

Philips Semiconductors

Product specification

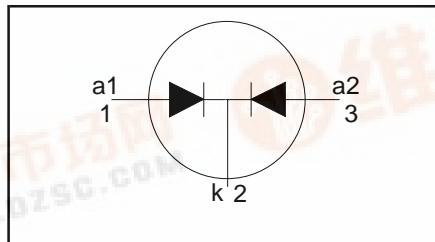
Rectifier diodes  
Schottky barrier

## PBYR1545CTF, PBYR1545CTX series

## FEATURES

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

## SYMBOL



## QUICK REFERENCE DATA

$V_R = 40 \text{ V} / 45 \text{ V}$   
 $I_{O(AV)} = 15 \text{ A}$   
 $V_F \leq 0.57 \text{ V}$

## GENERAL DESCRIPTION

Dual, common cathode 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.

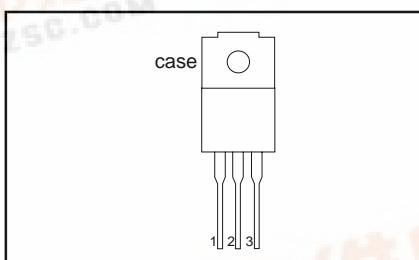
The PBYR1545CTF series is supplied in the SOT186 package.

The PBYR1545CTX series is supplied in the SOT186A package.

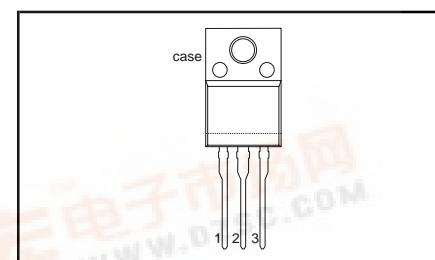
## PINNING

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	isolated

## SOT186



## SOT186A



## LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.		UNIT
			PBYR15	PBYR15	PBYR15	
$V_{RRM}$	Peak repetitive reverse voltage		-	40	45	V
$V_{RWM}$	Working peak reverse voltage		-	40	45	V
$V_R$	Continuous reverse voltage	$T_{hs} \leq 89 \text{ }^\circ\text{C}$	-	40	45	V
$I_{O(AV)}$	Average rectified output current (both diodes conducting)	square wave; $\delta = 0.5$ ; $T_{hs} \leq 93 \text{ }^\circ\text{C}$	-	15		A
$I_{FRM}$	Repetitive peak forward current per diode	square wave; $\delta = 0.5$ ; $T_{hs} \leq 93 \text{ }^\circ\text{C}$	-	15		A
$I_{FSM}$	Non-repetitive peak forward current per diode	$t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$	-	100	110	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		$^\circ\text{C}$
$T_{sta}$	Storage temperature		-65	175		$^\circ\text{C}$

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**ISOLATION LIMITING VALUE & CHARACTERISTIC** $T_{hs} = 25^\circ\text{C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{isol}$	Peak isolation voltage from all terminals to external heatsink	SOT186 package; R.H. $\leq 65\%$ ; clean and dustfree	-	-	1500	V
$V_{isol}$	R.M.S. isolation voltage from all terminals to external heatsink	SOT186A package; $f = 50\text{-}60\text{ Hz}$ ; sinusoidal waveform; R.H. $\leq 65\%$ ; clean and dustfree	-	-	2500	V
$C_{isol}$	Capacitance from pin 2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

**THERMAL RESISTANCES**

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th j-hs}$	Thermal resistance junction to heatsink	per diode both diodes (with heatsink compound)	-	-	6 5.2	K/W K/W
$R_{th j-a}$	Thermal resistance junction to ambient	in free air	-	55	-	K/W

**ELECTRICAL CHARACTERISTICS** $T_j = 25^\circ\text{C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_F$	Forward voltage	$I_F = 7.5\text{ A}; T_j = 125^\circ\text{C}$ $I_F = 15\text{ A}; T_j = 125^\circ\text{C}$ $I_F = 15\text{ A}$	- - -	0.44 0.63 0.62	0.57 0.72 0.84	V V V
$I_R$	Reverse current	$V_R = V_{RWM}$	-	0.22	1	mA
$C_d$	Junction capacitance	$V_R = V_{RWM}; T_j = 100^\circ\text{C}$ $V_R = 5\text{ V}; f = 1\text{ MHz}, T_j = 25^\circ\text{C to } 125^\circ\text{C}$	-	18 270	25 -	mA pF

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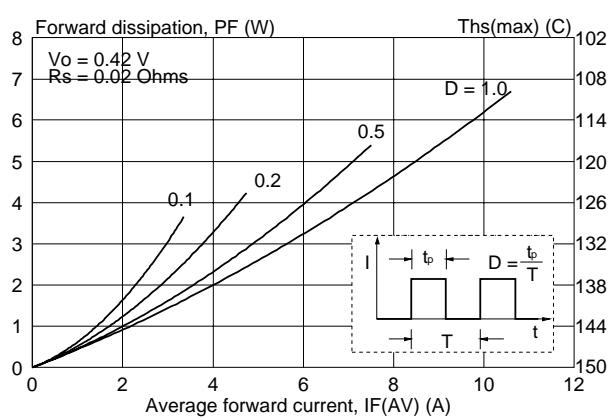


Fig.1. Maximum forward dissipation  $P_F = f(I_{F(AV)})$  per diode; square current waveform where  
 $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$ .

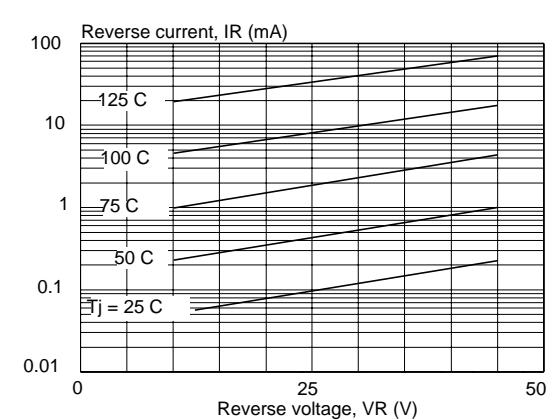


Fig.4. Typical reverse leakage current per diode;  
 $I_R = f(V_R)$ ; parameter  $T_j$

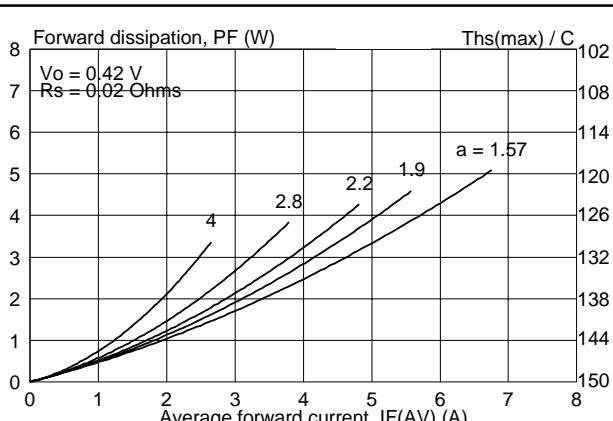


Fig.2. Maximum forward dissipation  $P_F = f(I_{F(AV)})$  per diode; sinusoidal current waveform where  $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$ .

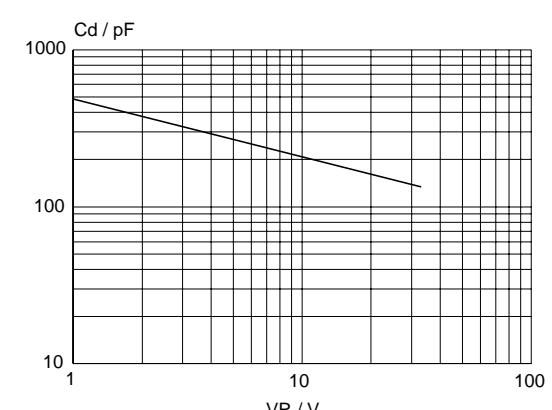


Fig.5. Typical junction capacitance per diode;  
 $C_d = f(V_R)$ ;  $f = 1$  MHz;  $T_j = 25$  °C to 125 °C.

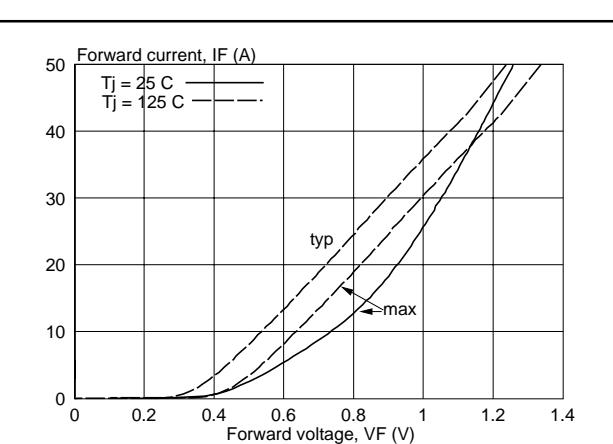


Fig.3. Typical and maximum forward characteristic  
 $I_F = f(V_F)$ ; parameter  $T_j$ .

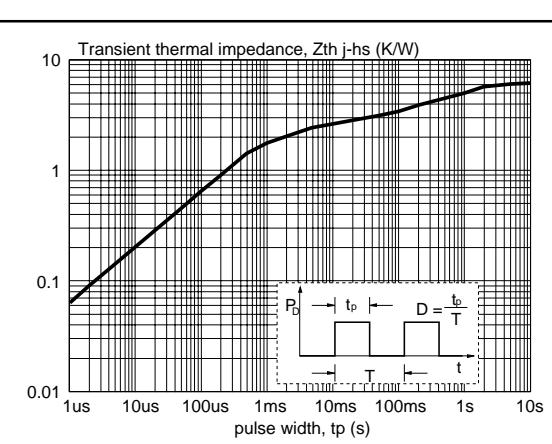


Fig.6. Transient thermal impedance per diode;  
 $Z_{th,j-hs} = f(t_p)$ .

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## MECHANICAL DATA

*Dimensions in mm*

*Net Mass: 2 g*

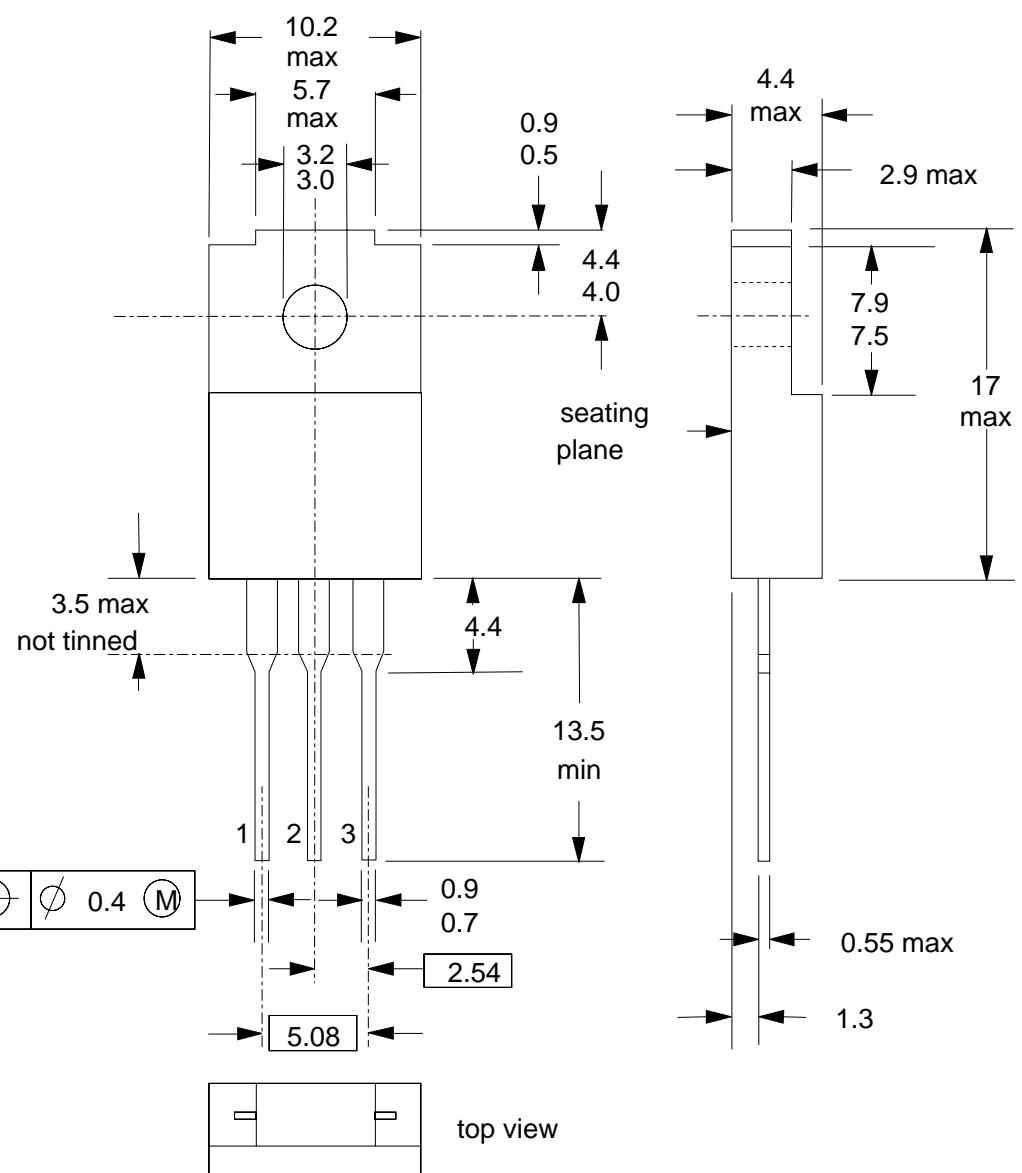


Fig.7. SOT186; The seating plane is electrically isolated from all terminals.

## Notes

**Notes**

1. Refer to mounting instructions for F-pack envelopes.
2. Epoxy meets UL94 V0 at 1/8".

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## MECHANICAL DATA

*Dimensions in mm*

*Net Mass: 2 g*

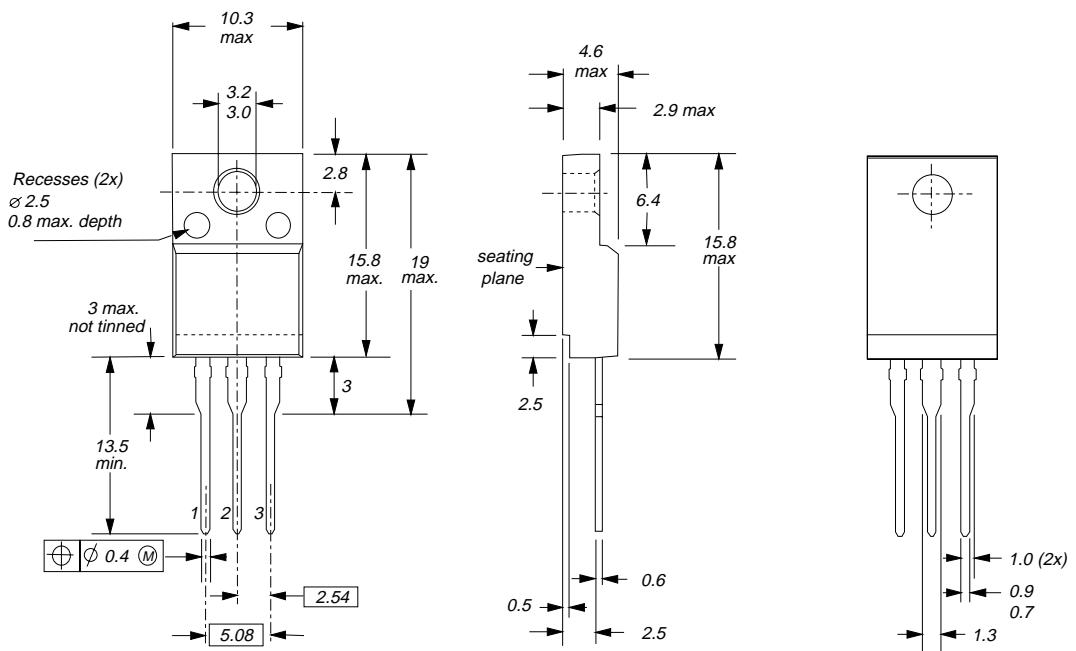


Fig.8. SOT186A; The seating plane is electrically isolated from all terminals.

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## Notes

Notes  
1. Refer to mounting instructions for F-pack envelopes.  
2. Epoxy meets UL94 V0 at 1/8".

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## DEFINITIONS

<b>Data sheet status</b>	
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.
<b>Limiting values</b>	
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.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	
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