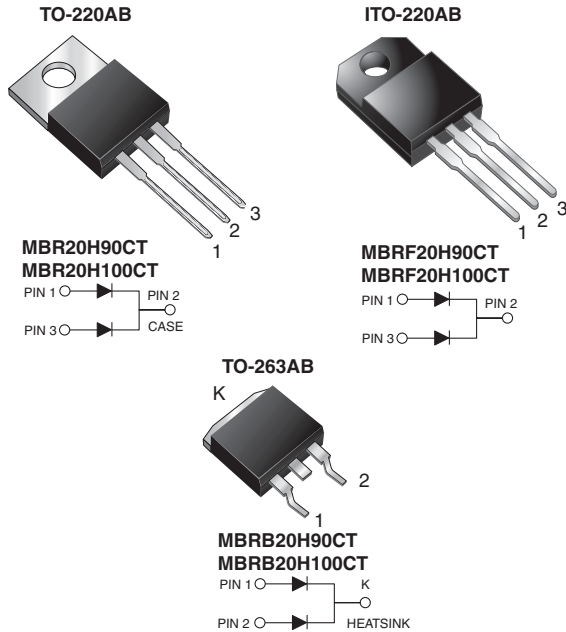


Dual Common Cathode High Voltage Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



FEATURES

- Power pack
- Guardring for overvoltage protection
- Low power loss, high efficiency
- Low forward voltage drop
- Low leakage current
- 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 available
- Automotive ordering code: base P/NHE3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

TYPICAL APPLICATIONS

For use in 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 | |
|-------------------------|-------------------------------|
| $I_{F(AV)}$ | 2 x 10 A |
| V_{RRM} | 90 V to 100 V |
| I_{FSM} | 250 A |
| I_R | 4.5 μ A |
| V_F | 0.64 |
| T_J max. | 175 °C |
| Package | TO-220AB, ITO-220AB, TO-263AB |
| Diode variations | Dual common cathode |

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | | |
|--|----------------|--------------|-------------|------------|
| PARAMETER | SYMBOL | MBR20H90CT | MBR20H100CT | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 90 | 100 | V |
| Working peak reverse voltage | V_{RWM} | 90 | 100 | |
| Maximum DC blocking voltage | V_{DC} | 90 | 100 | |
| Maximum average forward rectified current | $I_{F(AV)}$ | total device | | A |
| | | per diode | | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 250 | | A |
| Peak repetitive reverse current per diode at $t_p = 2.0$ μ s, 1 kHz | I_{RRM} | 1.0 | | |
| Voltage rate of change (rated V_R) | dV/dt | 10 000 | | V/ μ s |
| Operating junction and storage temperature range | T_J, T_{STG} | -65 to +175 | | °C |
| Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1$ min | V_{AC} | 1500 | | V |



| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | |
|--|-------------------------------|-----------------------|-------------------------|-------|------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUE | UNIT |
| Maximum instantaneous forward voltage per diode | V _F ⁽¹⁾ | I _F = 10 A | T _C = 25 °C | 0.77 | V |
| | | I _F = 10 A | T _C = 125 °C | 0.64 | |
| | | I _F = 20 A | T _C = 25 °C | 0.88 | |
| | | I _F = 20 A | T _C = 125 °C | 0.73 | |
| Maximum reverse current at working peak reverse voltage per diode | I _R ⁽²⁾ | Rated V _R | T _J = 25 °C | 4.5 | μA |
| | | | T _J = 125 °C | 6.0 | mA |

Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | |
|---|------------------|-----|------|------|------|
| PARAMETER | SYMBOL | MBR | MBRF | MBRB | UNIT |
| Typical thermal resistance per diode | R _{θJC} | 2.0 | 5.8 | 2.0 | °C/W |

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|-----------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB | MBR20H100CT-E3/45 | 1.85 | 45 | 50/tube | Tube |
| ITO-220AB | MBRF20H100CT-E3/45 | 1.99 | 45 | 50/tube | Tube |
| TO-263AB | MBRB20H100CT-E3/45 | 1.35 | 45 | 50/tube | Tube |
| TO-263AB | MBRB20H100CT-E3/81 | 1.35 | 81 | 800/reel | Tape and reel |
| TO-220AB | MBR20H100CTHE3/45 ⁽¹⁾ | 1.85 | 45 | 50/tube | Tube |
| ITO-220AB | MBRF20H100CTHE3/45 ⁽¹⁾ | 1.99 | 45 | 50/tube | Tube |
| TO-263AB | MBRB20H100CTHE3/45 ⁽¹⁾ | 1.35 | 45 | 50/tube | Tube |
| TO-263AB | MBRB20H100CTHE3/81 ⁽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)

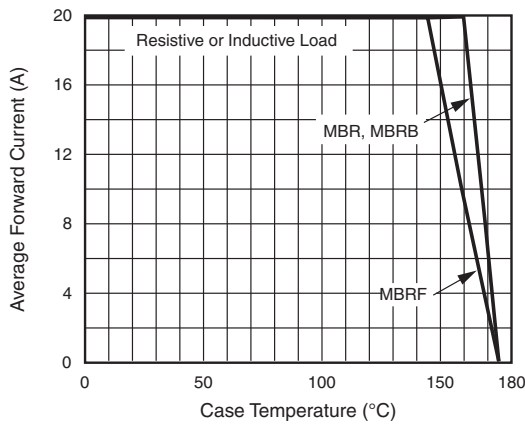


Fig. 1 - Forward Current Derating Curve

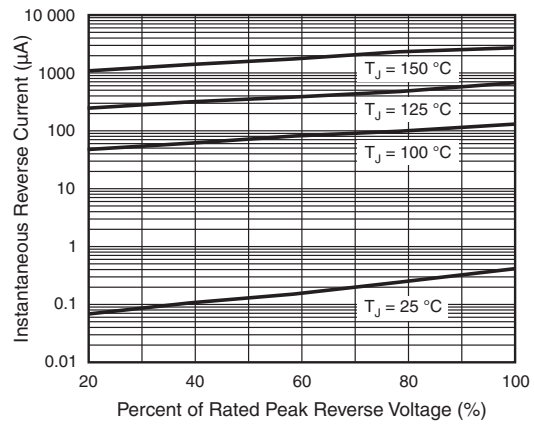


Fig. 4 - Typical Reverse Characteristics Per Diode

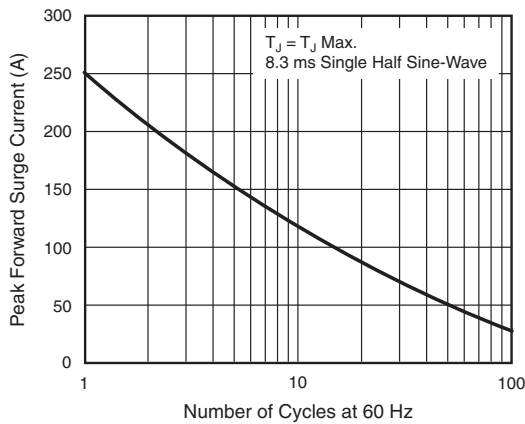


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

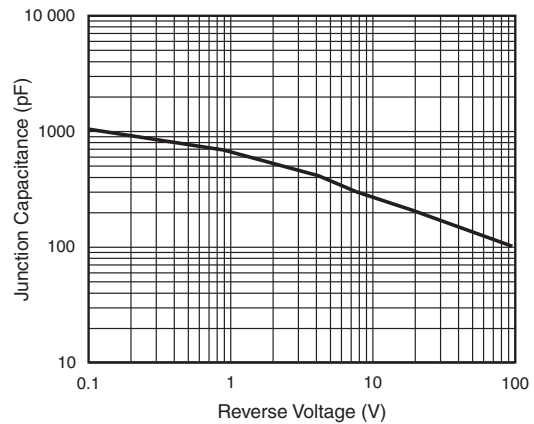


Fig. 5 - Typical Junction Capacitance Per Diode

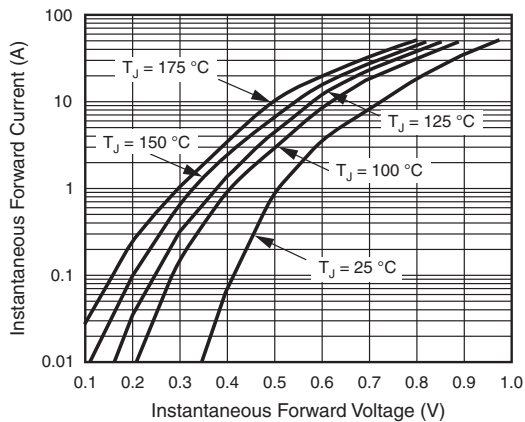


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

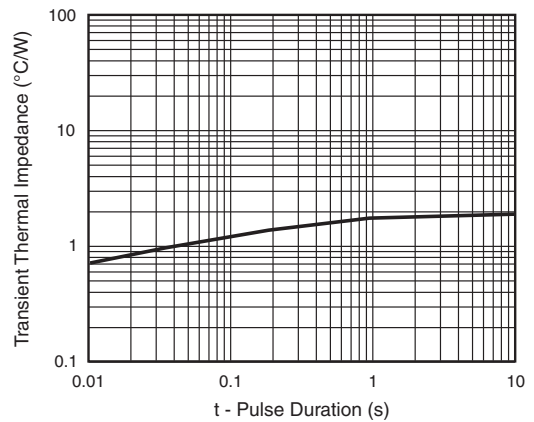
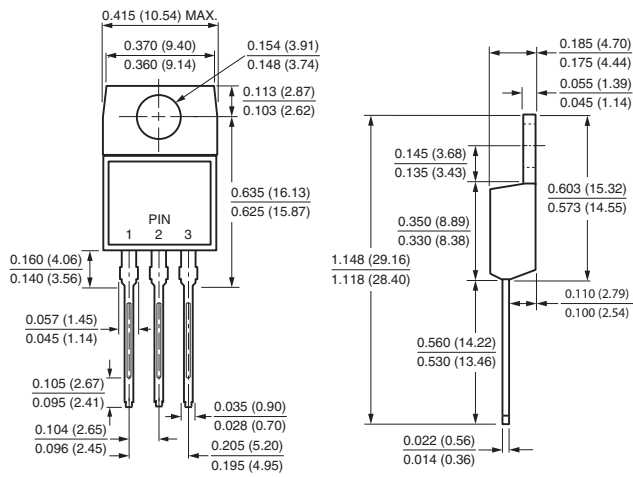


Fig. 6 - Typical Transient Thermal Impedance Per Diode

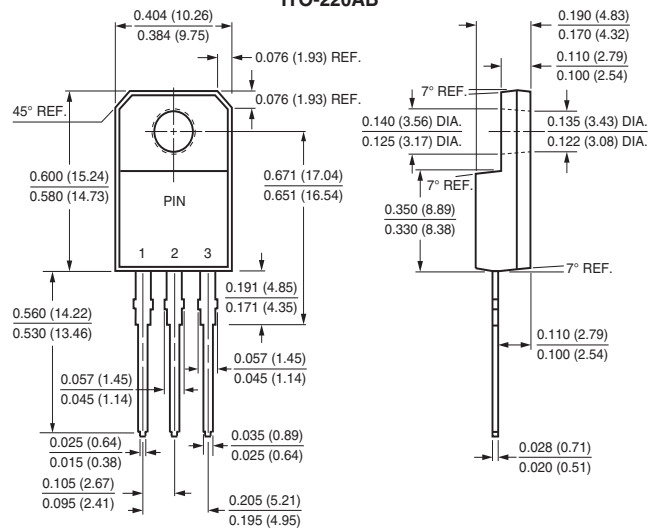


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

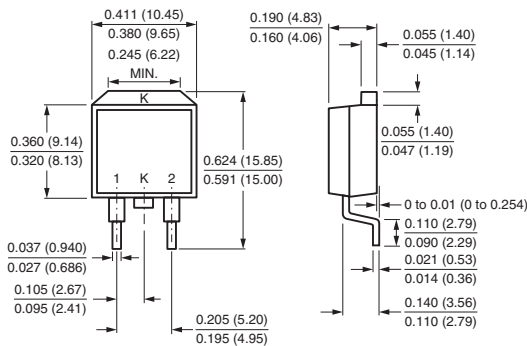
TO-220AB



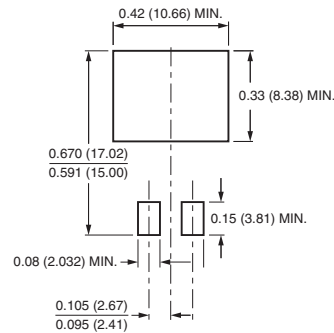
ITO-220AB



TO-263AB



Mounting Pad Layout





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