



SGM05UU2A3

Ultra-Low Capacitance 2-Channel ESD Protection

GENERAL DESCRIPTION

This SGM05UU2A3 is an ultra-low capacitance ESD protection device designed to protect circuits from electrostatic discharge.

FEATURES

- Protection for the Following IEC Standards:
 - ♦ IEC 61000-4-2: $\pm 25\text{kV}$ (Air)
 - ♦ IEC 61000-4-2: $\pm 25\text{kV}$ (Contact)
 - ♦ IEC 61000-4-5 (Lightning): 4A (8/20 μs)
- Channel Input Capacitance: 0.7pF (TYP)
- Low Profile Package: UTDFN-1 $\times$ 0.6-3L
- Working Voltage: 5V (MAX)

APPLICATIONS

Cellular Handsets & Accessories
Computers and Peripherals
Audio and Video Equipment
SIM Card Protection
Portable Electronics
10/100Mbit/s Ethernet

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Current ($t_p = 8/20\mu\text{s}$)	I_{PP}	4	A
ESD IEC 61000-4-2 (Air)	V_{ESD}	± 25	kV
ESD IEC 61000-4-2 (Contact)		± 25	
Operating Temperature Range	T_{OP}	-40 to +125	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}\text{C}$
Lead Temperature (Soldering, 10s)		+260	$^{\circ}\text{C}$

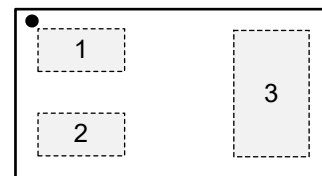
Stresses beyond those listed in Absolute Maximum Ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

PRODUCT SUMMARY

V_{RWM} (MAX)	I_{PP} (TYP)	C_{IN} (TYP)
5V	4A	0.7pF

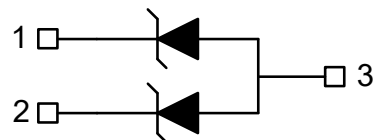
PIN CONFIGURATION

(TOP VIEW)



UTDFN-1 $\times$ 0.6-3L

EQUIVALENT CIRCUIT



PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM05UU2A3	UTDFN-1×0.6-3L	-40°C to +125°C	SGM05UU2A3XUEM3G/TR	00X	Tape and Reel, 10000
			SGM05UU2A3XUEM3DG/TR	00X	Tape and Reel, 10000

MARKING INFORMATION

NOTE: X = Date Code.

YY X

Date Code - Quarter

Serial Number

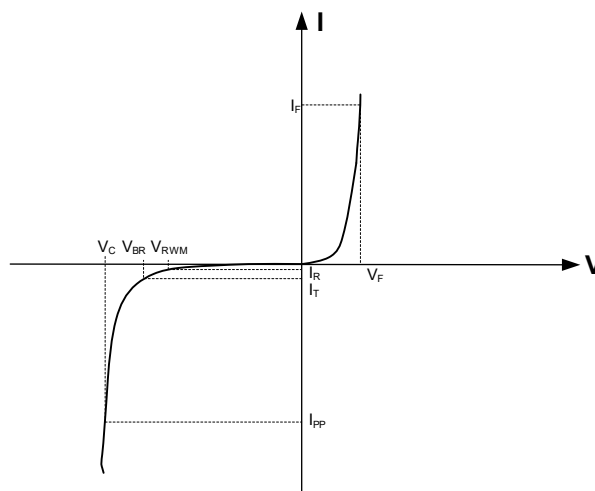
Green (RoHS & HSF): SG Micro Corp defines "Green" to mean Pb-Free (RoHS compatible) and free of halogen substances. If you have additional comments or questions, please contact your SGMICRO representative directly.

DISCLAIMER

SG Micro Corp reserves the right to make any change in circuit design, or specifications without prior notice.

ELECTRICAL PARAMETERS

SYMBOL	PARAMETER
V_{RWM}	Reverse Stand-Off Voltage
V_{BR}	Reverse Breakdown Voltage
I_R	Reverse Leakage Current
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
R_{DYN}	Dynamic Resistance
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F



ELECTRICAL CHARACTERISTICS(T_A = +25°C, unless otherwise noted.)

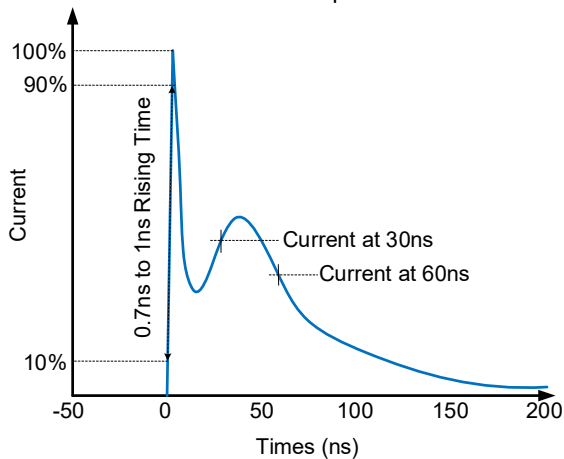
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Reverse Stand-Off Voltage	V _{RWM}	I/O to GND (pin3)			5	V
Reverse Breakdown Voltage	V _{BR}	I _R = 1mA, I/O to GND (pin3)	6	8	10	V
Reverse Leakage Current	I _R	V _{RWM} = 5V, I/O to GND (pin3)			500	nA
Channel Input Capacitance	C _{IN}	V _R = 0V, f = 1MHz, I/O to GND (pin3)		0.7	1	pF
Surge Clamping Voltage ⁽¹⁾	V _{C_SURGE}	t _P = 8/20μs, R _S = 2Ω, I _{PP} = 4A		8.6		V
ESD Clamping Voltage ⁽²⁾	V _C	t _P = 100ns, I _{TLP} = 8A		10.7		V
		t _P = 100ns, I _{TLP} = 16A		13.3		
Dynamic Resistance ⁽²⁾	R _{DYN}	t _P = 100ns		0.32		Ω

NOTES:

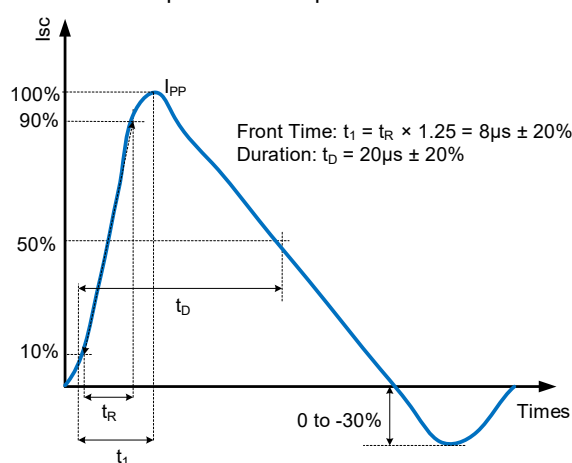
1. Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC 61000-4-5, 2Ω source impedance.
2. Non-repetitive current pulse, Transmission Line Pulse (TLP) t_P = 100ns; square pulse.

TYPICAL PERFORMANCE CHARACTERISTICS

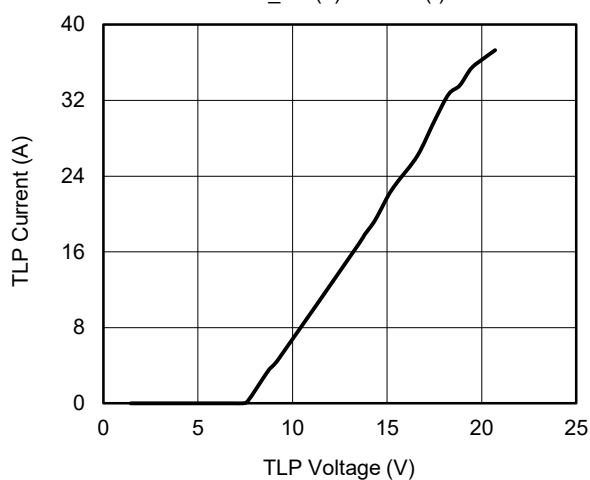
ESD Pulse Waveform per IEC 61000-4-2



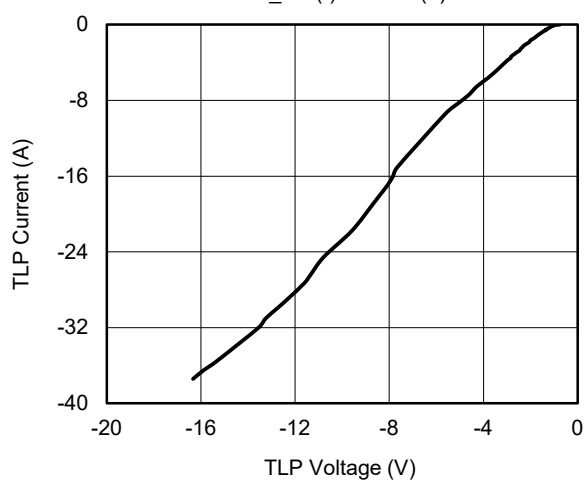
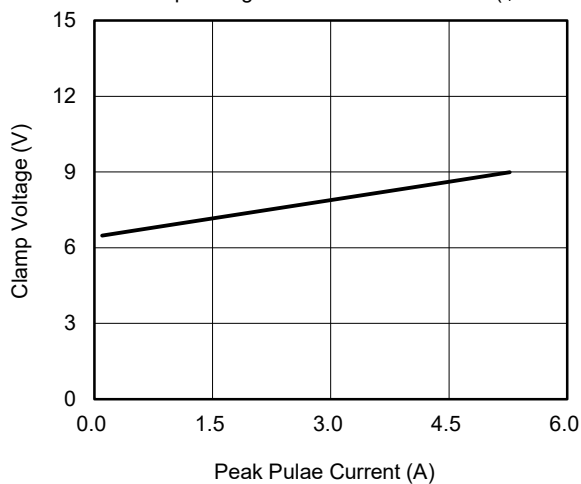
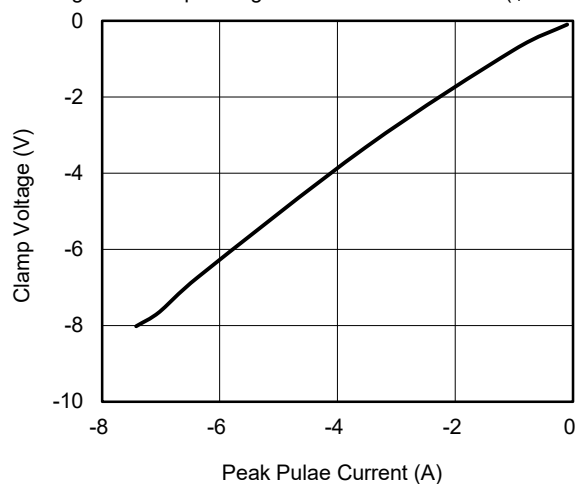
8/20μs Waveform per IEC 61000-4-5



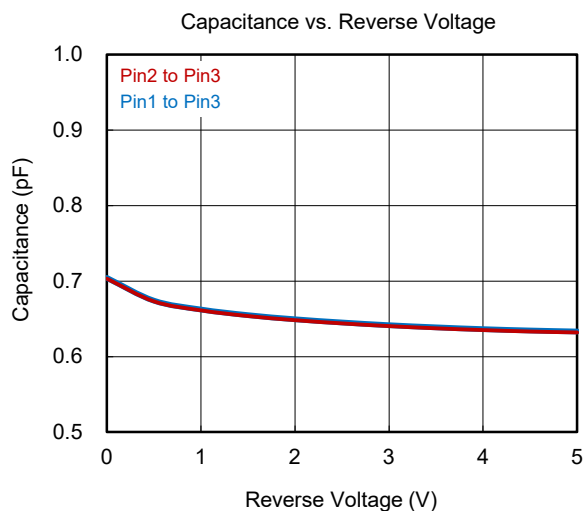
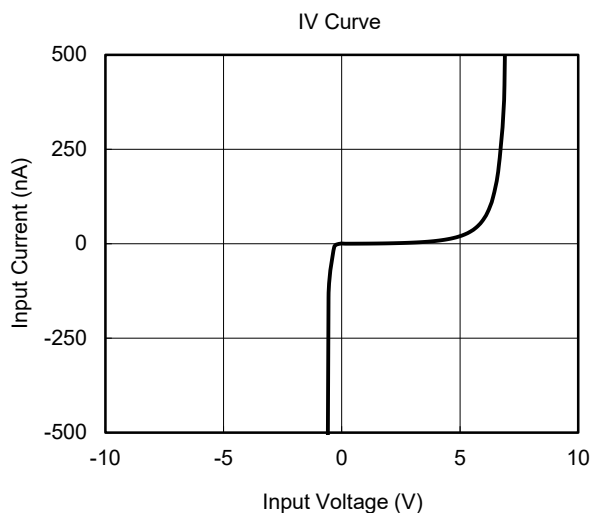
TLP_I/O (+) to GND (-)



TLP_I/O (-) to GND (+)

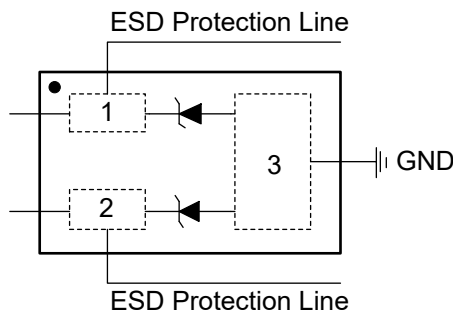
Positive Clamp Voltage vs. Peak Pulse Current ($t_P = 8/20\mu s$)Negative Clamp Voltage vs. Peak Pulse Current ($t_P = 8/20\mu s$)

TYPICAL PERFORMANCE CHARACTERISTICS (continued)



APPLICATION INFORMATION

The SGM05UU2A3 is applied to keep two data lines protect from transient over-voltage like ESD stress pulse. The two protected data lines are connected to the protection pin 1 and pin 2. The pin 3 is the negative pins connect to GND.



The recommended guidelines are as follows:

1. TVS Placement

Place the TVS as close as possible to the input connector.

2. TVS's Trace Layout

Avoid running protected traces in parallel with unprotected traces.
Minimize the path length between the TVS and the protected line.
Minimize parallel signal path length.
Route the protected traces as straight as possible.

3. GND Layout

Avoid using a common ground point shared with the TVS transient return path.
Minimize the length of the TVS transient return path to ground.
Use ground vias as close as possible to the TVS transient return to ground.

REVISION HISTORY

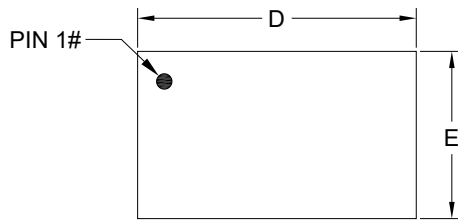
NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Original to REV.A (SEPTEMBER 2026)	Page
Changed from product preview to production data.....	All

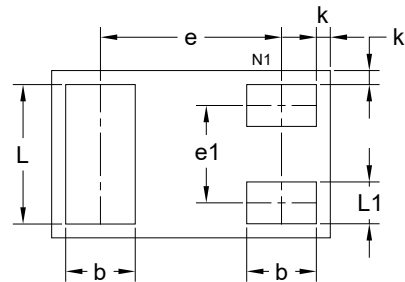
PACKAGE INFORMATION

PACKAGE OUTLINE DIMENSIONS

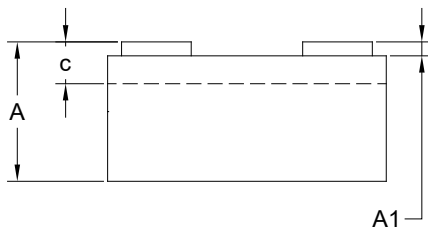
UTDFN-1×0.6-3L



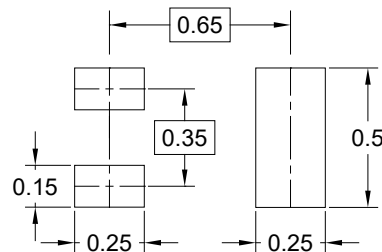
TOP VIEW



BOTTOM VIEW



SIDE VIEW



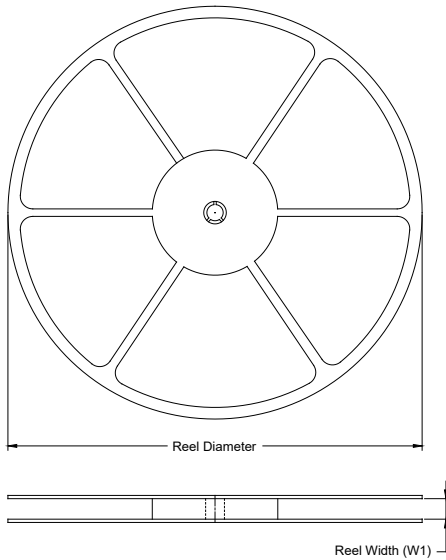
RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	0.400	0.500	0.550
A1	0.000	-	0.050
b	0.200	0.250	0.300
c	0.120	0.150	0.180
D	0.950	1.000	1.050
E	0.550	0.600	0.650
e	0.650 BSC		
e1	0.350 BSC		
k	0.050 REF		
L	0.450	0.500	0.550
L1	0.100	0.150	0.200

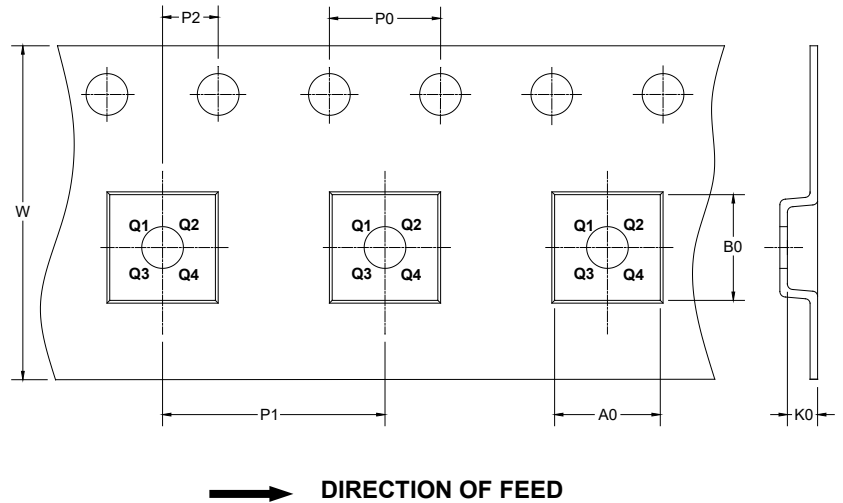
NOTE: This drawing is subject to change without notice.

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



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

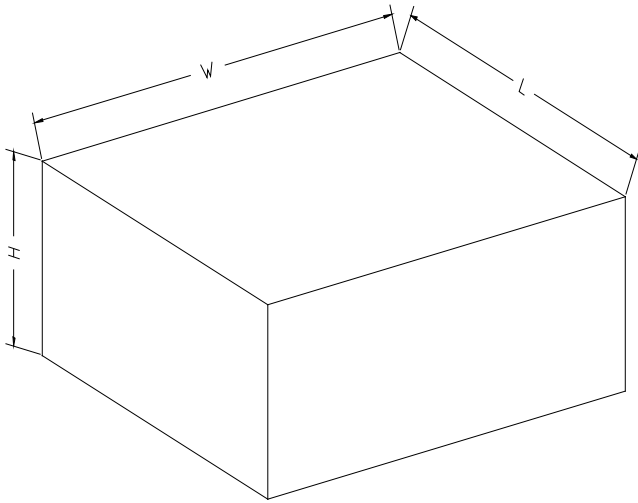
KEY PARAMETER LIST OF TAPE AND REEL

Ordering Number	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
SGM05UU2A3XUEM3G/TR	7"	8.6	0.70	1.15	0.57	4.0	2.0	2.0	8.0	Q2
SGM05UU2A3XUEM3DG/TR	7"	8.6	0.70	1.15	0.57	4.0	2.0	2.0	8.0	Q3

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