

GENERAL DESCRIPTION

The SGM23001C is an 802.11n WLAN Front-End Module (FEM) which integrates a fully matched 5.8GHz power amplifier (PA), two SPDT T/R switches and a controller inside.

The SGM23001C has 3 states which are bypass mode, high-power mode and off mode with only one control pin, providing customized solutions for 5.8G WLAN RF applications.

The SGM23001C is available in a Green TLGA-2x2-16L package.

APPLICATIONS

Personal Computer Systems and PC Cards
 Access Points
 Smart Home
 Battery-Powered Equipment

FEATURES

- **Saturated Output Power:**
 $P_{SAT} = 29.5\text{dBm @ } 4900\text{MHz to } 5900\text{MHz}$
 $P_{SAT} = 29.3\text{dBm @ } 5900\text{MHz to } 6425\text{MHz}$
- **Transmit Nominal Power: 22dBm @ MCS0**
- **Standby Current: 0.3 μ A**
- **Bypass Insertion Loss:**
 $1.3\text{dB @ } 4900\text{MHz to } 5900\text{MHz}$
 $1.4\text{dB @ } 5900\text{MHz to } 6425\text{MHz}$
- **Current Consumption:**
 $305\text{mA @ } P_{OUT} = 22\text{dBm, } 4900\text{MHz to } 5900\text{MHz}$
 $315\text{mA @ } P_{OUT} = 22\text{dBm, } 5900\text{MHz to } 6425\text{MHz}$
- **Error Vector Magnitude:**
 $-30\text{dB @ } P_{OUT} = 22\text{dBm, } 4900\text{MHz to } 5900\text{MHz}$
 $-28\text{dB @ } P_{OUT} = 22\text{dBm, } 5900\text{MHz to } 6425\text{MHz}$
- **Input and Output Fully Matched to 50 Ω**
- **Available in a Green TLGA-2x2-16L Package**

BLOCK DIAGRAM

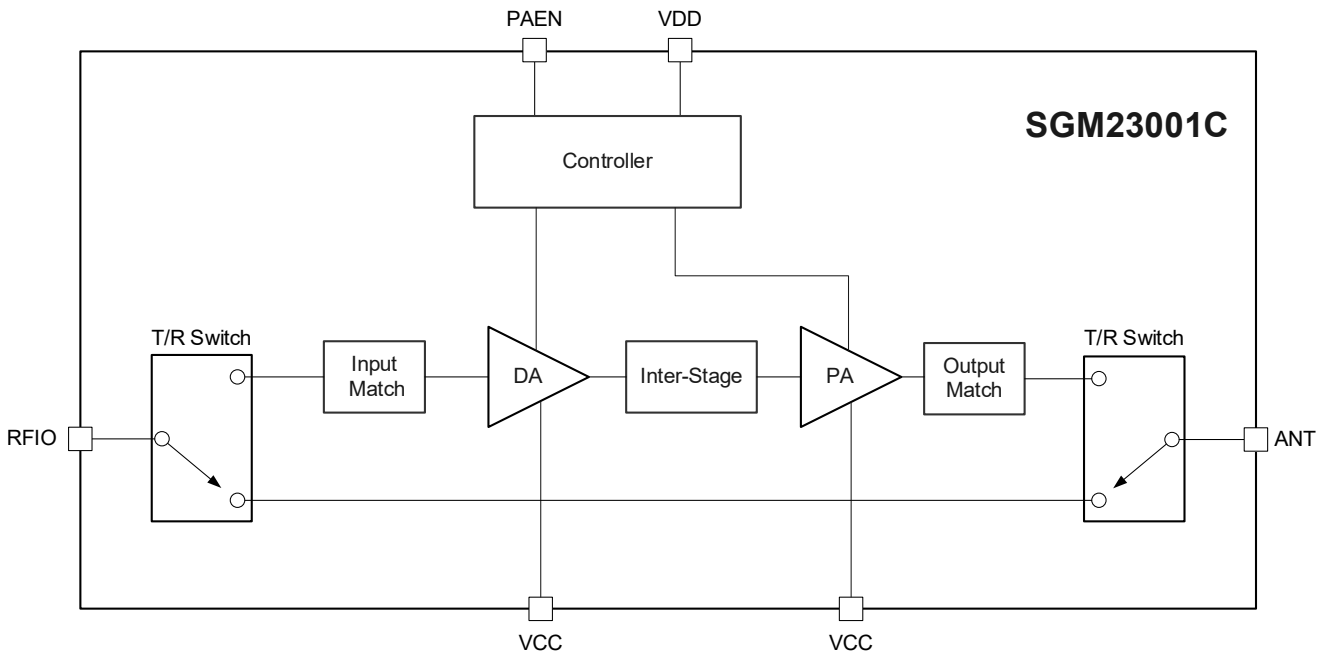


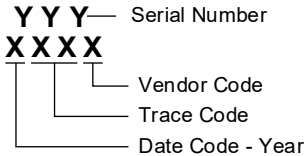
Figure 1. SGM23001C Block Diagram

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM23001C	TLGA-2x2-16L	-40°C to +85°C	SGM23001CYTLAG16G/TR	1GT XXXX	Tape and Reel, 3000

MARKING INFORMATION

NOTE: XXXX = Date Code, Trace 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 Voltage
- V_{CC} -0.3V to 6.0V
- V_{DD} -0.3V to 6.0V
- Control Voltage, PAEN -0.3V to 6.0V
- Tx Input Power 10dBm
- Rx Input Power 32dBm
- Package Thermal Resistance
- TLGA-2x2-16L, θ_{JA} 51.1°C/W
- TLGA-2x2-16L, θ_{JB} 8.0°C/W
- TLGA-2x2-16L, θ_{JC (TOP)} 76.0°C/W
- TLGA-2x2-16L, θ_{JC (BOT)} 5.9°C/W
- Storage Temperature Range -55°C to +150°C
- Lead Temperature (Soldering, 10s) +260°C
- ESD Susceptibility ⁽¹⁾⁽²⁾
- HBM ±1000V
- CDM ±2000V

NOTES:

1. For human body model (HBM), all pins comply with ANSI/ESDA/JEDEC JS-001 specifications.
2. For charged device model (CDM), all pins comply with ANSI/ESDA/JEDEC JS-002 specifications.

RECOMMENDED OPERATING CONDITIONS

- Operating Ambient Temperature Range -40°C to +85°C
- Supply Voltage
- V_{CC} 3.0V to 3.6V
- V_{DD} 3.0V to 3.6V
- Control Voltage High, PAEN_{IH} V_{DD} - 0.3V to 3.6V
- Control Voltage Low, PAEN_{IL} 0V to 0.45V

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.

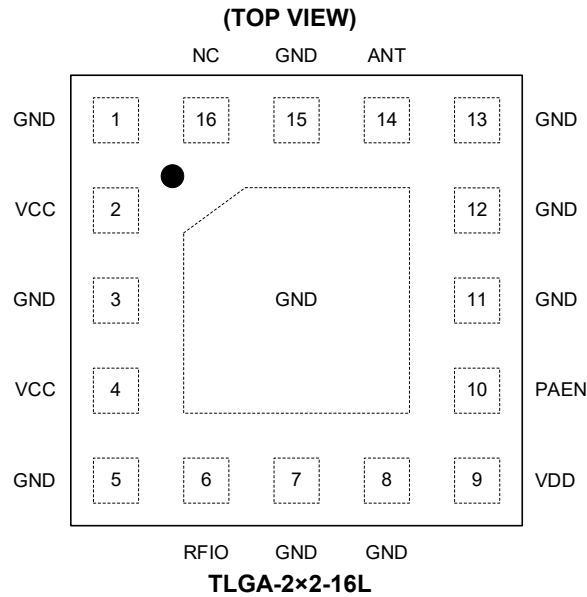
ESD SENSITIVITY CAUTION

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	FUNCTION
2, 4	VCC	Supply Voltage for PA.
6	RFIO	RF Tx Input and Rx Output Port.
9	VDD	Supply Voltage for Controller.
10	PAEN	Enable Pin for PA.
14	ANT	Antenna Port.
1, 3, 5, 7, 8, 11, 12, 13, 15	GND	Ground.
16	NC	No Connection.
Exposed Pad	GND	Ground

NOTE: External VCC supply must connect pin2 VCC together with pin4 VCC in PCB layout. Don't leave pin2 or pin4 alone.

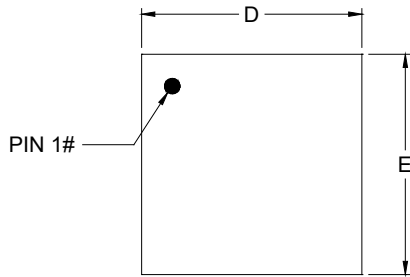
CONTROL LOGIC

Mode	PAEN
Bypass	0
High-Power	1
Off	Hi-Z

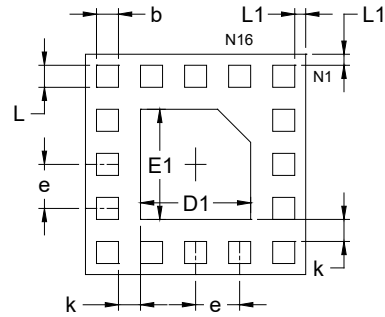
PACKAGE INFORMATION

PACKAGE OUTLINE DIMENSIONS

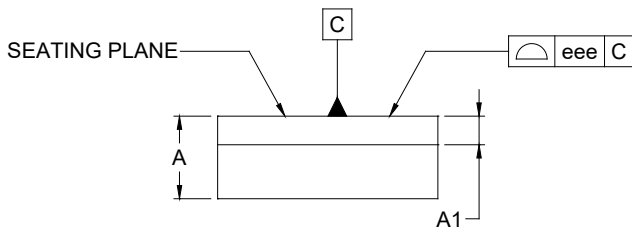
TLGA-2×2-16L



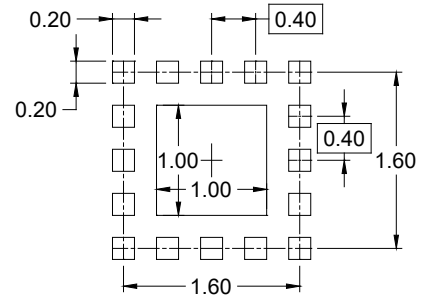
TOP VIEW



BOTTOM VIEW



SIDE VIEW



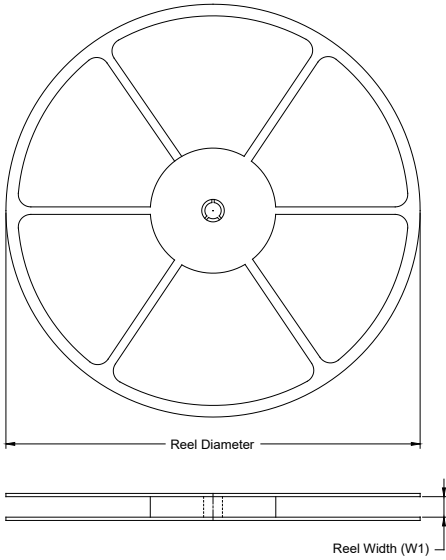
RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	0.700	-	0.800
A1	0.260 REF		
b	0.150	-	0.250
D	1.900	-	2.100
E	1.900	-	2.100
D1	0.900	-	1.100
E1	0.900	-	1.100
e	0.400 BSC		
k	0.200 REF		
L	0.150	-	0.250
L1	0.100 REF		
eee	0.100		

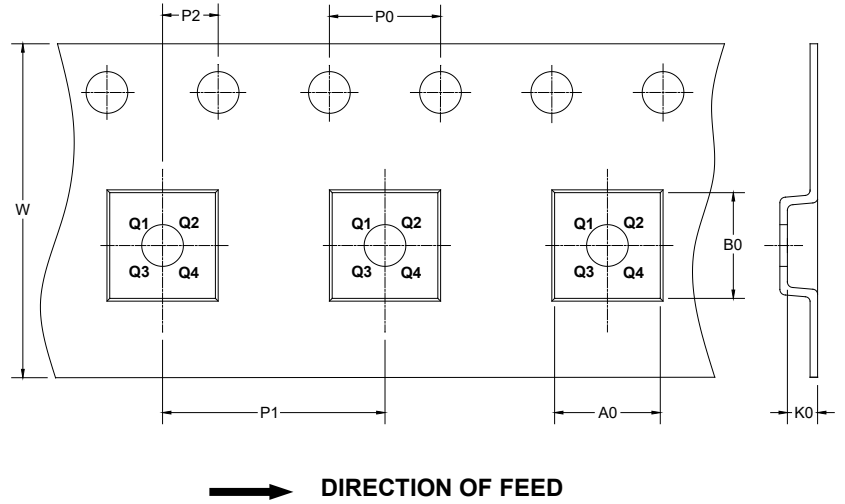
NOTE: This drawing is subject to change without notice.

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



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

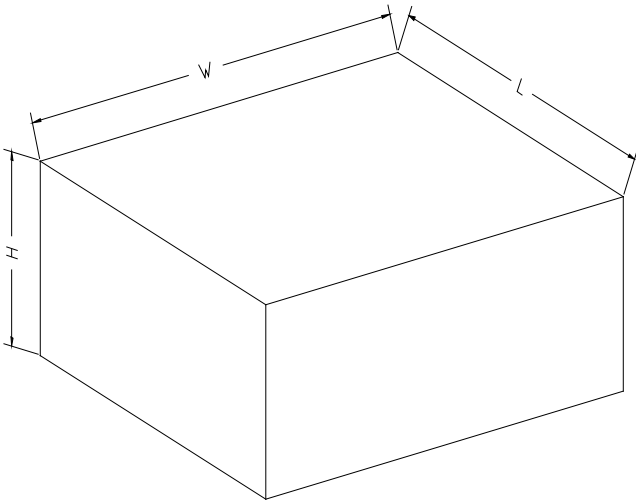
KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
TLGA-2x2-16L	7"	9.5	2.30	2.30	1.00	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

D00002