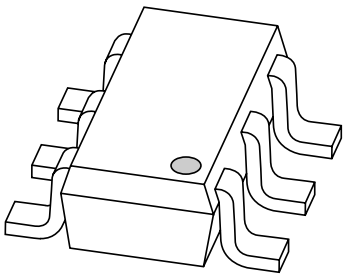
DATA SHEET



BAS21VD
High-voltage switching diode array

Product specification

2003 Jul 02

Philips
Semiconductors

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High-voltage switching diode array BAS21VD

FEATURES

- Small plastic SMD package
- Switching speed: max. 50 ns
- Continuous reverse voltage: max. 200 V
- Repetitive peak reverse voltage: max. 250 V
- Repetitive peak forward current: max. 1 A.

APPLICATIONS

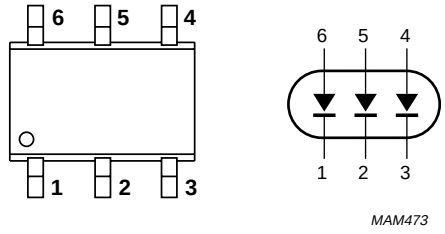
- High-voltage switching in surface mounted circuits
- Automotive
- Communication.

DESCRIPTION

The BAS21VD is a high-voltage diode array fabricated in planar technology and encapsulated in a small SOT457 plastic SMD package.

PINNING

PIN	DESCRIPTION
1	cathode (k1)
2	cathode (k2)
3	cathode (k3)
4	anode (a3)
5	anode (a2)
6	anode (a1)



Marking code: B5.

Fig.1 Simplified outline (SOT457) and symbol.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
V_{RRM}	repetitive peak reverse voltage		–	250	V
V_R	continuous reverse voltage		–	200	V
I_F	continuous forward current	note 1; see Fig.2	–	200	mA
I_{FRM}	repetitive peak forward current	t = 1 ms; δ = 25%	–	1	A
I_{FSM}	non-repetitive peak forward current	square wave; T_j = 25 °C prior to surge; see Fig.4			
		t = 10 μs	–	16	A
		t = 100 μs	–	8	A
		t = 10 ms	–	2	A
P_{tot}	total power dissipation	T_{amb} = 25 °C; note 1	–	250	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C

Note

1. Pulse test: t_p = 300 μs; δ = 0.02.

ELECTRICAL CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	TYP.	UNIT
Per diode					
V_F	forward voltage	see Fig.3			
		I_F = 100 mA	–	1	V
		I_F = 200 mA	–	1.25	V
I_R	reverse current	V_R = 200 V; note 1; see Fig.5	25	100	nA
		V_R = 200 V; T_j = 150 °C; note 1	–	100	μA
C_d	diode capacitance	f = 1 MHz; V_R = 0; see Fig.6	0.6	5	pF
t_{rr}	reverse recovery time	when switched from I_F = 30 mA to I_R = 30 mA; R_L = 100 Ω; measured at I_R = 3 mA; see Fig.8	16	50	ns

Note

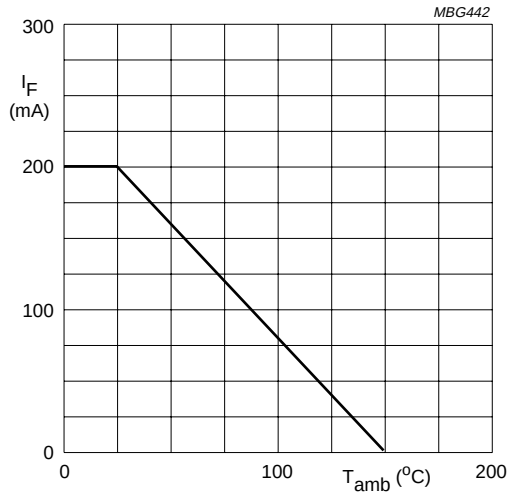
1. Pulse test: t_p = 300 μs; δ = 0.02.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	208	K/W

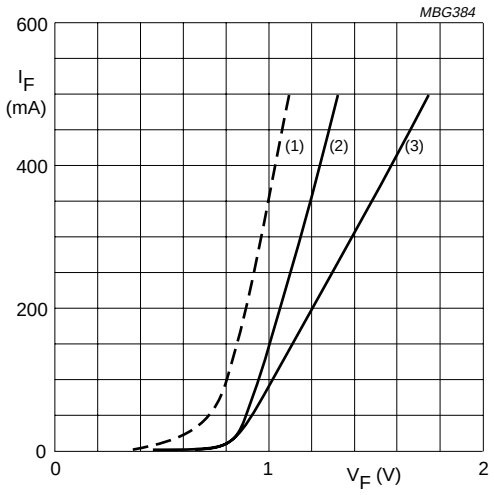
Note

1. Refer to SOT457 standard mounting conditions.



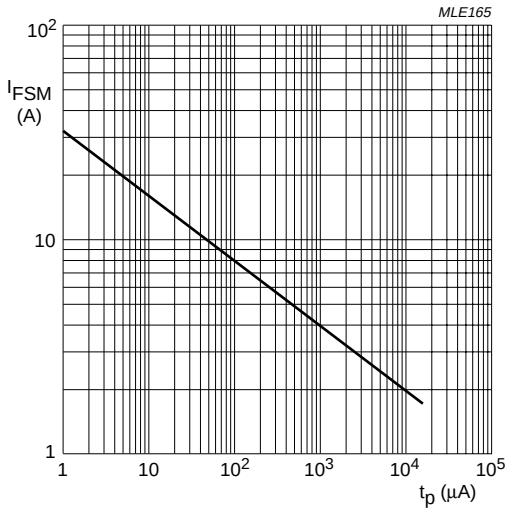
Device mounted on a FR4 printed-circuit board.

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



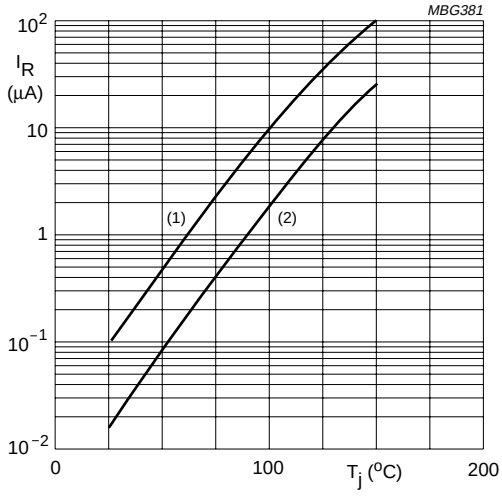
(1) T_j = 150 °C; typical values.
(2) T_j = 25 °C; typical values.
(3) T_j = 25 °C; maximum values.

Fig.3 Forward current as a function of a forward voltage.



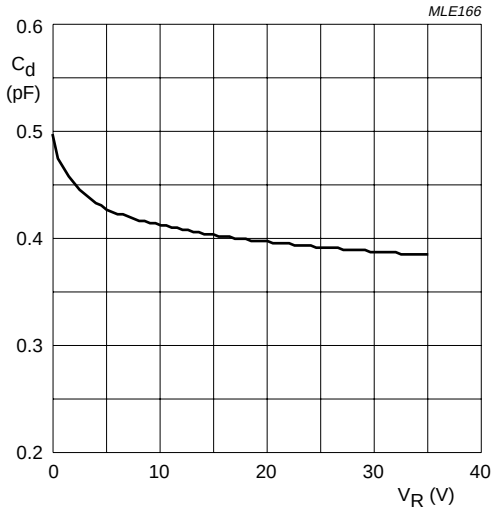
Based on square wave currents.
T_j = 25 °C prior to surge.

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



(1) $V_R = V_{Rmax}$; maximum values.
(2) $V_R = V_{Rmax}$; typical values.

Fig.5 Reverse current as a function of junction temperature.



f = 1 MHz; T_j = 25 °C.

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

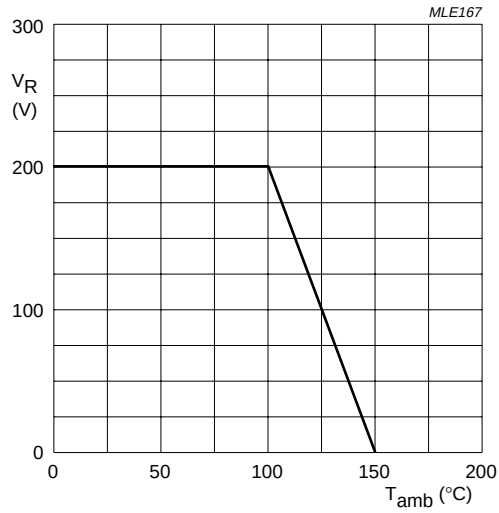
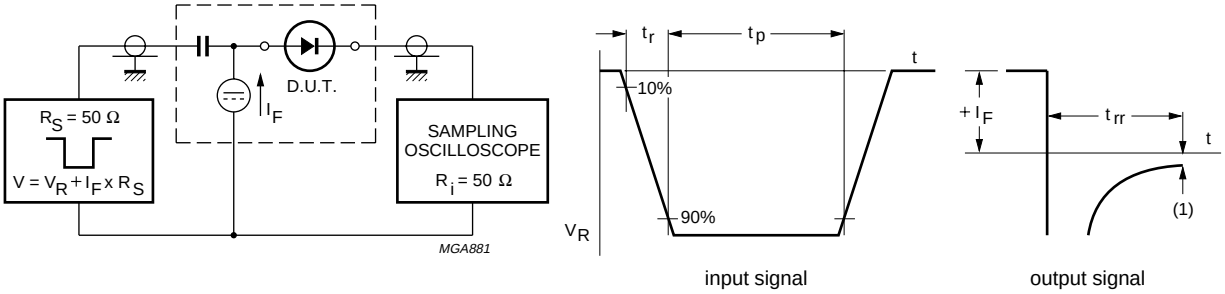


Fig.7 Maximum permissible continuous reverse voltage as a function of ambient temperature.

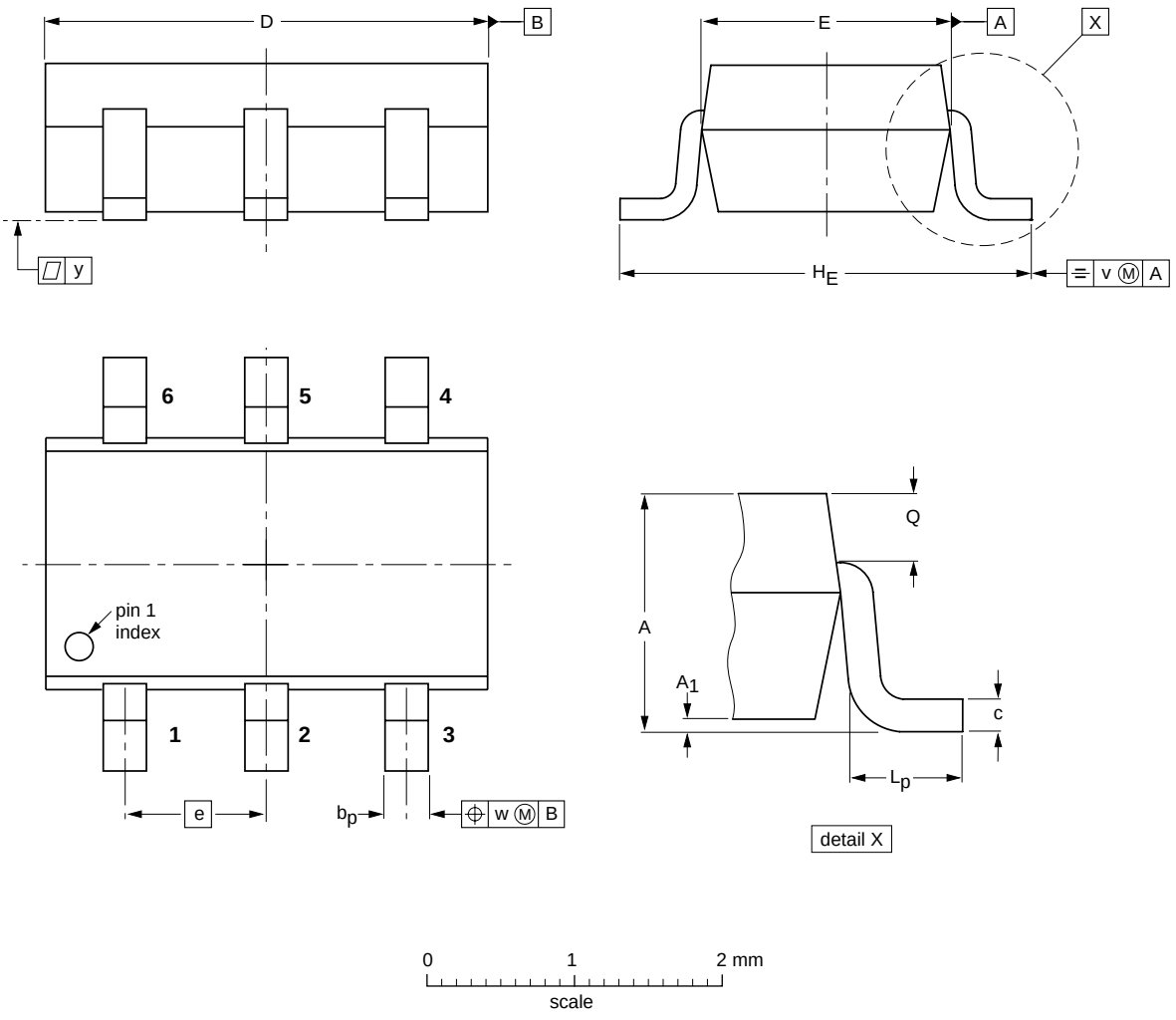


I_R = 3 mA.

Fig.8 Reverse recovery voltage test circuit and waveforms.

PACKAGE OUTLINE

Plastic surface mounted package; 6 leads **SOT457**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1	b_p	c	D	E	e	H_E	L_p	Q	v	w	y
mm	1.1 0.9	0.1 0.013	0.40 0.25	0.26 0.10	3.1 2.7	1.7 1.3	0.95	3.0 2.5	0.6 0.2	0.33 0.23	0.2	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT457			SC-74			~~97-02-28~~ 01-05-04

DATA SHEET STATUS

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