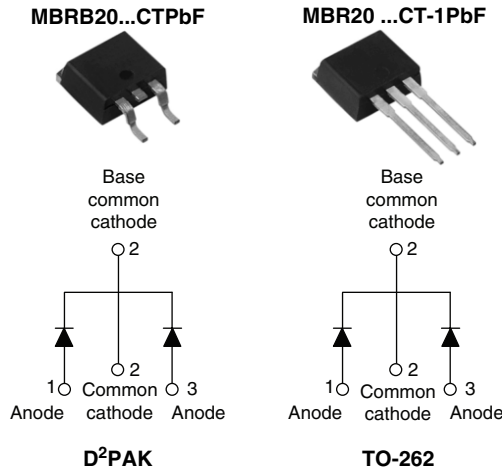


Schottky Rectifier, 2 x 10 A



FEATURES

- 150 °C T_J operation
- Low forward voltage drop
- High frequency operation
- Center tap D²PAK and TO-262 packages
- 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
- Halogen-free according to IEC 61249-2-21 definition
- AEC-Q101 qualified



RoHS*
COMPLIANT
HALOGEN
FREE

DESCRIPTION

This center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150 °C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

PRODUCT SUMMARY

| | |
|--------------------|---------------|
| I _{F(AV)} | 2 x 10 A |
| V _R | 80 V to 100 V |

MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
|--------------------|-----------------------------------|-------------|-------|
| I _{F(AV)} | Rectangular waveform (per device) | 20 | A |
| I _{FRM} | T _C = 133 °C (per leg) | 20 | |
| V _R | | 80 to 100 | V |
| I _{FSM} | t _p = 5 μs sine | 850 | A |
| V _F | 10 Apk, T _J = 125 °C | 0.70 | V |
| T _J | Range | - 65 to 150 | °C |

VOLTAGE RATINGS

| PARAMETER | SYMBOL | MBRB2080CTPbF MBR2080CT-1PbF | MBRB2090CTPbF MBR2090CT-1PbF | MBRB20100CTPbF MBR20100CT-1PbF | UNITS |
|--------------------------------------|------------------|---------------------------------|---------------------------------|-----------------------------------|-------|
| Maximum DC reverse voltage | V _R | 80 | 90 | 100 | V |
| Maximum working peak reverse voltage | V _{RWM} | | | | |

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
|----------------------------------------------------------|--------------------|--------------------------------------------------------------------------|--------|-------|
| Maximum average forward current per leg per device | I _{F(AV)} | T _C = 133 °C, rated V _R | 10 | A |
| | | | 20 | |
| Peak repetitive forward current per leg | I _{FRM} | Rated V _R , square wave, 20 kHz, T _C = 133 °C | 20 | |
| Non-repetitive peak surge current | I _{FSM} | 5 μs sine or 3 μs rect. pulse | 850 | |
| | | Following any rated load condition and with rated V _R applied | 150 | |
| Peak repetitive reverse surge current | I _R | 2.0 μs, 1.0 kHz | 0.5 | |
| Non-repetitive avalanche energy per leg | E _{AS} | T _J = 25 °C, I _{AS} = 2 A, L = 12 mH | 24 | mJ |

* Pb containing terminations are not RoHS compliant, exemptions may apply

MBRB20...CTPbF, MBR20...CT-1PbF



Vishay High Power Products Schottky Rectifier, 2 x 10 A

| ELECTRICAL SPECIFICATIONS | | | | | |
|---------------------------------------|----------------|--------------------------------------------------------------|-----------------------------------|--------|------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum forward voltage drop | $V_{FM}^{(1)}$ | 10 A | $T_J = 25\text{ }^\circ\text{C}$ | 0.80 | V |
| | | 20 A | | 0.95 | |
| | | 10 A | $T_J = 125\text{ }^\circ\text{C}$ | 0.70 | |
| | | 20 A | | 0.85 | |
| Maximum instantaneous reverse current | $I_{RM}^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$ | Rated DC voltage | 0.10 | mA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 6 | |
| Threshold voltage | $V_{F(TO)}$ | $T_J = T_J \text{ maximum}$ | | 0.433 | V |
| Forward slope resistance | r_t | | | 15.8 | m Ω |
| Maximum junction capacitance | C_T | $V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz), 25 °C | | 400 | pF |
| Typical series inductance | L_S | Measured from top of terminal to mounting plane | | 8.0 | 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 temperature range | T_J | | | - 65 to 150 | $^\circ\text{C}$ |
| Maximum storage temperature range | T_{Stg} | | | - 65 to 175 | |
| Maximum thermal resistance, junction to case per leg | R_{thJC} | DC operation | | 2.0 | $^\circ\text{C/W}$ |
| Typical thermal resistance, case to heatsink | R_{thCS} | Mounting surface, smooth and greased | | 0.50 | |
| Maximum thermal resistance, junction to ambient | R_{thJA} | DC operation | | 50 | |
| Approximate weight | | | | 2 | g |
| | | | | 0.07 | oz. |
| Mounting torque | minimum | | Non-lubricated threads | 6 (5) | kgf · cm (lbf · in) |
| | maximum | | | 12 (10) | |
| Marking device | | Case style D ² PAK | | MBRB20100CT | |
| | | Case style TO-262 | | MBR20100CT-1 | |

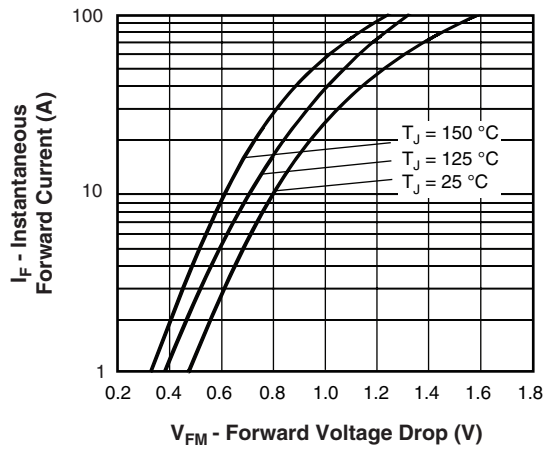


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

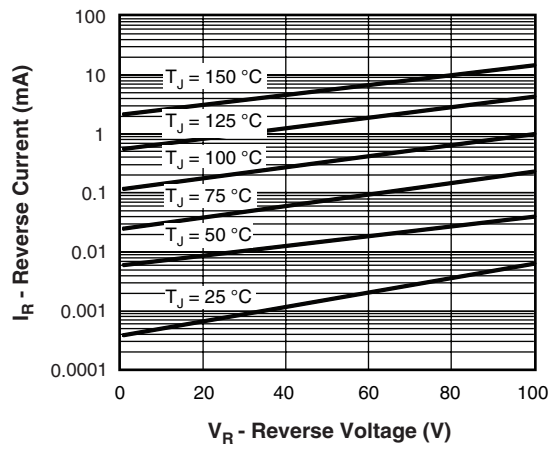


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

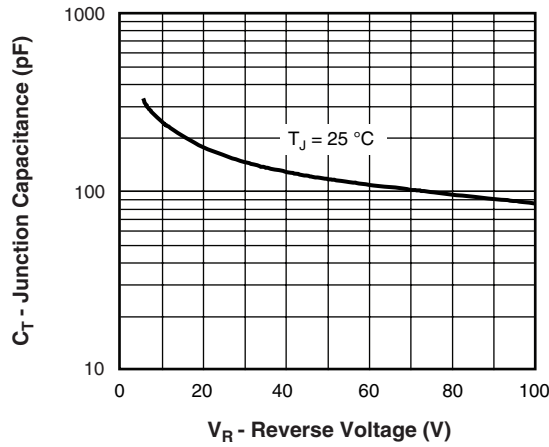


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

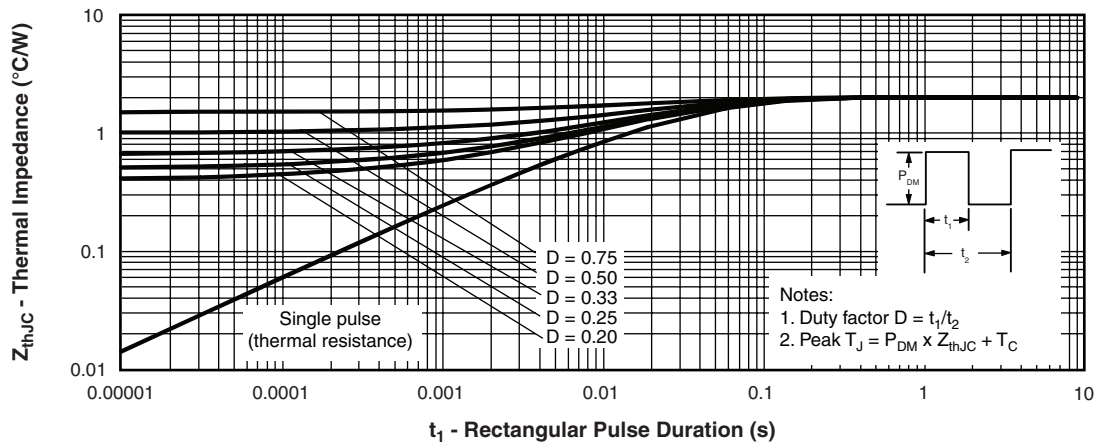


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

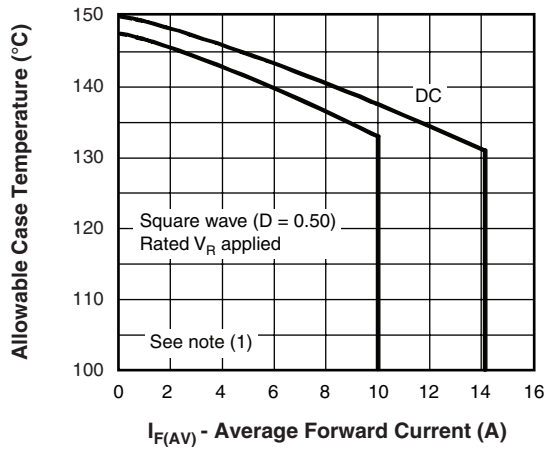


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

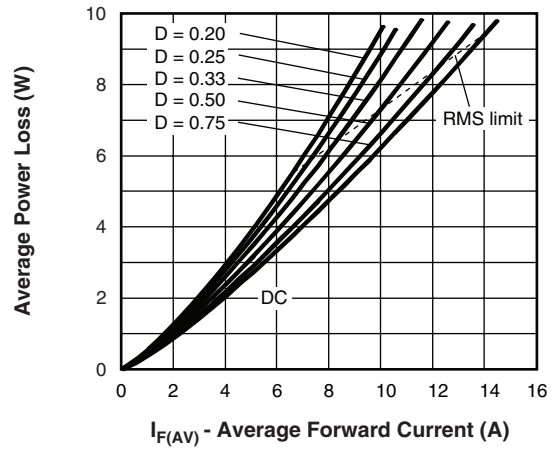


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

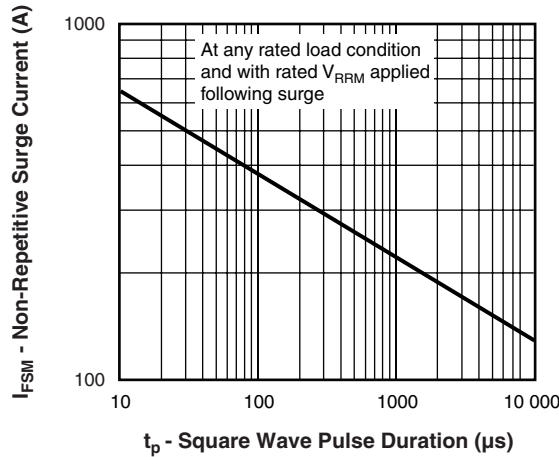


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

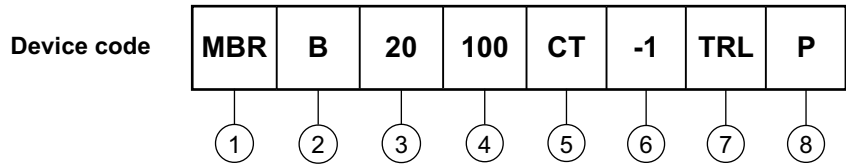
- (1) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;
 P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6);
 $P_{d_{REV}}$ = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at V_{R1} = Rated V_R



MBRB20...CTPbF, MBR20...CT-1PbF

Schottky Rectifier, 2 x 10 A Vishay High Power Products

ORDERING INFORMATION TABLE



- 1** - Essential part number
- 2** -
 - B = D²PAK **6** None
 - None = TO-262 **6** = -1
- 3** - Current rating (20 = 20 A)
- 4** - Voltage ratings

| |
|-------------|
| 80 = 80 V |
| 90 = 90 V |
| 100 = 100 V |
- 5** - CT = Essential part number
- 6**
 - None = D²PAK **2** = B
 - -1 = TO-262 **2** None
- 7** -
 - None = Tube (50 pieces)
 - TRL = Tape and reel (left oriented - for D²PAK only)
 - TRR = Tape and reel (right oriented - for D²PAK only)
- 8** -
 - None = Standard production
 - PbF = Lead (Pb)-free (for TO-262 and D²PAK tube)
 - P = Lead (Pb)-free (for D²PAK TRR and TRL)

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|------------------------------------------------------------------------|
| Dimensions | www.vishay.com/doc?95014 |
| Part marking information | www.vishay.com/doc?95008 |
| Packaging information | www.vishay.com/doc?95032 |



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