# Surface Mount Schottky Power Rectifier

. . . employing the Schottky Barrier principle in a large area metal–to–silicon power diode. State–of–the–art geometry features epitaxial construction with oxide passivation and metal overlay contact. Ideally suited for low voltage, high frequency rectification, or as free wheeling and polarity protection diodes in surface mount applications where compact size and weight are critical to the system.

- Small Compact Surface Mountable Package with J–Bend Leads
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- Very Low Forward Voltage Drop (0.55 Volts Max @ 1.0 A, $T_J$ = 25°C)
- Excellent Ability to Withstand Reverse Avalanche Energy Transients
- Guardring for Stress Protection

**Mechanical Characteristics:**

- Case: Epoxy, Molded
- Weight: 95 mg (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped in 12 mm Tape and Reel, 2500 units per reel
- Cathode Polarity Band
- Marking: B14

**MBRS140T3**

**Motorola Preferred Device**

**SCHOTTKY BARRIER RECTIFIERS 1.0 AMPERE 40 VOLTS**

**CASE 403A–03 SMB**

**MAXIMUM RATINGS**

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 40 | Volts |
| Average Rectified Forward Current ($T_L$ = 115°C) | $I_{F(AV)}$ | 1.0 | Amps |
| Nonrepetitive Peak Surge Current<br>(Surge applied at rated load conditions halfwave, single phase, 60 Hz) | $I_{FSM}$ | 40 | Amps |
| Operating Junction Temperature | $T_J$ | – 65 to +125 | °C |

**THERMAL CHARACTERISTICS**

| | | | |
|---|---|---|---|
| Thermal Resistance — Junction to Lead<br>($T_L$ = 25°C) | $R_{\theta JL}$ | 12 | °C/W |

**ELECTRICAL CHARACTERISTICS**

| | | | |
|---|---|---|---|
| Maximum Instantaneous Forward Voltage (1)<br>($i_F$ = 1.0 A, $T_J$ = 25°C) | $V_F$ | 0.6 | Volts |
| Maximum Instantaneous Reverse Current (1)<br>(Rated dc Voltage, $T_J$ = 25°C)<br>(Rated dc Voltage, $T_J$ = 100°C) | $i_R$ | <br>1.0<br>10 | mA |

(1) Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

**Preferred** devices are Motorola recommended choices for future use and best overall value.

**Rev 3**

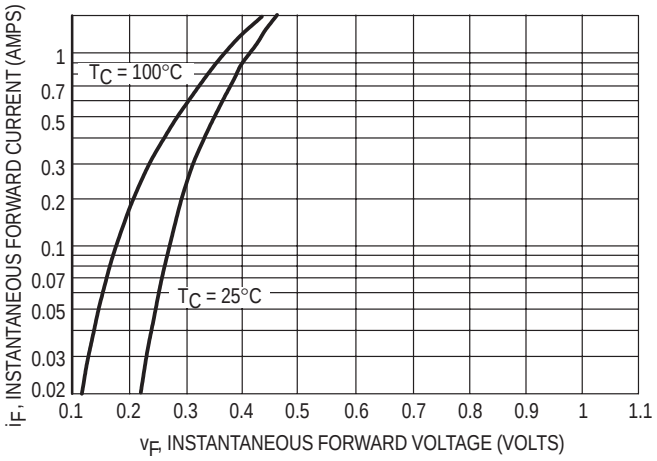



**Figure 1. Typical Forward Voltage**

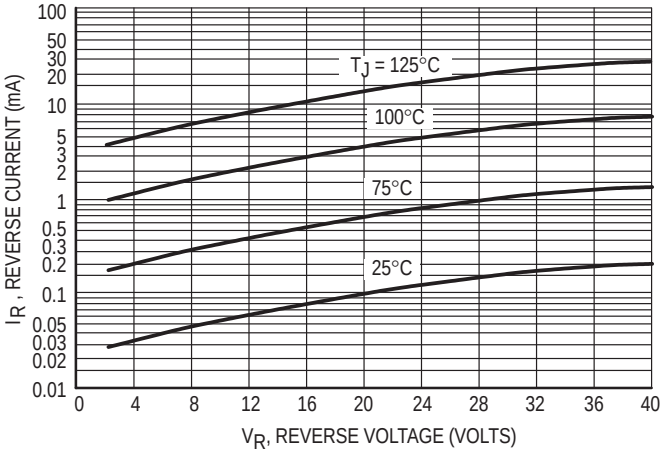



**Figure 2. Typical Reverse Current**

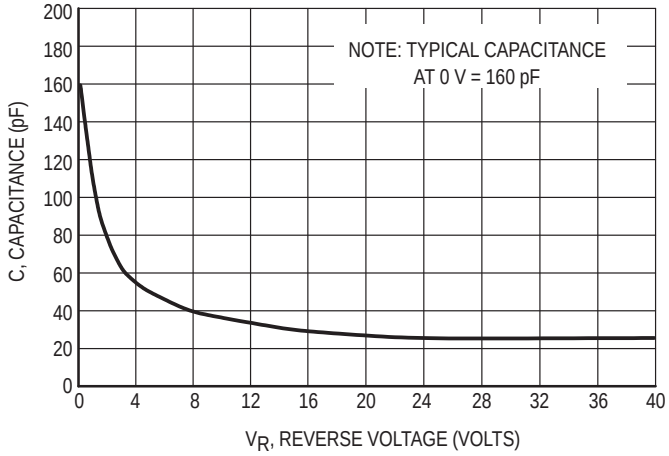



**Figure 3. Typical Capacitance**

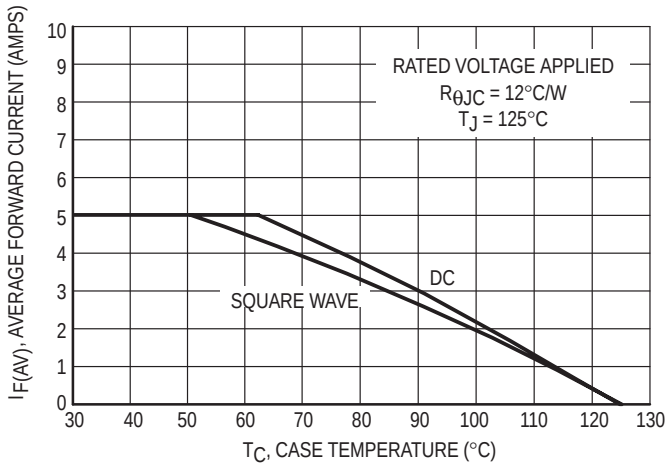



**Figure 4. Current Derating (Case)**

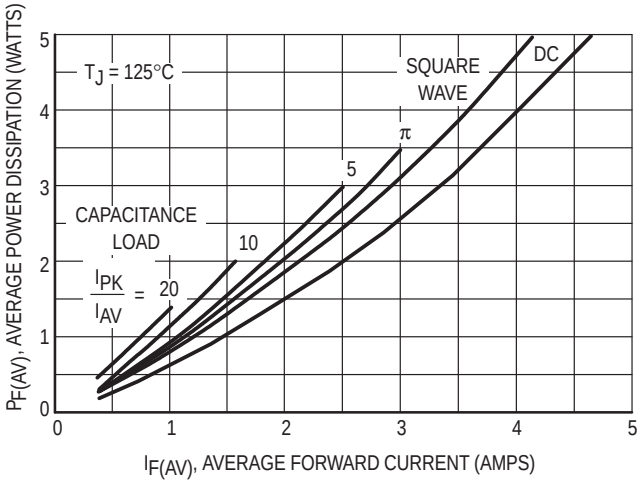
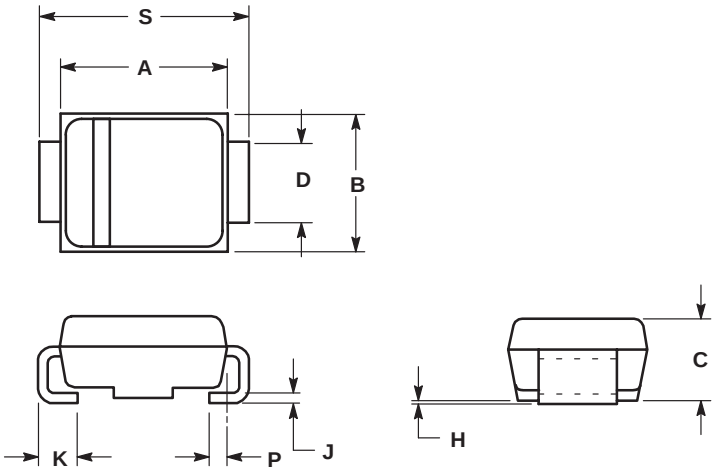



**Figure 5. Power Dissipation**

## PACKAGE DIMENSIONS




NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. D DIMENSION SHALL BE MEASURED WITHIN DIMENSION P.

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | MIN | MAX | MIN | MAX |
| A | 0.160 | 0.180 | 4.06 | 4.57 |
| B | 0.130 | 0.150 | 3.30 | 3.81 |
| C | 0.075 | 0.095 | 1.90 | 2.41 |
| D | 0.077 | 0.083 | 1.96 | 2.11 |
| H | 0.0020 | 0.0060 | 0.051 | 0.152 |
| J | 0.006 | 0.012 | 0.15 | 0.30 |
| K | 0.030 | 0.050 | 0.76 | 1.27 |
| P | 0.020 REF | | 0.51 REF | |
| S | 0.205 | 0.220 | 5.21 | 5.59 |

**CASE 403A–03**
**ISSUE D**

**How to reach us:**

**USA / EUROPE / Locations Not Listed**: Motorola Literature Distribution;
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**ASIA / PACIFIC**: Motorola Semiconductors H.K. Ltd.; Silicon Harbour Centre,
2, Dai King Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong.
852–26668334

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