# Rectifier diodes schottky barrier

# PBYR2025CT series

## GENERAL DESCRIPTION

Dual nickel silicide schottky barrier rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies with 3 V - 3.3 V outputs, or as or-ing diodes in fault tolerant power supply systems.

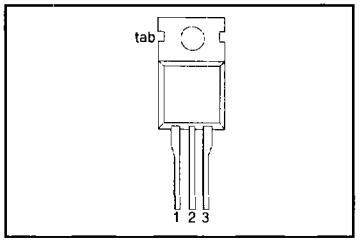
## QUICK REFERENCE DATA

| SYMBOL | PARAMETER | MAX. | MAX. | UNIT |
|---|---|---|---|---|
| | PBYR20- | 20CT | 25CT | |
| $V_{RRM}$ | Repetitive peak reverse voltage | 20 | 25 | V |
| $V_F$ | Forward voltage | 0.41 | 0.41 | V |
| $I_{O(AV)}$ | Average output current (both diodes conducting) | 20 | 20 | A |

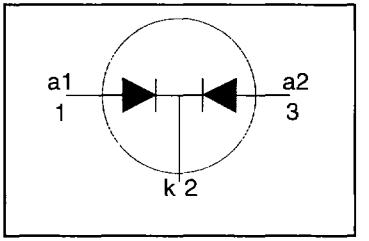
## PINNING - TO220AB

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

## PIN CONFIGURATION




## SYMBOL




## LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | | UNIT |
|---|---|---|---|---|---|---|
| | | | | -20 | -25 | |
| $V_{RRM}$ | Repetitive peak reverse voltage | | - | 20 | 25 | V |
| $V_{RWM}$ | Crest working reverse voltage | | - | 20 | 25 | V |
| $V_R$ | Continuous reverse voltage | $T_{mb} \leq 120$ °C | - | 20 | 25 | V |
| $I_{O(AV)}$ | Average output current (both diodes conducting) | square wave; $\delta = 0.5$; $T_{mb} \leq 135$ °C | - | 20 | | A |
| $I_{O(RMS)}$ | RMS output current (both diodes conducting) | | - | 28 | | A |
| $I_{FRM}$ | Repetitive peak forward current per diode | $t = 25$ µs; $\delta = 0.5$; $T_{mb} \leq 135$ °C | - | 20 | | A |
| $I_{FSM}$ | Non-repetitive peak forward current, per diode | $t = 10$ ms | - | 135 | | A |
| | | $t = 8.3$ ms sinusoidal $T_j = 125$ °C prior to surge; with reapplied $V_{RRM(max)}$ | - | 150 | | A |
| $I^2t$ | $I^2t$ for fusing | $t = 10$ ms | - | 91 | | $A^2s$ |
| $I_{RRM}$ | Repetitive peak reverse current per diode | $t_p = 2$ µs; $\delta = 0.001$ | - | 1 | | A |
| $I_{RSM}$ | Non-repetitive peak reverse current per diode | $t_p = 100$ µs | - | 1 | | A |
| $T_{stg}$ | Storage temperature | | -65 | 175 | | °C |
| $T_j$ | Operating junction temperature | | - | 150 | | °C |

## THERMAL RESISTANCES

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| $R_{th\ j\text{-}mb}$ | Thermal resistance junction to mounting base | per diode | - | - | 2.0 | K/W |
| | | both diodes | - | - | 1.5 | K/W |
| $R_{th\ j\text{-}a}$ | Thermal resistance junction to ambient | in free air | - | 60 | - | K/W |

## STATIC CHARACTERISTICS

$T_j$ = 25 °C unless otherwise stated

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| $V_F$ | Forward voltage (per diode) | $I_F$ = 10 A; $T_j$ = 125°C | - | 0.33 | 0.41 | V |
| | | $I_F$ = 20 A; $T_j$ = 125°C | - | 0.43 | 0.50 | V |
| | | $I_F$ = 20 A | - | 0.51 | 0.60 | V |
| $I_R$ | Reverse current (per diode) | $V_R = V_{RRM}$ | - | 1.0 | 5.0 | mA |
| | | $V_R = V_{RRM}$; $T_j$ = 100 °C | - | 22 | 40 | mA |
| $C_d$ | Junction capacitance (per diode) | f = 1MHz; $V_R$ = 5V; $T_j$ = 25 °C to 125 °C | - | 700 | - | pF |

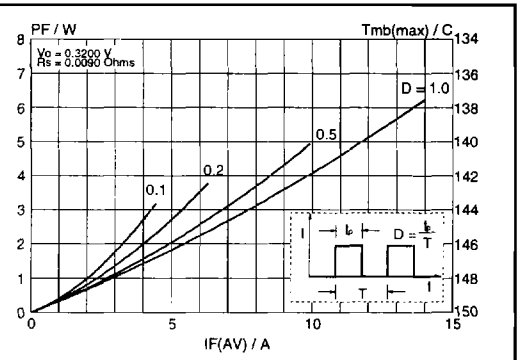



*Fig.1. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.*

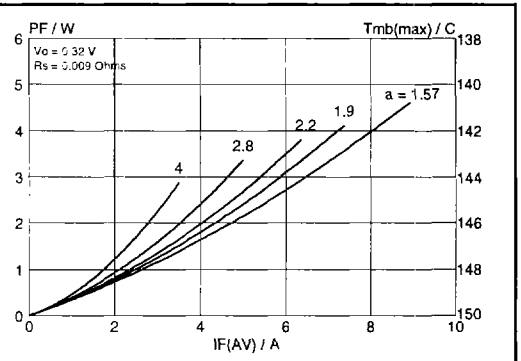



*Fig.2. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where a = form factor = $I_{F(RMS)} / I_{F(AV)}$.*

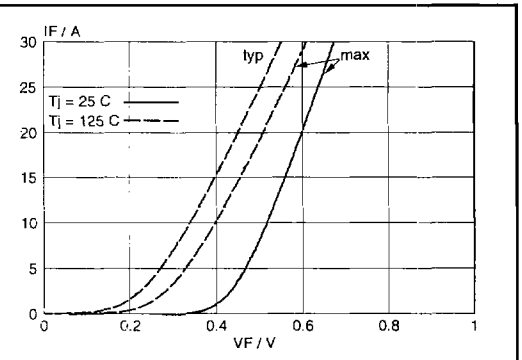



*Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter $T_j$*

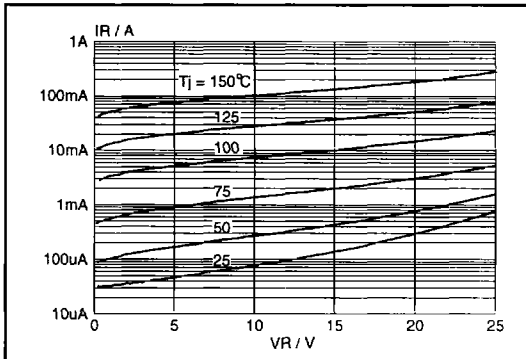



*Fig.4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter $T_j$*

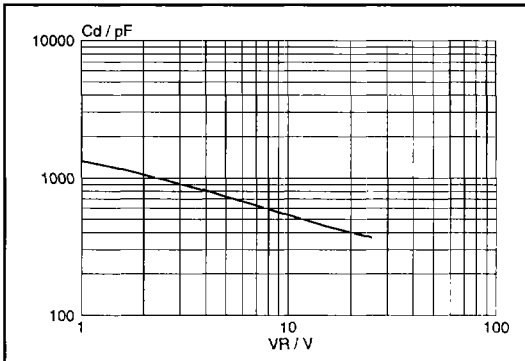



*Fig.5. Typical junction capacitance per diode; $C_d = f(V_R)$; f = 1 MHz; $T_j$ = 25°C to 125 °C.*

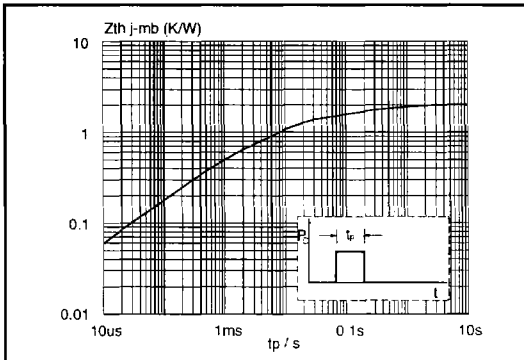



*Fig.6. Transient thermal impedance per diode; $Z_{th\ j\text{-}mb} = f(t_p)$.*