

**Multi-Channel TVS Diode Array**

- ESD / transient protection of data and power lines in 3.3 V / 5 V application according to:  
IEC61000-4-2 (ESD): ± 30 KV (contact)  
IEC61000-4-4 (EFT): 80 A (5/50 ns)  
IEC61000-4-5 (Surge): 10 A (8/20 µs)
- Working voltage: 5 V (5.3 V max.)
- Low clamping voltage
- Low reverse current < 5 µA
- Pb-free (RoHS compliant) package

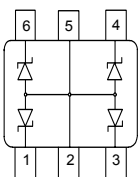


**Applications**

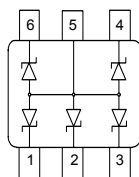
- Uni or bi-directional operation possible (see application example page 5)
- Mobile communication
- Consumer products (STB, MP3, DVD, DSC...)
- LCD displays, camera
- Notebooks and desktop computers, peripherals



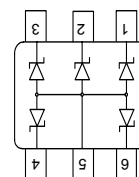
**ESD5V0S4US**



**ESD5V0S5US**



**ESD5V0S5US E6727**  
180° rotated in reel



Type	Package	Configuration	Marking
ESD5V0S4US	SOT363	4 lines, uni-directional	E4s
ESD5V0S5US	SOT363	5 lines, uni-directional	E5s
ESD5V3S5US E6727*	SOT363	5 lines, uni-directional	on request

\* Preliminary data

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

Parameter	Symbol	Value	Unit
ESD contact discharge per diode <sup>1)</sup>	$V_{\text{ESD}}$	30	kV
Peak pulse current ( $t_p = 8 / 20 \mu\text{s}$ ) per diode <sup>2)</sup>	$I_{\text{pp}}$	10	A
Peak pulse power ( $t_p = 8 / 20 \mu\text{s}$ ) per diode	$P_{\text{pk}}$	130	W
Operating temperature range	$T_{\text{op}}$	-55...125	°C
Storage temperature	$T_{\text{stg}}$	-65...150	

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

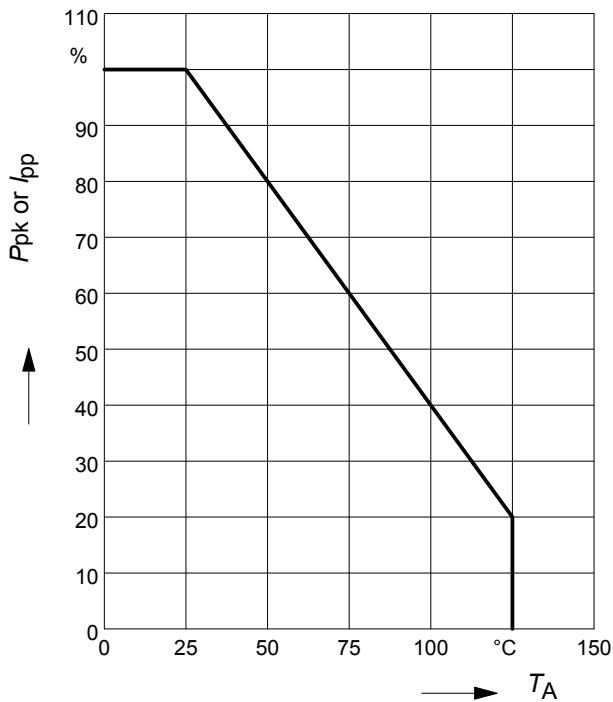
**Characteristics -**

Reverse working voltage	$V_{\text{RWM}}$	-	5	5.3	V
Breakdown voltage $I_{\text{(BR)}} = 1 \text{ mA}$	$V_{\text{(BR)}}$	5.7	6.7	7.7	
Reverse current $V_R = 3.3 \text{ V}$ $V_R = 5 \text{ V}$	$I_R$	-	-	1	$\mu\text{A}$
		-	-	5	
Clamping voltage (positive transients) $I_{\text{PP}} = 1 \text{ A}, t_p = 8/20 \mu\text{s}^2$ $I_{\text{PP}} = 10 \text{ A}, t_p = 8/20 \mu\text{s}^2$	$V_{\text{CL}}$	-	7	9	V
		-	10.5	13	
Forward clamping voltage (negative transients) $I_{\text{PP}} = 1 \text{ A}, t_p = 8/20 \mu\text{s}^2$ $I_{\text{PP}} = 10 \text{ A}, t_p = 8/20 \mu\text{s}^2$	$V_{\text{FC}}$	-	1	3	
		-	3.5	6	
Diode capacitance $V_R = 0 \text{ V}, f = 1 \text{ MHz}$ $V_R = 5 \text{ V}, f = 1 \text{ MHz}$	$C_T$	-	70	90	pF
		-	35	55	

<sup>1)</sup> $V_{\text{ESD}}$  according to IEC61000-4-2

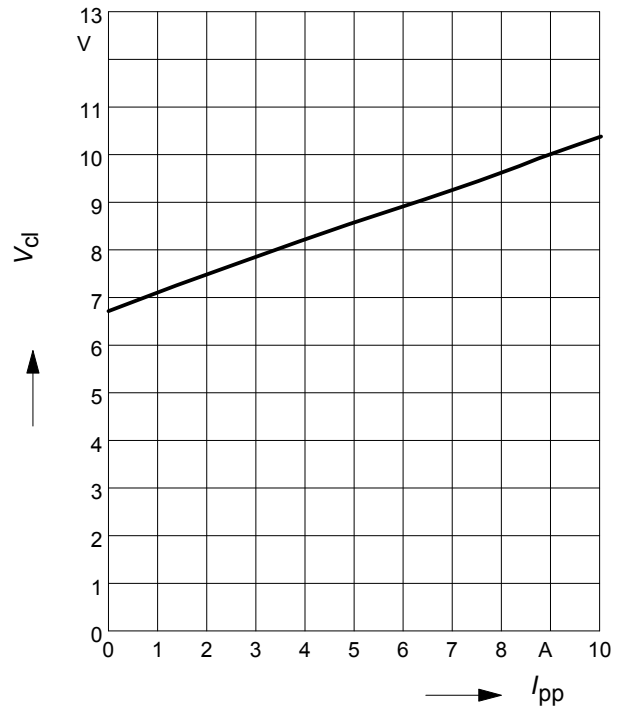
<sup>2)</sup> $I_{\text{pp}}$  according to IEC61000-4-5

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



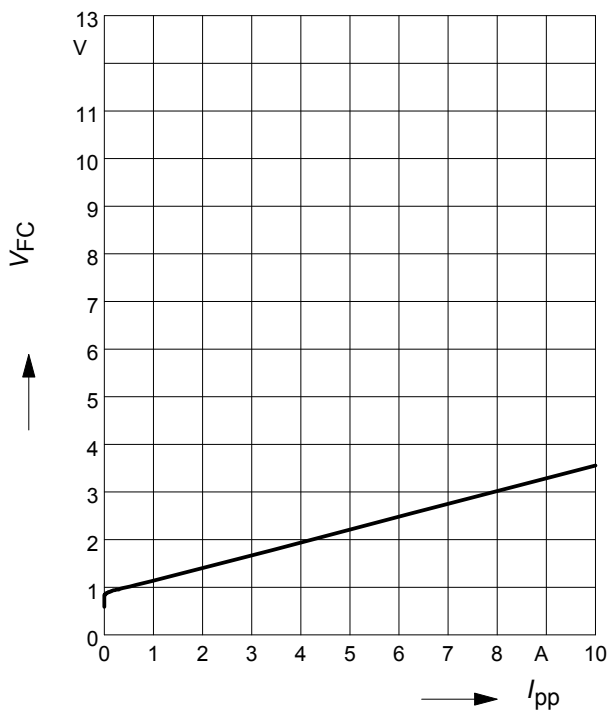
**Clamping voltage,  $V_{cl} = f(I_{pp})$**

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



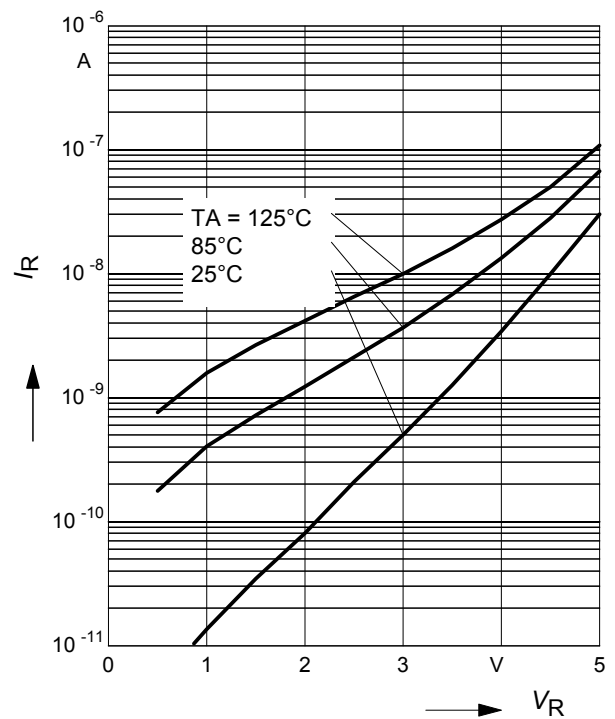
**Forward clamping voltage  $V_{FC} = f(I_{pp})$**

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



**Reverse current  $I_R = f(V_R)$**

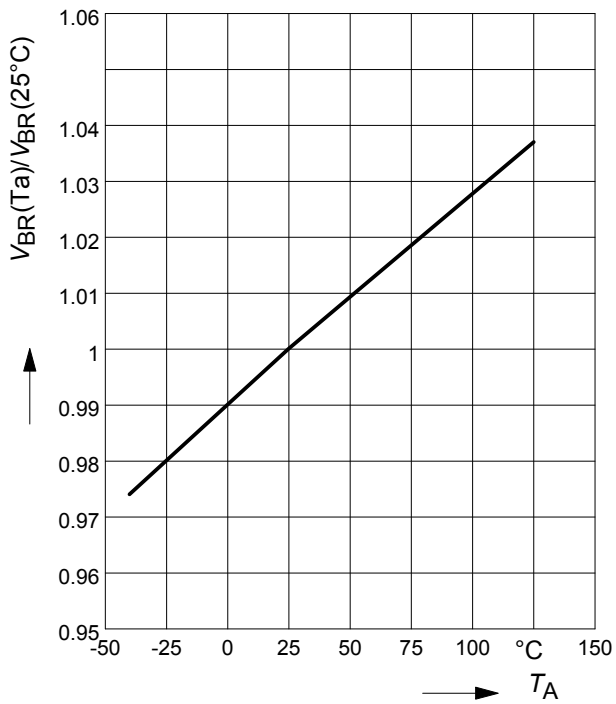
$T_A = \text{Parameter}$



**Normalized reverse voltage**

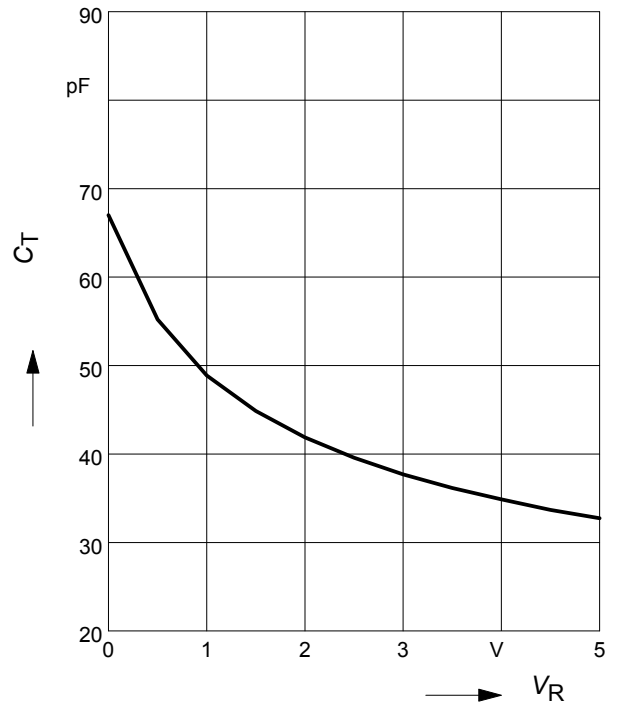
$$V_{BR}(T_A)/V_{BR}(25^\circ\text{C}) = f(T_A)$$

$$I_R = 1 \text{ mA}$$



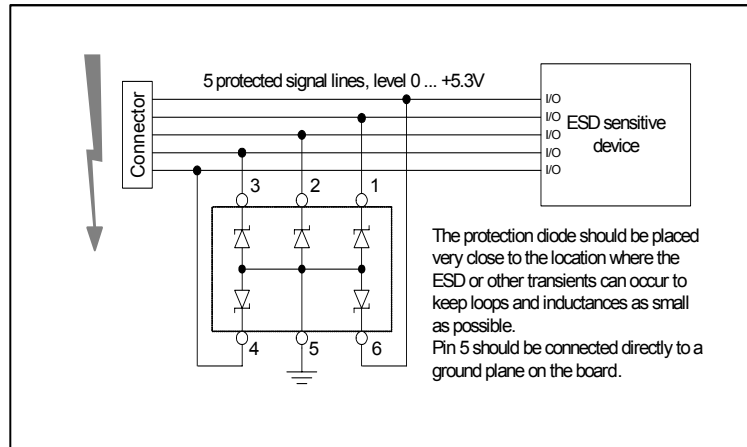
**Diode capacitance  $C_T = f(V_R)$**

$$f = 1 \text{ MHz}$$



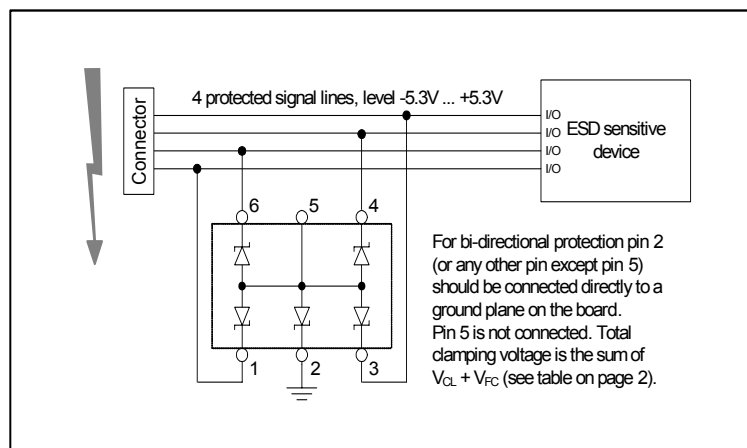
**Application example ESD5V0S5US**

5 channels, uni-directional



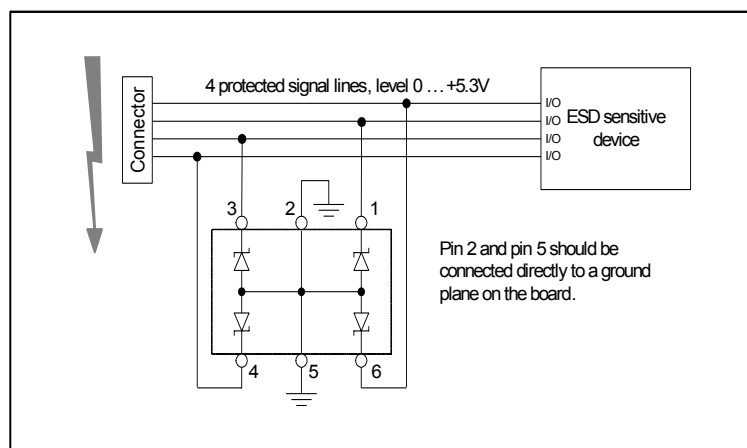
**Application example ESD5V0S5US**

4 channels, bi-directional

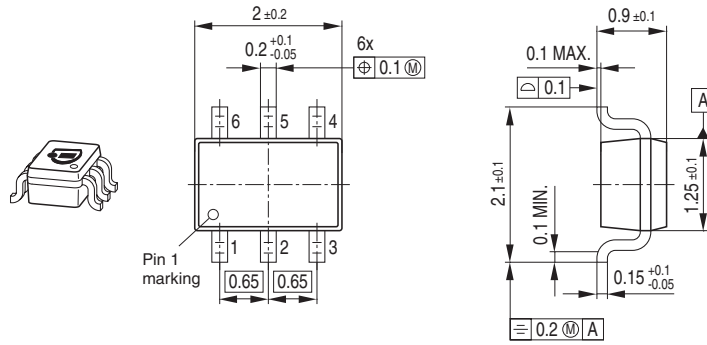


**Application example ESD5V0S4US**

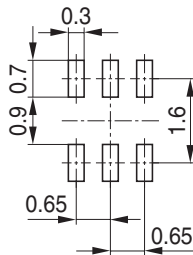
4 channels, uni-directional



Package Outline



Foot Print



Marking Layout (Example)

Small variations in positioning of Date code, Type code and Manufacture are possible.



Standard Packing

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

For symmetric types no defined Pin 1 orientation in reel.



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