μESD3.3ST5G SERIES

ESD Protection Diodes

In Ultra Small SOD−723 Package

The μESD Series is designed to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones, MP3 players, digital cameras and many other portable applications where board space comes at a premium.

Specification Features:

- Small Body Outline Dimensions:
  0.055″ x 0.024″ (1.40 mm x 0.60 mm)
- Low Body Height: 0.020″ (0.5 mm)
- Stand−off Voltage: 3.3 V − 12 V
- Low Leakage
- Response Time is Typically < 1 ns
- ESD Rating of Class 3 (> 16 kV) per Human Body Model
- IEC61000−4−2 Level 4 ESD Protection
- IEC61000−4−4 Level 4 EFT Protection
- These are Pb−Free Devices

Mechanical Characteristics:

CASE: Void-free, transfer-molded, thermosetting plastic Epoxy Meets UL 94 V−0

LEAD FINISH: 100% Matte Sn (Tin)

MOUNTING POSITION: Any

QUALIFIED MAX REFLOW TEMPERATURE: 260°C

Device Meets MSL 1 Requirements

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
IEC 61000−4−2 (ESD) Air Contact		±30 ±30	kV
IEC 61000−4−4 (EFT)		40	A
ESD Voltage Per Human Body Model Per Machine Model		16 400	kV V
Total Power Dissipation on FR−5 Board (Note 1) @ T_A = 25°C	P_D	150	mW
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C
Lead Solder Temperature − Maximum (10 Second Duration)	T_L	260	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR−5 = 1.0 x 0.75 x 0.62 in.

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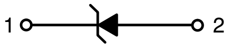
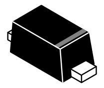
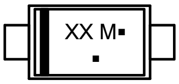


PIN 1. CATHODE
2. ANODE



SOD−723
CASE 509AA

MARKING DIAGRAM



XX = Specific Device Code
M = Date Code
▪ = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
μESDxxST5G	SOD−723 (Pb−Free)	8000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

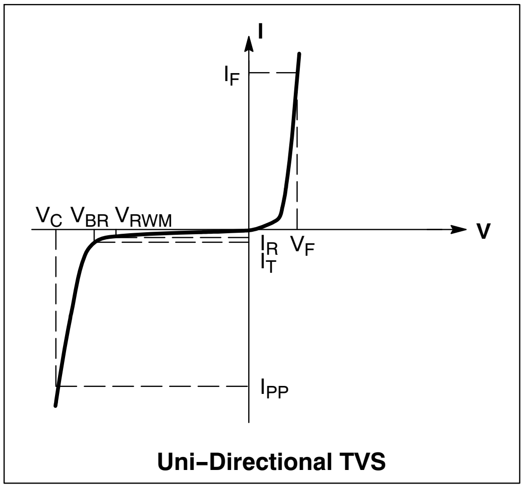
DEVICE MARKING INFORMATION

See specific marking information in the device marking column of the table on page 2 of this data sheet.

ELECTRICAL CHARACTERISTICS

(T_A = 25°C unless otherwise noted)

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F
P_{pk}	Peak Power Dissipation
C	Max. Capacitance @V_R = 0 and f = 1 MHz



Uni-Directional TVS

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, V_F = 1.1 V Max. @ I_F = 10 mA for all types)

Device*	Device Marking	V_{RWM} (V)	I_R (μA) @ V_{RWM}	V_{BR} (V) @ I_T (Note 2)	I_T	V_C (V) @ Max I_{PP}†	I_{PP} (A)†	P_{pk} (W)†	C (pF)
		Max	Max	Min	mA	Max	Max	Max	Typ
μESD3.3ST5G	E0	3.3	2.5	5.0	1.0	10.9	10.4	113	80
μESD5.0ST5G	E2	5.0	1.0	6.2	1.0	13.3	8.8	117	65
μESD12ST5G	E3	12	1.0	13.5	1.0	23.7	5.4	128	30

*Other voltages available upon request.
†Surge current waveform per Figure 1.
2. V_{BR} is measured with a pulse test current I_T at an ambient temperature of 25°C.

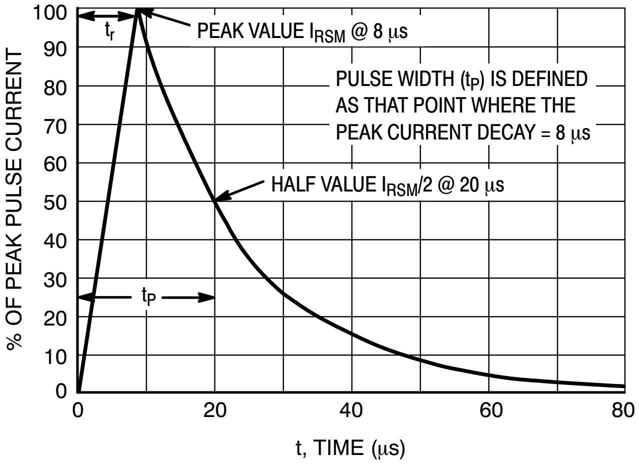


Figure 1. 8 x 20 μs Pulse Waveform

TYPICAL CHARACTERISTICS

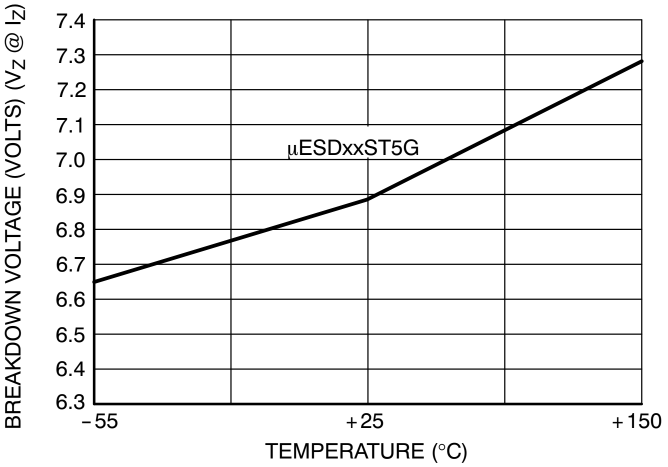


Figure 2. Typical Breakdown Voltage versus Temperature

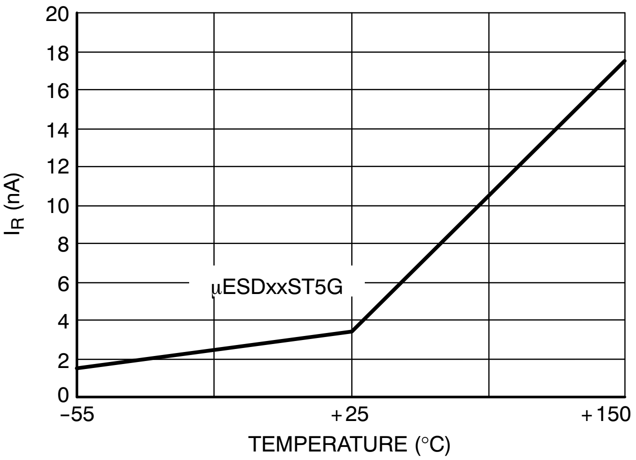


Figure 3. Typical Leakage Current versus Temperature

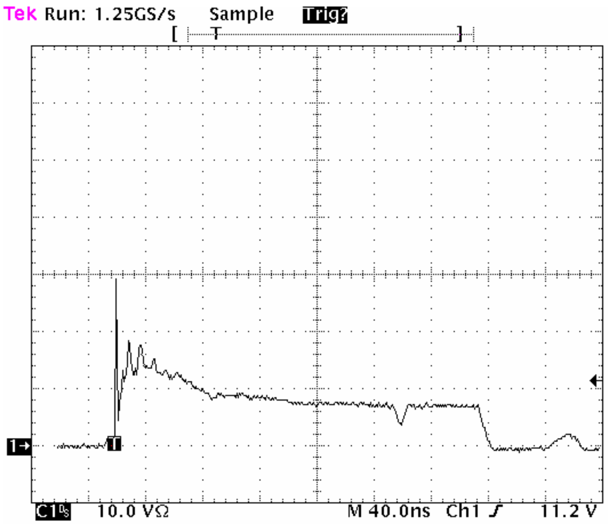


Figure 4. Positive 8 kV contact per IEC 6100−4−2 − μESD5.0ST5G

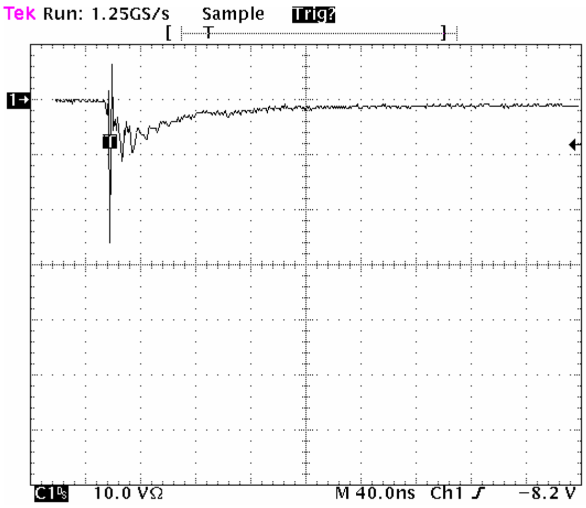
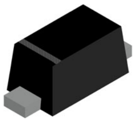
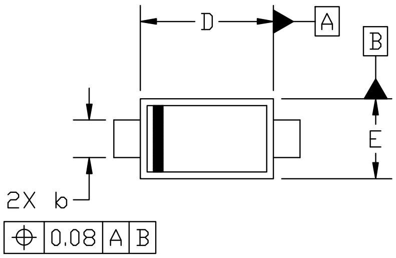


Figure 5. Negative 8 kV contact per IEC 61000−4−2 − μESD5.0ST5G

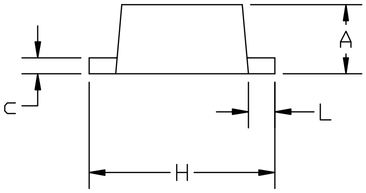


SOD-723, 2-LEAD, 1.00x0.60x0.52
CASE 509AA
ISSUE A

DATE 01 FEB 2024



TOP VIEW



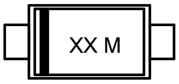
SIDE VIEW

NOTES:

1. DIMENSIONSING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSIONS: MILLIMETER.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

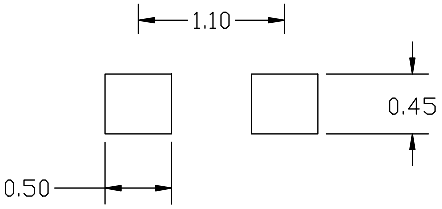
DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.49	0.52	0.55
b	0.25	0.28	0.32
c	0.08	0.12	0.15
D	0.95	1.00	1.05
E	0.55	0.60	0.65
H	1.35	1.40	1.45
L	0.15	0.20	0.25

GENERIC
MARKING DIAGRAM*



XX	= Specific Device Code
M	= Date Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.



RECOMMENDED MOUNTING FOOTPRINT

*For additional formation on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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DESCRIPTION:	**SOD-723, 2-LEAD, 1.00x0.60x0.52**		**PAGE 1 OF 1**

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