Schottky Diode

PBYR740B

40V / 7.5A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

Datasheet Rev. 1.3 – 04/19 – data without warranty / liability

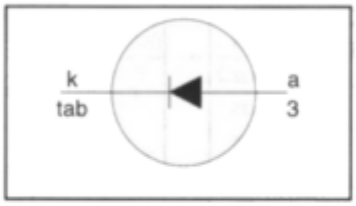
Rectifier diodes Schottky barrier

PBYR745B, PBYR745D series

FEATURES

- Low forward volt drop
- Fast switching
- Reverse surge capability
- High thermal cycling performance
- Low thermal resistance

SYMBOL



QUICK REFERENCE DATA

V_R = 40 V/ 45 V

$I_{F(AV)}$ = 7.5 A

$V_F \leq 0.57$ V

GENERAL DESCRIPTION

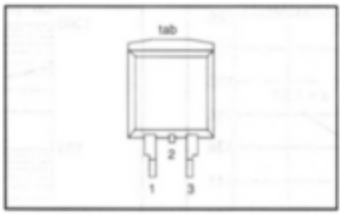
Schottky rectifier diodes in a surface mounting plastic envelope. Intended for use as output rectifiers in low voltage, high frequency switched mode power supplies.

The PBYR745B series is supplied in the SOT404 surface mounting package.
The PBYR745D series is supplied in the SOT428 surface mounting package.

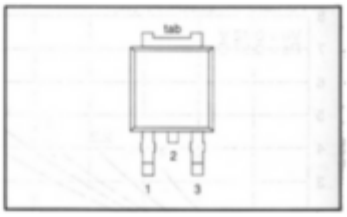
PINNING

PIN	DESCRIPTION
1	no connection
2	cathode[1]
3	anode
tab	cathode

SOT404



SOT428



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS		MIN.	MAX.		UNIT
			PBYR7		40B	45B	
			PBYR7		40D	45D	
V_{RRM}	Peak repetitive reverse voltage			-	40	45	V
V_{RWM}	Working peak reverse voltage			-	40	45	V
V_R	Continuous reverse voltage	$T_{mb} \leq 114$ °C		-	40	45	V
$I_{F(AV)}$	Average rectified forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 136$ °C		-	7.5		A
I_{FRM}	Repetitive peak forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 136$ °C		-	15		A
I_{FSM}	Non-repetitive peak forward current	t = 10 ms	PBYR7..B	-	135		A
		t = 8.3 ms		-	150		A
		t = 10 ms	PBYR7..D	-	100		A
		t = 8.3 ms		-	110		A
		sinusoidal; T_j = 125 °C prior to surge; with reapplied $V_{RRM(max)}$					
I_{RRM}	Peak repetitive reverse surge current	pulse width and repetition rate limited by $T_{j\,max}$		-	1		A
T_j	Operating junction temperature			-	150		°C
T_{stg}	Storage temperature			- 65	175		°C

1. It is not possible to make connection to pin 2 of the SOT404 or SOT428 package.

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base		-	-	3	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	pcb mounted, minimum footprint, FR4 board	-	50	-	K/W

ELECTRICAL CHARACTERISTICS

T_j = 25 ˚C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	I_F = 7.5 A; T_j = 125˚C	-	0.45	0.57	V
		I_F = 15 A; T_j = 125˚C	-	0.65	0.72	V
		I_F = 15 A	-	0.64	0.84	V
I_R	Reverse current	$V_R = V_{RWM}$	-	0.13	1	mA
		$V_R = V_{RWM}$; T_j = 100˚C	-	17	22	mA
C_d	Junction capacitance	V_R = 5 V; f = 1 MHz, T_j = 25˚C to 125˚C	-	270	-	pF

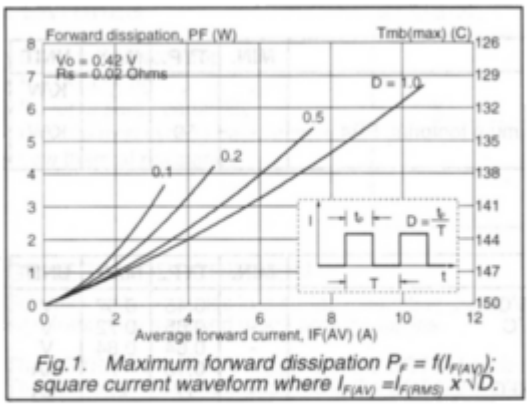


Fig.1. Maximum forward dissipation $P_F = f(I_{F(AV)})$; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

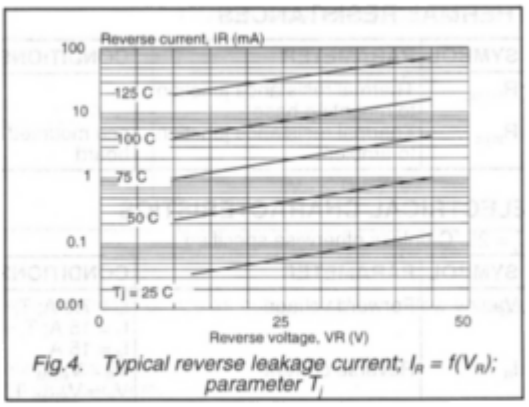


Fig.4. Typical reverse leakage current; $I_R = f(V_R)$; parameter T_j

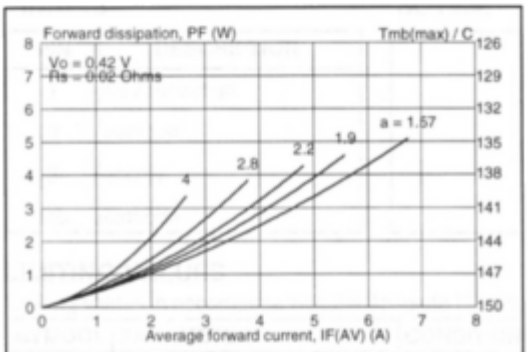


Fig.2. Maximum forward dissipation $P_F = f(I_{F(AV)})$; sinusoidal current waveform where a = form factor = $I_{F(RMS)} / I_{F(AV)}$.

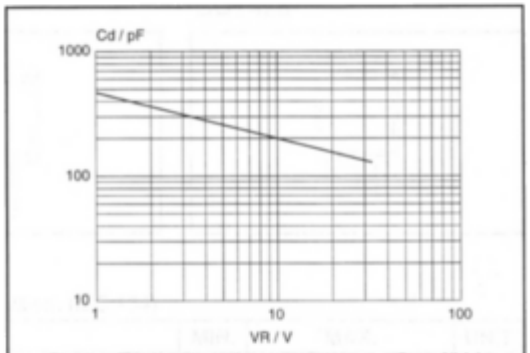


Fig.5. Typical junction capacitance; $C_d = f(V_R)$; f = 1 MHz; T_j = 25˚C to 125 ˚C.

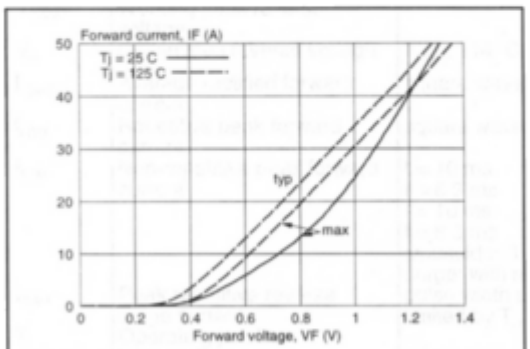


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

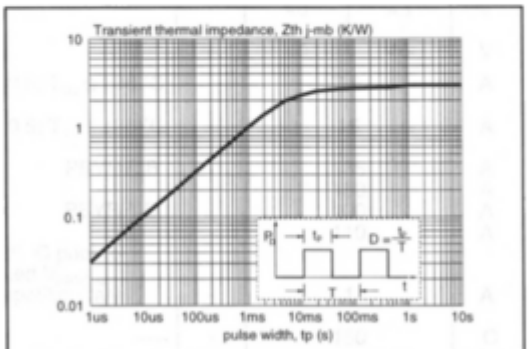


Fig.6. Transient thermal impedance; $Z_{th\ j\text{-}mb} = f(t_p)$.