

Philips Semiconductors

Product specification

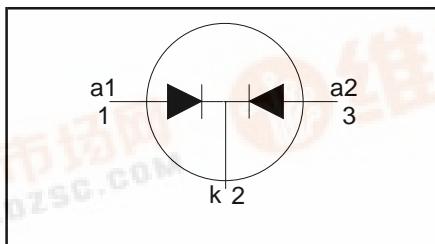
Rectifier diodes
Schottky barrier

PBYR645CTD series

FEATURES

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

SYMBOL



QUICK REFERENCE DATA

$V_R = 40 \text{ V} / 45 \text{ V}$
 $I_{O(AV)} = 6 \text{ A}$
 $V_F \leq 0.6 \text{ V}$

GENERAL DESCRIPTION

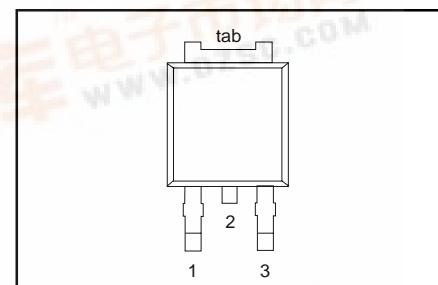
Dual schottky rectifier diodes intended for use as output rectifiers in low voltage, high frequency switched mode power supplies.

The PBYR645CTD series is supplied in the SOT428 surface mounting package.

PINNING

PIN	DESCRIPTION
1	anode 1
2	cathode ¹
3	anode 2
tab	cathode

SOT428



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RRM}	Peak repetitive reverse voltage	PBYR6	-	40CTD 40	45CTD 45
V_{RWM}	Working peak reverse voltage		-	40	45
V_R	Continuous reverse voltage	$T_{mb} \leq 113 \text{ }^\circ\text{C}$	-	40	45
$I_{O(AV)}$	Average rectified output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 134 \text{ }^\circ\text{C}$	-	6	A
I_{FRM}	Repetitive peak forward current per diode	square wave; $\delta = 0.5$; $T_{mb} \leq 134 \text{ }^\circ\text{C}$	-	6	A
I_{FSM}	Non-repetitive peak forward current per diode	$T_{mb} \leq 134 \text{ }^\circ\text{C}$ $t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$	-	65 70	A A
I_{RRM}	Peak repetitive reverse surge current per diode	sinusoidal; $T_j = 125 \text{ }^\circ\text{C}$ prior to surge; with reapply $V_{RRM(max)}$ pulse width and repetition rate limited by $T_{j,max}$	-	1	A
T_j	Operating junction temperature		-	150	$^\circ\text{C}$
T_{stg}	Storage temperature		-65	175	$^\circ\text{C}$

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THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j\cdot mb}$	Thermal resistance junction to mounting base	per diode	-	-	4	K/W
$R_{th\ j\cdot a}$	Thermal resistance junction to ambient	both diodes pcb mounted, minimum footprint, FR4 board	-	50	3.5	K/W

ELECTRICAL CHARACTERISTICSAll characteristics are per diode at $T_j = 25^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 3\text{ A}; T_j = 125^\circ\text{C}$ $I_F = 6\text{ A}; T_j = 125^\circ\text{C}$	-	0.55	0.6	V
I_R	Reverse current	$I_F = 6\text{ A}$ $V_R = V_{RWM}$	-	0.67	0.72	V
C_d	Junction capacitance	$V_R = V_{RWM}; T_j = 100^\circ\text{C}$ $V_R = 5\text{ V}; f = 1\text{ MHz}, T_j = 25^\circ\text{C to } 125^\circ\text{C}$	-	0.77	0.94	mA
			-	0.1	0.4	mA
			-	5	15	pF
			-	96	-	pF

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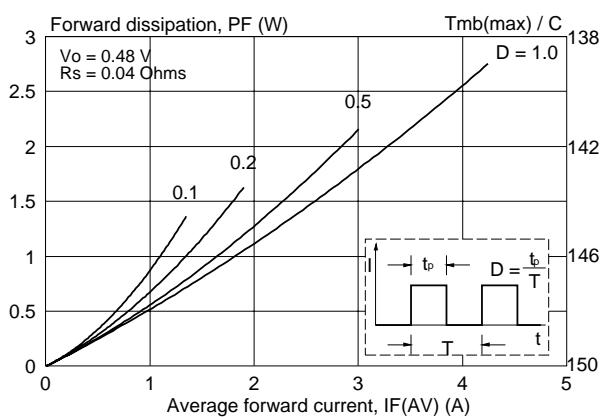


Fig.1. Maximum forward dissipation per diode
 $P_F = f(I_{F(AV)})$; square current waveform where
 $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

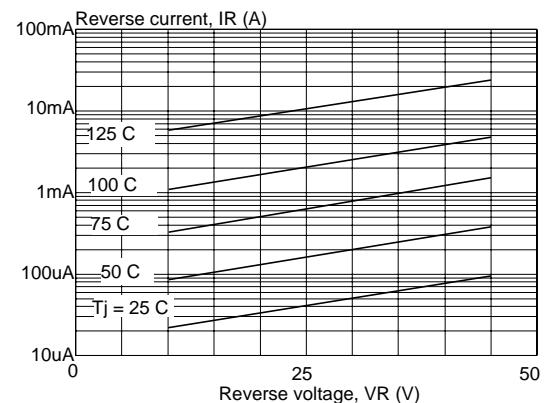


Fig.4. Typical reverse leakage current per diode;
 $I_R = f(V_R)$; parameter T_j

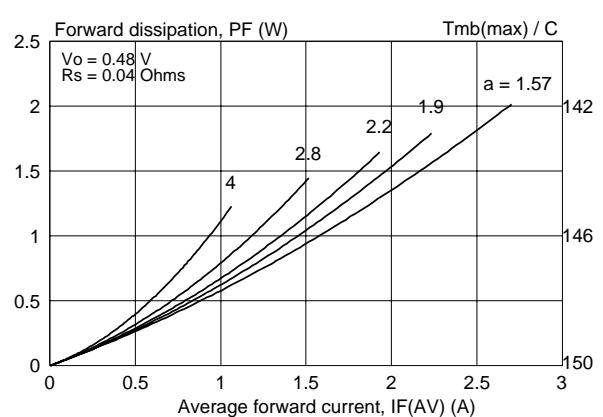


Fig.2. Maximum forward dissipation per diode
 $P_F = f(I_{F(AV)})$; sinusoidal current waveform where
 $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

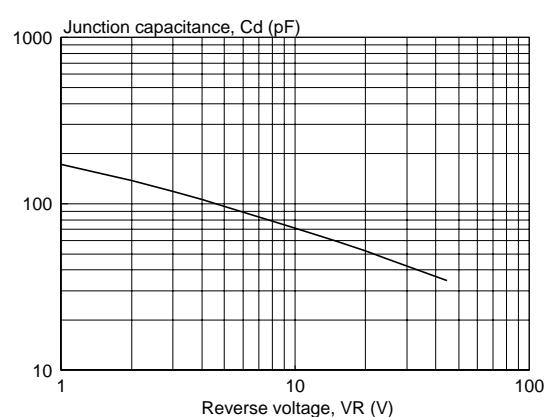


Fig.5. Typical junction capacitance per diode;
 $C_d = f(V_R)$; $f = 1$ MHz; $T_j = 25$ °C to 125 °C.

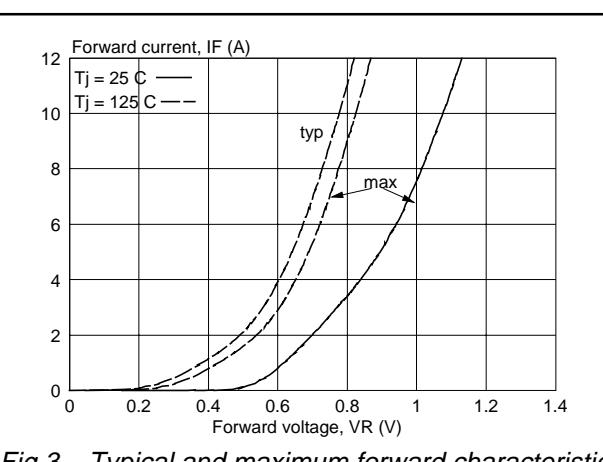


Fig.3. Typical and maximum forward characteristic per diode $I_F = f(V_F)$; parameter T_j .

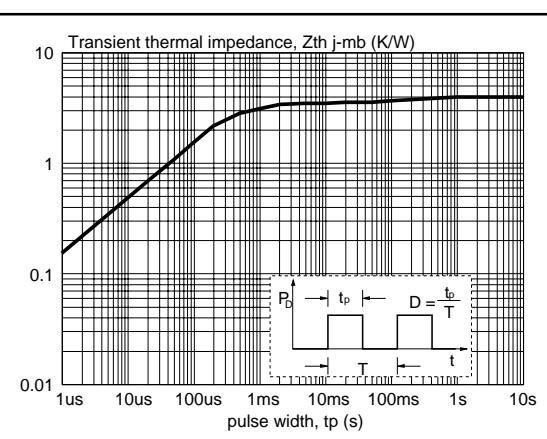


Fig.6. Transient thermal impedance per diode;
 $Z_{th j-mb} = f(t_p)$.

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MECHANICAL DATA

Dimensions in mm : Net Mass: 1.4 g

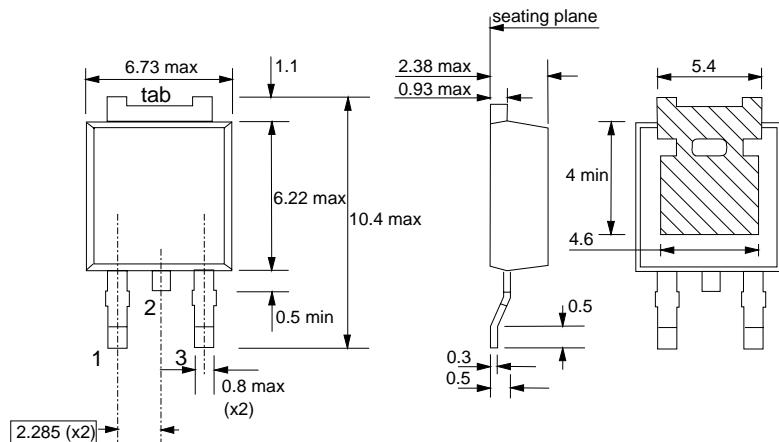


Fig.7. SOT428 : centre pin connected to mounting base.

MOUNTING INSTRUCTIONS

Dimensions in mm

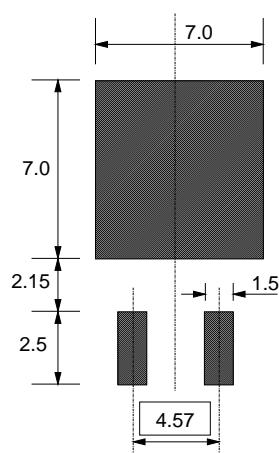


Fig.8. SOT428 : soldering pattern for surface mounting.

Notes

1. Observe the general handling precautions for electrostatic-discharge sensitive devices (ESDs) to prevent damage to MOS gate oxide.
2. Epoxy meets UL94 V0 at 1/8".

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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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