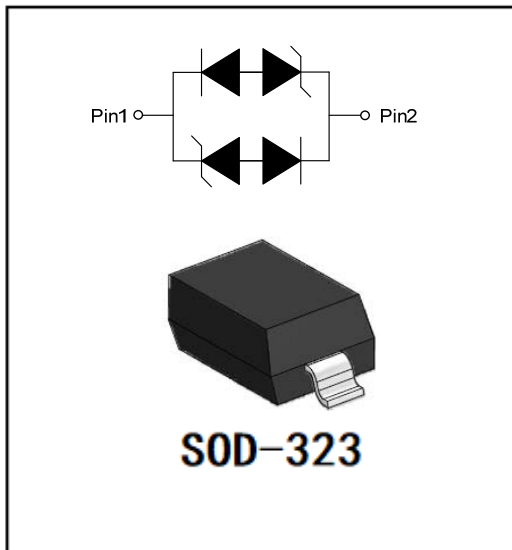


1- Line, Bi-directional, Transient Voltage Suppressor



Features

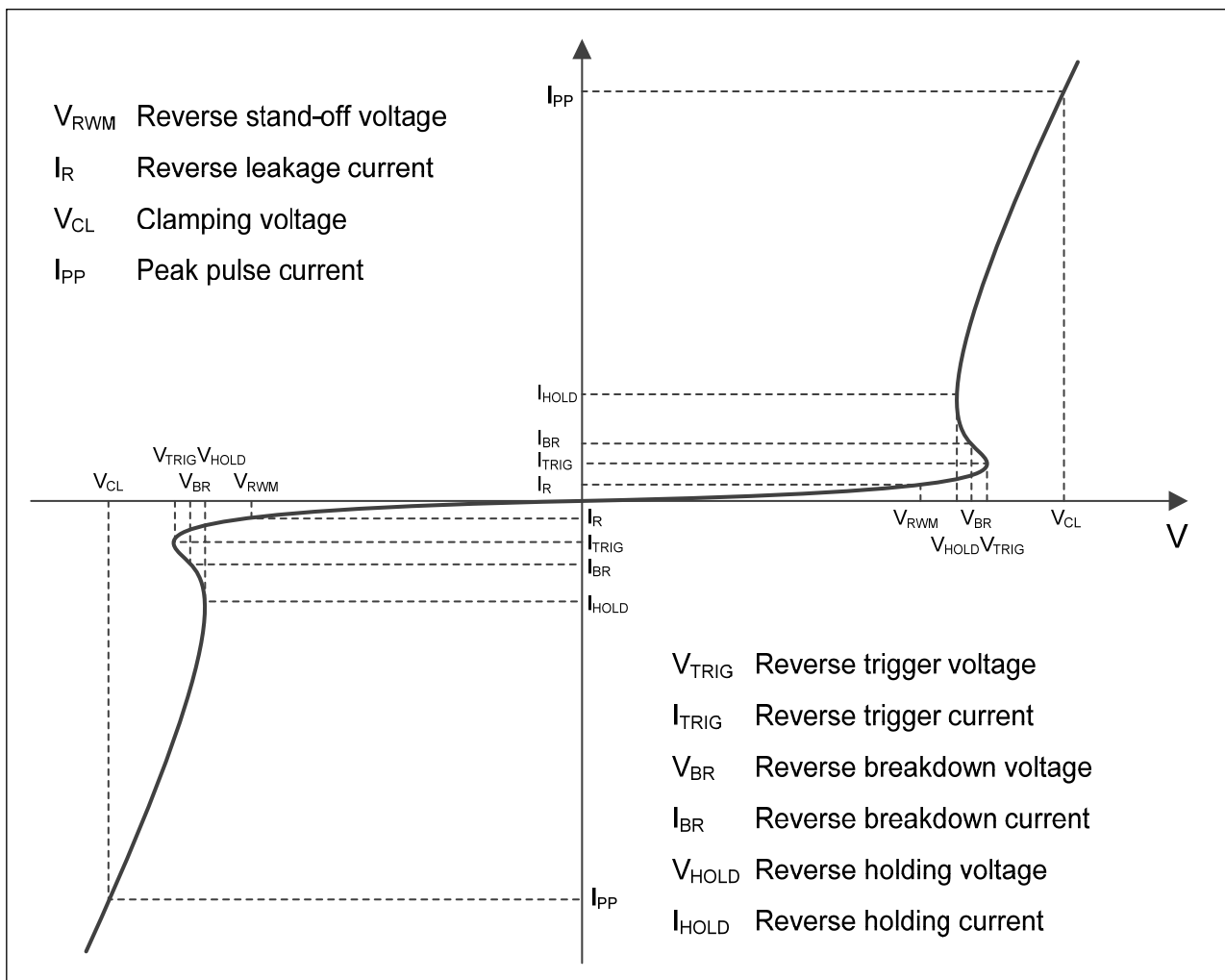
- Stand-off voltage: $\pm 4.5V$ Max
- Transient protection for each line according to
IEC61000-4-2(ESD): $\pm 30kV$ (contact)
IEC61000-4-4 (EFT): 40A (5/50ns)
IEC61000-4-5(surge): 15A (8/20 μs)
- capacitance: $C_J = 300pF$ typ.
- Low leakage current
- Low clamping voltage: $V_{CL} = 7V$ typ. @ $I_{PP} = 16A$ (TLP)
- Solid-state silicon technology

Mechanical Data

- **Package:** SOD323
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end
- **Marking:**



■ Definitions of electrical characteristics





ESD4V5D3BA

■Maximum Ratings

PARAMETER	SYMBOL	LIMITS	UNIT
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	1920	W
Peak pulse current ($t_p = 8/20\mu s$)	I_{PP}	160	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 30	KV
ESD according to IEC61000-4-2 contact discharge		± 30	
Junction temperature	T_J	125	$^{\circ}C$
Operating temperature	T_{OP}	-40~85	$^{\circ}C$
Storage temperature	T_{STG}	-55~150	$^{\circ}C$

■Electrical Characteristics ($T_a=25^{\circ}C$ Unless otherwise specified)

PARAMETER	Symbol	UNIT	Conditions	Min	Typ	Max
Reverse maximum working voltage	V_{RWM}	V				± 4.5
Reverse leakage current	I_R	μA	$V_{RWM} = 4.5V$			1
Reverse breakdown voltage	$V_{(BR)}$	V	$I_T = 1mA$	4.6		
Clamping voltage ¹⁾	V_{CL}	V	$I_{PP} = 16A, t_p = 100ns$		7	
Dynamic resistance ¹⁾	R_{DYN}	Ω			0.04	
Clamping voltage ²⁾	V_{CL}	V	$V_{ESD} = 8kV$		9	
Clamping voltage ³⁾	V_{CL}	V	$I_{PP} = 1A, t_p = 8/20\mu s$		5	7
		V	$I_{PP} = 20A, t_p = 8/20\mu s$		5.5	7.5
		V	$I_{PP} = 160A, t_p = 8/20\mu s$		10	12
Junction capacitance	C_J	pF	$V_R = 0V, f = 1MHz$		280	300

Notes:

- 1) TLP parameter: $Z_0 = 50\Omega, t_p = 100ns, t_r = 2ns$, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.
- 2) Contact discharge mode, according to IEC61000-4-2.
- 3) Non-repetitive current pulse, according to IEC61000-4-5.

■Ordering Information (Example)

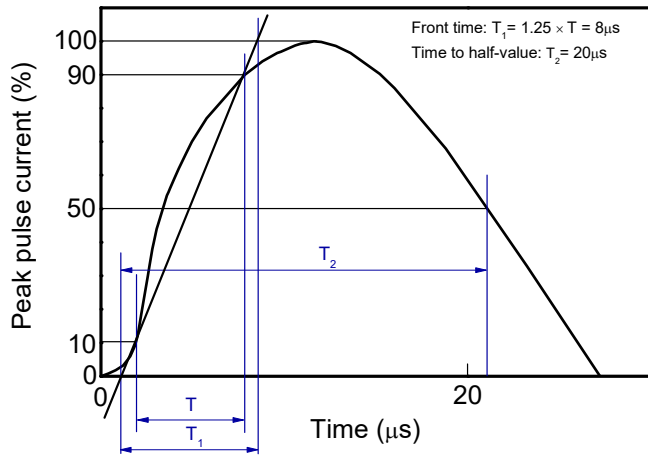
PREFERRED P/N	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
ESD4V5D3BA	Approximate 0.004	3000	30000	120000	7 reel



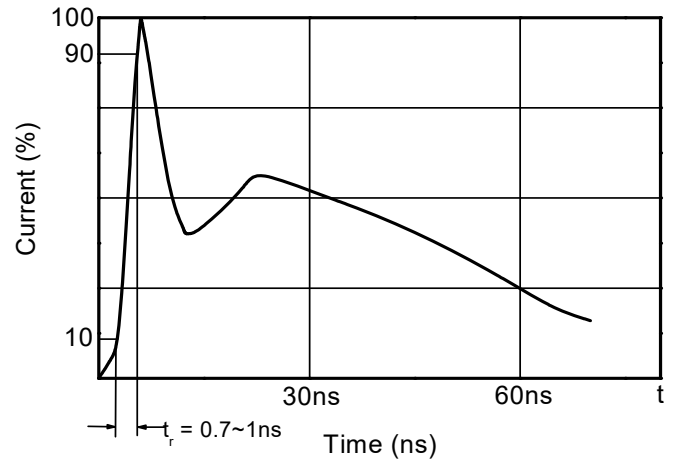
ESD4V5D3BA

■ Characteristics (Typical)

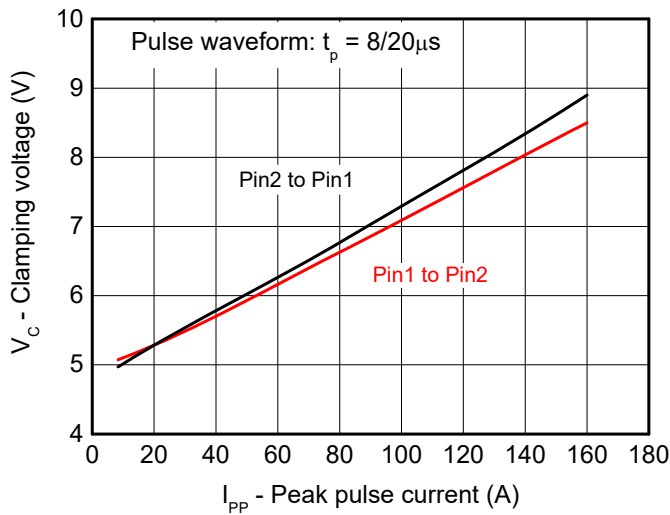
8/20 μ s waveform per IEC61000-4-5



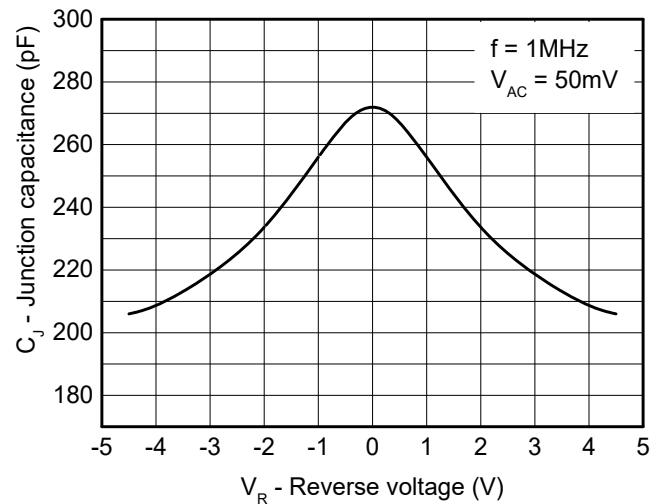
Contact discharge current waveform per IEC61000-4-2



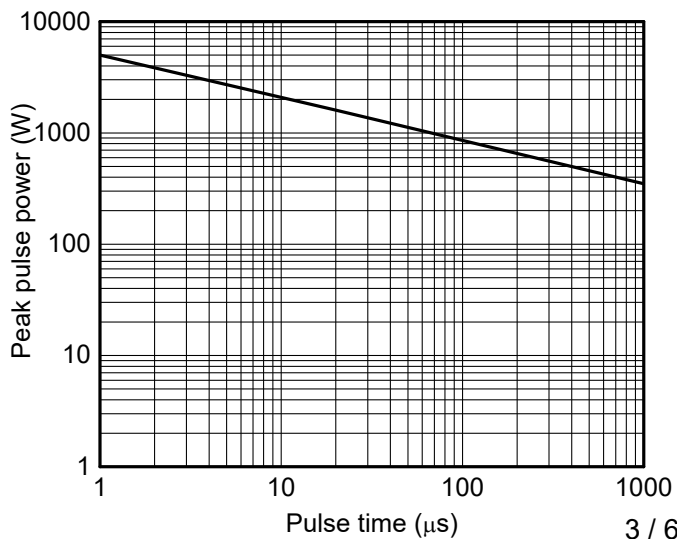
Clamping voltage vs. Peak pulse current



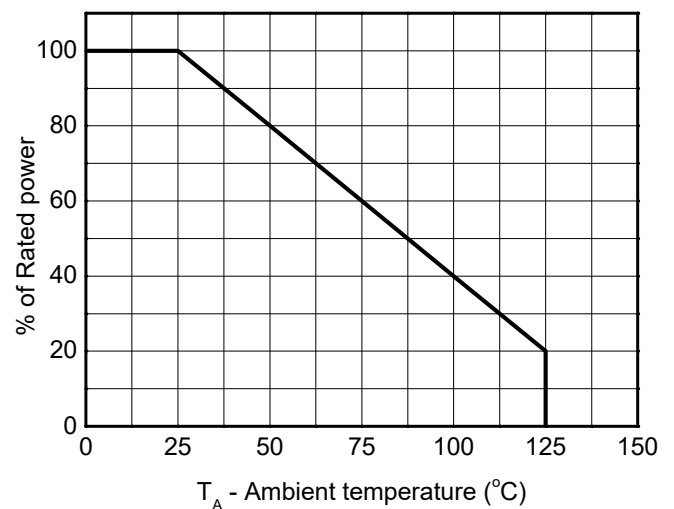
Capacitance vs. Reverse voltage



Non-repetitive peak pulse power vs. Pulse time



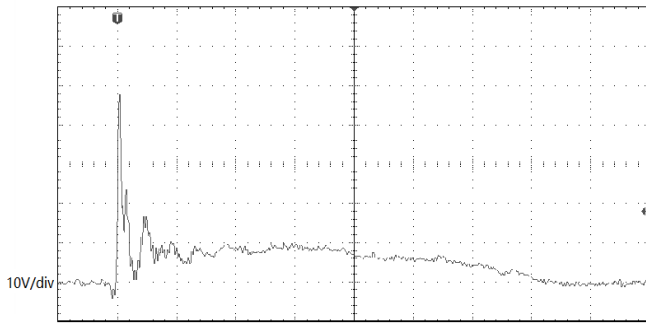
Power derating vs. Ambient temperature



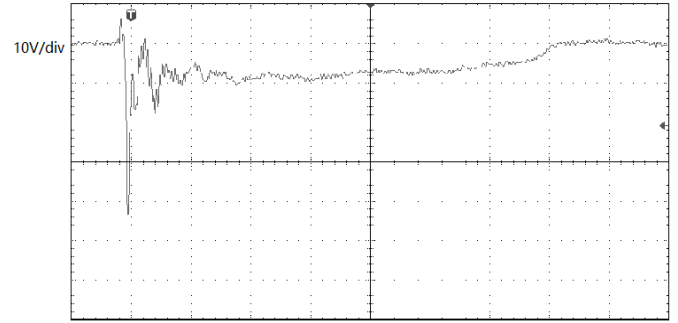


ESD4V5D3BA

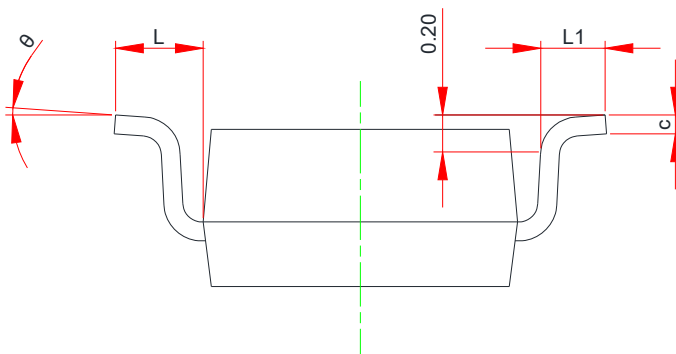
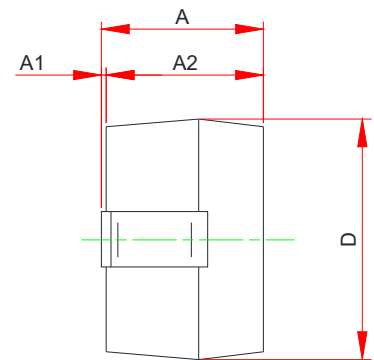
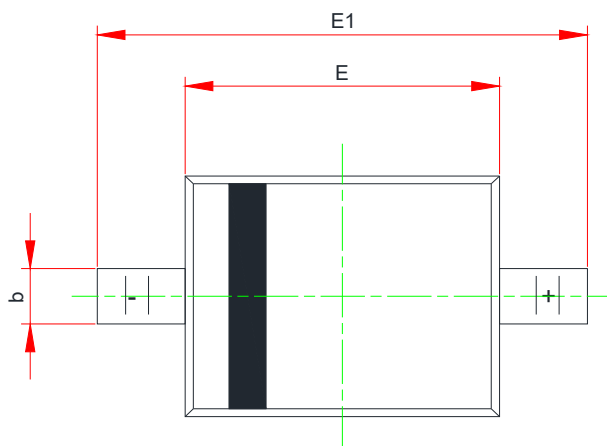
ESD clamping
(+8kV contact discharge per IEC61000-4-2)



ESD clamping
(-8kV contact discharge per IEC61000-4-2)



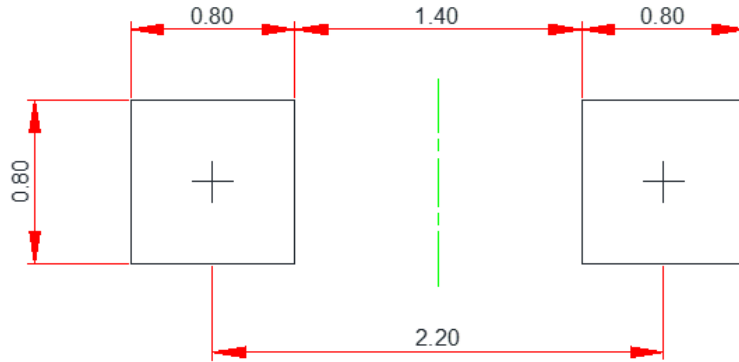
■ Outline Dimensions



Symbol	Dimensions in millimeters		
	Min.	Typ.	Max.
A	0.800	-	1.100
A1	0.000	-	0.100
A2	0.800	-	0.900
b	0.250	-	0.350
c	0.080	-	0.150
D	1.150	-	1.400
E	1.600	-	1.800
E1	2.400	-	2.700
L	0.475 REF		
L1	0.20	-	0.400
θ	0°	-	8°



■ Soldering Footprint



Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.



ESD4V5D3BA

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