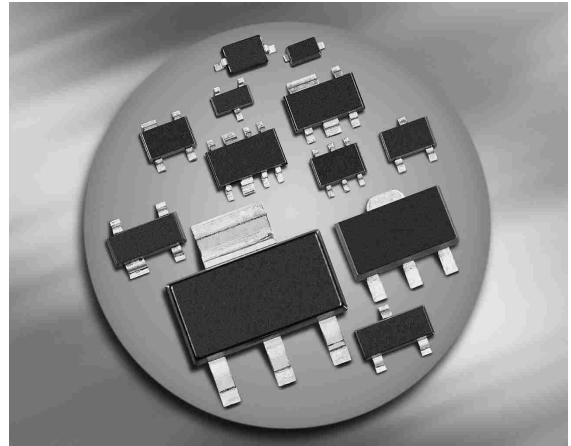


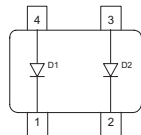
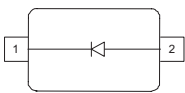
Silicon PIN Diode

- Series diode for mobile communication in low loss transmit-receiver switches
- Band switch for TV-tuners
- Very low forward resistance (typ. $0.65 \Omega @ 5 \text{ mA}$)
- Low capacitance (typ. $0.5 \text{ pF} @ 0\text{V}$)
- Fast switching applications



BAR65-02L
BAR65-02V
BAR65-03W

BAR65-07



Type	Package	Configuration	L_S (nH)	Marking
BAR65-02L *	TSLP-2-1	single, leadless	0.4	NN
BAR65-02V	SC79	single	0.6	N
BAR65-03W	SOD323	single	1.8	M/blue
BAR65-07	SOT143	parallel pair	2	Ms

* Preliminary Data

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

Parameter	Symbol	Value	Unit
Diode reverse voltage	V_R	30	V
Forward current	I_F	100	mA
Total power dissipation	P_{tot}		mW
BAR65-02L, $T_S \leq 128^\circ\text{C}$		250	
BAR65-02V, $T_S \leq 118^\circ\text{C}$		250	
BAR65-03W, $T_S \leq 113^\circ\text{C}$		250	
BAR65-07, $T_S \leq 57^\circ\text{C}$		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
BAR65-02L		≤ 90	
BAR65-02V		≤ 130	
BAR65-03W		≤ 145	
BAR65-07		≤ 370	

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

DC Characteristics

Reverse current $V_R = 20\text{ V}$	I_R	-	-	20	nA
Forward voltage $I_F = 100\text{ mA}$	V_F	-	0.93	1	V

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

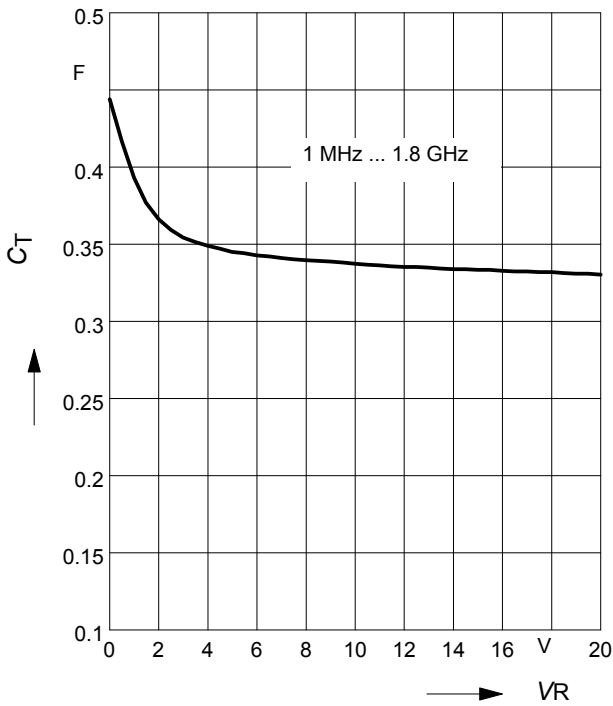
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Diode capacitance $V_R = 1\text{ V}, f = 1\text{ MHz}$ $V_R = 3\text{ V}, f = 1\text{ MHz}$ $V_R = 0\text{ V}, f = 100\text{ MHz} \dots 1.8\text{ GHz}$	C_T	- - -	0.45 0.4 0.5	0.9 0.8 -	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	- - -	700 10 5	- - -	k Ω
Forward resistance $I_F = 1\text{ mA}, f = 100\text{ MHz}$ $I_F = 5\text{ mA}, f = 100\text{ MHz}$ $I_F = 10\text{ mA}, f = 100\text{ MHz}$	r_f	- - -	1 0.65 0.56	- 0.95 0.9	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}	-	80	-	ns
I-region width	W_I	-	3.5	-	μm
Insertion loss ¹⁾ $I_F = 1\text{ mA}, f = 1.8\text{ GHz}$ $I_F = 5\text{ mA}, f = 1.8\text{ GHz}$ $I_F = 10\text{ mA}, f = 1.8\text{ GHz}$	$ S_{21} ^2$	- - -	-0.08 -0.06 -0.05	- - -	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$	- - -	-12 -7 -5	- - -	

¹BAR65-02L in series configuration, $Z = 50\ \Omega$

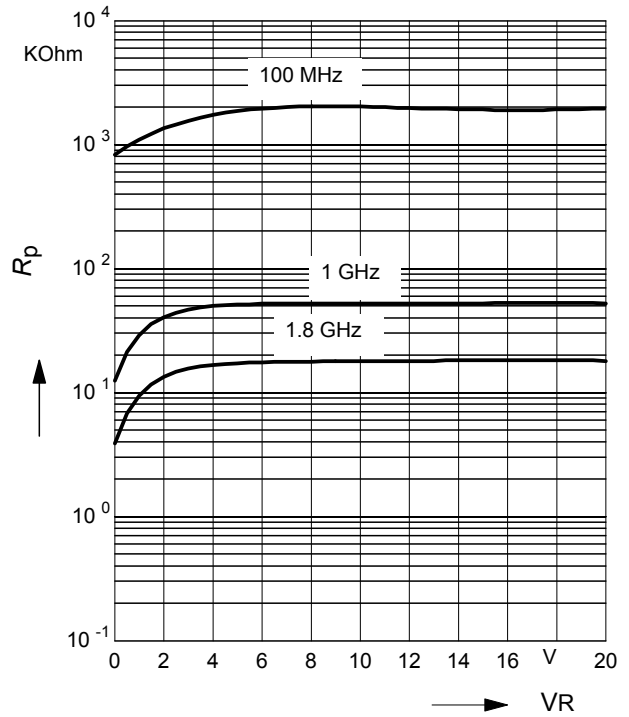
Diode capacitance $C_T = f(V_R)$

$f = \text{Parameter}$



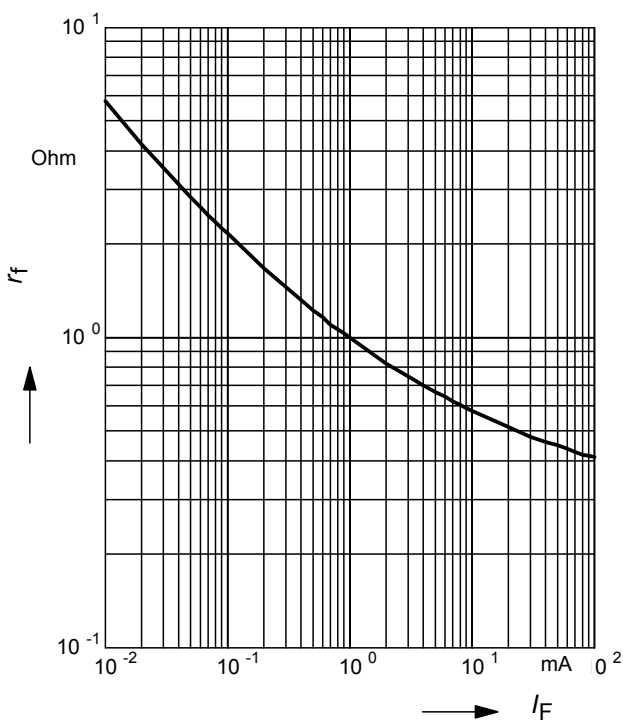
Reverse parallel resistance $R_p = f(V_R)$

$f = \text{Parameter}$



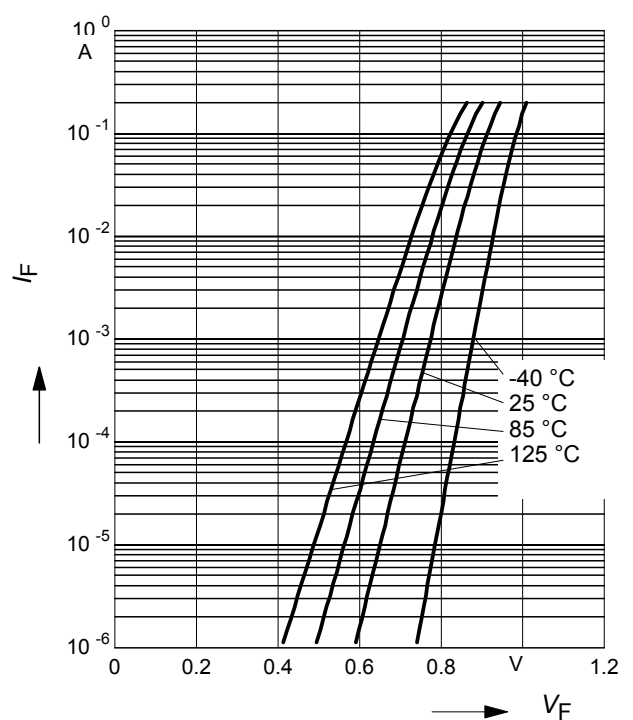
Forward resistance $r_f = f(I_F)$

$f = 100\text{MHz}$



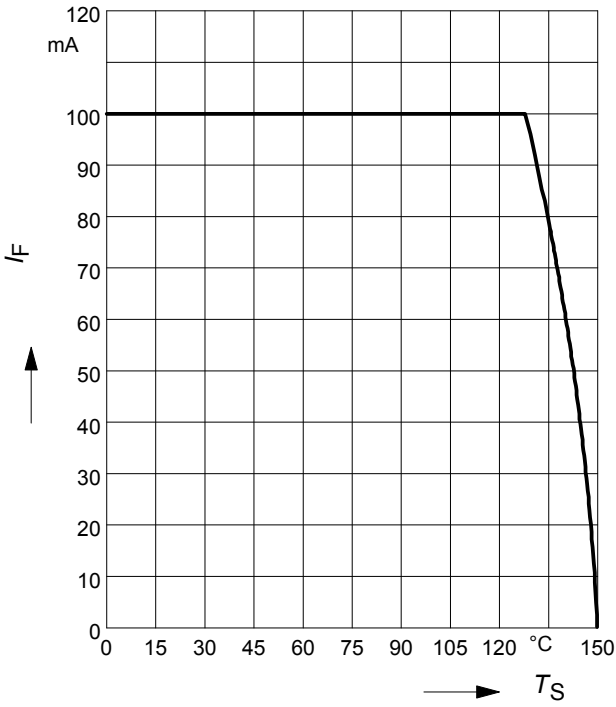
Forward current $I_F = f(V_F)$

$T_A = \text{Parameter}$



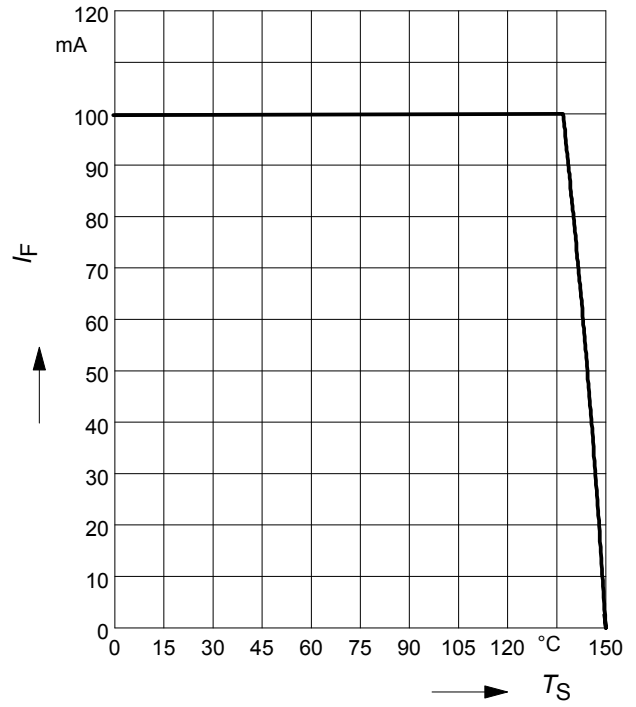
Forward current $I_F = f(T_S)$

BAR65-02L



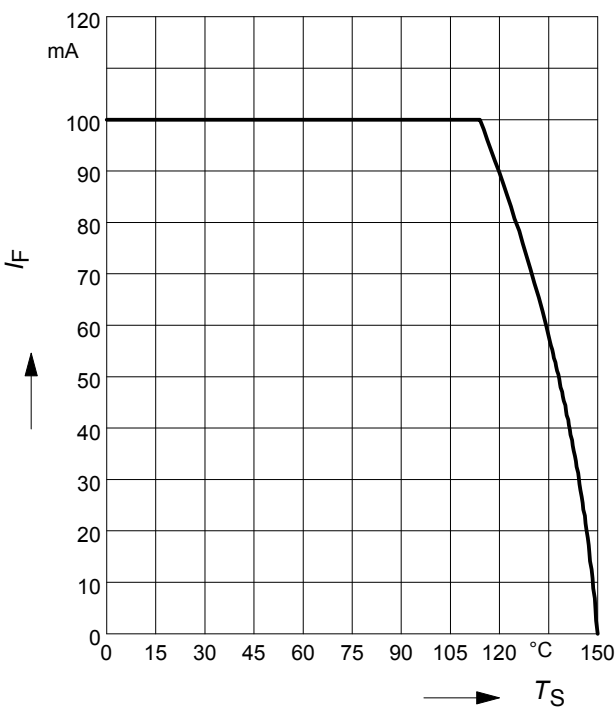
Forward current $I_F = f(T_S)$

BAR65-02V



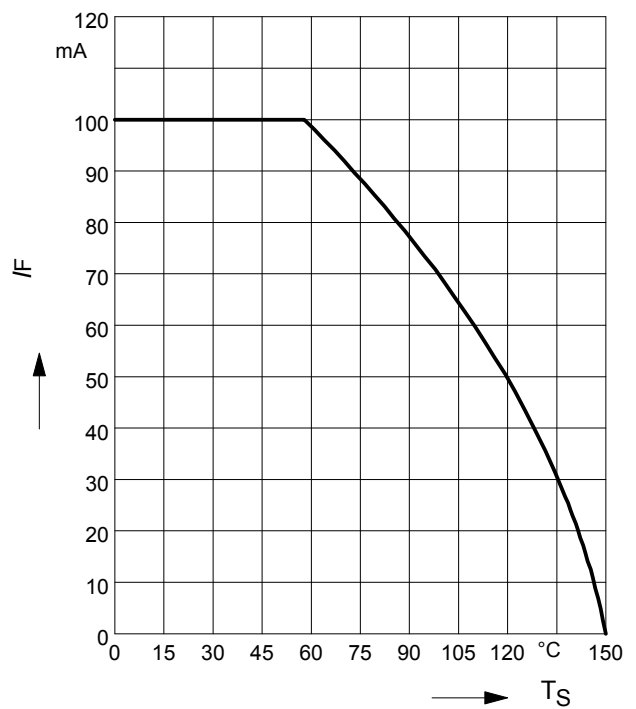
Forward current $I_F = f(T_S)$

BAR65-03W



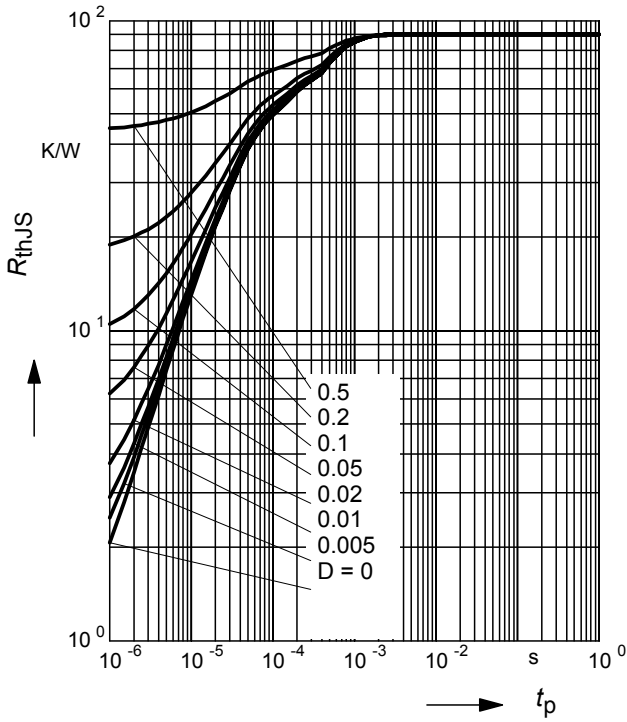
Forward current $I_F = f(T_S)$

BAR65-07



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

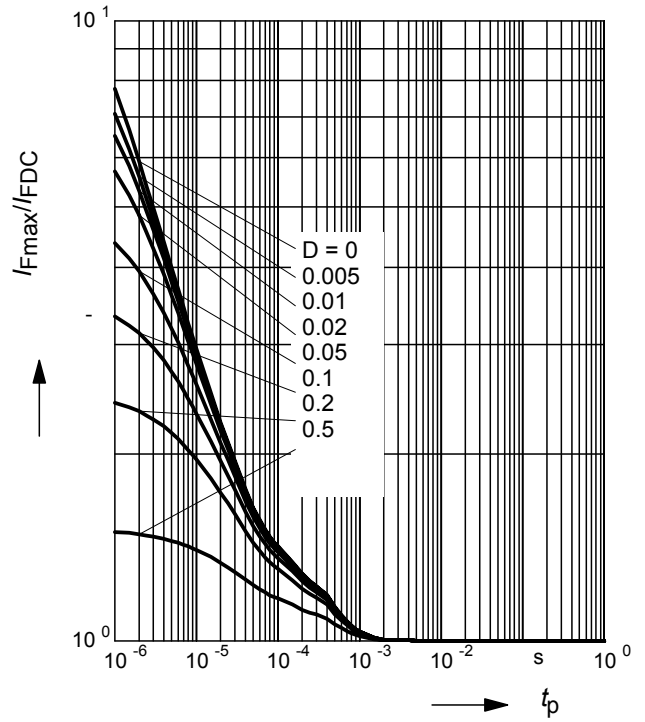
BAR65-02L



Permissible Pulse Load

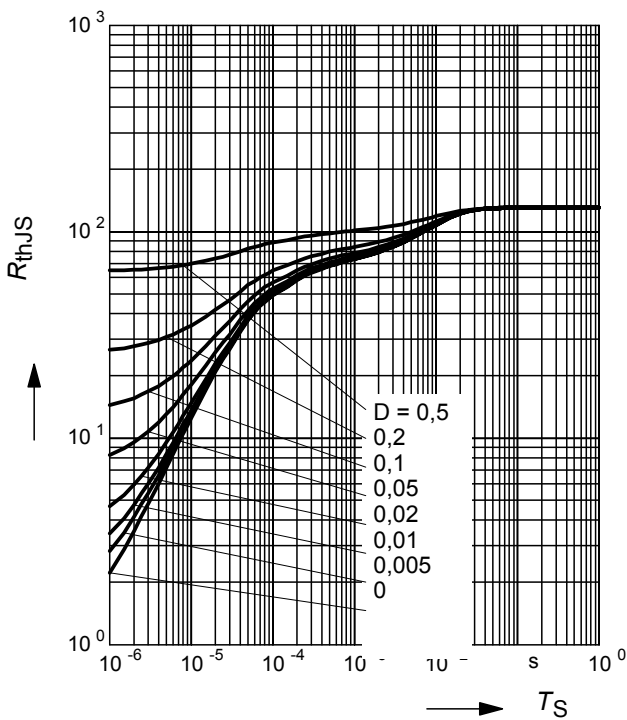
$I_{Fmax} / I_{FDC} = f(t_p)$

BAR65-02L



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

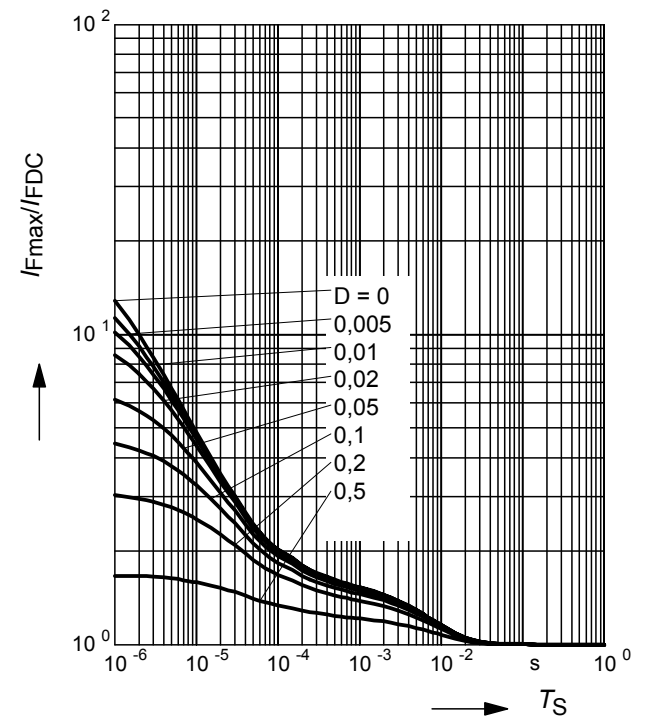
BAR65-02V



Permissible Pulse Load

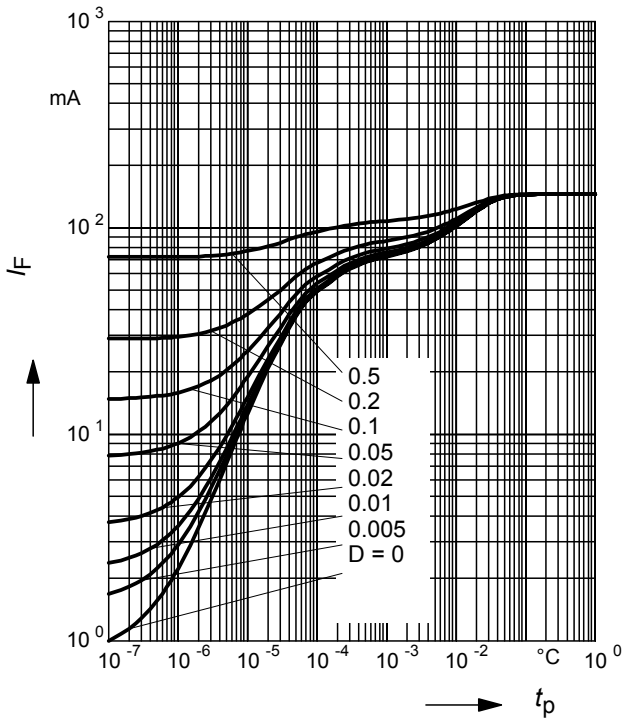
$I_{Fmax} / I_{FDC} = f(t_p)$

BAR65-02V



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

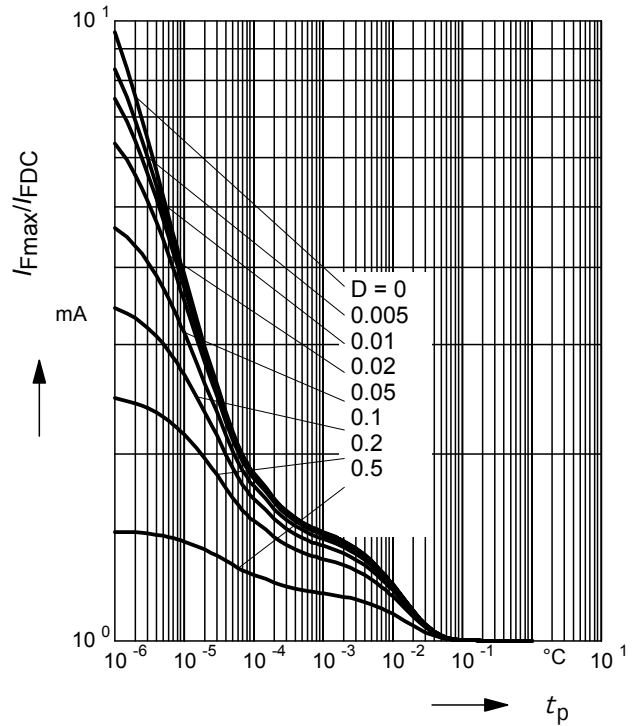
BAR65-03W



Permissible Pulse Load

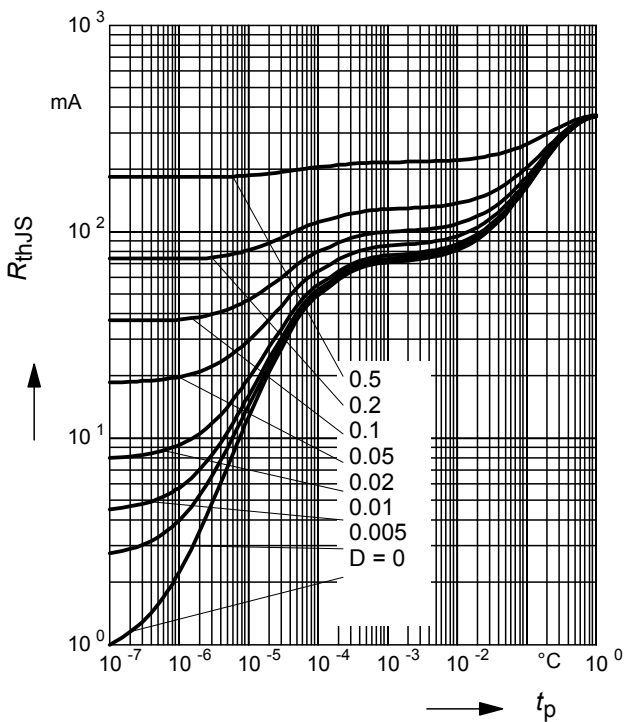
$I_{Fmax} / I_{FDC} = f(t_p)$

BAR65-03W



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

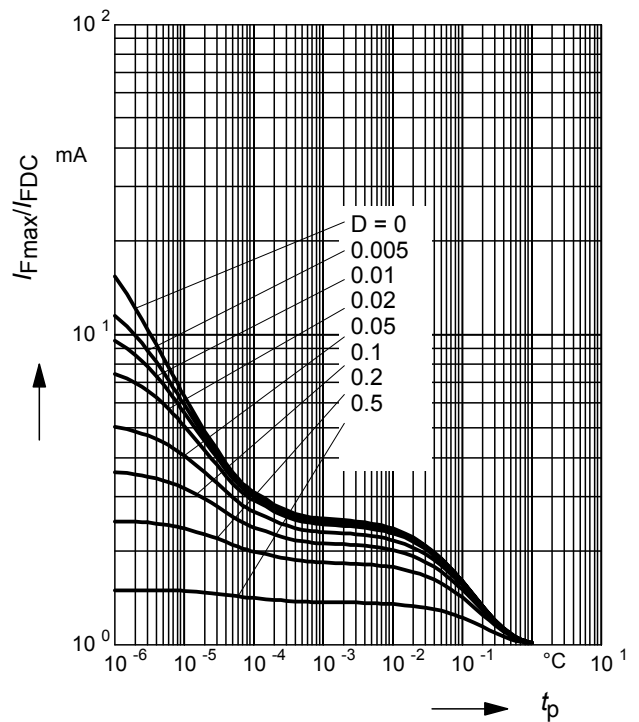
BAR65-07



Permissible Pulse Load

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

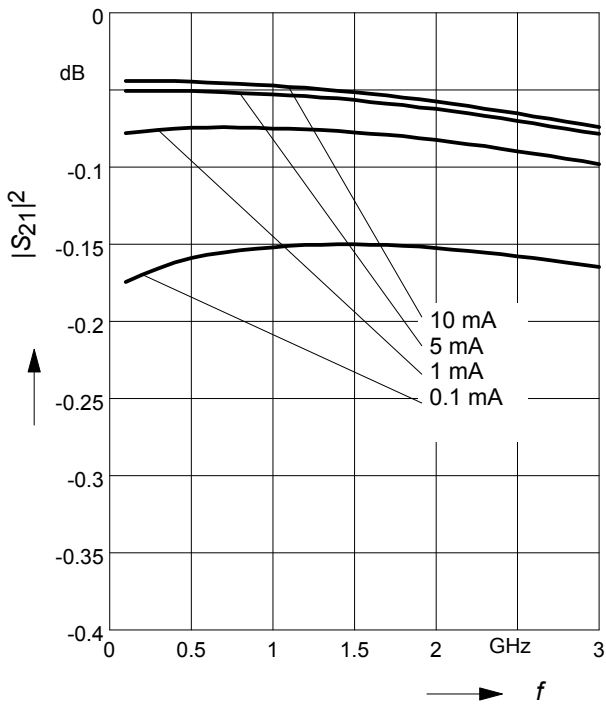
BAR65-07



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

I_F = Parameter

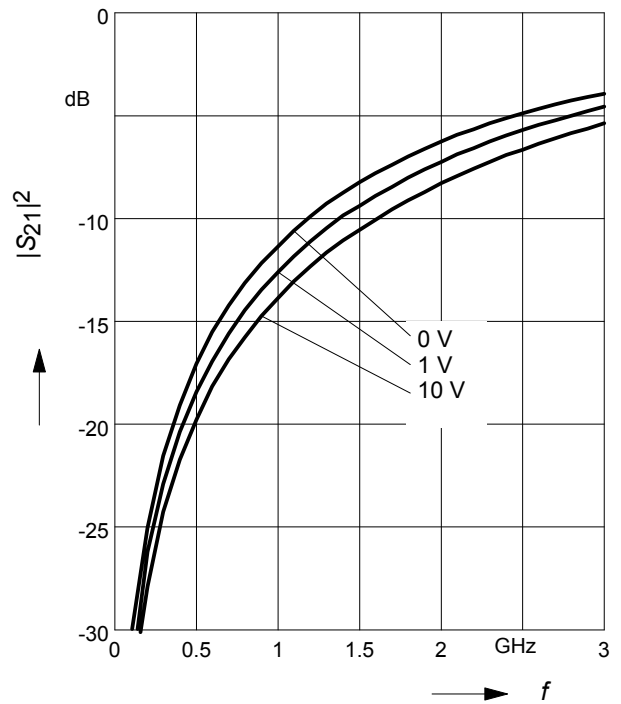
BAR65-02L in series configuration, $Z = 50\Omega$



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

V_R = Parameter

BAR65-02L in series configuration $Z = 50\Omega$



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