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DRTR5V0U2SRQ

2 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY

Product Summary

V_{RRM} (V)	Ipp (A)	$V_{F\ Typ}$ (V)	$I_{R\ Max}$ (nA)
5.5	5	0.8	100

Description and Applications

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 the device ideal for use in portable applications:

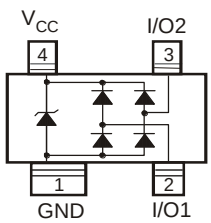
- Cellular handsets
- Portable electronics
- Computers and peripherals

Features

- IEC 61000-4-2 (ESD): Air ±15kV, Contact ±8kV
- 2 Channels of ESD Protection
- Low Channel Input Capacitance of 1.0pF Typical
- Typically Used at High-Speed Ports such as USB 2.0, IEEE1394, Serial ATA, DVI™, HDMI™, PCI
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DIODES™ DGD0211CWTQ is suitable for automotive applications requiring specific change control; this part is AEC-Q100 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

Mechanical Data

- Package: SOT143
- Package 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)



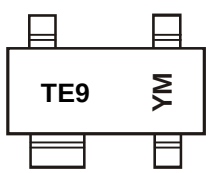
Device Schematic

Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
DRTR5V0U2SRQ-7	Automotive	TE9	7	8	3,000/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, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



TE9 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: J = 2022)
M = Month (ex: 9 = September)

Date Code Key

Year	2017	……	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	E	……	J	K	L	M	N	O	P	R	S	T

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

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	I_{PP}	5	A	8/20µs, Per Figure 3
ESD Protection – Contact Discharge	$V_{ESD_Contact}$	±24	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V_{ESD_Air}	±24	kV	Standard IEC 61000-4-2

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	400	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	310	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage	V_{RWM}	-	-	5.5	V	—
Channel Leakage Current (Notes 6, 7)	I_R	-	1	100	nA	V_R = 3V
Reverse Breakdown Voltage	V_{BR}	6.0	8.3	9.0	V	I_R = 1mA, from pin 4 to pin 1
	$V_{Br(I/O-GND)}$	6.0	9.1	9.5	V	I_R = 1mA (Note 7)
Forward Voltage (Note 7)	V_F	-	0.8	-	V	I_F = 8mA
Reverse Clamping Voltage, Positive Transients	V_{CL}	-	2.0	3.5	V	I_{PP} = 1A, t_P = 8/20µs
		-	5.0	7.0	V	I_{PP} = 5A, t_P = 8/20µs
Dynamic Resistance (Note 7)	R_{DYN}	-	0.9	-	Ω	I_{PP} = 1A, t_p = 8/20µs
I/O to GND Capacitance (Note 7)	$C_{(I/O-GND)}$	-	1.0	1.5	pF	$V_{(I/O-GND)}$ = 0V, f = 1MHz

Notes:
5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes Incorporated suggested pad layout, which can be found on our website at http://www.diodes.com/package-outlines.html.
6. Short duration pulse test used to minimize self-heating effect.
7. Measured from pin 2 or pin 3 to GND.

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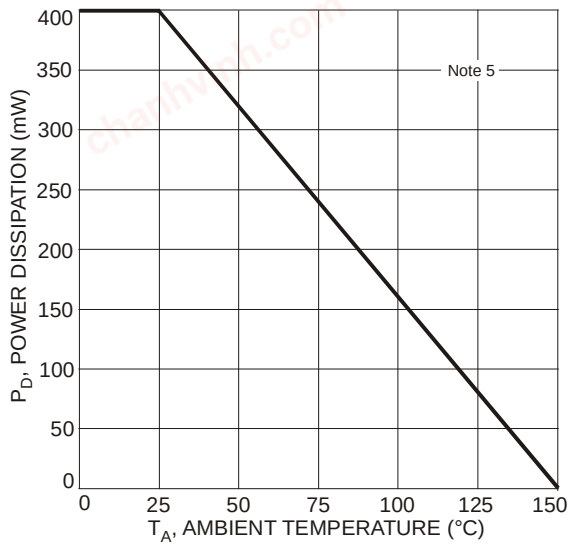


Figure 1 Power Dissipation vs. Ambient Temperature

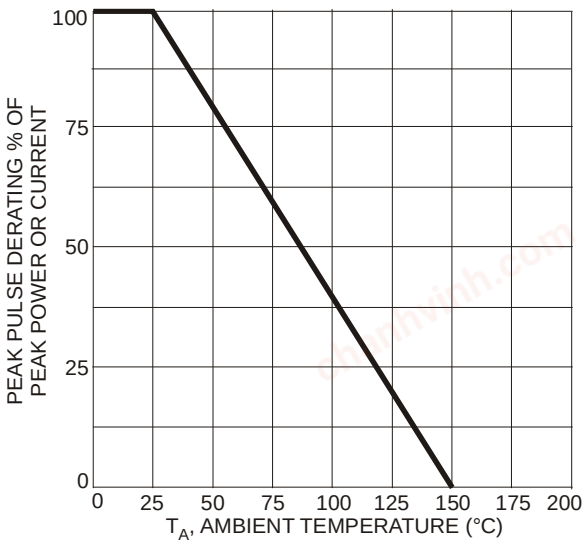


Figure 2 Pulse Derating Curve

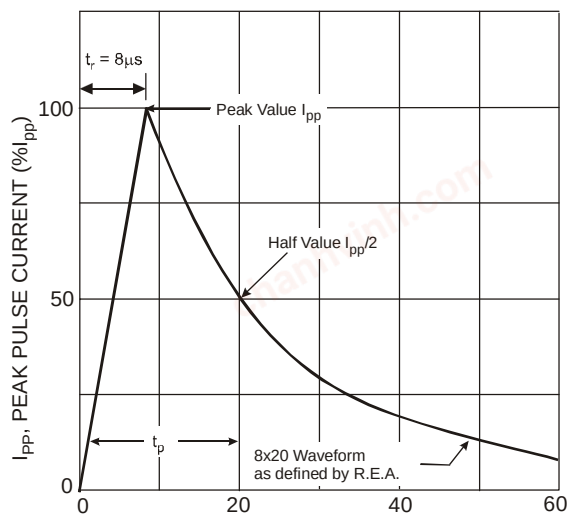


Figure 3 Pulse Waveform

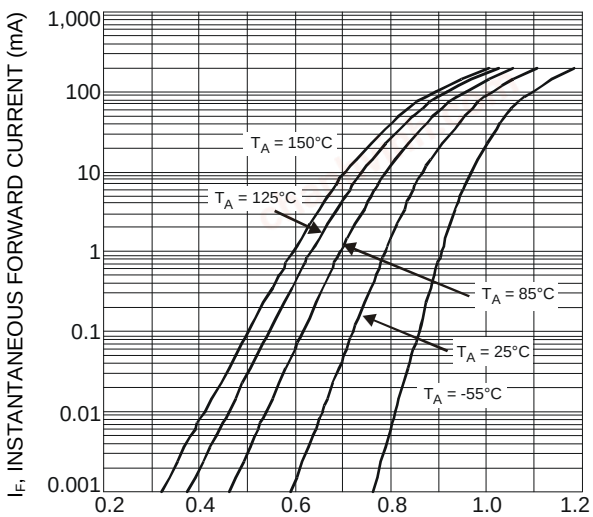


Figure 4 Typical Forward Characteristics

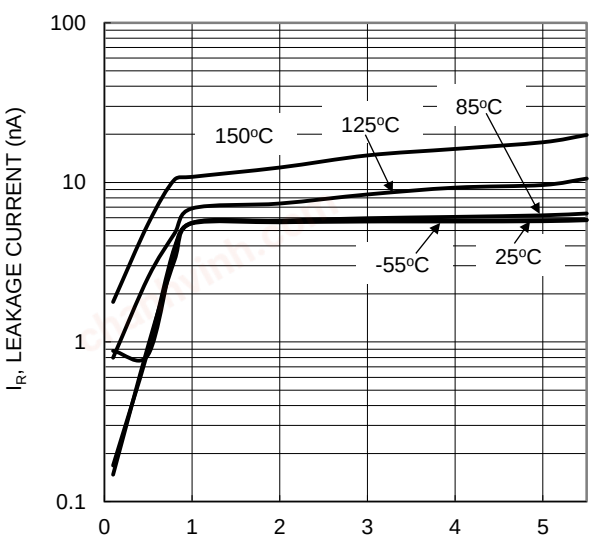


Figure 5. Typical Reverse Characteristics

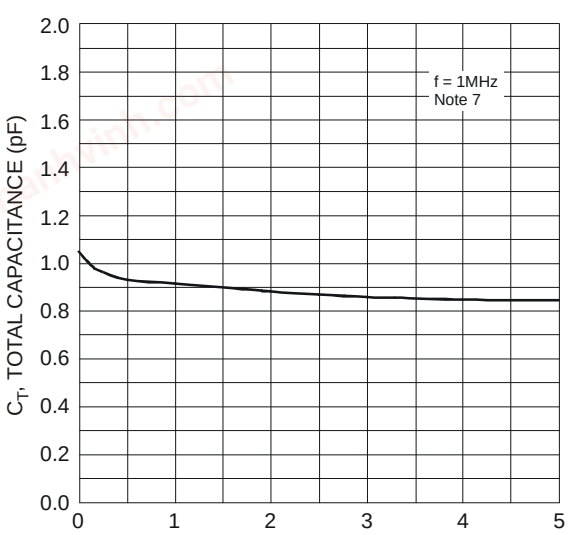


Figure 6 Typical Total Capacitance vs. Reverse Voltage

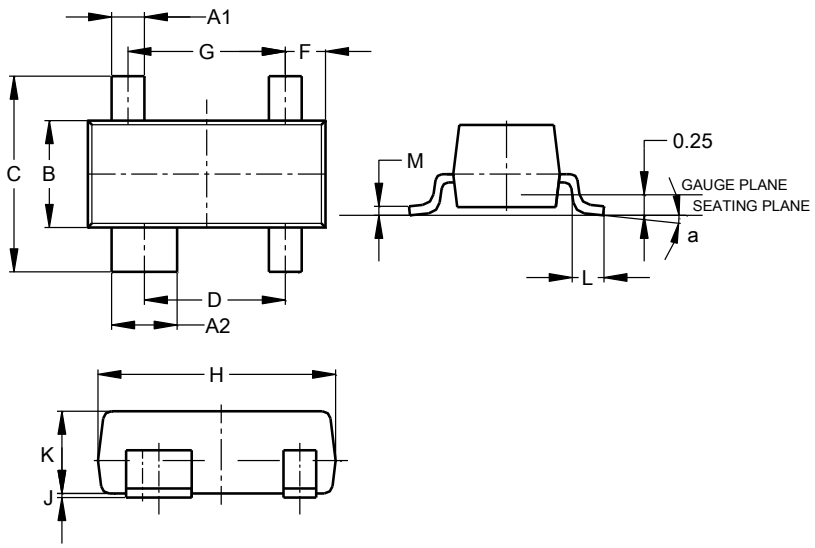
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Package Outline Dimensions

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

SOT143

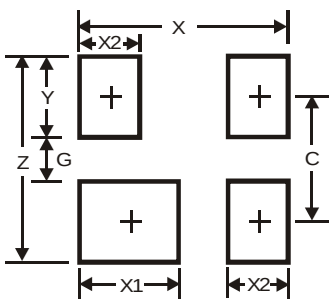


SOT143			
Dim	**Min**	**Max**	**Typ**
A1	0.37	0.51	0.400
A2	0.77	0.93	0.800
B	1.20	1.40	1.30
C	2.28	2.48	2.38
D	1.58	1.83	1.72
F	0.45	0.60	0.49
G	1.78	2.03	1.92
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.89	1.00	-
L	0.46	0.60	0.50
M	0.085	0.18	0.11
a	0°	8°	-
All Dimensions in mm			

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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