



### Discription

The HESD56181W12-2/TR protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events.

Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD.

It gives designer the flexibility to protect one unidirectional line in applications where arrays are not practical.



SOD-323

### Features

- ★ Transient protection for high-speed data lines  
IEC 61000-4-2(ESD) ±30kV (Contact)  
±30kV (Air)  
IEC 61000-4-4(EFT) 40A (5/50 ns)
- ★ Peak power dissipation: 1540W (8/20us)
- ★ Working voltages : 12V
- ★ Protects one Vcc or data line
- ★ Low clamping voltage
- ★ Low leakage current



Circuit Diagram

### Ordering information

Product ID	Pack	Qty(PCS)
HESD56181W12-2/TR	SOD-323	3000

### Absolute Ratings(Tamb = 25°C)

Symbol	Parameter	Value	Units
P <sub>PP</sub>	Peak Pulse Power (t <sub>p</sub> = 8/20 μ s)	1540	W
T <sub>L</sub>	Maximum lead temperature for soldering during 10s	260	°C
T <sub>stg</sub>	Storage Temperature Range	-55 to +155	°C
T <sub>op</sub>	Operating Temperature Range	-40 to +125	°C
T <sub>j</sub>	Maximum junction temperature	150	°C
	IEC61000-4-2 (ESD) air discharge contact discharge	±30 ±30	KV
	IEC61000-4-4 (EFT)	40	A

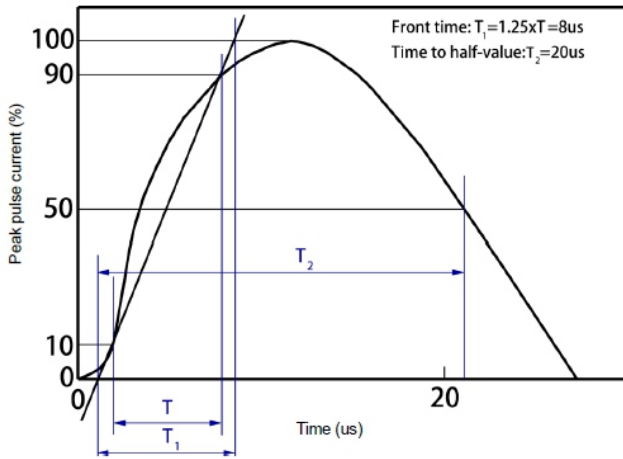


### Electrical Characteristics

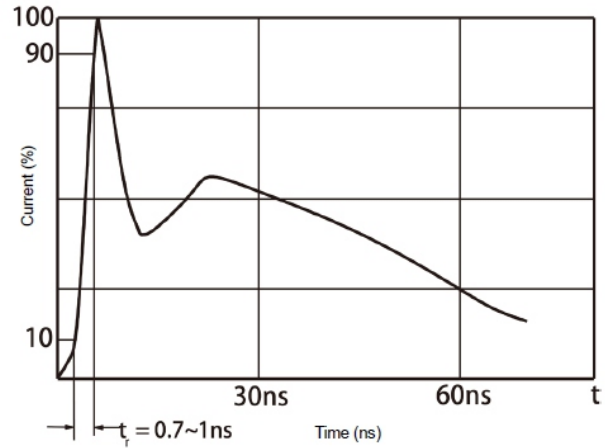
Symbol	Parameter	Test Condition	Min	Typ	Max	Units
$V_{RWM}$	Reverse Working Voltage				12	V
$V_{BR}$	Reverse Breakdown Voltage	$I_T = 1\text{mA}$	13.5	14.8	15.5	V
$I_R$	Reverse Leakage Current	$V_{RWM} = 12\text{V}$			1	$\mu\text{A}$
$V_C$	Clamping Voltage	$I_{RWM} = 30\text{A}, t_p = 8/20\mu\text{s}$			19	V
		$I_{RWM} = 55\text{A}, t_p = 8/20\mu\text{s}$			28	V
$C_J$	Junction Capacitance	$V_R = 0\text{V}, f = 1\text{MHz}$	250	350	450	pF



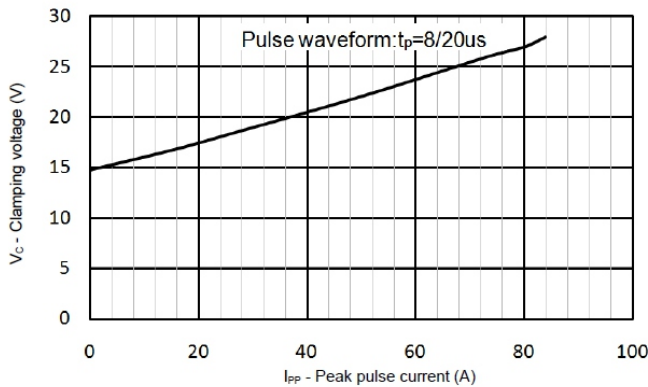
### Typical Characteristics



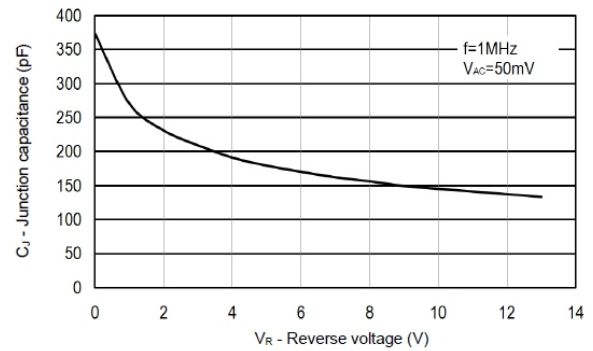
8/20 us waveform per IEC61000-4-5



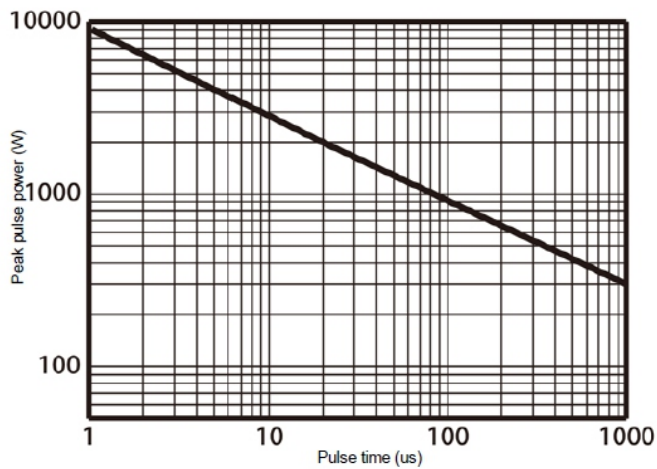
Contact discharge current waveform per IEC61000-4-2



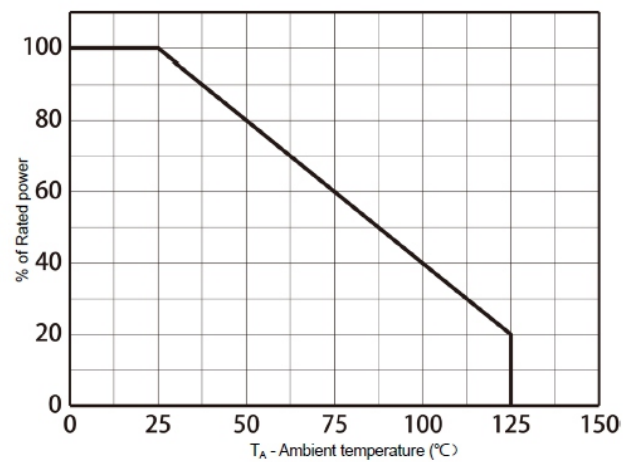
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage



Non-repetitive peak pulse power vs. Pulse time



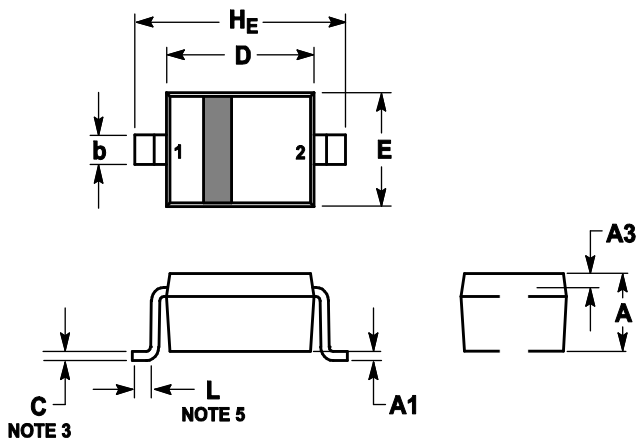
Power derating vs. Ambient temperature



## Outline And Dimensions

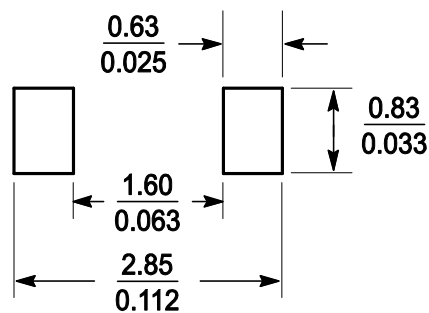
Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
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			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.8	0.9	1	0.031	0.035	0.04
A1	0	0.05	0.1	0	0.002	0.004
A3	0.15REF			0.006REF		
b	0.25	0.32	0.4	0.01	0.012	0.016
C	0.089	0.12	0.177	0.003	0.005	0.007
D	1.6	1.7	1.8	0.062	0.066	0.07
E	1.15	1.25	1.35	0.045	0.049	0.053
L	0.08			0.003		
HE	2.3	2.5	2.7	0.09	0.098	0.105

## Soldering Footprint





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