

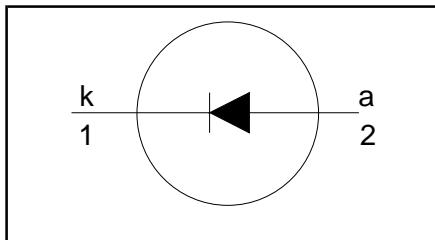
## Rectifier diodes Schottky barrier

## PBYR745 series

### FEATURES

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

### SYMBOL



### QUICK REFERENCE DATA

$$V_R = 40 \text{ V} / 45 \text{ V}$$

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

$$V_F \leq 0.57 \text{ V}$$

### GENERAL DESCRIPTION

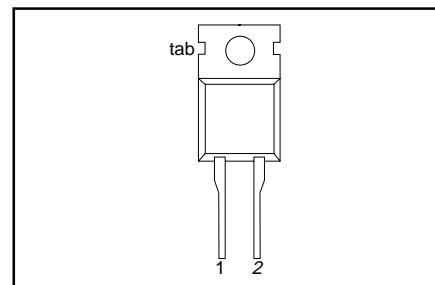
Schottky rectifier diodes in a plastic envelope. Intended for use as output rectifiers in low voltage, high frequency switched mode power supplies.

The PBYR745 series is supplied in the conventional leaded SOD59 (TO220AC) package.

### PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | cathode     |
| 2   | anode       |
| tab | cathode     |

### SOD59 (TO220AC)



### 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       | PBYR7  | -      | 40         | 45 | V                |
| $V_{RWM}$   | Working peak reverse voltage          |  | -      | 40         | 45 | V                |
| $V_R$       | Continuous reverse voltage            | $T_{mb} \leq 114 \text{ }^\circ\text{C}$   | -      | 40         | 45 | V                |
| $I_{F(AV)}$ | Average rectified forward current     | square wave; $\delta = 0.5$ ; $T_{mb} \leq 136 \text{ }^\circ\text{C}$   | -      | 7.5        |    | A                |
| $I_{FRM}$   | Repetitive peak forward current       | square wave; $\delta = 0.5$ ; $T_{mb} \leq 136 \text{ }^\circ\text{C}$   | -      | 15         |    | A                |
| $I_{FSM}$   | Non-repetitive peak forward current   | $t = 10 \text{ ms}$<br>$t = 8.3 \text{ ms}$<br>sinusoidal; $T_j = 125 \text{ }^\circ\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$ pulse width and repetition rate limited by $T_{j\max}$ | -<br>- | 135<br>150 |    | A<br>A           |
| $I_{RRM}$   | Peak repetitive reverse surge current |  | -      | 1          |    | A                |
| $T_j$       | Operating junction temperature        |  | -      | 150        |    | $^\circ\text{C}$ |
| $T_{stg}$   | Storage temperature                   |  | - 65   | 175        |    | $^\circ\text{C}$ |

### 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       | in free air | -    | 60   | -    | K/W  |

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## ELECTRICAL CHARACTERISTICS

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

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

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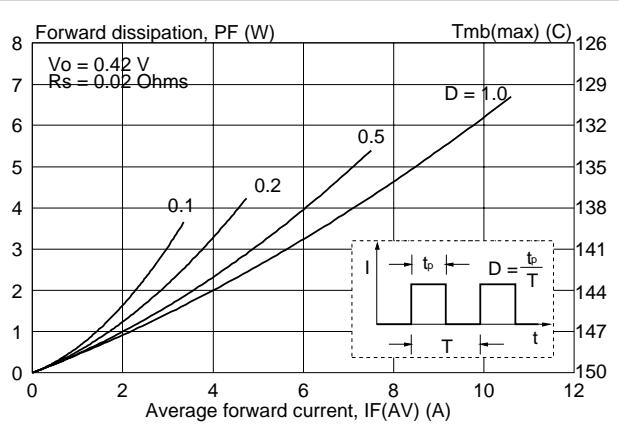


Fig.1. Maximum forward dissipation  $P_F = f(I_{F(AV)})$ ; square current waveform where  $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$ .

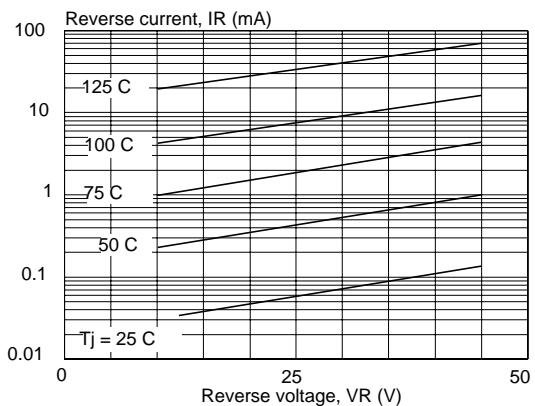


Fig.4. Typical reverse leakage current;  $I_R = f(V_R)$ ; parameter  $T_j$

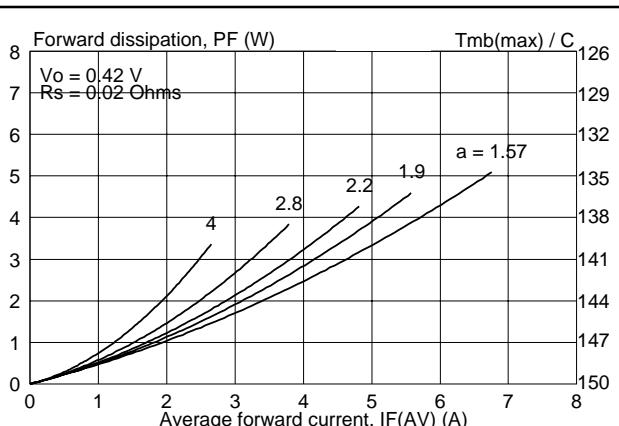


Fig.2. Maximum forward dissipation  $P_F = f(I_{F(AV)})$ ; sinusoidal current waveform where  $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$ .

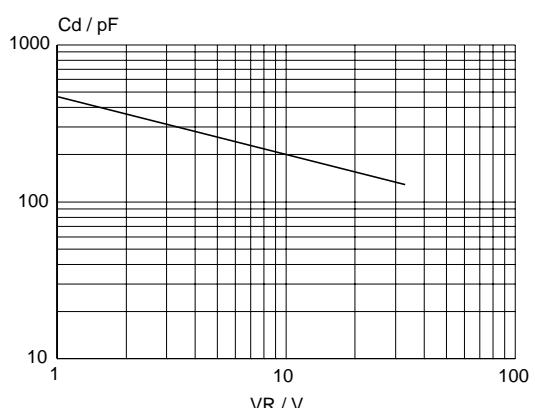


Fig.5. Typical junction capacitance;  $C_d = f(V_R)$ ;  $f = 1 \text{ MHz}$ ;  $T_j = 25^\circ C$  to  $125^\circ C$ .

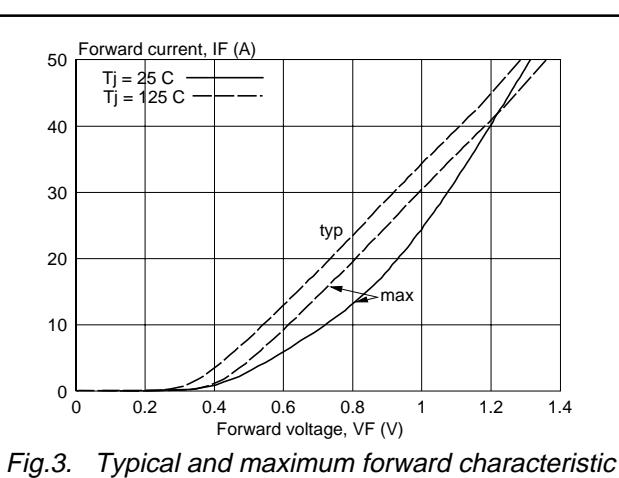


Fig.3. Typical and maximum forward characteristic  $I_F = f(V_F)$ ; parameter  $T_j$

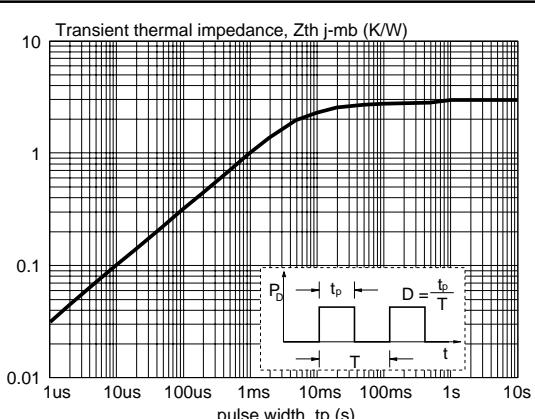


Fig.6. Transient thermal impedance;  $Z_{th-j(mb)} = f(t_p)$ .

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## MECHANICAL DATA

*Dimensions in mm*

Net Mass: 2 g

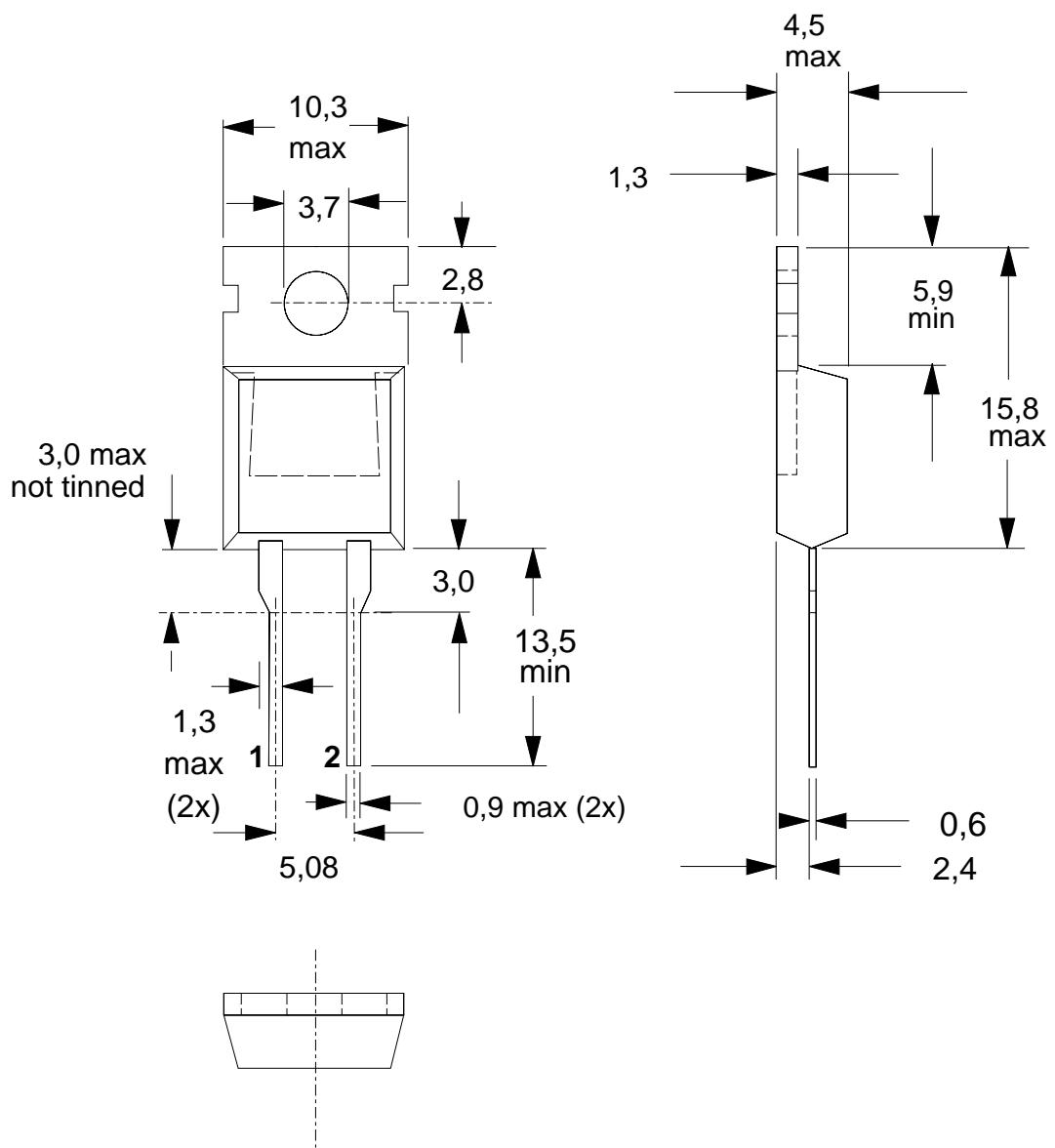


Fig.7. SOD59 (TO220AC). pin 1 connected to mounting base.

**Notes**

1. Refer to mounting instructions for TO220 envelopes.
2. Epoxy meets UL94 V0 at 1/8".

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