DATA SHEET

PBYR30100PT series
Schottky Barrier rectifier diodes

Product specification
File under Discrete Semiconductors, SC02

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Philips Semiconductors

PHILIPS

Schottky Barrier rectifier diodes — PBYR30100PT series

GENERAL DESCRIPTION

Low leakage Platinum barrier rectifier diodes in SOT93 plastic envelope, featuring low forward voltage drop, low capacitance, and absence of stored charge. They are intended for use in Switch Mode Power Supplies, and high frequency circuits in general, where both low conduction losses and zero switching losses are important. These devices can withstand reverse voltage transients and have guaranteed reverse avalanche surge capability. The series consists of common-cathode types.

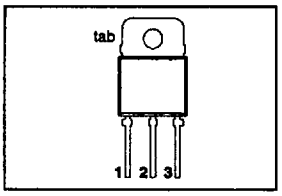
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.			UNIT
	PBYR-	3060	3080	30100	
V_{RRM}	Repetitive peak reverse voltage	60	80	100	V
V_{RWM}	Crest working reverse voltage	60	80	100	V
V_R	Continuous reverse voltage	60	80	100	V
V_F	Forward voltage	0.70	0.70	0.70	V
I_O	Output current (both diodes conducting)	30	30	30	A

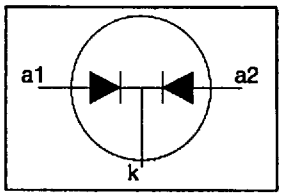
PINNING - SOT93

PIN	DESCRIPTION
1	Anode 1 (a)
2	Cathode (k)
3	Anode 2 (a)
tab	Cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
				3060	3080	30100	
V_{RRM}	Repetitive peak reverse voltage per diode.		-	60	80	100	V
V_{RWM}	Crest working reverse voltage per diode.		-	60	80	100	V
V_R	Continuous reverse voltage per diode.		-	60	80	100	V
$I_{F(AV)}$	Average forward current[1] per diode	Square wave; $\delta = 0.5$; $T_{mb} \leq 125$ °C	-	15			A
I_O	per device		-	30			A
I_{FRM}	Repetitive forward surge current per diode.	20kHz; $\delta = 0.5$; $T_{mb} \leq 125$C	-	30			A
I_{FSM}	Non-repetitive forward surge current per diode.	$T_j = 125$ °C; prior to surge; with reapplied V_{RWM}.					
		t = 10 ms	-	135			A
		t = 8.3 ms	-	150			A
I^2t	I^2t for fusing per device.		-	93			A^2s
I_{RRM}	Repetitive reverse surge current per diode.	$t_p = 2$ µs; f = 1kHz	-	1.0			A
I_{RSM}	Non-repetitive reverse surge current per diode.	$t_p = 100$ µs	-	1.0			A
T_j	Junction temperature		-	150			°C
T_{stg}	Storage Temperature		-65	175			°C

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
$R_{th\ j\text{-}mb}$	Junction to mounting base				
	per diode		-	1.4	K/W
	both diodes		-	1.0	K/W
$R_{th\ j\text{-}a}$	Junction to Ambient.			40	K/W

CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V_F	Forward voltages[2]	$T_j = 125$ °C; $I_F = 15$ A	-	0.70	V
V_F	per diode.	$T_j = 125$ °C; $I_F = 30$ A	-	0.85	V
V_F		$T_j = 25$ °C; $I_F = 30$ A	-	0.95	V
I_R	Reverse leakage current	$V_R = V_{RWM}$; $T_j = 25$ °C	-	150	µA
I_R	per diode.	$V_R = V_{RWM}$; $T_j = 125$ °C	-	150	mA

1 Switching losses negligible up to 500 kHz.

2 Measured under pulsed conditions; pulse width $t_p = 300$ µs

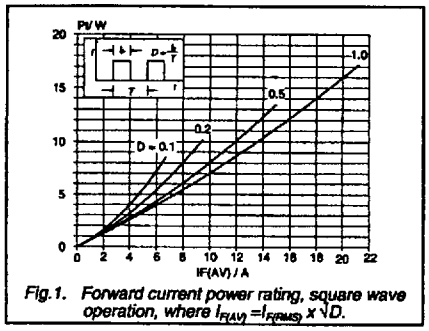


Fig.1. Forward current power rating, square wave operation, where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

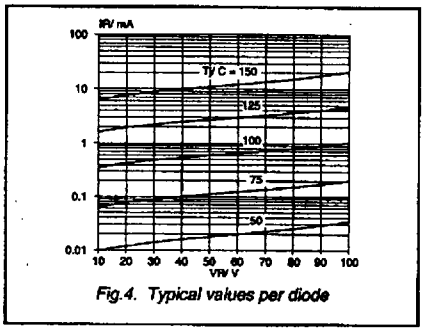


Fig.4. Typical values per diode

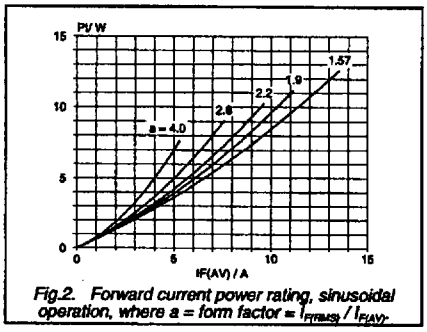


Fig.2. Forward current power rating, sinusoidal operation, where a = form factor = $I_{F(RMS)} / I_{F(AV)}$.

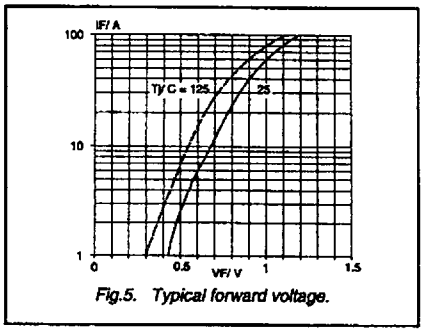


Fig.5. Typical forward voltage.

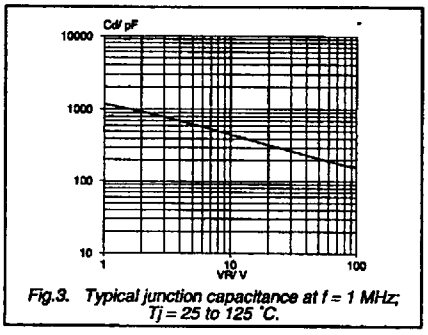


Fig.3. Typical junction capacitance at f = 1 MHz; Tj = 25 to 125 °C.

MECHANICAL DATA

Dimensions in mm

Net Mass: 5 g

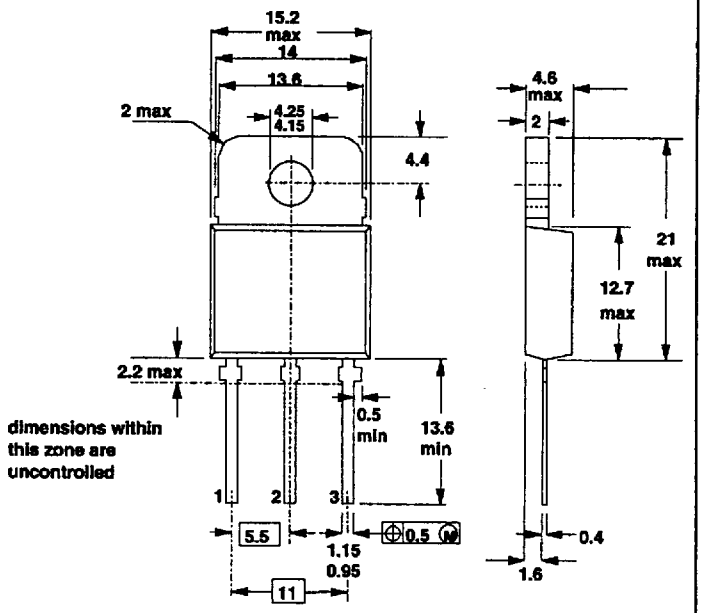


Fig.6. SOT93; pin 2 connected to mounting base.

Notes

1. Accessories supplied on request: refer to mounting instructions for SOT93 envelope.

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 are given 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 this 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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