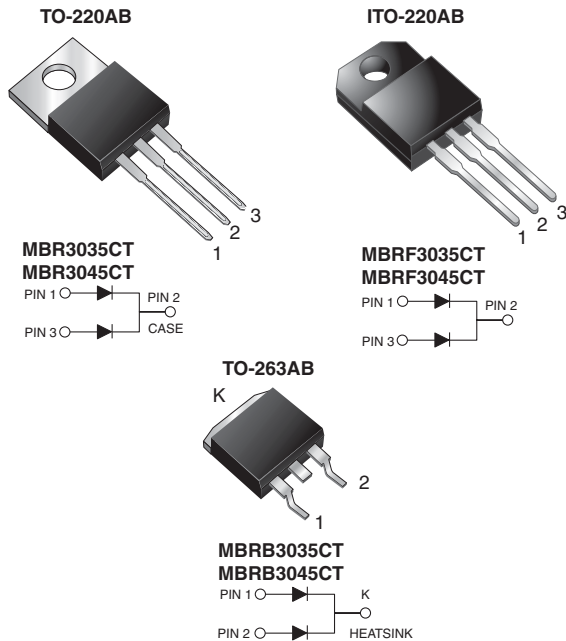


Dual Common Cathode Schottky Rectifier



FEATURES

- Guardring for overvoltage protection
- Low power loss, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AB and ITO-220AB package)
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: TO-220AB, ITO-220AB, TO-263AB

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

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

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS

| | |
|--------------------|------------|
| $I_{F(AV)}$ | 15 A x 2 |
| V_{RRM} | 35 V, 45 V |
| I_{FSM} | 200 A |
| V_F | 0.60 V |
| $T_J \text{ max.}$ | 150 °C |

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

| PARAMETER | SYMBOL | MBR3035CT | MBR3045CT | UNIT |
|--|---------------------------|---------------|-----------|------|
| Maximum repetitive peak reverse voltage | V_{RRM} | 35 | 45 | V |
| Working peak reverse voltage | V_{RWM} | 35 | 45 | |
| Maximum DC blocking voltage | V_{DC} | 35 | 45 | |
| Maximum average forward rectified current | total device per diode | $I_{F(AV)}$ | | A |
| | | 30 | | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 200 | | °C |
| Peak repetitive reverse current per diode at $t_p = 2.0$ μ s, 1 kHz | I_{RRM} | 2.0 | | |
| Voltage rate of change (rated V_F) | dV/dt | 10 000 | | |
| Operating junction temperature range | T_J | - 65 to + 150 | | °C |
| Storage temperature range | T_{STG} | - 65 to + 175 | | |
| Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1$ min | V_{AC} | 1500 | | V |



| ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | |
|--|----------------------|---------------------|-----------------------------------|-------|------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUE | UNIT |
| Maximum instantaneous forward voltage per diode | V_F ⁽¹⁾ | $I_F = 20\text{ A}$ | $T_C = 125\text{ }^\circ\text{C}$ | 0.60 | V |
| | | $I_F = 30\text{ A}$ | $T_C = 25\text{ }^\circ\text{C}$ | 0.76 | |
| | | $I_F = 30\text{ A}$ | $T_C = 125\text{ }^\circ\text{C}$ | 0.72 | |
| Maximum instantaneous reverse current at DC blocking voltage per diode | I_R ⁽¹⁾ | Rated V_R | $T_J = 25\text{ }^\circ\text{C}$ | 1.0 | mA |
| | | | $T_J = 125\text{ }^\circ\text{C}$ | 60 | |

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width $\leq 40\text{ ms}$

| THERMAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|-----------------|-----|------|------|--------------------|
| PARAMETER | SYMBOL | MBR | MBRF | MBRB | UNIT |
| Typical thermal resistance per diode | $R_{\theta JC}$ | 1.5 | 4.5 | 1.5 | $^\circ\text{C/W}$ |

| ORDERING INFORMATION (Example) | | | | | |
|---------------------------------------|---------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB | MBR3045CT-E3/45 | 1.85 | 45 | 50/tube | Tube |
| ITO-220AB | MBRF3045CT-E3/45 | 1.99 | 45 | 50/tube | Tube |
| TO-263AB | MBRB3045CT-E3/45 | 1.35 | 45 | 50/tube | Tube |
| TO-263AB | MBRB3045CT-E3/81 | 1.35 | 81 | 800/reel | Tape and reel |
| TO-220AB | MBR3045CTHE3/45 ⁽¹⁾ | 1.85 | 45 | 50/tube | Tube |
| ITO-220AB | MBRF3045CTHE3/45 ⁽¹⁾ | 1.99 | 45 | 50/tube | Tube |
| TO-263AB | MBRB3045CTHE3/45 ⁽¹⁾ | 1.35 | 45 | 50/tube | Tube |
| TO-263AB | MBRB3045CTHE3/81 ⁽¹⁾ | 1.35 | 81 | 800/reel | Tape and reel |

Note

- (1) AEC-Q101 qualified



RATINGS AND CHARACTERISTICS CURVES

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

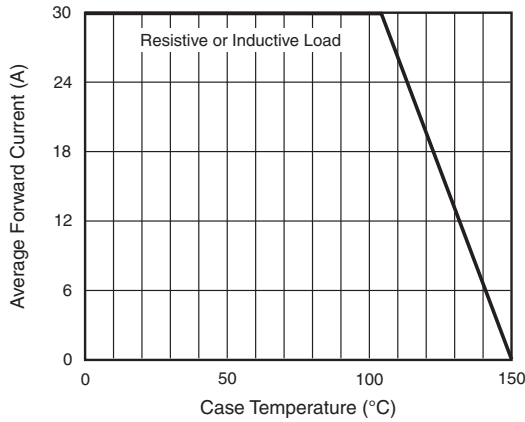


Fig. 1 - Forward Current Derating Curve

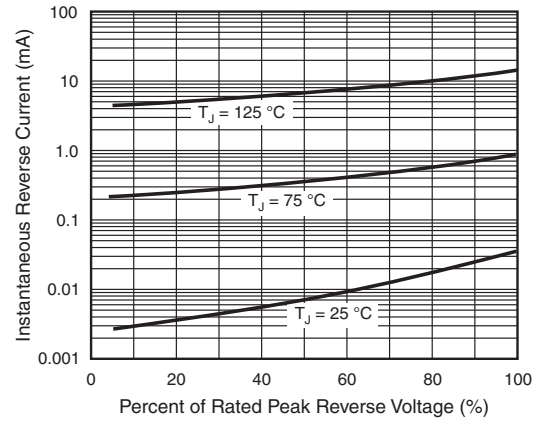


Fig. 4 - Typical Reverse Characteristics Per Diode

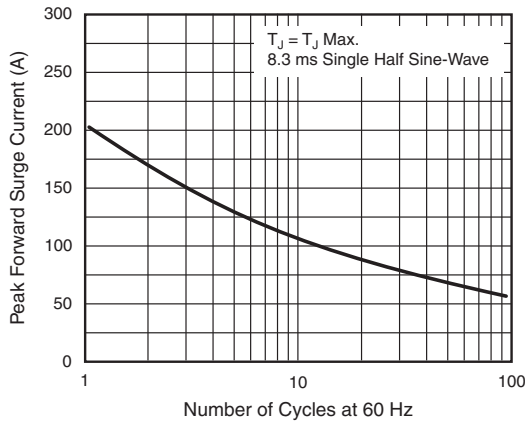


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

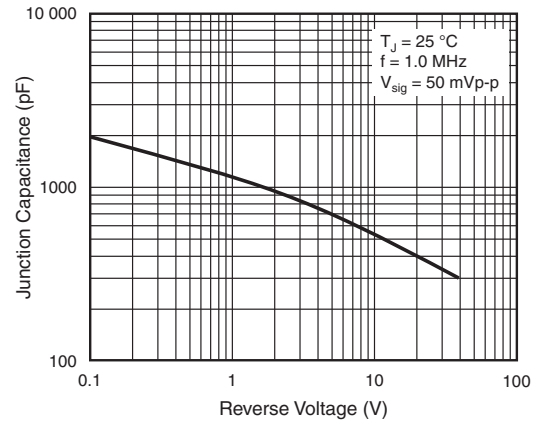


Fig. 5 - Typical Junction Capacitance Per Diode

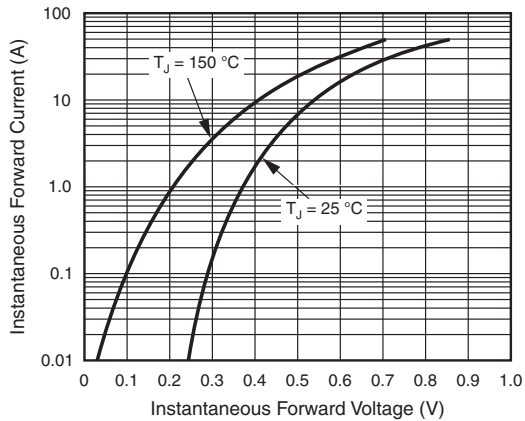


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

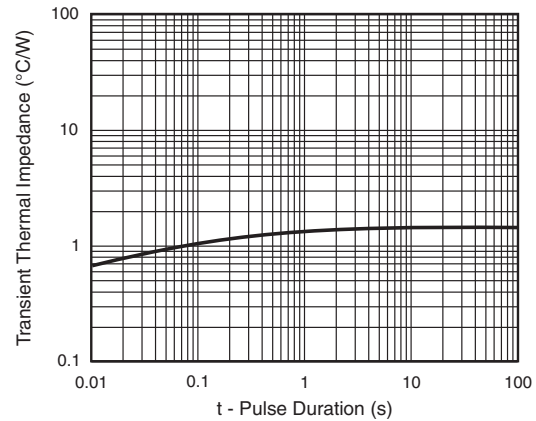
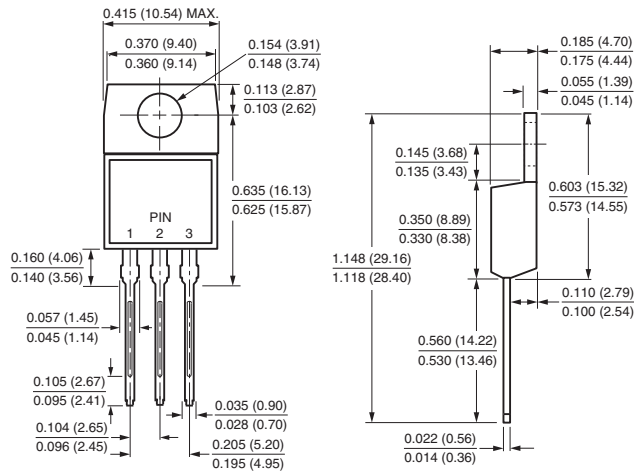


Fig. 6 - Typical Transient Thermal Impedance Per Diode

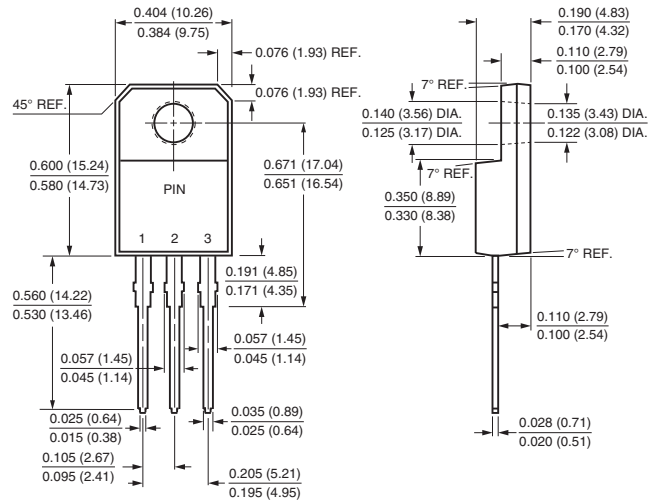


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

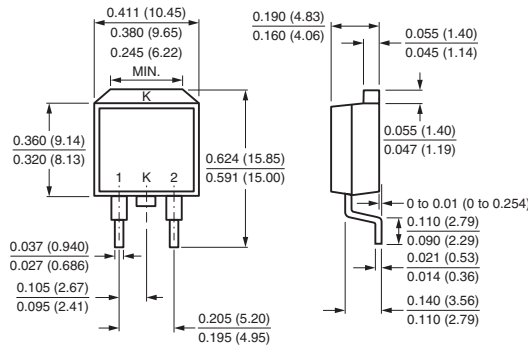
TO-220AB



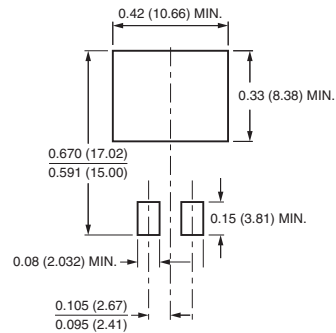
ITO-220AB



TO-263AB



Mounting Pad Layout





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