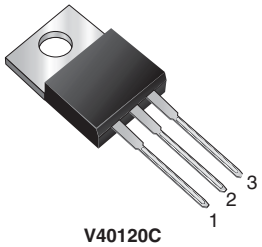
# Dual High Voltage Trench MOS Barrier Schottky Rectifier

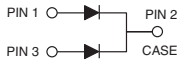
Ultra Low $V_F$ = 0.43 V at $I_F$ = 5 A

TMBS®

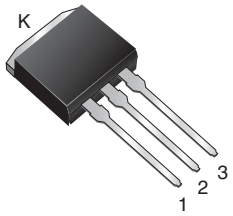
TO-220AB



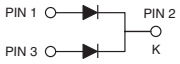

V40120C




TO-262AA




VI40120C




## FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency 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

RoHS COMPLIANT
HALOGEN FREE

## TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

| PRIMARY CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 2 x 20 A |
| $V_{RRM}$ | 120 V |
| $I_{FSM}$ | 250 A |
| $V_F$ at $I_F$ = 20 A | 0.63 V |
| $T_J$ max. | 150 °C |
| Package | TO-220AB, TO-262AA |
| Diode variation | Common cathode |

## MECHANICAL DATA

**Case:** TO-220AB and TO-262AA
Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 1A whisker testt

**Polarity:** as marked

**Mounting Torque:** 10 in-lbs max.

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

| PARAMETER | | SYMBOL | V40120C | VI40120C | UNIT |
|---|---|---|---|---|---|
| Max. repetitive peak reverse voltage | | $V_{RRM}$ | 120 | | V |
| Max. average forward rectified current (fig. 1) | per device | $I_{F(AV)}$ | 40 | | A |
| | per diode | | 20 | | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | | $I_{FSM}$ | 250 | | A |
| Voltage rate of change (rated $V_R$) | | dV/dt | 10 000 | | V/µs |
| Operating junction and storage temperature range | | $T_J$, $T_{STG}$ | -40 to +150 | | °C |


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| **ELECTRICAL CHARACTERISTICS** ($T_A$ = 25 °C unless otherwise noted) | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITIONS** | | **SYMBOL** | **TYP.** | **MAX.** | **UNIT** |
| Instantaneous forward voltage per diode | $I_F$ = 5 A | $T_A$ = 25 °C | $V_F$ (1) | 0.50 | - | V |
| | $I_F$ = 10 A | | | 0.60 | - | |
| | $I_F$ = 20 A | | | 0.78 | 0.88 | |
| | $I_F$ = 5 A | $T_A$ = 125 °C | | 0.43 | - | |
| | $I_F$ = 10 A | | | 0.53 | - | |
| | $I_F$ = 20 A | | | 0.63 | 0.71 | |
| Reverse current per diode | $V_R$ = 90 V | $T_A$ = 25 °C | $I_R$ (2) | 19 | - | µA |
| | | $T_A$ = 125 °C | | 10 | - | mA |
| | $V_R$ = 120 V | $T_A$ = 25 °C | | - | 500 | µA |
| | | $T_A$ = 125 °C | | 22 | 45 | 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** | **V40120C** | **VI40120C** | **UNIT** |
| Typical thermal resistance per diode | $R_{\theta JC}$ | 1.8 | | °C/W |

| **ORDERING INFORMATION** (Example) | | | | | |
|---|---|---|---|---|---|
| **PACKAGE** | **PREFERRED P/N** | **UNIT WEIGHT (g)** | **PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| TO-220AB | V40120C-M3/4W | 1.88 | 4W | 50/tube | Tube |
| TO-262AA | VI40120C-M3/4W | 1.45 | 4W | 50/tube | Tube |



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

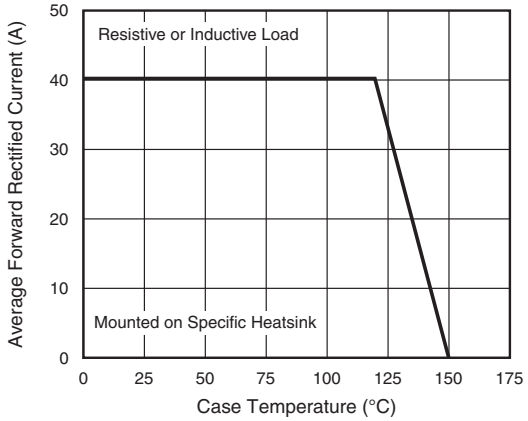



Fig. 1 - Maximum Forward Current Derating Curve

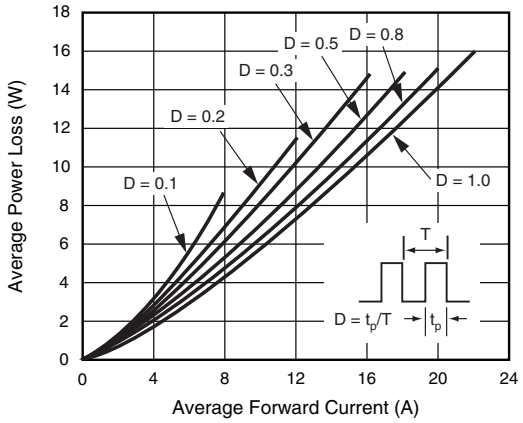



Fig. 2 - Forward Power Loss Characteristics Per Diode

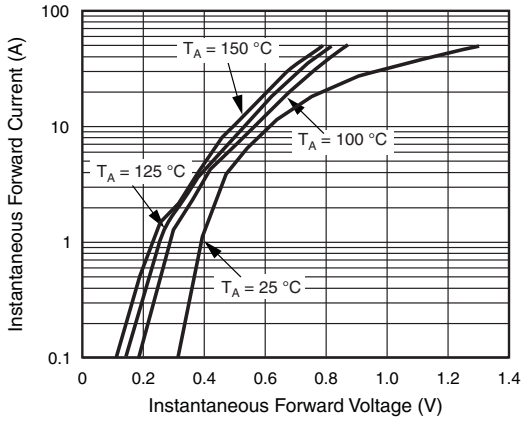



Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

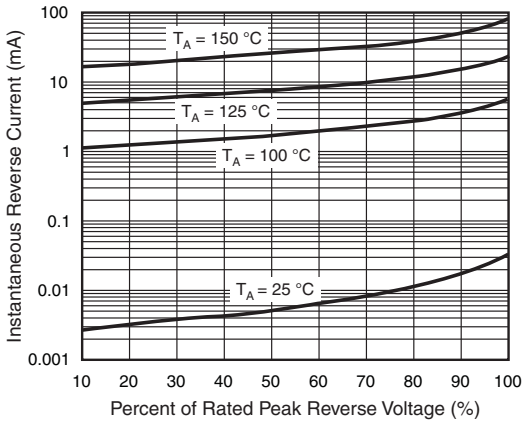



Fig. 4 - Typical Reverse Characteristics Per Diode

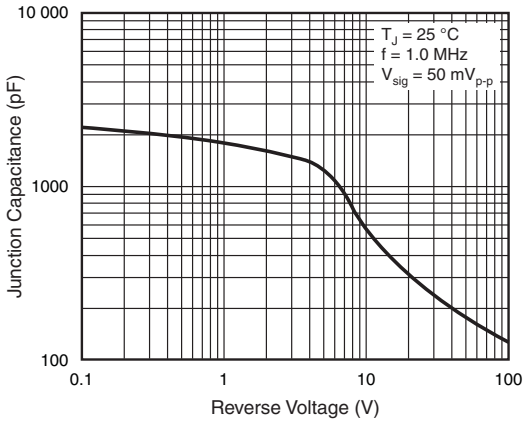



Fig. 5 - Typical Junction Capacitance Per Diode

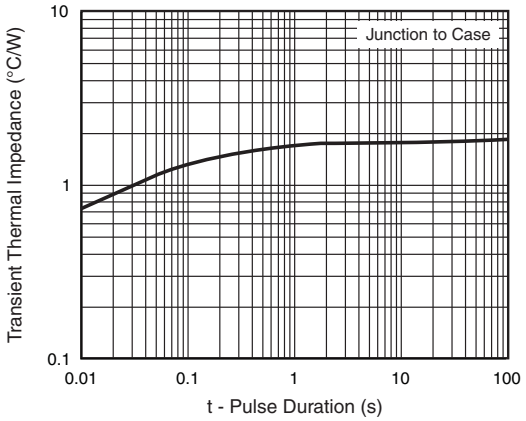
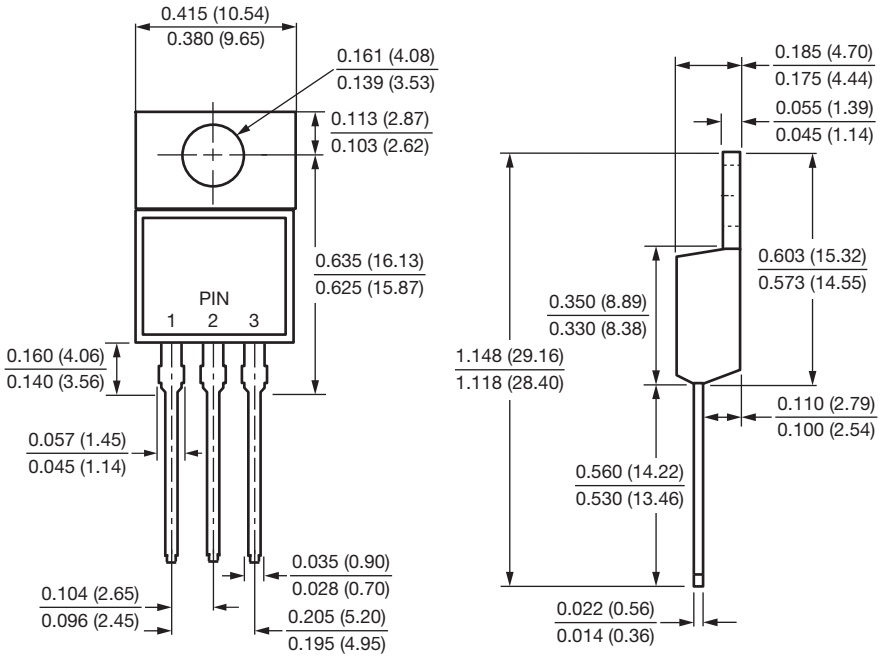



Fig. 6 - Typical Transient Thermal Impedance Per Diode

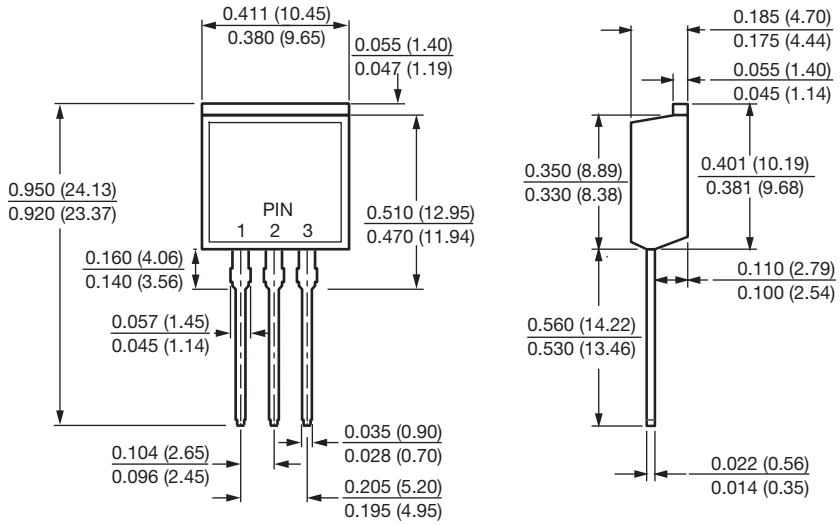

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**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**TO-220AB**




**TO-262AA**






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