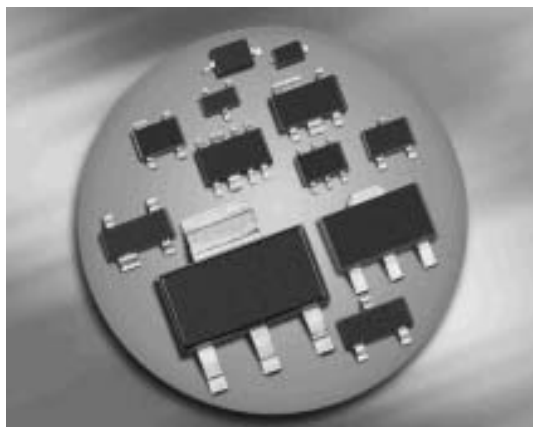
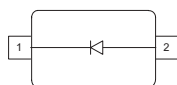


Silicon PIN Diode

- 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 @ $I_F = 10\text{mA}$)
- Very low signal distortion
- Pb-free (RoHS compliant) package¹⁾
- Qualified according AEC Q101


BAR89-02LRH


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

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

Parameter	Symbol	Value	Unit
Diode reverse voltage	V_R	80	V
Forward current	I_F	100	mA
Total power dissipation $T_S \leq 133^\circ\text{C}$	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 ²⁾	R_{thJS}	≤ 65	K/W

¹⁾Pb-containing package may be available upon special request

²⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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

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

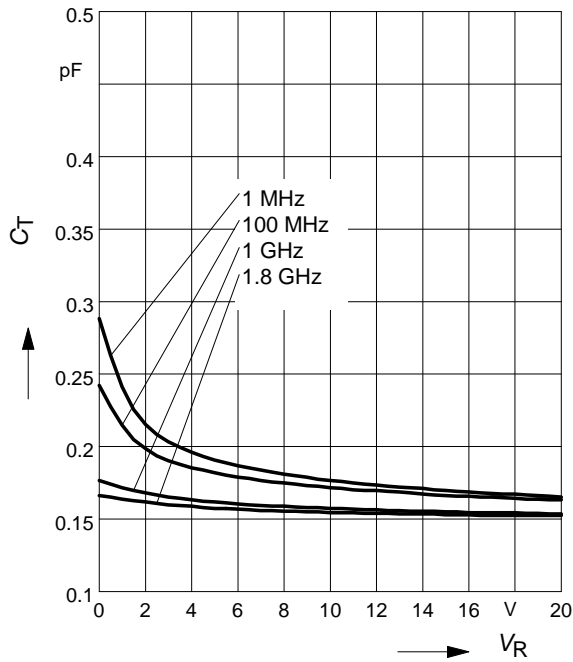
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

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

¹BAR89-02LRH in series configuration, $Z = 50\ \Omega$

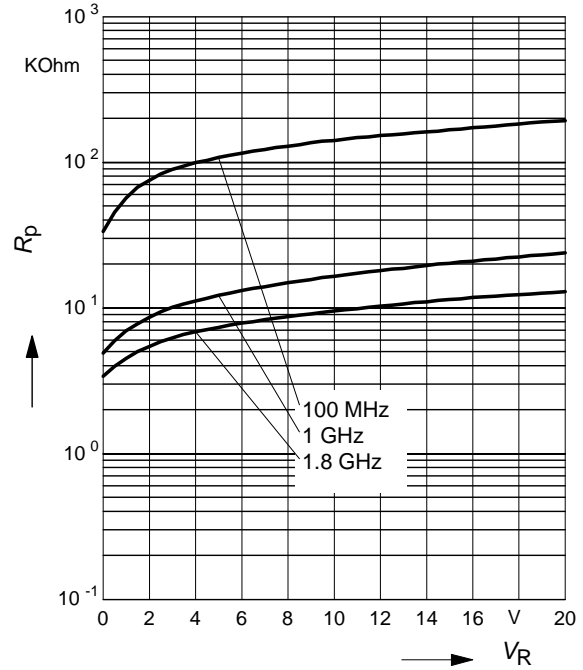
Diode capacitance $C_T = f(V_R)$

$f =$ Parameter



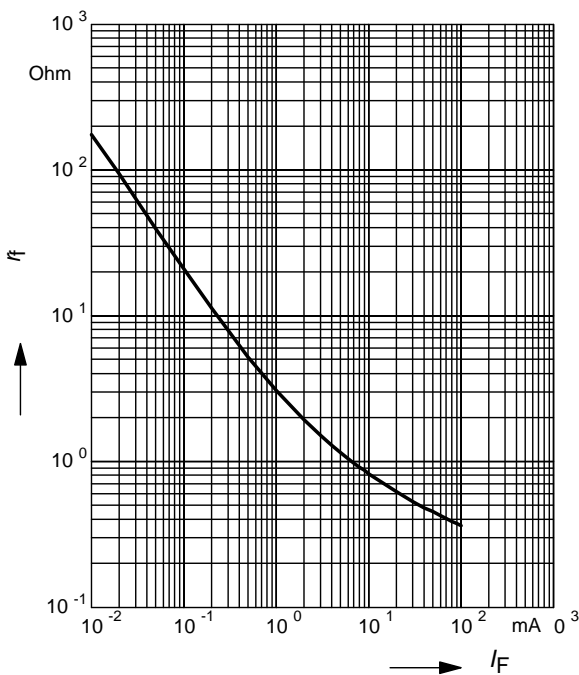
Reverse parallel resistance $R_p = f(V_R)$

$f =$ Parameter



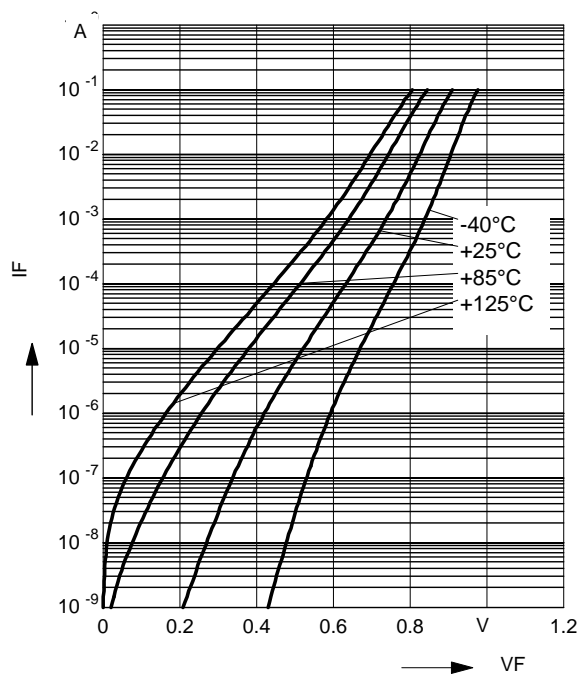
Forward resistance $r_f = f(I_F)$

$f = 100\text{MHz}$



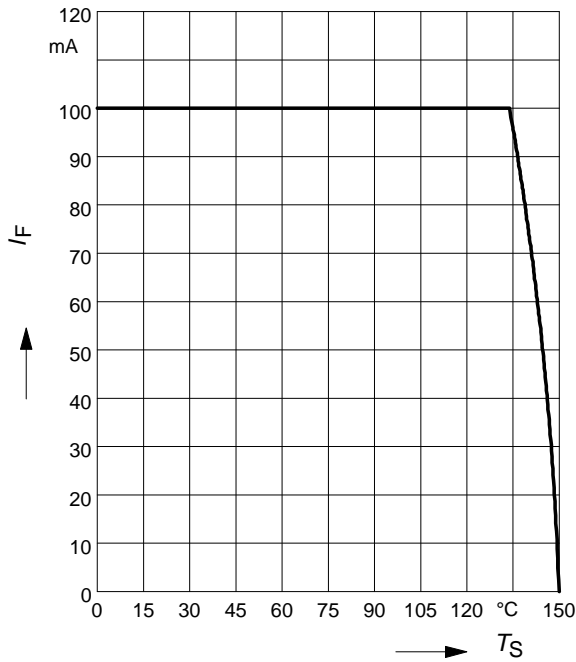
Forward current $I_F = f(V_F)$

$T_A =$ Parameter



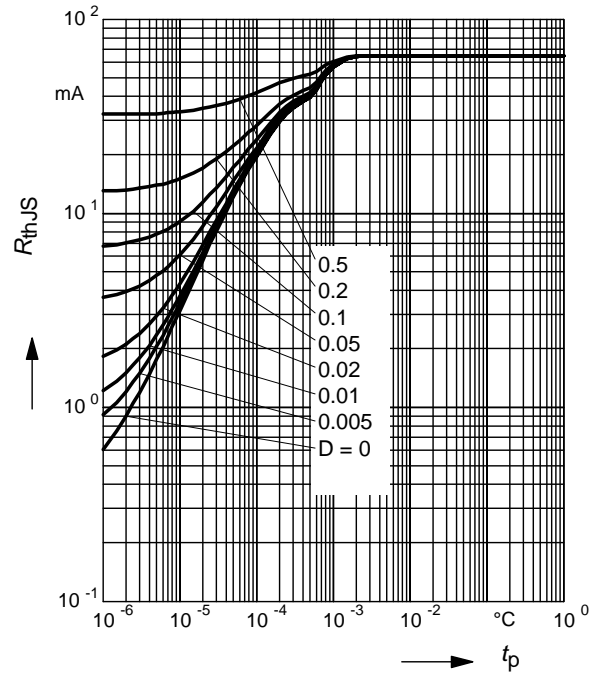
Forward current $I_F = f(T_S)$

BAR89-02LRH



Permissible Puls Load $R_{thJS} = f(t_p)$

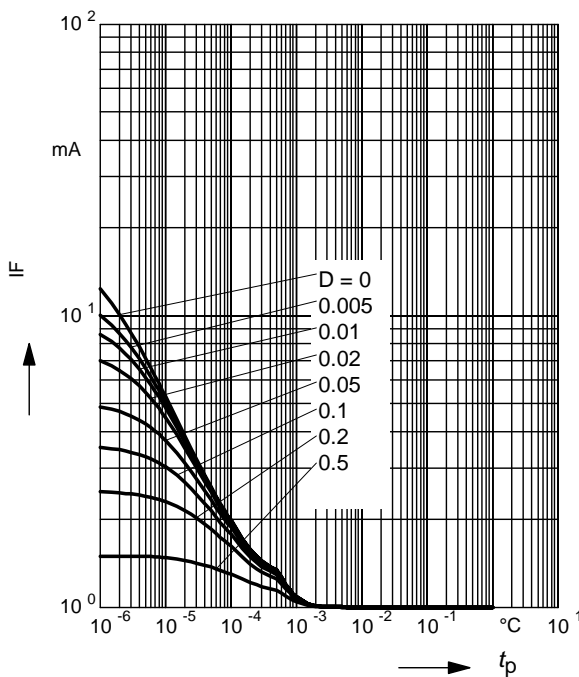
BAR89-02LRH



Permissible Pulse Load

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

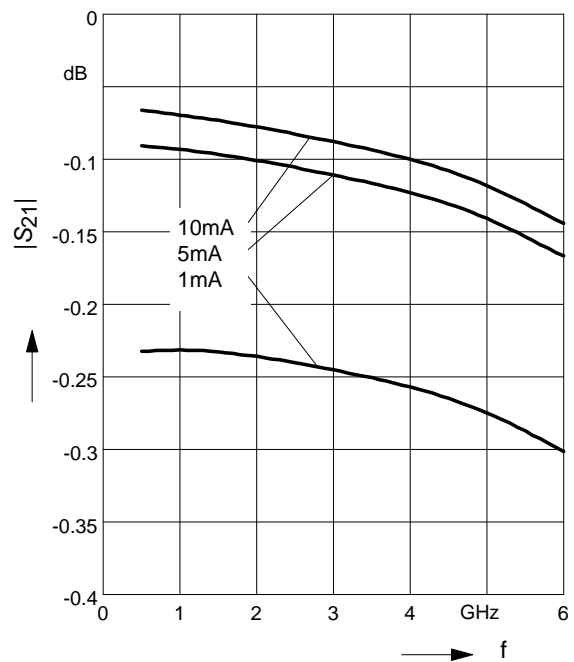
BAR89-02LRH



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

I_F = Parameter

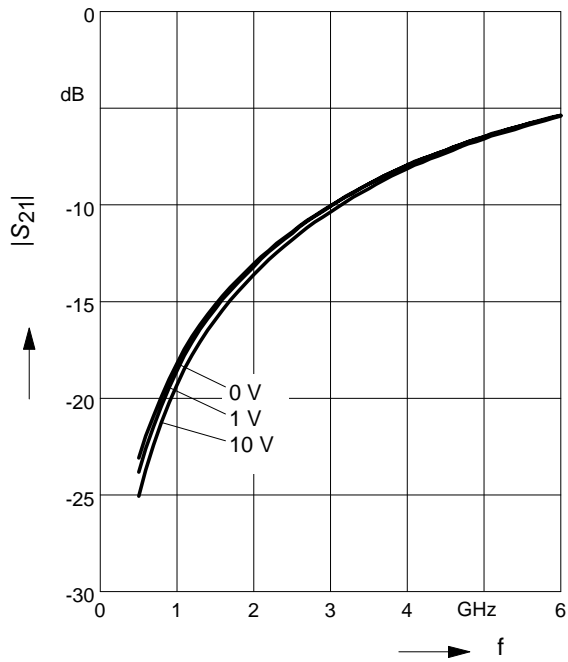
BAR89-02LRH in series configuration, $Z = 50\Omega$



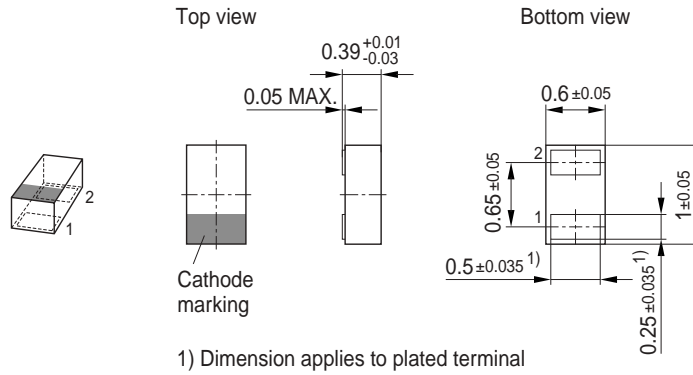
Isolation $I_{SO} = -|S_{21}|^2 = f(f)$

V_R = Parameter

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

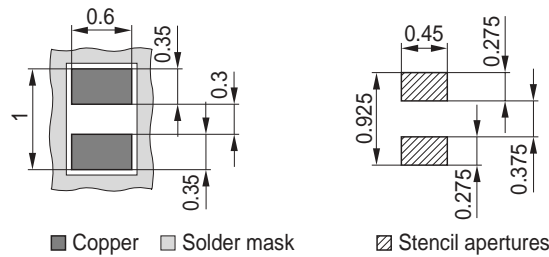


Package Outline

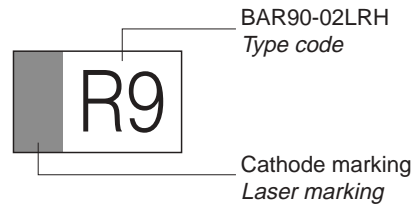


Foot Print

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

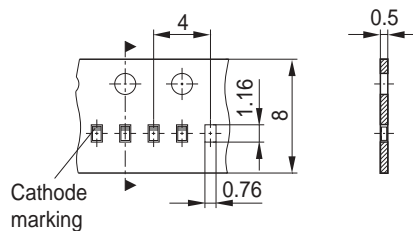


Marking Layout (Example)



Standard Packing

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



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