to change without notice.

PACKAGE OUTLINE DIMENSIONS

TDFN-3x3-14L



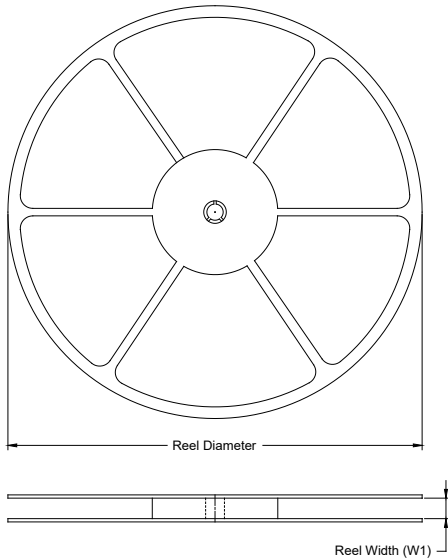
NOTES:

1. All linear dimensions are in millimeters.
2. This drawing is subject to change without notice.

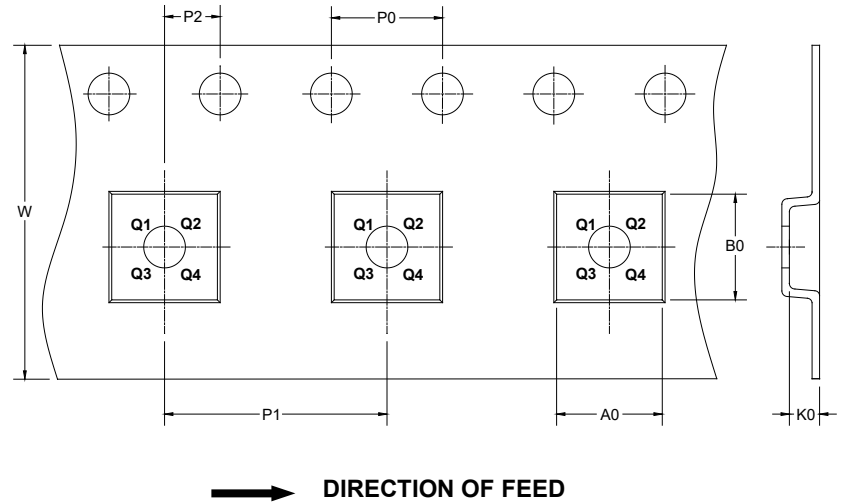
PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



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

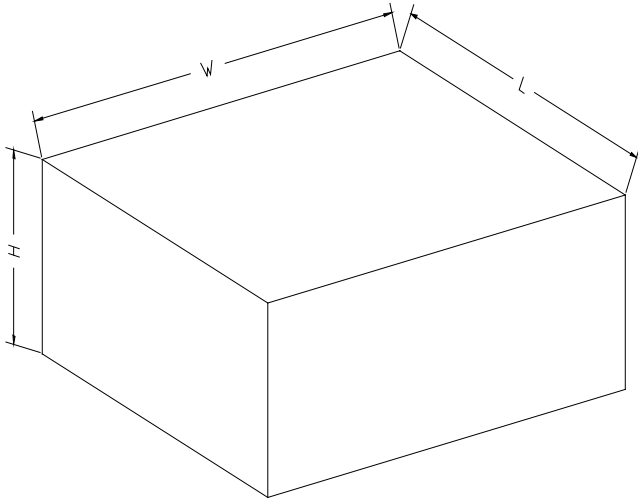
KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
TSSOP-16 (Exposed Pad)	13"	12.4	6.80	5.40	1.50	4.0	8.0	2.0	12.0	Q1
TDFN-3×3-14L	13"	12.4	3.35	3.35	1.13	4.0	8.0	2.0	12.0	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
13"	386	280	370	5

DD0002