Schottky Diode

PBYL1020B

20V / 10A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

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

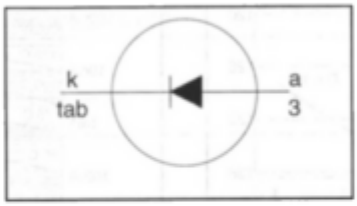
Rectifier diodes Schottky barrier

PBYL1025B series

FEATURES

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

SYMBOL



QUICK REFERENCE DATA

V_R = 20 V/ 25 V

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

$V_F \leq 0.4$ V

GENERAL DESCRIPTION

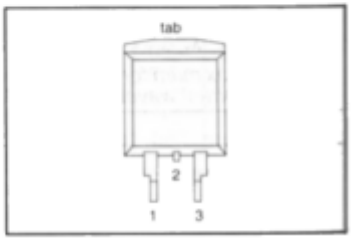
Schottky rectifier diodes intended for use as output rectifiers in low voltage, high frequency switched mode power supplies.

The PBYL1025B series is supplied in the SOT404 surface mounting package.

PINNING

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

SOT404



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.		UNIT
		PBYL10		20B	25B	
V_{RRM}	Peak repetitive reverse voltage		-	20	25	V
V_{RWM}	Working peak reverse voltage		-	20	25	V
V_R	Continuous reverse voltage	$T_{mb} \leq 119$ °C	-	20	25	V
$I_{F(AV)}$	Average rectified forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 132$ °C	-	10		A
I_{FRM}	Repetitive peak forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 132$ °C	-	20		A
I_{FSM}	Non-repetitive peak forward current	t = 10 ms	-	130		A
		t = 8.3 ms sinusoidal; T_j = 125 °C prior to surge; with reapplied $V_{RRM(max)}$	-	150		A
I_{RRM}	Peak repetitive reverse surge current	pulse width and repetition rate limited by $T_{j\,max}$	-	1		A
T	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 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 = 10 A; T_j = 150˚C	-	0.33	0.4	V
		I_F = 10 A; T_j = 125˚C	-	0.39	0.45	V
		I_F = 20 A; T_j = 125˚C	-	0.54	0.61	V
		I_F = 20 A	-	0.57	0.64	V
I_R	Reverse current	$V_R = V_{RWM}$	-	0.2	5	mA
		$V_R = V_{RWM}$; T_j = 100˚C	-	15	30	mA
C_d	Junction capacitance	V_R = 5 V; f = 1 MHz, T_j = 25˚C to 125˚C	-	580	-	pF

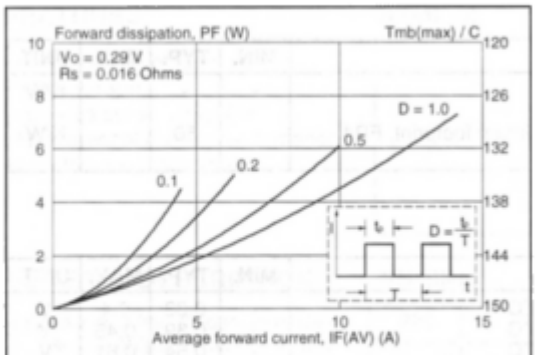


Fig.1. Maximum forward dissipation $P_F = f(I_{F(AV)})$; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

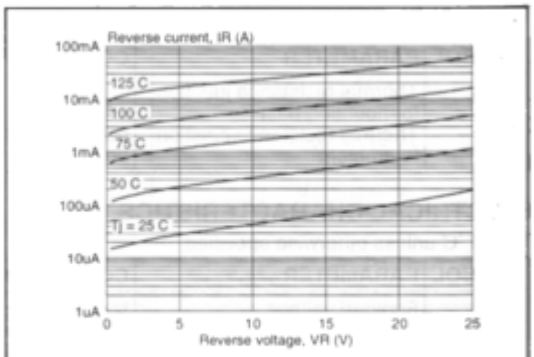


Fig.4. Typical reverse leakage current; $I_R = f(V_R)$; parameter T

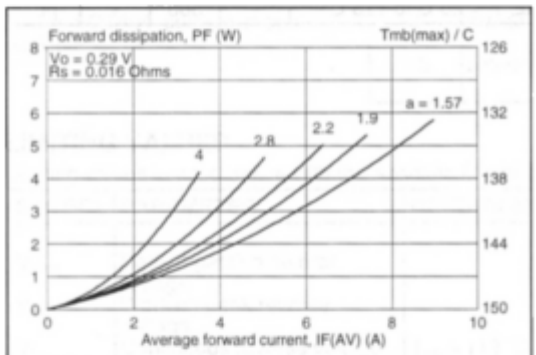


Fig.2. Maximum forward dissipation $P_F = f(I_{F(AV)})$; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

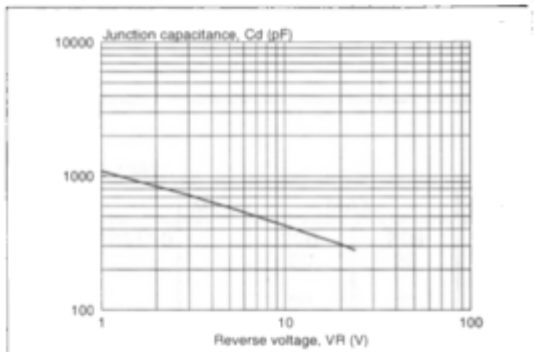


Fig.5. Typical junction capacitance; $C_d = f(V_R)$; $f = 1$ MHz; $T_j = 25$ °C to 125 °C.

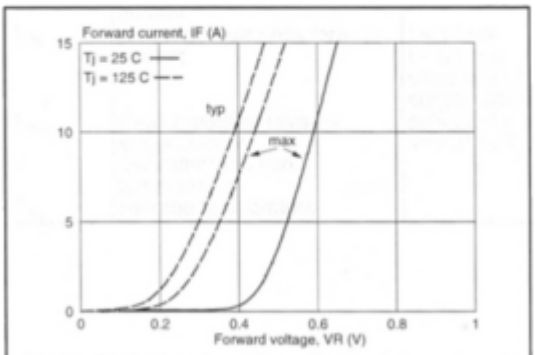


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

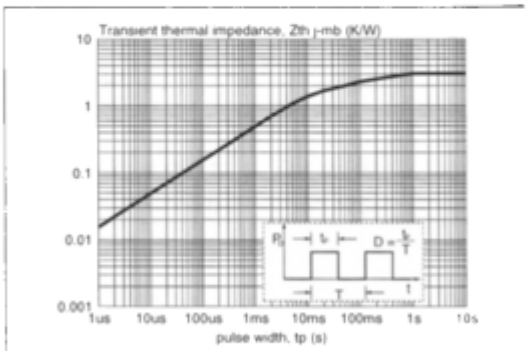


Fig.6. Transient thermal impedance; $Z_{th\ j\text{-}mb} = f(t_p)$