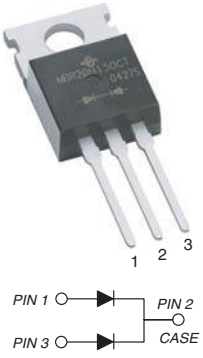
# Dual Common Cathode Schottky Rectifier

TO-220AB




## 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

RoHS COMPLIANT

## TYPICAL APPLICATIONS

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

## MECHANICAL DATA

**Case:** TO-220AB

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

| PRIMARY CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 2 x 30 A |
| $V_{RRM}$ | 35 V, 45 V, 60 V |
| $I_{FSM}$ | 320 A |
| $V_F$ | 0.51 V, 0.56 V |
| $T_J$ max. | 150 °C |
| Package | TO-220AB |
| Diode variations | Common cathode |

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

| PARAMETER | | SYMBOL | M6035C | M6045C | M6060C | UNIT |
|---|---|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | | $V_{RRM}$ | 35 | 45 | 60 | V |
| Maximum average forward rectified current at (fig.1) | total device | $I_{F(AV)}$ | 60 | | | A |
| | per diode | | 30 | | | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | | $I_{FSM}$ | 320 | | | A |
| Peak repetitive reverse current per diode at $t_p$ = 2 µs, 1 kHz per diode | | $I_{RRM}$ | 1.0 | | | A |
| Voltage rate of change (rated $V_R$) | | dV/dt | 10 000 | | | V/µs |
| Operating junction and storage temperature range | | $T_J$, $T_{STG}$ | -65 to +150 | | | °C |

| **ELECTRICAL CHARACTERISTICS** ($T_A$ = 25 °C unless otherwise noted) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITIONS** | | **M6035C** | **M6045C** | **M6060C** | | **UNIT** |
| | | | | **TYP.** | **MAX.** | **TYP.** | **MAX.** | |
| Instantaneous forward voltage per diode | $V_F$ (1) | $I_F$ = 10 A | $T_J$ = 25 °C | 0.42 | - | 0.43 | - | V |
| | | $I_F$ = 20 A | | 0.49 | - | 0.52 | - | |
| | | $I_F$ = 30 A | | 0.55 | 0.61 | 0.59 | 0.65 | |
| | | $I_F$ = 10 A | $T_J$ = 125 °C | 0.31 | - | 0.33 | - | |
| | | $I_F$ = 20 A | | 0.42 | - | 0.47 | - | |
| | | $I_F$ = 30 A | | 0.51 | 0.56 | 0.56 | 0.61 | |
| Reverse current per diode | $I_R$ (2) | $V_R$ | $T_J$ = 25 °C | 140 | 700 | 180 | 700 | µA |
| | | | $T_J$ = 125 °C | 106 | 175 | 140 | 175 | mA |
| Typical junction capacitance | $C_J$ | 4.0 V, 1 MHz | | 1170 | - | 970 | - | pF |

**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** | **M6035C** | **M6045C** | **M6060C** | **UNIT** |
| Typical thermal resistance per diode | $R_{\theta JC}$ | 2.0 | | | °C/W |

| **ORDERING INFORMATION** (Example) | | | | |
|---|---|---|---|---|
| **PREFERRED P/N** | **UNIT WEIGHT (g)** | **PREFERRED PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| M6045C-E3/45 | 2.068 | 45 | 50/tube | Tube |

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

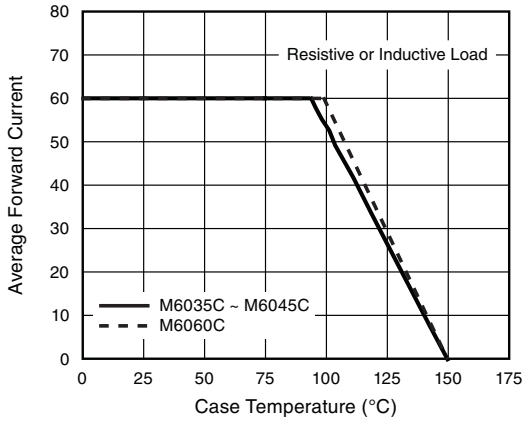



Fig. 1 - Maximum Forward Current Derating Curve

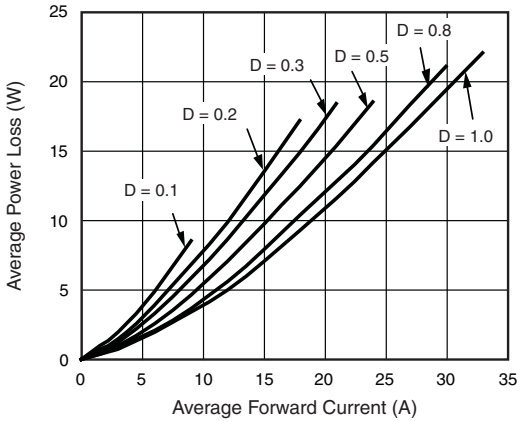



Fig. 2 - Forward Power Loss Characteristics Per Diode

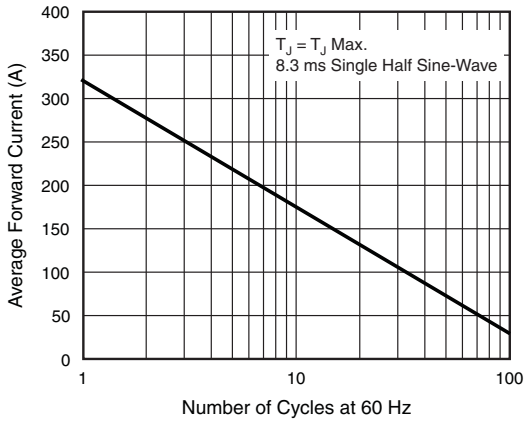



Fig. 3 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

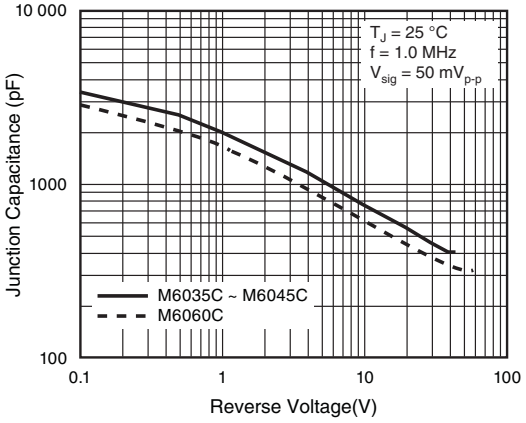



Fig. 6 - Typical Junction Capacitance Per Diode

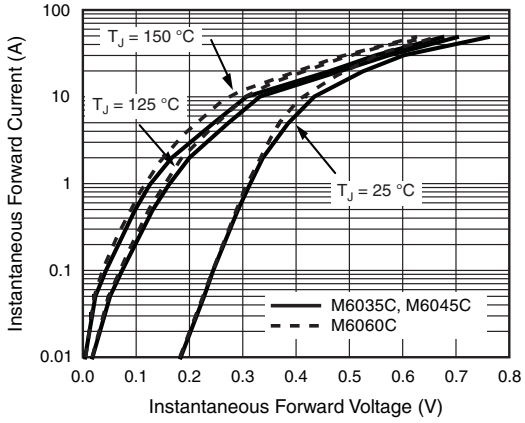



Fig. 4 - Typical Instantaneous Forward Characteristics Per Diode

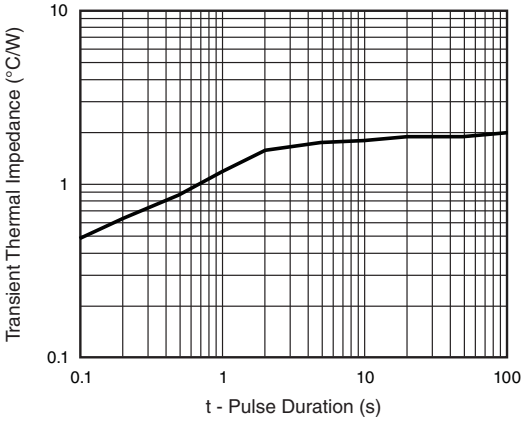



Fig. 7 - Typical Transient Thermal Impedance Per Diode

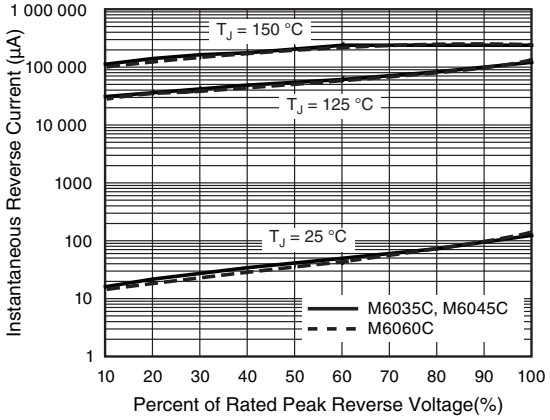
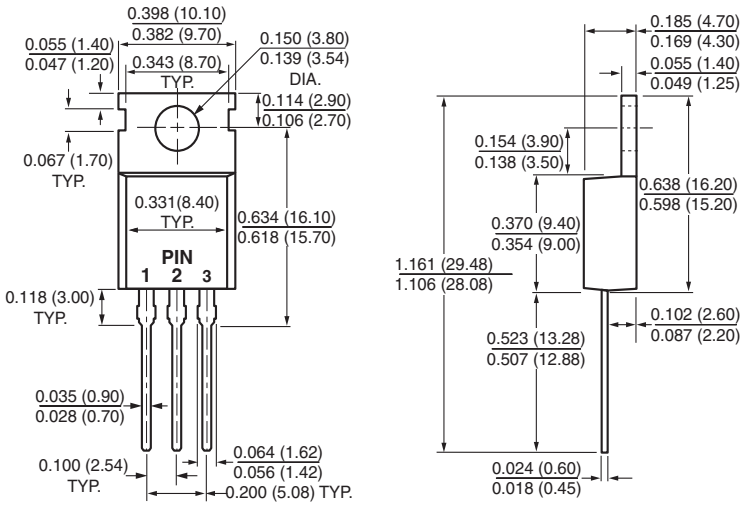



Fig. 5 - Typical Reverse Characteristics Per Diode

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

**TO-220AB**



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