Multi-Channel TVS Diode Array
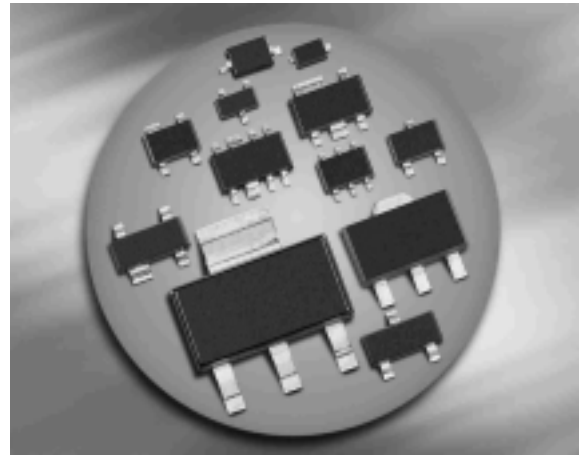
- ESD / transient protection of
  data and power lines
  in 3.3 V / 5 V application according to:
  IEC61000-4-2 (ESD): ± 25 KV (contact)
  IEC61000-4-4 (EFT): 40 A (5/50 ns)
  IEC61000-4-5 (Lighting): 6 A (8/20 µs)

- Max. working voltage: 5 V (5.3 V max.)

- Low clamping voltage

- Low reverse current < 5 µA

Applications

- Mobile communication

- Consumer products (STB, MP3, DVD, DSC...)

- LCD displays, camera

- Notebooks and destop computers, peripherals

ESD5V0S4US
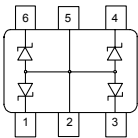
ESD5V0S5US
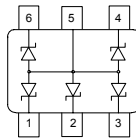
Type	Package	Configuration	Marking
ESD5V0S4US*	SOT363	4 channel, uni-directional	E4s
ESD5V0S5US*	SOT363	5 channel, uni-directional	E5s

* Preliminary data

Maximum Ratings at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Value	Unit
ESD contact discharge[1]	V_{ESD}	25	kV
Peak pulse current (t_p = 8 / 20 µs)[2]	I_{pp}	6	A
Peak pulse power (t_p = 8 / 20 µs)	P_{pk}	75	W
Operating temperature range	T_{op}	-55...125	°C
Storage temperature	T_{stg}	-65...150	

[1] V_{ESD} according to IEC61000-4-2

[2] I_{pp} according to IEC61000-4-5

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point[1]	R_{thJS}	$\leq$ tbd	W/K

Electrical Characteristics at T_A = 25°C, unless otherwise specified

| Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Reverse working voltage	V_{RWM}	-	5	5.3	V
Breakdown voltage $I_{(BR)}$ = 1 mA	$V_{(BR)}$	5.7	6.7	7.7	
Reverse current V_R = 5 V	I_R	-	-	5	µA
Clamping voltage V_{ESD} = 15 kV (contact)[2] I_{PP} = 3 A, t_p = 8/20 µs[3] I_{PP} = 6 A, t_p = 8/20 µs[3]	V_{CL}	- - -	tbd 8 9.3	- - -	V
Diode capacitance V_R = 0 V, f = 1 MHz	C_T	-	70	90	pF

[1] For calculation of R_{thJA} please refer to Application Note Thermal Resistance

[2] V_{ESD} according to IEC61000-4-2
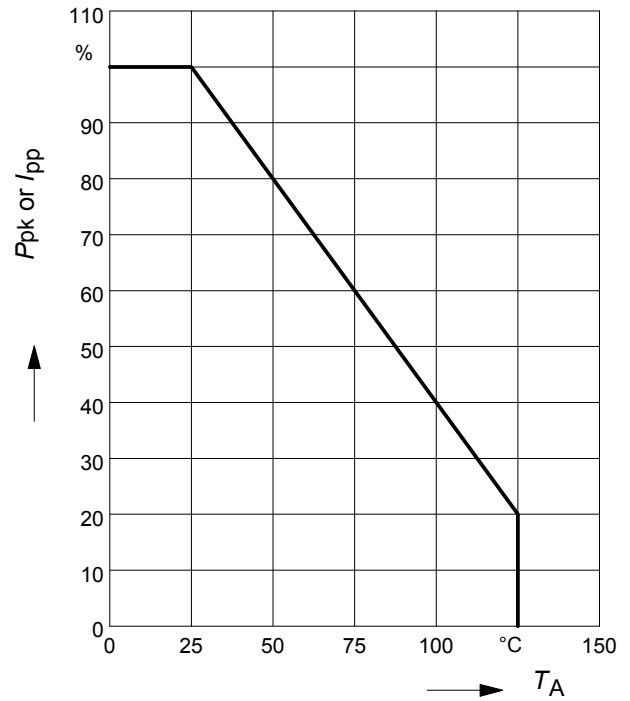
[3] I_{pp} according to IEC61000-4-5

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Non-repetitive peak pulse power
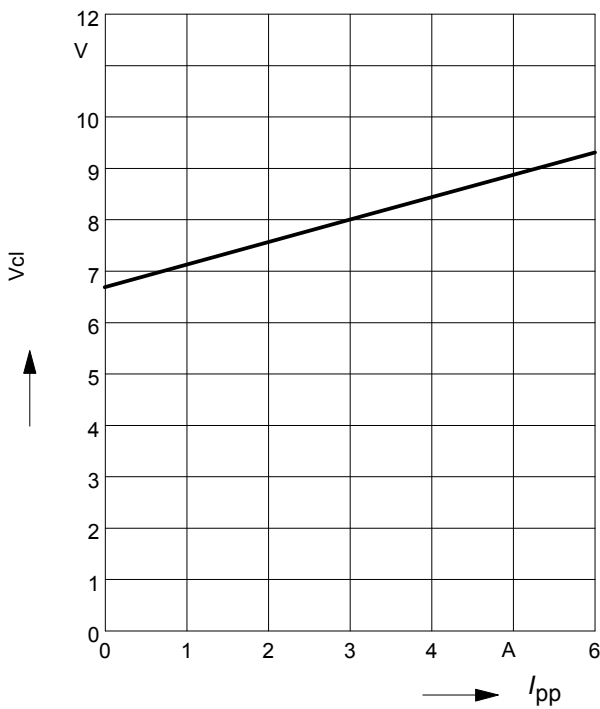
$P_{pk} = f(t_p)$
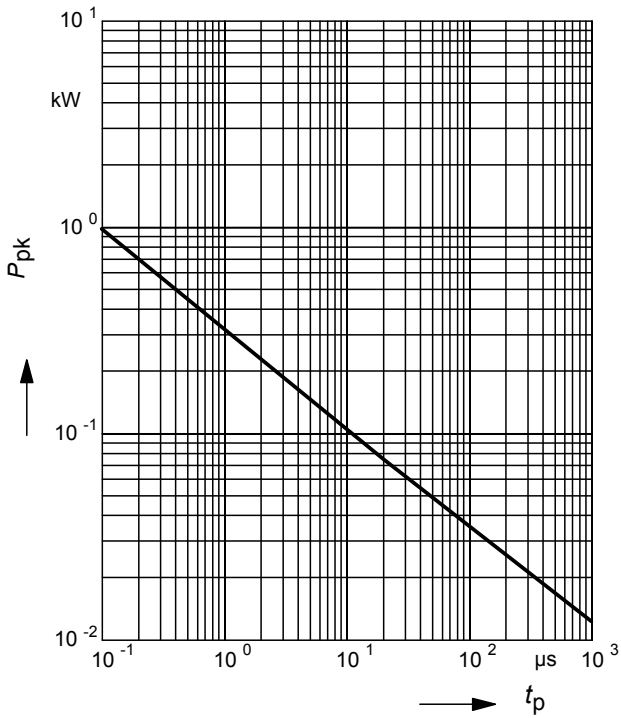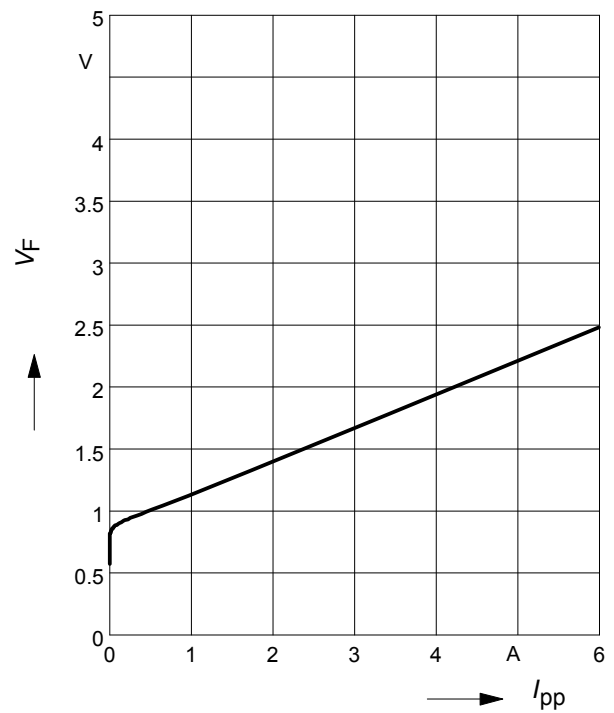

Power derating curve $P_{pk} = f(T_A)$

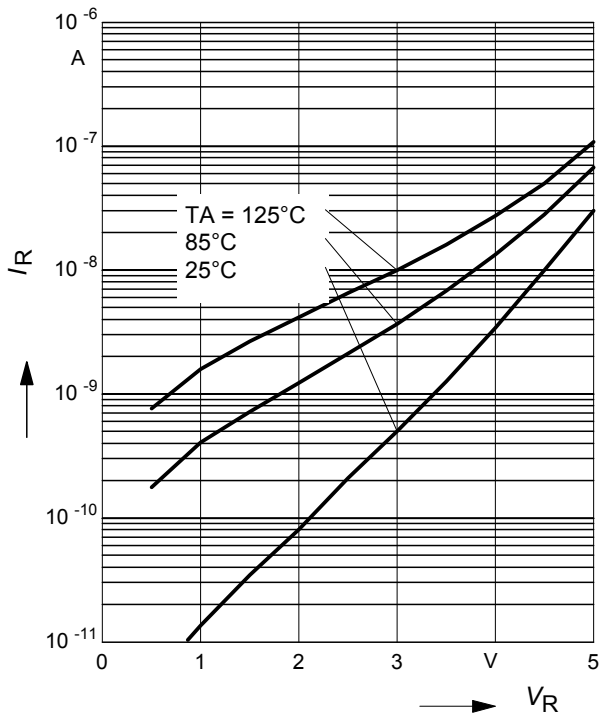**Clamping voltage**, $V_{cl} = (I_{pp})$

$t_p = 8 / 20\ \mu s$

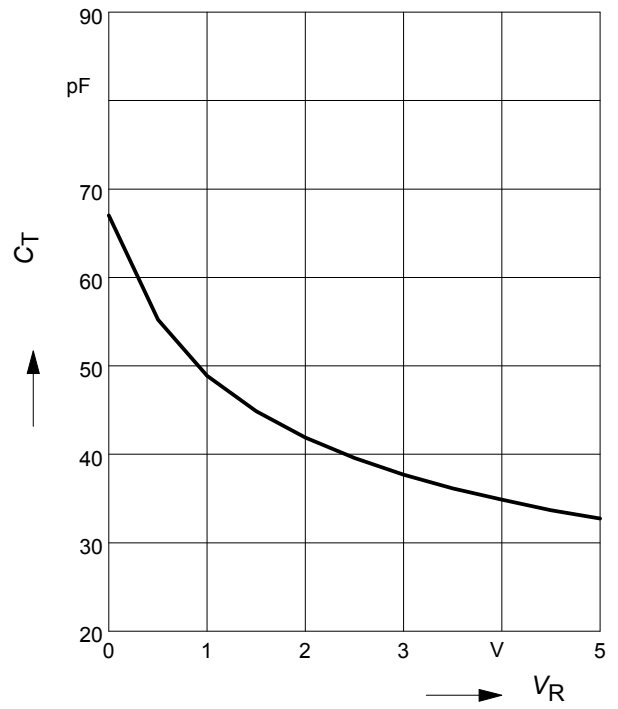**Forward voltage** $V_F = f(I_{pp})$

$t_p = 8 / 20\ \mu s$

3   2006-05-05
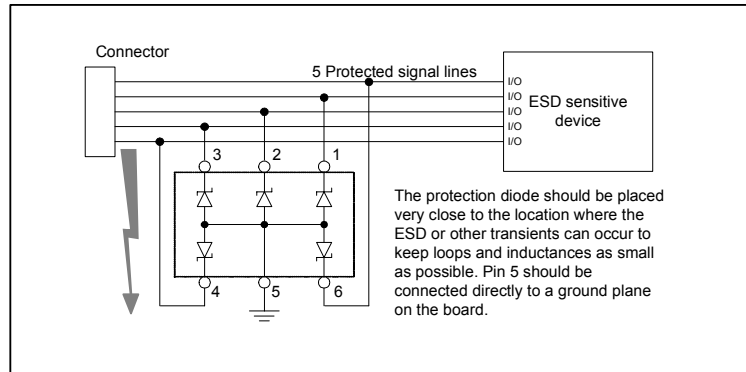
Reverse current $I_R = f(V_R)$

T_A = Parameter

Diode capacitance $C_T = f(V_R)$

f = 1MHz

2006-05-05

Application example ESD5V0S5US
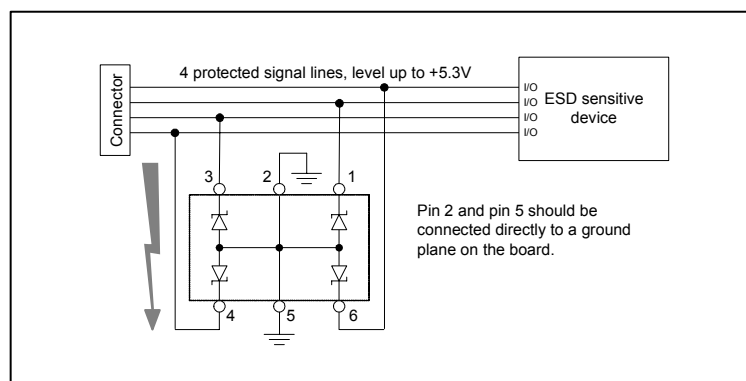5 channels, uni-directional

The protection diode should be placed very close to the location where the ESD or other transients can occur to keep loops and inductances as small as possible. Pin 5 should be connected directly to a ground plane on the board.

Application example ESD5V0S5US
4 channels, bi-directional

For bi-directional protection pin 2 (or any other pin except pin 5) should be connected directly to a ground plane on the board. Pin 5 is not connected.
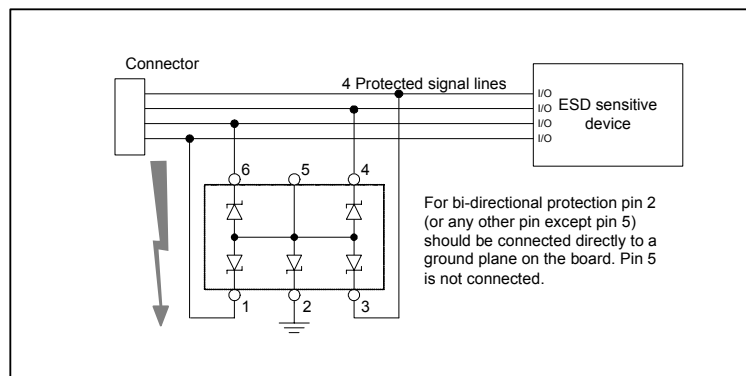
Application example ESD5V0S4US
4 channels, uni-directional

Pin 2 and pin 5 should be connected directly to a ground plane on the board.

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Package Outline

2 ±0.2

0.2 +0.1 -0.05

6x
⊕ 0.1 Ⓜ

6 5 4

Pin 1 marking

1 2 3

0.65 0.65

0.9 ±0.1

0.1 MAX.

◻ 0.1

A

2.1 ±0.1

0.1 MIN.

1.25 ±0.1

0.15 +0.1 -0.05

= 0.2 Ⓜ A

Foot Print

0.3

0.9 0.7

1.6

0.65

0.65
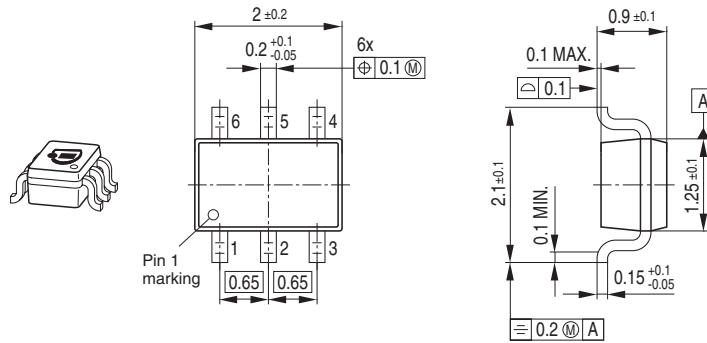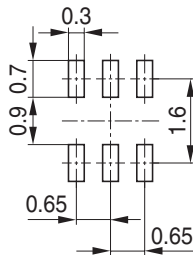
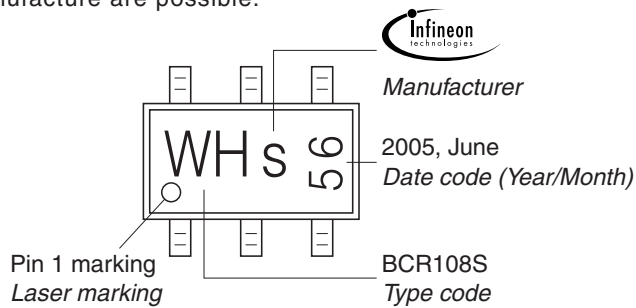## Marking Layout (Example)

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

Manufacturer

WH S   5 6

2005, June
Date code (Year/Month)

Pin 1 marking
Laser marking

BCR108S
Type code

Standard Packing

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

For symmetric types no defined Pin 1 orientation in reel.
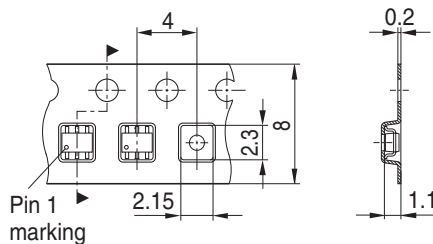
4

0.2

8

2.3

Pin 1 marking

2.15

1.1

Attention please!

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