

ESD9D3.3 SERIES

100W Surface Mount TVS For ESD Protection Diode
VOLTAGE : 3.3 TO 5Volts

Features	Outline
- Small body outline dimensions: 0.039" X 0.024"(1.0mm X 0.60mm). - Low body height: 0.017"(0.43mm)max. - Stand-off voltage: 3.3V-5.0V. - Low leakage. - Response time is typically < 1ns. - Suffix "G" indicates Halogen-free part, ex.ESD9D3.3G. - ESD rating of class 3 (> 16kV) per human body Model. - IEC61000-4-2 level 4 ESD protection. - Lead-free parts meet environmental standards of MIL-STD-19500 /228	SOD-923 Dimensions in inches and (millimeters)
Mechanical data	
- Epoxy:UL94-V0 rated flame retardant - Case : Molded plastic, SOD-923 - Terminals : Solder plated, solderable per MIL-STD-750, Method 2026 - Polarity : Indicated by cathode band - Weight : Approximated 0.000044 gram	

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified. Single phase, half wave, 60Hz, resistive or inductive load.
 For capacitive load, derate current by 20%.

Parameter	Conditions	Symbol	Value	UNIT
Total power dissipation	on FR-5 board(Note1)@ TA=25°C	P _O	150	mW
ESC61000-4-2(ESD)	air discharge		±15	KV
	contact discharge		±8	
ESD voltage	per human body model	V _{ESD}	16	KV
Lead solder temperature-maximum	10 second duration	T _L	260	°C
Peak power dissipation	tp = 8/20 us	P _{PP}	100	W
Operating temperature		T _J	-55 ~ +150	°C
Storage temperature		T _{STG}	-55 ~ +150	°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.

Part No.	Marking	V _{RWM} (V) Max	I _A (uA) @V _{RWM} Max	V _{BR} (V)@I _T (Note 2) Min	I _T (mA)	I _{PP} (Note 3) (A) Typ	V _C (V)(Note 3) @Max I _{PP} Max	P _{PK} (W) (8 X 20 us) Max	C(pF) Typ
ESD9D3.3	E	3.3	2.5	5.0	1.0	9.8	10.4	102	80
ESD9D3.3C	B	3.3	1.0	5.0	1.0	8.4	14.1	158	25
ESD9D5.0	G	5.0	1.0	6.2	1.0	8.7	12.3	107	65
ESD9D5.0C	C	5.0	1.0	5.6	1.0	11.6	18.6	174	15

Part numbers with an additional "C" suffix are bi-directional devices.
 Over voltage available upon request.
 2. V_{BR} is measured with a pulse test current I_T at an ambient temperature of 25°C.
 3. Surge current waveform per Figure 1.

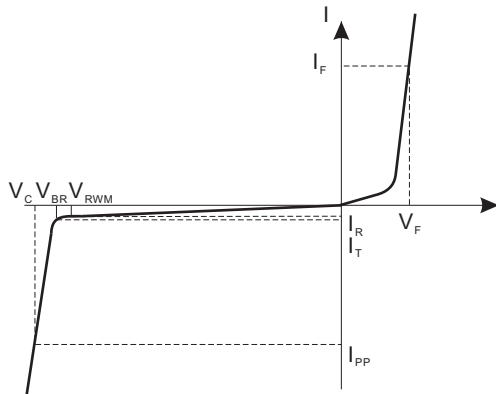


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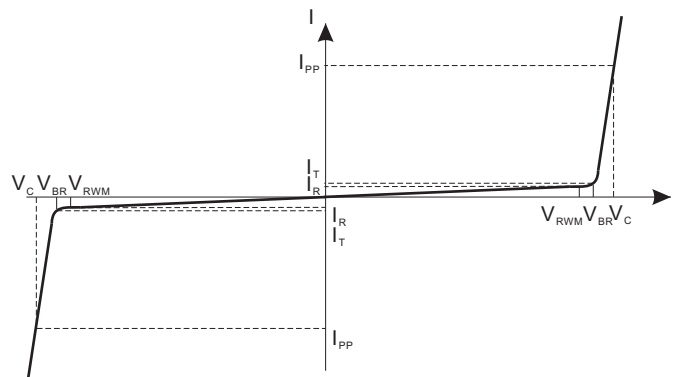
Rating and characteristic curves

Typical characteristics (at $T_A = 25^\circ\text{C}$ unless otherwise noted)



Uni-Directional TVS

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



Bi-Directional TVS

V_C : Clamping Voltage @ I_{PP}
 I_{PP} : Maximum Reverse Peak Pulse Current
 V_{RWM} : Working Peak Reverse voltage
 I_R : Maximum Reverse Leakage Current @ V_{RWM}
 V_{BR} : Breakdown voltage @ I_T
 I_T : Test Current
 P_{PK} : Peak Power Dissipation
 C : Max. Capacitance @ $V_R = 0$ and $f = 1\text{MHz}$

FIG.1 - 8 X 20us PULSE WAVEFORM

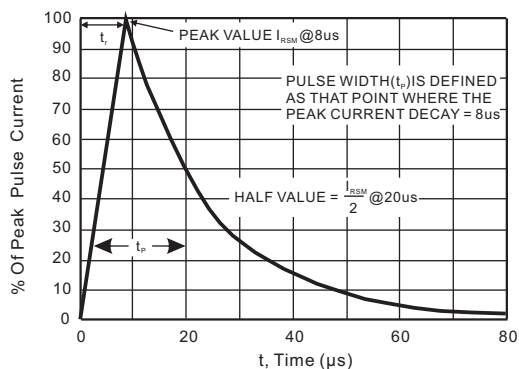


Fig.3-TYPICAL BREAKDOWN VOLTAGE VERSUS TEMPERATURE

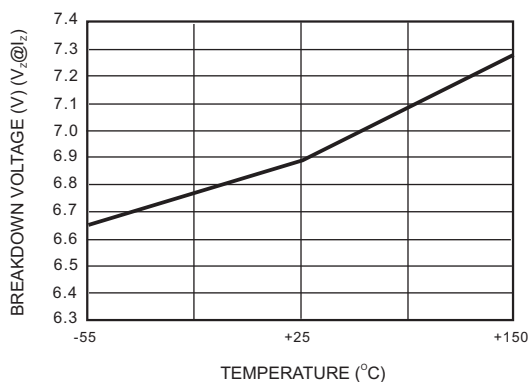


Fig.2- POWER RATING CURVE

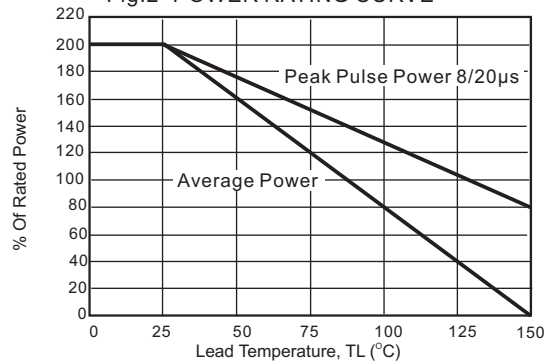


FIG.4-TYPICAL LEAKAGE CURRENT VERSUS TEMPERATURE

