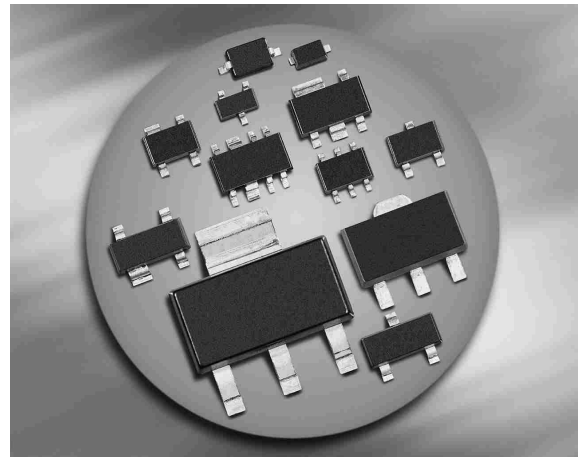


### Multi-Channel TVS Diode Array

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

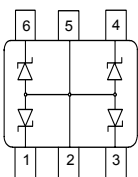


### Applications

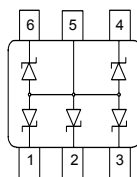
- Uni or bi-directional operation possible (see application example page 5)
- Mobile communication
- Consumer products (STB, MP3, DVD, DSC...)
- LCD displays, camera
- Notebooks and desktop computers, peripherals



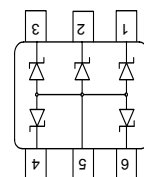
#### ESD5V0S4US



#### 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 | $^\circ\text{C}$ |
| 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. |      |

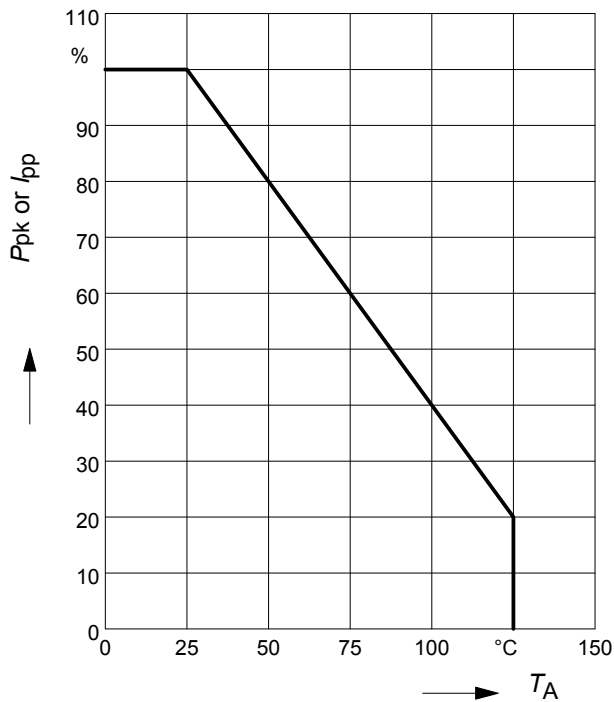
**Characteristics -**

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

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

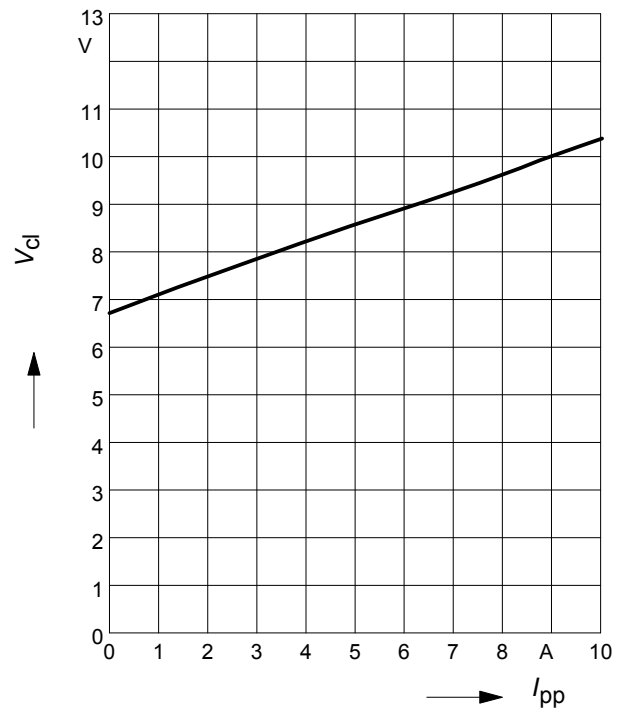
<sup>2)</sup>  $I_{\text{pp}}$  according to IEC61000-4-5

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



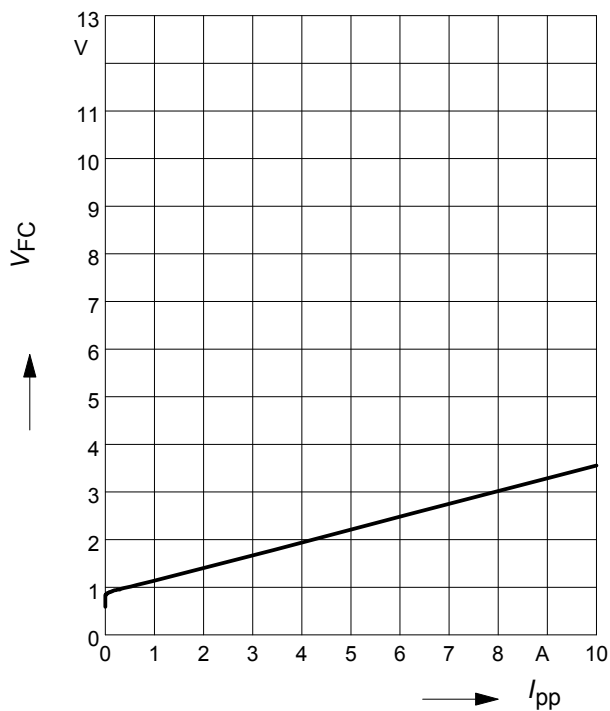
**Clamping voltage,  $V_{cl} = f(I_{pp})$**

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



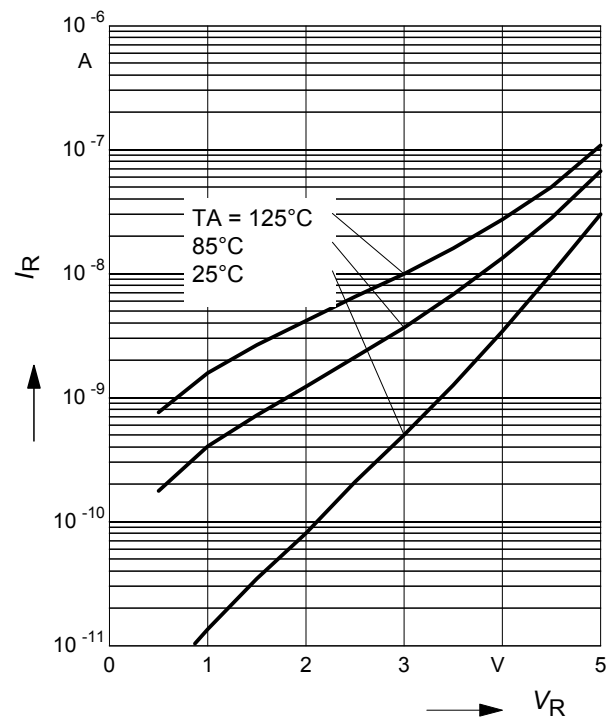
**Forward clamping voltage  $V_{FC} = f(I_{pp})$**

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



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

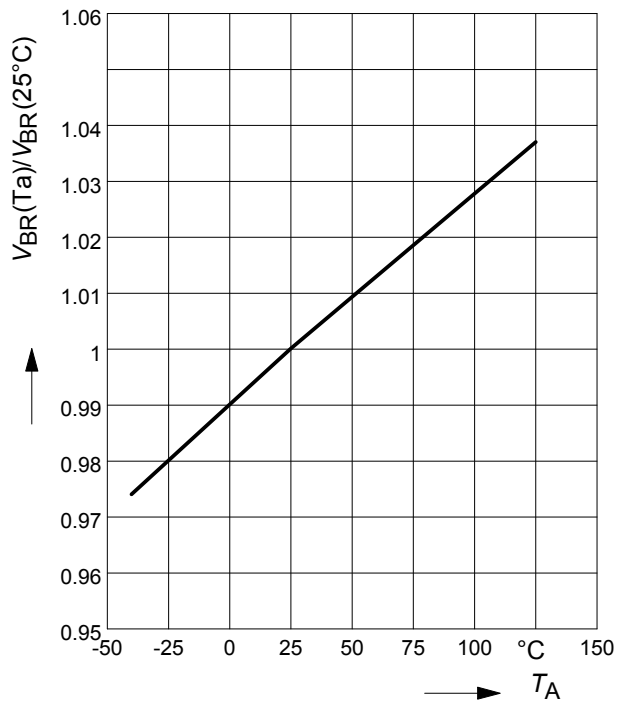
$T_A = \text{Parameter}$



### Normalized reverse voltage

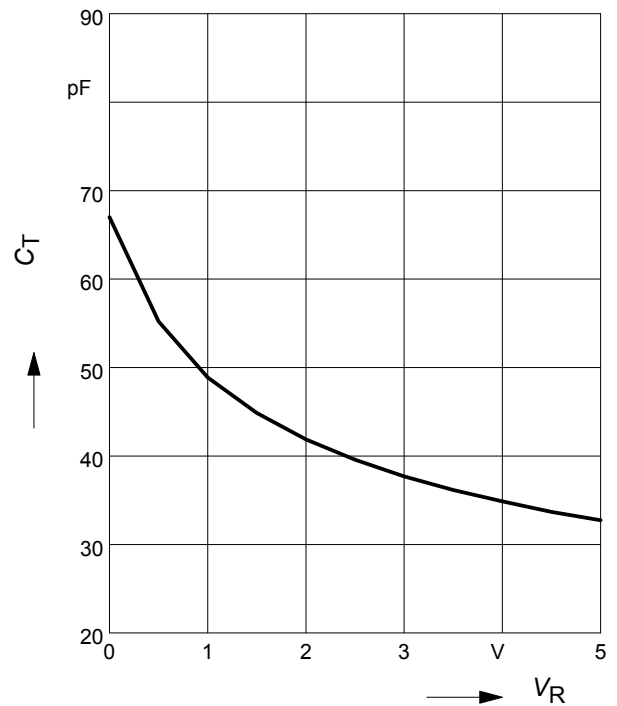
$$V_{BR}(T_A)/V_{BR}(25^\circ\text{C}) = f(T_A)$$

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



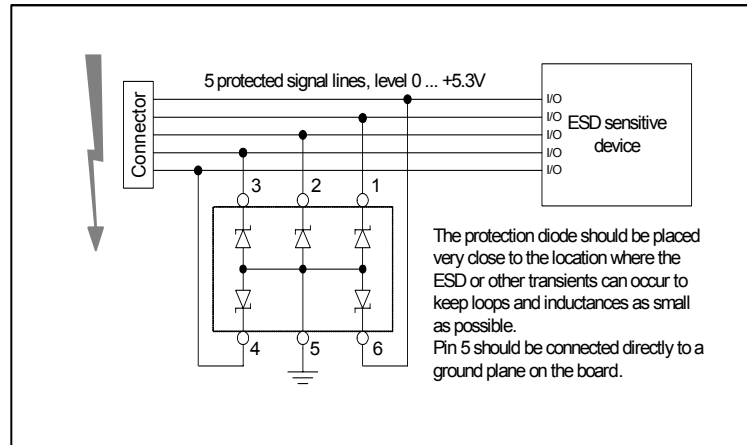
### Diode capacitance $C_T = f(V_R)$

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



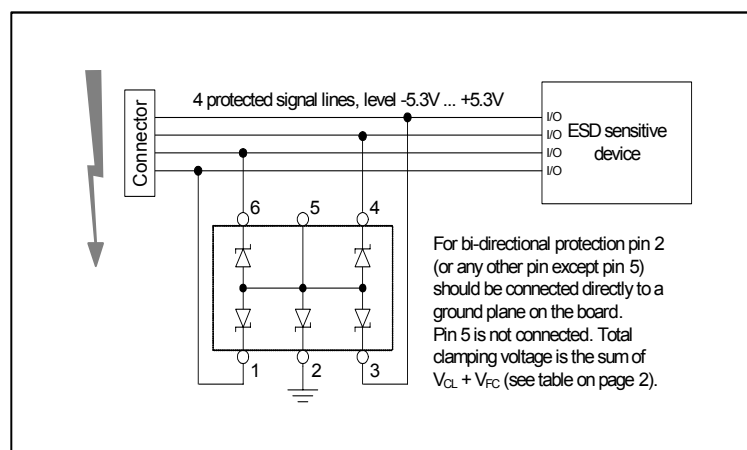
### Application example ESD5V0S5US

5 channels, uni-directional



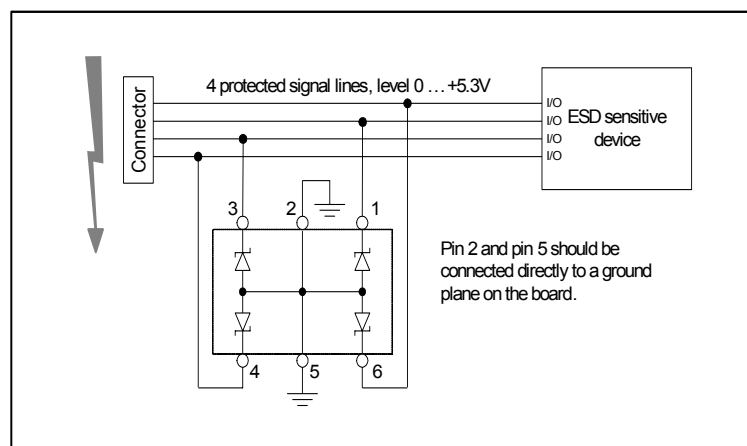
### Application example ESD5V0S5US

4 channels, bi-directional

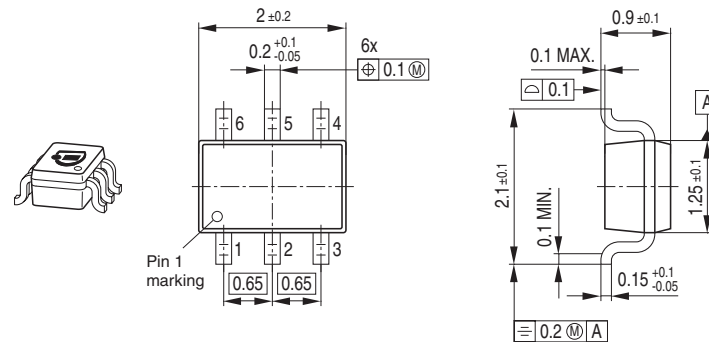


### Application example ESD5V0S4US

4 channels, uni-directional



## Package Outline

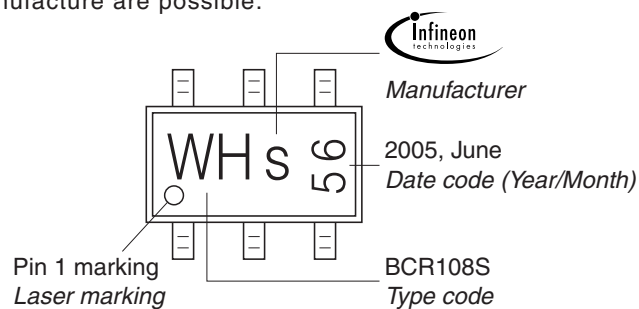


## Foot Print



## 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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