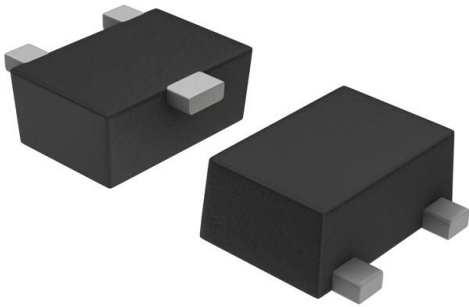


ESD7C3.3DT5G Datasheet

www.digi-electronics.com



DiGi Electronics Part Number	ESD7C3.3DT5G-DG
Manufacturer	onsemi
Manufacturer Product Number	ESD7C3.3DT5G
Description	TVS DIODE 3.3VWM SOT723
Detailed Description	Clamp Ipp Tvs Diode Surface Mount SOT-723

<https://www.DiGi-Electronics.com>

This model ESD7C3.3DT5G is available at DiGi Electronics.

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Purchase and inquiry

Manufacturer Product Number:

ESD7C3.3DT5G

Series:

-

Type:

Zener

Voltage - Reverse Standoff (Typ):

3.3V (Max)

Voltage - Clamping (Max) @ Ipp:

-

Power - Peak Pulse:

-

Applications:

General Purpose

Operating Temperature:

-55°C ~ 150°C (Tj)

Package / Case:

SOT-723

Base Product Number:

ESD7C3.3

Manufacturer:

onsemi

Product Status:

Active

Unidirectional Channels:

2

Voltage - Breakdown (Min):

5V

Current - Peak Pulse (10/1000µs):

-

Power Line Protection:

No

Capacitance @ Frequency:

13pF @ 1MHz

Mounting Type:

Surface Mount

Supplier Device Package:

SOT-723

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.10.0080

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

ESD Protection Diode

Micro-Packaged Diodes for ESD Protection ESD7C, SZESD7C SERIES

The ESD7CxxD 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:

- Low Capacitance 6.2 pF to 13 pF
- Low Clamping Voltage
- Small Body Outline Dimensions:
0.047" x 0.047" (1.20 mm x 1.20 mm)
- Low Body Height: 0.020" (0.5 mm)
- Stand-off Voltage: 3.3 V, 5 V
- Low Leakage
- Response Time < 1 ns
- ESD Rating of Class 3 (> 16 kV) per Human Body Model
- IEC61000-4-2 Level 4 ESD Protection
- SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; 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

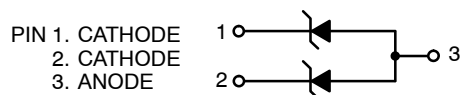
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
IEC 61000-4-2 (ESD) Contact Air		±8.0 ±15	kV
Total Power Dissipation on FR-5 Board (Note 1) @ T _A = 25°C Derate above 25°C	P _D	240 1.9	mW mW/°C
Thermal Resistance Junction-to-Ambient	R _{θJA}	525	°C/W
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 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.

See Application Note AND8308/D for further description of survivability specs.



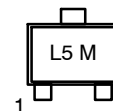
MARKING DIAGRAM



SOT-723
CASE 631AA

L5 = Specific Device Code
M = Date Code

*Date Code orientation and/or position may vary depending upon manufacturing location.



ORDERING INFORMATION

Device	Package	Shipping [†]
ESD7CxxDT5G	SOT-723 (Pb-Free)	8000 / Tape & Reel
SZESD7CxxDT5G	SOT-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

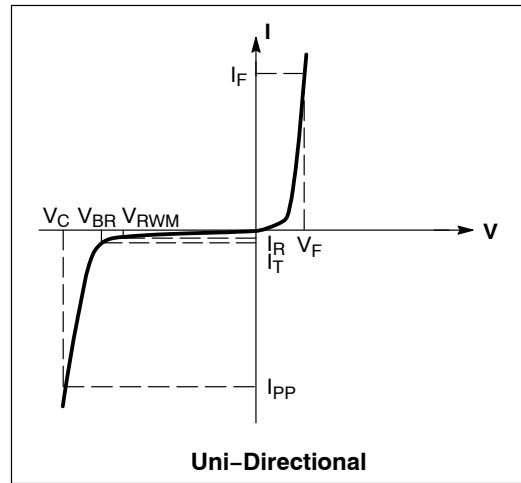
See specific marking information in the device marking column of the table on page 2 of this data sheet.

ESD7C, SZESD7C SERIES

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



*See Application Note AND8308/D for detailed explanations of datasheet parameters.

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

Device (Note 2)	Device Marking	V _{RWM} (V)	I _R (μA) @ V _{RWM}	V _{BR} (V) @ I _T (Note 3)	I _T	C (pF) (Note 4)	C (pF) (Note 4)	V _C Per IEC61000-4-2 (Note 5)
		Max	Max	Min	mA	Typ	Max	
ESD7C3.3DT5G	L5	3.3	1.0	5.0	1.0	12	13	Figures 1 and 2 See Below (Note 6)
ESD7C5.0DT5G	L4	5.0	0.5	11	1.0	6.0	6.2	

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Include SZ-prefix devices where applicable.
3. V_{BR} is measured with a pulse test current I_T at an ambient temperature of 25°C.
4. Capacitance of one diode at f = 1 MHz, V_R = 0 V, T_A = 25°C.
5. For test procedure see Figures 3 and 4 and Application Note AND8307/D.
6. ESD7C5.0DT5G shown below. Other voltages available upon request.

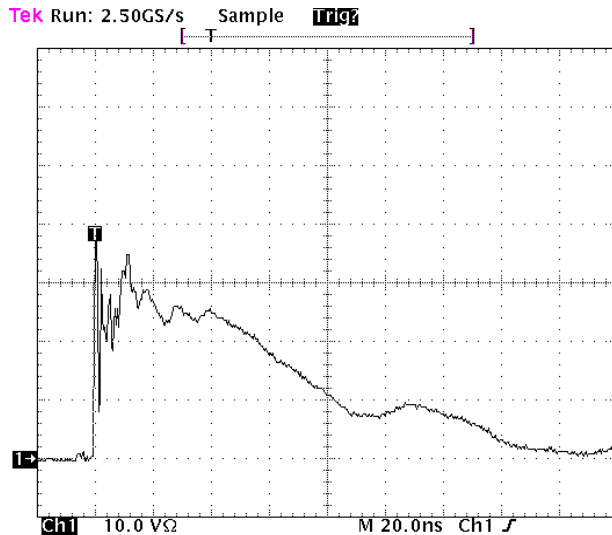


Figure 1. ESD Clamping Voltage Screenshot Positive 8 kV Contact per IEC61000-4-2

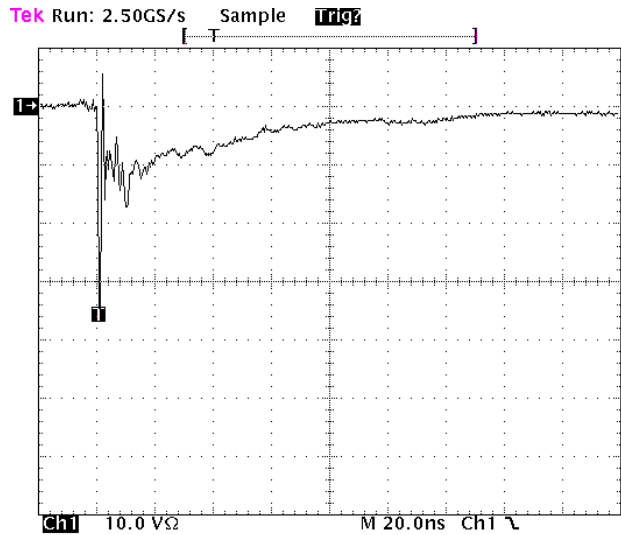
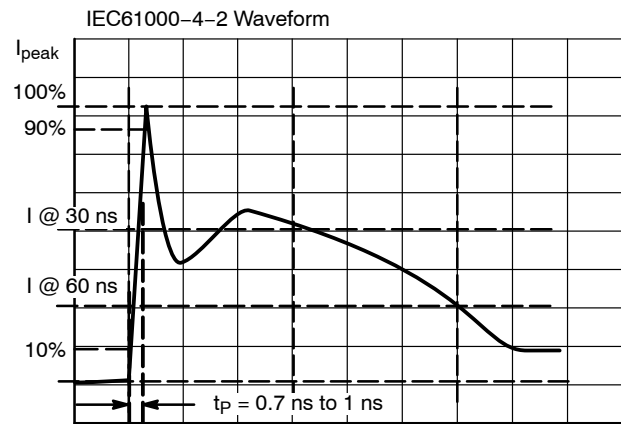
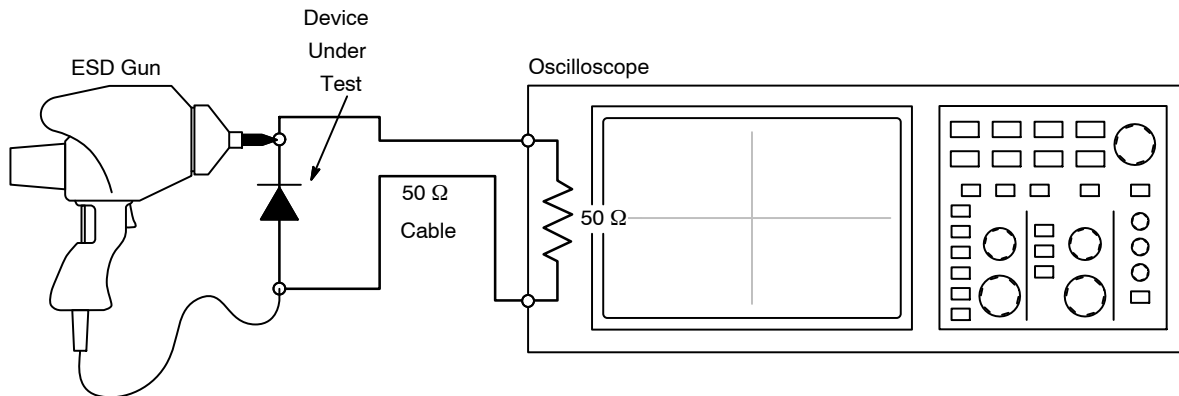


Figure 2. ESD Clamping Voltage Screenshot Negative 8 kV Contact per IEC61000-4-2

ESD7C, SZESD7C SERIES**IEC 61000-4-2 Spec.**

Level	Test Voltage (kV)	First Peak Current (A)	Current at 30 ns (A)	Current at 60 ns (A)
1	2	7.5	4	2
2	4	15	8	4
3	6	22.5	12	6
4	8	30	16	8

**Figure 3. IEC61000-4-2 Spec****Figure 4. Diagram of ESD Test Setup**

The following is taken from Application Note **AND8308/D – Interpretation of Datasheet Parameters for ESD Devices.**

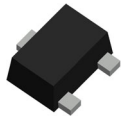
ESD Voltage Clamping

For sensitive circuit elements it is important to limit the voltage that an IC will be exposed to during an ESD event to as low a voltage as possible. The ESD clamping voltage is the voltage drop across the ESD protection diode during an ESD event per the IEC61000-4-2 waveform. Since the IEC61000-4-2 was written as a pass/fail spec for larger

systems such as cell phones or laptop computers it is not clearly defined in the spec how to specify a clamping voltage at the device level. **onsemi** has developed a way to examine the entire voltage waveform across the ESD protection diode over the time domain of an ESD pulse in the form of an oscilloscope screenshot, which can be found on the datasheets for all ESD protection diodes. For more information on how **onsemi** creates these screenshots and how to interpret them please refer to AND8307/D.



**MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS**



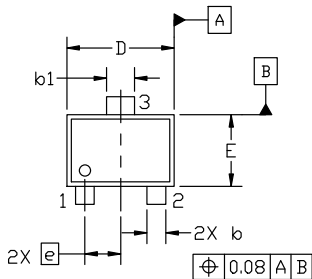
**SOT-723 1.20x0.80x0.50, 0.40P
CASE 631AA
ISSUE E**

DATE 24 JAN 2024

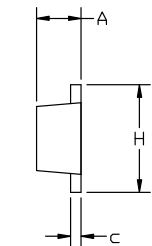
NOTES:

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.

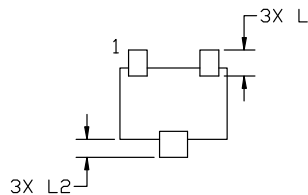
DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.45	0.50	0.55
b	0.15	0.21	0.27
b1	0.25	0.31	0.37
c	0.07	0.12	0.17
D	1.15	1.20	1.25
E	0.75	0.80	0.85
e	0.40 BSC		
H	1.15	1.20	1.25
L	0.29 REF		
L2	0.15	0.20	0.25



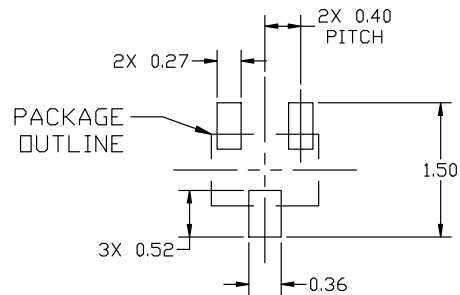
TOP VIEW



SIDE VIEW

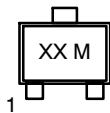


BOTTOM VIEW



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 DN 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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DESCRIPTION:	SOT-723 1.20x0.80x0.50, 0.40P	PAGE 1 OF 1

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