

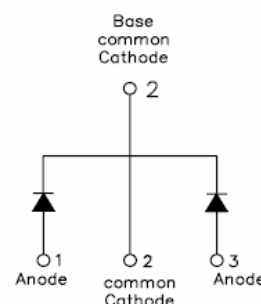
**MBR2050/2060CT MBRB2050/2060CT**  
**MBR2050/2060CT-1 SCHOTTKY RECTIFIER**

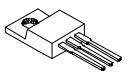
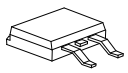
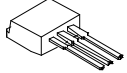
**Applications:**

- Switching power supply
- Converters
- Free-Wheeling diodes
- Reverse battery protection

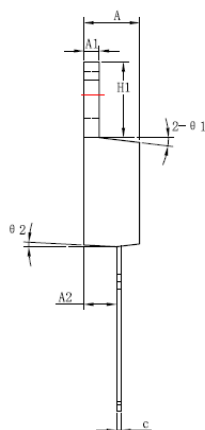
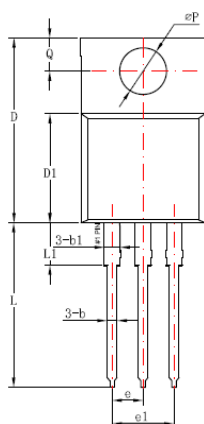
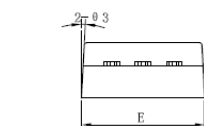
**Features:**

- 150 °C T<sub>J</sub> operation
- Center tap configuration
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- This is a Pb – Free Device
- All SMC parts are traceable to the wafer lot
- Additional testing can be offered upon request



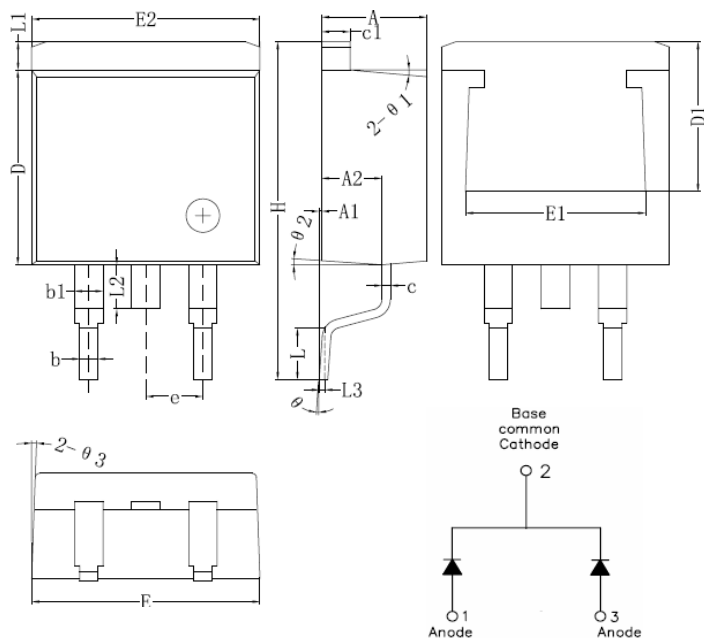
| Case styles                                                                         |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>MBR2050CT</b><br><b>MBR2060CT</b>                                                | <b>MBRB2050CT</b><br><b>MBRB2060CT</b>                                              | <b>MBR2050CT-1</b><br><b>MBR2060CT-1</b>                                              |
|  |  |  |
| <b>TO-220AB</b>                                                                     | <b>D<sup>2</sup>PAK</b>                                                             | <b>TO-262</b>                                                                         |

Mechanical Dimensions: In Inches / mm



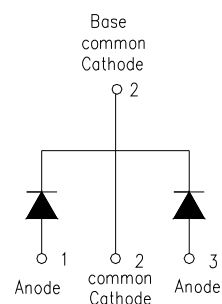
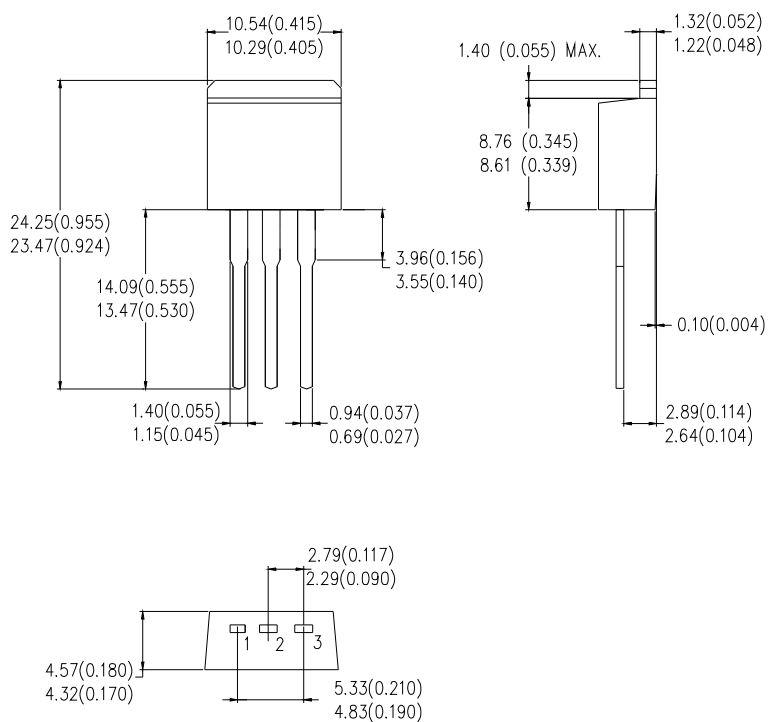
| Symbol | Dimensions in millimeters |         |       |
|--------|---------------------------|---------|-------|
|        | Min                       | Typical | Max   |
| A      | 4.42                      | 4.57    | 4.72  |
| A1     | 1.17                      | 1.27    | 1.37  |
| A2     | 2.59                      | 2.69    | 2.89  |
| b      | 0.71                      | 0.81    | 0.96  |
| b1     |                           | 1.27    |       |
| c      | 0.36                      | 0.38    | 0.61  |
| D      | 14.94                     | 15.24   | 15.54 |
| D1     | 8.85                      | 9.00    | 9.15  |
| E      | 10.01                     | 10.16   | 10.31 |
| e      |                           | 2.54    |       |
| e1     |                           | 5.06    |       |
| H1     | 6.04                      | 6.24    | 6.44  |
| L      | 12.7                      | 13.56   | 13.78 |
| L1     |                           | 3.5     |       |
| ΦP     | 3.74                      | 3.84    | 4.04  |
| Q      | 2.54                      | 2.74    | 2.94  |
| Θ1     |                           | 7°      |       |
| Θ2     |                           | 3°      |       |
| Θ3     |                           | 4°      |       |

**TO-220AB**



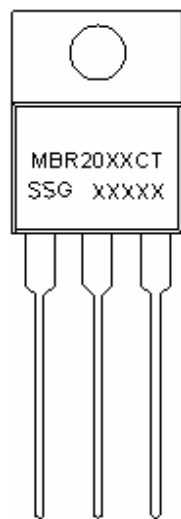
| Symbol | Dimensions in millimeters |         |       |
|--------|---------------------------|---------|-------|
|        | Min.                      | Typical | Max.  |
| A      | 4.55                      | 4.70    | 4.85  |
| A1     | 0                         | 0.10    | 0.25  |
| A2     | 2.59                      | 2.69    | 2.89  |
| b      | 0.71                      | 0.81    | 0.96  |
| b1     |                           | 1.27    |       |
| c      | 0.36                      | 0.38    | 0.61  |
| c1     | 1.17                      | 1.27    | 1.37  |
| D      | 8.55                      | 8.70    | 8.85  |
| D1     | 6.40                      |         |       |
| E      | 10.01                     | 10.16   | 10.31 |
| E1     | 7.6                       |         |       |
| E2     | 9.98                      | 10.08   | 10.18 |
| e      |                           | 2.54    |       |
| H      | 14.6                      | 15.1    | 15.6  |
| L      | 2.00                      | 2.30    | 2.70  |
| L1     | 1.17                      | 1.27    | 1.40  |
| L2     |                           |         | 2.20  |
| L3     |                           | 0.25BSC |       |
| e      | 0                         | -       | 8°    |
| e1     |                           | 5°      |       |
| e2     |                           | 4°      |       |
| e3     |                           | 4°      |       |

## D<sup>2</sup>PAK

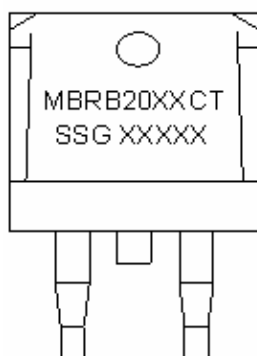


## TO-262

## Marking Diagram:



MBR20XXCT



MBRB20XXCT

Where XX is Reverse Voltage  
Where XXXXX is YYWWL

MBR = Device Type  
B = Package type  
20 = Forward Current (20A)  
XX = Reverse Voltage (50/60V)  
CT/CT-1 = Configuration  
SSG = SSG  
YY = Year  
WW = Week  
L = Lot Number

**Cautions:** Molding resin  
Epoxy resin UL:94V-0

## Ordering Information:

| Device                   | Package                         | Shipping      |
|--------------------------|---------------------------------|---------------|
| MBR20XXCT<br>MBR20XXCT-1 | TO-220AB<br>(Pb-Free)           | 50pcs / tube  |
| MBRB20XXCT               | D <sup>2</sup> PAK<br>(Pb-Free) | 800pcs / reel |

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification.

## Maximum Ratings:

| Characteristics                                            | Symbol    | Condition                                                  | Max. |           | Units |
|------------------------------------------------------------|-----------|------------------------------------------------------------|------|-----------|-------|
| Peak Inverse Voltage                                       | $V_{RWM}$ | -                                                          | 50   | MBR2050CT | V     |
|                                                            |           |                                                            | 60   | MBR2060CT |       |
| Average Rectified Output Current                           | $I_o$     | 50Hz Full Sine Wave Resistive Load @T <sub>C</sub> = 80 °C | 20   |           | A     |
| Max. Peak One Cycle Non-Repetitive Surge Current (per leg) | $I_{FSM}$ | 8.3ms, 50Hz Full Sine Wave, 1Cycle Non-repetitive          | 180  |           | A     |

## Electrical Characteristics:

| Characteristics                        | Symbol   | Condition                                                                           | Max.   | Units |
|----------------------------------------|----------|-------------------------------------------------------------------------------------|--------|-------|
| Forward Voltage Drop*                  | $V_{F1}$ | @ 10A, Pulse, $T_J = 25\text{ }^{\circ}\text{C}$                                    | 0.80   | V     |
|                                        |          | @ 20 A, Pulse, $T_J = 25\text{ }^{\circ}\text{C}$                                   | 0.95   |       |
|                                        | $V_{F2}$ | @ 10A, Pulse, $T_J = 125\text{ }^{\circ}\text{C}$                                   | 0.70   | V     |
|                                        |          | @ 20A, Pulse, $T_J = 125\text{ }^{\circ}\text{C}$                                   | 0.85   |       |
| Reverse Current<br>(per leg)*          | $I_{R1}$ | @ $V_R$ = rated VR<br>$T_J = 25\text{ }^{\circ}\text{C}$                            | 1.0    | mA    |
|                                        | $I_{R2}$ | @ $V_R$ = rated VR<br>$T_J = 125\text{ }^{\circ}\text{C}$                           | 150    | mA    |
| Junction Capacitance<br>(per leg)      | $C_T$    | @ $V_R = 5\text{V}$ , $T_C = 25\text{ }^{\circ}\text{C}$<br>$f_{SIG} = 1\text{MHz}$ | 400    | pF    |
| Typical Series Inductance<br>(per leg) | $L_S$    | Measured lead to lead 5 mm from<br>package body                                     | 8.0    | nH    |
| Max. Voltage Rate of Change            | dv/dt    | -                                                                                   | 10,000 | V/ s  |

\* Pulse Width < 300 $\mu$ s, Duty Cycle <2%

## Thermal-Mechanical Specifications:

| Characteristics                                 | Symbol          | Condition                                                    | Specification | Units                |
|-------------------------------------------------|-----------------|--------------------------------------------------------------|---------------|----------------------|
| Max. Junction Temperature                       | $T_J$           | -                                                            | -55 to +150   | $^{\circ}\text{C}$   |
| Max. Storage Temperature                        | $T_{stg}$       | -                                                            | -55 to +150   | $^{\circ}\text{C}$   |
| Maximum Thermal<br>Resistance Junction to Case  | $R_{\theta JC}$ | DC operation                                                 | 2.3           | $^{\circ}\text{C/W}$ |
| Typical Thermal Resistance<br>Case to Heat Sink | $R_{\theta CS}$ | Mounting surface, smooth and<br>greased<br>(only for TO-220) | 0.50          | $^{\circ}\text{C/W}$ |
| Approximate Weight                              | wt              | -                                                            | 2             | g                    |
| Case Style                                      | ITO-220AB       |                                                              |               |                      |

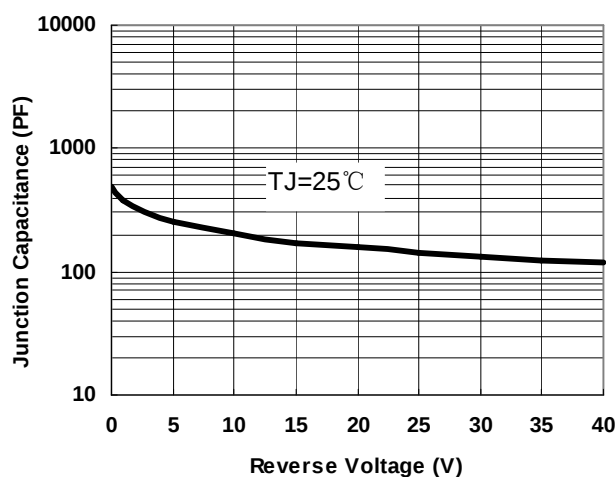


Fig.1-Typical Junction Capacitance

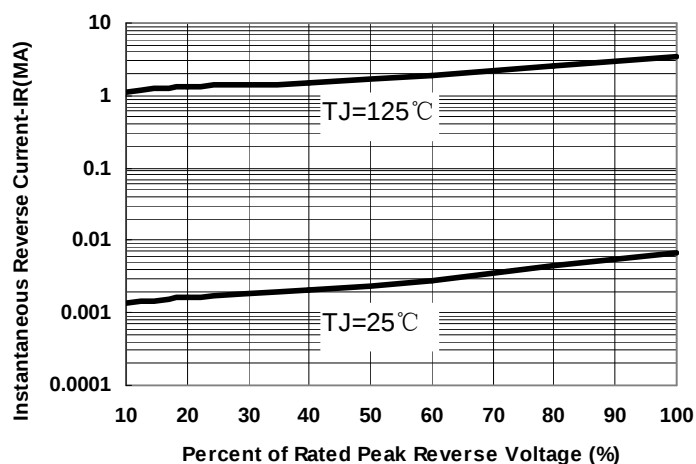


Fig.2-Typical Reverse Characteristics

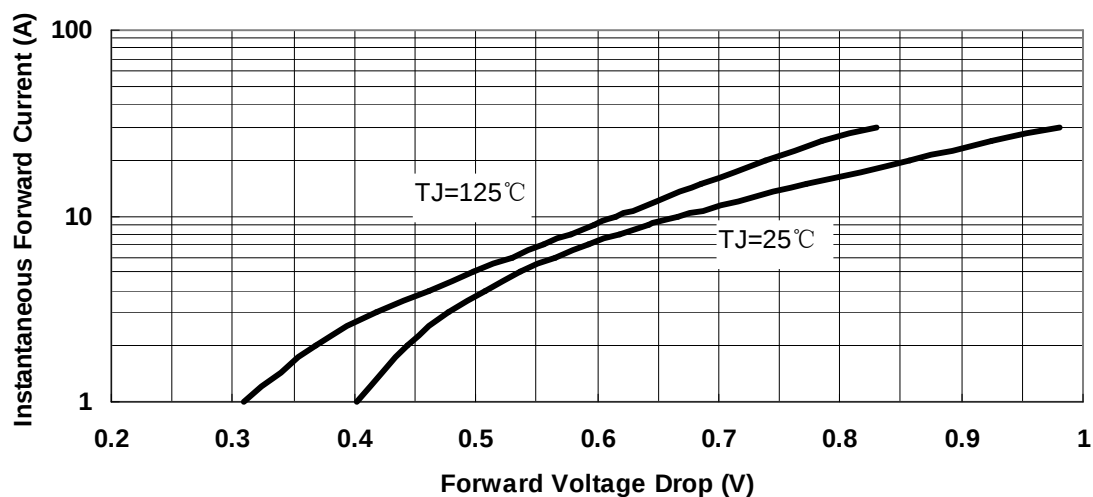


Fig.3-Typical Instantaneous Forward Voltage Characteristics

**DISCLAIMER:**

- 1- The information given herein, including the specifications and dimensions, is subject to change without prior notice to improve product characteristics. Before ordering, purchasers are advised to contact the SMC - Sangdest Microelectronics (Nanjing) Co., Ltd sales department for the latest version of the datasheet(s).
- 2- In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, medical equipment, and safety equipment), safety should be ensured by using semiconductor devices that feature assured safety or by means of users' fail-safe precautions or other arrangement.
- 3- In no event shall SMC - Sangdest Microelectronics (Nanjing) Co., Ltd be liable for any damages that may result from an accident or any other cause during operation of the user's units according to the datasheet(s). SMC - Sangdest Microelectronics (Nanjing) Co., Ltd assumes no responsibility for any intellectual property claims or any other problems that may result from applications of information, products or circuits described in the datasheets.
- 4- In no event shall SMC - Sangdest Microelectronics (Nanjing) Co., Ltd be liable for any failure in a semiconductor device or any secondary damage resulting from use at a value exceeding the absolute maximum rating.
- 5- No license is granted by the datasheet(s) under any patents or other rights of any third party or SMC - Sangdest Microelectronics (Nanjing) Co., Ltd.
- 6- The datasheet(s) may not be reproduced or duplicated, in any form, in whole or part, without the expressed written permission of SMC - Sangdest Microelectronics (Nanjing) Co., Ltd.
- 7- The products (technologies) described in the datasheet(s) are not to be provided to any party whose purpose in their application will hinder maintenance of international peace and safety nor are they to be applied to that purpose by their direct purchasers or any third party. When exporting these products (technologies), the necessary procedures are to be taken in accordance with related laws and regulations..