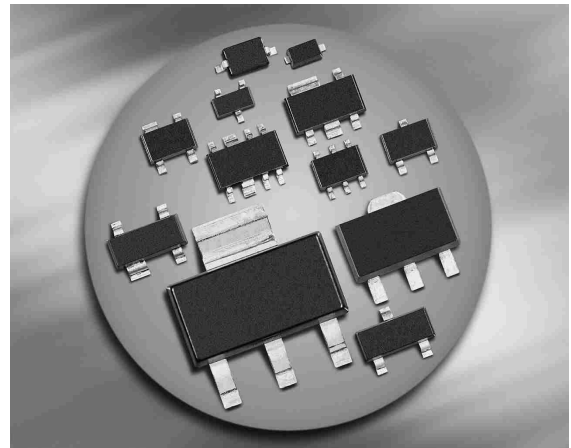
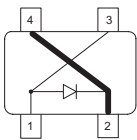


Silicon RF Switching Diode

- Designed for use in shunt configuration in high performance RF switches
- High shunt signal isolation
- Low shunt insertion loss
- Optimized for short - open transformation using $\lambda/4$ lines



BAR81W



Type	Package	Configuration	L_S (nH)	Marking
BAR81W	SOT343	single shunt-diode	0.15*	BBs

* series inductance chip to ground

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 $T_S \leq 138^\circ\text{C}$	P_{tot}	100	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}	≤ 120	K/W

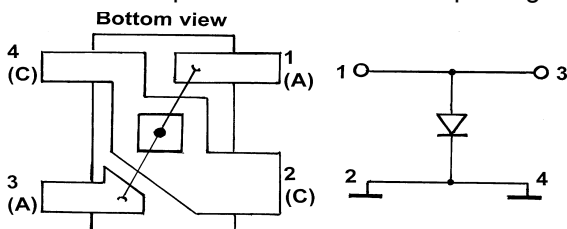
¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
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
AC Characteristics					
Diode capacitance $V_R = 1\text{ V}, f = 1\text{ MHz}$ $V_R = 3\text{ V}, f = 1\text{ MHz}$	C_T	-	0.6 0.57	1 0.9	pF
Forward resistance $I_F = 5\text{ mA}, f = 100\text{ MHz}$	r_f	-	0.7	1	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
Shunt insertion loss ¹⁾ $V_R = 3\text{ V}, f = 1.89\text{ GHz}$	$ S_{21} ^2$	-	0.7	-	dB
Shunt isolation ¹⁾ $I_F = 10\text{ mA}, f = 1.89\text{ GHz}$	$ S_{21} ^2$	-	30	-	

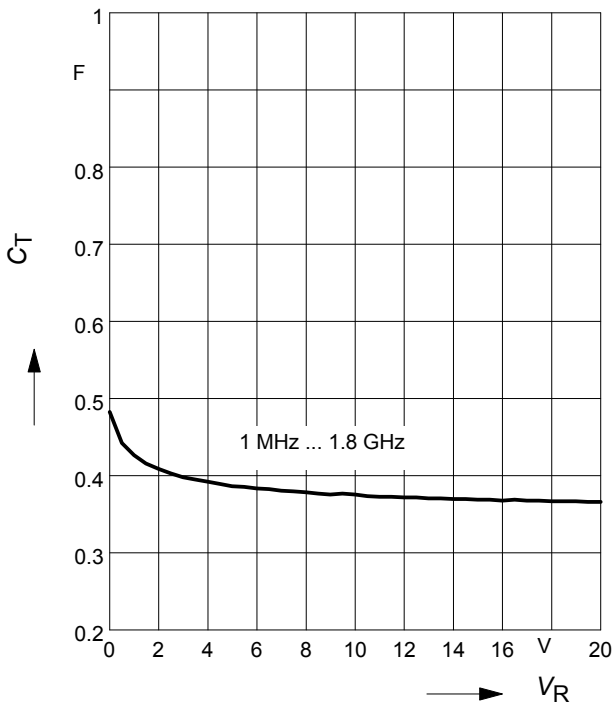
Configuration of the shunt-diode

- A perfect ground is essential for optimum isolation
- The anode pins should be used as passage for RF


¹For more information please refer to Application Note 049.

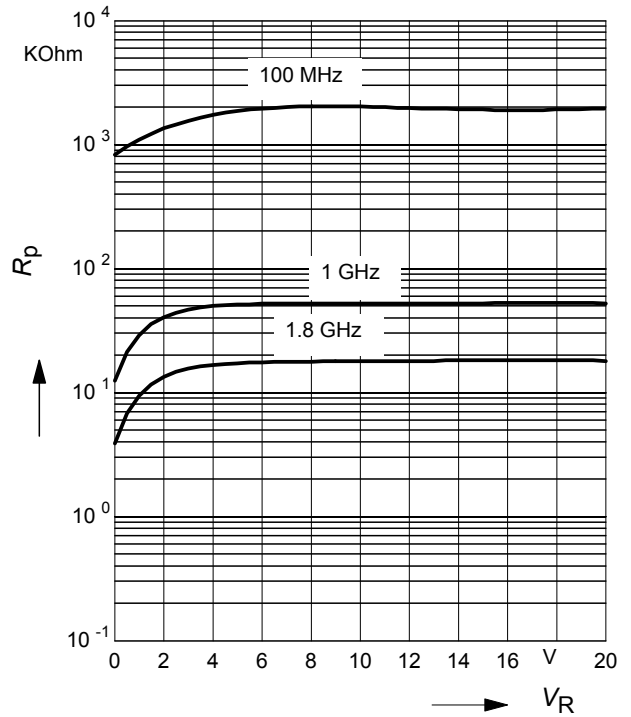
Diode capacitance $C_T = f(V_R)$

$f = \text{Parameter}$



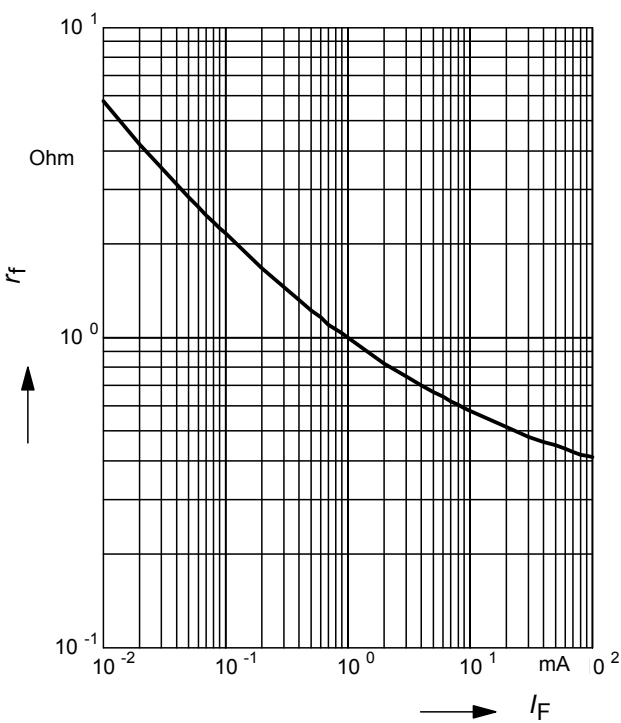
Reverse parallel resistance $R_p = f(V_R)$

$f = \text{Parameter}$



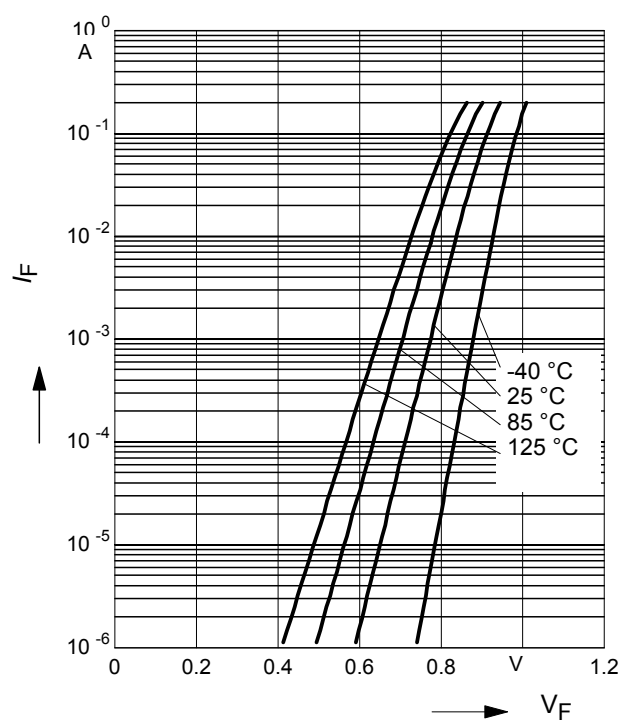
Forward resistance $r_f = f(I_F)$

$f = 100\text{MHz}$



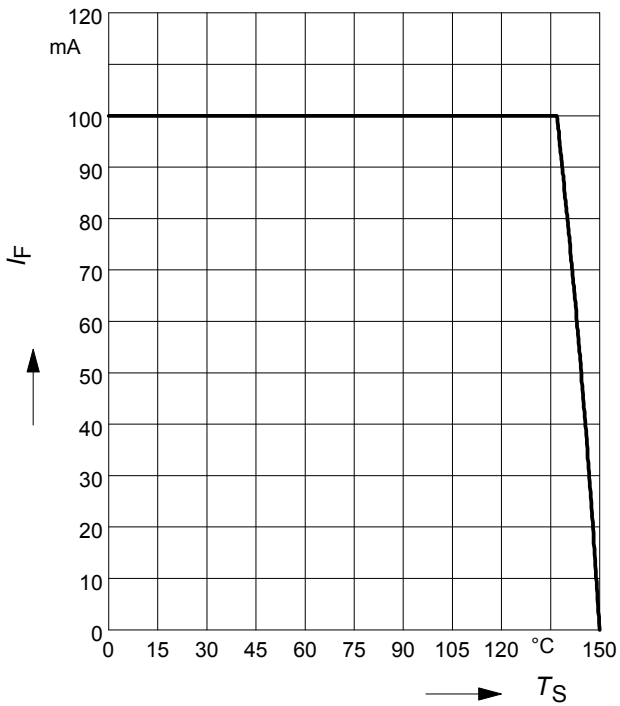
Forward current $I_F = f(V_F)$

$T_A = \text{Parameter}$



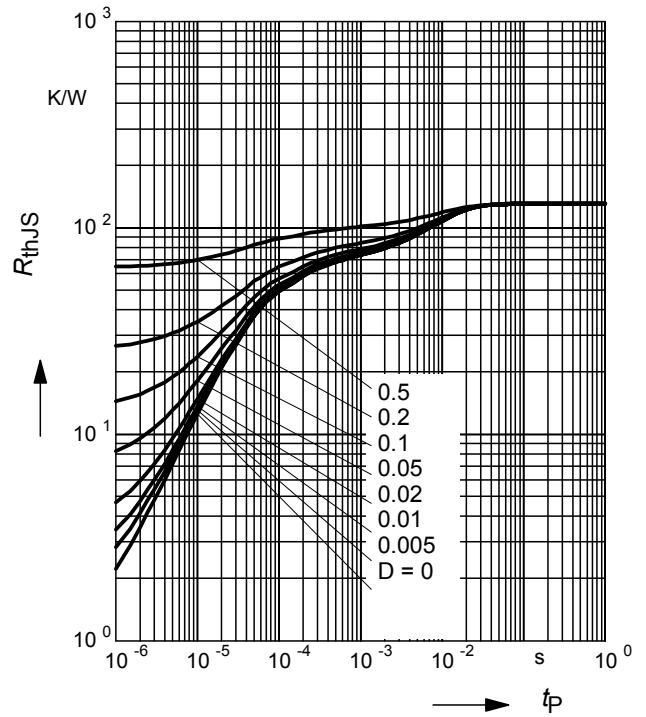
Forward current $I_F = f(T_S)$

BAR81W



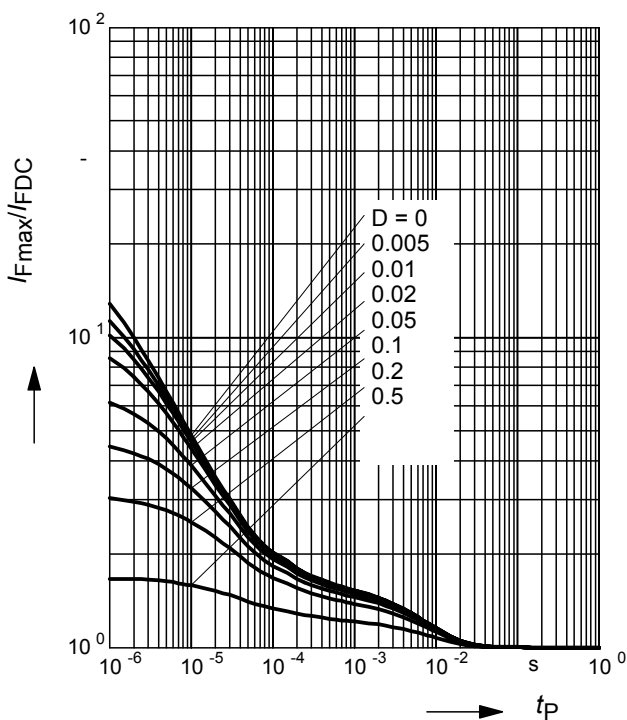
Permissible Puls Load $R_{thJS} = f(t_p)$

BAR81W



Permissible Pulse Load

$I_{Fmax}/I_{FDC} = f(t_p)$ BAR81W





LittleDiode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

LittleDiode.com

Looking forward to providing you with the best possible service.