

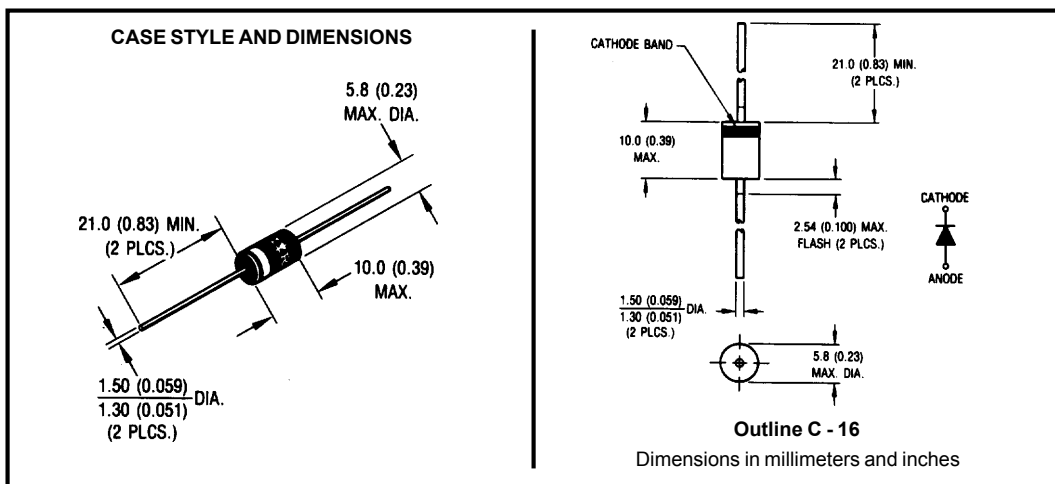
Major Ratings and Characteristics

| Characteristics | MBR340 | Units |
|----------------------------------|------------|------------|
| $I_{F(AV)}$ Rectangular waveform | 3.0 | A |
| V_{RRM} | 30/40 | V |
| I_{FSM} @ $t_p = 5 \mu s$ sine | 430 | A |
| V_F @3Apk, $T_J = 25^\circ C$ | 0.6 | V |
| T_J | -40 to 150 | $^\circ C$ |

Description/Features

The MBR340 axial leaded Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- Low profile, axial leaded outline
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability



MBR340

Bulletin PD-20593 rev. A 03/02

International
IR Rectifier

Voltage Ratings

| Part number | MBR340 |
|---|--------|
| V_R Max. DC Reverse Voltage (V) | 40 |
| V_{RWM} Max. Working Peak Reverse Voltage (V) | |

Absolute Maximum Ratings

| Parameters | MBR340 | Units | Conditions |
|---|--------|-------|--|
| $I_{F(AV)}$ Max. Average Forward Current * See Fig. 4 | 3.0 | A | 50% duty cycle @ $T_C = 92^\circ\text{C}$, rectangular waveform |
| I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 6 | 430 | A | 5 μs Sine or 3 μs Rect. pulse |
| | 80 | | 10ms Sine or 6ms Rect. pulse |
| E_{AS} Non-Repetitive Avalanche Energy | 8.0 | mJ | $T_J = 25^\circ\text{C}$, $I_{AS} = 1$ Amps, $L = 5$ mH |
| I_{AR} Repetitive Avalanche Current | 1.0 | A | Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical |

Electrical Specifications

| Parameters | MBR340 | Units | Conditions |
|---|--------|------------------|---|
| V_{FM} Max. Forward Voltage Drop * See Fig. 1 (1) | 0.5 | V | @ 1.0A |
| | 0.6 | V | @ 3.0A |
| | 0.85 | V | @ 9.4A |
| | 0.37 | V | @ 1.0A |
| | 0.49 | V | @ 3.0A |
| | 0.72 | V | @ 9.4A |
| I_{RM} Max. Reverse Leakage Current * See Fig. 2 (1) | 0.6 | mA | $T_J = 25^\circ\text{C}$ |
| | 8 | mA | $T_J = 100^\circ\text{C}$ |
| | 20 | mA | $T_J = 125^\circ\text{C}$ |
| C_T Typical Junction Capacitance | 190 | pF | $V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) 25°C |
| L_S Typical Series Inductance | 9.0 | nH | Measured lead to lead 5mm from package body |
| dv/dt Max. Voltage Rate of Change | 10000 | V/ μs | (Rated V_R) |

(1) Pulse Width < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

| Parameters | MBR340 | Units | Conditions |
|---|------------|--------------------|-----------------------------|
| T_J Max. Junction Temperature Range (*) | -40 to 150 | $^\circ\text{C}$ | |
| T_{stg} Max. Storage Temperature Range | -40 to 150 | $^\circ\text{C}$ | |
| R_{thJL} Typical Thermal Resistance Junction to Lead (**) | 28 | $^\circ\text{C/W}$ | DC operation (* See Fig. 4) |
| wt Approximate Weight | 1.2(0.042) | g(oz.) | |
| Case Style | C-16 | | |

(*) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{th(j-a)}}$ thermal runaway condition for a diode on its own heatsink

(**) Mounted 1 inch square PCB, thermal probe connected to lead 2mm from package

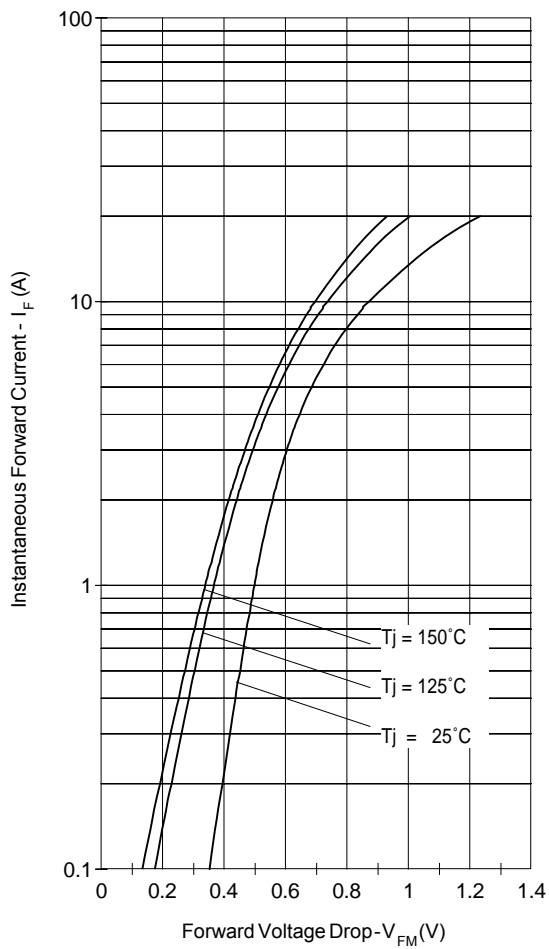


Fig. 1 - Max. Forward Voltage Drop Characteristics

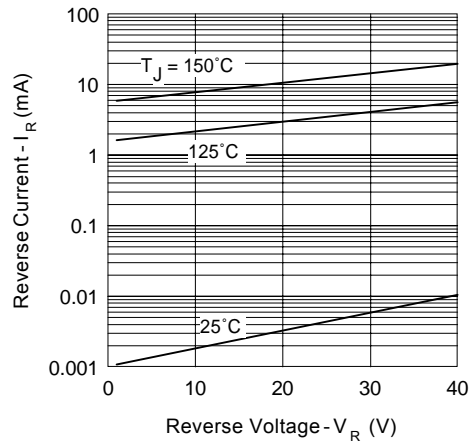


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage

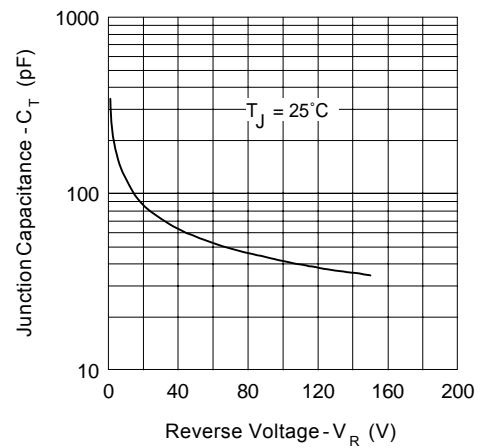


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

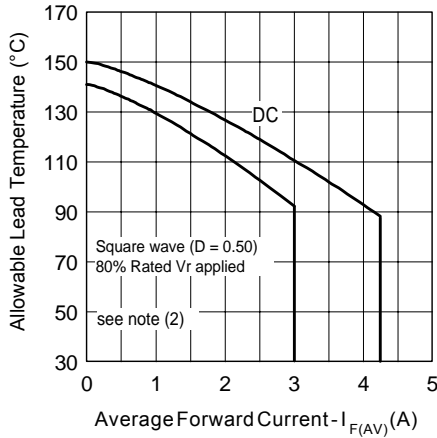


Fig. 4 - Max. Allowable Lead Temperature Vs. Average Forward Current

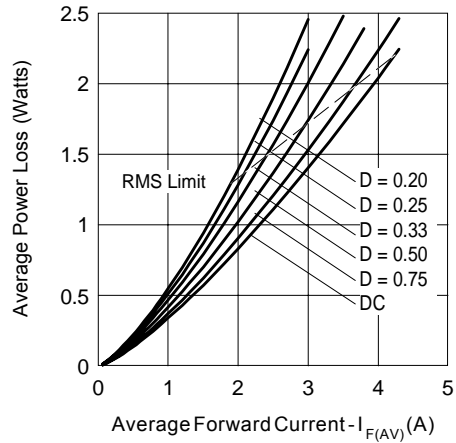


Fig. 5-Forward Power Loss Characteristics

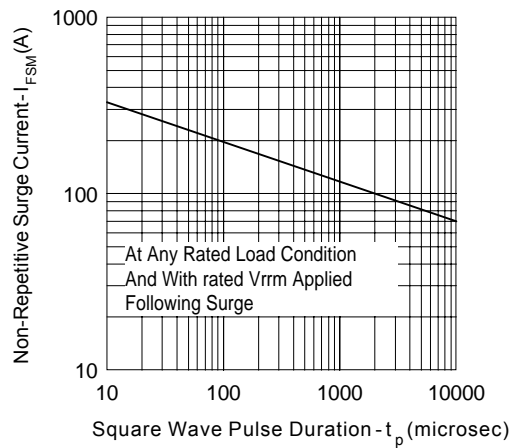


Fig. 6 - Max. Non-Repetitive Surge Current

(2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;

$Pd = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

$Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 80\% \text{ rated } V_R$

Ordering Information Table

| | | | | |
|--------------------|------------|-------------------------------------|-----------|-----------|
| Device Code | MBR | 3 | 40 | TR |
| | ① | ② | ③ | ④ |
| 1 | - | Schottky MBR Series | | |
| 2 | - | Current Rating: 3 = 3A | | |
| 3 | - | Voltage Rating: 40 = 40V | | |
| 4 | - | TR = Tape & Reel package (1200 pcs) | | |
| | - | = Box package (500 pcs) | | |

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
IR Rectifier

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