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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

Silicon PIN Diode

- Optimized for antenna switches
  in hand held applications

- Very low capacitance at zero volts reverse bias
  at frequencies above 1GHz (typ. 0.19 pF)

- Low forward resistance (typ. 0.8Ω @ I_F = 10mA)

- Very low signal distortion

- Pb-free (RoHS compliant) package

RoHS ✓
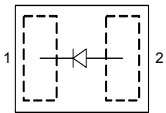
BAR89-02LRH

Type	Package	Configuration	L_S(nH)	Marking
BAR89-02LRH	TSLP-2-7	single, leadless	0.4	R

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

Parameter	Symbol	Value	Unit
Diode reverse voltage	V_R	80	V
Forward current	I_F	100	mA
Total power dissipation $T_S \leq 133°C$	P_{tot}	250	mW
Junction temperature	T_j	150	°C
Operating temperature range	T_{op}	-55 ... 125	
Storage temperature	T_{stg}	-55 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point[1]	R_{thJS}	≤ 65	K/W

[1]For calculation of R_{thJA} please refer to Application Note AN077 (Thermal Resistance Calculation)

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Breakdown voltage $I_{(BR)}$ = 5 µA	$V_{(BR)}$	80	-	-	V
Reverse current V_R = 60 V	I_R	-	-	50	nA
Forward voltage I_F = 10 mA I_F = 100 mA	V_F	- -	0.83 0.95	0.9 1.1	V

2012-08-08

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Diode capacitance	C_T				pF
V_R = 1 V, f = 1 MHz		-	0.25	0.35	
V_R = 0 V, f = 100 MHz		-	0.25	-	
V_R = 0 V, f = 1 GHz		-	0.19	-	
V_R = 0 V, f = 1.8 GHz		-	0.18	-	
Reverse parallel resistance	R_P				kΩ
V_R = 0 V, f = 100 MHz		-	35	-	
V_R = 0 V, f = 1 GHz		-	5	-	
V_R = 0 V, f = 1.8 GHz		-	3.5	-	
Forward resistance	r_f				Ω
I_F = 1 mA, f = 100 MHz		-	3	-	
I_F = 5 mA, f = 100 MHz		-	1.2	-	
I_F = 10 mA, f = 100 MHz		-	0.8	1.5	
Charge carrier life time	τ_{rr}	-	800	-	ns
I_F = 10 mA, I_R = 6 mA, measured at I_R = 3 mA, R_L = 100 Ω					
I-region width	W_I	-	19	-	µm
Insertion loss[1]	I_L				dB
I_F = 1 mA, f = 1.8 GHz		-	0.23	-	
I_F = 5 mA, f = 1.8 GHz		-	0.1	-	
I_F = 10 mA, f = 1.8 GHz		-	0.08	-	
Isolation[1]	I_{SO}				
V_R = 0 V, f = 0.9 GHz		-	19	-	
V_R = 0 V, f = 1.8 GHz		-	14	-	
V_R = 0 V, f = 2.45 GHz		-	11	-	

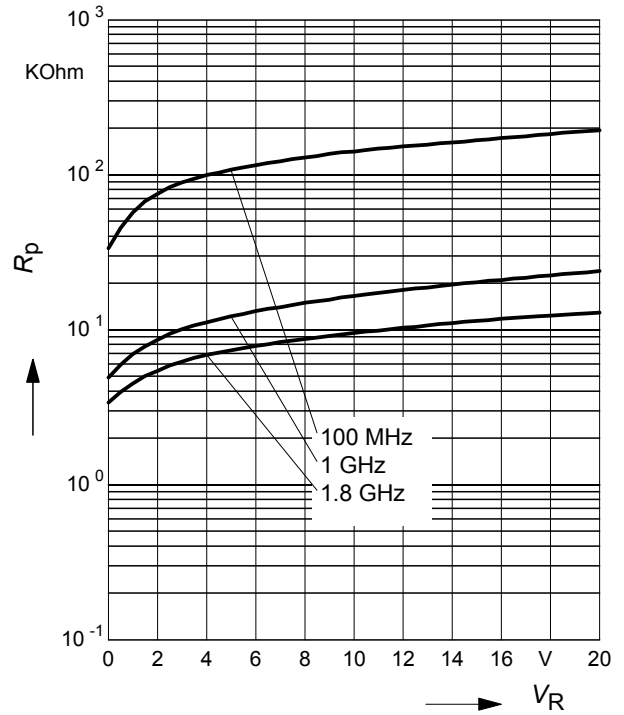[1]BAR89-02LRH in series configuration, Z = 50Ω

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Diode capacitance $C_T = f(V_R)$

f = Parameter
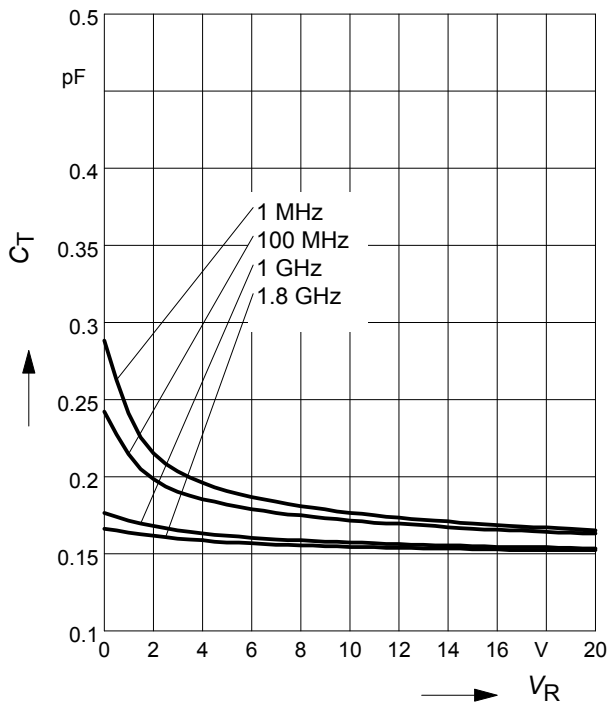
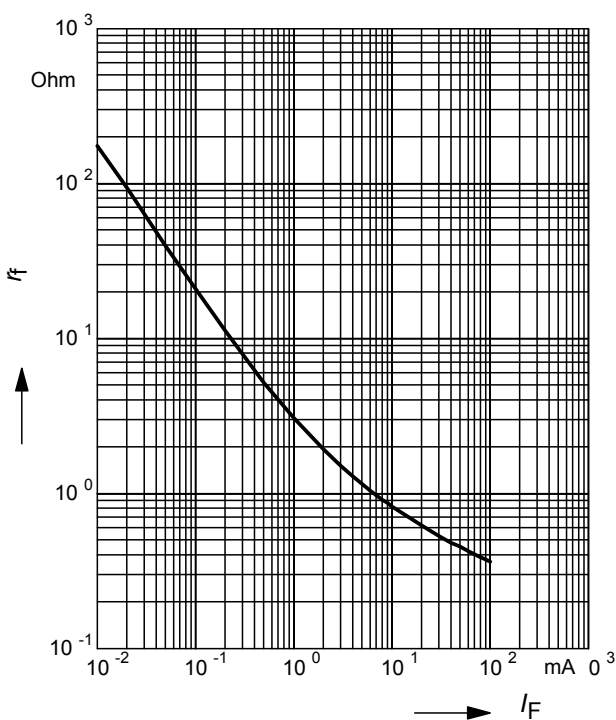**Reverse parallel resistance** $R_P = f(V_R)$
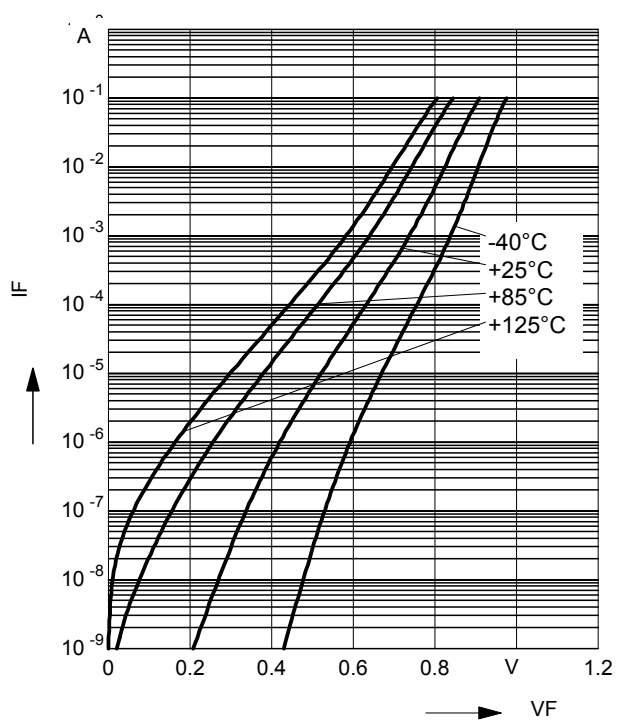
f = Parameter
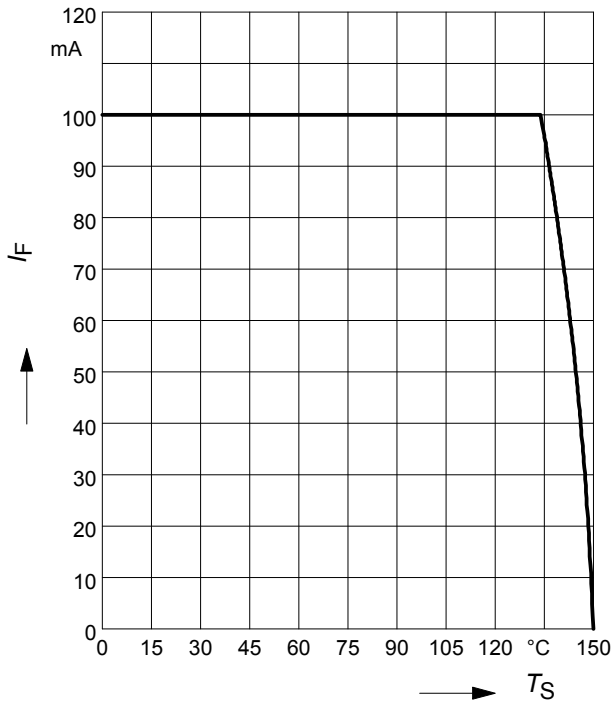

Forward resistance $r_f = f(I_F)$

f = 100MHz

Forward current $I_F = f(V_F)$
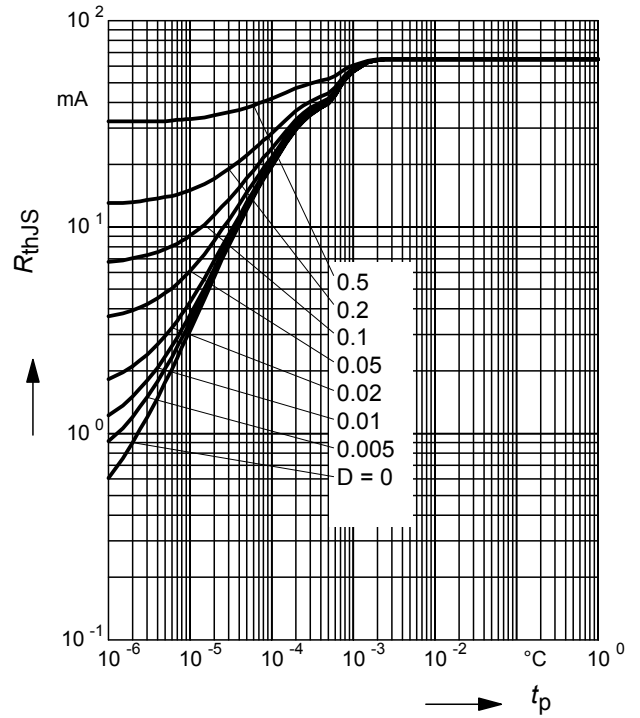
T_A = Parameter

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Forward current $I_F = f(T_S)$

BAR89-02LRH

Permissible Puls Load $R_{thJS} = f(t_p)$
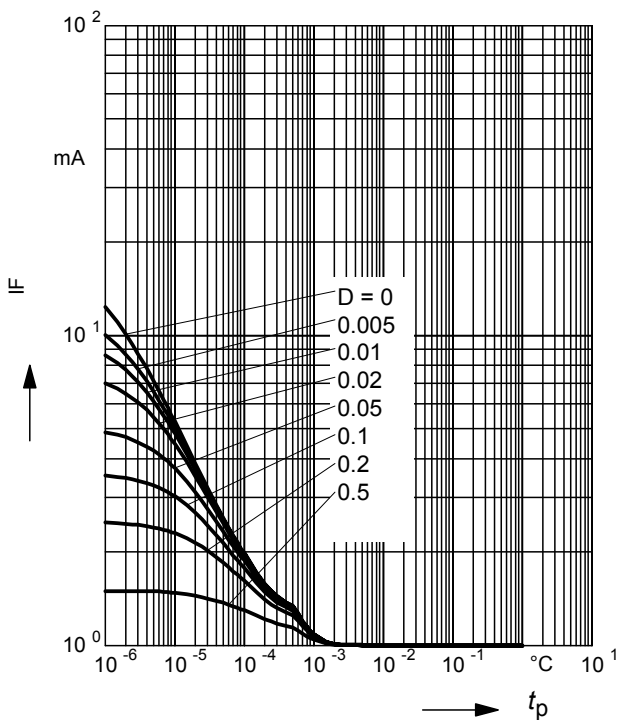
BAR89-02LRH

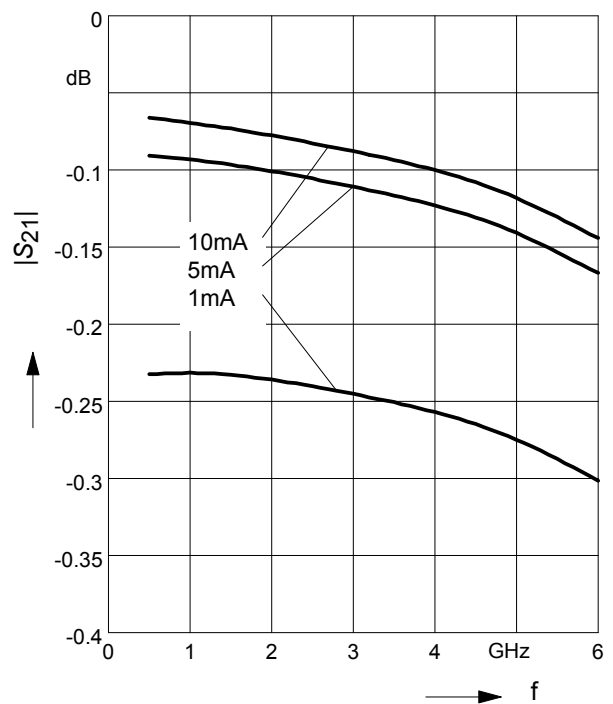## Permissible Pulse Load

$I_{Fmax}/I_{FDC} = f(t_p)$

BAR89-02LRH

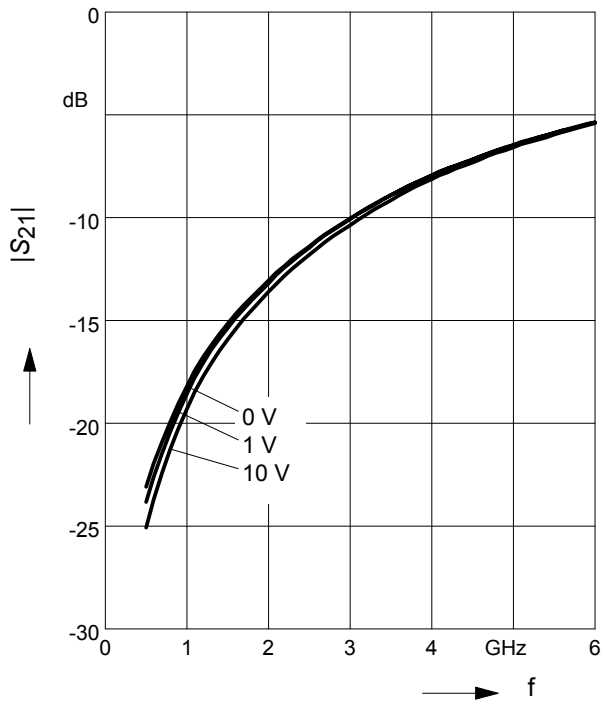## Insertion loss $I_L = -|S_{21}|^2 = f(f)$

I_F = Parameter
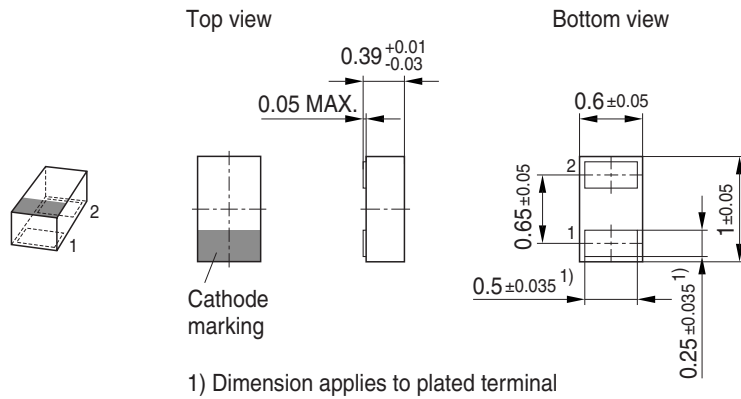
BAR89-02LRH in series configuration, $Z = 50\Omega$

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Isolation $I_{SO} = -|S_{21}|^2 = f(f)$

V_R = Parameter
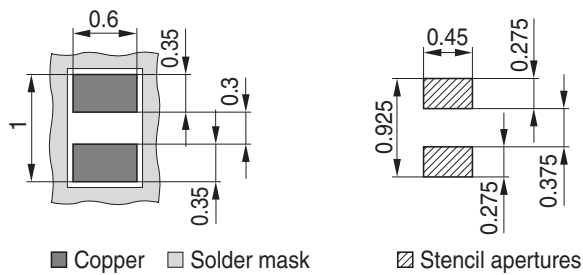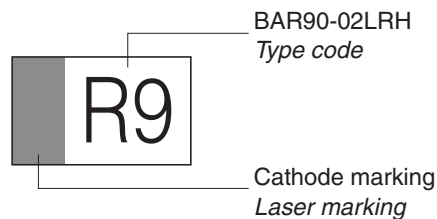
BAR89-02LRH in series configuration, $Z = 50\Omega$

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Package Outline

Top view

Bottom view

$0.39^{+0.01}_{-0.03}$

0.05 MAX.

0.6 ± 0.05

0.65 ± 0.05

1 ± 0.05

Cathode marking

0.5 ± 0.035 [1]

0.25 ± 0.035 [1]

1) Dimension applies to plated terminal

Foot Print

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

0.6

0.35

0.3

1

0.35

0.45

0.275

0.925

0.275

0.375

■ Copper   ☐ Solder mask   ▨ Stencil apertures

Marking Layout (Example)

R9

BAR90-02LRH
Type code

Cathode marking
Laser marking

Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel
Reel ø330 mm = 50.000 Pieces/Reel (optional)
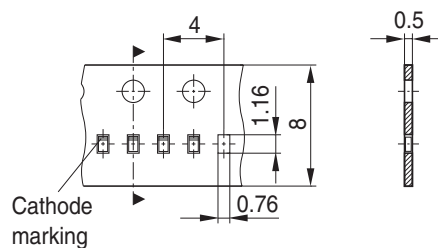
4

0.5

1.16

8

Cathode marking

0.76

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Edition 2009-11-16

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