

2 CHANNELS LOW CAPACITANCE TVS DIODE ARRAY
Product Summary

V_{BR} MIN	I_{PP} MAX	C_{IN} TYP
6.2V	6.0A	0.65pF

Description

This new generation TVS is designed to protect sensitive electronics from the damage due to ESD. The combination of small size and high ESD surge capability makes it ideal for use in portable applications, such as cellular phones, digital cameras, and MP3 players.

Applications

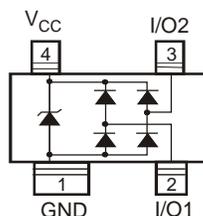
- Cellular Handsets
- Portable Electronics
- Computers and Peripheral

Features

- Provides ESD Protection per IEC 61000-4-2 Standard:
Air: +18kV, Contact: ±16kV
- IEC 61000-4-5 (Lightning): ±6A
- TLP Dynamic Resistance: 0.25Ω
- Two Channels of ESD Protection
- Low Channel Input Capacitance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: SOT143
- Case Material: Molded Plastic, "Green" Molding Compound.
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead-free Plating). Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.009 grams (Approximate)

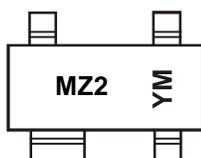


Device Schematic

Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DT1042-02SR-7	Standard	MZ2	7	8	3000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, see <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information


MZ2 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: F = 2018)
 M = Month (ex: 9 = September)

Date Code Key

Year	2016	2017	2018	2019	2020	2021
Code	D	E	F	G	H	I

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current, Per IEC61000-4-5	I _{PP_I/O}	±6.0	A	I/O to V _{SS} , 8/20μs
Peak Pulse Power, Per IEC61000-4-5	P _{PP_I/O}	55	W	I/O to V _{SS} , 8/20μs
Operating Voltage (DC)	V _{DC}	5.5	V	I/O to V _{SS}
ESD Protection—Contact Discharge, Per IEC61000-4-2	V _{ESD_I/O}	±16	kV	I/O to V _{SS}
ESD Protection—Air Discharge, Per IEC61000-4-2	V _{ESD_I/O}	±18	kV	I/O to V _{SS}
Operating Temperature	T _{OP}	-55 to +85	°C	—
Storage Temperature	T _{STG}	-55 to +150	°C	—

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation Typical (Note 5)	P _D	350	mW
Thermal Resistance, Junction to Ambient Typical (Note 5)	R _{θJA}	360	°C/W

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V _{RWM}	—	—	5.0	V	V _{CC} to V _{SS}
Reverse Current (Note 6)	I _R (V _{CC} to V _{SS})	—	—	1.0	μA	V _R = V _{RWM} = 5V, V _{CC} to V _{SS}
Reverse Current (Note 6)	I _R (I/O to V _{SS})	—	—	0.5	μA	V _R = V _{RWM} = 5V, Any I/O to V _{SS}
Reverse Breakdown Voltage	V _{BR}	6.2	—	—	V	I _R = 1mA, V _{CC} to V _{SS}
Forward Clamping Voltage	V _F	-1.0	-0.8	—	V	I _F = -15mA, V _{CC} to V _{SS}
Reverse Clamping Voltage (Note 7)	V _{C_VCC}	—	6.3	—	V	I _{PP} = 9A, V _{CC} to V _{SS} , 8/20μs
	V _{C_I/O}	—	7.7	9	V	I _{PP} = 6A, I/O to V _{SS} , 8/20μs
ESD Clamping Voltage	V _{ESD_VCC}	—	6.8	—	V	TLP, 10A, t _p = 100ns, V _{CC} to V _{SS} . Per Figure 2
	V _{ESD_I/O}	—	9	—	V	TLP, 10A, t _p = 100ns, I/O to V _{SS} . Per Figure 2
ESD Clamping Voltage	V _{ESD_VCC}	—	7.2	—	V	TLP, 16A, t _p = 100ns, V _{CC} to V _{SS} . Per Figure 2
	V _{ESD_I/O}	—	10.5	—	V	TLP, 16A, t _p = 100ns, I/O to V _{SS} . Per Figure 2
Dynamic Resistance	R _{DIF_VCC}	—	0.1	—	Ω	TLP, 10A, t _p = 100ns, V _{CC} to V _{SS}
	R _{DIF_I/O}	—	0.25	—	Ω	TLP, 10A, t _p = 100ns, I/O to V _{SS}
Channel Input Capacitance	C _{I/O to VSS}	—	0.65	0.8	pF	V _R = 2.5V, V _{CC} = 5V, f = 1MHz

- Notes:
- Device mounted on Polyimide PCB pad layout (2oz copper) as shown on Diodes Incorporated's suggested pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
 - Short duration pulse test used to minimize self-heating effect.
 - Clamping voltage value is based on an 8 × 20μs peak pulse current (I_{PP}) waveform.

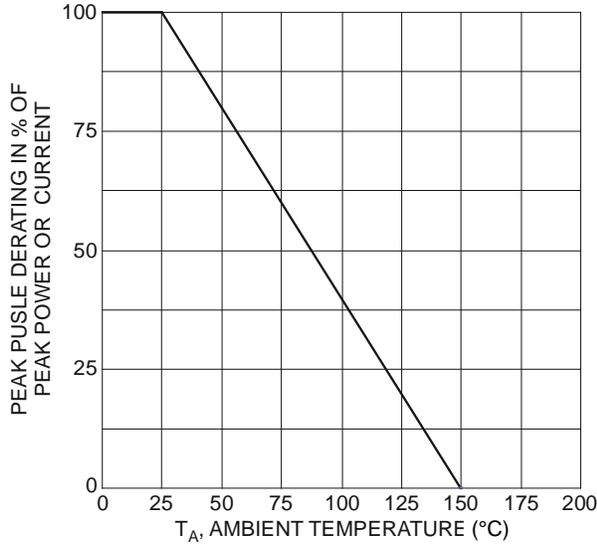


Figure 1 Pulse Derating Curve

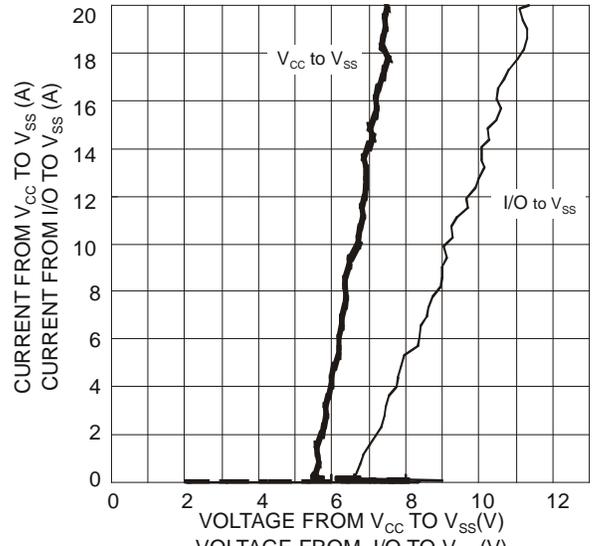


Figure 2 Current vs. Voltage

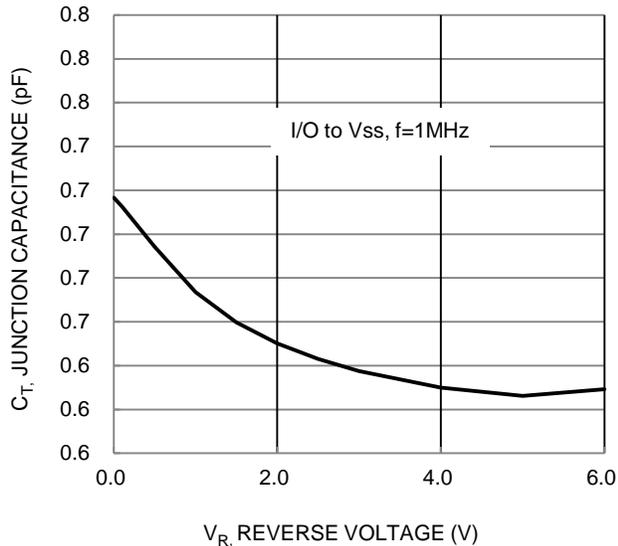


Figure 3 Typical Total Capacitance

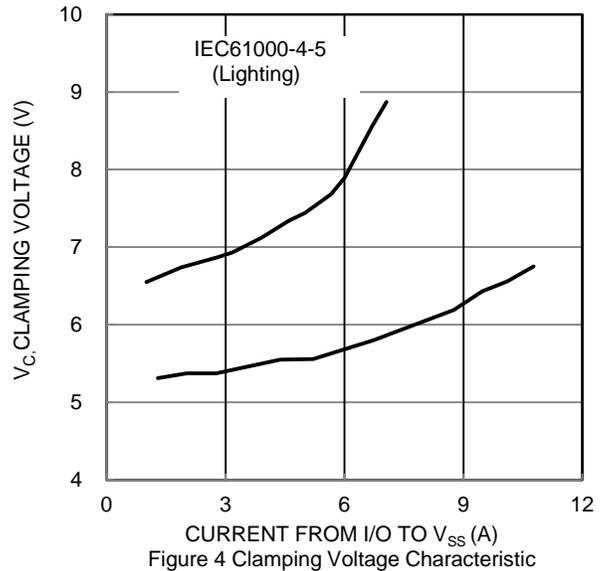
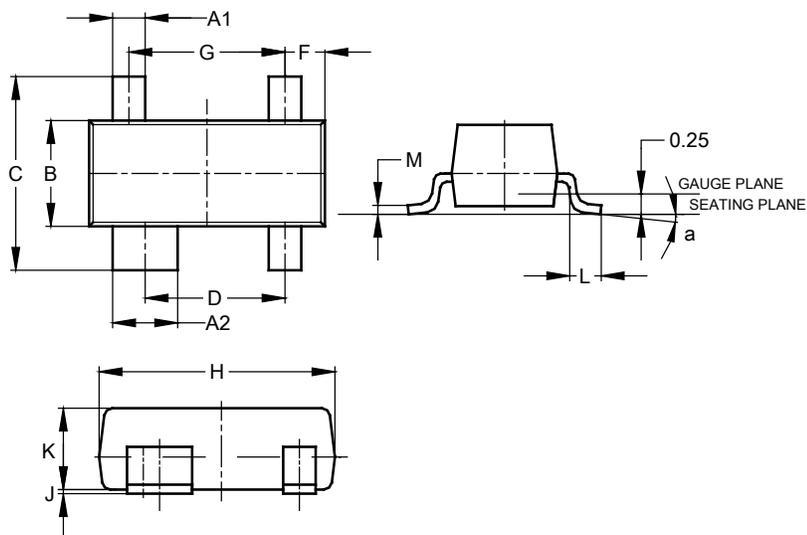


Figure 4 Clamping Voltage Characteristic

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT143

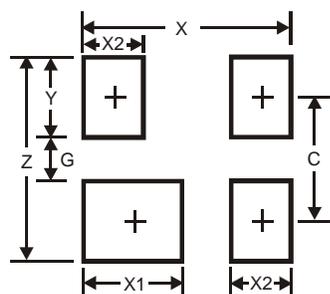


SOT143			
Dim	Min	Max	Typ
A1	0.37	0.51	0.400
A2	0.77	0.93	0.800
B	1.20	1.40	1.30
C	2.28	2.48	2.38
D	1.58	1.83	1.72
F	0.45	0.60	0.49
G	1.78	2.03	1.92
H	2.80	3.00	2.90
J	0.013	0.10	-
K	0.89	1.00	-
L	0.46	0.60	0.50
M	0.085	0.18	0.11
a	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT143



Dimensions	Value (in mm)
Z	2.70
G	1.30
X	2.50
X1	1.00
X2	0.60
Y	0.70
C	2.00

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