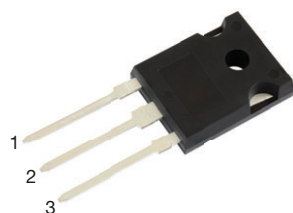


## Dual Common Cathode Schottky Rectifier



TO-247AD 3L



### FEATURES

- Power pack
- Guardring for overvoltage protection
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Solder dip 275 °C max., 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### LINKS TO ADDITIONAL RESOURCES



3D Models

### PRIMARY CHARACTERISTICS

|                       |                        |
|-----------------------|------------------------|
| $I_{F(AV)}$           | 30 A                   |
| $V_{RRM}$             | 35 V, 45 V, 50 V, 60 V |
| $I_{FSM}$             | 200 A                  |
| $V_F$                 | 0.60 V, 0.65 V         |
| $T_J$ max.            | 150 °C                 |
| Package               | TO-247AD 3L            |
| Circuit configuration | Common cathode         |

### TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, or polarity protection application.

### MECHANICAL DATA

**Case:** TO-247AD 3L

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - RoHS-compliant, halogen-free, commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test

**Polarity:** as marked

**Mounting Torque:** 10 in-lbs maximum

### MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)

| MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)                              |                                 |             |           |           |           |      |
|----------------------------------------------------------------------------------------------|---------------------------------|-------------|-----------|-----------|-----------|------|
| PARAMETER                                                                                    | SYMBOL                          | MBR3035PT   | MBR3045PT | MBR3050PT | MBR3060PT | UNIT |
| Maximum repetitive peak reverse voltage                                                      | V <sub>RRM</sub>                | 35          | 45        | 50        | 60        | V    |
| Maximum working peak reverse voltage                                                         | V <sub>RWM</sub>                | 35          | 45        | 50        | 60        | V    |
| Maximum DC blocking voltage                                                                  | V <sub>DC</sub>                 | 35          | 45        | 50        | 60        | V    |
| Maximum average forward rectified current (fig. 1)                                           | I <sub>F(AV)</sub>              | 30          |           |           |           | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | I <sub>FSM</sub>                | 200         |           |           |           | A    |
| Peak repetitive reverse surge current at t <sub>p</sub> = 2 μs, 1 kHz per diode              | I <sub>RRM</sub> <sup>(1)</sup> | 2.0         |           | 1.0       |           | A    |
| Voltage rate of change (rated V <sub>R</sub> )                                               | dV/dt                           | 10 000      |           |           |           | V/μs |
| Operating junction temperature range                                                         | T <sub>J</sub>                  | -65 to +150 |           |           |           | °C   |
| Storage temperature range                                                                    | T <sub>STG</sub>                | -65 to +175 |           |           |           | °C   |

#### Note

<sup>(1)</sup> 2.0  $\mu$ s pulse width,  $f = 1.0$  kHz

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                                                                    | SYMBOL      | TEST CONDITIONS     |                                     | MBR3035PT | MBR3045PT | MBR3050PT | MBR3060PT | UNIT |
|------------------------------------------------------------------------------|-------------|---------------------|-------------------------------------|-----------|-----------|-----------|-----------|------|
| Maximum instantaneous forward voltage per diode                              | $V_F^{(1)}$ | $I_F = 20\text{ A}$ | $T_C = 25\text{ }^{\circ}\text{C}$  | -         |           | 0.75      |           | V    |
|                                                                              |             | $I_F = 20\text{ A}$ | $T_C = 125\text{ }^{\circ}\text{C}$ | 0.60      |           | 0.65      |           |      |
|                                                                              |             | $I_F = 30\text{ A}$ | $T_C = 25\text{ }^{\circ}\text{C}$  | 0.76      |           | -         |           |      |
|                                                                              |             | $I_F = 30\text{ A}$ | $T_C = 125\text{ }^{\circ}\text{C}$ | 0.72      |           | -         |           |      |
| Maximum instantaneous reverse current at rated DC blocking voltage per diode | $I_R^{(1)}$ |                     | $T_J = 25\text{ }^{\circ}\text{C}$  | 1.0       |           | 5.0       |           | mA   |
|                                                                              |             |                     | $T_J = 125\text{ }^{\circ}\text{C}$ | 60        |           | 100       |           |      |

**Note**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

**THERMAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                                              | SYMBOL          | MBR3035PT | MBR3045PT | MBR3050PT | MBR3060PT | UNIT                 |
|--------------------------------------------------------|-----------------|-----------|-----------|-----------|-----------|----------------------|
| Typical thermal resistance, junction to case per diode | $R_{\theta JC}$ | 1.4       |           |           |           | $^{\circ}\text{C/W}$ |

**ORDERING INFORMATION** (Example)

| PACKAGE     | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|-------------|----------------|-----------------|--------------|---------------|---------------|
| TO-247AD 3L | MBR3045PT-M3/P | 5.83            | P            | 25/tube       | Tube          |



## RATINGS AND CHARACTERISTICS CURVES ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

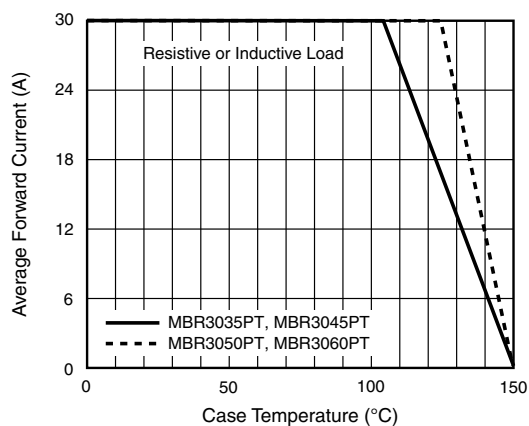


Fig. 1 - Forward Current Derating Curve

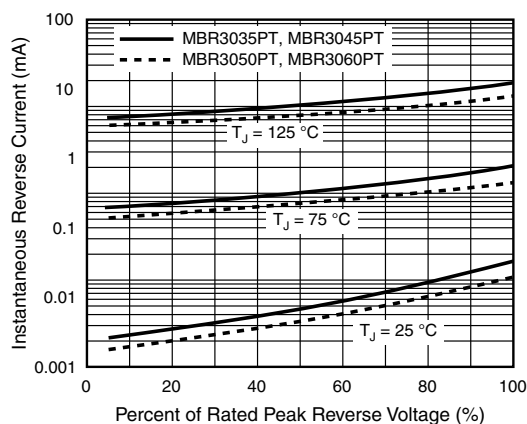


Fig. 4 - Typical Reverse Characteristics Per Diode

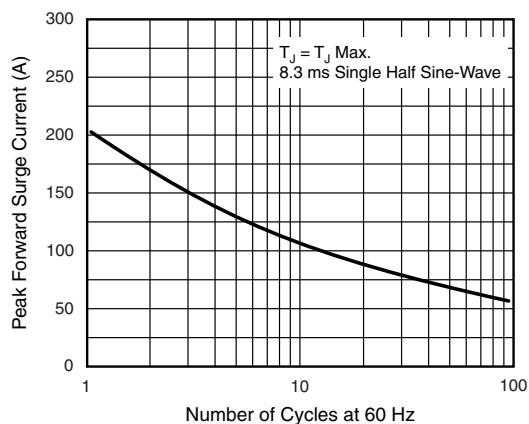


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

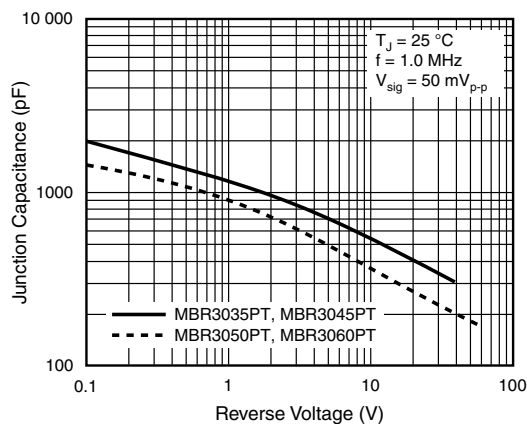


Fig. 5 - Typical Junction Capacitance Per Diode

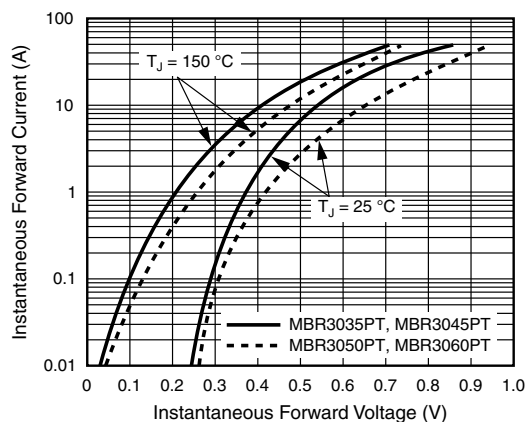


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

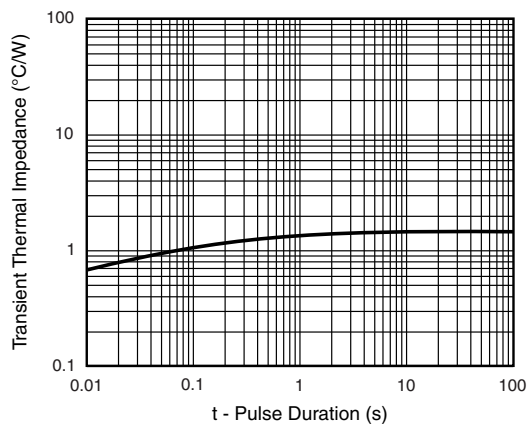
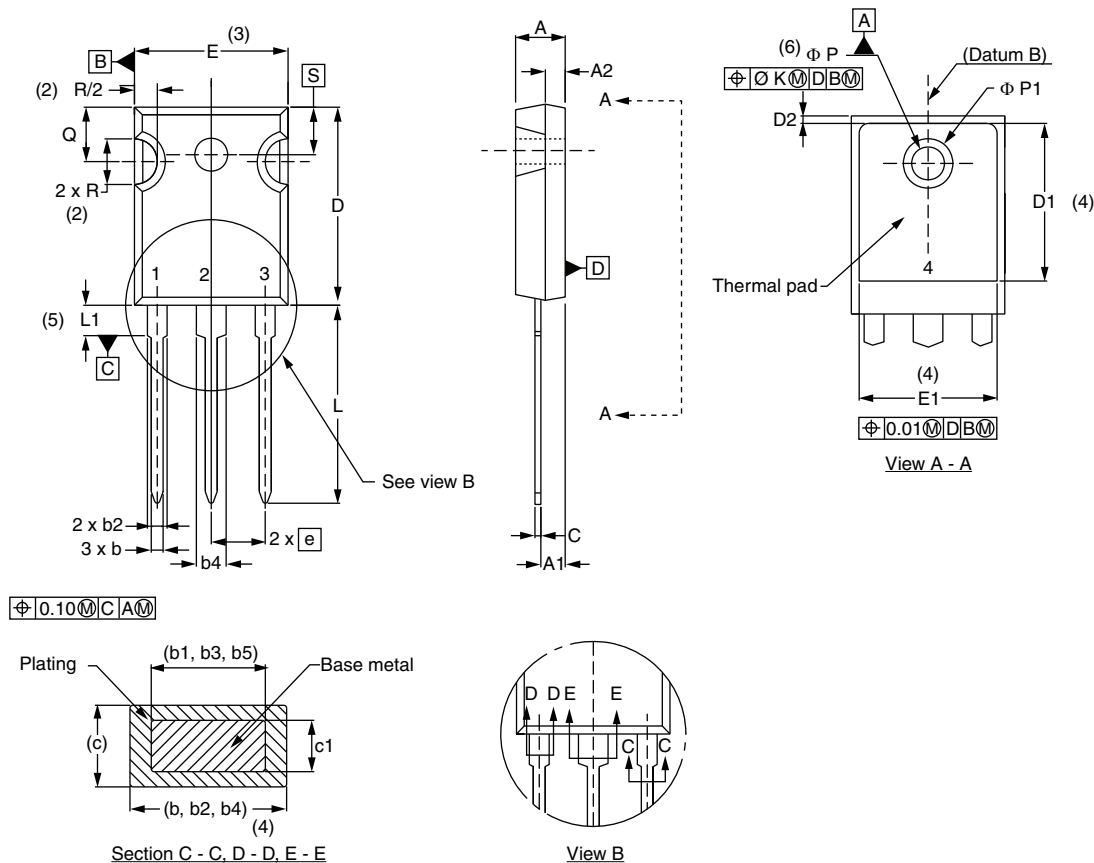


Fig. 6 - Typical Transient Thermal Impedance Per Diode



PACKAGE OUTLINE DIMENSIONS in millimeters (inches) TO-247AD 3L



| SYMBOL | MILLIMETERS |       | INCHES |       | NOTES |
|--------|-------------|-------|--------|-------|-------|
|        | MIN.        | MAX.  | MIN.   | MAX.  |       |
| A      | 4.65        | 5.31  | 0.183  | 0.209 |       |
| A1     | 2.21        | 2.59  | 0.087  | 0.102 |       |
| A2     | 1.50        | 2.49  | 0.059  | 0.098 |       |
| b      | 0.99        | 1.40  | 0.039  | 0.055 |       |
| b1     | 0.99        | 1.35  | 0.039  | 0.053 |       |
| b2     | 1.65        | 2.39  | 0.065  | 0.094 |       |
| b3     | 1.65        | 2.34  | 0.065  | 0.092 |       |
| b4     | 2.59        | 3.43  | 0.102  | 0.135 |       |
| b5     | 2.59        | 3.38  | 0.102  | 0.133 |       |
| c      | 0.38        | 0.89  | 0.015  | 0.035 |       |
| c1     | 0.38        | 0.84  | 0.015  | 0.033 |       |
| D      | 19.71       | 20.70 | 0.776  | 0.815 | 3     |
| D1     | 13.08       | -     | 0.515  | -     | 4     |

| SYMBOL | MILLIMETERS |       | INCHES    |       | NOTES |
|--------|-------------|-------|-----------|-------|-------|
|        | MIN.        | MAX.  | MIN.      | MAX.  |       |
| D2     | 0.51        | 1.30  | 0.020     | 0.051 |       |
| E      | 15.29       | 15.87 | 0.602     | 0.625 | 3     |
| E1     | 13.46       | -     | 0.53      | -     |       |
| e      | 5.46 BSC    |       | 0.215 BSC |       |       |
| Ø K    | 0.254       |       | 0.010     |       |       |
| L      | 19.81       | 20.32 | 0.780     | 0.800 |       |
| L1     | 3.71        | 4.29  | 0.146     | 0.169 |       |
| Ø P    | 3.56        | 3.66  | 0.14      | 0.144 |       |
| Ø P1   | -           | 6.98  | -         | 0.275 |       |
| Q      | 5.31        | 5.69  | 0.209     | 0.224 |       |
| R      | 4.52        | 5.49  | 0.178     | 0.216 |       |
| S      | 5.51 BSC    |       | 0.217 BSC |       |       |

Notes

- Dimensioning and tolerancing per ASME Y14.5M-1994
- Contour of slot optional
- Dimension D and E do not include mold flash. These dimensions are measured at the outermost extremes of the plastic body
- Thermal pad contour optional with dimensions D1 and E1
- Lead finish uncontrolled in L1
- Ø P to have a maximum draft angle of 1.5 to the top of the part with a maximum hole diameter of 3.91 mm (0.154")
- Outline conforms to JEDEC® outline TO-247 with exception of dimension A min., D, E min., Q min., S, and note 4



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