DATA SHEET

BAT56
Schottky barrier diode

Preliminary specification
File under Discrete Semiconductors, SC01

December 1993

Philips Semiconductors

PHILIPS

Schottky barrier diode BAT56

FEATURES

- Low leakage current
- Low turn-on and high breakdown voltage
- Ultra-fast switching speed.

DESCRIPTION

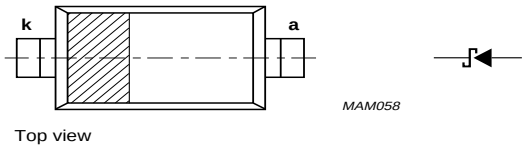
Silicon epitaxial Schottky barrier diode with an integrated guard ring for stress protection. Intended for high speed switching, circuit protection and voltage clamping applications.

The diode is encapsulated in a SOD123 SMD plastic package.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_R	continuous reverse voltage		60	V
I_F	continuous forward current		30	mA
V_F	forward voltage	I_F = 1 mA	410	mV
I_R	reverse current	V_R = 60 V	200	nA
T_j	junction temperature		150	°C
C_d	diode capacitance	V_R = 1 V	1.6	pF

PIN CONFIGURATION



Top view

Fig.1 Simplified outline (SOD123) and symbol.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_R	continuous reverse voltage		–	60	V
I_F	continuous forward current		–	30	mA
I_{FRM}	repetitive peak forward current	$t_p \leq 1$ s; $\delta \leq 0.5$	–	100	mA
I_{FSM}	non-repetitive peak forward current	$t_p < 10$ ms	–	250	mA
T_{stg}	storage temperature		–65	+150	°C
T_{amb}	operating ambient temperature		–65	+150	°C
T_j	junction temperature		–	150	°C

THERMAL RESISTANCE

SYMBOL	PARAMETER	THERMAL RESISTANCE
$R_{th\ j\text{-}a}$	from junction to ambient; note 1	500 K/W

Note

1. Printed-circuit board mounting (SOD123 standard conditions).

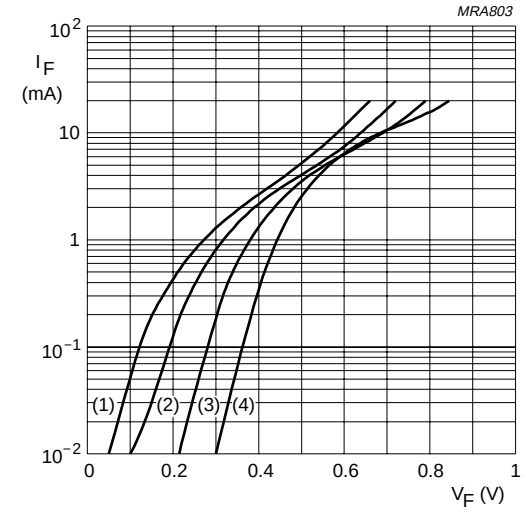
CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_F	forward voltage	I_F = 0.1 mA	–	330	mV
		I_F = 1 mA	–	410	mV
		I_F = 15 mA	–	1	V
$V_{(BR)R}$	reverse breakdown voltage	I_R = 10 µA	60	–	V
I_R	reverse current	V_R = 30 V; note 1	–	100	nA
		V_R = 60 V; note 1	–	200	nA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz	–	1.6	pF

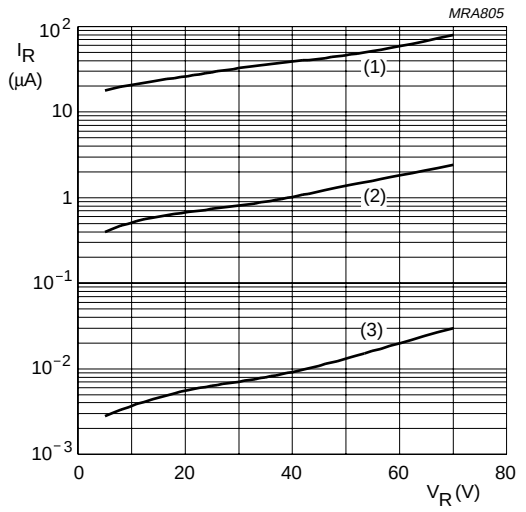
Note

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



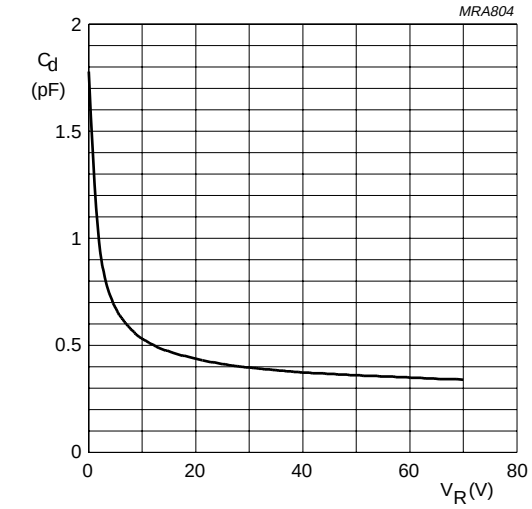
(1) T_{amb} = 125 °C.
(2) T_{amb} = 85 °C.
(3) T_{amb} = 25 °C.
(4) T_{amb} = –40 °C.

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



(1) T_{amb} = 150 °C.
(2) T_{amb} = 85 °C.
(3) T_{amb} = 25 °C.

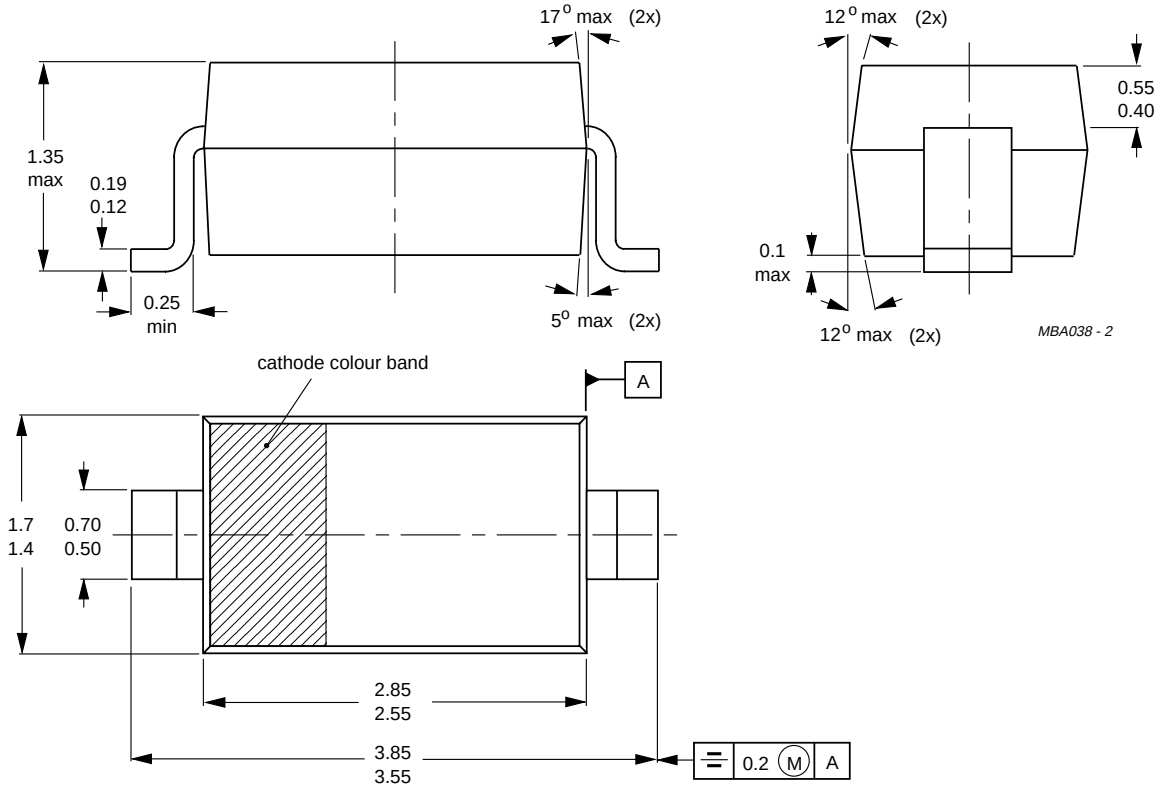
Fig.3 Reverse current as a function of reverse voltage.



f = 1 MHz.

Fig.4 Diode capacitance as a function of reverse voltage.

PACKAGE OUTLINE



Dimensions in mm.

Fig.5 SOD123.

DEFINITIONS

Data Sheet Status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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Philips Semiconductors – a worldwide company

Argentina: IEROD, Av. Juramento 1991 - 14.B, (1428) Buenos Aires,
Tel. (541)786 7633, Fax. (541)786 9367

Australia: 34 Waterloo Road, NORTH RYDE, NSW 2113,
Tel. (02)805 4455, Fax. (02)805 4466

Austria: Triester Str. 64, A-1101 WIEN, P.O. Box 213,
Tel. (01)60 101-1236, Fax. (01)60 101-1211

Belgium: Postbus 90050, 5600 PB EINDHOVEN, The Netherlands,
Tel. (31)40 783 749, Fax. (31)40 788 399

Brazil: Rua do Rocio 220 - 5th floor, Suite 51,
CEP: 04552-000-SÃO PAULO-SP, Brazil.
P.O. Box 7383 (01064-970).
Tel. (011)829-1166, Fax. (011)829-1849

Canada: INTEGRATED CIRCUITS:
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Tel. (571)217 4609, Fax. (01)217 4549

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Tel. (032)88 2636, Fax. (031)57 1949

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Tel. (9)0-50261, Fax. (9)0-520971

France: 4 rue du Port-aux-Vins, BP317,
92156 SURESNES Cedex,
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Tel. (040)3296-0, Fax. (040)3296 213

Greece: No. 15, 25th March Street, GR 17778 TAVROS,
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Hong Kong: 15/F Philips Ind. Bldg., 24-28 Kung Yip St.,
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India: PEICO ELECTRONICS & ELECTRICALS Ltd.,
Components Dept., Shivsagar Estate, Block 'A',
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Tel. (022)4938 541, Fax. (022)4938 722

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Netherlands: Postbus 90050, 5600 PB EINDHOVEN,
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New Zealand: 2 Wagener Place, C.P.O. Box 1041, AUCKLAND,
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Thailand: PHILIPS ELECTRONICS (THAILAND) Ltd.,
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Turkey: Talatpasa Cad. No. 5, 80640 LEVENT/ISTANBUL,
Tel. (01)279 2770, Fax. (01)269 3094

United Kingdom: Philips Semiconductors Limited, P.O. Box 65, Philips
House, Torrington Place, LONDON, WC1E 7HD,
Tel. (071)436 41 44, Fax. (071)323 03 42

United States: INTEGRATED CIRCUITS:
811 East Arques Avenue, SUNNYVALE, CA 94088-3409,
Tel. (800)234-7381, Fax. (708)296-8556
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Tel. (800)447-3762 and (407)881-3200, Fax. (407)881-3300

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For all other countries apply to: Philips Semiconductors,
International Marketing and Sales, Building BAF-1,
P.O. Box 218, 5600 MD, EINDHOVEN, The Netherlands,
Telex 35000 phtcnl, Fax. +31-40-724825

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