

## GENERAL DESCRIPTION

The SGM4514 is an advanced high voltage CMOS RF antenna switch driver in an ultra-small footprint.

The SGM4514 supports 16V to 70V power supply voltage range and there is no damage if  $V_{CC}$  plus  $V_{SPIKE}$  is less than 77V (MAX), the transient spike voltage is generated by T/R switching.

The SGM4514 is available in Green TQFN-4x4-16AL, TDFN-3x3-8BL and MSOP-8 (Exposed Pad) packages and operates over an operating temperature range of  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ .

## FEATURES

- High Speed and Low Power
- Wide Output  $V_{CC}$  Range: 16V to 70V
- Low  $R_{DS(ON)}$ :
  - ♦ NMOS =  $2\Omega$  (TYP)
  - ♦ PMOS =  $10\Omega$  (TYP)
- Input Frequency: 2.1MHz (TYP)
- Low Static Current:  $I_{CC} = 250\mu\text{A}$
- Low Dynamic Current at 100kHz:  
 $I_{CC\_DYN} = 0.65\text{mA}$  (TYP)
- Available in Green TQFN-4x4-16AL, TDFN-3x3-8BL and MSOP-8 (Exposed Pad) Packages

## APPLICATIONS

Wireless Base Station  
High Voltage Level Shifting  
Ultrasound Driver  
RF PA

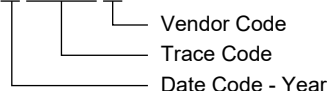
## PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM4514	TQFN-4×4-16AL	-40°C to +125°C	SGM4514XTQZ16G/TR	SGM4514 XTQZ16 XXXXXX	Tape and Reel, 3000
	TDFN-3×3-8BL	-40°C to +125°C	SGM4514XTDD8G/TR	SGM 4514DD XXXXXX	Tape and Reel, 4000
	MSOP-8 (Exposed Pad)	-40°C to +125°C	SGM4514XPMS8G/TR	SGM4514 XPMS8 XXXXXX	Tape and Reel, 4000

## MARKING INFORMATION

NOTE: XXXXX = Date Code, Trace Code and Vendor Code.

**XXXXX**



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

High Voltage Supply Voltage Range .....	-0.5V to 77V
DC Output Source Current.....	140mA
DC Output Sink Current.....	180mA
DC Supply Current per Supply Pin .....	140mA
DC Ground Current per Ground Pin .....	180mA
Package Thermal Resistance	
TQFN-4×4-16AL, $\theta_{JA}$ .....	52°C/W
TQFN-4×4-16AL, $\theta_{JB}$ .....	23°C/W
TQFN-4×4-16AL, $\theta_{JC}$ .....	42°C/W
TDFN-3×3-8BL, $\theta_{JA}$ .....	84°C/W
TDFN-3×3-8BL, $\theta_{JB}$ .....	44°C/W
TDFN-3×3-8BL, $\theta_{JC}$ .....	65°C/W
MSOP-8 (Exposed Pad), $\theta_{JA}$ .....	61°C/W
MSOP-8 (Exposed Pad), $\theta_{JB}$ .....	30°C/W
MSOP-8 (Exposed Pad), $\theta_{JC}$ .....	59°C/W
Junction Temperature .....	+150°C
Storage Temperature Range .....	-65°C to +150°C
Lead Temperature (Soldering, 10s) .....	+260°C
ESD Susceptibility	
HBM.....	4000V
CDM .....	1000V

## RECOMMENDED OPERATING CONDITIONS

High Voltage Supply Voltage Range .....	16V to 70V
Output Voltage Range .....	0V to $V_{CC}$
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.

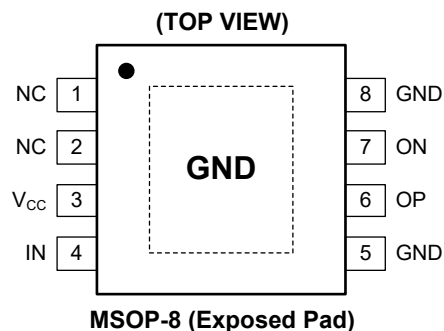
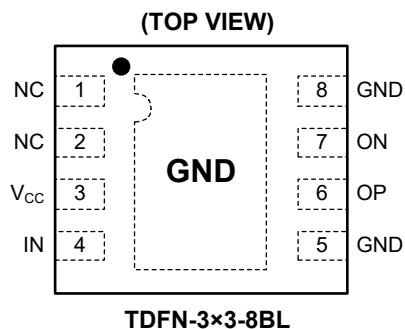
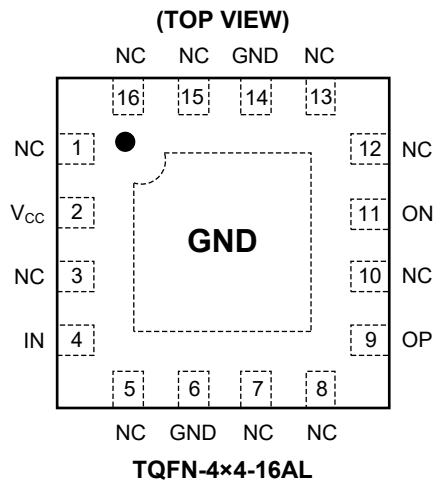
## ESD SENSITIVITY CAUTION

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
TQFN-4x4-16AL	TDFN-3x3-8BL	MSOP-8 (Exposed Pad)		
1, 3, 5, 7, 8, 10, 12, 13, 15, 16	1, 2	1, 2	NC	No Connection. NC pins should be left open.
2	3	3	V <sub>CC</sub>	High Voltage Power Supply.
4	4	4	IN	Logic Control Input.
6, 14	5, 8	5, 8	GND	Ground.
9	6	6	OP	Non-Inverted Output.
11	7	7	ON	Inverted Output.
Exposed Pad	Exposed Pad	Exposed Pad	GND	Ground. Exposed Pad should be tied to GND or left floating.

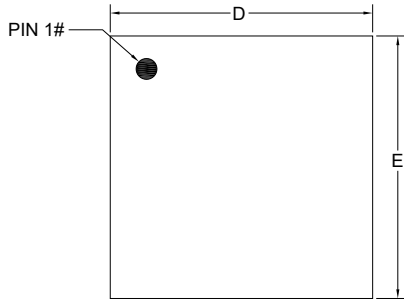
**FUNCTION TABLE**

INPUT	OUTPUT	
IN	OP	ON
H	H	L
L	L	H

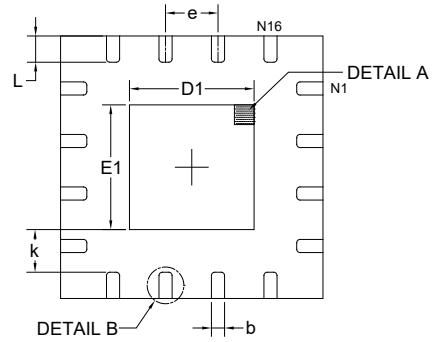
# PACKAGE INFORMATION

## PACKAGE OUTLINE DIMENSIONS

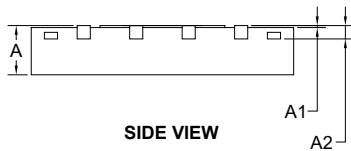
### TQFN-4×4-16AL



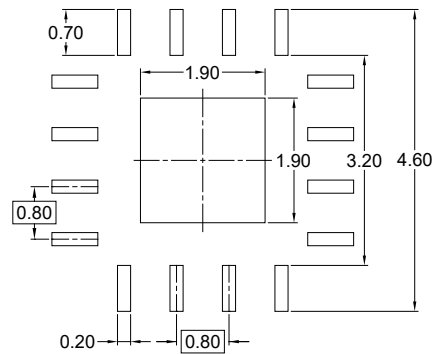
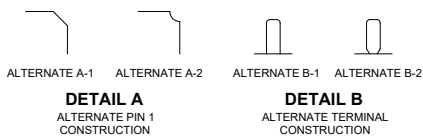
TOP VIEW



BOTTOM VIEW



SIDE VIEW



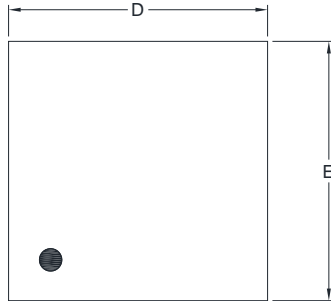
RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		
	MIN	MOD	MAX
A	0.700	0.750	0.800
A1	0.000	0.020	0.050
A2	0.203 REF		
b	0.150	0.200	0.250
D	4.000 BSC		
E	4.000 BSC		
D1	1.800	1.900	2.000
E1	1.800	1.900	2.000
e	0.800 BSC		
k	0.650 REF		
L	0.300	0.400	0.500

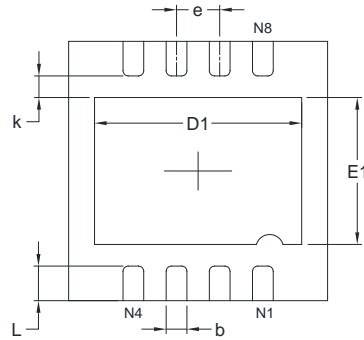
NOTE: This drawing is subject to change without notice.

PACKAGE OUTLINE DIMENSIONS

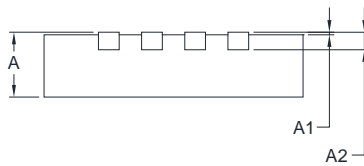
TDFN-3x3-8BL



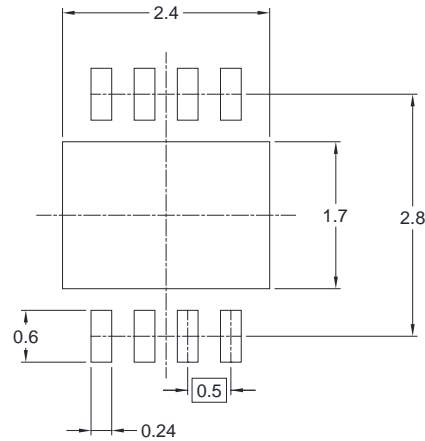
TOP VIEW



BOTTOM VIEW



SIDE VIEW



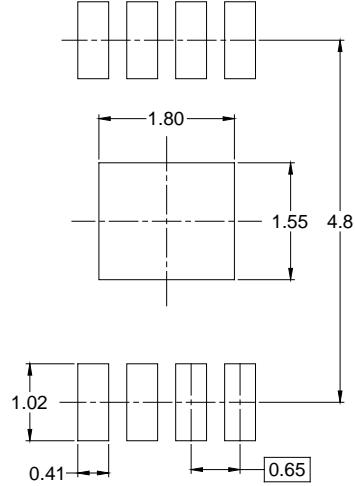
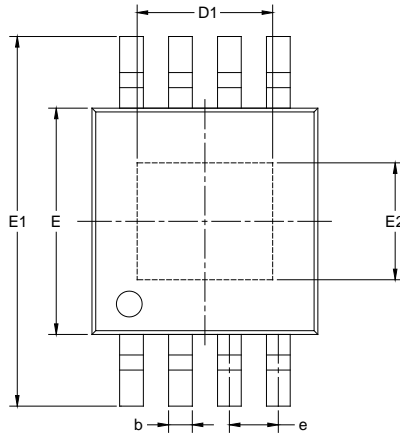
RECOMMENDED LAND PATTERN (Unit: mm)

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	2.900	3.100	0.114	0.122
D1	2.300	2.500	0.091	0.098
E	2.900	3.100	0.114	0.122
E1	1.600	1.800	0.063	0.071
k	0.200 MIN		0.008 MIN	
b	0.180	0.300	0.007	0.012
e	0.500 TYP		0.020 TYP	
L	0.300	0.500	0.012	0.020

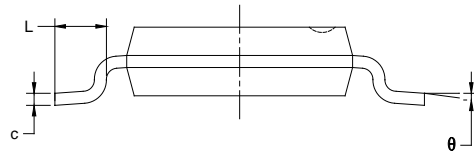
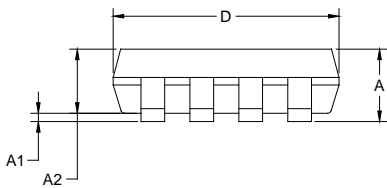
NOTE: This drawing is subject to change without notice.

PACKAGE OUTLINE DIMENSIONS

MSOP-8 (Exposed Pad)



RECOMMENDED LAND PATTERN (Unit: mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
D1	1.700	1.900	0.067	0.075
e	0.65 BSC		0.026 BSC	
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
E2	1.450	1.650	0.057	0.065
L	0.400	0.800	0.016	0.031
$\theta$	0°	6°	0°	6°

NOTES:

1. Body dimensions do not include mode flash or protrusion.
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
TQFN-4×4-16AL	13"	12.4	4.30	4.30	1.10	4.0	8.0	2.0	12.0	Q1
TDFN-3×3-8BL	13"	12.4	3.35	3.35	1.13	4.0	8.0	2.0	12.0	Q1
MSOP-8 (Exposed Pad)	13"	12.4	5.20	3.30	1.50	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