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MBR3035PT, MBR3045PT, MBR3050PT, MBR3060PT

Vishay General Semiconductor

Dual Common Cathode Schottky Rectifier



PIN 3 0 CASE

| 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 (TO-3P) | | | | | |
| Diode variations | Common cathode | | | | | |

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

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 (TO-3P)

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade

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

E3 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) | | | | | | | | |
|---|---------------------------------|-------------|-----------|-----------|-----------|------|--|--|
| PARAMETER | SYMBOL | MBR3035PT | MBR3045PT | MBR3050PT | MBR3060PT | UNIT | | |
| Maximum repetitive peak reverse voltage | V _{RRM} | 35 | 45 | 50 | 60 | V | | |
| Maximum working peak reverse voltage | V _{RWM} | 35 | 45 | 50 | 60 | V | | |
| Maximum DC blocking voltage | V _{DC} | 35 | 45 | 50 | 60 | V | | |
| Maximum average forward rectified current (fig. 1) | I _{F(AV)} | 30 A | | | | | | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | I _{FSM} | 200 A | | | | | | |
| Peak repetitive reverse surge current at $t_p = 2 \ \mu s$, 1 kHz per diode | I _{RRM} ⁽¹⁾ | 2.0 1.0 | | | А | | | |
| Voltage rate of change (rated V _R) | dV/dt | 10 000 V/µ | | | | | | |
| Operating junction temperature range | TJ | -65 to +150 | | | | °C | | |
| Storage temperature range | T _{STG} | -65 to +175 | | | °C | | | |

Note

(1) 2.0 µs pulse width, f = 1.0 kHz



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| ELECTRICAL CHARACTERISTICS ($T_A = 25$ °C unless otherwise noted) | | | | | | | | | |
|---|-------------------------------|------------------------|-------------------------|-----------|-----------|-----------|-----------|------|--|
| PARAMETER | SYMBOL | TEST CO | ONDITIONS | MBR3035PT | MBR3045PT | MBR3050PT | MBR3060PT | UNIT | |
| Maximum instantaneous forward voltage per diode | V _F ⁽¹⁾ | I _F = 20 A | T _C = 25 °C | - | | 0.75 | | - V | |
| | | I _F = 20 A | T _C = 125 °C | 0.60 | | 0.65 | | | |
| | | $I_{F} = 30 \text{ A}$ | T _C = 25 °C | 0.76 | | _ | | | |
| | | I _F = 30 A | T _C = 125 °C | 0.72 | | - | | | |
| Maximum instantaneous reverse current at rated DC blocking | I _B ⁽¹⁾ | | $T_J = 25 \ ^\circ C$ | 1 | .0 | 5 | .0 | mA | |
| voltage per diode | 'R'' | | T _J = 125 °C | 6 | 0 | 1(| 00 | | |

Note

⁽¹⁾ Pulse test: 300 µs pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted) | | | | | | | |
|--|---------------------|-----------|-----------|-----------|-----------|------|--|
| PARAMETER | SYMBOL | MBR3035PT | MBR3045PT | MBR3050PT | MBR3060PT | UNIT | |
| Typical thermal resistance, junction to case per diode | $R_{	ext{	heta}JC}$ | 1.4 | | | °C/W | | |

| ORDERING INFORMATION (Example) | | | | | | | | |
|--------------------------------|--|------|----|---------|------|--|--|--|
| PACKAGE | KAGE PREFERRED P/N UNIT WEIGHT (g) PACKAGE CODE BASE QUANTITY DELIVERY | | | | | | | |
| TO-247AD | MBR3045PT-E3/45 | 6.13 | 45 | 30/tube | Tube | | | |

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

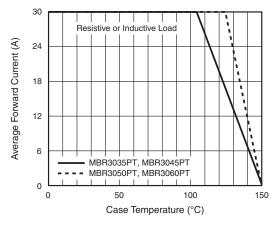


Fig. 1 - Forward Current Derating Curve

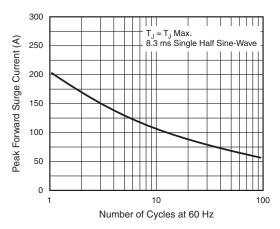


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode



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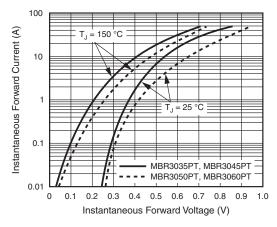


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

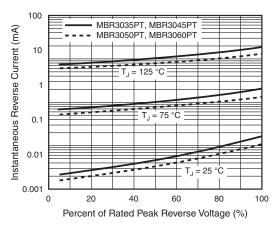


Fig. 4 - Typical Reverse Characteristics Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

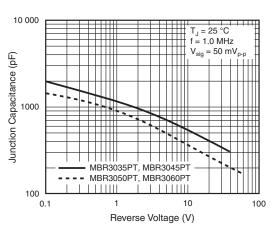


Fig. 5 - Typical Junction Capacitance Per Diode

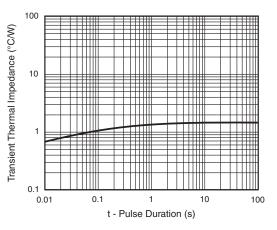
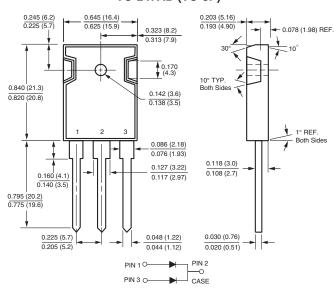


Fig. 6 - Typical Transient Thermal Impedance Per Diode



TO-247AD (TO-3P)

Revision: 17-Aug-15 3 Document Number: 88676 For technical questions within your region: <u>DiodesAmericas@vishay.com</u>, <u>DiodesAsia@vishay.com</u>, <u>DiodesEurope@vishay.com</u> THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT <u>www.vishay.com/doc?91000</u>



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