

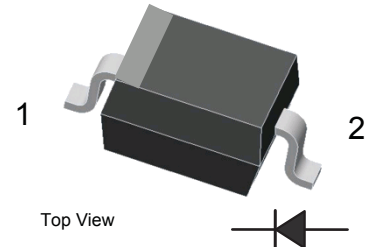
Low-leakage Diode

BAS416

■ Features

- Plastic SMD package
- Low leakage current: typ. 3 pA
- Switching time: typ. 0.8 μ s
- Continuous reverse voltage: max. 75 V
- Repetitive peak reverse voltage: max. 85 V
- Repetitive peak forward current: max. 500 mA.

SOD-323



PIN DESCRIPTION

PIN	DESCRIPTION
1	Cathode
2	Anode

■ Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Rating	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	85	V
Continuous Reverse Voltage	V_R	75	
Continuous Forward Current (see Fig.1)	I_F	200	mA
Repetitive Peak Forward Current	I_{FRM}	500	
Non-Repetitive Peak Forward Current (Square Wave, $T_J = 25^\circ\text{C}$ prior to surge, see Fig.3)	I_{FSM}	4	A
$t = 1 \mu\text{s}$		1	
$t = 1 \text{ ms}$		0.5	
Total Device Dissipation (Note 1)	P_{tot}	250	mW
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	450	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature range	T_{stg}	-55 to 150	

Note 1. Device mounted on an FR4 printed-circuit board.

■ Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward voltage (see Fig.2)	V_{F1}	$I_F = 1 \text{ mA}$			0.9	V
	V_{F2}	$I_F = 10 \text{ mA}$			1	
	V_{F3}	$I_F = 50 \text{ mA}$			1.1	
	V_{F4}	$I_F = 150 \text{ mA}$			1.25	
Reverse voltage leakage current (see Fig.4)	I_{R1}	$V_R = 75 \text{ V}$		0.003	5	nA
	I_{R2}	$V_R = 75 \text{ V}, T_J = 150^\circ\text{C}$		3	80	
Diode Capacitance (see Fig.5)	C_D	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$		2		pF
Reverse recovery time (see Fig.6)	t_{rr}	when switched from $I_F = 10 \text{ mA}$ to $I_R = 10 \text{ mA}; R_L = 100 \Omega$; measured at $I_R = 1 \text{ mA}$;		0.8	3	μs

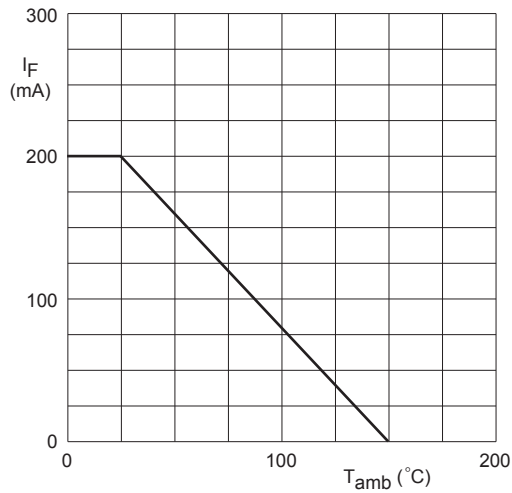
■ Marking

Marking	D4
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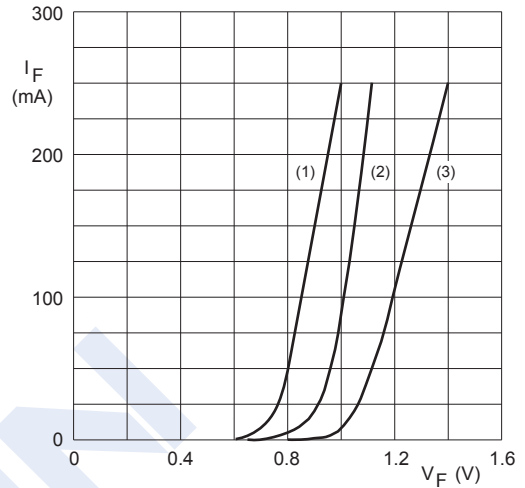
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■ Typical Characteristics



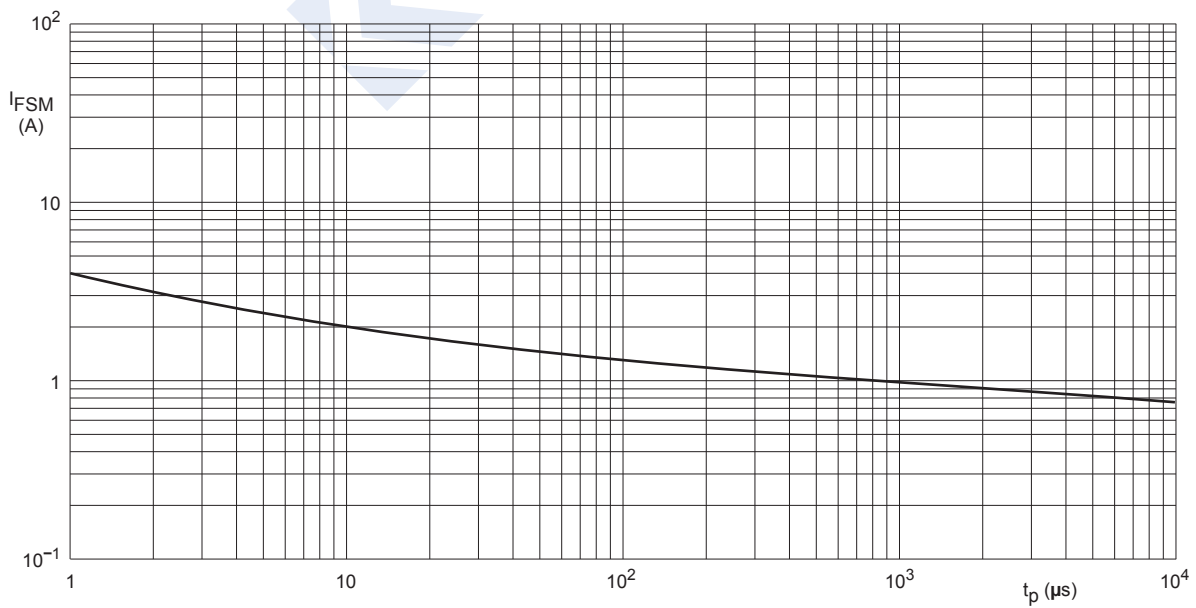
Device mounted on an FR4 printed-circuit board.

Fig.1 Maximum permissible continuous forward current as a function of ambient temperature.



- (1) $T_j = 150$ °C; typical values.
- (2) $T_j = 25$ °C; typical values.
- (3) $T_j = 25$ °C; maximum values.

Fig.2 Forward current as a function of forward voltage.

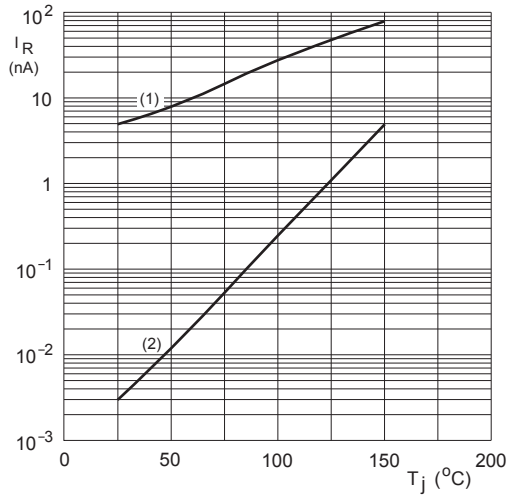


Based on square wave currents.
 $T_j = 25$ °C prior to surge.

Fig.3 Maximum permissible non-repetitive peak forward current as a function of pulse duration.

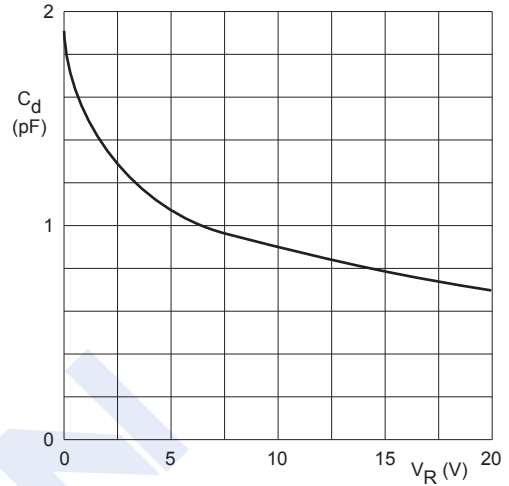
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BAS416



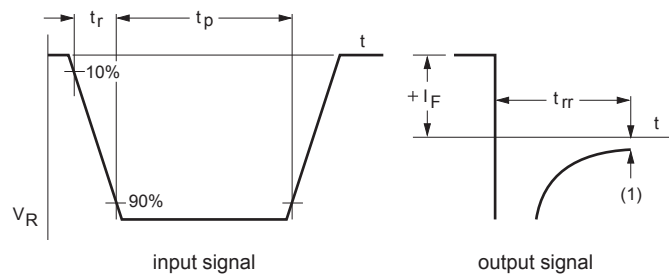
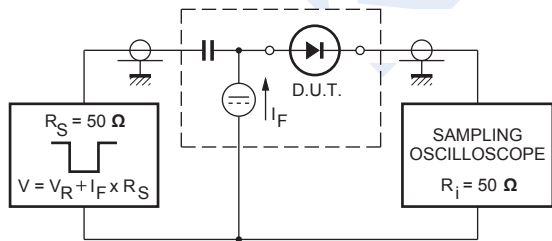
$V_R = 75\text{ V}$.
 (1) Maximum values.
 (2) Typical values.

Fig.4 Reverse current as a function of junction temperature.



$f = 1\text{ MHz}$; $T_j = 25\text{ }^\circ\text{C}$.

Fig.5 Diode capacitance as a function of reverse voltage; typical values.



(1) $I_R = 1\text{ mA}$.
 Input signal: reverse pulse rise time $t_r = 0.6\text{ ns}$; reverse voltage pulse duration $t_p = 100\text{ ns}$; duty factor $\delta = 0.05$;
 Oscilloscope: rise time $t_r = 0.35\text{ ns}$.

Fig.6 Reverse recovery voltage test circuit and waveforms.

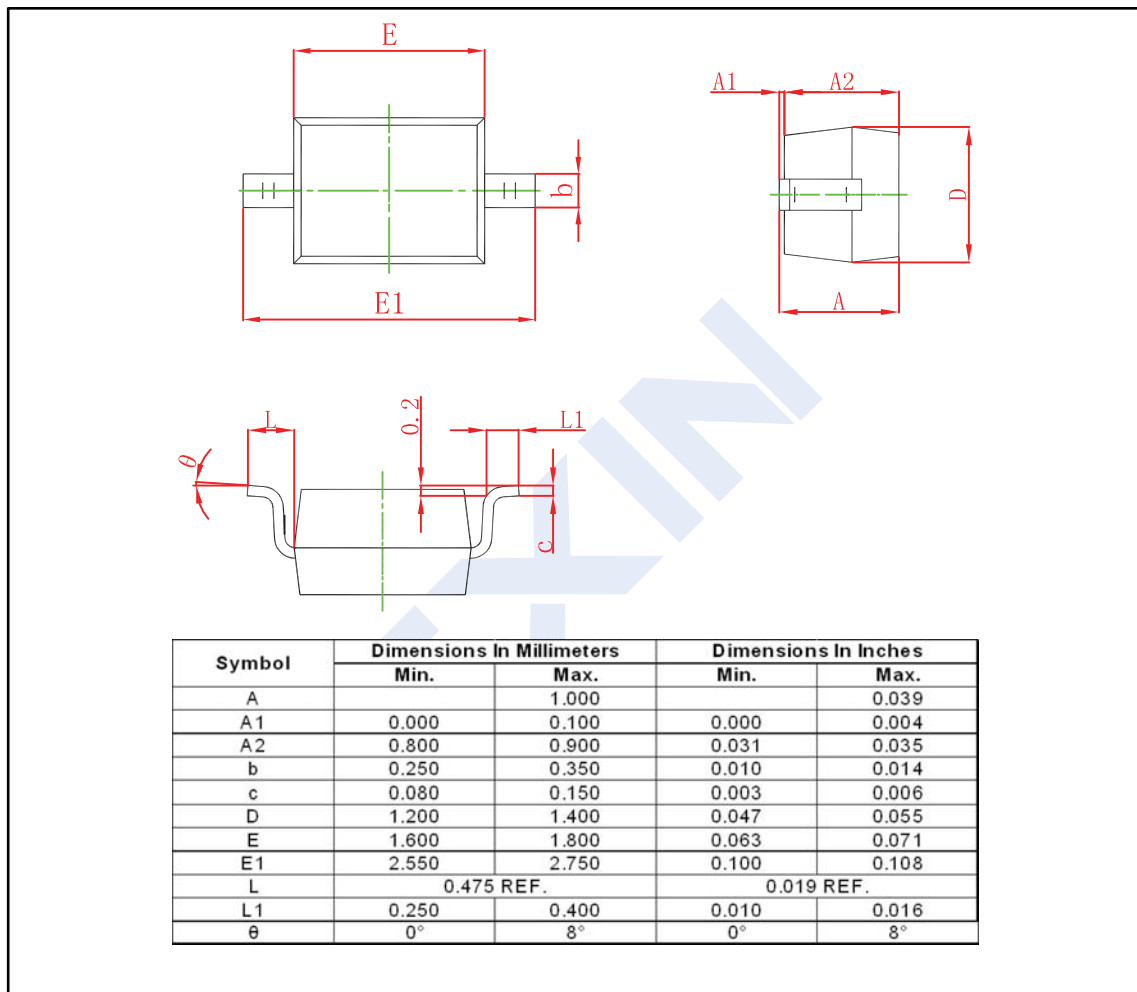
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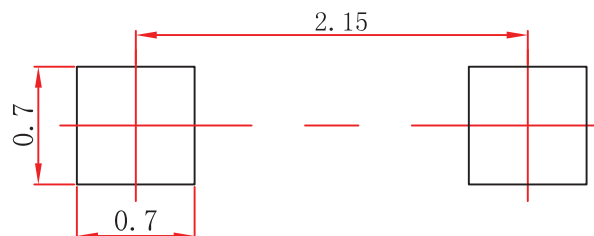
■ Package Outline Dimensions

Plastic surface mounted package; 2 leads

SOD-323



■ The Recommended Mounting Pad Size

**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.