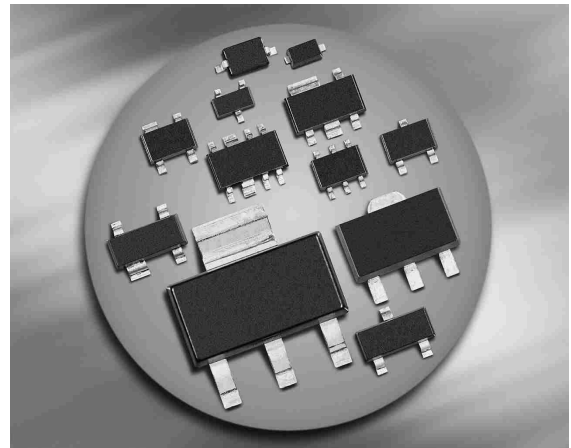
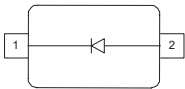
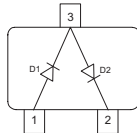
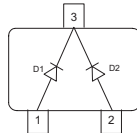
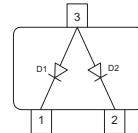
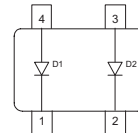


**Silicon PIN Diodes**

- PIN diode for high speed switching of RF signals
- Very low forward resistance (low insertion loss)
- Very low capacitance (high isolation)
- For frequencies up to 3GHz


**BAR63-02..**  
**BAR63-03W**

**BAR63-04**  
**BAR63-04W**

**BAR63-05**  
**BAR63-05W**

**BAR63-06**  
**BAR63-06W**

**BAR63-07L4**


Type	Package	Configuration	$L_S$ (nH)	Marking
BAR63-02L*	TSLP-2-1	single, leadless	0.4	G
BAR63-02V	SC79	single	0.6	G
BAR63-02W	SCD80	single	0.6	GG
BAR63-03W	SOD323	single	1.8	G
BAR63-04	SOT23	series	1.8	G4s
BAR63-04W	SOT323	series	1.4	G4s
BAR63-05	SOT23	common cathode	1.8	G5s
BAR63-05W	SOT323	common cathode	1.4	G5s
BAR63-06	SOT23	common anode	1.8	G6s
BAR63-06W	SOT323	common anode	1.4	G6s
BAR63-07L4*	TSLP-4-4	parallel pair, leadless	0.4	P3s

\* preliminary data

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

Parameter	Symbol	Value	Unit
Diode reverse voltage	$V_R$	50	V
Forward current	$I_F$	100	mA
Total power dissipation	$P_{\text{tot}}$		mW
BAR63-02L, $T_S \leq 118^\circ\text{C}$		250	
BAR63-02V, -02W, BAR63-03W, $T_S \leq 115^\circ\text{C}$		250	
BAR63-04...BAR63-06, $T_S \leq 55^\circ\text{C}$		250	
BAR63-04S, $T_S \leq 115^\circ\text{C}$		250	
BAR63-04W...BAR63-06W, $T_S \leq 105^\circ\text{C}$		250	
BAR63-07L4, $T_S \leq \text{td}$		250	
Junction temperature	$T_j$	150	°C
Operating temperature range	$T_{\text{op}}$	-55 ... 125	
Storage temperature	$T_{\text{stg}}$	-55 ... 150	

**Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup>	$R_{\text{thJS}}$		K/W
BAR63-02L		$\leq 125$	
BAR63-02V, BAR63-02W		$\leq 140$	
BAR63-03W		$\leq 155$	
BAR63-04...BAR63-06		$\leq 380$	
BAR63-04S		$\leq 180$	
BAR63-04W...BAR63-06W		$\leq 180$	
BAR63-07L4		$\leq \text{td}$	

<sup>1</sup>For calculation of  $R_{\text{thJA}}$  please refer to the Technical Information

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC Characteristics</b>					
Breakdown voltage $I_{(BR)} = 5 \mu\text{A}$	$V_{(BR)}$	50	-	-	V
Reverse current $V_R = 35 \text{ V}$	$I_R$	-	-	10	nA
Forward voltage $I_F = 100 \text{ mA}$	$V_F$	-	0.95	1.2	V

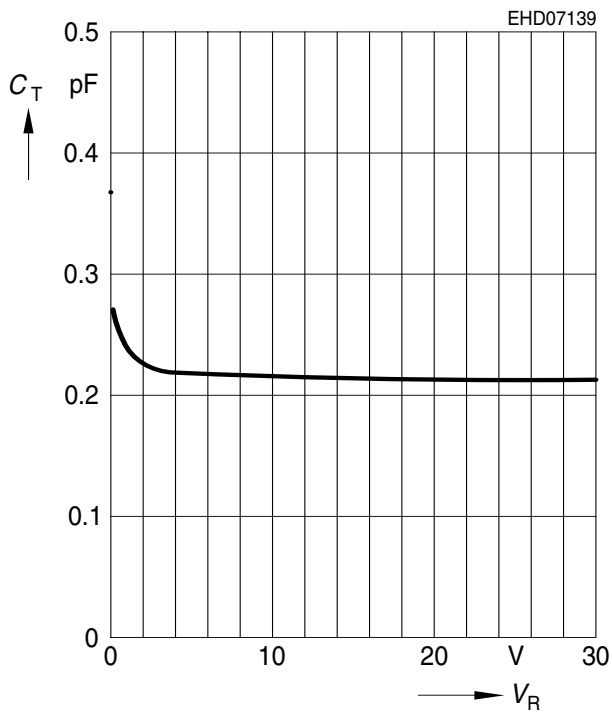
**Electrical Characteristics at  $T_A = 25^\circ\text{C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>AC Characteristics</b>					
Diode capacitance $V_R = 5\text{ V}, f = 1\text{ MHz}$ $V_R = 0\text{ V}, 100\text{ MHz} \dots 1.8\text{ GHz}$	$C_T$	- -	0.21 0.3	0.3 -	pF
Reverse parallel resistance $V_R = 0\text{ V}, f = 100\text{ MHz}$ $V_R = 0\text{ V}, f = 1\text{ GHz}$ $V_R = 0\text{ V}, f = 1.8\text{ GHz}$	$R_P$	- - -	500 15 5	- - -	k $\Omega$
Forward resistance $I_F = 5\text{ mA}, f = 100\text{ MHz}$ $I_F = 10\text{ mA}, f = 100\text{ MHz}$	$r_f$	- -	1.2 1	2 -	$\Omega$
Charge carrier life time $I_F = 10\text{ mA}, I_R = 6\text{ mA}$ , measured at $I_R = 3\text{ mA}$ , $R_L = 100\ \Omega$	$\tau_{rr}$	-	75	-	ns
I-region width	$W_I$	-	4.5	-	$\mu\text{m}$
Insertion loss <sup>1)</sup> $I_F = 1\text{ mA}, f = 1.8\text{ GHz}$ $I_F = 5\text{ mA}, f = 1.8\text{ GHz}$ $I_F = 10\text{ mA}, f = 1.8\text{ GHz}$	$ S_{21} ^2$	- - -	-0.15 -0.11 -0.1	- - -	dB
Isolation <sup>1)</sup> $V_R = 0\text{ V}, f = 0.9\text{ MHz}$ $V_R = 0\text{ V}, f = 1.8\text{ MHz}$ $V_R = 0\text{ V}, f = 2.45\text{ MHz}$	$ S_{21} ^2$	- - -	-17.9 -12.3 -10	- - -	

<sup>1</sup>BAR63-02L in series configuration,  $Z = 50\ \Omega$

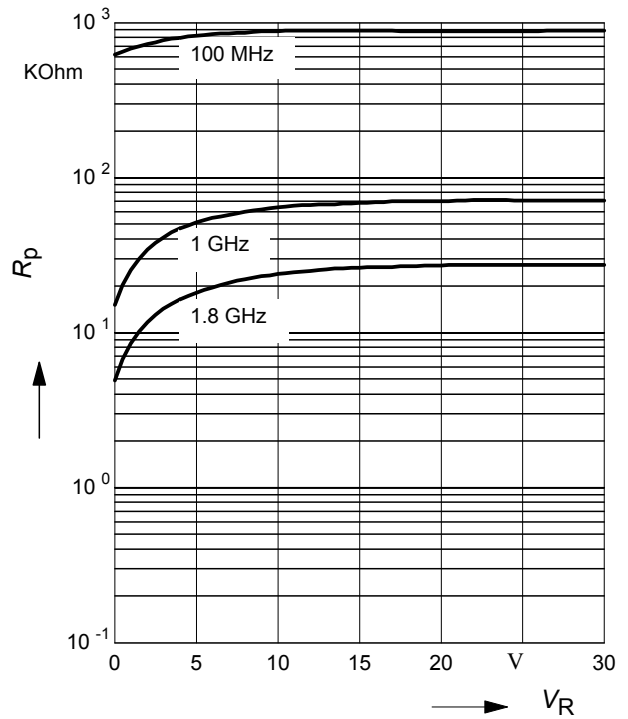
**Diode capacitance  $C_T = f(V_R)$**

$f = 1\text{MHz} - 1.8\text{GHz}$



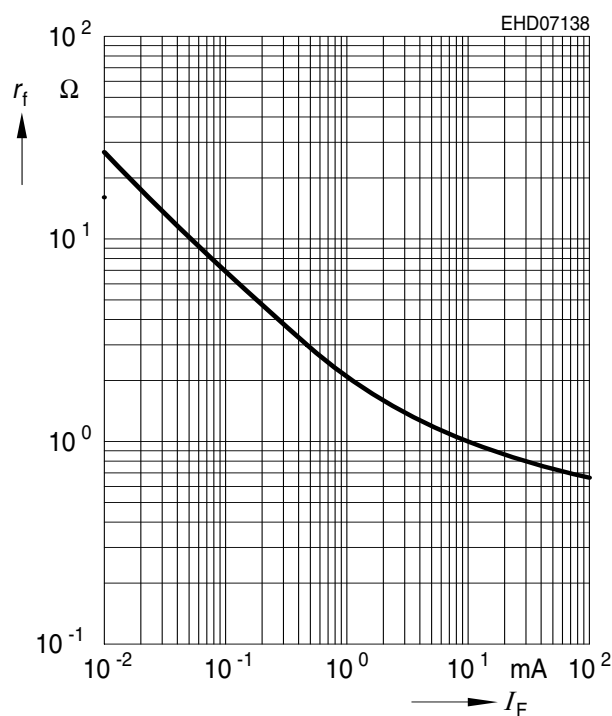
**Reverse parallel resistance  $R_p = f(V_R)$**

$f = \text{Parameter}$



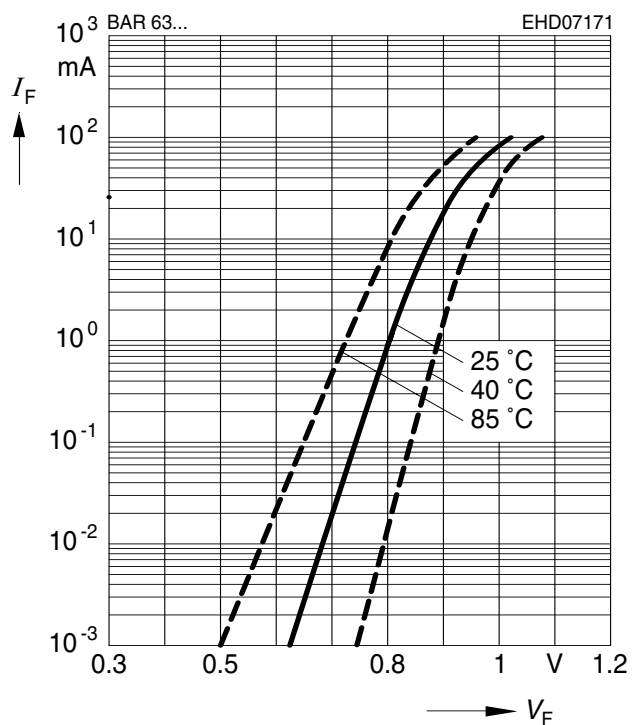
**Forward resistance  $r_f = f(I_F)$**

$f = 100\text{MHz}$



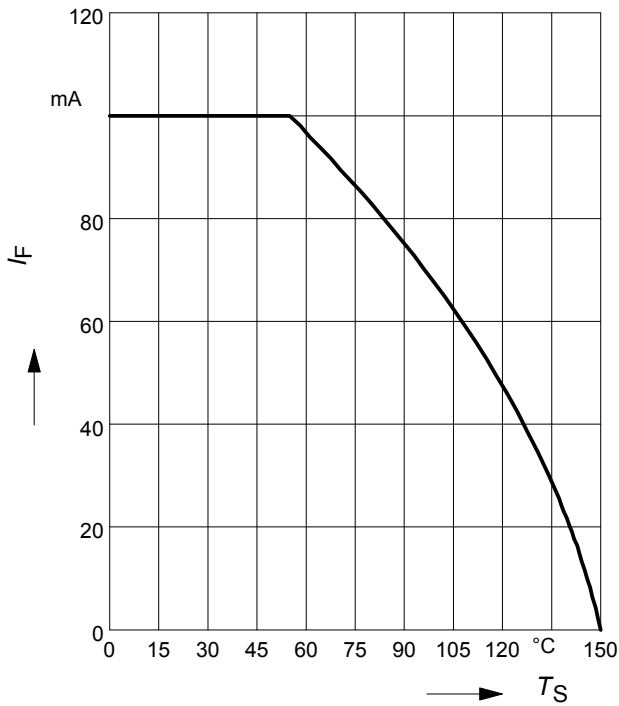
**Forward current  $I_F = f(V_F)$**

$T_A = \text{Parameter}$



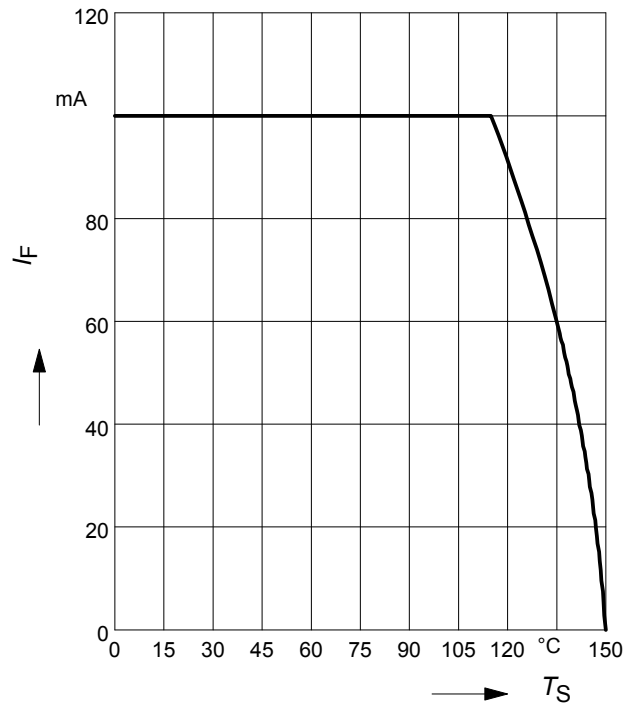
**Forward current  $I_F = f(T_S)$**

BAR63-04...BAR63-06



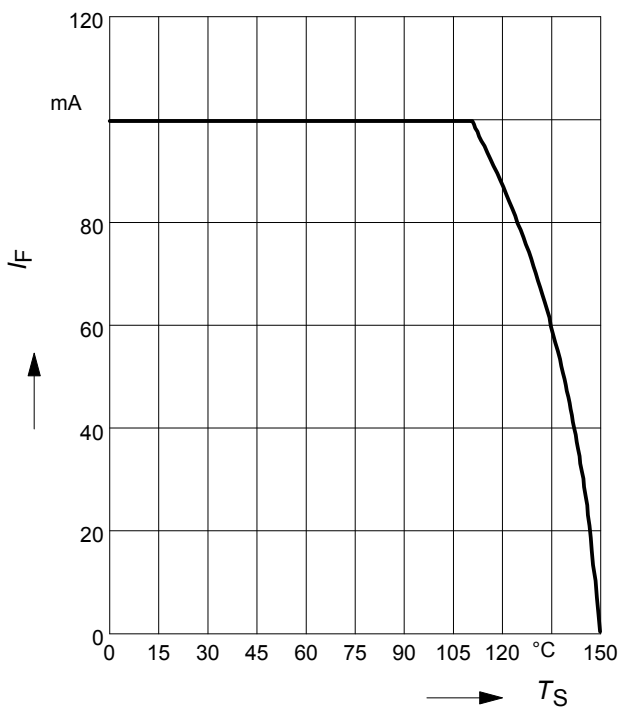
**Forward current  $I_F = f(T_S)$**

BAR63-02V, BAR63-02W



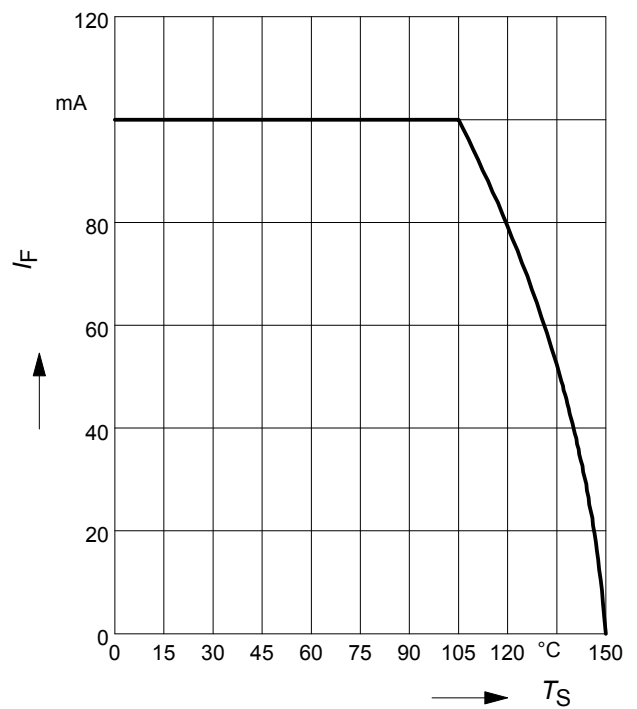
**Forward current  $I_F = f(T_S)$**

BAR63-03W



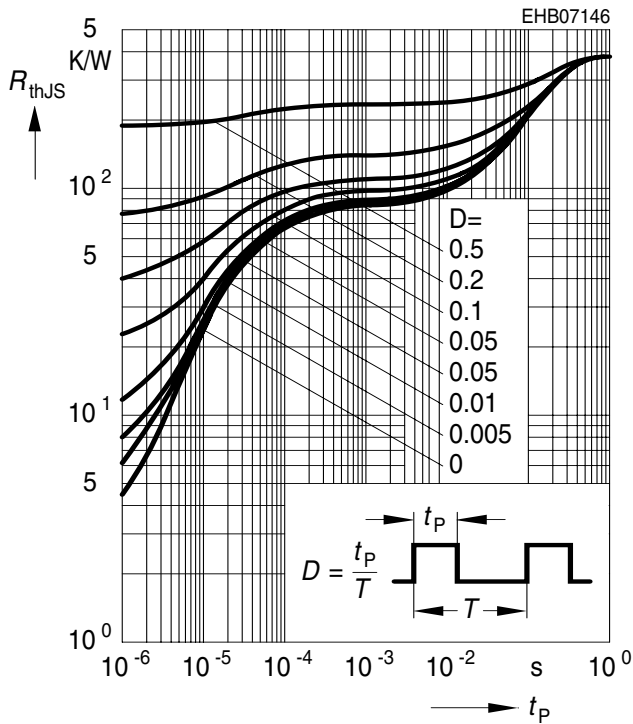
**Forward current  $I_F = f(T_S)$**

BAR63-04W...BAR63-06W



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

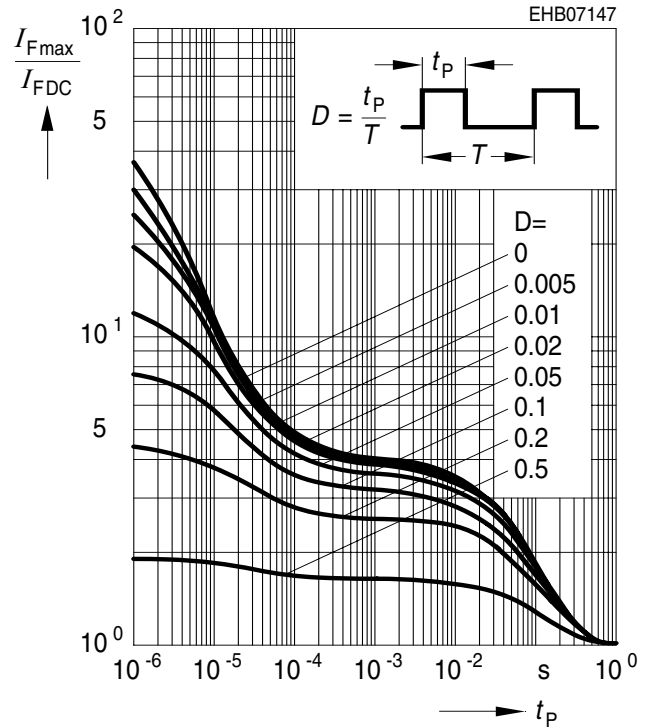
BAR63-04...BAR63-06



**Permissible Pulse Load**

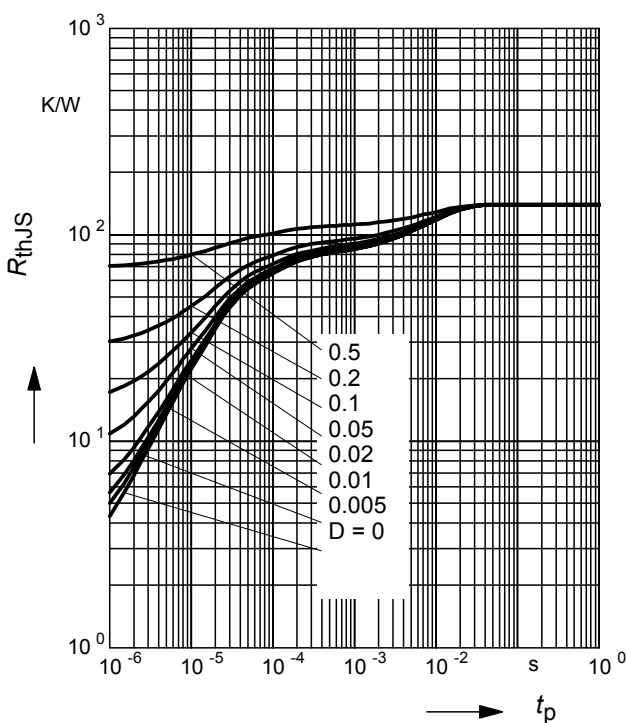
$I_{Fmax} / I_{FDC} = f(t_p)$

BAR63-04...BAR63-06



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

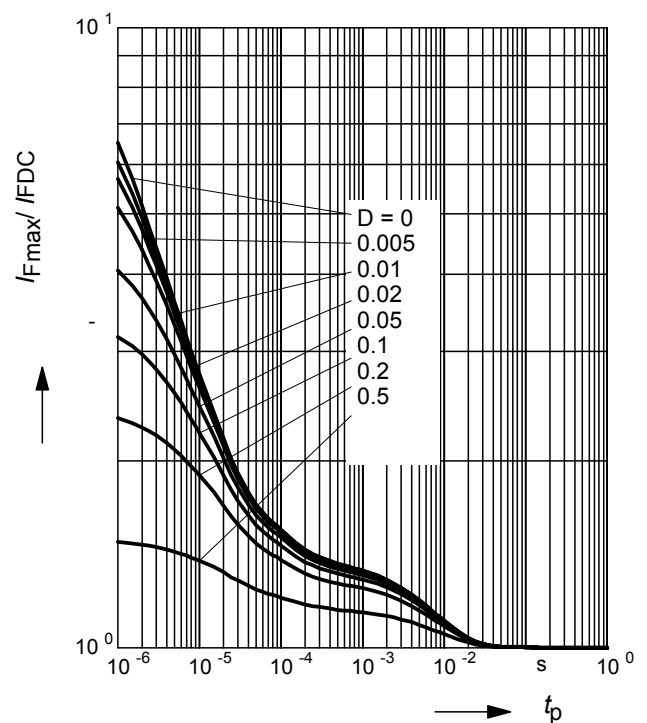
BAR63-02V, BAR63-02W



**Permissible Pulse Load**

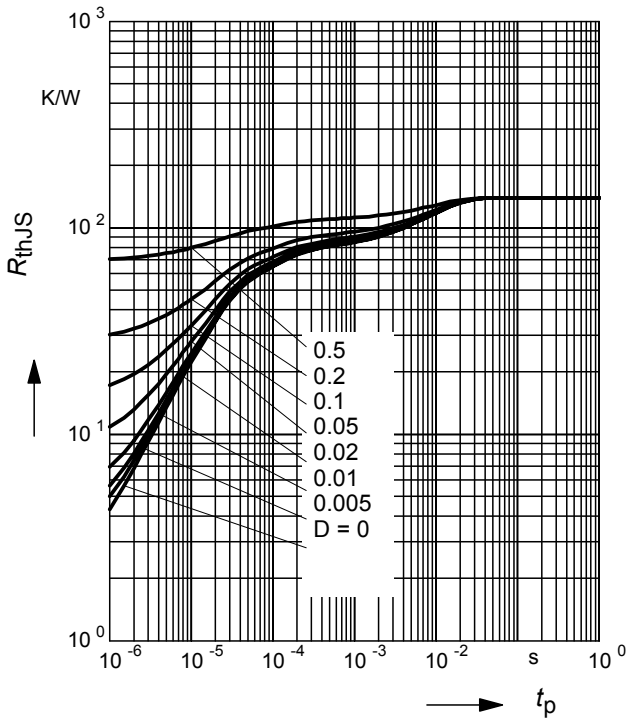
$I_{Fmax} / I_{FDC} = f(t_p)$

BAR63-02V, BAR63-02W



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

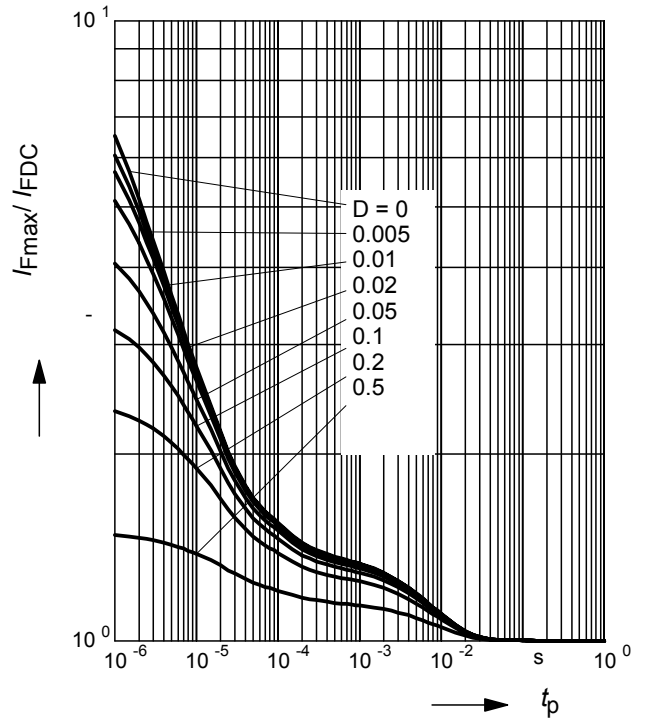
BAR63-03W



**Permissible Pulse Load**

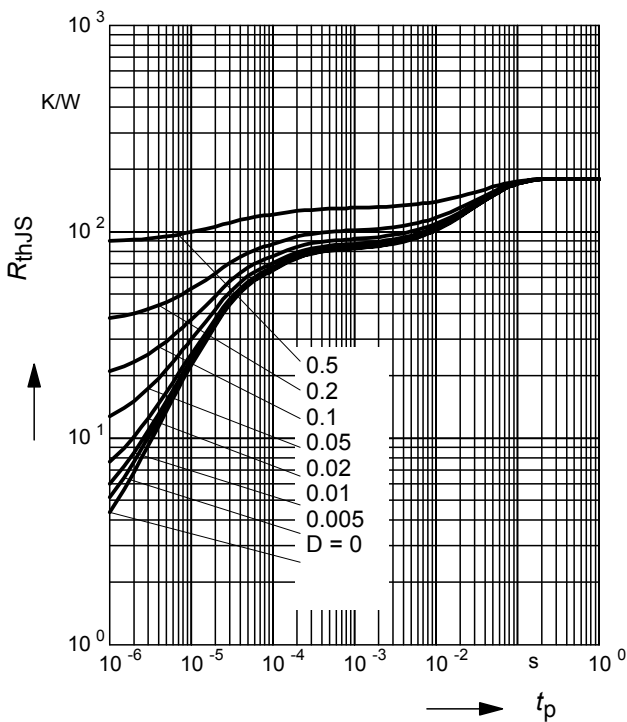
$I_{Fmax} / I_{FDC} = f(t_p)$

BAR63-03W



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

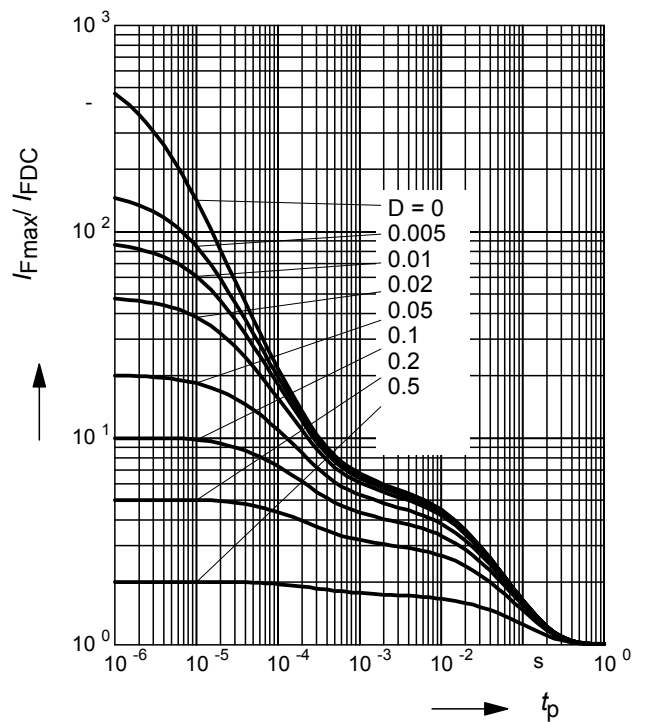
BAR63-04W...BAR63-06W



**Permissible Pulse Load**

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

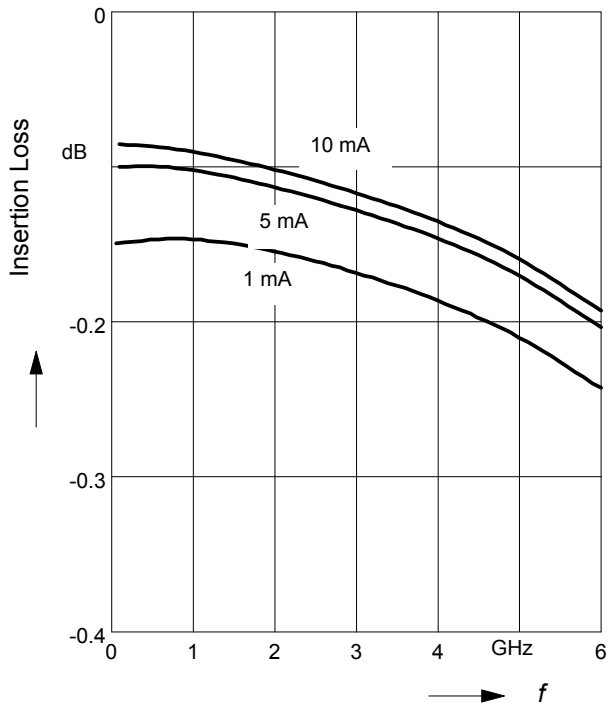
BAR63-04W...BAR63-06W



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

$I_F$  = Parameter

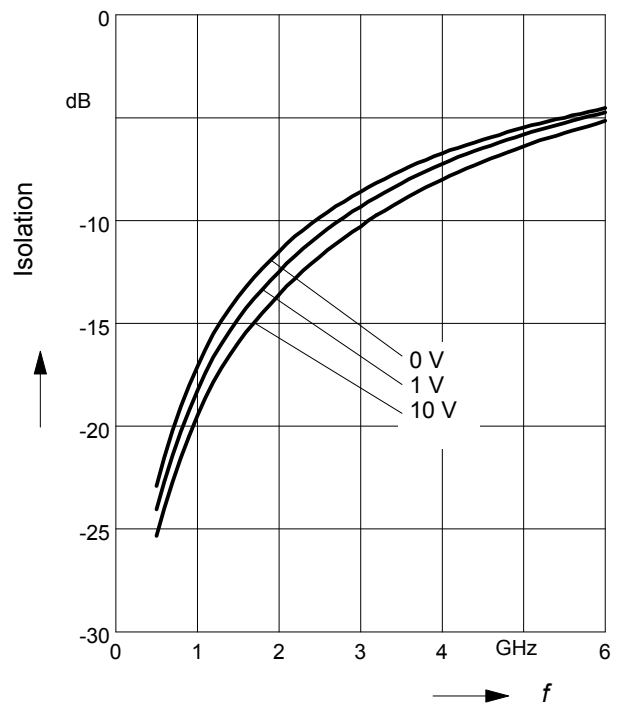
BAR63-02L in series configuration,  $Z = 50\Omega$



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

$V_R$  = Parameter

BAR63-02L in series configuration,  $Z = 50\Omega$





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