Schottky barrier (double) diodes — BAS70 series

FEATURES

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

APPLICATIONS

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

DESCRIPTION

Planar Schottky barrier diodes with an integrated guard ring for stress protection. Single diodes and double diodes with different pinning are available.

The diodes BAS70, BAS70-04, BAS70-05 and BAS70-06 are encapsulated in a SOT23 small plastic SMD package. The BAS70-07 is encapsulated in a SOT143 small plastic SMD package.

MARKING

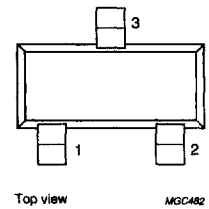
TYPE NUMBER	MARKING CODE
BAS70	73p
BAS70-04	74p
BAS70-05	75p
BAS70-06	76p
BAS70-07	77p

PINNING SOT143 (see Fig.2)

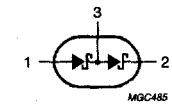
PIN	DESCRIPTION
BAS70-07	
1	k_1
2	k_2
3	a_2
4	a_1

PINNING SOT23 (see Fig.1a)

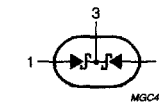
PIN	DESCRIPTION			
	BAS70 (see Fig.1b)	BAS70-04 (see Fig.1c)	BAS70-05 (see Fig.1d)	BAS70-06 (see Fig.1e)
1	a_1	a_1	a_1	k_1
2	n.c.	k_2	a_2	k_2
3	k_1	k_1, a_2	k_1, k_2	a_1, a_2



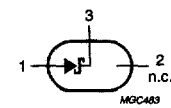
a. Simplified outline SOT23.



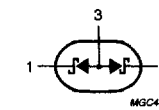
c. BAS70-04



d. BAS70-05.

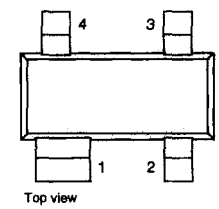


b. BAS70 single diode.



e. BAS70-06.

Fig.1 Simplified outline (SOT23) and symbols.



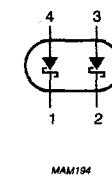


Fig.2 Simplified outline (SOT143) BAS70-07 and symbol.

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		–	70	V
I_F	continuous forward current		–	70	mA
I_{FRM}	repetitive peak forward current	$t_p \leq 1$ s; $\delta \leq 0.5$	–	70	mA
I_{FSM}	non-repetitive peak forward current	$t_p < 10$ ms	–	100	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	forward voltage	see Fig.3		
		I_F = 1 mA	410	mV
		I_F = 10 mA	750	mV
		I_F = 15 mA	1	V
I_R	reverse current	V_R = 50 V; note 1; see Fig.4	100	nA
		V_R = 70 V; note 1; see Fig.4	10	µA
τ	charge carrier life time (Krakauer method)	I_F = 5 mA	100	ps
C_d	diode capacitance	f = 1 MHz; V_R = 0 V; see Fig.6	2	pF

Note

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

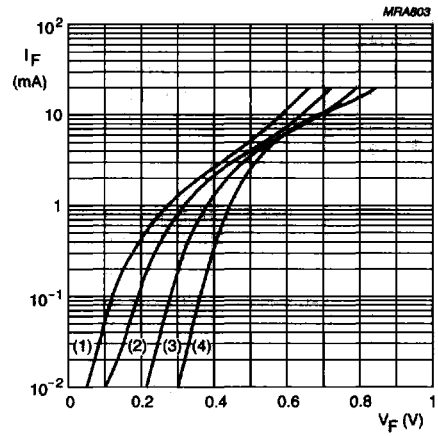
THERMAL CHARACTERISTICS

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

Note

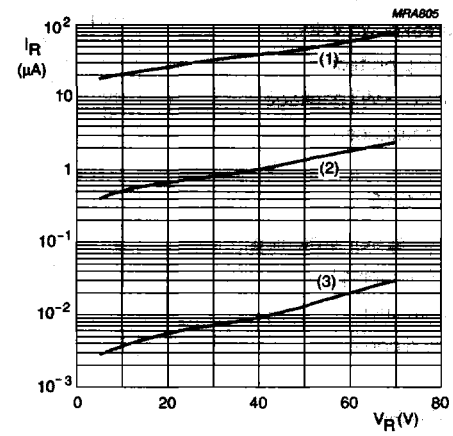
1. Refer to SOT23 or SOT143 standard mounting conditions.

GRAPHICAL DATA



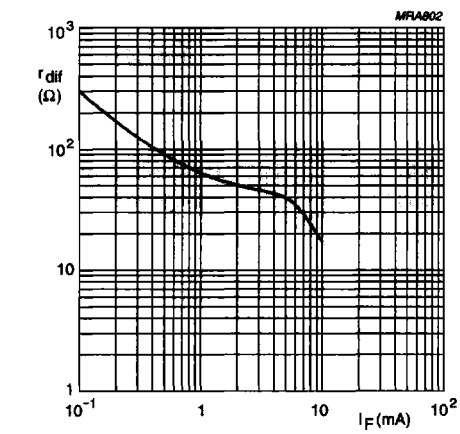
(1) T_{amb} = 125 °C.
(2) T_{amb} = 85 °C.
(3) T_{amb} = 25 °C.
(4) T_{amb} = −40 °C.

Fig.3 Forward current as a function of forward voltage; typical values.



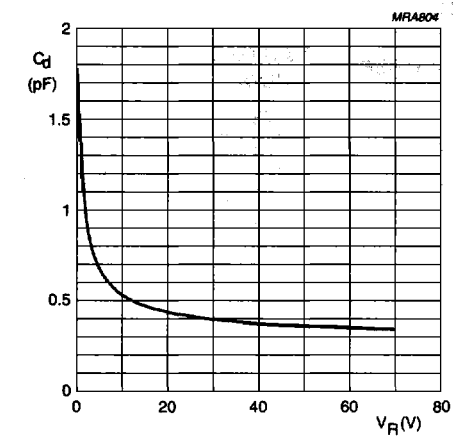
(1) T_{amb} = 150 °C.
(2) T_{amb} = 85 °C.
(3) T_{amb} = 25 °C.

Fig.4 Reverse current as a function of reverse voltage; typical values.



f = 10 kHz.

Fig.5 Differential forward resistance as a function of forward current; typical values.



f = 1 MHz.

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