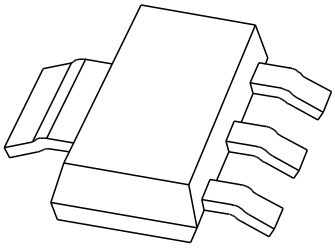
DATA SHEET



PBYR2100CT series
Schottky barrier double diodes

Product specification
Supersedes data of December 1993
File under Discrete Semiconductors, SC01

1996 May 03

Philips
Semiconductors

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Schottky barrier double diodes PBYR2100CT series

FEATURES

- Low switching losses
- High breakdown voltage
- Fast recovery time
- Guard ring protected
- Plastic SMD package.

APPLICATIONS

- Low power, switched-mode power supplies
- Rectifying
- Polarity protection.

DESCRIPTION

The PBYR2100CT series consists of Schottky barrier double diodes, fabricated in planar technology, and encapsulated in SOT223 plastic SMD packages.

PINNING

PIN	DESCRIPTION
1	anode (a_1)
2	common cathode
3	anode (a_2)
4	common cathode

MARKING

TYPE NUMBER	MARKING CODE
PBYR280CT	BYR28
PBYR290CT	BYR29
PBYR2100CT	BYR210

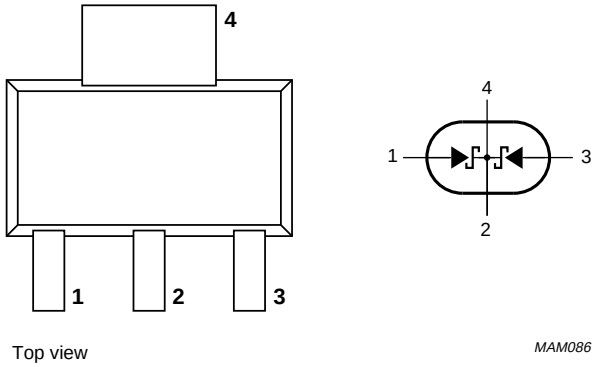


Fig.1 Simplified outline (SOT223), pin configuration and symbol.

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				
	PBYR280CT		–	80	V
	PBYR290CT		–	90	V
	PBYR2100CT		–	100	V
V_{RRM}	repetitive peak reverse voltage				
	PBYR280CT		–	80	V
	PBYR290CT		–	90	V
	PBYR2100CT		–	100	V
V_{RWM}	crest working reverse voltage				
	PBYR280CT		–	80	V
	PBYR290CT		–	90	V
	PBYR2100CT		–	100	V
$I_{F(AV)}$	average forward current	T_{amb} = 85 °C; see Fig.2; $R_{th\ j\text{-}a}$ = 70 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 sine wave; 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		–65	+150	°C
T_{amb}	operating ambient temperature		–	85	°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	MIN.	TYP.	MAX.	UNIT
Per diode						
V_F	forward voltage	see Fig.3				
		I_F = 1 A; note 1	–	–	790	mV
		I_F = 1 A; T_j = 100 °C; note 1	–	–	690	mV
I_R	reverse current	$V_R = V_{RRMmax}$; note 1; see Fig.4	–	–	0.5	mA
		$V_R = V_{RRMmax}$; T_j = 100 °C; note 1; see Fig.4	–	–	5	mA
C_d	diode capacitance	V_R = 4 V; f = 1 MHz; see Fig.5	–	–	100	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	70	K/W

Note

1. Refer to SOT223 standard mounting conditions.

GRAPHICAL DATA

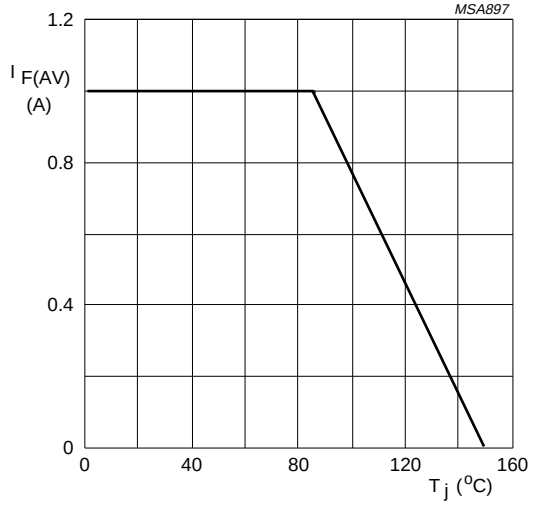
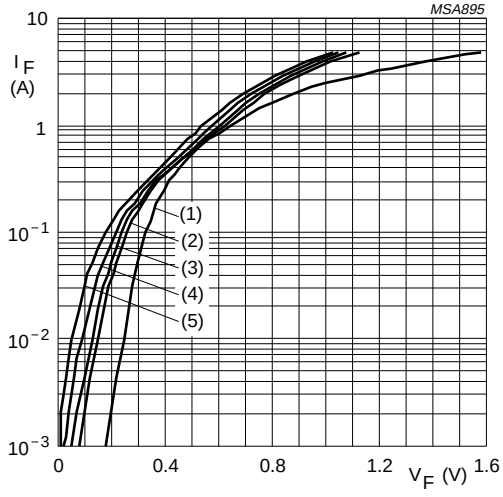
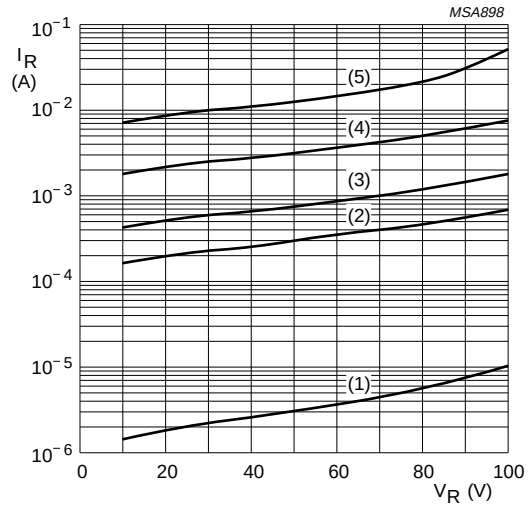


Fig.2 Average forward current derating curve.



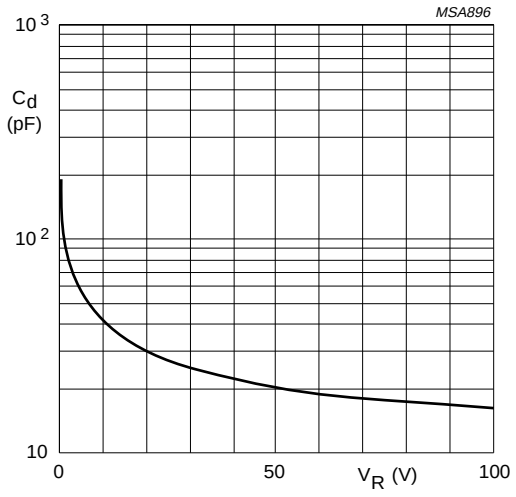
(1) T_{amb} = 25 °C.
(2) T_{amb} = 85 °C.
(3) T_{amb} = 100 °C.
(4) T_{amb} = 125 °C.
(5) T_{amb} = 150 °C.

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



(1) T_{amb} = 25 °C.
(2) T_{amb} = 85 °C.
(3) T_{amb} = 100 °C.
(4) T_{amb} = 125 °C.
(5) T_{amb} = 150 °C.

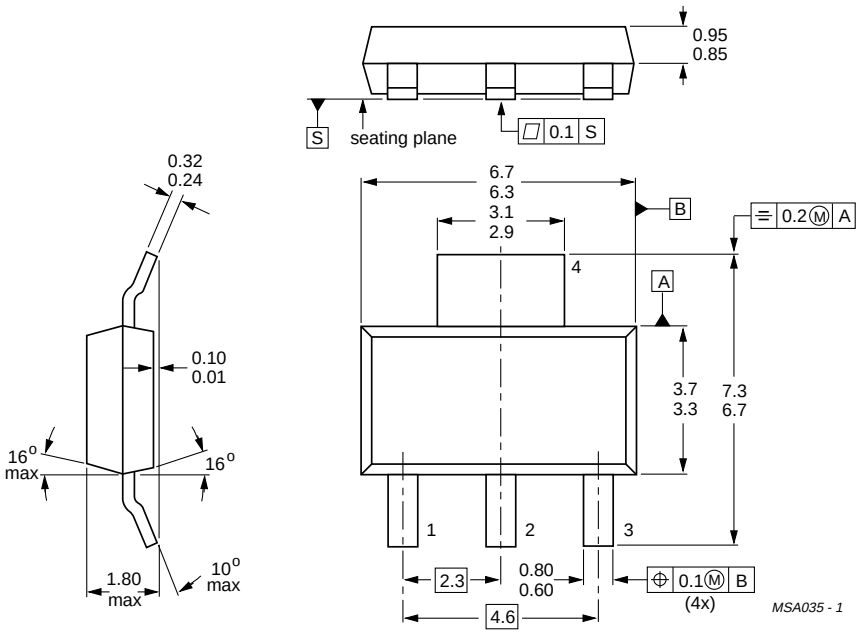
Fig.4 Reverse current as a function of reverse voltage; typical values.



f = 1 MHz.

Fig.5 Diode capacitance as a function of reverse voltage; typical values.

PACKAGE OUTLINE



Dimensions in mm.

Fig.6 SOT223.

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.