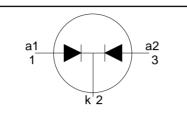
# PBYR1025CTD series

# FEATURES

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



**SYMBOL** 

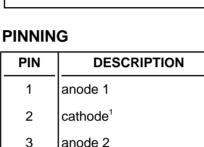
# QUICK REFERENCE DATA

$$V_{R} = 20 \text{ V}/25 \text{ V}$$
  
 $I_{O(AV)} = 10 \text{ A}$   
 $V_{F} \le 0.4 \text{ V}$ 

### **GENERAL DESCRIPTION**

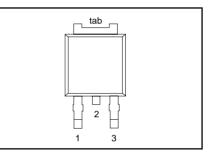
Dual schottky rectifier diodes intended for use as output rectifiers in low voltage, high frequency switched mode power supplies.

The PBYR1025CTD series is supplied in the SOT428 surface mounting package.



cathode

# SOT428



# LIMITING VALUES

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

tab

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.		UNIT
		PBYR10		20CTD	25CTD	
V <sub>RRM</sub>	Peak repetitive reverse voltage		-	20	25	V
V <sub>RWM</sub>	Working peak reverse		-	20	25	V
V <sub>R</sub>	Continuous reverse voltage	$T_{mb} \le 107 \ ^{\circ}C$	-	20	25	V
I <sub>O(AV)</sub>	Average rectified output current (both diodes conducting)	square wave; $\delta$ = 0.5; T <sub>mb</sub> $\leq$ 136 °C	-	10		A
I <sub>FRM</sub>	Repetitive peak forward current per diode	square wave; $\delta$ = 0.5; T <sub>mb</sub> $\leq$ 136 °C	-	10		A
I <sub>FSM</sub>	Non-repetitive peak forward current per diode	t = 10 ms t = 8.3 ms sinusoidal; T <sub>i</sub> = 125 °C prior to surge; with reapplied V <sub>RRM(max)</sub>	-		0 00	A A
I <sub>RRM</sub>	Peak repetitive reverse surge current per diode	pulse width and repetition rate limited by T <sub>j max</sub>	-		1	A
T <sub>j</sub>	Operating junction temperature	interest of the second se	-	150		°C
T <sub>stg</sub>	Storage temperature		- 65	175		°C

<sup>1</sup> it is not possible to make connection to pin 2 of the SOT428 package

# Rectifier diodes Schottky barrier

# PBYR1025CTD series

# THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
R <sub>th j-mb</sub> R <sub>th j-a</sub>	to mounting base	per diode both diodes pcb mounted, minimum footprint, FR4 board		- - 50	3 2.5 -	K/W K/W K/W

# **ELECTRICAL CHARACTERISTICS**

All characteristics are per diode at  $T_i = 25$  °C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V <sub>F</sub>	Forward voltage	I <sub>F</sub> = 5 A; T <sub>i</sub> = 125°C	-	0.33	0.4	V
· ·		$I_{\rm F} = 10 \text{ Å}; T_{\rm i} = 125 ^{\circ} \text{C}$	-	0.44	0.55	V
		$I_{\rm F} = 10  {\rm A}^{-1}$	-	0.5	0.62	V
I <sub>R</sub>	Reverse current	$\dot{V}_{R} = V_{RWM}$	-	0.2	5	mA
		$V_{\rm R} = V_{\rm RWM}$ ; T <sub>i</sub> = 100°C	-	10	20	mA
C <sub>d</sub>	Junction capacitance	$V_{R} = 5 \text{ V}; \text{ f} = 1 \text{ MHz}, \text{ T}_{j} = 25 ^{\circ}\text{C} \text{ to } 125 ^{\circ}\text{C}$	-	350	-	pF

PBYR1025CTD series

# **Rectifier diodes** Schottky barrier

4

3

2

1

0

1

#### Forward dissipation, PF (W) Tmb(max) / C 100mA Reverse current, IR (A) 138 Vo = 0.25 V Rs = 0.03 Ohms D = 1.010mA 125 C 141 h 2 -100<sup>'</sup>C 0.1 144 1mA ≣75 Ċ 50 C D 147 100uA 10uAL 0 150 0 2 3 4 5 6 8 25 Reverse voltage, VR (V) 50 Average forward current, IF(AV) (A) Fig.1. Maximum forward dissipation per diode Fig.4. Typical reverse leakage current per diode; $\breve{P}_{F} = f(I_{F(AV)})$ ; square current waveform where $I_R = f(V_R)$ ; parameter $T_i$ $\dot{I}_{F(AV)} = I_{F(RMS)} \times \sqrt{D}.$ Forward dissipation, PF (W) Tmb(max) / C Junction capacitance, Cd (pF 1000 3 136.5 Vo = 0.25 V Rs = 0.03 Ohms a = 1.57 1.9 138.75 2.5 2.2 2.8 4 141 2 143.25 1.5 145.5 0.5 147.75 150 0 100 0 2 3 4 5 10 100 Average forward current, IF(AV) (A) Reverse voltage, VR (V) Fig.5. Typical junction capacitance per diode; $C_d = f(V_R); f = 1 \text{ MHz}; T_j = 25^{\circ}C \text{ to } 125^{\circ}C.$ Fig.2. Maximum forward dissipation per diode $P_F = f(I_{F(AV)})$ ; sinusoidal current waveform where $a = form factor = I_{F(RMS)} / I_{F(AV)}$ . Forward current, IF (A) Transient thermal impedance, Zth j-mb (K/W) 10 10 Tj = 25 C -Tj = 125 C · 8 typ 1 max 6 0.1 Δ 0.01 t⊳ŀ D 2 ₩<u></u> T 0.001 └─ 1us 0 1ms 10ms 100ms 1s 10us 100us 10s 0.8 0.2 0.4 0.6 0 1

### February 1998

Forward voltage, VR (V) Fig.3. Typical and maximum forward characteristic

per diode  $I_F = f(V_F)$ ; parameter  $T_i$ 

pulse width, tp (s)

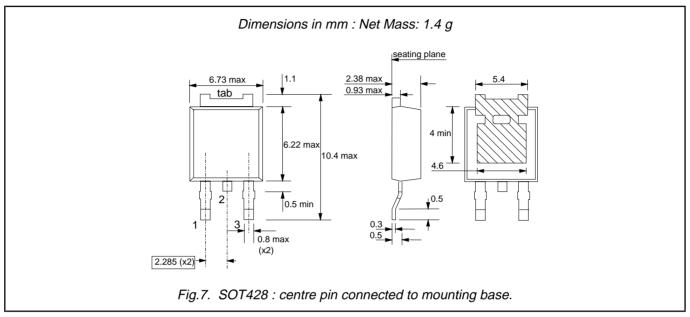
Fig.6. Transient thermal impedance per diode;

 $Z_{th j-mb} = f(t_p).$ 

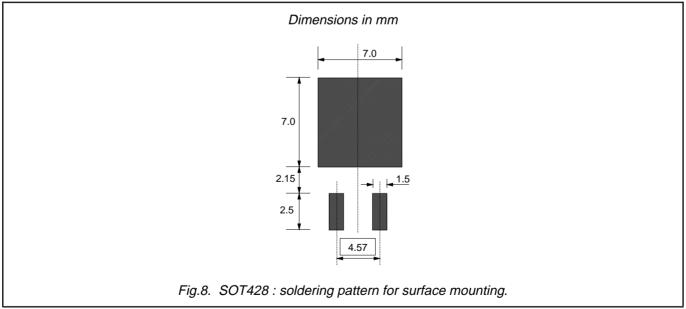
# Rectifier diodes Schottky barrier

# PBYR1025CTD series

# **MECHANICAL DATA**



# **MOUNTING INSTRUCTIONS**



### 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".

# Rectifier diodes Schottky barrier

# PBYR1025CTD series

### DEFINITIONS

Data sheet status				
Objective specification	bjective specification This data sheet contains target or goal specifications for product development.			
Preliminary specification	minary 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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