

Silicon TVS Diodes

- ESD / transient protection of data and power lines in 3.3 V / 5 V applications according to:
IEC61000-4-2 (ESD): ± 30 kV (contact)
IEC61000-4-4 (EFT): 80 A (5/50 ns)
IEC61000-4-5 (surge): 40 A/600 W (8/20 μ s)
- Max. working voltage: 5 V
- Low clamping voltage
- Low reverse current
- Pb-free (RoHS compliant) package



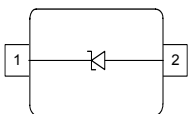
Applications

- Uni or bi-directional operation possible (see application example page 5)
- Mobile communication
- Consumer products (STB, MP3, DVD, DSC...)
- LCD displays, camera
- Notebooks and desktop computers, peripherals

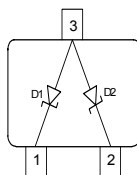
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ESD5V0S1U-03W



ESD5V0S2U-06



Type	Package	Configuration	Marking
ESD5V0S1U-03W	SOD323	1 line, uni-directional	yellow E
ESD5V0S2U-06	SOT23	2 lines, uni-directional	E5

Maximum Ratings at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Value	Unit
ESD contact discharge ¹⁾	V_{ESD}	30	kV
Peak pulse current ($t_p = 8 / 20 \mu\text{s}$) ²⁾	I_{pp}	40	A
Peak pulse power ($t_p = 8 / 20 \mu\text{s}$) ²⁾	P_{pk}	600	W
Operating temperature range	T_{op}	-55...125	°C
Storage temperature	T_{stg}	-65...150	

Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

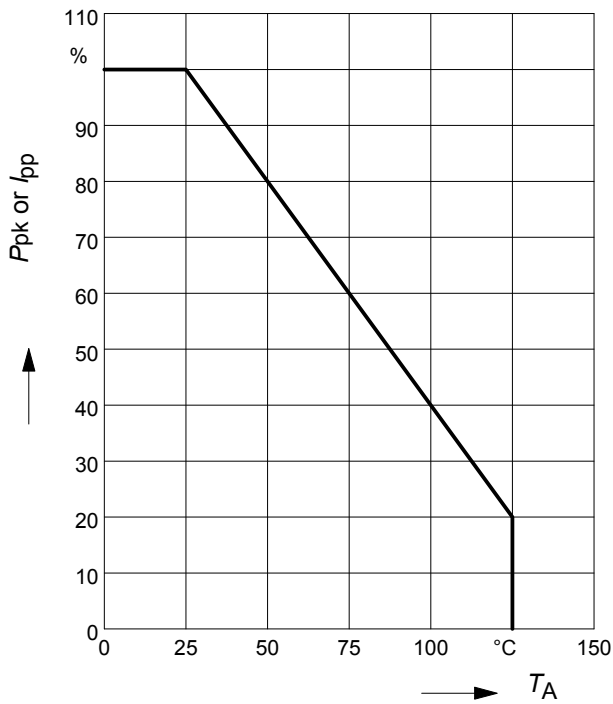
Characteristics -

Reverse working voltage	V_{RWM}	-	-	5	V
Breakdown voltage $I_{(\text{BR})} = 1 \text{ mA}$	$V_{(\text{BR})}$	5.5	6.7	8	
Reverse current $V_R = 3.3 \text{ V}$ $V_R = 5 \text{ V}$	I_R	-	-	5 20	μA
Clamping voltage (positive transient) $I_{\text{PP}} = 5 \text{ A}, t_p = 8/20 \mu\text{s}^2)$ $I_{\text{PP}} = 24 \text{ A}, t_p = 8/20 \mu\text{s}^2)$ $I_{\text{PP}} = 40 \text{ A}, t_p = 8/20 \mu\text{s}^2)$	V_{CL}	-	7.5 9 11	9.5 12 14	V
Forward clamping voltage (negative transients) $I_{\text{PP}} = 5 \text{ A}, t_p = 8/20 \mu\text{s}^2)$ $I_{\text{PP}} = 24 \text{ A}, t_p = 8/20 \mu\text{s}^2)$ $I_{\text{PP}} = 40 \text{ A}, t_p = 8/20 \mu\text{s}^2)$	V_{FC}	-	1.5 3 4	3 5 6	
Diode capacitance $V_R = 0 \text{ V}, f = 1 \text{ MHz}$	C_T	-	430	500	

¹⁾ V_{ESD} according to IEC61000-4-2

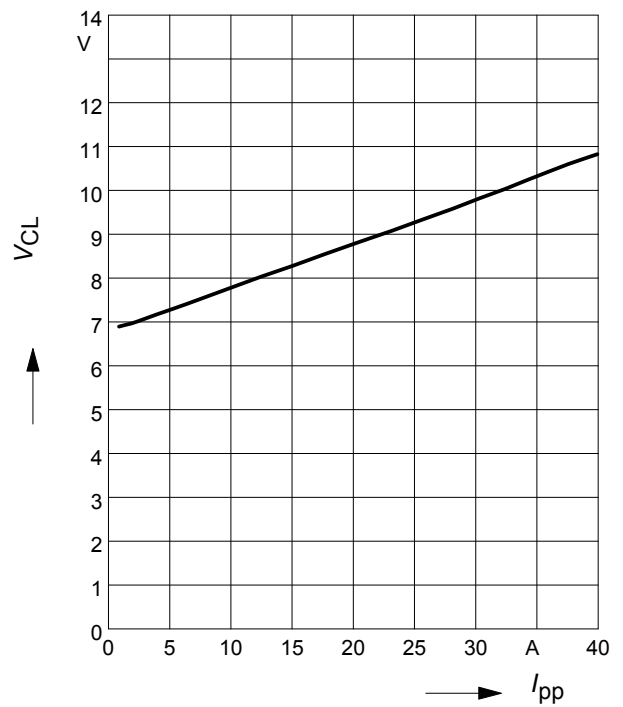
²⁾ I_{pp} according to IEC61000-4-5

Power derating curve $P_{pk} = f(T_A)$



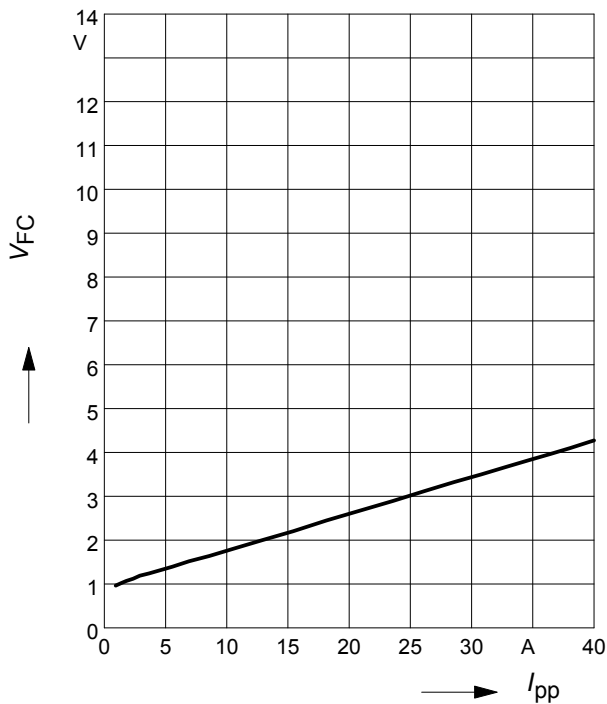
Clamping voltage $V_{cl} = f(I_{pp})$

$t_p = 8 / 20 \mu s$ (positive transients)



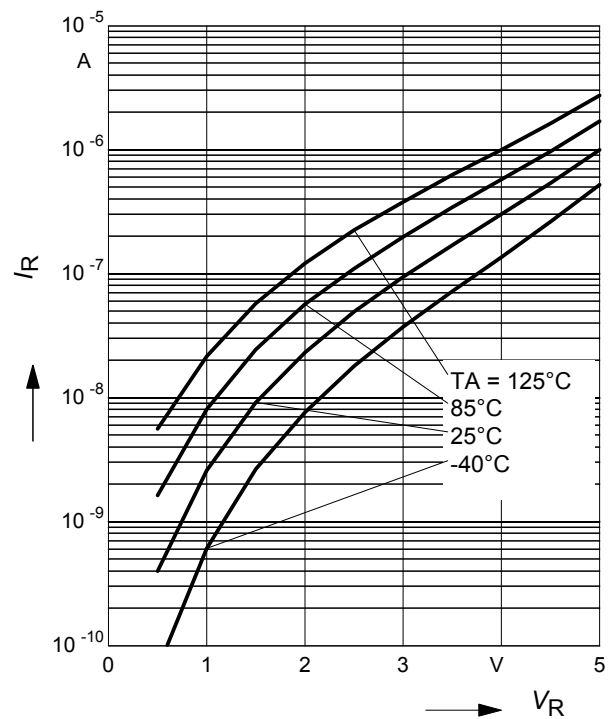
Forward clamping voltage $V_{FC} = f(I_{PP})$

$t_p = 8 / 20 \mu s$ (negative transient)



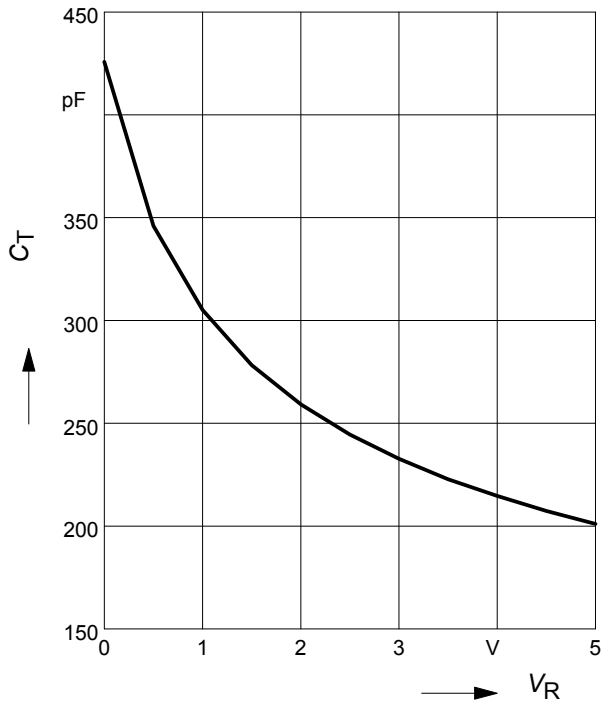
Reverse current $I_R = f(V_R)$

$T_A = \text{Parameter}$

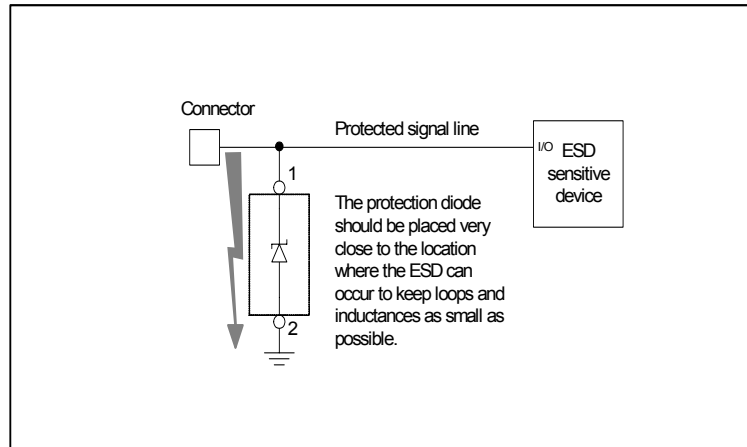


Diode capacitance $C_T = f(V_R)$

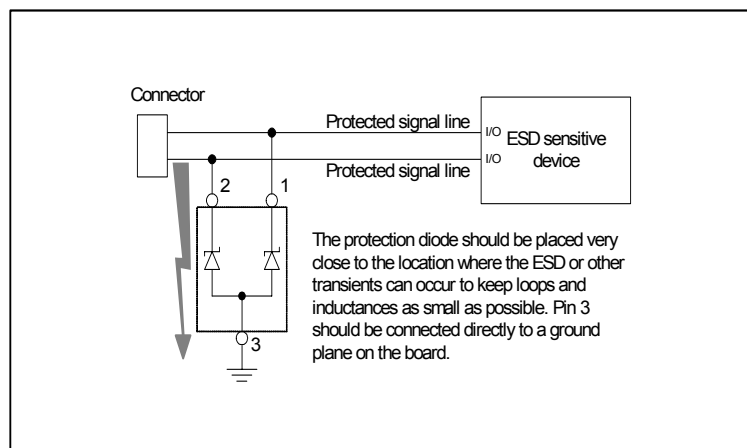
$f = 1\text{MHz}$



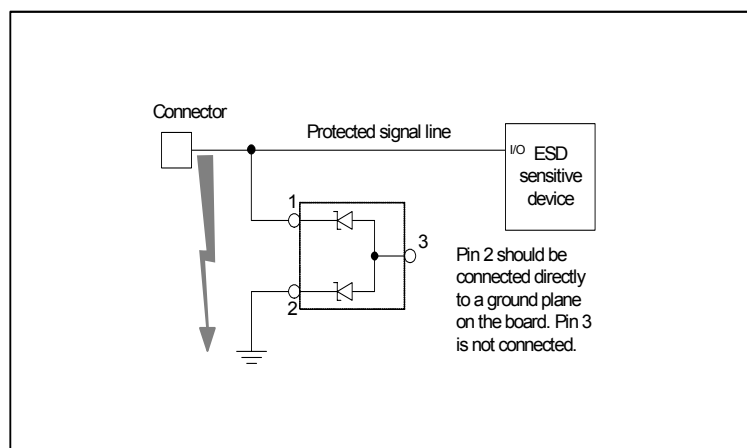
Application example ESD5V01U-03W
single channel, uni-directional



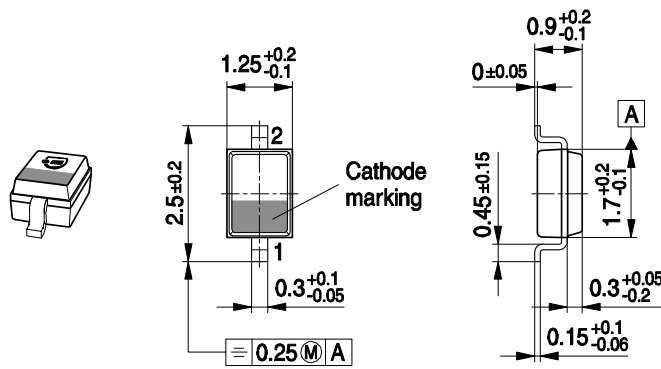
Application example ESD5V0S2U-06
dual channel, uni-directional



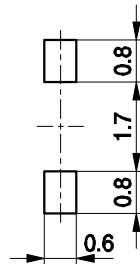
Application example ESD5V0S2U-06
single channel, bi-directional



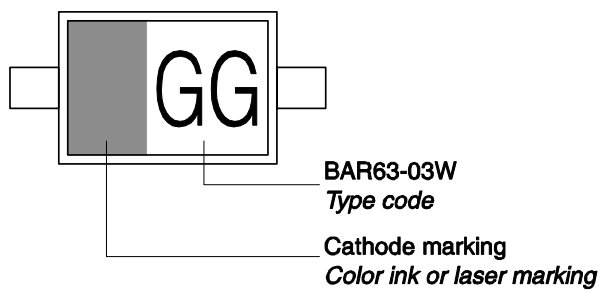
Package Outline



Foot Print

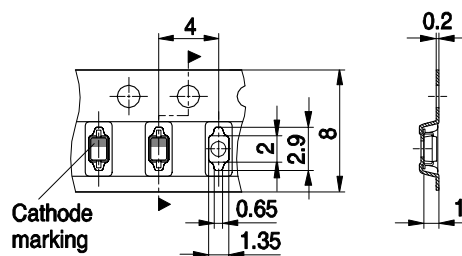


Marking Layout (Example)

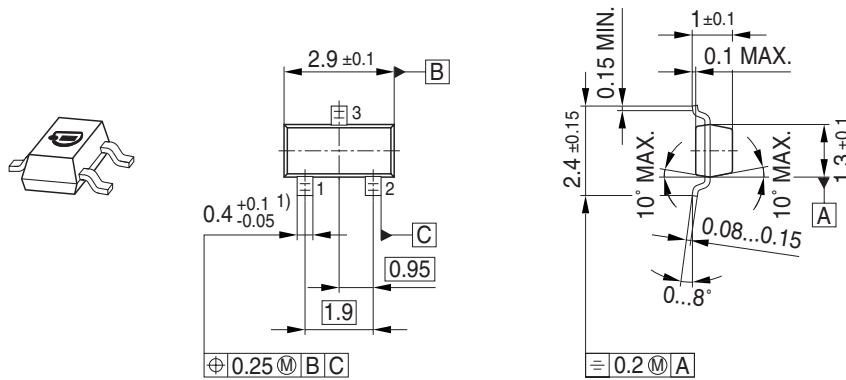


Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel
 Reel ø330 mm = 10.000 Pieces/Reel



Package Outline



1) Lead width can be 0.6 max. in dambar area

Foot Print

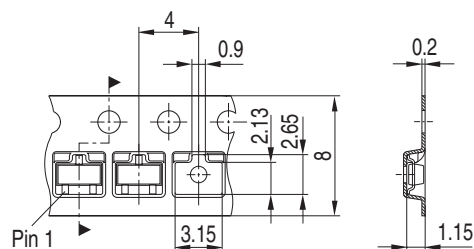


Marking Layout (Example)



Standard Packing

Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Reel \varnothing 330 mm = 10.000 Pieces/Reel



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