



SGM7300A

3.3V, Differential 2-Channel, 2:1 Multiplexer/Demultiplexer Switch

GENERAL DESCRIPTION

The SGM7300A is a differential 2-channel switch which can be used for both multiplexer (MUX) and demultiplexer (DEMUX) configurations. The device can be used for PCI Express Generation 3, USB 3.1 and other high-speed serial interface applications.

The product can switch dual differential signals to 1 of 2 locations. The SGM7300A minimizes the impedance of the switch so that the attenuation observed through the switch can be ignored and minimizes the inter-channel skew and inter-channel crosstalk required for high-speed serial interfaces. The SGM7300A can achieve extremely low power consumption by extending existing high-speed ports. In order to achieve high ESD tolerance, the ESD protection circuits are integrated into ICs.

The SGM7300A optimizes the pins to match the product to different application layouts. It is suitable for edge connectors with different signal sources on the motherboard, with input and output pins on opposite sides of the package. When SGM7300A is in power-off state, all I/O pins' impedance is 20k Ω . When V_{DD} is powered on, the ports that switched off are low impedance, approximately 4 Ω , the two port ends that switched on are approximately 13k Ω .

No external DC blocking capacitors are required on the RF paths as long as no external DC voltage is applied, which can save PCB area and cost.

The SGM7300A is available in a Green TLGA-2.5 \times 4.5-20L package.

FEATURES

- High Bandwidth: 9GHz
- Support 10Gbps Signal Transmission
- Support USB 3.1 Gen1 and Gen2 Data Rates
- Low Insertion Loss:
 - ♦ -0.33dB at 0.1GHz
 - ♦ -0.85dB at 4.0GHz
- Low Off-State Isolation: -22dB at 4.0GHz
- Low Return Loss: -20dB at 4.0GHz
- Available in a Green TLGA-2.5 \times 4.5-20L Package

APPLICATIONS

USB 3.1

PCI Express Generation 3

DisplayPort 1.2

SATA 6Gbit/s

High-Speed Differential Signals Routing

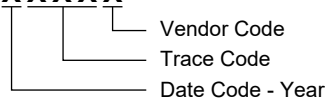
PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM7300A	TLGA-2.5×4.5-20L	-40°C to +85°C	SGM7300AYTLN20G/TR	MET TLN20 XXXXX	Tape and Reel, 5000

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

Supply Voltage, V_{DD}	-0.3V to 3.7V
Package Thermal Resistance	
TLGA-2.5×4.5-20L, θ_{JA}	105.6°C/W
TLGA-2.5×4.5-20L, θ_{JB}	78.3°C/W
TLGA-2.5×4.5-20L, θ_{JC}	100.5°C/W
Junction Temperature	+150°C
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

Supply Voltage, V_{DD}	3.0V to 3.6V
Control Voltage, V_{XSD} , V_{SEL}	0V to 3.6V
Operating 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.

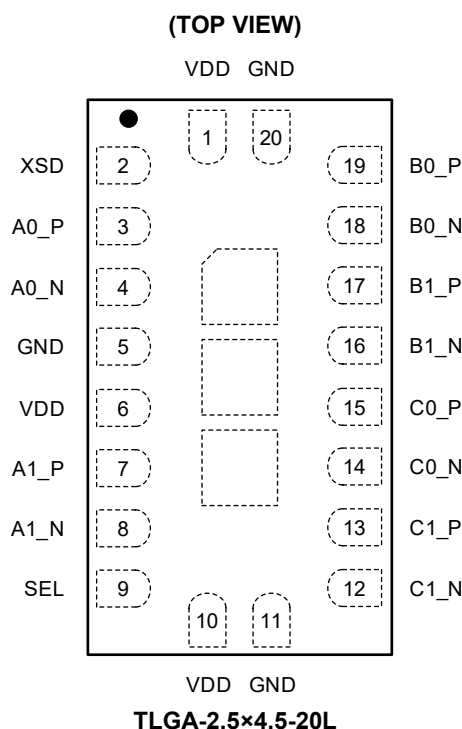
ESD SENSITIVITY CAUTION

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	TYPE	FUNCTION
3	A0_P	I/O	Channel 0, Port A, Positive/Negative Signal.
4	A0_N	I/O	
7	A1_P	I/O	Channel 1, Port A, Positive/Negative Signal.
8	A1_N	I/O	
19	B0_P	I/O	Channel 0, Port B, Positive/Negative Signal.
18	B0_N	I/O	
17	B1_P	I/O	Channel 1, Port B, Positive/Negative Signal.
16	B1_N	I/O	
15	C0_P	I/O	Channel 0, Port C, Positive/Negative Signal.
14	C0_N	I/O	
13	C1_P	I/O	Channel 1, Port C, Positive/Negative Signal.
12	C1_N	I/O	
9	SEL	CMOS Single-Ended Input	Operation Mode Select Pin. SEL = Low: A ↔ B SEL = High: A ↔ C
2	XSD	CMOS Single-Ended Input	XSD = Low: Normal Operation XSD = High: High-Z Operation
1, 6, 10	VDD	Power	Positive Supply Voltage.
5, 11, 20	GND	Power	Ground.
Exposed Pad	—	Power	Exposed pad must be connected to ground.

FUNCTIONAL BLOCK DIAGRAM

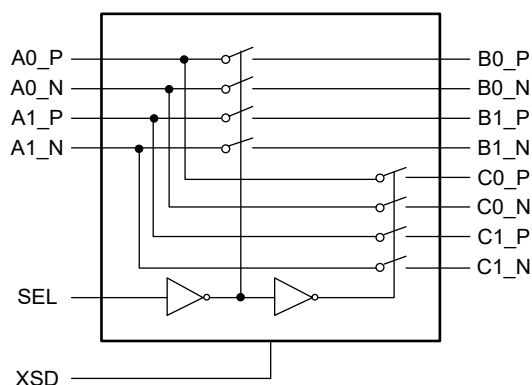


Figure 1. Block Diagram

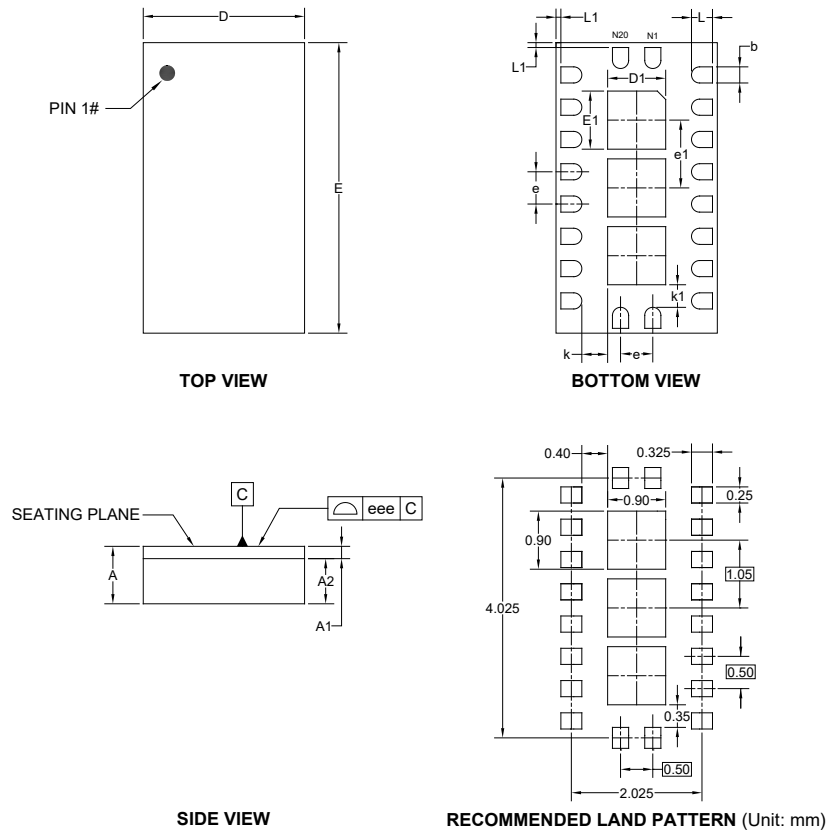
FUNCTIONAL DESCRIPTION

XSD	SEL	FUNCTION
High	X	All channel off
Low	Low	Channel on An to Bn
Low	High	Channel on An to Cn

X = Don't care.

PACKAGE OUTLINE DIMENSIONS

TLGA-2.5×4.5-20L



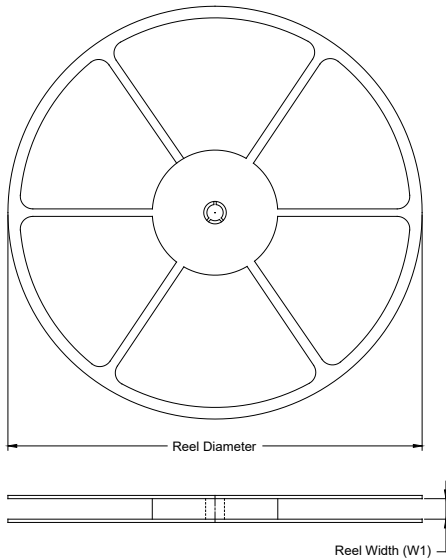
Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	0.840	-	0.940
A1	0.160	-	0.220
A2	0.700 REF		
b	0.200	-	0.300
D	2.400	-	2.600
E	4.400	-	4.600
D1	0.800	0.900	1.000
E1	0.800	0.900	1.000
e	0.500 BSC		
e1	1.050 BSC		
L	0.275	-	0.375
L1	0.025	-	0.125
k	0.400 REF		
k1	0.350 REF		
eee	0.100		

NOTE: This drawing is subject to change without notice.

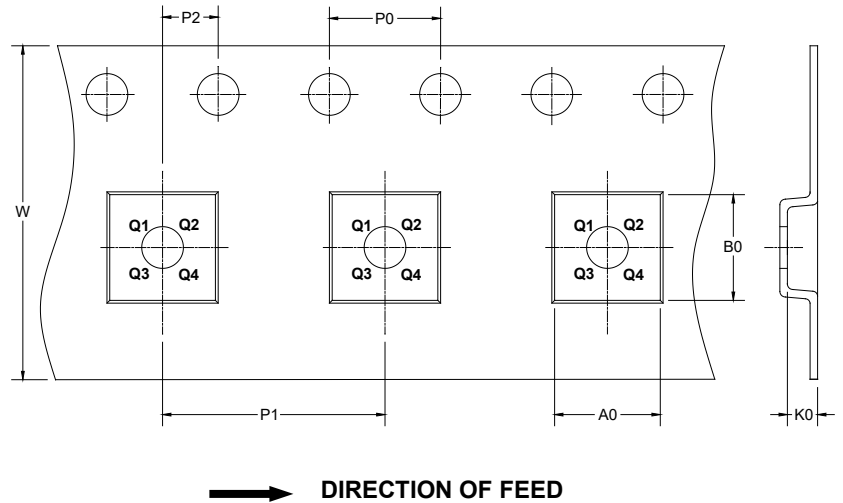
PACKAGE INFORMATION

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-2.5×4.5-20L	13"	12.4	2.8	4.8	1.15	4	8	2	12	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