

GENERAL DESCRIPTION

The SGM23001A 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 SGM23001A has 3 states, namely bypass mode, high-power mode and off mode with only one control pin, providing customized solutions for 5.8G WLAN RF applications.

The SGM23001A is available in a Green TLGA-2×2-16L package.

FEATURES

- **Saturated Output Power: 27dBm**
- **Transmit Nominal Power: 22dBm @ 802.11n MCS0**
- **Standby Current: 0.4μA**
- **Current Consumption:**
 - ◆ 4.9GHz to 5.9GHz: 300mA @ $P_{OUT} = 22\text{dBm}$
 - ◆ 5.9GHz to 6.425GHz: 310mA @ $P_{OUT} = 22\text{dBm}$
- **Error Vector Magnitude:**
 - ◆ 4.9GHz to 5.9GHz: -29dB @ $P_{OUT} = 22\text{dBm}$
 - ◆ 5.9GHz to 6.425GHz: -29dB @ $P_{OUT} = 22\text{dBm}$
- **Input and Output Fully Matched to 50Ω**
- **Available in a Green TLGA-2×2-16L Package**

APPLICATIONS

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

BLOCK DIAGRAM

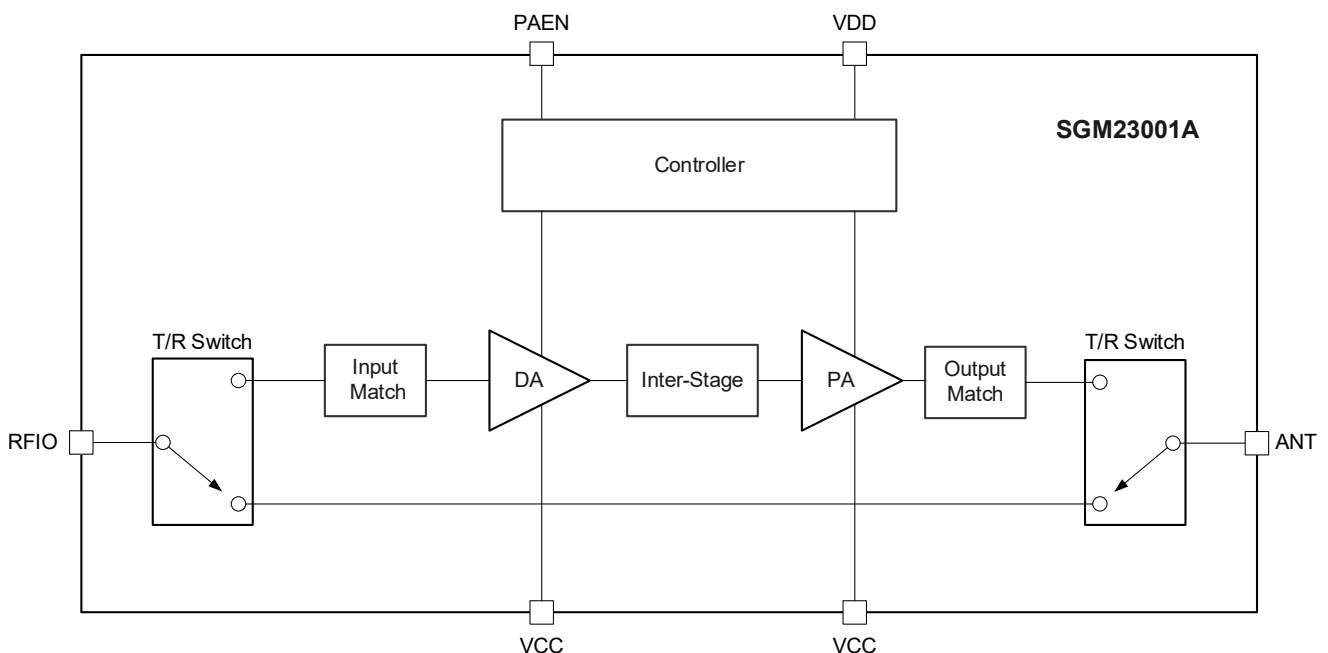


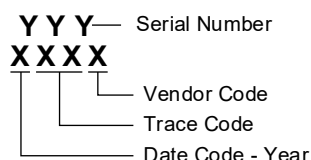
Figure 1. SGM23001A Block Diagram

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM23001A	TLGA-2×2-16L	-40°C to +85°C	SGM23001AYTLAG16G/TR	0FN XXXX	Tape and Reel, 3000

MARKING INFORMATION

NOTE: XXXX = Vendor Code, Date Code and Trace 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 3.6V
Tx Input Power	10dBm
Rx Input Power	32dBm

Package Thermal Resistance

TLGA-2×2-16L, θ _{JA}	51.1°C/W
TLGA-2×2-16L, θ _{JB}	8°C/W
TLGA-2×2-16L, θ _{JC} (TOP)	76°C/W
TLGA-2×2-16L, 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 Frequency Range 1 4.9GHz to 5.9GHz

Operating Frequency Range 2 5.9GHz to 6.425GHz

Supply Voltage

V _{CC}	3.0V to 4.6V
V _{DD}	3.0V to 4.6V
Control Voltage High, PAEN _{IH}	1.6V to 2.0V
Control Voltage Low, PAEN _{IL}	0V to 0.45V
Operating Ambient Temperature Range	-40°C to +85°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.

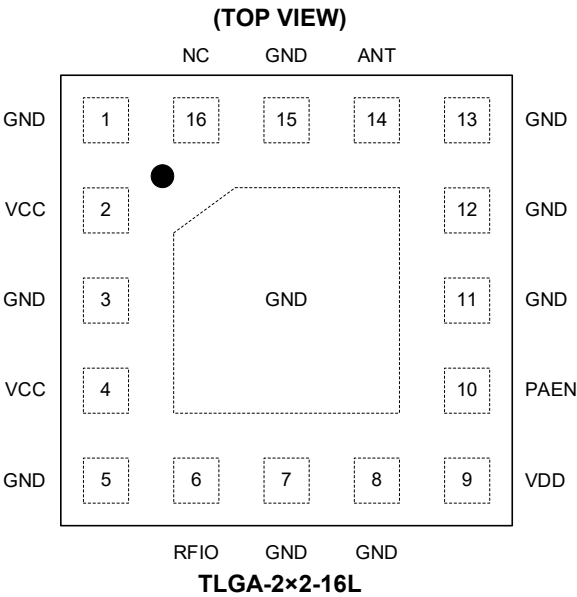
ESD SENSITIVITY CAUTION

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	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.

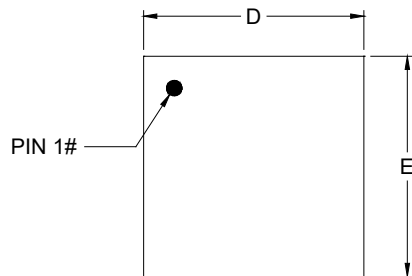
CONTROL LOGIC

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

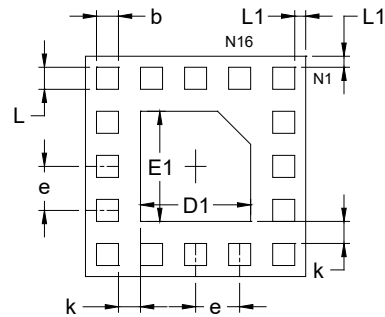
PACKAGE INFORMATION

PACKAGE OUTLINE DIMENSIONS

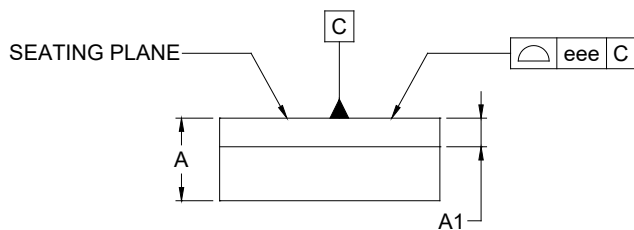
TLGA-2×2-16L



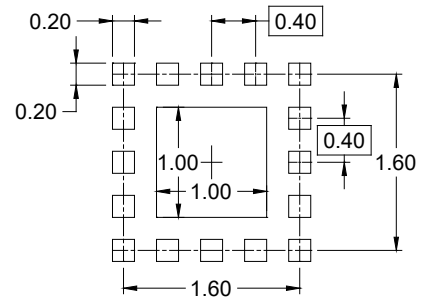
TOP VIEW



BOTTOM VIEW



SIDE VIEW



RECOMMENDED LAND PATTERN (Unit: mm)

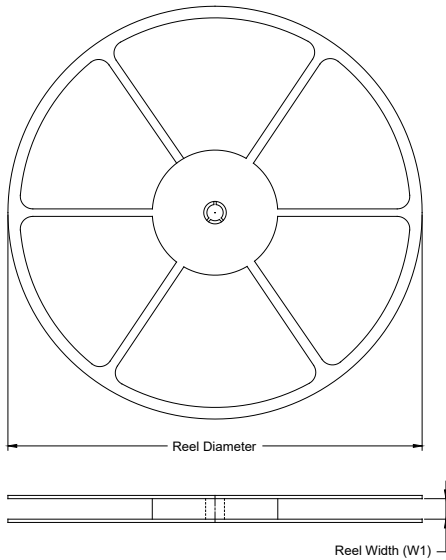
Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	0.700	-	0.800
A1	0.260 REF		
b	0.150	-	0.250
D	1.900	-	2.100
E	1.900	-	2.100
D1	0.900	-	1.100
E1	0.900	-	1.100
e	0.400 BSC		
k	0.200 REF		
L	0.150	-	0.250
L1	0.100 REF		
eee	0.100		

NOTE: This drawing is subject to change without notice.

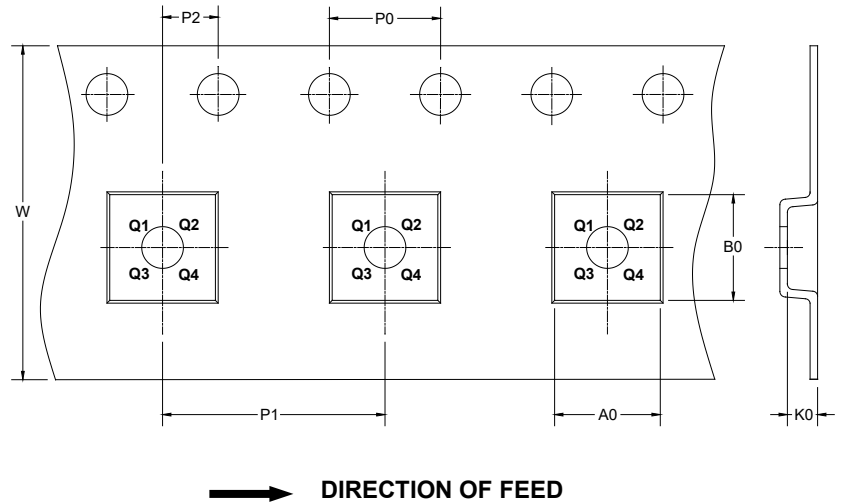
PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



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

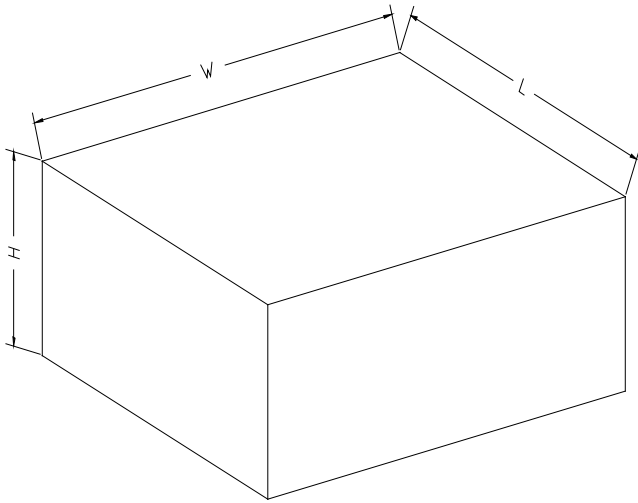
KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
TLGA-2×2-16L	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

DD0002