



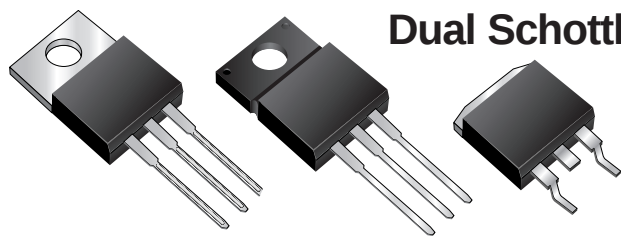
# MBR20HxxCT, MBRF20HxxCT & MBRB20HxxCT Series

New Product

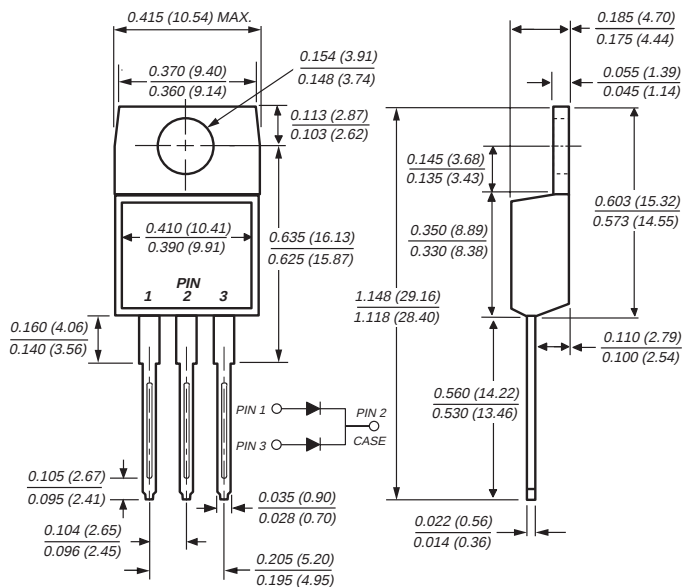
Vishay Semiconductors  
formerly General Semiconductor

## Dual Schottky Barrier Rectifier

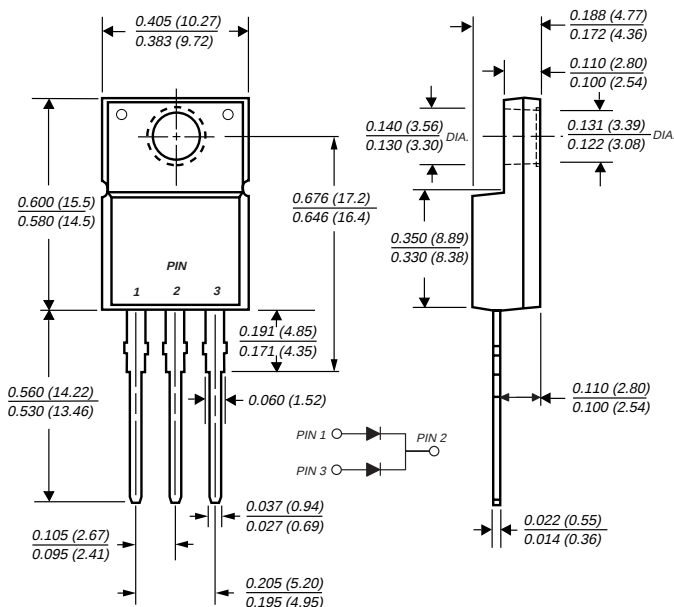
Reverse Voltage 35 to 60V  
Forward Current 20A



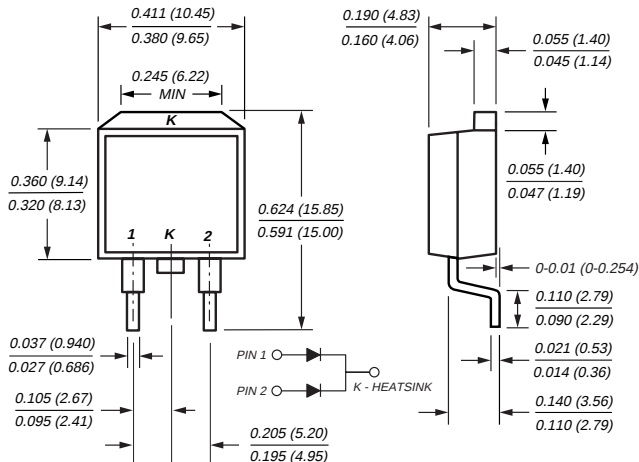
TO-220AB (MBR20HxxCT)



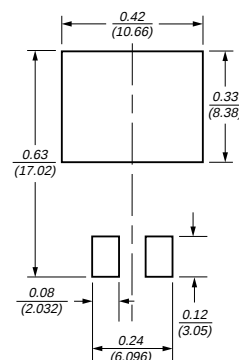
ITO-220AB (MBRF20HxxCT)



TO-263AB (MBRB20HxxCT)



Mounting Pad Layout TO-263AB



Dimensions in inches  
and (millimeters)

### Mechanical Data

**Case:** JEDEC TO-220AB, ITO-220AB & TO-263AB molded plastic body

**Terminals:** Plated leads, solderable per MIL-STD-750, Method 2026

**Polarity:** As marked

**Mounting Position:** Any

**Mounting Torque:** 10 in-lbs maximum

**Weight:** 0.08 oz., 2.24 g

### Features

- Plastic package has Underwriters Laboratory Flammability Classification 94 V-0
- Dual rectifier construction, positive center tap
- Metal silicon junction, majority carrier conduction
- Low forward voltage drop, low power loss and high efficiency
- Guarding for overvoltage protection
- For use in low voltage, high frequency inverters, free wheeling, and polarity protection applications
- Rated for reverse surge and ESD
- 175 °C maximum operation junction temperature

# MBR20HxxCT, MBRF20HxxCT & MBRB20HxxCT Series



Vishay Semiconductors  
formerly General Semiconductor

## Maximum Ratings (T<sub>C</sub> = 25 °C unless otherwise noted)

| Parameter                                                                                                      | Symbol             | MBR20H35CT                                                        | MBR20H45CT | MBR20H50CT | MBR20H60CT | Unit |
|----------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------|------------|------------|------------|------|
| Maximum repetitive peak reverse voltage                                                                        | V <sub>RRM</sub>   | 35                                                                | 45         | 50         | 60         | V    |
| Working peak reverse voltage                                                                                   | V <sub>RWM</sub>   | 35                                                                | 45         | 50         | 60         | V    |
| Maximum DC blocking voltage                                                                                    | V <sub>DC</sub>    | 35                                                                | 45         | 50         | 60         | V    |
| Max. average forward rectified current<br>(see fig. 1) <i>Total device<br/>Per leg</i>                         | I <sub>F(AV)</sub> | 20<br>10                                                          |            |            |            | A    |
| Peak repetitive forward current at T <sub>C</sub> = 150 °C per leg<br>(rated V <sub>R</sub> , 2.0KHz sq. wave) | I <sub>FRM</sub>   | 20                                                                |            |            |            | A    |
| Non-repetitive avalanche energy per leg<br>at 25 °C, I <sub>AS</sub> = 4 A, L = 10 mH                          | E <sub>AS</sub>    | 80                                                                |            |            |            | mJ   |
| Peak forward surge current 8.3 ms single half sine-wave<br>superimposed on rated load (JEDEC Method) per leg   | I <sub>FSM</sub>   | 150                                                               |            |            |            | A    |
| Peak repetitive reverse surge current per leg<br>at t <sub>p</sub> = 2.0 μs, 1 KHz                             | I <sub>RRM</sub>   | 1.0                                                               |            | 0.5        |            | A    |
| Peak non-repetitive reverse energy (8/20 μs waveform)                                                          | E <sub>RSM</sub>   | 20                                                                |            | 10         |            | mJ   |
| Electrostatic discharge capacitor voltage<br>Human body model: C = 100 pF, R = 1.5 kΩ                          | V <sub>C</sub>     | 25                                                                |            |            |            | kV   |
| Voltage rate of change (rated V <sub>R</sub> )                                                                 | dv/dt              | 10,000                                                            |            |            |            | V/μs |
| Operating junction temperature range                                                                           | T <sub>J</sub>     | −65 to +175                                                       |            |            |            | °C   |
| Storage temperature range                                                                                      | T <sub>STG</sub>   | −65 to +175                                                       |            |            |            | °C   |
| RMS Isolation voltage (MBRF type only) from terminals<br>to heatsink with t = 1.0 second, RH ≤ 30%             | V <sub>ISOL</sub>  | 4500 <sup>(1)</sup><br>3500 <sup>(2)</sup><br>1500 <sup>(3)</sup> |            |            |            | V    |

## Electrical Characteristics (T<sub>C</sub> = 25 °C unless otherwise noted)

| Parameter                                                                                                                                                                                                                                                                  | Symbol         | MBR20H35CT, MBR20H45CT |                              | MBR20H50CT, MBR20H60CT |                              | Unit     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------------|------------------------------|------------------------|------------------------------|----------|
|                                                                                                                                                                                                                                                                            |                | Typ                    | Max                          | Typ                    | Max                          |          |
| Maximum instantaneous forward voltage per leg <sup>(4)</sup><br>at I <sub>F</sub> = 10 A T <sub>J</sub> = 25 °C<br>at I <sub>F</sub> = 10 A T <sub>J</sub> = 125 °C<br>at I <sub>F</sub> = 20 A T <sub>J</sub> = 25 °C<br>at I <sub>F</sub> = 20 A T <sub>J</sub> = 125 °C | V <sub>F</sub> | —<br>0.49<br>—<br>0.62 | 0.63<br>0.55<br>0.75<br>0.68 | —<br>0.57<br>—<br>0.68 | 0.71<br>0.61<br>0.85<br>0.71 | V        |
| Maximum instantaneous reverse current<br>at rated DC blocking voltage per leg <sup>(4)</sup> T <sub>J</sub> = 25 °C<br>T <sub>J</sub> = 125 °C                                                                                                                             | I <sub>R</sub> | —<br>4.0               | 100<br>12                    | —<br>2.0               | 100<br>12                    | μA<br>mA |

## Thermal Characteristics (T<sub>C</sub> = 25 °C unless otherwise noted)

| Parameter                                        | Symbol           | MBR | MBRF | MBRB | Unit |
|--------------------------------------------------|------------------|-----|------|------|------|
| Thermal resistance from junction to case per leg | R <sub>θJC</sub> | 2.0 | 4.0  | 2.0  | °C/W |

### Notes:

(1) Clip mounting (on case), where lead does not overlap heatsink with 0.110" offset  
(2) Clip mounting (on case), where leads do overlap heatsink

(3) Screw mounting with 4-40 screw, where washer diameter is ≤ 4.9 mm (0.19")  
(4) Pulse test: 300μs pulse width, 1% duty cycle

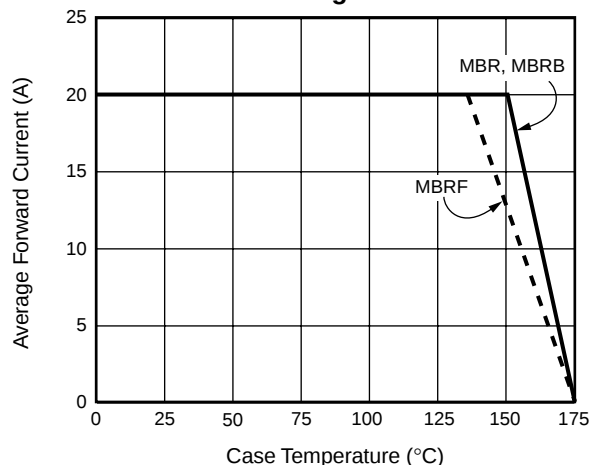
## Ordering Information

| Product                   | Case      | Package Code   | Package Option                                                                                                         |
|---------------------------|-----------|----------------|------------------------------------------------------------------------------------------------------------------------|
| MBR20H35CT – MBR20H60CT   | TO-220AB  | 45             | Anti-Static tube, 50/tube, 2K/carton                                                                                   |
| MBRF20H35CT – MBRF20H60CT | ITO-220AB | 45             | Anti-Static tube, 50/tube, 2K/carton                                                                                   |
| MBRB20H35CT – MBRB20H60CT | TO-263AB  | 31<br>45<br>81 | 13" reel, 800/reel, 4.8K/carton<br>Anti-Static tube, 50/tube, 2K/carton<br>Anti-Static 13" reel, 800/reel, 4.8K/carton |

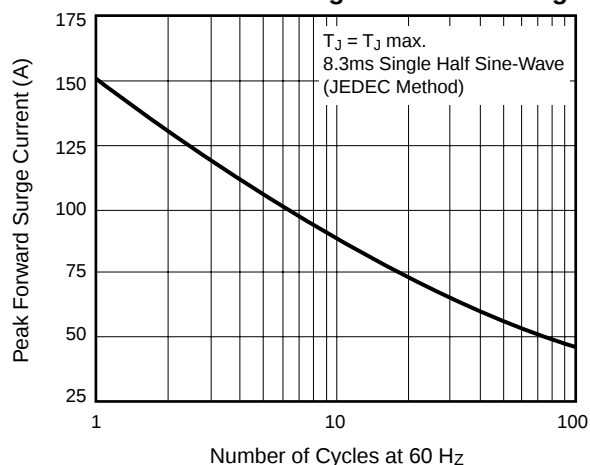


## Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

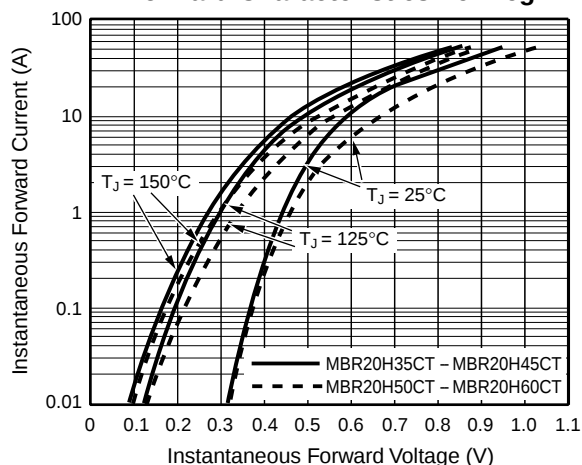
**Fig. 1 – Forward Current  
Derating Curve**



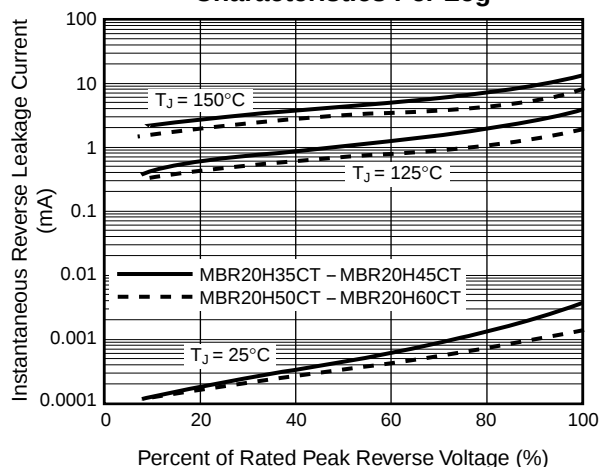
**Fig. 2 – Maximum Non-Repetitive  
Peak Forward Surge Current Per Leg**



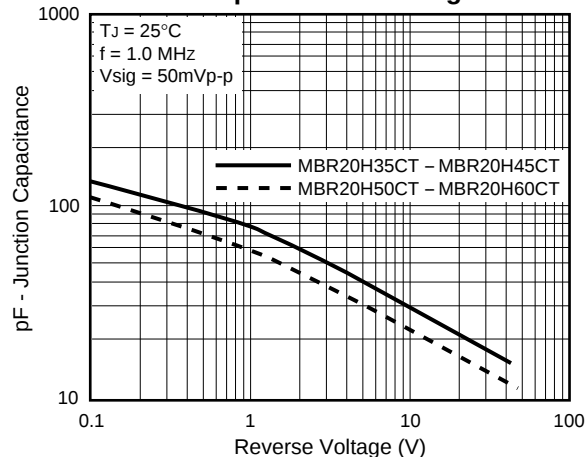
**Fig. 3 – Typical Instantaneous  
Forward Characteristics Per Leg**



**Fig. 4 – Typical Reverse  
Characteristics Per Leg**



**Fig. 5 – Typical Junction  
Capacitance Per Leg**



**Fig. 6 – Typical Transient  
Thermal Impedance Per Leg**

