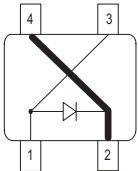


**Silicon RF Switching Diode**

- 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
- Pb-free (RoHS compliant) package


**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 $T_S \leq 138^\circ\text{C}$	$P_{\text{tot}}$	100	mW
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>	$R_{\text{thJS}}$	$\leq 120$	K/W

<sup>1)</sup>For calculation of  $R_{\text{thJA}}$  please refer to Application Note Thermal Resistance

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

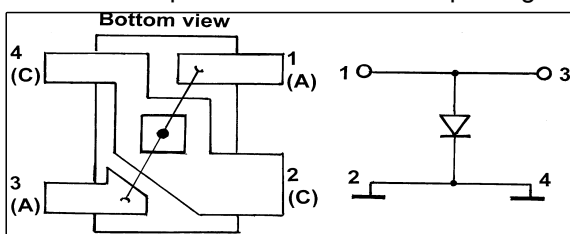
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC Characteristics</b>					
Reverse current $V_R = 20\text{ V}$	$I_R$	-	-	20	nA
Forward voltage $I_F = 100\text{ mA}$	$V_F$	-	0.93	1	V

**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	1	pF
Forward resistance $I_F = 5\text{ mA}, f = 100\text{ MHz}$	$r_f$	-	0.7	1	$\Omega$
Charge carrier life time $I_F = 10\text{ mA}, I_R = 6\text{ mA}$ , measured at $I_R = 3\text{ mA}$ , $R_L = 100\ \Omega$	$\tau_{rr}$	-	80	-	ns
I-region width	$W_I$	-	3.5	-	$\mu\text{m}$
Shunt Insertion loss <sup>1)</sup> $I_F = 10\text{ mA}, f = 1.89\text{ GHz}$	$I_L$	-	30	-	dB
Shunt isolation <sup>1)</sup> $V_R = 3\text{ V}, f = 1.89\text{ GHz}$	$I_{SO}$	-	0.7	-	

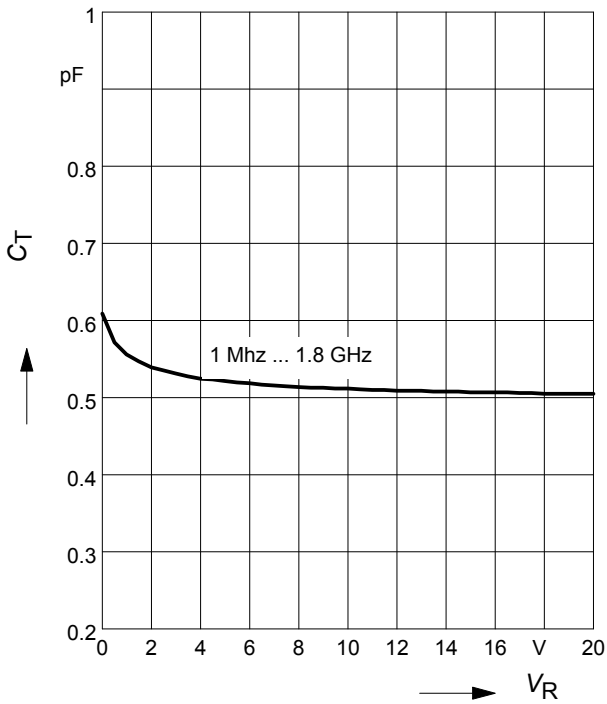
**Configuration of the shunt-diode**

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


<sup>1</sup>For more information please refer to Application Note 049.

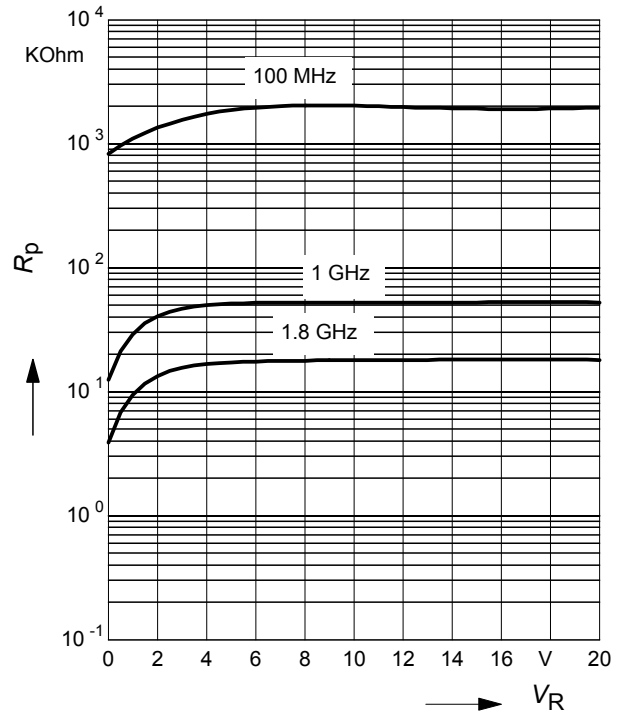
**Diode capacitance  $C_T = f(V_R)$**

$f = \text{Parameter}$



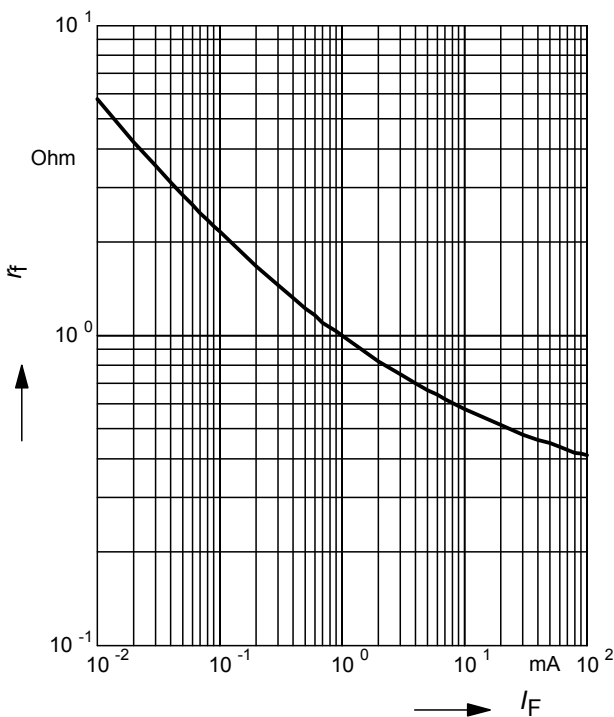
**Reverse parallel resistance  $R_P = f(V_R)$**

$f = \text{Parameter}$



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

$f = 100\text{MHz}$



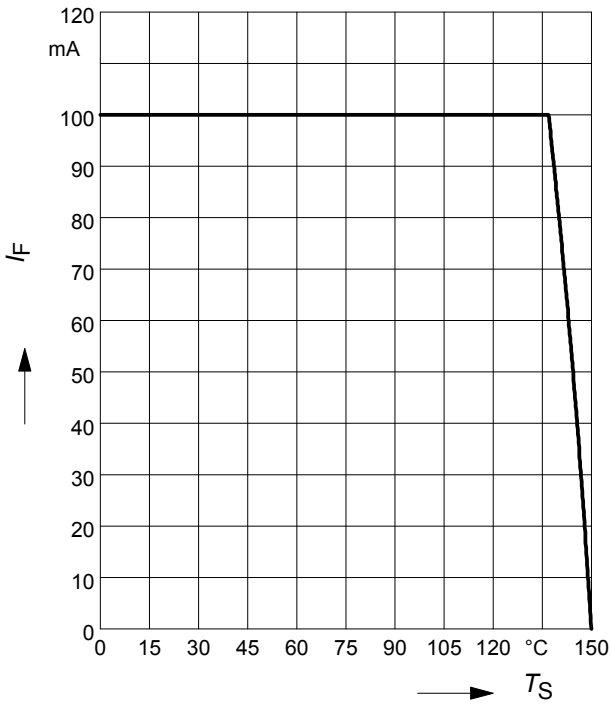
**Forward current  $I_F = f(V_F)$**

$T_A = \text{Parameter}$



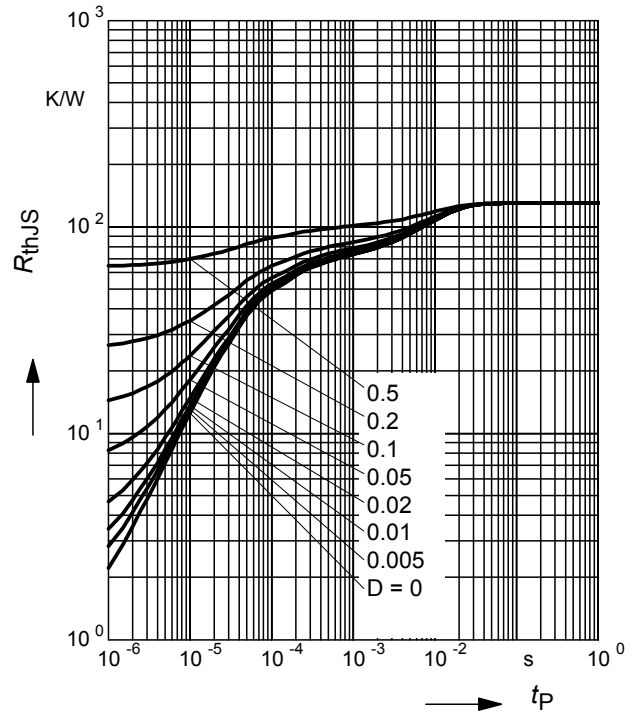
**Forward current  $I_F = f(T_S)$**

BAR81W



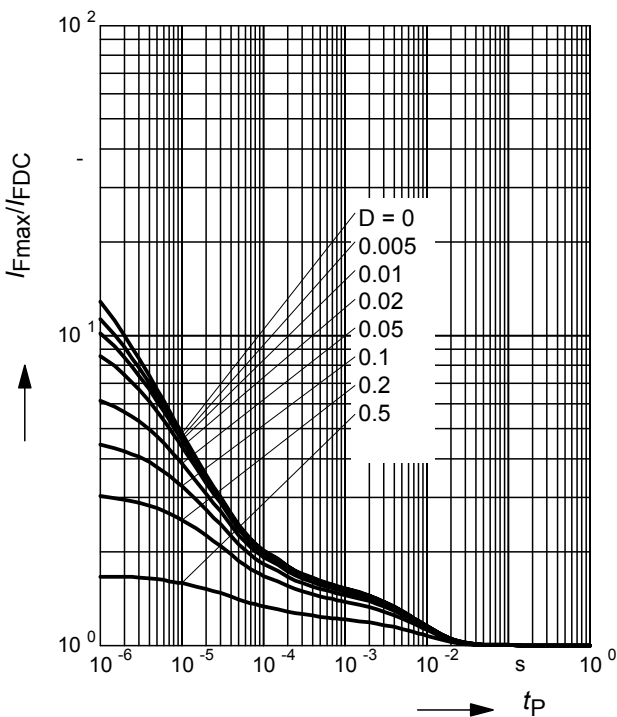
**Permissible Puls Load  $R_{thJS} = f(t_p)$**

BAR81W

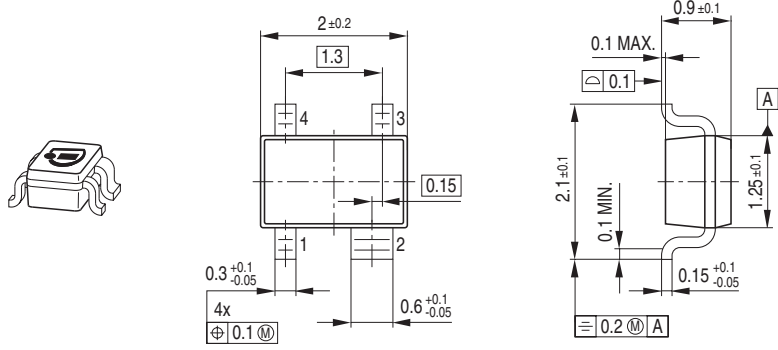


**Permissible Pulse Load**

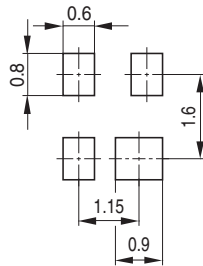
$I_{Fmax} / I_{FDC} = f(t_p)$  BAR81W



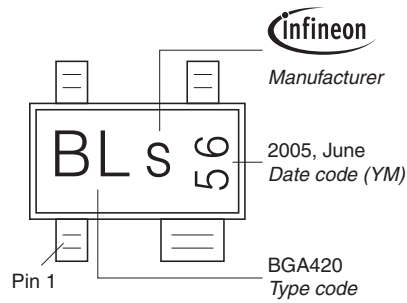
Package Outline



Foot Print

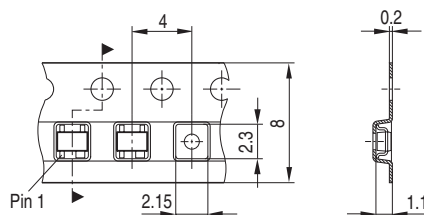


Marking Layout (Example)



Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel  
 Reel ø330 mm = 10.000 Pieces/Reel



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