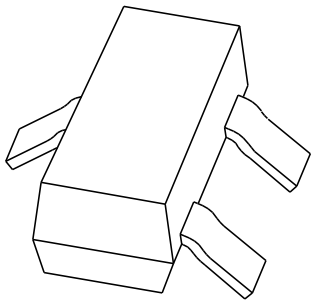
DATA SHEET



BAS40 series
Schottky barrier (double) diodes

Product specification
Supersedes data of October 1994
File under Discrete Semiconductors, SC01

1996 Mar 20

Philips
Semiconductors

PHILIPS

Schottky barrier (double) diodes BAS40 series

FEATURES

- Low forward voltage
- Guard ring protected
- Small SMD package
- Low diode capacitance.

APPLICATIONS

- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Blocking diodes.

DESCRIPTION

Planar Schottky barrier diodes encapsulated in a SOT23 small plastic SMD package. Single diodes and double diodes with different pinning are available.

MARKING

TYPE NUMBER	MARKING CODE
BAS40	43p
BAS40-04	44p
BAS40-05	45p
BAS40-06	46p

PINNING

PIN	BAS40			
		-04	-05	-06
1	a_1	a_1	a_1	k_1
2	n.c.	k_2	a_2	k_2
3	k_1	k_1, a_2	k_1, k_2	a_1, a_2

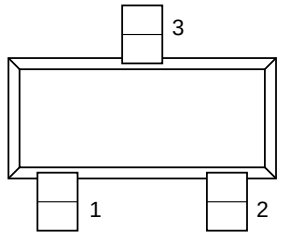


Fig.1 Simplified outline (SOT23) and pin configuration.

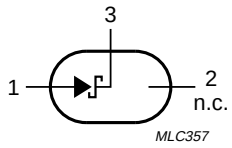


Fig.2 BAS40 single diode configuration (symbol).

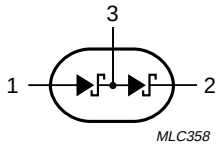


Fig.3 BAS40-04 diode configuration (symbol).

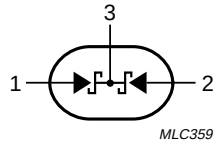


Fig.4 BAS40-05 diode configuration (symbol).

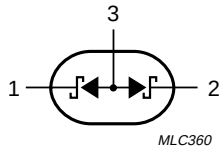


Fig.5 BAS40-06 diode configuration (symbol).

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
V_R	continuous reverse voltage		–	40	V
I_F	continuous forward current		–	120	mA
I_{FRM}	repetitive peak forward current	$t_p \leq 1$ s; $\delta \leq 0.5$	–	120	mA
I_{FSM}	non-repetitive peak forward current	$t_p < 10$ ms	–	200	mA
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
Per diode				
V_F	continuous forward voltage	see Fig.6		
		I_F = 1 mA	380	mV
		I_F = 10 mA	500	mV
		I_F = 15 mA	1	V
I_R	continuous reverse current	V_R = 30 V; note 1; see Fig.7	1	µA
		V_R = 40 V; note 1; see Fig.7	10	µA
τ	charge carrier life time	I_F = 5 mA; Krakauer method	100	ps
C_d	diode capacitance	V_R = 0 V; f = 1 MHz; see Fig.9	5	pF

Note

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

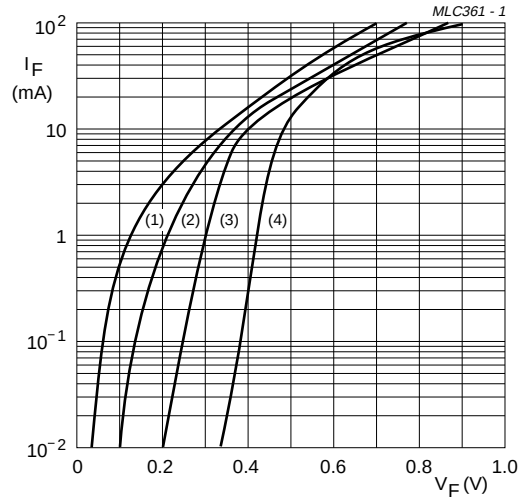
THERMAL CHARACTERISTICS

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

Note

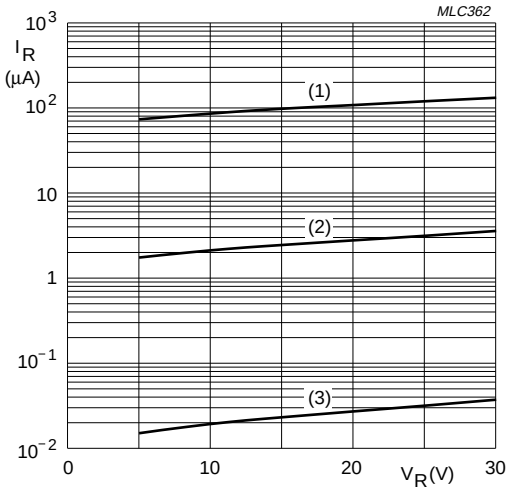
1. Refer to SOT23 standard mounting conditions.

GRAPHICAL DATA



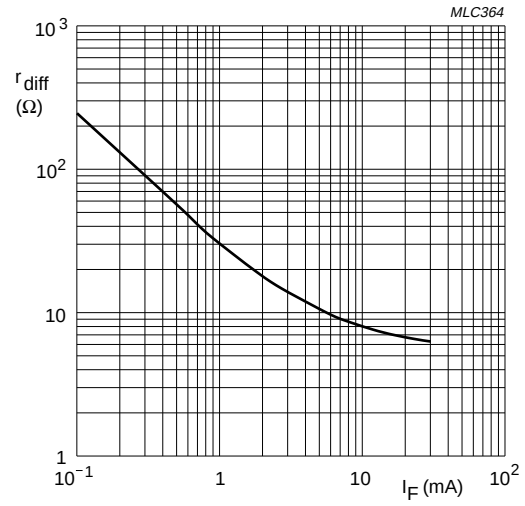
(1) T_{amb} = 150 °C.
(2) T_{amb} = 85 °C.
(3) T_{amb} = 25 °C.
(4) T_{amb} = –40 °C.

Fig.6 Forward current as a function of forward voltage; typical values.



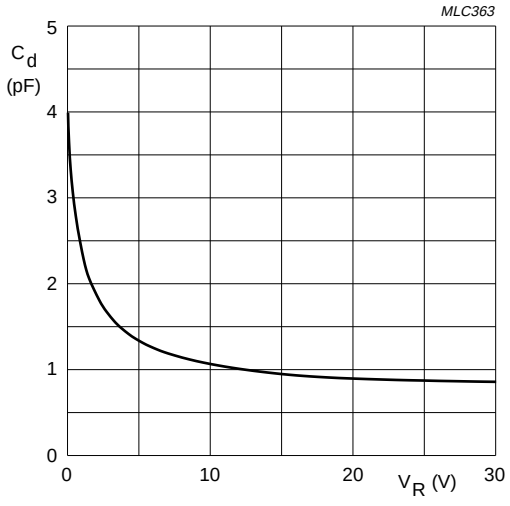
(1) T_{amb} = 150 °C.
(2) T_{amb} = 85 °C.
(3) T_{amb} = 25 °C.

Fig.7 Reverse current as a function of reverse voltage; typical values.



f = 10 KHz.

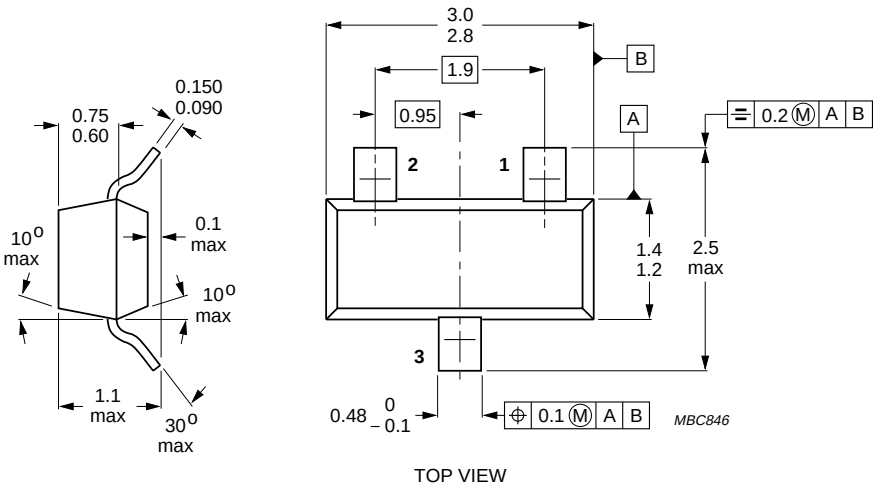
Fig.8 Differential forward resistance as a function of forward current; typical values.



f = 1 MHz; T_{amb} = 25 °C.

Fig.9 Diode capacitance as a function of reverse voltage; typical values.

PACKAGE OUTLINE



Dimensions in mm.

Fig.10 SOT23.

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.	

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.