

# Schottky Diode

## **PBYR1040X**

40V / 10A

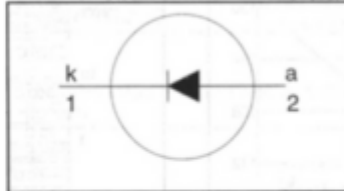
# DATASHEET

OEM – Philips

Source: Philips Databook 1999

**Rectifier diodes  
Schottky barrier**
**PBYR1045F, PBYR1045X series**
**FEATURES**

- Low forward volt drop
- Fast switching
- Reverse surge capability
- High thermal cycling performance
- Isolated mounting tab

**SYMBOL**

**QUICK REFERENCE DATA**

$$V_R = 40 \text{ V} / 45 \text{ V}$$

$$I_{F(AV)} = 10 \text{ A}$$

$$V_F \leq 0.59 \text{ V}$$

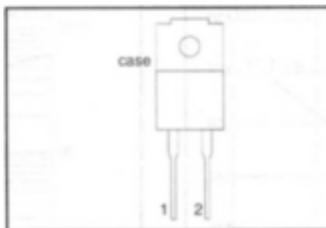
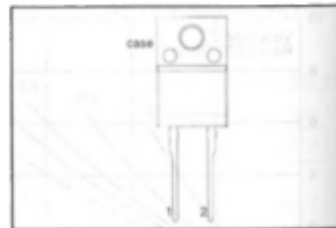
**GENERAL DESCRIPTION**

Schottky rectifier diodes in a plastic envelope with electrically isolated mounting tab. Intended for use as output rectifiers in low voltage, high frequency switched mode power supplies.

The PBYR1045F series is supplied in the SOD100 package.  
The PBYR1045X series is supplied in the SOD113 package.

**PINNING**

PIN	DESCRIPTION
1	cathode
2	anode
tab	isolated

**SOD100**

**SOD113**

**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.		UNIT
				PBYR10 PBYR10	40F 40X	
$V_{RRM}$	Peak repetitive reverse voltage		-	40	45	V
$V_{RWM}$	Working peak reverse voltage		-	40	45	V
$V_R$	Continuous reverse voltage	$T_{ha} \leq 95 \text{ }^\circ\text{C}$	-	40	45	V
$I_{F(AV)}$	Average rectified forward current	square wave; $\delta = 0.5$ ; $T_{ha} \leq 112 \text{ }^\circ\text{C}$	-	10		A
$I_{FRM}$	Repetitive peak forward current	square wave; $\delta = 0.5$ ; $T_{ha} \leq 112 \text{ }^\circ\text{C}$	-	20		A
$I_{FSM}$	Non-repetitive peak forward current	$t = 10 \text{ ms}$	-	100		A
		$t = 8.3 \text{ ms}$	-	110		A
$I_{RRM}$	Peak repetitive reverse surge current	sinusoidal; $T_j = 125 \text{ }^\circ\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$ pulse width and repetition rate limited by $T_{jmax}$	-	1		A
$T_j$	Operating junction temperature		-	150		$^\circ\text{C}$
$T_{stg}$	Storage temperature		-65	175		$^\circ\text{C}$

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### ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{ns} = 25\text{ °C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{isol}$	Peak isolation voltage from both terminals to external heatsink	SOD100 package; R.H. $\leq$ 65%; clean and dustfree	-	-	1500	V
$V_{isol}$	R.M.S. isolation voltage from both terminals to external heatsink	SOD113 package; $f = 50\text{-}60\text{ Hz}$ ; sinusoidal waveform; R.H. $\leq$ 65%; clean and dustfree	-	-	2500	V
$C_{isol}$	Capacitance from pin 1 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

### THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th-jhs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.5	K/W
$R_{th-ja}$	Thermal resistance junction to ambient	in free air	-	55	-	K/W

### ELECTRICAL CHARACTERISTICS

$T_j = 25\text{ °C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_f$	Forward voltage	$I_f = 10\text{ A}$ ; $T_j = 125\text{ °C}$ $I_f = 20\text{ A}$ ; $T_j = 125\text{ °C}$	-	0.5 0.69	0.59 0.75	V V
$I_R$	Reverse current	$I_f = 20\text{ A}$ $V_R = V_{RWM}$ $V_R = V_{RWM}$ ; $T_j = 100\text{ °C}$	-	0.2 22	1.3 35	mA mA
$C_d$	Junction capacitance	$V_R = 5\text{ V}$ ; $f = 1\text{ MHz}$ ; $T_j = 25\text{ °C}$ to $125\text{ °C}$	-	350	-	pF

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