



**THE DATASHEET OF  
SZUESD3.3DT5G**



# μESD3.3DT5G SERIES

## ESD Protection Diodes

### Ultra Small SOT-723 Package

The μESD Series is designed to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium. Because of its small size, it is suited for use in cellular phones, portable devices, digital cameras, power supplies and many other portable applications.

#### Specification Features:

- Small Body Outline Dimensions:  
0.047" x 0.032" (1.20 mm x 0.80 mm)
- Low Body Height: 0.020" (0.5 mm)
- Stand-off Voltage: 3.3 V – 6.0 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
- AEC-Q101 Qualified and PPAP Capable
- 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)<br>Air Contact   |                                   | ±30<br>±30     | kV          |
| IEC 61000-4-4 (EFT)  |                                   | 40             | A           |
| ESD Voltage<br>Per Human Body Model<br>Per Machine Model                                       |                                   | 16<br>400      | kV<br>V     |
| Total Power Dissipation on FR-5 Board<br>(Note 1) @ T <sub>A</sub> = 25°C<br>Derate above 25°C | P <sub>D</sub>                    | 240<br>1.9     | mW<br>mW/°C |
| Thermal Resistance Junction-to-Ambient   | R <sub>θJA</sub>                  | 525            | °C/W        |
| Junction and Storage Temperature Range   | T <sub>J</sub> , T <sub>stg</sub> | -55 to<br>+150 | °C          |
| Lead Solder Temperature – Maximum<br>(10 Second Duration)                                      | T <sub>L</sub>                    | 260            | °C          |

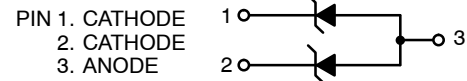
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. FR-5 = 1.0 x 0.75 x 0.62 in.



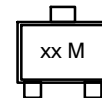
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SOT-723  
CASE 631AA  
STYLE 4

#### MARKING DIAGRAM



xx = Device Code  
M = Date Code

#### ORDERING INFORMATION

| Device     | Package | Shipping†        |
|------------|---------|------------------|
| UESDxxDT5G | SOT-723 | 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

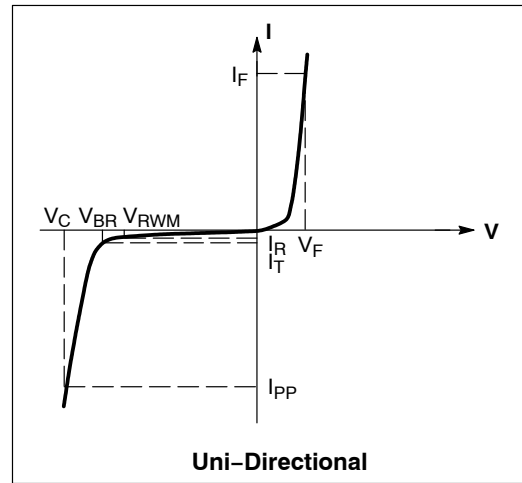
See specific marking information in the device marking column of the table on page 2 of this data sheet.

## μESD3.3DT5G SERIES

### ELECTRICAL CHARACTERISTICS

( $T_A = 25^\circ\text{C}$  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 |



### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 1.1$ V Max. @ $I_F = 10$ mA for all types)

| Device*     | Device Marking | $V_{RWM}$ (V) | $I_R$ ( $\mu\text{A}$ ) @ $V_{RWM}$ | $V_{BR}$ (V) @ $I_T$<br>(Note 2) | $I_T$ | C (pF) |
|-------------|----------------|---------------|-------------------------------------|----------------------------------|-------|--------|
|             |                | Max           | Max                                 | Min                              | mA    | Typ    |
| UESD3.3DT5G | L0             | 3.3           | 1.0                                 | 5.0                              | 1.0   | 47     |
| UESD5.0DT5G | L2             | 5.0           | 0.1                                 | 6.2                              | 1.0   | 38     |
| UESD6.0DT5G | L3             | 6.0           | 0.1                                 | 7.0                              | 1.0   | 34     |

\*Other voltages available upon request.

2.  $V_{BR}$  is measured with a pulse test current  $I_T$  at an ambient temperature of  $25^\circ\text{C}$ .

# μESD3.3DT5G SERIES

## TYPICAL CHARACTERISTICS

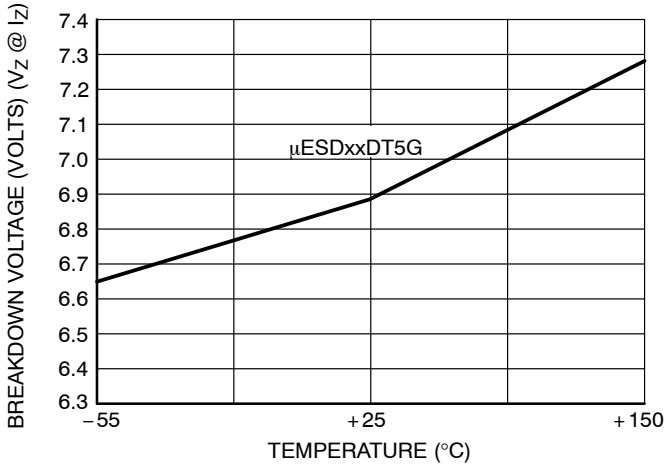


Figure 1. Typical Breakdown Voltage versus Temperature

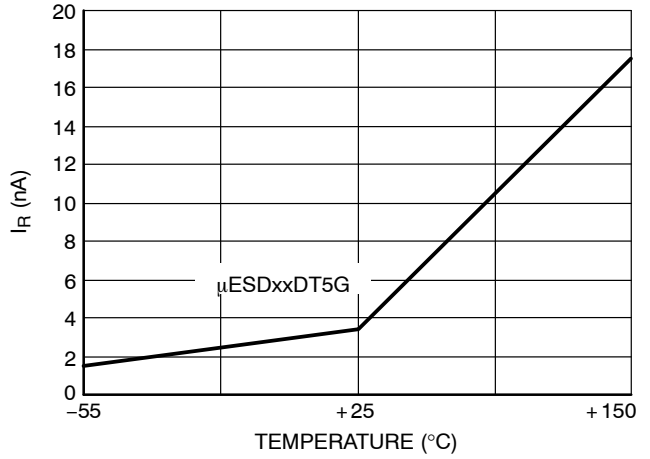


Figure 2. Typical Leakage Current versus Temperature

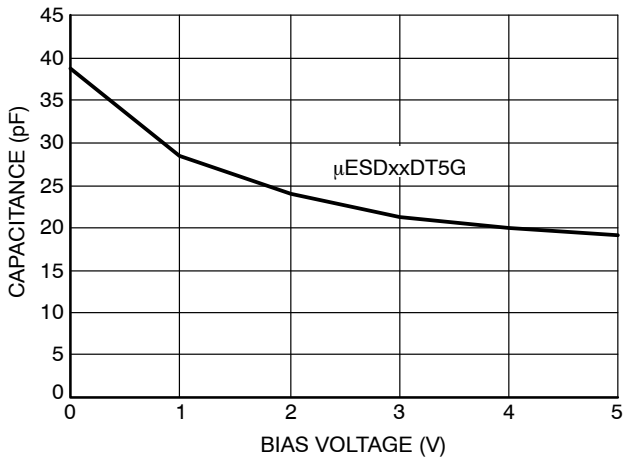


Figure 3. Typical Capacitance versus Bias Voltage

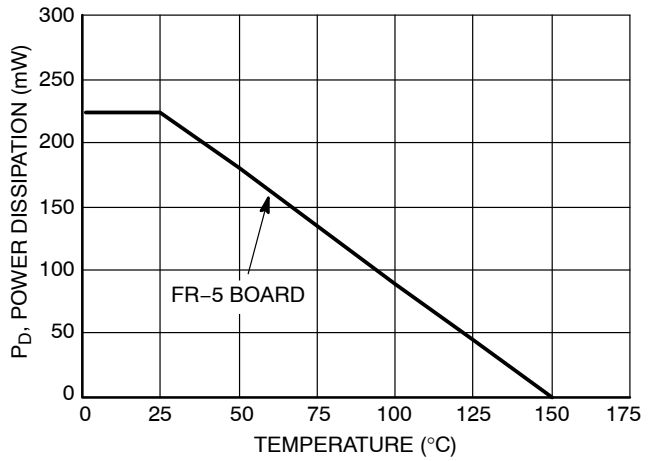


Figure 4. Steady State Power Derating Curve

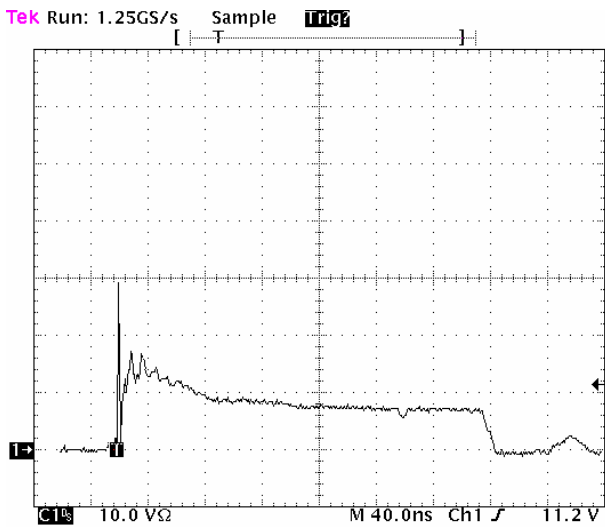


Figure 5. Positive 8 kV contact per IEC 6100-4-2  
- μESD5.0DT5G

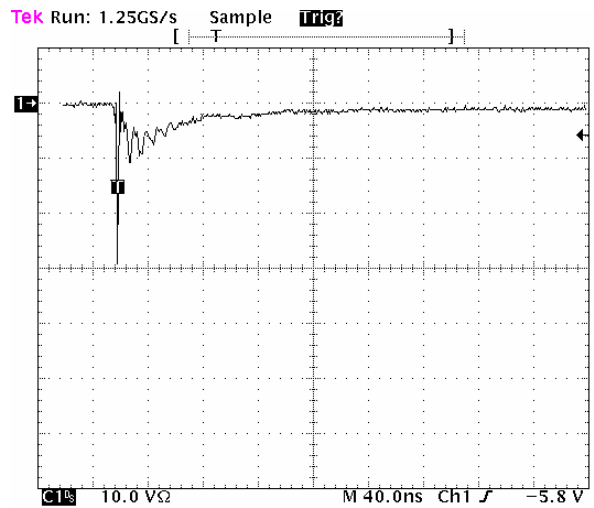
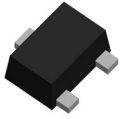


Figure 6. Negative 8 kV contact per IEC 6100-4-2  
- μESD5.0DT5G

# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



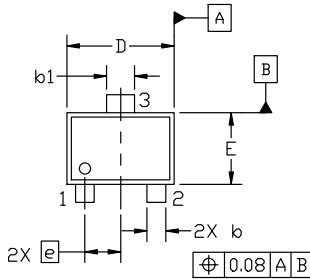
**SOT-723 1.20x0.80x0.50, 0.40P**  
CASE 631AA  
ISSUE E

DATE 24 JAN 2024

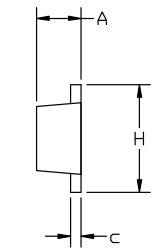
**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

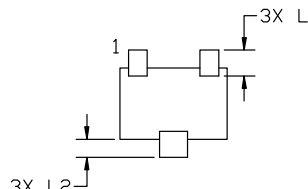
| DIM | MILLIMETERS |      |      |
|-----|-------------|------|------|
|     | MIN.        | NOM. | MAX. |
| A   | 0.45        | 0.50 | 0.55 |
| b   | 0.15        | 0.21 | 0.27 |
| b1  | 0.25        | 0.31 | 0.37 |
| c   | 0.07        | 0.12 | 0.17 |
| D   | 1.15        | 1.20 | 1.25 |
| E   | 0.75        | 0.80 | 0.85 |
| e   | 0.40 BSC    |      |      |
| H   | 1.15        | 1.20 | 1.25 |
| L   | 0.29 REF    |      |      |
| L2  | 0.15        | 0.20 | 0.25 |



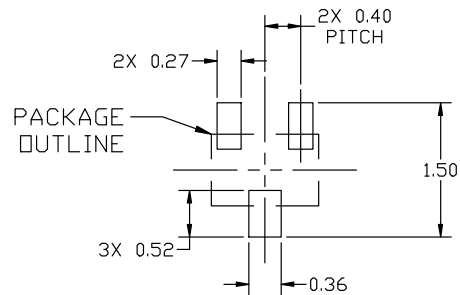
TOP VIEW



SIDE VIEW

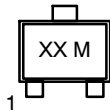


BOTTOM VIEW



RECOMMENDED MOUNTING FOOTPRINT

**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.

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

| STYLE 1:     | STYLE 2:     | STYLE 3:     | STYLE 4:       | STYLE 5:    |
|--------------|--------------|--------------|----------------|-------------|
| PIN 1. BASE  | PIN 1. ANODE | PIN 1. ANODE | PIN 1. CATHODE | PIN 1. GATE |
| 2. EMITTER   | 2. N/C       | 2. ANODE     | 2. CATHODE     | 2. SOURCE   |
| 3. COLLECTOR | 3. CATHODE   | 3. CATHODE   | 3. ANODE       | 3. DRAIN    |

|                         |                                      |  |
|-------------------------|--------------------------------------|--|
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| <b>DESCRIPTION:</b>     | <b>SOT-723 1.20x0.80x0.50, 0.40P</b> | <b>PAGE 1 OF 1</b>   |

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