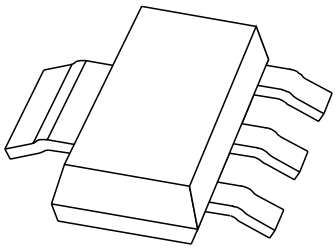
DATA SHEET



BAT140 series
Schottky barrier double diodes

Product specification
File under Discrete Semiconductors, SC01

1997 Oct 03

Philips
Semiconductors

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Schottky barrier double diodes BAT140 series

FEATURES

- Low switching losses
- Capability of absorbing very high surge current
- Fast recovery time
- Guard ring protected
- Plastic SMD package.

APPLICATIONS

- Low power switched-mode power supplies
- Rectification
- Polarity protection.

DESCRIPTION

Planar Schottky barrier double diodes encapsulated in a SOT223 plastic SMD package.

MARKING

TYPE NUMBER	MARKING CODE
BAT140A	AT140A
BAT140C	AT140C
BAT140S	AT140S

PINNING

PIN	BAT140		
	A	C	S
1	k_1	a_1	a_1
2	n.c.	n.c.	n.c.
3	k_2	a_2	k_2
4	a_1, a_2	k_1, k_2	k_1, a_2

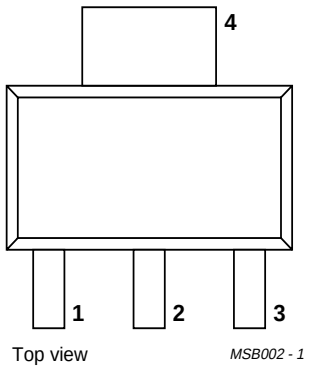


Fig.1 Simplified outline (SOT223) and pin configuration.

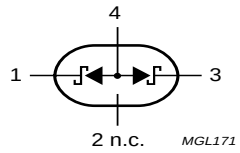


Fig.2 BAT140A diode configuration (symbol).

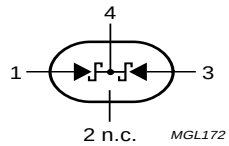


Fig.3 BAT140C diode configuration (symbol).

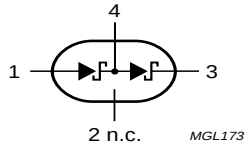


Fig.4 BAT140S diode configuration (symbol).

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		–	1	A
$I_{F(AV)}$	average forward current	T_{amb} = 65 °C; $R_{th\ j\text{-}a}$ = 80 K/W; note 1; $V_{R(equiv)}$ = 0.2 V; note 2	–	1	A
I_{FSM}	non-repetitive peak forward current	t = 8.3 μs half sinewave; JEDEC method	–	10	A
I_{RSM}	non-repetitive peak reverse current	t_p = 100 μs	–	0.5	A
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	125	°C

Notes

1. Refer to SOT223 standard mounting conditions.
2. For Schottky barrier diodes thermal run-away has to be considered, as in some applications, the reverse power losses P_R are a significant part of the total power losses. Nomograms for determination of the reverse power losses P_R and $I_{F(AV)}$ rating will be available on request.

ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
Per diode					
V_F	forward voltage	see Fig.5			
		I_F = 100 mA; note 1	280	330	mV
		I_F = 1 A; note 1	460	500	mV
I_R	reverse current	V_R = 10 V; note 1; see Fig.6	15	40	μA
		V_R = 40 V; note 1; see Fig.6	60	300	μA
C_d	diode capacitance	V_R = 4 V; f = 1 MHz; see Fig.7	65	80	pF

Note

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

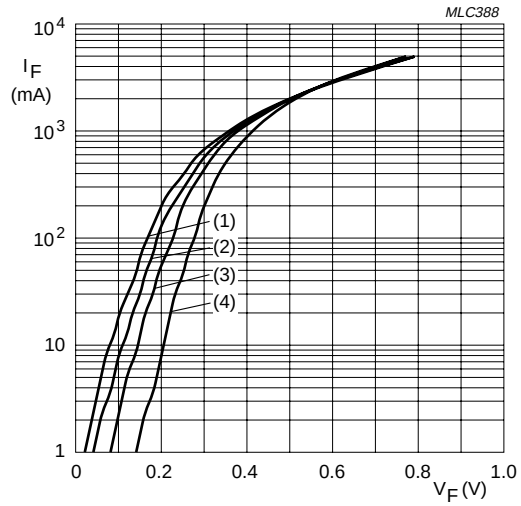
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	100	K/W

Note

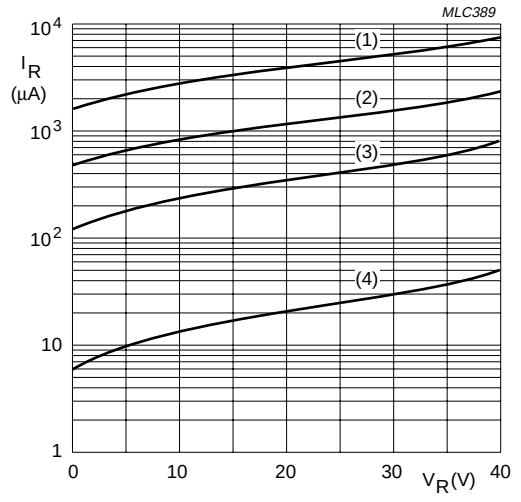
1. Refer to SOT223 standard mounting conditions.

GRAPHICAL DATA



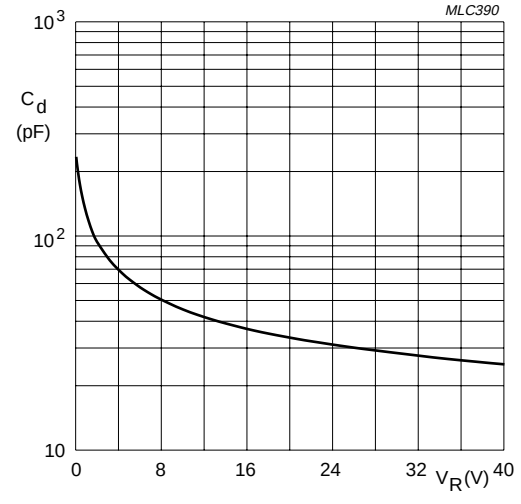
(1) T_{amb} = 125 °C. (3) T_{amb} = 75 °C.
(2) T_{amb} = 100 °C. (4) T_{amb} = 25 °C.

Fig.5 Forward current as a function of forward voltage; typical values.



(1) T_{amb} = 125 °C. (3) T_{amb} = 75 °C.
(2) T_{amb} = 100 °C. (4) T_{amb} = 25 °C.

Fig.6 Reverse current as a function of reverse voltage; typical values.

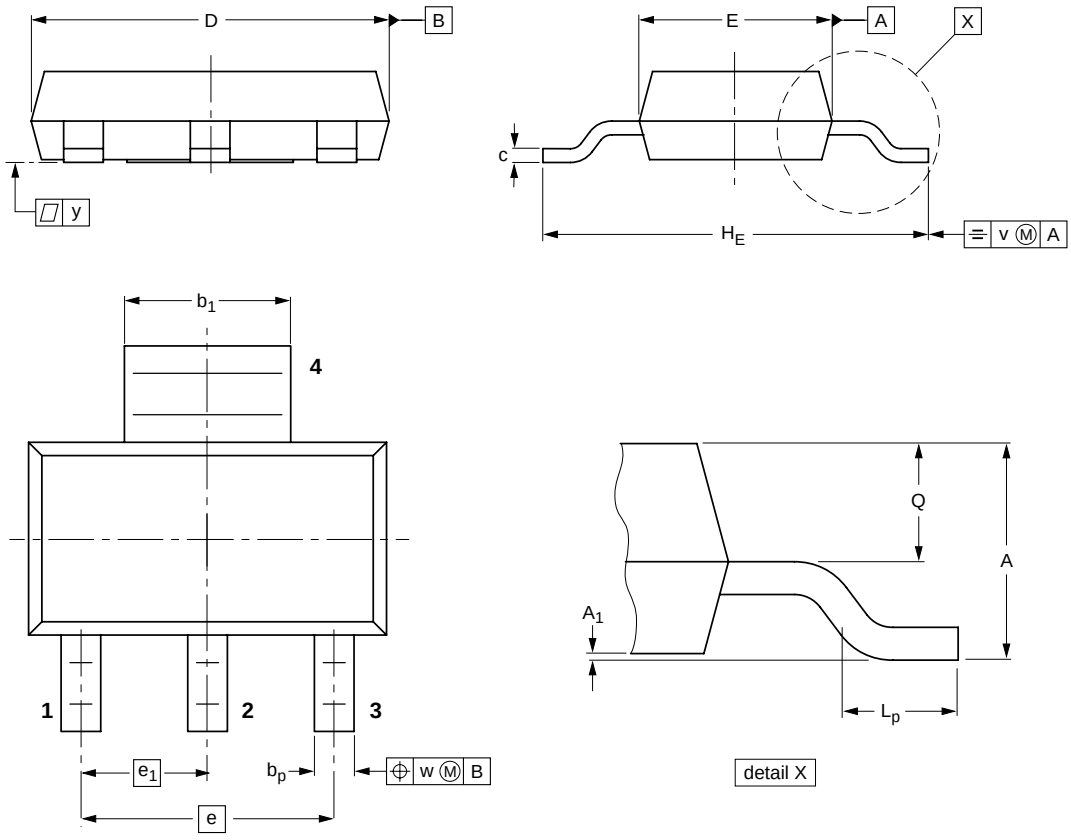


f = 1 MHz.

Fig.7 Diode capacitance as a function of reverse voltage; typical values.

PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 4 leads **SOT223**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1	b_p	b_1	c	D	E	e	e_1	H_E	L_p	Q	v	w	y
mm	1.8 1.5	0.10 0.01	0.80 0.60	3.1 2.9	0.32 0.22	6.7 6.3	3.7 3.3	4.6	2.3	7.3 6.7	1.1 0.7	0.95 0.85	0.2	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT223						~~96-11-11~~ 97-02-28

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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