

## RF ESD Protection Diodes

- ESD protection of RF antenna / interfaces or ultra high speed data lines acc. to:  
IEC61000-4-2 (ESD):  $\pm 20$  kV (air / contact)  
IEC61000-4-4 (EFT): 40 A (5/50 ns)  
IEC61000-4-5 (surge): 10 A (8/20  $\mu$ s)



- Very low line capacitance: 0.8 pF @ 1 GHz (0.4 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 mm
- Pb-free (RoHS compliant) package

### Applications in anti-parallel configuration

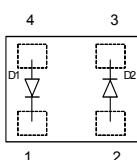
- For low RF signal levels without superimposed DC voltage: e.g. GPS, XM-Radio, Sirius, DVB, DMB, DAB, Remote Keyless Entry

### 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
- For more technical details on ESD and Antenna protection please refer to Application Note No.103 on [www.infineon.com/tvsiodes](http://www.infineon.com/tvsiodes)



## ESD0P8RFL



| Type      | Package  | Configuration | Marking |
|-----------|----------|---------------|---------|
| ESD0P8RFL | TSLP-4-7 | anti-parallel | E8      |

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

| Parameter   | Symbol           | Value           |  | Unit             |
|---|------------------|-----------------|--|------------------|
| ESD contact discharge <sup>1)</sup>                             | $V_{\text{ESD}}$ | 20              |  | kV               |
| Peak pulse current ( $t_p = 8 / 20 \mu\text{s}$ ) <sup>2)</sup> | $I_{\text{pp}}$  | 10              |  | A                |
| Operating temperature range                                     | $T_{\text{op}}$  | $-55 \dots 150$ |  | $^\circ\text{C}$ |
| Storage temperature   | $T_{\text{stg}}$ | $-65 \dots 150$ |  |                  |

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

| Parameter | Symbol | Values |      |      | Unit |
|-----------|--------|--------|------|------|------|
|           |        | min.   | typ. | max. |      |

**Characteristics -**

|  |                  |   |     |    |    |
|--|------------------|---|-----|----|----|
| Reverse working voltage <sup>3)</sup><br>$V_R = 50 \text{ V}$            | $V_{\text{RWM}}$ | - | -   | 50 | V  |
| Forward clamping voltage <sup>2)</sup><br>$I_{\text{PP}} = 10 \text{ A}$ | $V_{\text{FC}}$  | - | 12  | 15 | V  |
| Line capacitance <sup>4)</sup><br>$V_R = 0 \text{ V}, f = 1 \text{ GHz}$ | $C_T$            | - | 0.8 | -  | pF |
| Series inductance (per diode)  | $L_S$            | - | 0.4 | -  | nH |

<sup>1</sup> $V_{\text{ESD}}$  according to IEC61000-4-2, only valid in anti-parallel or rail-to-rail connection.

Please refer to the application examples.

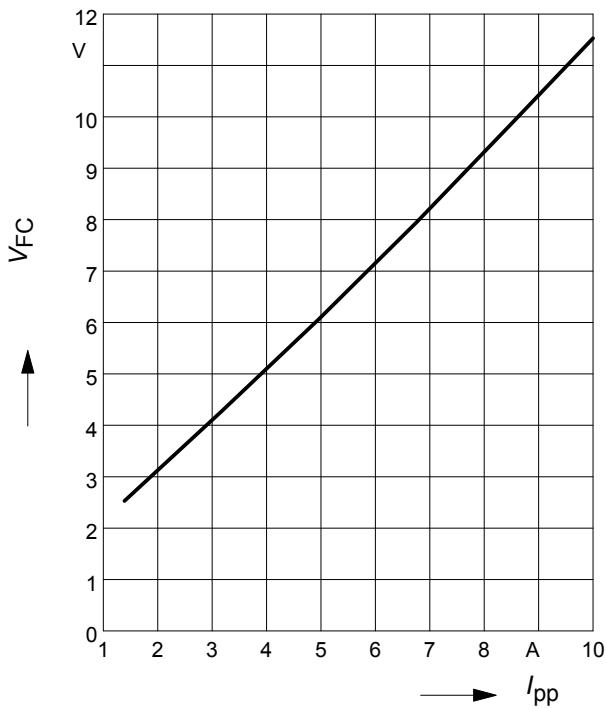
<sup>2</sup> $I_{\text{pp}}$  according to IEC61000-4-5, only valid in anti-parallel or rail-to-rail connection.

Please refer to the application examples.

<sup>3</sup>Only valid in rail-to-rail configuration with  $V_{\text{CC}} \geq V_{\text{RWM}}$

<sup>4</sup>Total capacitance line to ground (2 diodes in parallel)

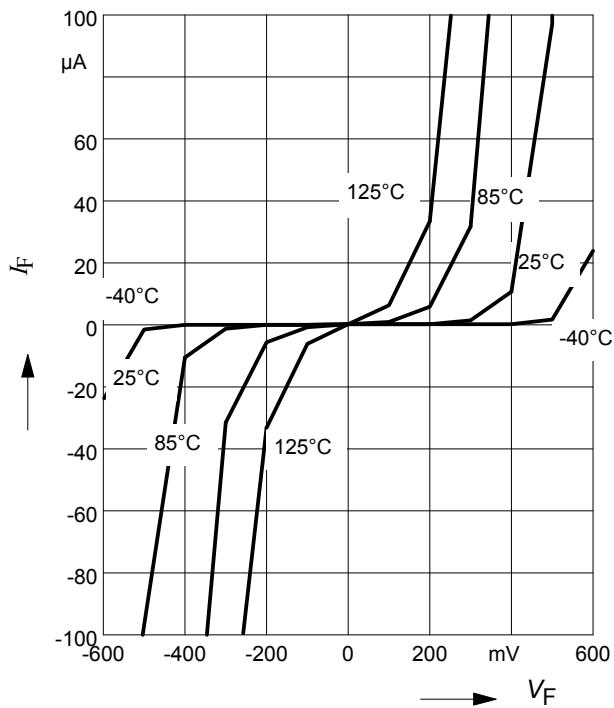
**Forward clamping voltage  $V_{FC} = f(I_{PP})$**   
 $t_p = 8 / 20 \mu s$



**Forward current  $I_F = f(V_F)$**

$T_A = \text{Parameter}$

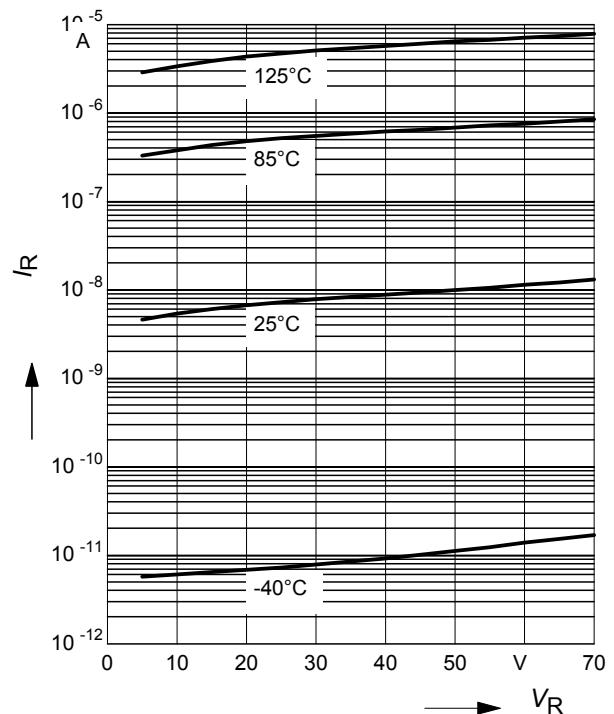
leakage in anti-parallel configuration



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

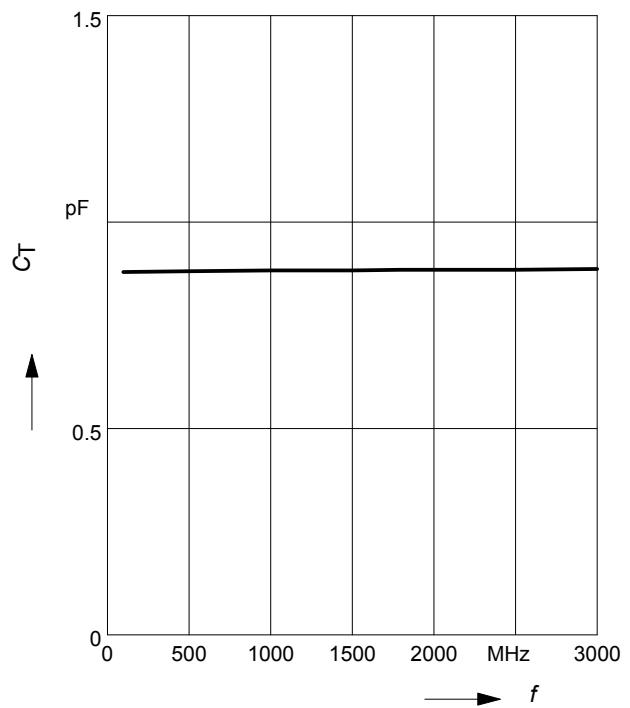
$T_A = \text{Parameter}$

leakage in rail-to-rail configuration



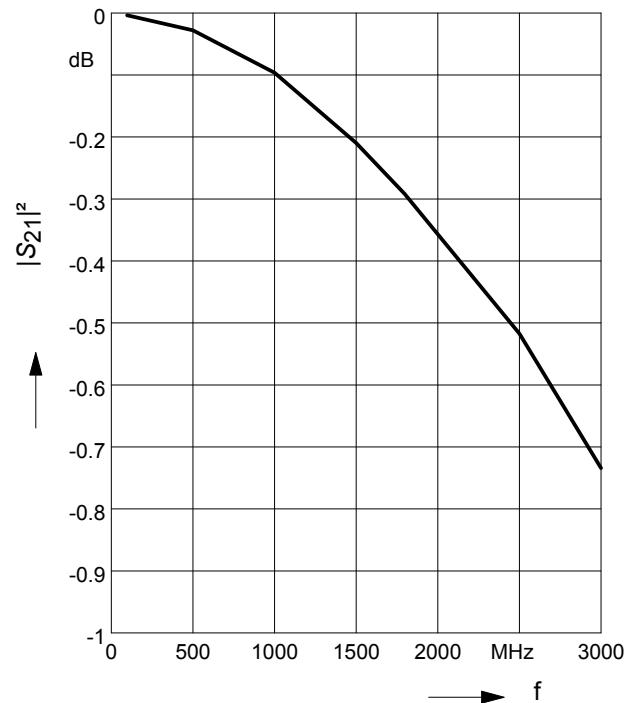
**Line capacitance  $C_T = f(f)$**

$V_R = 0 \text{ V}$



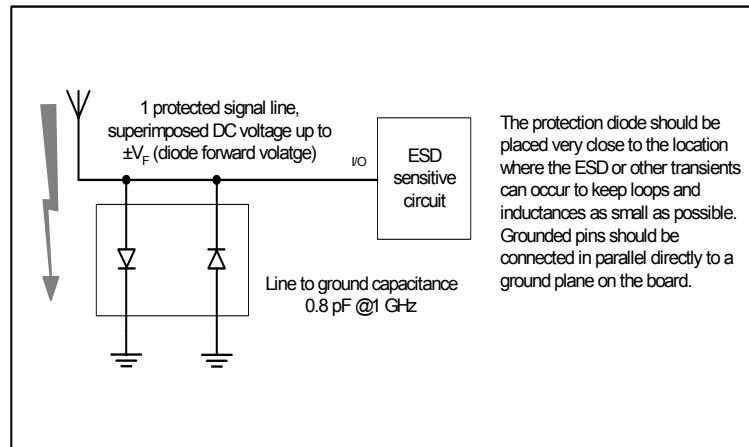
**Insertion loss**  $I_L = -|S_{21}|^2 = f(f)$

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



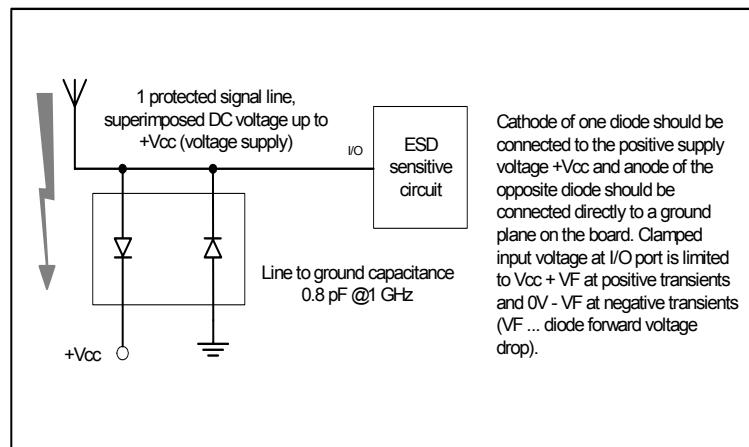
## 1. Application example

1 RF signal channel, anti-parallel configuration,  
please refer also to Application Note No.103



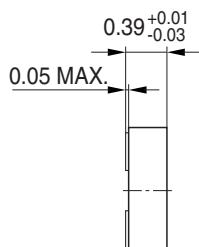
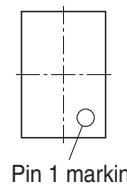
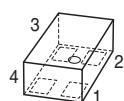
## 2. Application example

1 RF signal channel, rail-to-rail configuration



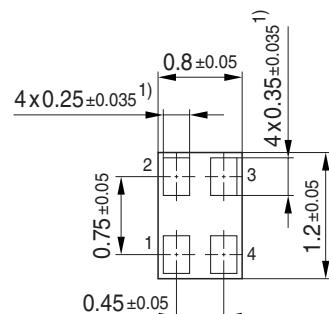
## Package Outline

Top view



Pin 1 marking

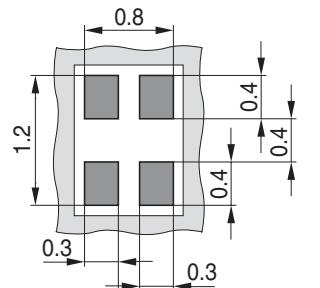
Bottom view



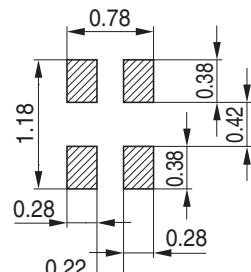
1) Dimension applies to plated terminal

## Foot Print

For board assembly information please refer to Infineon website "Packages"

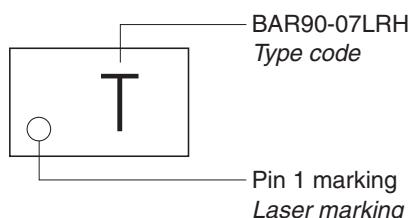


■ Copper □ Solder mask



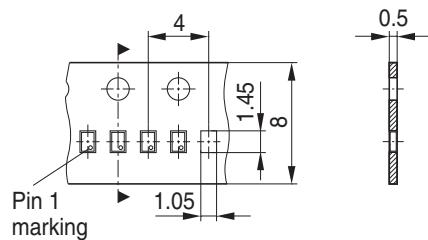
□ Stencil apertures

## Marking Layout (Example)



## Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel



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