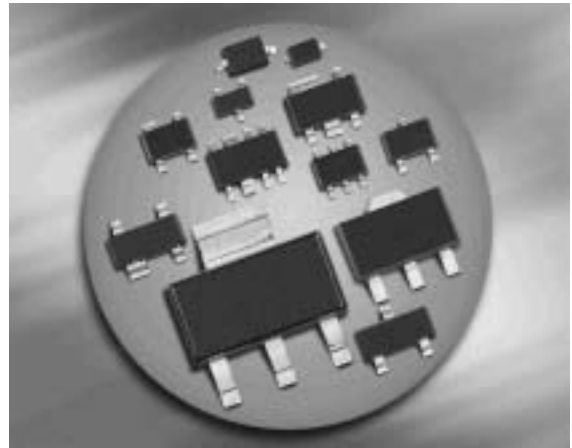
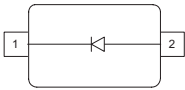
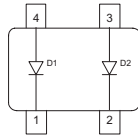
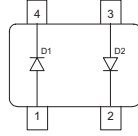
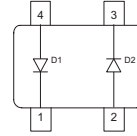


Silicon Deep Trench PIN Diodes

- Optimized for low bias current antenna switches in hand held applications
- Very low capacitance at zero volt reverse bias at frequencies above 1GHz (typ. 0.19pF)
- Low forward resistance (typ. 1.3Ω @ $I_F = 3\text{mA}$)
- Improved ON / OFF mode harmonic distortion balance


BAR90-02L
BAR90-02LRH

BAR90-07L4
BAR90-07LRH

BAR90-098L4
BAR90-098LRH

BAR90-099L4
BAR90-099LRH


Type	Package	Configuration	L_S (nH)	Marking
BAR90-02L*	TSLP-2-1	single, leadless	0.4	RT
BAR90-02LRH*	TSLP-2-7	single, leadless	0.4	R9
BAR90-07L4*	TSLP-4-4	parallel pair, leadless	0.4	RT
BAR90-07LRH*	TSLP-4-7	parallel pair, leadless	0.4	T
BAR90-098L4*	TSLP-4-4	anti-parallel pair, leadless	0.4	TT
BAR90-098LRH*	TSLP-4-7	anti-parallel pair, leadless	0.4	T9
BAR90-099L4*	TSLP-4-4	anti-parallel pair, leadless	0.4	TR
BAR90-099LRH*	TSLP-4-7	anti-parallel pair, leadless	0.4	99

* Preliminary data

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 ¹⁾	R_{thJS}	≤ 65	K/W

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 $I_F = 3 \text{ mA}$ $I_F = 100 \text{ mA}$	V_F	0.75 -	0.81 0.9	0.87 1	V

¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

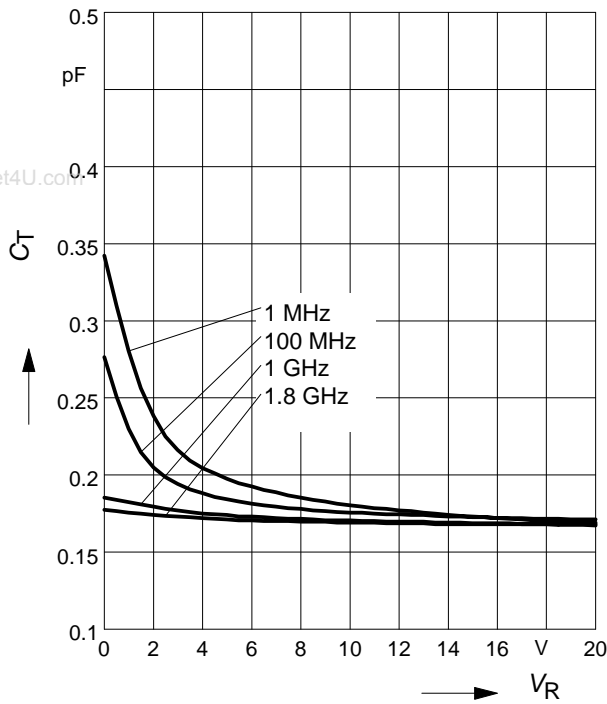
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Diode capacitance $V_R = 1\text{ V}, f = 1\text{ MHz}$ $V_R = 0\text{ V}, f = 100\text{ MHz}$ $V_R = 0\text{ V}, f = 1\text{ GHz}$ $V_R = 0\text{ V}, f = 1.8\text{ GHz}$	C_T	-	0.25 0.3 0.19 0.18	0.35 - - -	pF
Reverse parallel resistance $V_R = 0\text{ V}, f = 100\text{ MHz}$ $V_R = 0\text{ V}, f = 1\text{ GHz}$ $V_R = 0\text{ V}, f = 1.8\text{ GHz}$	R_P	-	35 5 4	- - -	k Ω
Forward resistance $I_F = 1\text{ mA}, f = 100\text{ MHz}$ $I_F = 3\text{ mA}, f = 100\text{ MHz}$ $I_F = 10\text{ mA}, f = 100\text{ MHz}$	r_f	-	2 1.3 0.8	- 2.3 -	Ω
Charge carrier life time $I_F = 10\text{ mA}, I_R = 6\text{ mA}$, measured at $I_R = 3\text{ mA}$, $R_L = 100\ \Omega$	τ_{rr}	-	750	-	ns
I-region width	W_I	-	20	-	μm
Insertion loss ¹⁾ $I_F = 1\text{ mA}, f = 1.8\text{ GHz}$ $I_F = 3\text{ mA}, f = 1.8\text{ GHz}$ $I_F = 10\text{ mA}, f = 1.8\text{ GHz}$	$ S_{21} ^2$	-	-0.16 -0.11 -0.08	- - -	dB
Isolation ¹⁾ $V_R = 0\text{ V}, f = 0.9\text{ GHz}$ $V_R = 0\text{ V}, f = 1.8\text{ GHz}$ $V_R = 0\text{ V}, f = 2.45\text{ GHz}$	$ S_{21} ^2$	-	-18.5 -13.5 -11.5	- - -	

¹BAR90-02L in series configuration, $Z = 50\ \Omega$

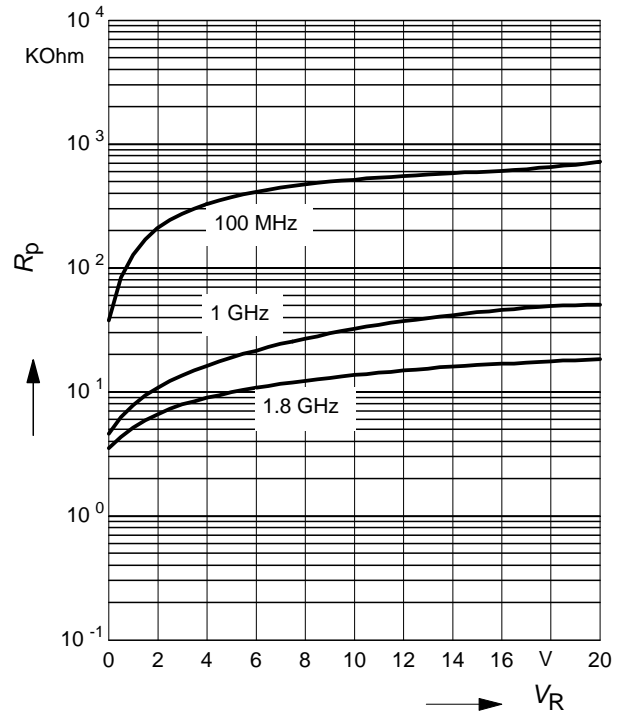
Diode capacitance $C_T = f(V_R)$

$f =$ Parameter



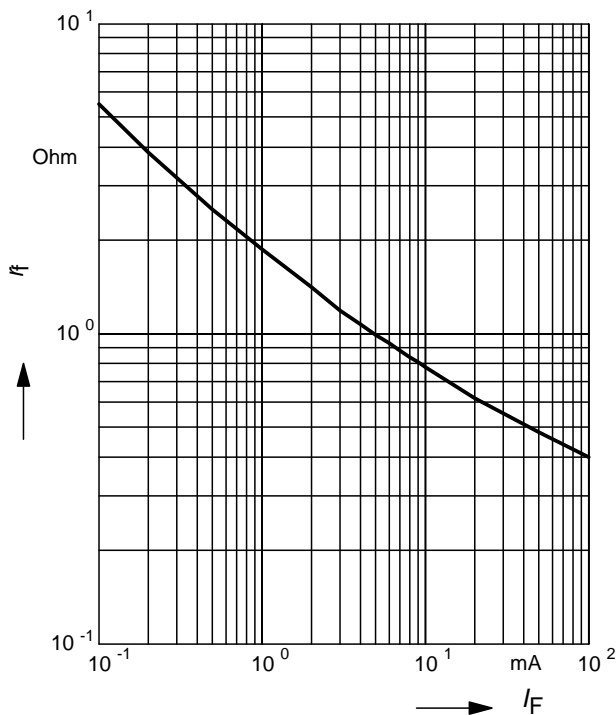
Reverse parallel resistance $R_p = f(V_R)$

$f =$ Parameter



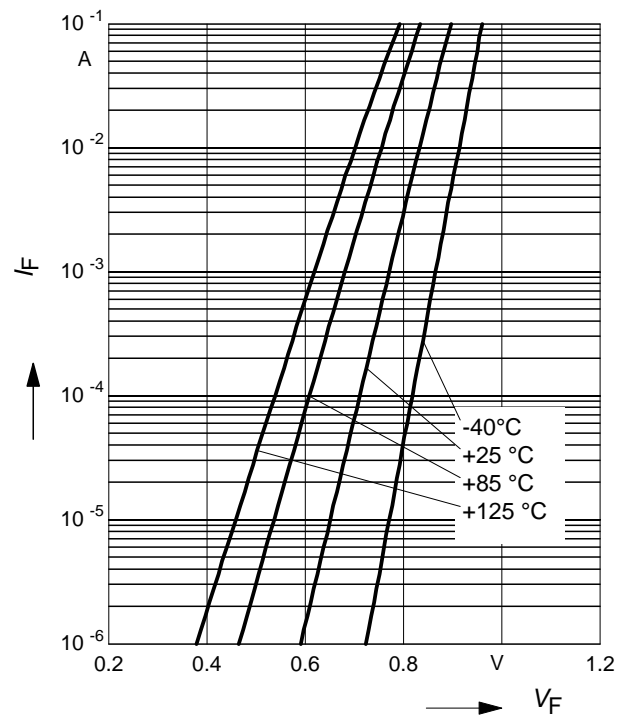
Forward resistance $r_f = f(I_F)$

$f = 100$ MHz

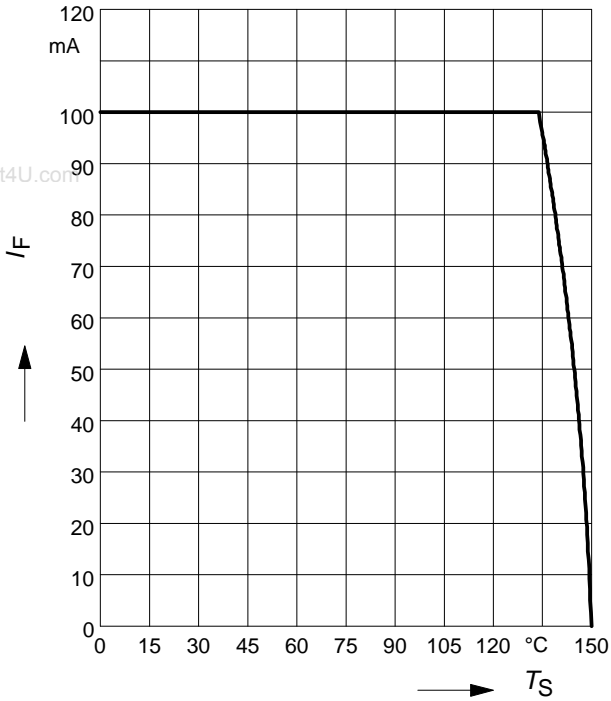


Forward current $I_F = f(V_F)$

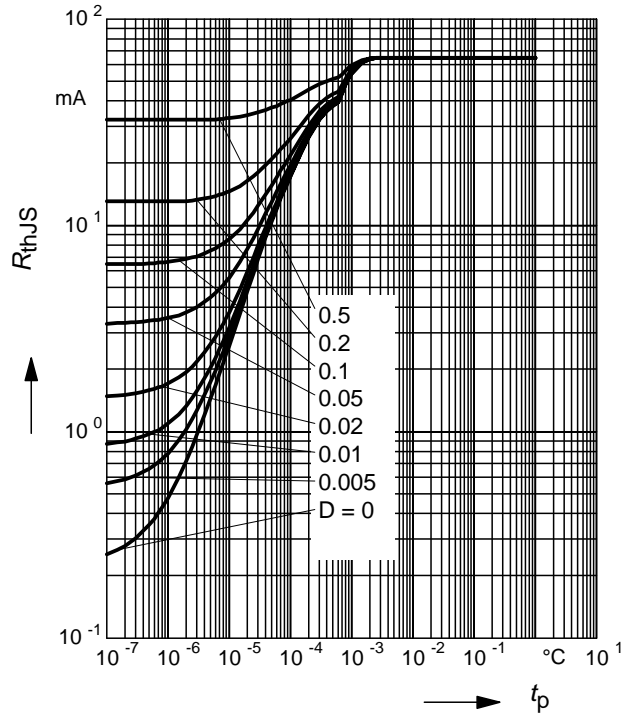
$T_A =$ Parameter



Forward current $I_F = f(T_S)$

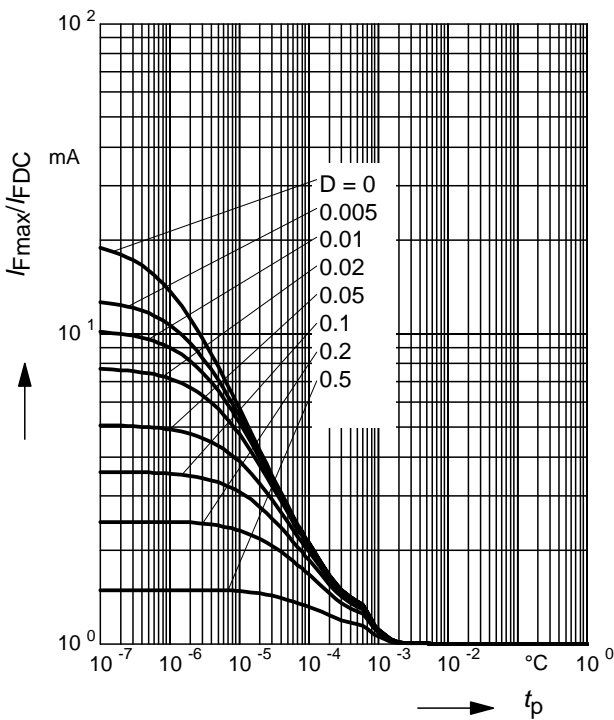


Permissible Puls Load $R_{thJS} = f(t_p)$



Permissible Pulse Load

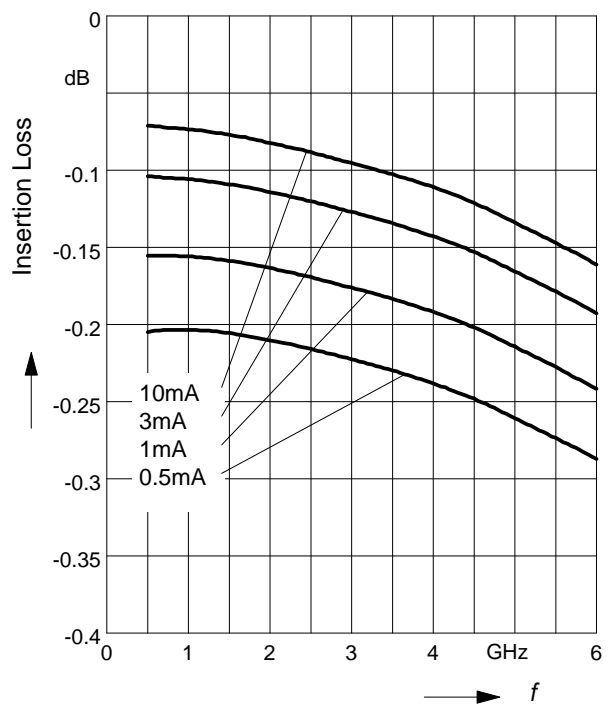
$I_{Fmax} / I_{FDC} = f(t_p)$



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

I_F = Parameter

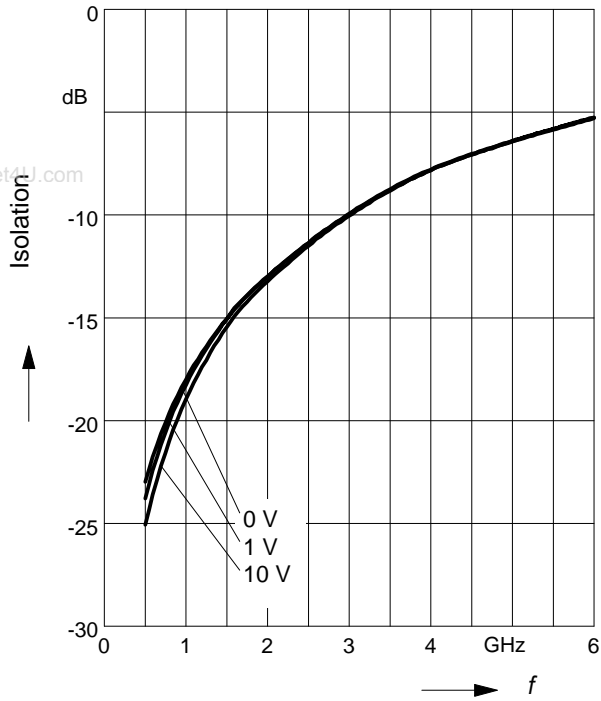
BAR90-02L in series configuration, $Z = 50\Omega$



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

$V_R =$ Parameter

BAR90-02L in series configuration, $Z = 50\Omega$



**Published by Infineon Technologies AG,
St.-Martin-Strasse 53,
81669 München**

**© Infineon Technologies AG 2004.
All Rights Reserved.**

Attention please!

The information herein is given to describe certain components and shall not be considered as a guarantee of characteristics.

Terms of delivery and rights to technical change reserved.

We hereby disclaim any and all warranties, including but not limited to warranties of non-infringement, regarding circuits, descriptions and charts stated herein.

www.DataSheet4U.com

Information

For further information on technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies Office (www.infineon.com).

Warnings

Due to technical requirements components may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies Office.

Infineon Technologies Components may only be used in life-support devices or systems with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system, or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body, or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.