

## Low-leakage double diode

### FEATURES

- Plastic SMD package
- Low leakage current: typ. 3 pA
- Switching time: typ. 0.8  $\mu$ s
- Continuous reverse voltage: max. 75 V
- Repetitive peak reverse voltage: max. 85 V
- Repetitive peak forward current: max. 500 mA.
- P/N suffix V means AEC-Q101 qualified, e.g: BAS416V
- P/N suffix V means Halogen-free

### APPLICATION

- Low-leakage current applications in surface mounted circuits.



### DESCRIPTION

Epitaxial, medium-speed switching, double diode in a small SOD323 plastic SMD package. The diodes are connected in series.

### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
<b>Per diode</b>					
$V_{RRM}$	repetitive peak reverse voltage		–	85	V
$V_R$	continuous reverse voltage		–	75	V
$I_F$	continuous forward current	single diode loaded; note 1; see Fig.2	–	160	mA
		double diode loaded; note 1; see Fig.2	–	140	mA
$I_{FRM}$	repetitive peak forward current		–	500	mA
$I_{FSM}$	non-repetitive peak forward current	square wave; $T_j = 25\text{ }^\circ\text{C}$ prior to surge; see Fig.4			
		$t_p = 1\text{ }\mu\text{s}$	–	4	A
		$t_p = 1\text{ ms}$	–	1	A
		$t_p = 1\text{ s}$	–	0.5	A
$P_{tot}$	total power dissipation	$T_{amb} = 25\text{ }^\circ\text{C}$ ; note 1	–	250	mW
$T_{stg}$	storage temperature		–65	+150	$^\circ\text{C}$
$T_j$	junction temperature		–	150	$^\circ\text{C}$

### Note

1. Device mounted on a FR4 printed-circuit board.

**ELECTRICAL CHARACTERISTICS**  $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
<b>Per diode</b>					
$V_F$	forward voltage	see Fig.3			
		$I_F = 1\text{ mA}$	–	900	mV
		$I_F = 10\text{ mA}$	–	1 000	mV
		$I_F = 50\text{ mA}$	–	1 100	mV
		$I_F = 150\text{ mA}$	–	1 250	mV
$I_R$	reverse current	see Fig.5			
		$V_R = 75\text{ V}$	0.003	5	nA
		$V_R = 75\text{ V}; T_j = 150\text{ }^\circ\text{C}$	3	80	nA
$C_d$	diode capacitance	$f = 1\text{ MHz}; V_R = 0$ ; see Fig.6	2	–	pF
$t_{rr}$	reverse recovery time	when switched from $I_F = 10\text{ mA}$ to $I_R = 10\text{ mA}; R_L = 100\text{ }\Omega$ ; measured at $I_R = 1\text{ mA}$ ; see Fig.7	0.8	3	$\mu\text{s}$

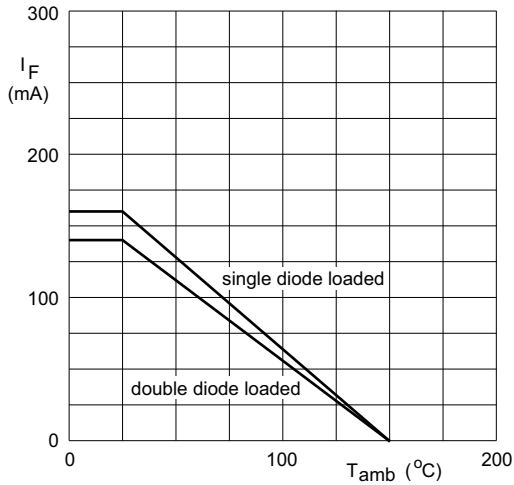
**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point		360	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	500	K/W

**Note**

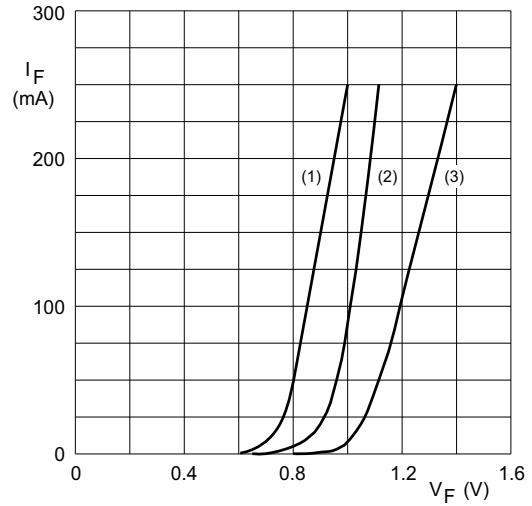
1. Device mounted on a FR4 printed-circuit board.

## RATING AND CHARACTERISTICS CURVES (BAS416)



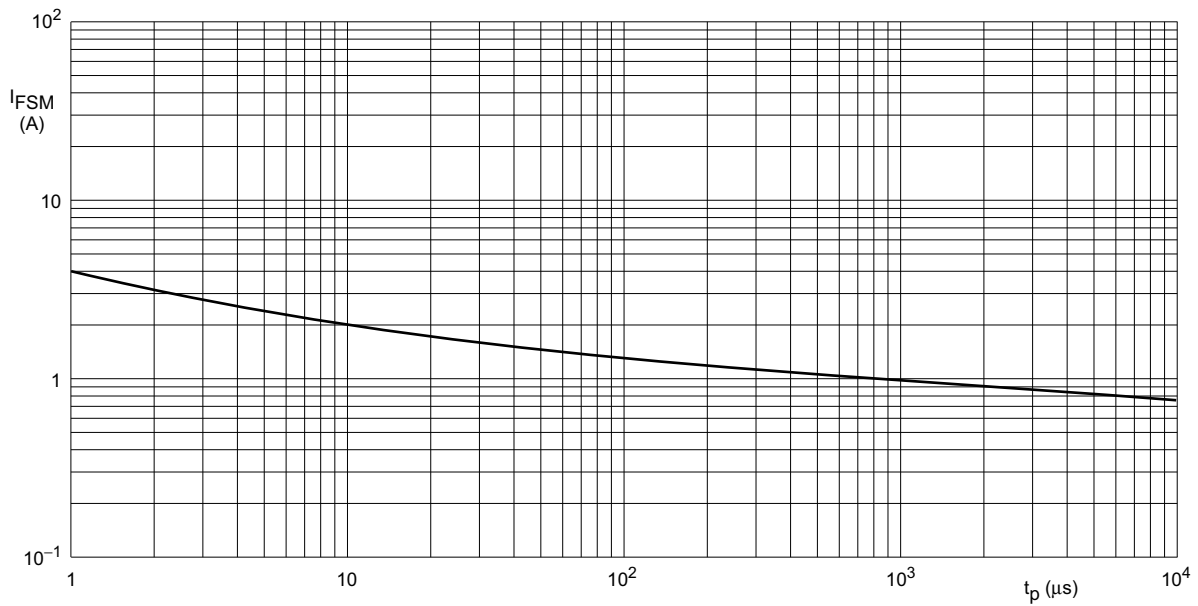
Device mounted on a FR4 printed-circuit board.

Fig.2 Maximum permissible continuous forward current as a function of ambient temperature.



- (1)  $T_j = 150\text{ }^\circ\text{C}$ ; typical values.
- (2)  $T_j = 25\text{ }^\circ\text{C}$ ; typical values.
- (3)  $T_j = 25\text{ }^\circ\text{C}$ ; maximum values.

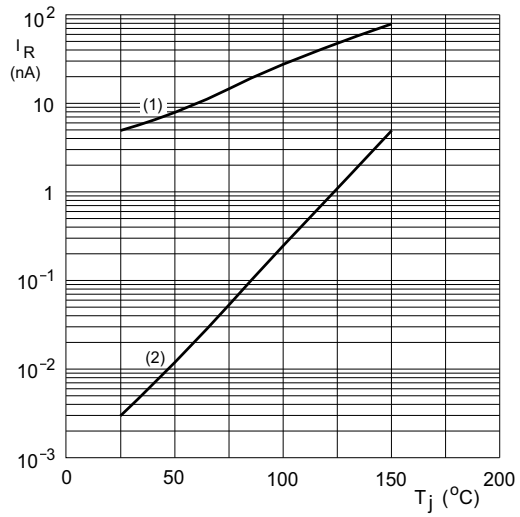
Fig.3 Forward current as a function of forward voltage; per diode.



Based on square wave currents;  $T_j = 25\text{ }^\circ\text{C}$  prior to surge.

Fig.4 Maximum permissible non-repetitive peak forward current as a function of pulse duration per diode.

## RATING AND CHARACTERISTICS CURVES (BAS416)

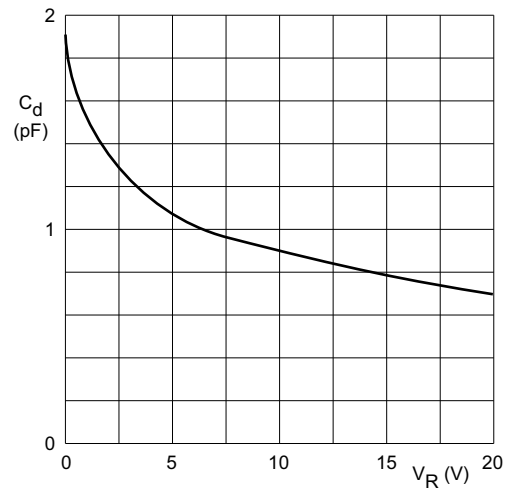


$V_R = 75 \text{ V}$ .

(1) Maximum values.

(2) Typical values.

Fig.5 Reverse current as a function of junction temperature; per diode.

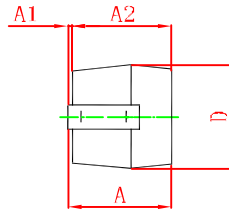
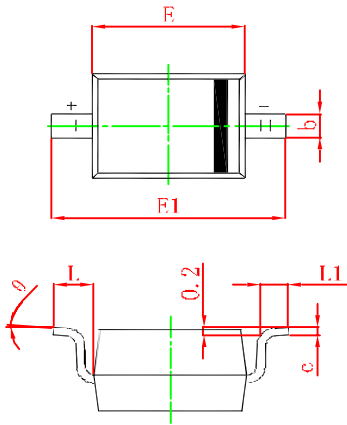


$f = 1 \text{ MHz}$ ;  $T_j = 25 \text{ }^{\circ}\text{C}$ .

Fig.6 Diode capacitance as a function of reverse voltage; per diode; typical values.

**SOD-323 PACKAGE OUTLINE**  
**SOD-323**

Plastic surface mounted package



Symbol	Min.(mm)	Max.(mm)
A		1.000
A1	0.000	0.100
A2	0.800	0.900
b	0.250	0.350
c	0.080	0.150
D	1.200	1.400
E	1.600	1.800
E1	2.500	2.700
L	0.475REF	
L1	0.250	0.400
θ	0°	8°

## PACKAGING OF DIODE AND BRIDGE RECTIFIERS

### REEL PACK

PACKAGE	PACKING CODE	EA PER REEL	EA PER INNER BOX	COMPONENT SPACE (mm)	TAPE SPACE (mm)	REEL DIA (mm)	CARTON SIZE (mm)	EA PER CARTON	GROSS WEIGHT(Kg)
SOD-323	-T	3,000	15,000	---	---	178	390*205*31	120,000	5.17

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