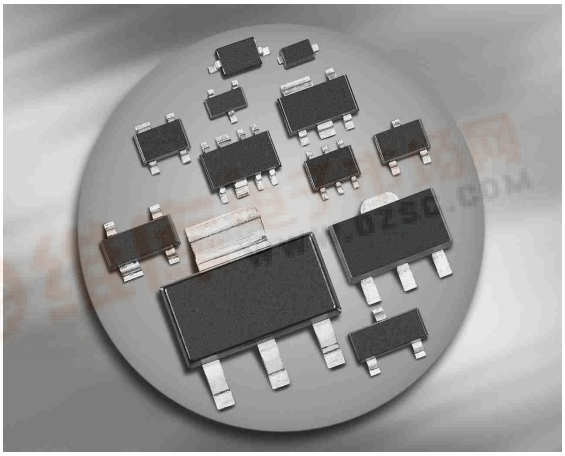
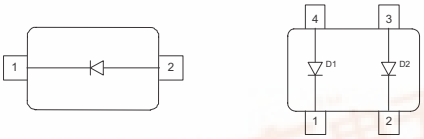
Silicon PIN Diode

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



BAR65-02L **BAR65-07**
BAR65-02V
BAR65-03W



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°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°C		250	
BAR65-02V, $T_S \leq$ 118°C		250	
BAR65-03W, $T_S \leq$ 113°C		250	
BAR65-07, $T_S \leq$ 57°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°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Reverse current V_R = 20 V	I_R	-	-	20	nA
Forward voltage I_F = 100 mA	V_F	-	0.93	1	V

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

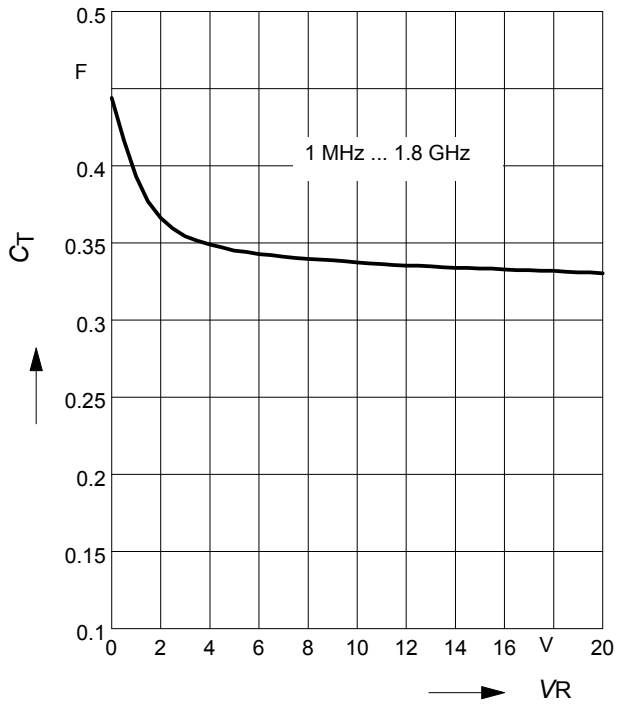
Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Diode capacitance	C_T				pF
V_R = 1 V, f = 1 MHz		-	0.45	0.9	
V_R = 3 V, f = 1 MHz		-	0.4	0.8	
V_R = 0 V, f = 100 MHz ... 1.8 GHz		-	0.5	-	
Reverse parallel resistance	R_P				kΩ
V_R = 0 V, f = 100 MHz		-	700	-	
V_R = 0 V, f = 1 GHz		-	10	-	
V_R = 0 V, f = 1.8 GHz		-	5	-	
Forward resistance	r_f				Ω
I_F = 1 mA, f = 100 MHz		-	1	-	
I_F = 5 mA, f = 100 MHz		-	0.65	0.95	
I_F = 10 mA, f = 100 MHz		-	0.56	0.9	
Charge carrier life time	τ_{rr}	-	80	-	ns
I_F = 10 mA, I_R = 6 mA, measured at I_R = 3 mA, R_L = 100 Ω					
I-region width	W_I	-	3.5	-	µm
Insertion loss[1)]	$\|S_{21}\|^2$				dB
I_F = 1 mA, f = 1.8 GHz		-	-0.08	-	
I_F = 5 mA, f = 1.8 GHz		-	-0.06	-	
I_F = 10 mA, f = 1.8 GHz		-	-0.05	-	
Isolation[1)]	$\|S_{21}\|^2$				
V_R = 0 V, f = 0.9 GHz		-	-12	-	
V_R = 0 V, f = 1.8 GHz		-	-7	-	
V_R = 0 V, f = 2.45 GHz		-	-5	-	

[1]BAR65-02L in series configuration, Z = 50Ω

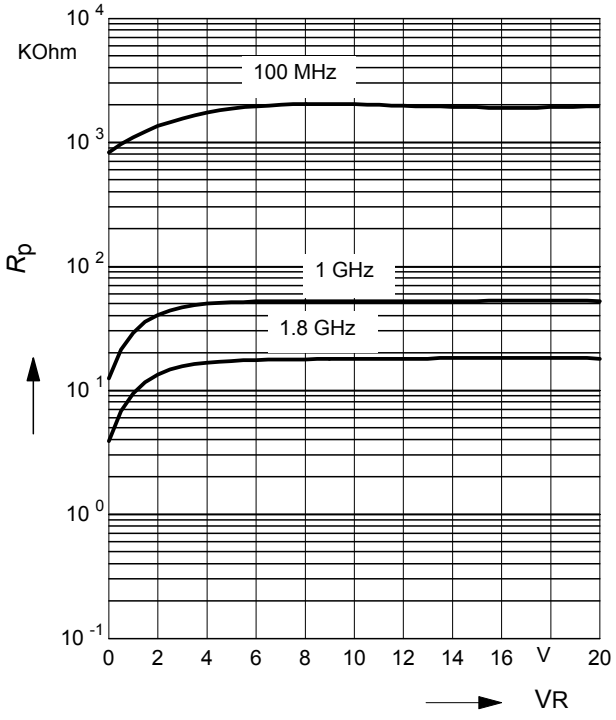
Diode capacitance $C_T = f(V_R)$

f = Parameter



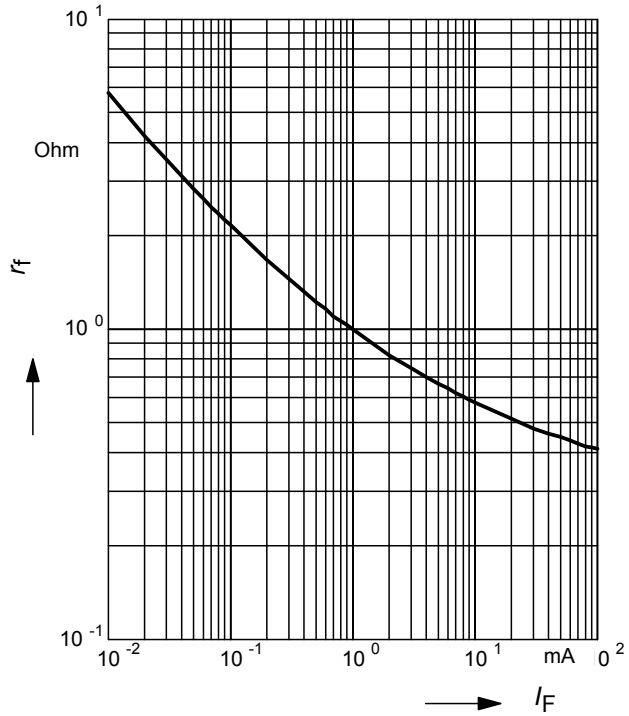
Reverse parallel resistance $R_P = f(V_R)$

f = Parameter



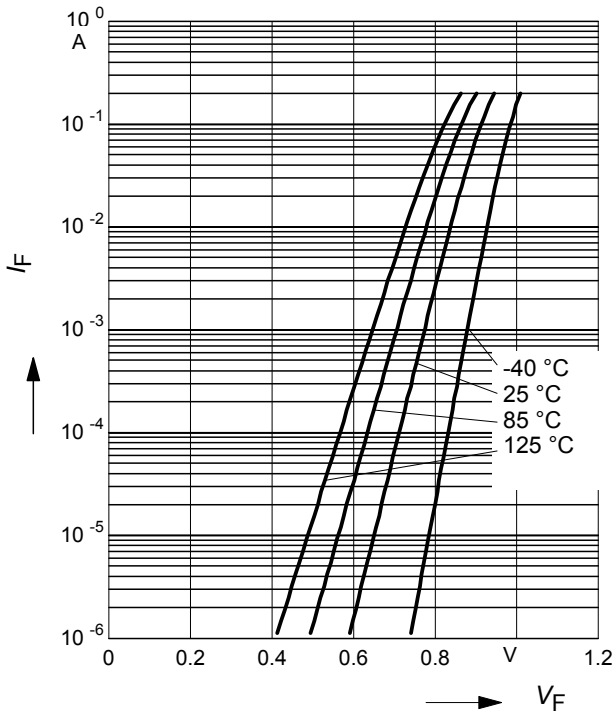
Forward resistance $r_f = f(I_F)$

f = 100MHz

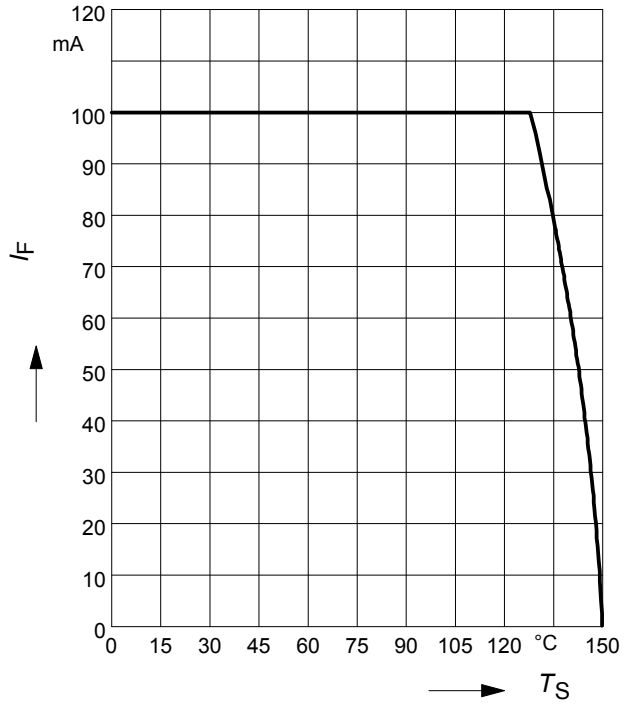


Forward current $I_F = f(V_F)$

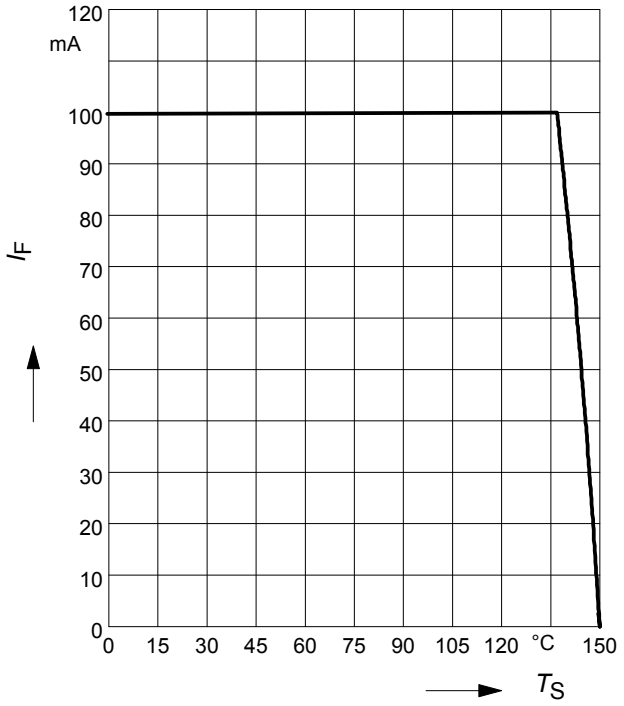
T_A = Parameter



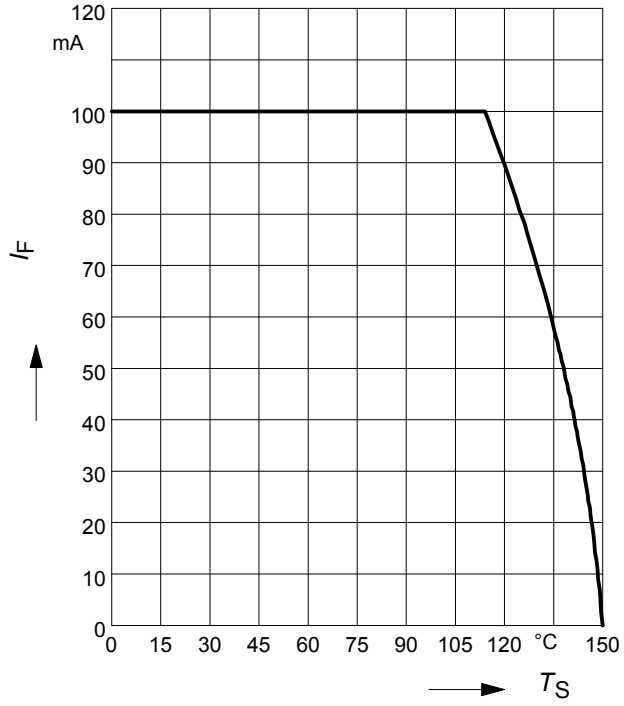
Forward current $I_F = f(T_S)$
BAR65-02L



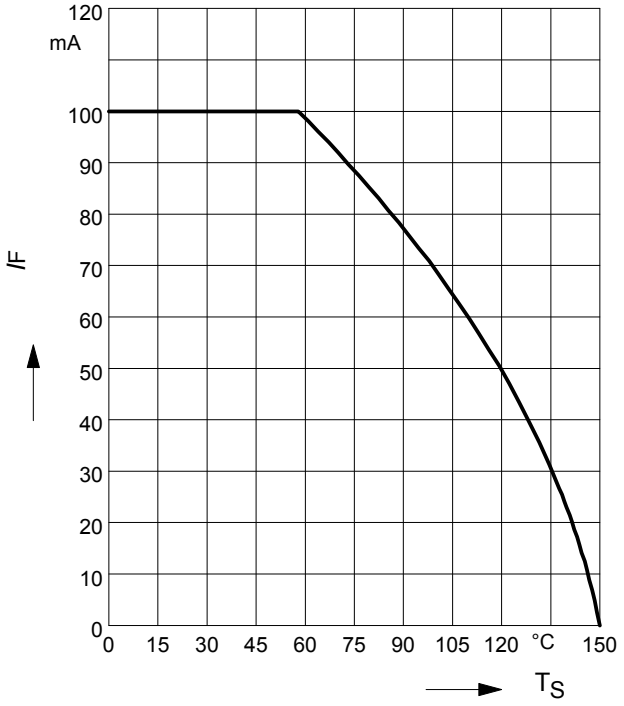
Forward current $I_F = f(T_S)$
BAR65-02V



Forward current $I_F = f(T_S)$
BAR65-03W

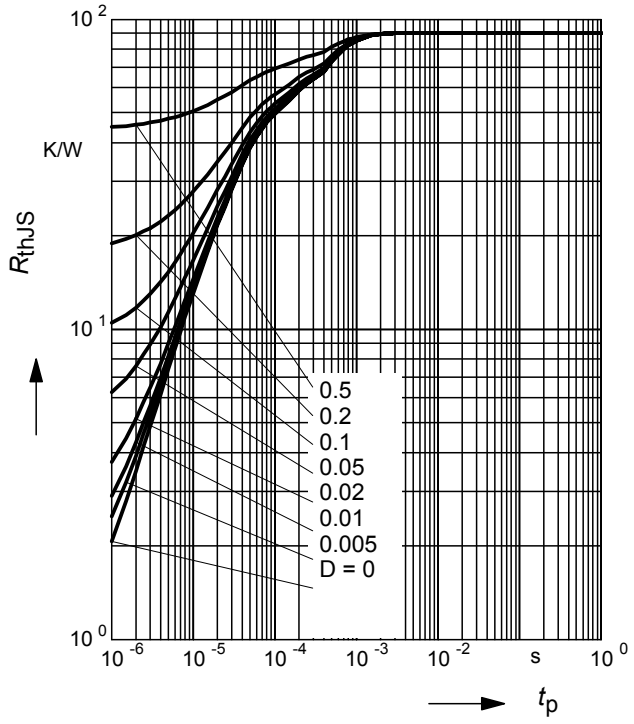


Forward current $I_F = f(T_S)$
BAR65-07



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

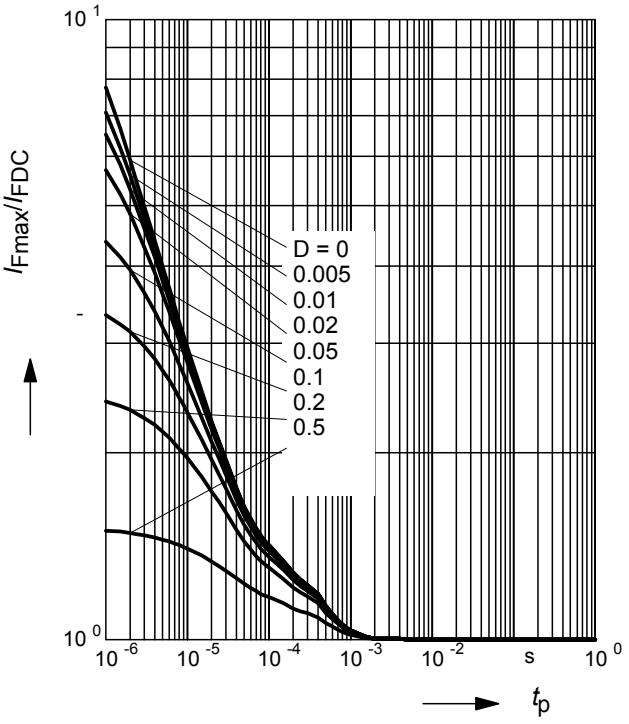
BAR65-02L



Permissible Pulse Load

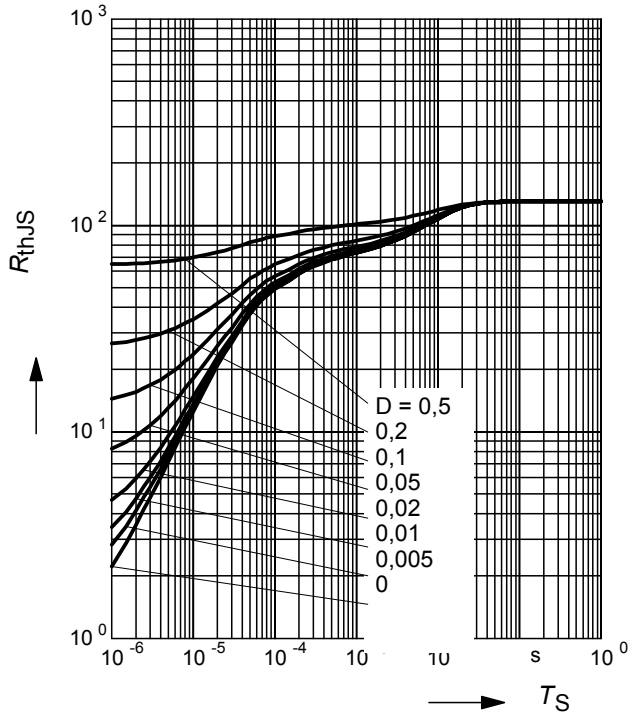
$I_{Fmax}/I_{FDC} = f(t_p)$

BAR65-02L



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

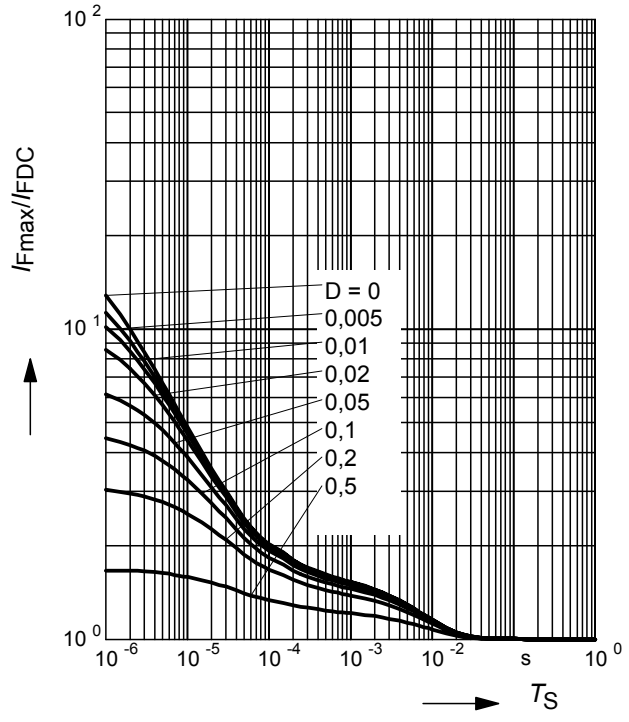
BAR65-02V



Permissible Pulse Load

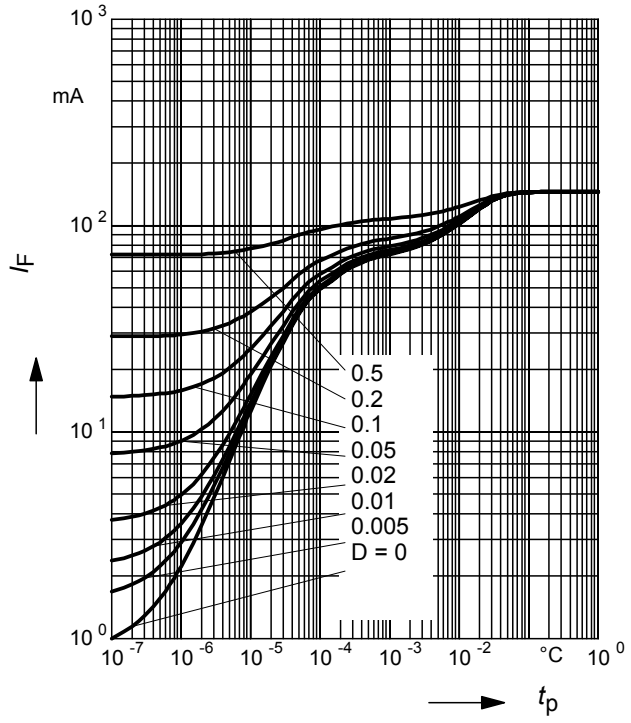
$I_{Fmax}/I_{FDC} = f(t_p)$

BAR65-02V



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

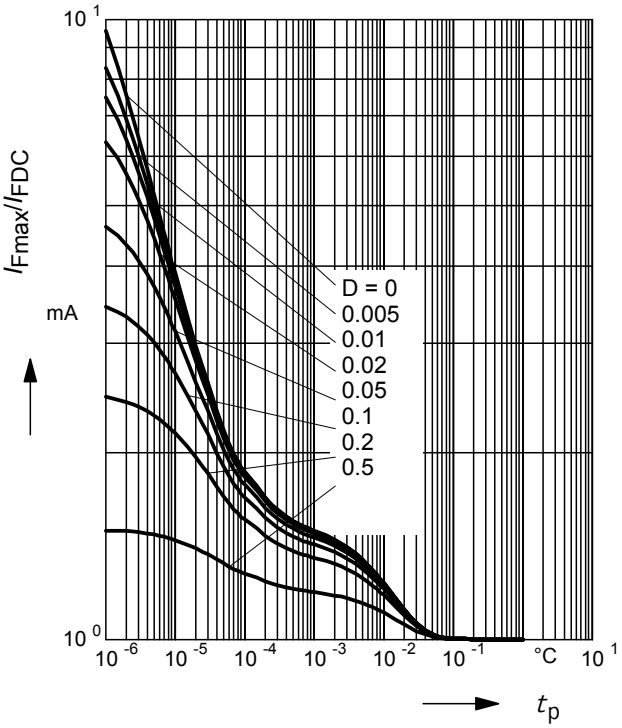
BAR65-03W



Permissible Pulse Load

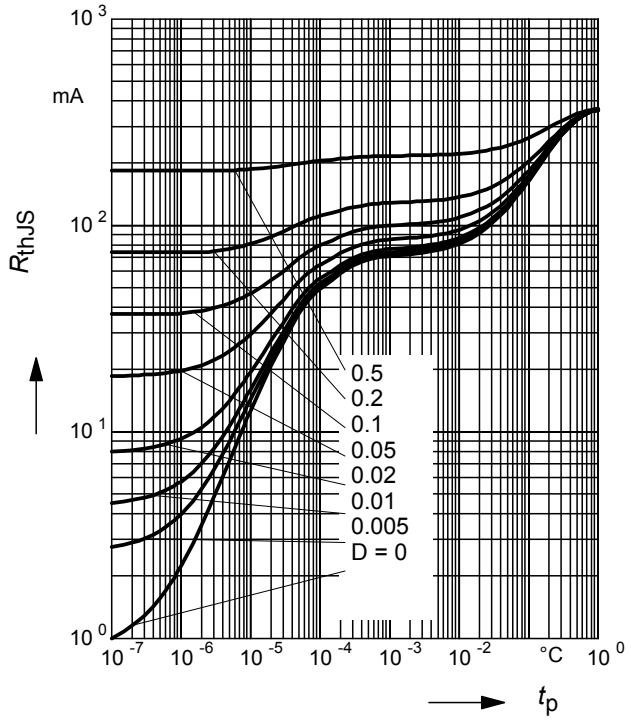
$I_{Fmax}/ I_{FDC} = f(t_p)$

BAR65-03W



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

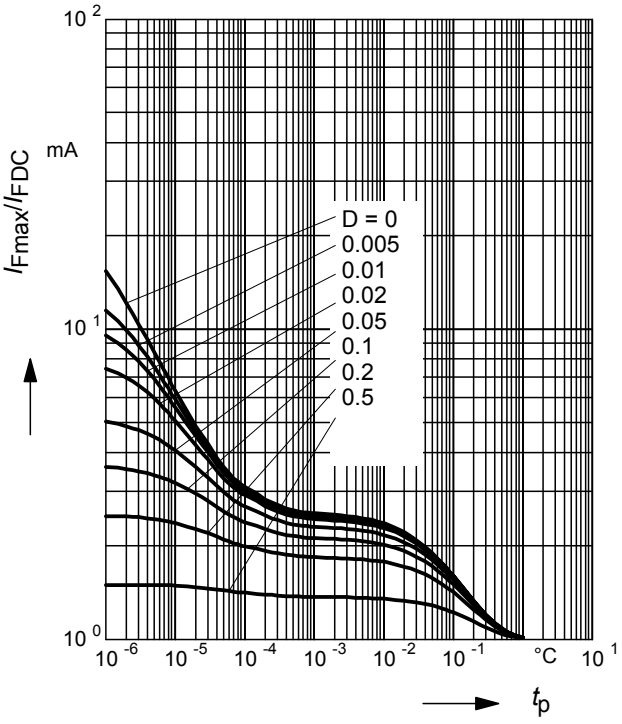
BAR65-07



Permissible Pulse Load

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

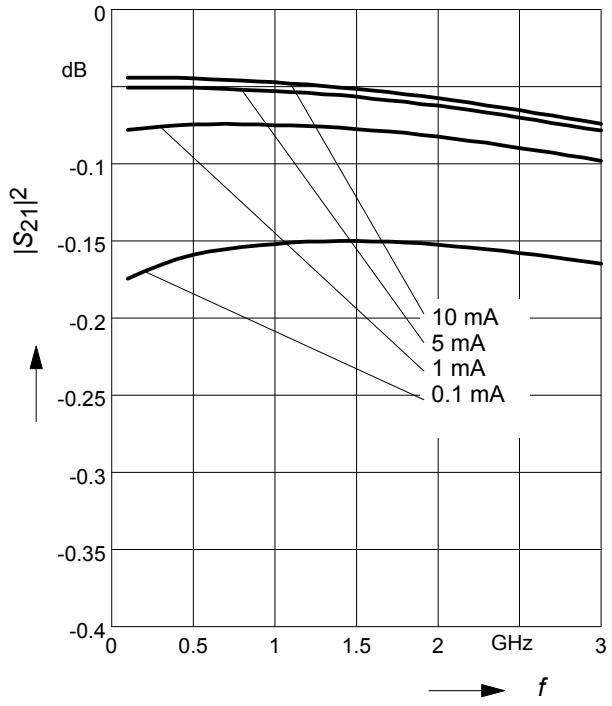
BAR65-07



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 $Z = 50\Omega$