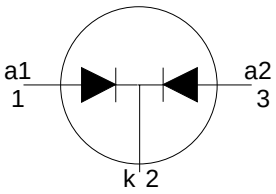
# Rectifier diodes Schottky barrier

# BYV116, BYV116B 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 V/ 25 V

$I_{O(AV)}$ = 10 A

$V_F \leq 0.54$ V

## GENERAL DESCRIPTION

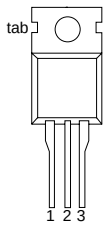
Dual schottky rectifier diodes intended for use as output rectifiers in low voltage, high frequency switched mode power supplies.

The BYV116 series is supplied in the SOT78 (TO220AB) conventional leaded package.
The BYV116B series is supplied in the SOT404 surface mounting package.

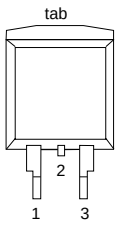
## PINNING

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

## SOT78 (TO220AB)




## SOT404




## LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | | UNIT |
|---|---|---|---|---|---|---|
| | | **BYV118-** | | **20** | **25** | |
| | | **BYV116B-** | | **20** | **25** | |
| $V_{RRM}$ | Peak repetitive reverse voltage | | - | 20 | 25 | V |
| $V_{RWM}$ | Working peak reverse voltage | | - | 20 | 25 | V |
| $V_R$ | Continuous reverse voltage | $T_{mb} \leq 124$ ˚C | - | 20 | 25 | V |
| $I_{O(AV)}$ | Average rectified forward current (both diodes conducting) | square wave; $\delta = 0.5$; $T_{mb} \leq 123$ ˚C | - | 10 | | A |
| $I_{FRM}$ | Repetitive peak forward current per diode | square wave; $\delta = 0.5$; $T_{mb} \leq 123$ ˚C | - | 10 | | A |
| $I_{FSM}$ | Non-repetitive peak forward current per diode | t = 10 ms | - | 50 | | A |
| | | t = 8.3 ms | - | 55 | | A |
| | | sinusoidal; $T_j$ = 125 ˚C prior to surge; with reapplied $V_{RRM(max)}$ | | | | |
| $I_{RRM}$ | Peak repetitive reverse surge current per diode | pulse width and repetition rate limited by $T_{j\,max}$ | - | 1 | | A |
| $T_j$ | Operating junction temperature | | - | 150 | | ˚C |
| $T_{stg}$ | Storage temperature | | - 65 | 175 | | ˚C |

**1**. It is not possible to make connection to pin 2 of the SOT404 package.

## THERMAL RESISTANCES

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| $R_{th\ j\text{-}mb}$ | Thermal resistance junction to mounting base | per diode | - | - | 4 | K/W |
| | | both diodes | - | - | 3.5 | K/W |
| $R_{th\ j\text{-}a}$ | Thermal resistance junction to ambient | SOT78 package, in free air | - | 60 | - | K/W |
| | | SOT404 package, pcb mounted, minimum footprint, FR4 board | - | 50 | - | K/W |

## ELECTRICAL CHARACTERISTICS

All characteristics are per diode at $T_j$ = 25 ˚C unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| $V_F$ | Forward voltage | $I_F$ = 5 A; $T_j$ = 125˚C | - | 0.47 | 0.54 | V |
| | | $I_F$ = 10 A; $T_j$ = 125˚C | - | 0.66 | 0.77 | V |
| | | $I_F$ = 5 A | - | 0.58 | 0.64 | V |
| $I_R$ | Reverse current | $V_R = V_{RWM}$ | - | 0.05 | 3 | mA |
| | | $V_R = V_{RWM}$; $T_j$ = 100˚C | - | 5 | 10 | mA |
| $C_d$ | Junction capacitance | $V_R$ = 5 V; f = 1 MHz, $T_j$ = 25˚C to 125˚C | - | 160 | - | pF |

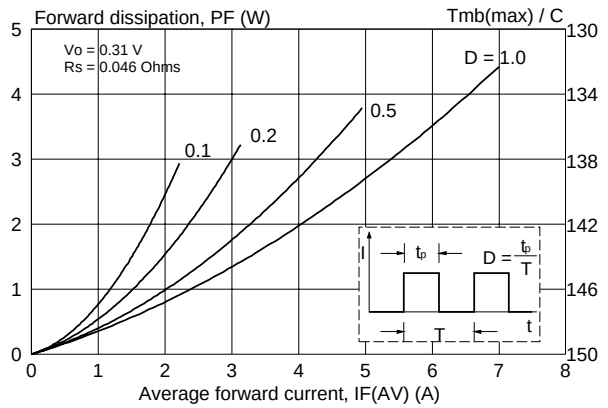



*Fig.1. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.*

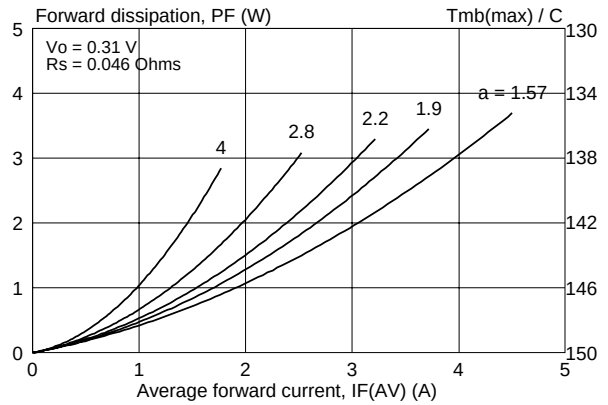



*Fig.2. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where a = form factor = $I_{F(RMS)} / I_{F(AV)}$.*

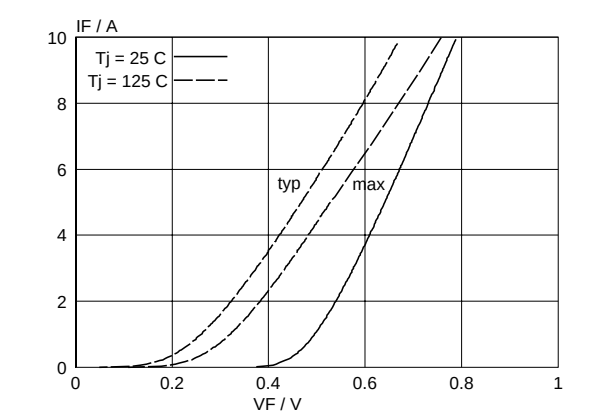



*Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter $T_j$*

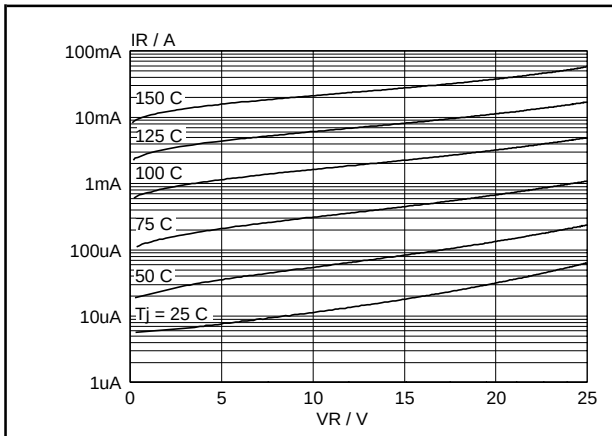



*Fig.4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter $T_j$*

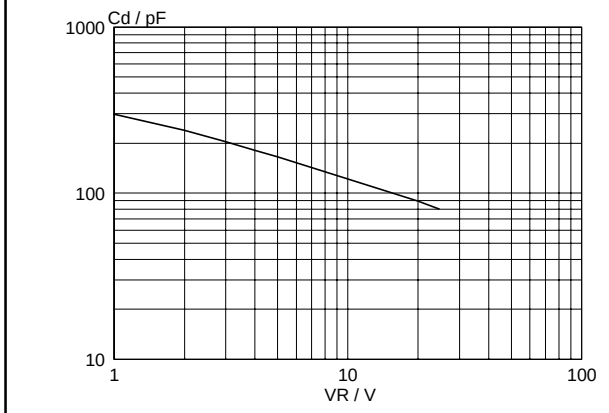



*Fig.5. Typical junction capacitance per diode; $C_d = f(V_R)$; f = 1 MHz; $T_j$ = 25˚C to 125 ˚C.*

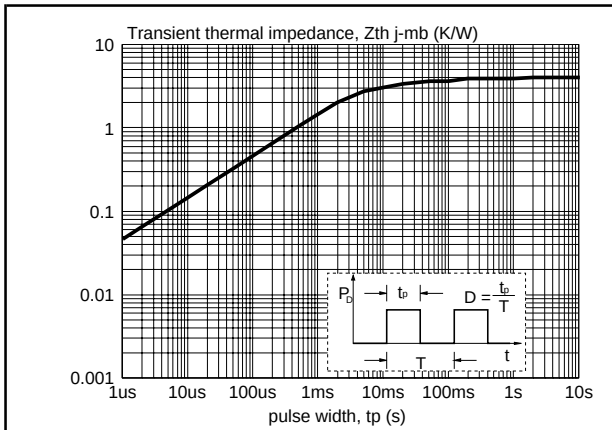



*Fig.6. Transient thermal impedance; per diode; $Z_{th\ j\text{-}mb} = f(t_p)$.*

## MECHANICAL DATA

*Dimensions in mm*

*Net Mass: 1.4 g*

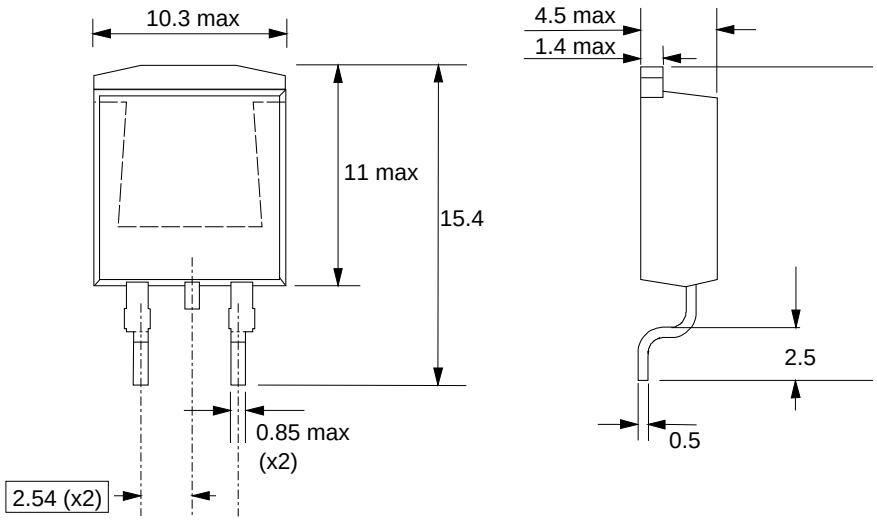



*Fig.7. SOT404 : centre pin connected to mounting base.*

## MOUNTING INSTRUCTIONS

*Dimensions in mm*

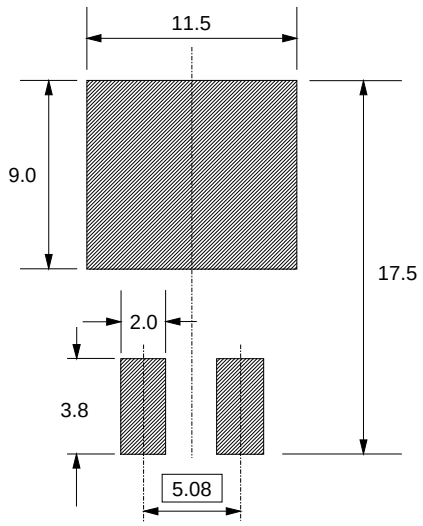



*Fig.8. SOT404 : minimum pad sizes for surface mounting.*

**Notes**
1. Plastic meets UL94 V0 at 1/8".

## MECHANICAL DATA

*Dimensions in mm*

*Net Mass: 2 g*

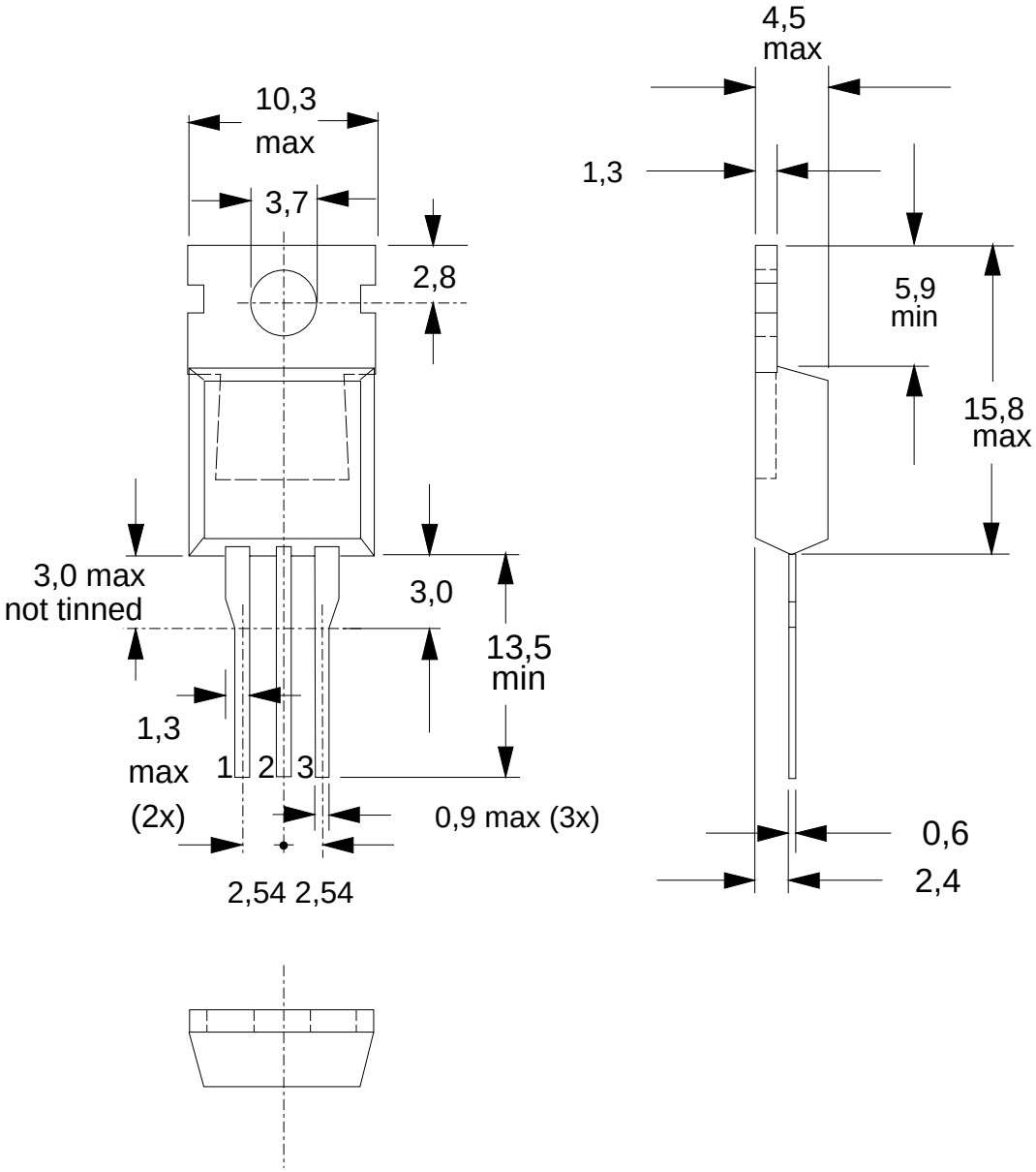



*Fig.9. SOT78 (TO220AB); pin 2 connected to mounting base.*

**Notes**
1. Refer to mounting instructions for SOT78 (TO220) envelopes.
2. Epoxy meets UL94 V0 at 1/8".

## 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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## LIFE SUPPORT APPLICATIONS

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