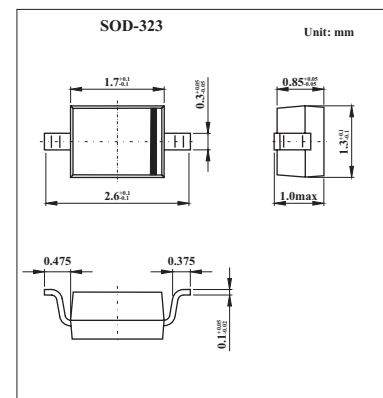


Silicon PIN Diodes

BAR50-03W

■ Features

- Current-controlled RF resistor for switching and attenuating applications
- Frequency range above 10 MHz up to 6 GHz
- Especially useful as antenna switch in mobile communication
- Very low capacitance at zero volt reverse bias at frequencies above 1 GHz (typ. 0.15 pF)
- VLow forward resistance
- Very low harmonics

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Value	Unit
Diode reverse voltage	V_R	50	V
Forward current	I_F	100	mA
Total power dissipation $T_s \leq 116^\circ\text{C}$	P_{tot}	250	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Operating temperature range	T_{op}	-55 to +125	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to +150	$^\circ\text{C}$
Junction - soldering point ¹⁾	R_{thJS}	≤ 135	K/W

BAR50-03W

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse current	I_R	$V_R = 50\text{ V}$			50	nA
Forward voltage	V_F	$I_F = 50\text{ mA}$		0.95	1.1	V
Diode capacitance	C_T	$V_R = 1\text{ V}, f = 1\text{ MHz}$		0.24	0.5	pF
		$V_R = 5\text{ V}, f = 1\text{ MHz}$		0.2	0.4	
		$V_R = 0\text{ V}, f = 100\text{ MHz}$		0.2		
		$V_R = 0\text{ V}, f = 1 \dots 1.8\text{ GHz}, \text{ all other}$		0.15		
Reverse parallel resistance	R_p	$V_R = 0\text{ V}, f = 100\text{ MHz}$		25		K Ω
		$V_R = 0\text{ V}, f = 1\text{ GHz}$		6		
		$V_R = 0\text{ V}, f = 1.8\text{ GHz}$		5		
Forward resistance	r_f	$I_F = 0.5\text{ mA}, f = 100\text{ MHz}$		25	40	Ω
		$I_F = 1\text{ mA}, f = 100\text{ MHz}$		16.5	25	
		$I_F = 10\text{ mA}, f = 100\text{ MHz}$		3	4.5	
Charge carrier life time	τ_{rr}	$I_F = 10\text{ mA}, I_R = 6\text{ mA}, \text{ measured at}$ $I_R = 3\text{ mA}, R_L = 100\ \Omega$		1100		ns
l-region width	W_l			56		μm
Insertion loss	$ S_{21} ^2$	$I_F = 3\text{ mA}, f = 1.8\text{ GHz}$		-0.56		dB
		$I_F = 5\text{ mA}, f = 1.8\text{ GHz}$		-0.4		
		$I_F = 18\text{ mA}, f = 1.8\text{ GHz}$		-0.27		
Isolation	$ S_{21} ^2$	$V_R = 0\text{ V}, f = 0.9\text{ GHz}$		-24.5		dB
		$V_R = 0\text{ V}, f = 1.8\text{ GHz}$		-20		
		$V_R = 0\text{ V}, f = 2.45\text{ GHz}$		-18		
		$V_R = 0\text{ V}, f = 5.6\text{ GHz}$		-12		

■ Marking

Marking	blue A
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