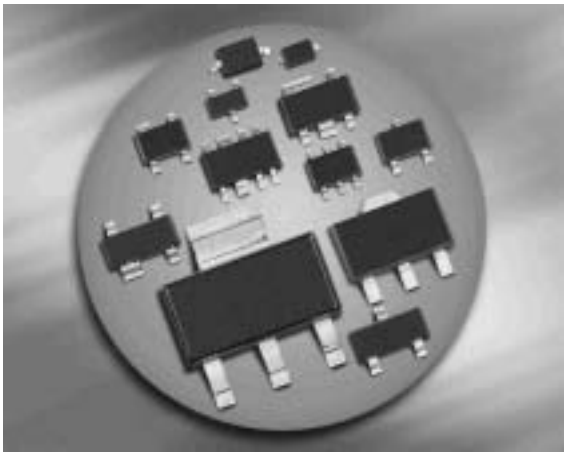
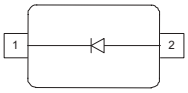
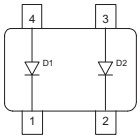
Silicon PIN Diode

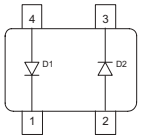
- Optimized for low current antenna switches in hand held applications
- Very low forward resistance (typ. 1.5 Ω @ I_F = 1 mA)
- Low capacitance at zero volt reverse bias at frequencies above 1 GHz (typ. 0.28 pF)
- Very low signal distortion

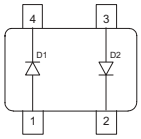


BAR88-02L **BAR88-07L4** **BAR88-099L4** **BAR88-098LRH**
BAR88-02LRH **BAR88-07LRH** **BAR88-099LRH**
BAR88-02V









Type	Package	Configuration	L_S(nH)	Marking
BAR88-02L	TSLP-2-1	single, leadless	0.4	UU
BAR88-02LRH*	TSLP-2-7	single, leadless	0.4	U8
BAR88-02V	SC79	single	0.6	U
BAR88-07L4*	TSLP-4-4	parallel pair, leadless	0.4	UT
BAR88-07LRH*	TSLP-4-7	parallel pair, leadless	0.4	T8
BAR88-098LRH*	TSLP-4-7	anti-parallel, leadless	0.4	98
BAR88-099L4*	TSLP-4-4	anti-parallel pair, leadless	0.4	US
BAR88-099LRH*	TSLP-4-7	anti parallel, leadless	0.4	S8

* Preliminary Data

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	P_{tot}		mW
BAR88-02L, -02LRH, -07L4, -07LRH $T_S \leq$ 133°C		250	
BAR88-02V, $T_S \leq$ 123°C		250	
BAR88-098LRH, -099L4, -099LRH $T_S \leq$ 133°C		250	
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}		K/W
BAR88-02L, -02LRH, -07L4, -07LRH		≤ 65	
BAR88-02V		≤ 105	
BAR88-098LRH, -99L4, -099LRH		≤ 65	

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	V_F				V
I_F = 1 mA		-	0.75	0.9	
I_F = 100 mA		-	0.95	1.2	

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

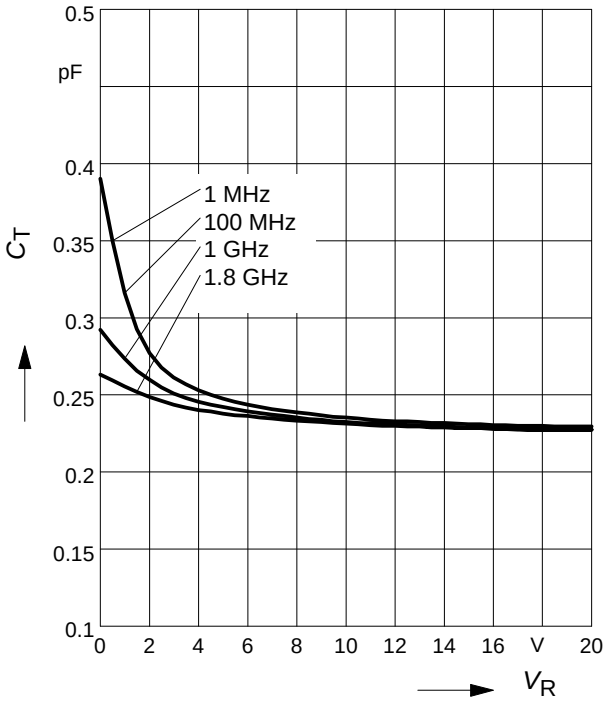
Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Diode capacitance	C_T				pF
V_R = 1 V, f = 1 MHz		-	0.3	0.4	
V_R = 0 V, f = 100 MHz		-	0.4	-	
V_R = 0 V, f = 1 GHz		-	0.28	-	
V_R = 0 V, f = 1.8 GHz		-	0.25	-	
Reverse parallel resistance	R_P				kΩ
V_R = 0 V, f = 100 MHz		-	65	-	
V_R = 0 V, f = 1 GHz		-	2.5	-	
V_R = 0 V, f = 1.8 GHz		-	1.5	-	
Forward resistance	r_f				Ω
I_F = 1 mA, f = 100 MHz		-	1.5	2.5	
I_F = 5 mA, f = 100 MHz		-	0.8	-	
I_F = 10 mA, f = 100 MHz		-	0.6	-	
Charge carrier life time	τ_{rr}	-	500	-	ns
I_F = 10 mA, I_R = 6 mA, measured at I_R = 3 mA, R_L = 100 Ω					
I-region width	W_I	-	13	-	µm
Insertion loss[1)]	$\|S_{21}\|^2$				dB
I_F = 1 mA, f = 1.8 GHz		-	-0.11	-	
I_F = 5 mA, f = 1.8 GHz		-	-0.07	-	
I_F = 10 mA, f = 1.8 GHz		-	-0.06	-	
Isolation[1)]	$\|S_{21}\|^2$				
V_R = 0 V, f = 0.9 GHz		-	-15	-	
V_R = 0 V, f = 1.8 GHz		-	-11	-	
V_R = 0 V, f = 2.45 GHz		-	-9	-	

[1]BAR88-02L in series configuration, Z = 50Ω

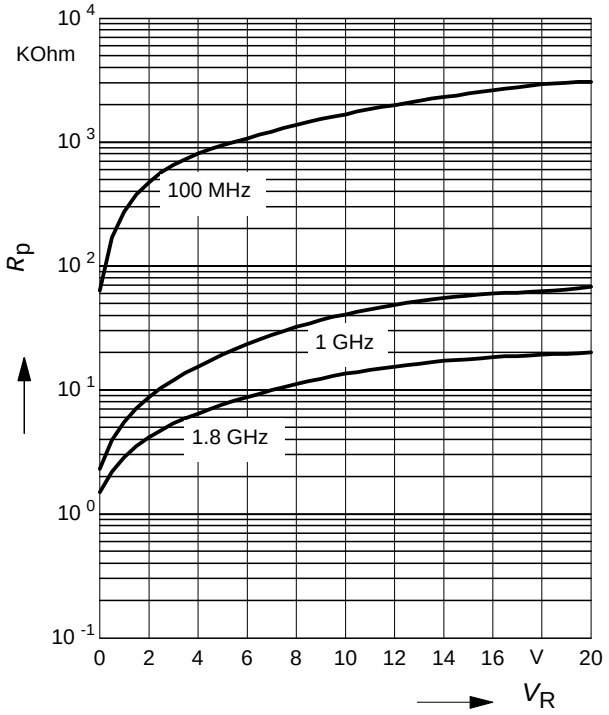
Diode capacitance $C_T = f\ (V_R)$

f = Parameter



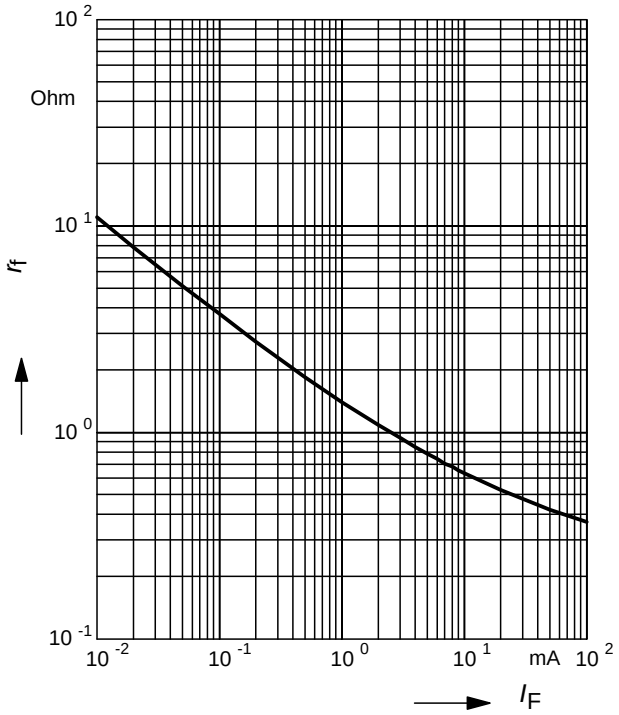
Reverse parallel resistance $R_P = f(V_R)$

f = Parameter



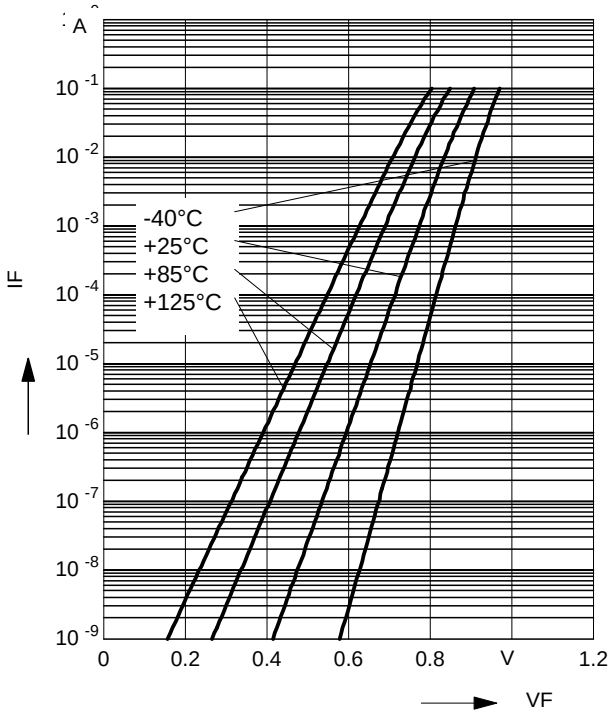
Forward resistance $r_f = f\ (I_F)$

f = 100MHz

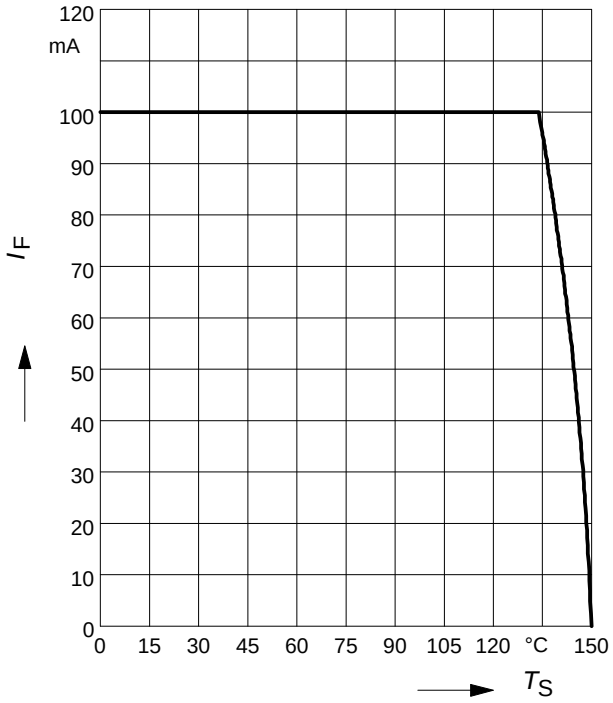


Forward current $I_F = f\ (V_F)$

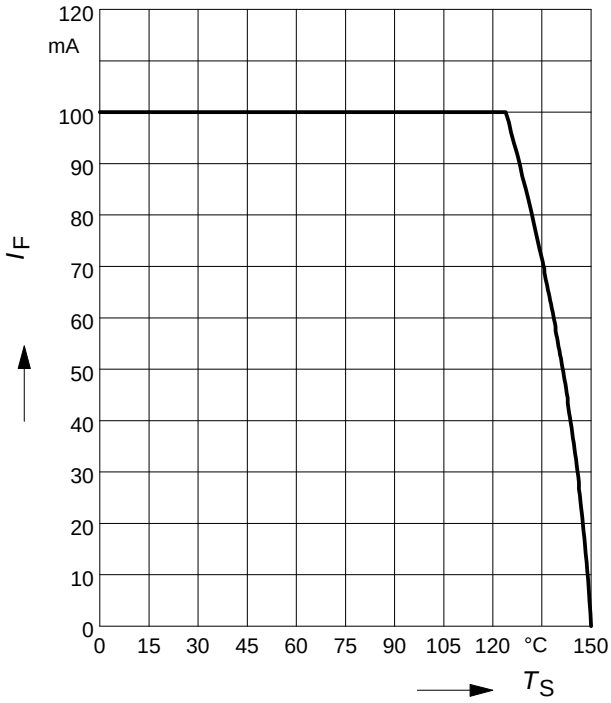
T_A = Parameter



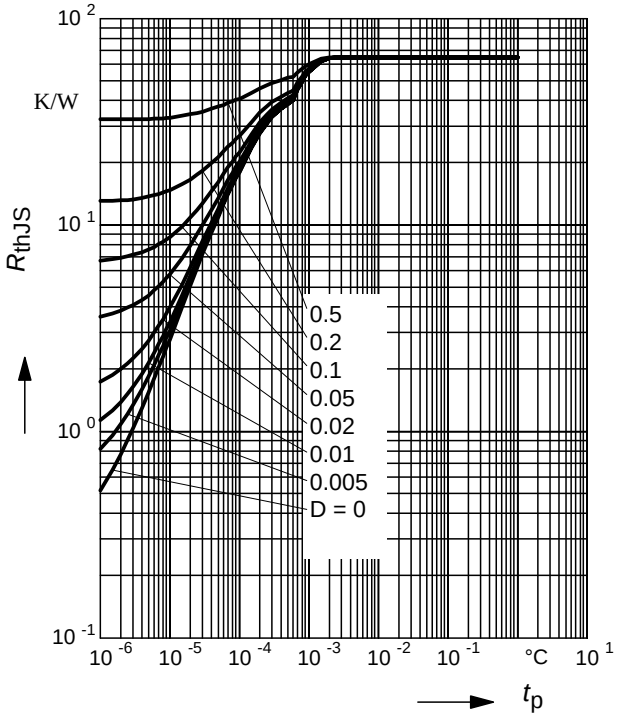
Forward current $I_F = f(T_S)$
BAR88-02L, -02LRH, -07L4, -07LRH,
-098LRH, -099L4, -099LRH



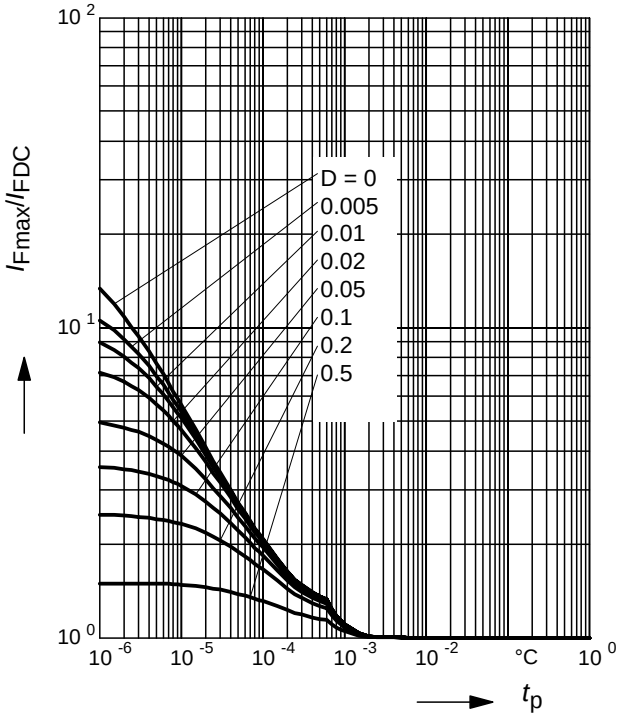
Forward current $I_F = f(T_S)$
BAR88-02V



Permissible Puls Load $R_{thJS} = f(t_p)$
BAR88-02L, -02LRH, -07L4, -07LRH
-098LRH, -099L4, -099LRH

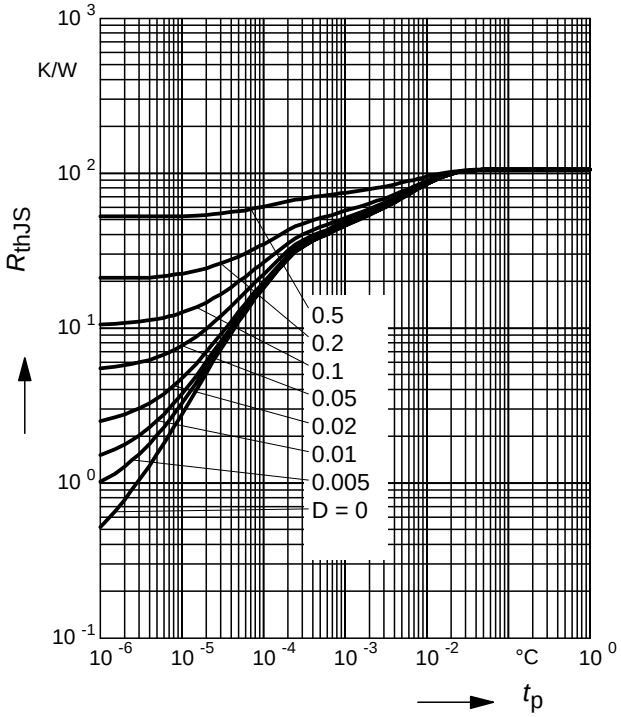


Permissible Pulse Load
$I_{Fmax}/ I_{FDC} = f(t_p)$, BAR88-02L, -02LRH
-07L4, -07LRH, -098LRH, -099L4, -099LRH



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

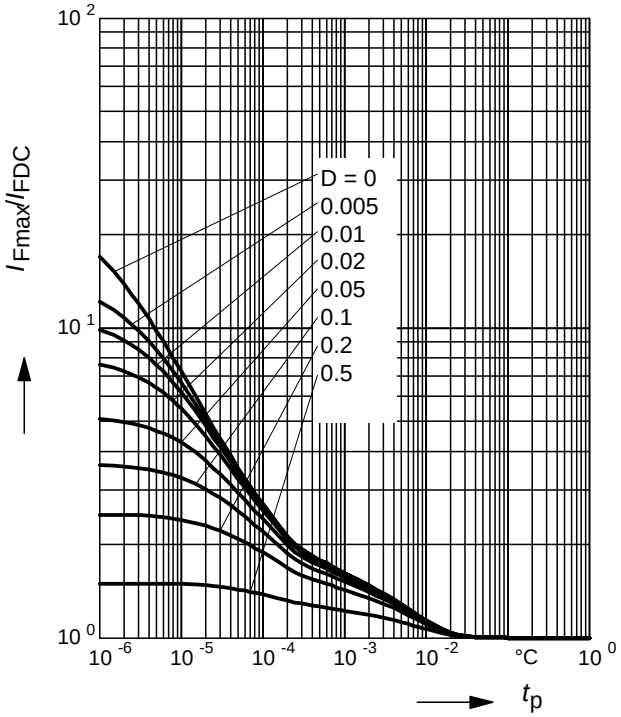
BAR88-02V



Permissible Pulse Load

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

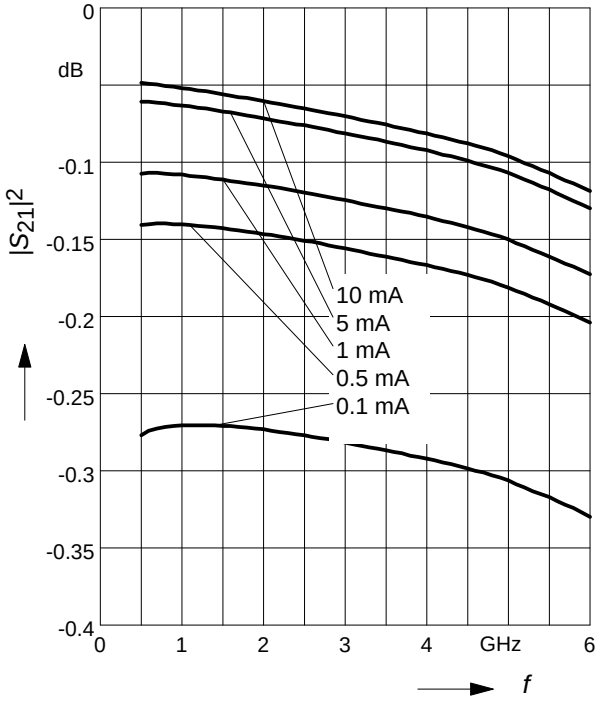
BAR88-02V



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

I_F = Parameter

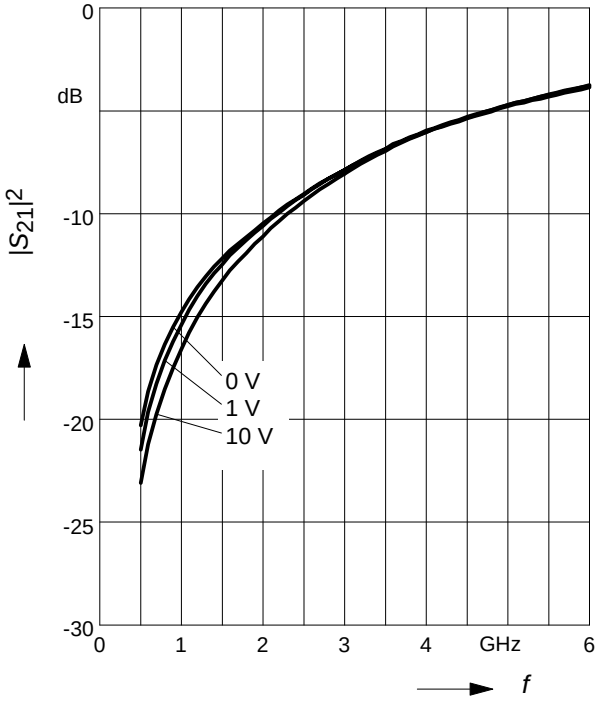
BAR88-02L in series configuration, Z = 50Ω



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

V_R = Paramter

BAR88-02L in series configuration, Z = 50Ω



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