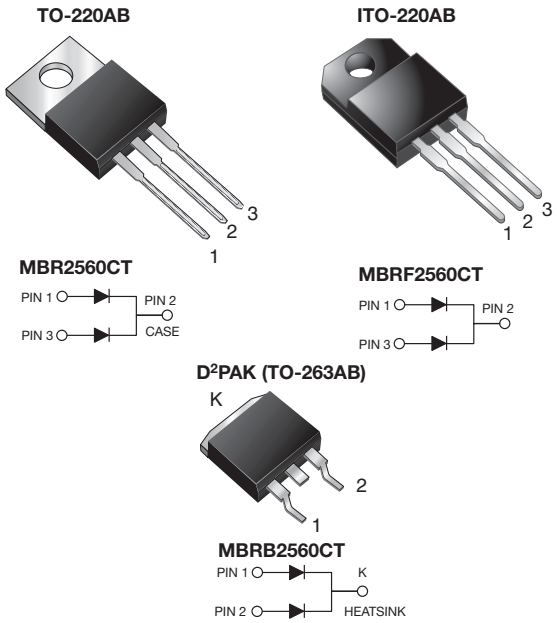
# Dual Common Cathode Schottky Rectifier




## FEATURES

- Power pack
- Guardring for overvoltage protection
- Lower power losses, 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 $D^2$PAK (TO-263AB) package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AB and ITO-220AB package)
- 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, or polarity protection application.

## MECHANICAL DATA

**Case:** TO-220AB, ITO-220AB, $D^2$PAK (TO-263AB)
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 JESD22-B102
E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** as marked

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

| PRIMARY CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 2 x 12.5 A |
| $V_{RRM}$ | 60 V |
| $I_{FSM}$ | 150 A |
| $V_F$ | 0.65 V at 15 A |
| $T_J$ max. | 150 °C |
| Package | TO-220AB, ITO-220AB, $D^2$PAK (TO-263AB) |
| Diode variation | Common cathode |

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

| PARAMETER | | SYMBOL | MBR2560CT | UNIT |
|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | | $V_{RRM}$ | 60 | V |
| Working peak reverse voltage | | $V_{RWM}$ | 60 | |
| Maximum DC blocking voltage | | $V_{DC}$ | 60 | |
| Maximum average forward rectified current at $T_C$ = 130 °C | total device | $I_{F(AV)}$ | 25 | A |
| | per diode | | 12.5 | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | | $I_{FSM}$ | 150 | A |
| Peak repetitive reverse surge current per diode at $t_p$ = 2 μs, 1 kHz | | $I_{RRM}$ | 0.5 | |
| Peak non-repetitive reverse energy (8/20 μs waveform) per diode | | $E_{RSM}$ | 25 | mJ |
| Electrostatic discharge capacitor voltage human body model: C = 100 pF, R = 1.5 kΩ | | $V_C$ | 25 | kV |
| Voltage rate of change (rated $V_R$) | | dV/dt | 10 000 | V/μs |
| 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 |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| **ELECTRICAL CHARACTERISTICS** ($T_C$ = 25 °C unless otherwise noted) | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITIONS** | | **SYMBOL** | **MBR2560CT** | **UNIT** |
| Maximum instantaneous forward voltage per diode | $I_F$ = 15 A | $T_C$ = 25 °C | $V_F$ (1) | 0.75 | V |
| | | $T_C$ = 125 °C | | 0.65 | |
| Maximum instantaneous reverse current at blocking voltage per diode | | $T_C$ = 25 °C | $I_R$ (1) | 1.0 | mA |
| | | $T_C$ = 125 °C | | 50 | |

**Note**

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

| **THERMAL CHARACTERISTICS** ($T_C$ = 25 °C unless otherwise noted) | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **MBR** | **MBRF** | **MBRB** | **UNIT** |
| Typical thermal resistance from junction to case per diode | $R_{\theta JC}$ | 1.5 | 4.5 | 1.5 | °C/W |

| **ORDERING INFORMATION** (Example) | | | | | |
|---|---|---|---|---|---|
| **PACKAGE** | **PREFERRED P/N** | **UNIT WEIGHT (g)** | **PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| TO-220AB | MBR2560CT-E3/45 | 1.85 | 45 | 50/tube | Tube |
| ITO-220AB | MBRF2560CT-E3/45 | 1.99 | 45 | 50/tube | Tube |
| TO-263AB | MBRB2560CT-E3/45 | 1.35 | 45 | 50/tube | Tube |
| TO-263AB | MBRB2560CT-E3/81 | 1.35 | 81 | 800/reel | Tape and reel |


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**RATINGS AND CHARACTERISTICS CURVES** ($T_C$ = 25 °C unless otherwise noted)

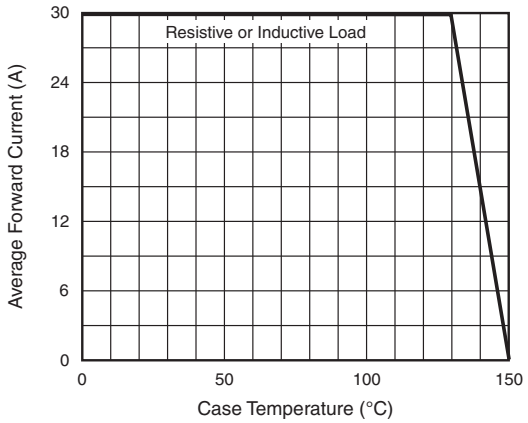


Fig. 1 - Forward Current Derating Curve

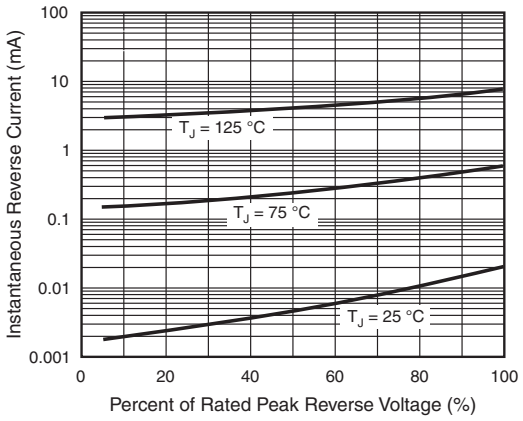


Fig. 4 - Typical Reverse Characteristics Per Diode

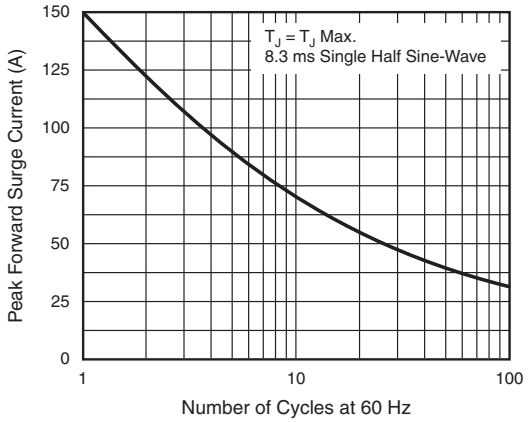


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

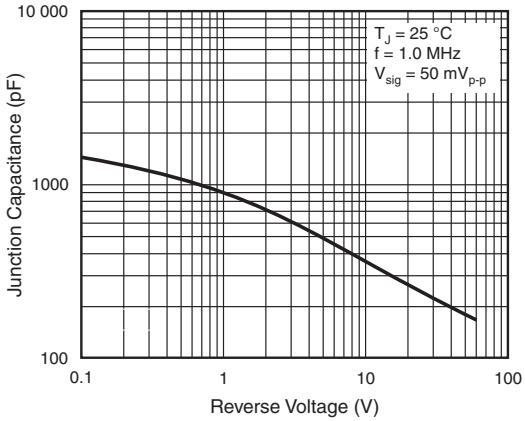


Fig. 5 - Typical Junction Capacitance Per Diode

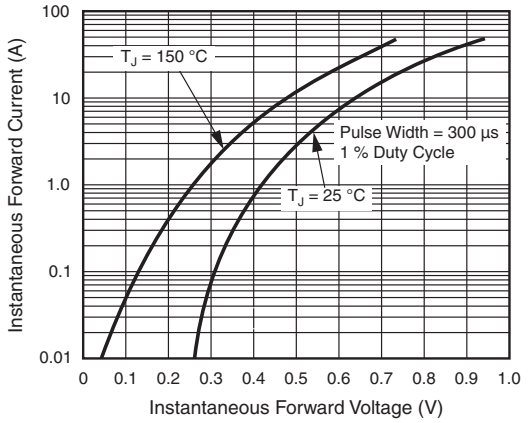


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

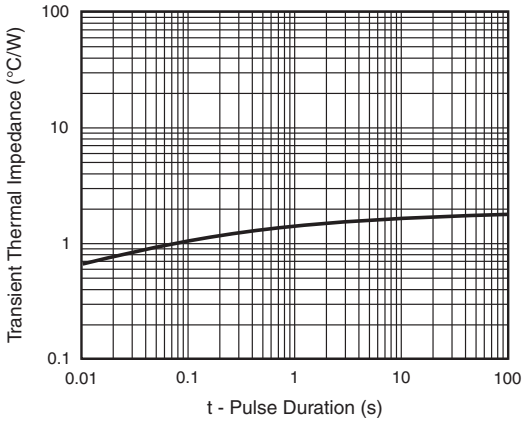


Fig. 6 - Typical Transient Thermal Impedance Per Diode


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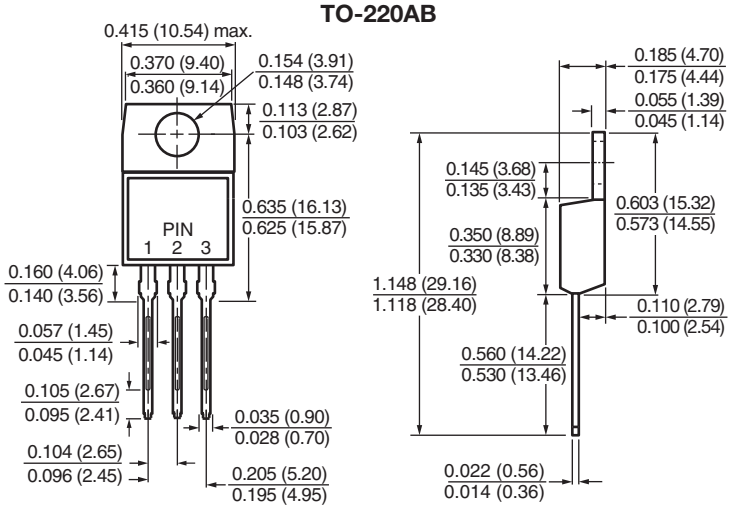
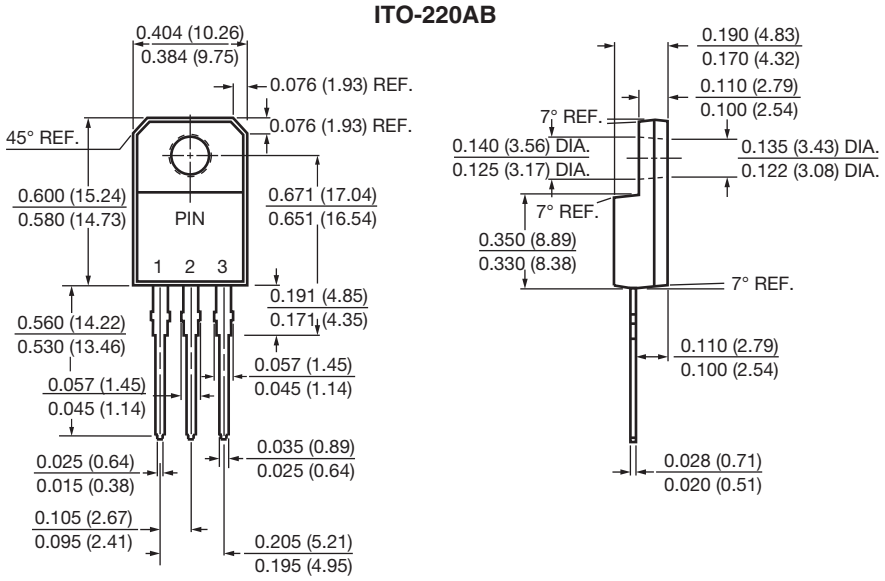
**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

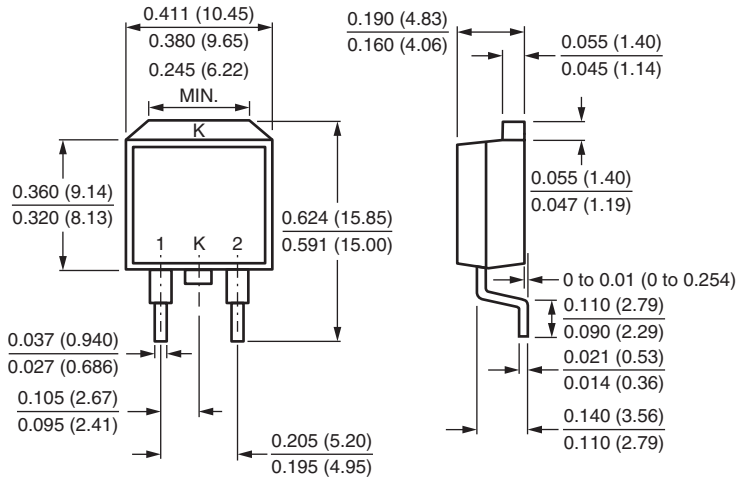
### TO-220AB



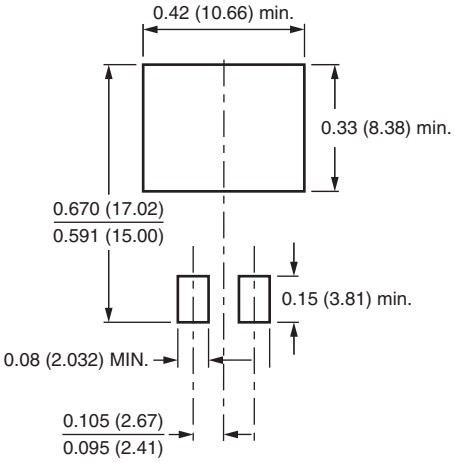

### ITO-220AB




### D²PAK (TO-263AB)




### Mounting Pad Layout





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