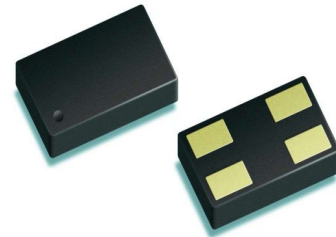


RF ESD Protection Diodes

- ESD protection of RF antenna / interfaces or ultra high speed data lines acc. to:
IEC61000-4-2 (ESD): ± 15 KV (air / contact)
IEC61000-4-4 (EPT): 40 A (5/50 ns)
IEC61000-4-5 (surge): 5 A (8/20 μ s)
- Very low line capacitance: 0.4 pF @ 1 GHz
(0.2 pF per diode)
- Ultra low series inductance: 0.4 nH per diode
- Very low clamping voltage
- Ultra small leadless package: 1.2 x 0.8 x 0.39 mm³
- Pb-free (RoHS compliant) package



Applications in anti-parallel configuration

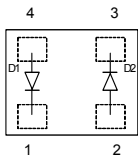
- For low RF signal levels without superimposed DC voltage: e.g. GPS, XM-Radio, Sirius, DVB, DMB, DAB, Remote Keyless Entry

Applications in rail-to-rail configuration

- For high RF signal levels or low RF signal levels with superimposed DC voltage: e.g. HDMI, S-ATA, Gbit Ethernet



ESD0P4RFL



Type	Package	Configuration	Marking
ESD0P4RFL	TSLP-4-7	anti-parallel	E4

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

Parameter	Symbol	Value	Unit
ESD contact discharge ¹⁾	V_{ESD}	15	kV
Peak pulse current ($t_p = 8 / 20 \mu\text{s}$) ²⁾	I_{pp}	5	A
Operating temperature range	T_{op}	-55...150	$^\circ\text{C}$
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 ³⁾	V _{RWM}	-	-	50	V
Reverse current ³⁾ V _R = 50 V	I _R	-	20	100	nA
Forward clamping voltage ²⁾ I _{PP} = 5 A	V _{FC}	-	6	9	V
Diode capacitance ⁴⁾ V _R = 0 V, f = 1 GHz	C _T	-	0.4	-	pF
Series inductance per diode	L _S	-	0.4	-	nH

¹⁾ V_{ESD} according to IEC61000-4-2, only valid in anti-parallel or rail-to-rail connection.

Please refer to the application examples.

²⁾ I_{pp} according to IEC61000-4-5, only valid in anti-parallel or rail-to-rail connection.

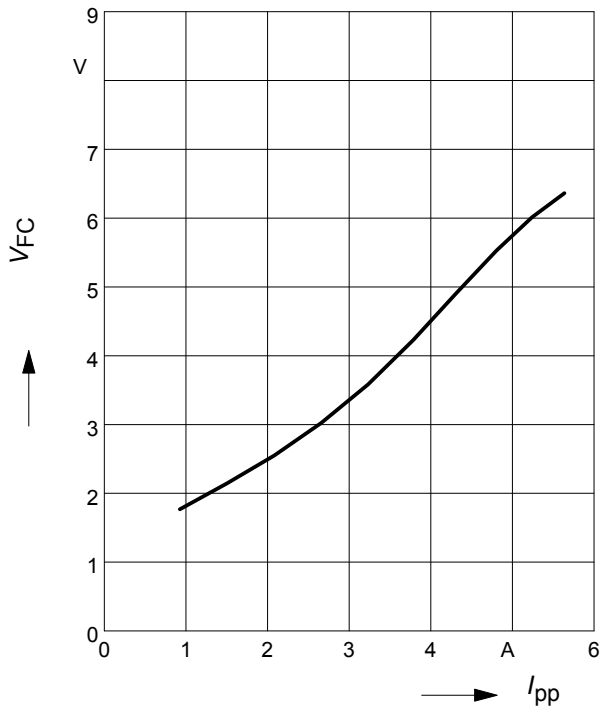
Please refer to the application examples.

³⁾Only valid in rail-to-rail configuration with $V_{\text{CC}} \leq V_{\text{RWM}}$

⁴⁾Total capacitance line to ground (2 diodes in parallel)

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

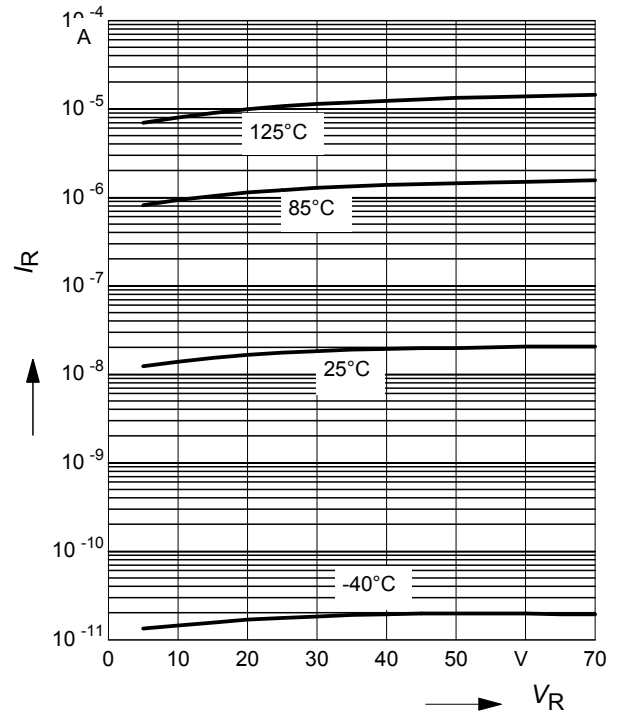
$t_p = 8 / 20 \mu s$



Reverse current $I_R = f(V_R)$

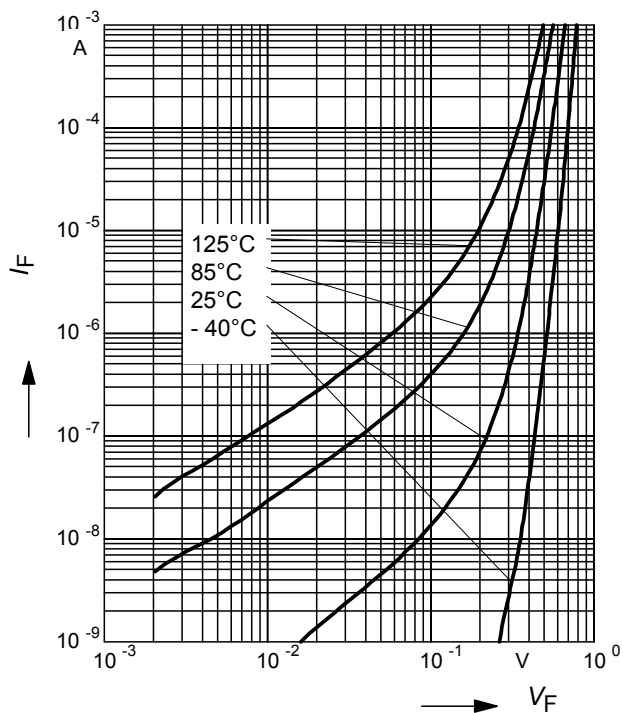
$T_A = \text{Parameter}$

leakage in rail-to-rail configuration



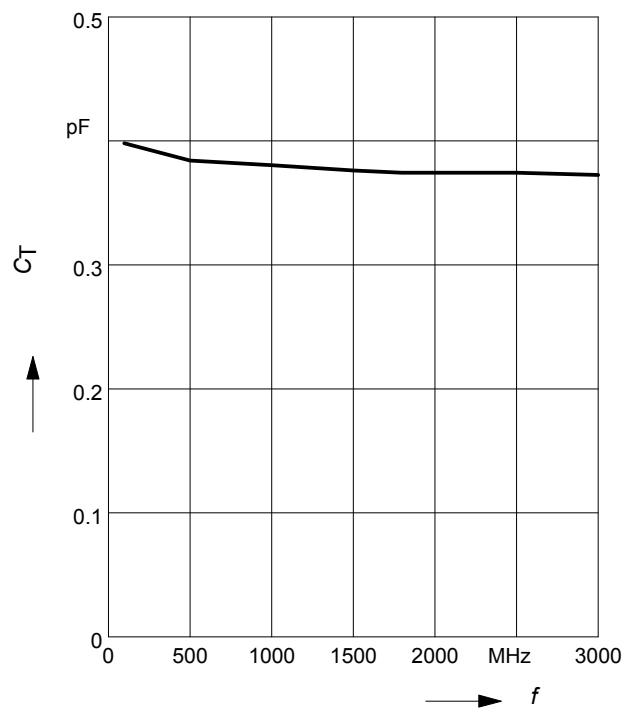
Forward current $I_F = f(V_F)$

leakage in anti-parallel configuration



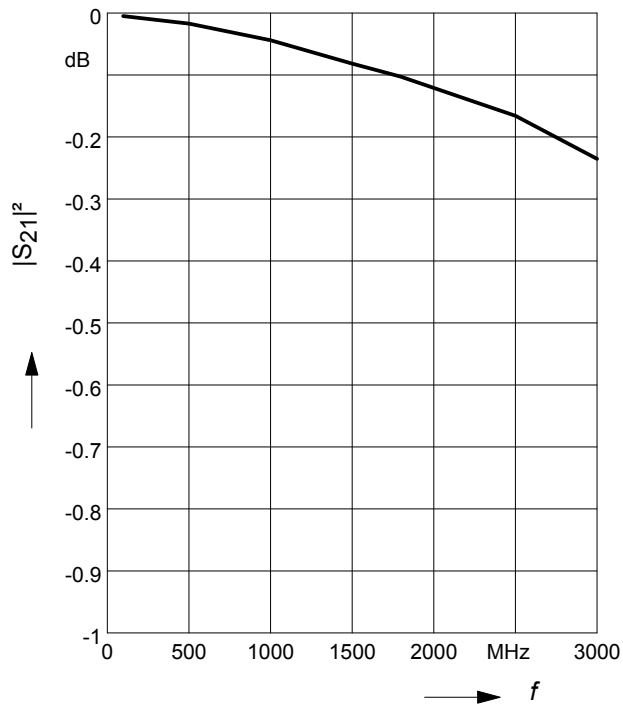
Line capacitance $C_T = f(f)$

$V_R = 0 V$



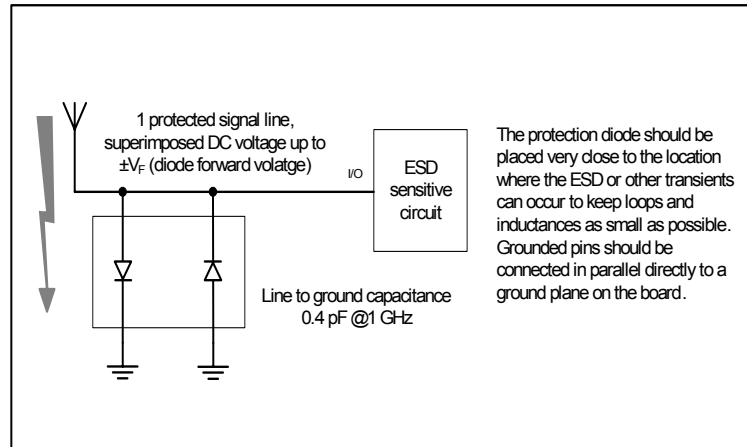
Insertion loss $I_L = -|S_{21}|^2 = f(f)$

$V_R = 0 \text{ V}$, $Z = 50 \Omega$



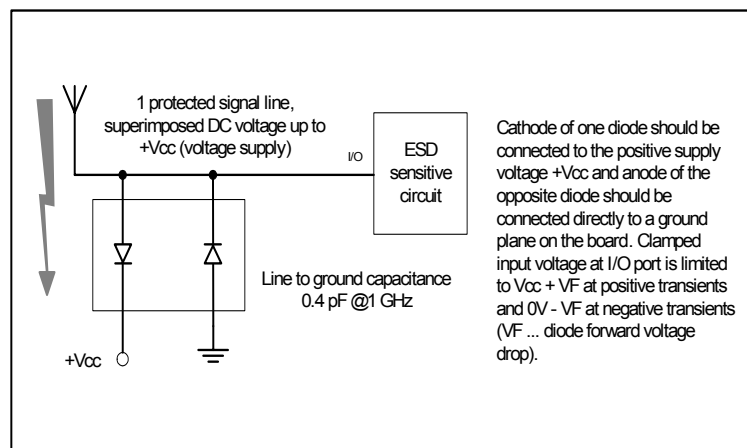
1. Application example ESD0P4RFL

1 RF signal channel, anti-parallel configuration



2. Application example ESD0P4RFL

1 RF signal channel, rail-to-rail configuration



Technical drawing of a 2x2 grid of holes. The drawing includes the following dimensions and labels:

- Top horizontal dimension: 0.8 ± 0.05
- Left horizontal dimension: $4 \times 0.25 \pm 0.035$
- Right vertical dimension: $4 \times 0.35 \pm 0.035$
- Bottom horizontal dimension: 0.45 ± 0.05
- Left vertical dimension: 0.75 ± 0.05
- Right vertical dimension: 1.2 ± 0.05
- Labels: 1, 2, 3, 4 (positioning points), 1) (tolerance zone indicator)

 Stencil apertures

Technical drawing of a mechanical part. The main view shows a rectangular block with a width of 8 and a height of 1.45. There are four circular features, each with a diameter of 4. The distance between the centers of the first and second circles is 1.05. The distance between the centers of the third and fourth circles is 4. A label 'Pin 1 marking' points to the first circle. A cross-section view on the right shows a rectangular block with a width of 0.5 and a height of 1.45, with a shaded area indicating a specific material or feature.

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