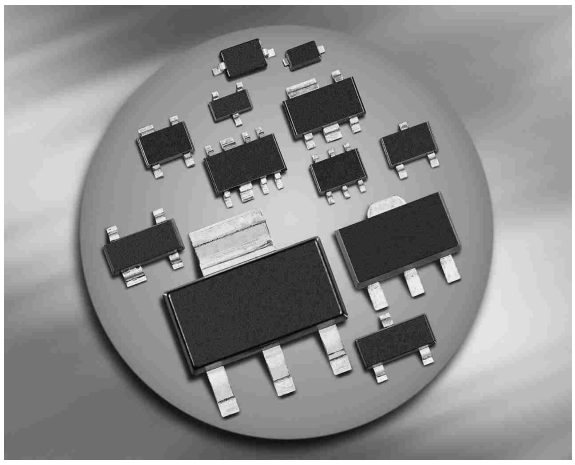
Ultra-Low Capacitance ESD Diode Array



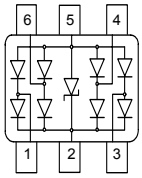
- Rail-to-rail diodes with internal TVS diode
- ESD / transient protection of four I/O lines and one Vcc line exceeding:
  IEC61000-4-2 (ESD): ± 15 kV (contact)
  IEC61000-4-4 (EFT): 2.5 kV / 50 A (5/50 ns)
  IEC61000-4-5 (surge): 3 A (8/20 µs)
- Reverse working voltage data lines: 5.3 V max.
- Reverse working voltage Vcc: 6 V max.
- Very low capacitance: 0.4 pF typ.
- Very low reverse current < 10 nA typ.
- Very low clamping voltage:
  12 V typ. at positive transients
  4 V typ. at negative transients
- Pb-free (RoHS compliant) package

Applications

- USB 2.0 ports and future USB 3.0 ports
- Ethernet port: 10/100/1000 Mb/s
- IEEE 1394 FireWire ports
- Mobile communications e.g. high-speed SIM card protection
- Consumer products (STB, DVD, DSC, DVC...)
- Notebooks and desktop computers, peripherals

RoHS

ESD5V3U4RRS



Type	Package	Configuration	Marking
ESD5V3U4RRS	SOT363	6 pins, uni-directional	E8s

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

Parameter	Symbol	Value	Unit
ESD contact discharge[1)]	V_{ESD}	15	kV
Peak pulse current (t_p = 8 / 20 µs)[2)]	I_{pp}	3	A
Peak pulse power (t_p = 8 / 20 µs)[2)]	P_{pk}	50	W
Operating temperature range	T_{op}	-55...125	°C
Storage temperature	T_{stg}	-65...150	

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics [3)]					
Reverse working voltage	V_{RWM}				V
I/O pin[4)] to pin 5		-	-	5.3	
pin 2 to pin 5		-	-	6	
Breakdown voltage $I_{(BR)}$ = 1 mA, any pin to pin 5	$V_{(BR)}$	6.3	-	-	
Reverse current V_R = 5.3 V, any pin to pin 5	I_R	-	< 10	100	nA
Clamping voltage	V_{CL}				V
I_{PP} = 1 A, t_p = 8/20 µs[2)], any pin to pin 5		-	10	13	
I_{PP} = 3 A, t_p = 8/20 µs[2)], any pin to pin 5		-	12	15	
Forward clamping voltage	V_{FC}				
I_{PP} = 1 A, t_p = 8/20 µs[2)], any pin to pin 5		-	2	4	
I_{PP} = 3 A, t_p = 8/20 µs[2)], any pin to pin 5		-	4	6	
Line capacitance[5)4)] V_R = 0 V, f = 1 MHz, any I/O pin to pin 5	C_T	-	0.4	0.6	pF
Dynamic resistance[6)]	R_D	-	-	-	-

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

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

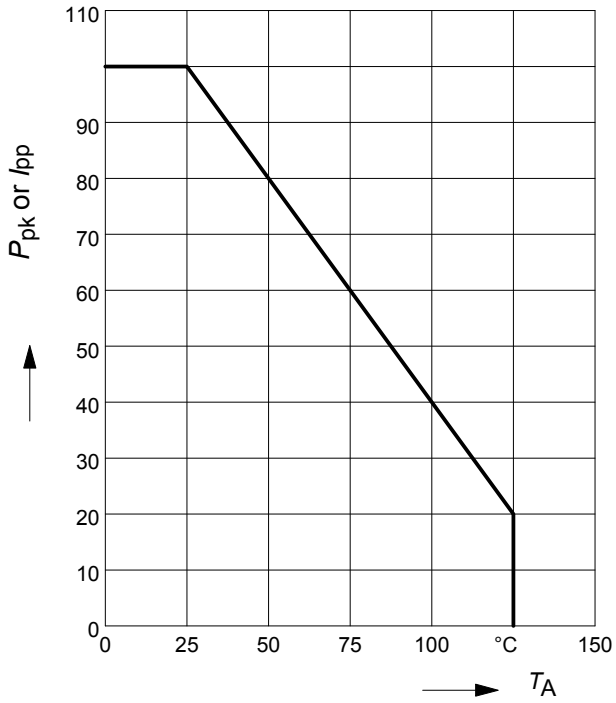
[3] It is strongly recommended that pin 5 is connected to ground for propper functionality.

[4] I/0 pins are pin 1, 3, 4, 6

[5] Total capacitance line to ground

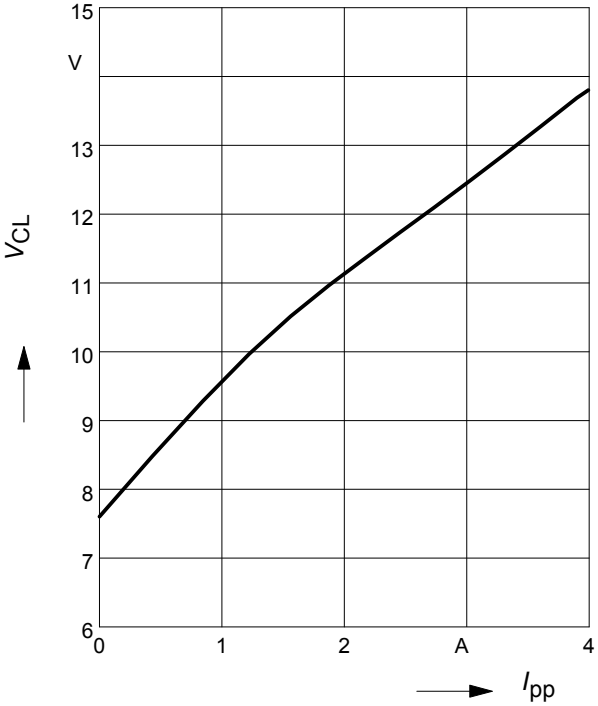
[6] according to TLP tests

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



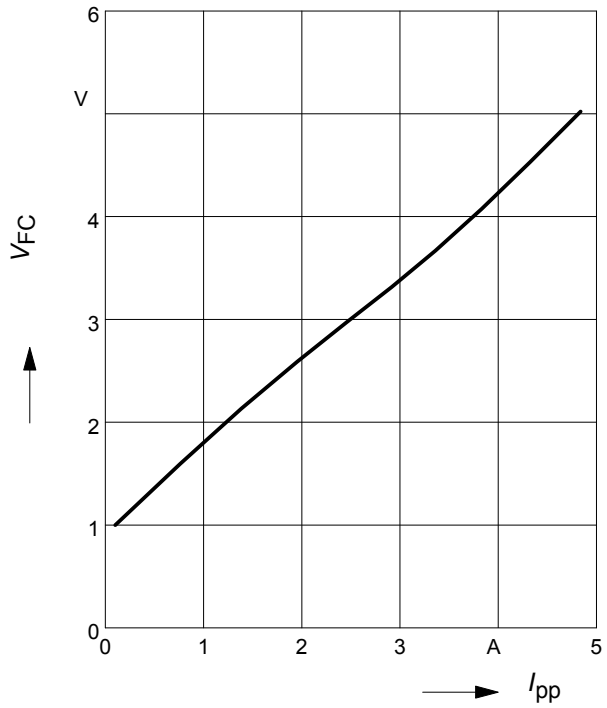
Clamping voltage, $V_{cl} = f(I_{pp})$

t_p = 8 / 20 µs



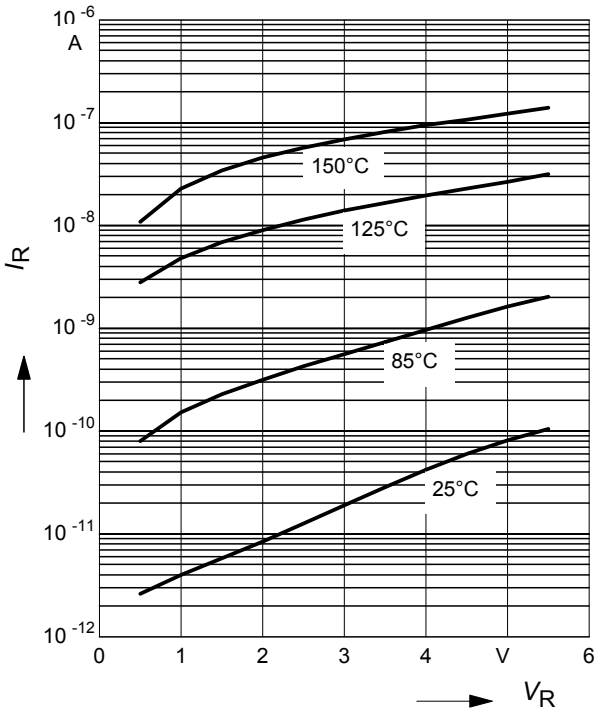
Forward clamping voltage $V_{FC} = f(I_{PP})$

t_p = 8 / 20 µs



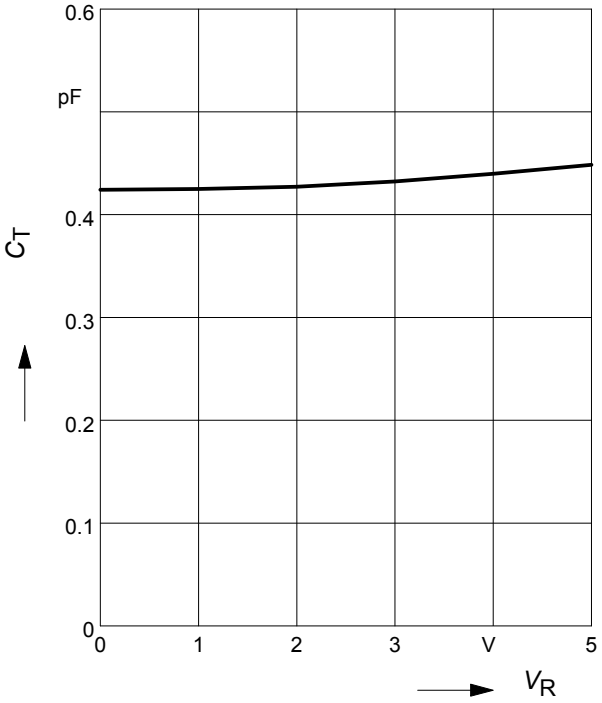
Reverse current $I_R = f(V_R)$

T_A = Parameter

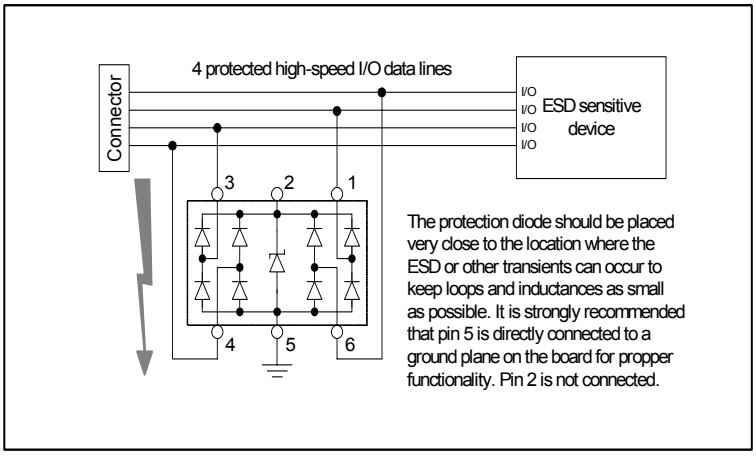


Diode capacitance $C_T = f(V_R)$

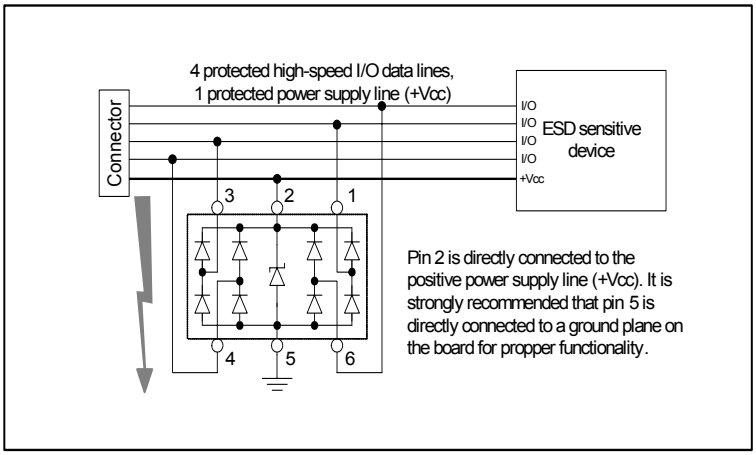
f = 1MHz



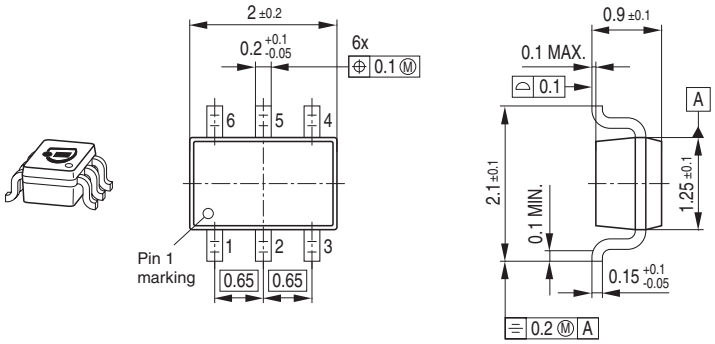
Application example ESD5V3U4RRS
4 data lines, uni-directional



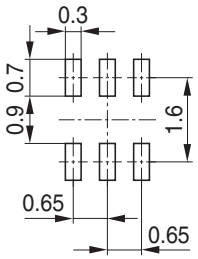
Application example ESD5V3U4RRS
4 data lines and 1 power supply line, uni-directional



Package Outline

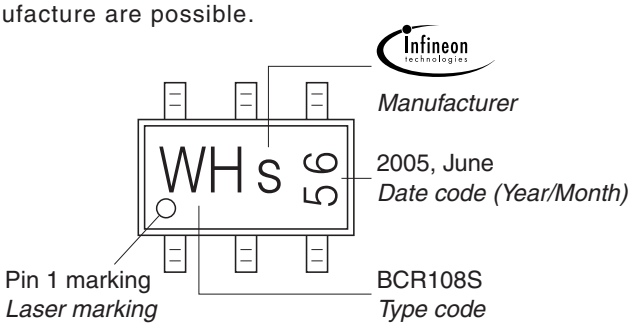


Foot Print



Marking Layout (Example)

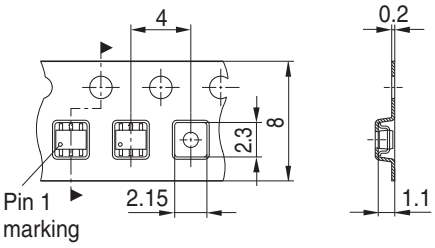
Small variations in positioning of
Date code, Type code and Manufacture are possible.



Standard Packing

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

For symmetric types no defined Pin 1 orientation in reel.



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