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[Vishay Semiconductor/Diodes Division](#)
[VS-MBR340](#)

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sales@integrated-circuit.com

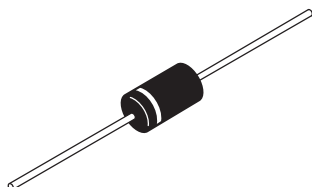


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VS-MBR340, VS-MBR340-M3

Vishay Semiconductors

Schottky Rectifier, 3 A



C-16



FEATURES

- Low profile, axial leaded outline
- Very low forward voltage drop
- High frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability
- Compliant to RoHS Directive 2002/95/EC
- Designed and qualified for commercial level
- Halogen-free according to IEC 61249-2-21 definition (-M3 only)



RoHS
COMPLIANT
HALOGEN
FREE
Available

| PRODUCT SUMMARY | |
|-----------------|-----------------|
| Package | DO-201AD (C-16) |
| $I_{F(AV)}$ | 3 A |
| V_R | 40 V |
| V_F at I_F | 0.49 V |
| I_{RM} max. | 20 mA at 125 °C |
| T_J max. | 150 °C |
| Diode variation | Single die |
| E_{AS} | 6.0 mJ |

DESCRIPTION

The VS-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, freewheeling diodes, and reverse battery protection.

| MAJOR RATINGS AND CHARACTERISTICS | | | |
|-----------------------------------|--|-------------|------------------|
| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
| $I_{F(AV)}$ | Rectangular waveform | 3.0 | A |
| V_{RRM} | | 40 | V |
| I_{FSM} | $t_p = 5 \mu s$ sine | 430 | A |
| V_F | 3 Apk, $T_J = 25 \text{ }^\circ\text{C}$ | 0.6 | V |
| T_J | | - 40 to 150 | $^\circ\text{C}$ |

| VOLTAGE RATINGS | | | | |
|--------------------------------------|-----------|-----------|--------------|-------|
| PARAMETER | SYMBOL | VS-MBR340 | VS-MBR340-M3 | UNITS |
| Maximum DC reverse voltage | V_R | 40 | 40 | V |
| Maximum working peak reverse voltage | V_{RWM} | | | |

| ABSOLUTE MAXIMUM RATINGS | | | | | |
|--|-------------|--|---|--------|-------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum average forward current See fig. 4 | $I_{F(AV)}$ | 50 % duty cycle at $T_C = 92 \text{ }^\circ\text{C}$, rectangular waveform | | 3.0 | A |
| Maximum peak one cycle non-repetitive surge current See fig. 6 | I_{FSM} | 5 μs sine or 3 μs rect. pulse | Following any rated load condition and with rated V_{RRM} applied | 430 | |
| | | 10 ms sine or 6 ms rect. pulse | | 80 | |
| Non-repetitive avalanche energy | E_{AS} | $T_J = 25 \text{ }^\circ\text{C}$, $I_{AS} = 1 \text{ A}$, $L = 12 \text{ mH}$ | | 6.0 | mJ |
| Repetitive avalanche current | I_{AR} | Current decaying linearly to zero in 1 μs Frequency limited by, T_J maximum $V_A = 1.5 \times V_R$ typical | | 1.0 | A |



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| ELECTRICAL SPECIFICATIONS | | | | | |
|---|----------------|--|-----------------------------------|--------|------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum forward voltage drop See fig. 1 | $V_{FM}^{(1)}$ | 1.0 A | $T_J = 25\text{ }^\circ\text{C}$ | 0.5 | V |
| | | 3.0 A | | 0.6 | |
| | | 9.4 A | | 0.85 | |
| | | 1.0 A | $T_J = 125\text{ }^\circ\text{C}$ | 0.37 | |
| | | 3.0 A | | 0.49 | |
| | | 9.4 A | | 0.72 | |
| Maximum reverse leakage current See fig. 2 | $I_{RM}^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$ | $V_R = \text{Rated } V_R$ | 0.6 | mA |
| | | $T_J = 100\text{ }^\circ\text{C}$ | | 8 | |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 20 | |
| Typical junction capacitance | C_T | $V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C | | 190 | pF |
| Typical series inductance | L_S | Measured lead to lead 5 mm from package body | | 9.0 | nH |
| Maximum voltage rate of change | dV/dt | Rated V_R | | 10 000 | V/ μ s |

Note

(1) Pulse width < 300 μ s, duty cycle < 2 %

| THERMAL - MECHANICAL SPECIFICATIONS | | | | | |
|--|----------------------|----------------------------|--|-------------|--------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum junction and storage temperature range | $T_J^{(1)}, T_{Stg}$ | | | - 40 to 150 | $^\circ\text{C}$ |
| Maximum thermal resistance, junction to lead | $R_{thJL}^{(2)}$ | DC operation See fig. 4 | | 28 | $^\circ\text{C/W}$ |
| Approximate weight | | | | 1.2 | g |
| | | | | 0.042 | oz. |
| Marking device | | Case style C-16 | | MBR340 | |

Notes

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

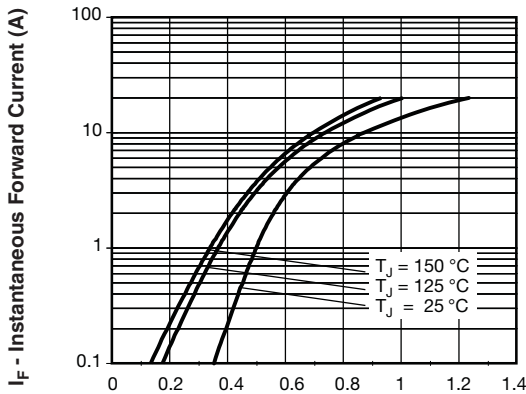
(2) Mounted 1" square PCB, thermal probe connected to lead 2 mm from package



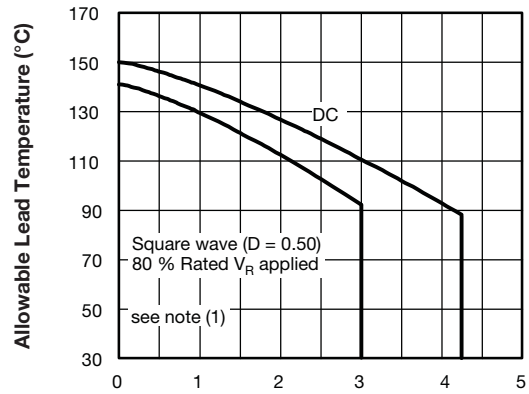
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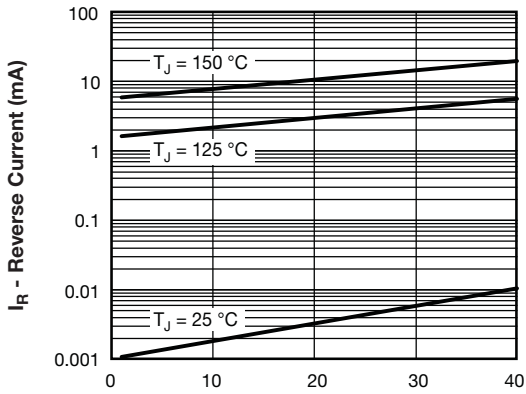
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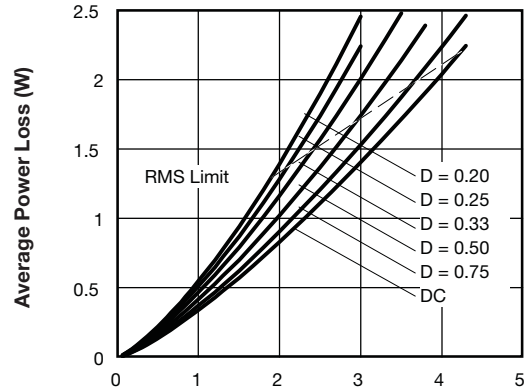
93449_01 **V_{FM} - Forward Voltage Drop (V)**
Fig. 1 - Maximum Forward Voltage Drop Characteristics



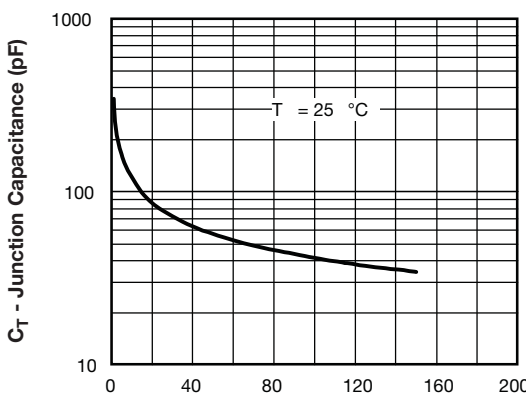
93449_05 **I_{F(AV)} - Average Forward Current (A)**
Fig. 4 - Maximum Allowable Lead Temperature vs. Average Forward Current



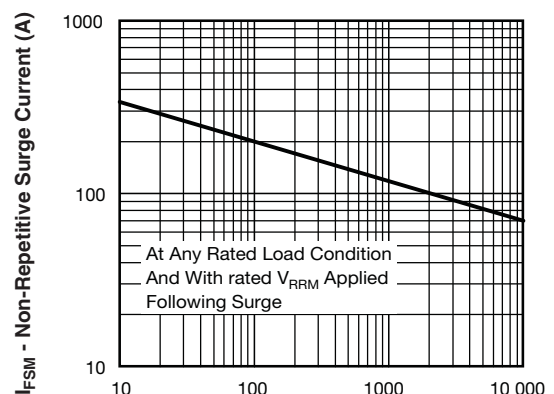
93449_02 **V_R - Reverse Voltage (V)**
Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage



9449_05 **Average Forward Current - I_{F(AV)} (A)**
Fig. 5 - Forward Power Loss Characteristics



93449_03 **V_R - Reverse Voltage (V)**
Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage



93449_06 **t_p - Square Wave Pulse Duration (μs)**
Fig. 6 - Maximum Non-Repetitive Surge Current

Note

(1) Formula used: $T_C = T_J - (P_d + P_{dREV}) \times R_{thJC}$;
 $P_d = \text{Forward power loss} = I_{F(AV)} \times V_{FM} \text{ at } (I_{F(AV)}/D)$ (see fig. 6); $P_{dREV} = \text{Inverse power loss} = V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 80\%$ rated V_R



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VS-MBR340, VS-MBR340-M3

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ORDERING INFORMATION TABLE

| Device code | VS- | MBR | 3 | 40 | TR | -M3 |
|-------------|---------------------------------|-----------------------|---------------------------|-----------------------------|---|--|
| | ① | ② | ③ | ④ | ⑤ | ⑥ |
| | ① | ② | ③ | ④ | ⑤ | ⑥ |
| | - Vishay Semiconductors product | - Schottky MBR series | - Current rating: 3 = 3 A | - Voltage rating: 40 = 40 V | - TR = Tape and reel package None = Bulk package | - Environmental digit • None = Lead (Pb)-free and RoHS compliant • -M3 = Halogen-free, RoHS compliant, and terminations lead (Pb)-free |

| ORDERING INFORMATION (Example) | | | |
|--------------------------------|------------------|------------------------|-----------------------|
| PREFERRED P/N | QUANTITY PER T/R | MINIMUM ORDER QUANTITY | PACKAGING DESCRIPTION |
| VS-MBR340 | 500 | 500 | Bulk |
| VS-MBR340TR | 1200 | 1200 | Tape and reel |
| VS-MBR340-M3 | 500 | 500 | Bulk |
| VS-MBR340TR-M3 | 1200 | 1200 | Tape and reel |

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|--|
| Dimensions | www.vishay.com/doc?95242 |
| Part marking information | www.vishay.com/doc?95304 |
| Packaging information | www.vishay.com/doc?95338 |



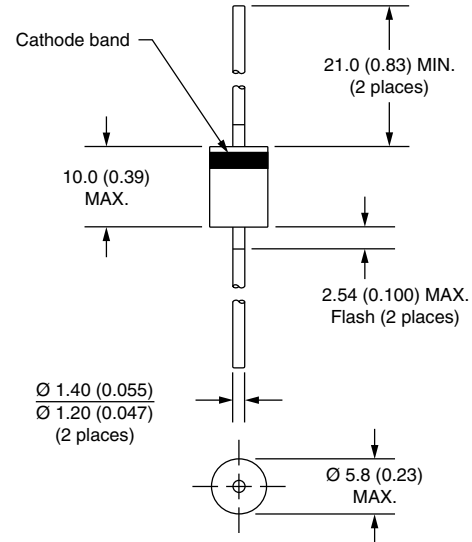
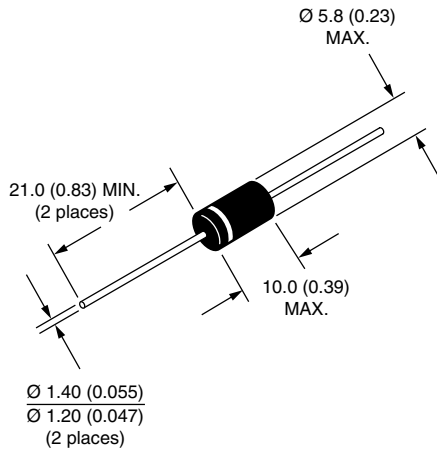
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Outline Dimensions

Vishay Semiconductors

Axial DO-201AD (C-16)

DIMENSIONS in millimeters (inches)





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