

**MBR20150DCT, MBR20150DFCT**  
SCHOTTKY BARRIER RECTIFIERS



**VOLTAGE:** 150 Volts

**CURRENT:** 20.0 Amperes

**Marking and Polarity**

**FEATURES**

- Low forward voltage drop for high efficiency
- Low power loss for high reliability
- High forward surge capability for high reliability
- High frequency operation
- Solder bath temperature 260°C maximum, 10s, per JESD22-B106
- Component in accordance to RoHS 2011/65/EU

**MECHANICAL DATA**

- Terminals:** Plated Leads Solderable per MIL-STD-202, Method 208
- Mounting Position:** Any
- Lead Free:** Lead Free Finish, RoHS Compliant
- Polarity:** As marked

**TYPICAL APPLICATIONS**

- For use in high frequency inverters ,  
AC/DC converters, LED driver etc. applications

**TO-220AB**  
**MBR20150DCT**



**TO-220F**  
**MBR20150DFCT**



**Remark:**

- NH=niuhang trademark;
- FF=Product line code, According to actual changes  
YWW=Date code, According to actual changes  
EDDQK=Internal code, According to actual changes
- MBR20150DCT/FCT=Module.

**Maximum Ratings (Ratings at 25°C ambient temperature unless otherwise specified )**

| Parameter                                                                                                    | Symbol      | MBR20150DCT, MBR20150DFCT | Unit    |
|--------------------------------------------------------------------------------------------------------------|-------------|---------------------------|---------|
| Maximum repetitive peak reverse voltage                                                                      | $V_{RRM}$   | 150                       | V       |
| Maximum average forward rectified current (see fig.1)                                                        | $I_{F(AV)}$ | 20                        | A       |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL) | $I_{FSM}$   | 160                       | A       |
| Peak repetitive reverse current per diode at $t_p=2\mu s$ 1KHz                                               | $I_{RRM}$   | 10                        | $\mu A$ |

**Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified )**

| Parameter                                       | Test Conditions                      | Symbol | MBR20150DCT, MBR20150DFCT |      |      | Unit    |
|-------------------------------------------------|--------------------------------------|--------|---------------------------|------|------|---------|
|                                                 |                                      |        | Min.                      | Typ. | Max. |         |
| Instantaneous forward voltage per diode (note1) | $T_A=25^\circ C$ IF= 10 A            | $V_F$  | --                        | 0.87 | 0.95 | V       |
|                                                 | $T_A=125^\circ C$                    |        | --                        | 0.81 | 0.88 |         |
| Reverse current per diode (note1)               | $T_A=25^\circ C$ VR= $V_{RRM}$       | $I_R$  | --                        | 1    | 10   | $\mu A$ |
|                                                 | $T_A=125^\circ C$ VR= 80%* $V_{RRM}$ |        | --                        | 0.5  | 5    | mA      |
| Typical junction capacitance                    | 1V, 10KHz                            | $C_J$  | --                        | 480  | --   | pF      |

**Thermal Characteristics (Ratings at 25°C ambient temperature unless otherwise specified )**

| Parameter                          | Symbol          | MBR20150DCT, MBR20150DFCT |         | Unit         |
|------------------------------------|-----------------|---------------------------|---------|--------------|
| Operating junction                 | $T_J$           | -55                       | to 175  | $^\circ C$   |
| Storage temperature range          | $T_{STD}$       | -55                       | to 175  |              |
| Typical thermal resistance (note3) | $R_{\theta JC}$ | TO-220AB                  | TO-220F | $^\circ C/W$ |
|                                    |                 | 2.5                       | 4.5     |              |

- Notes:
- Pulse test: 300  $\mu s$  pulse width, 1% duty cycle
  - Device mounted on Device mounted on 75mm x 45mm x 2.5mm Aluminum Plate Heatsink.

# MBR20150DCT, MBR20150DFCT

## SCHOTTKY BARRIER RECTIFIERS



### RATING AND CHARACTERISTIC CURVES

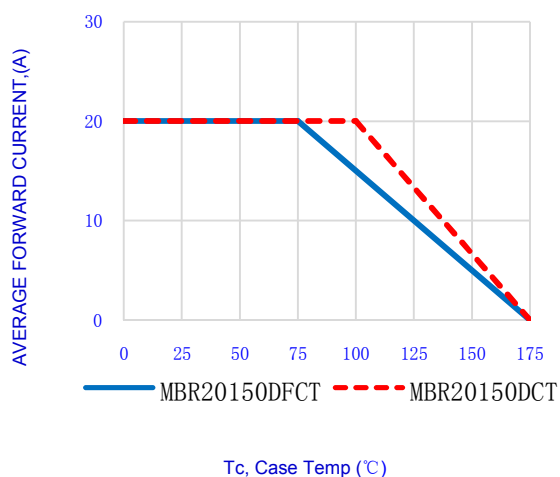


Fig.1-FORWARD CURRENT DERATING CURVE

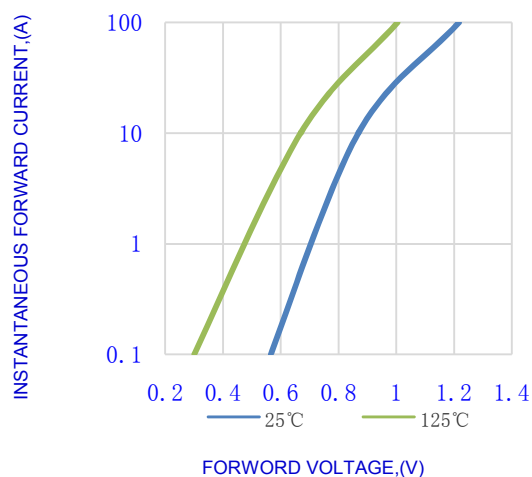


Fig.2- TYPICAL INSTANTANEOUS FORWARD

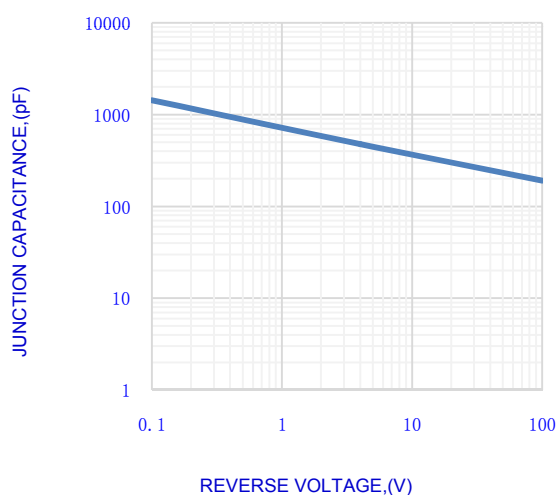


Fig.3- TYPICAL JUNCTION CAPACITANCE

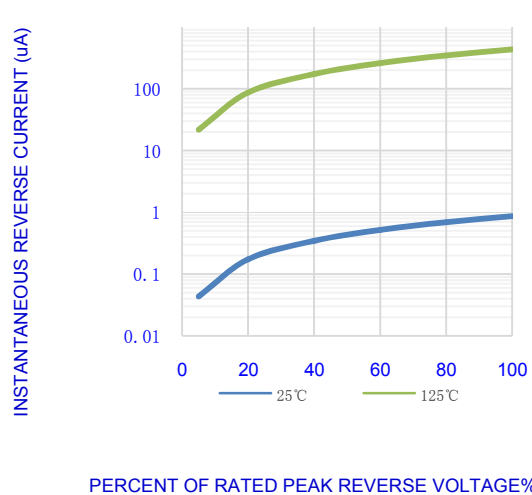


Fig.4- TYPICAL REVERSE CHARACTERISTICS

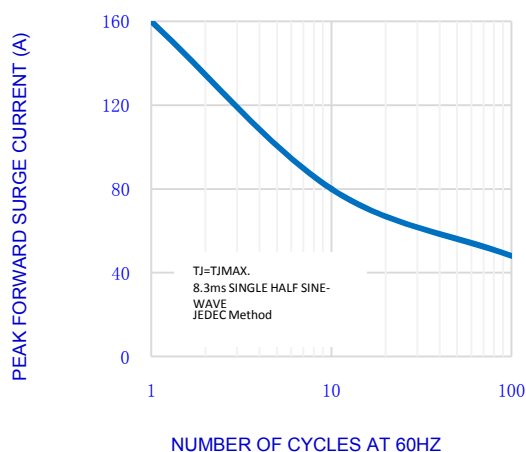


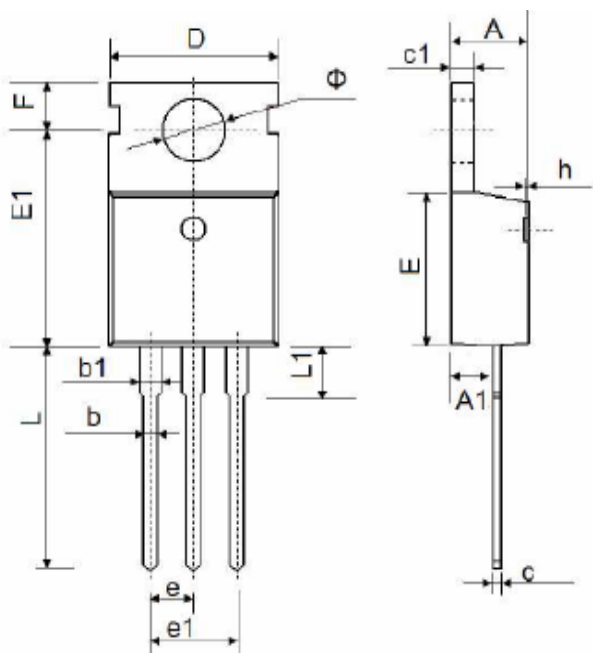
Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

**MBR20150DCT, MBR20150DFCT**

SCHOTTKY BARRIER RECTIFIERS



**OUTLINE DRAWINGS**

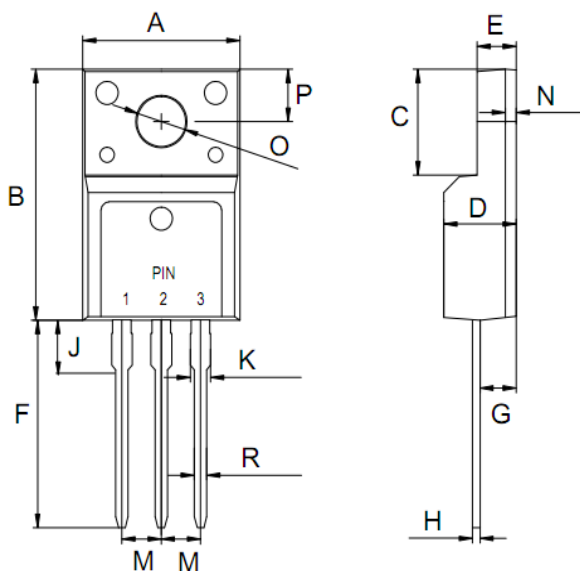


**TO-220AB**

**OUTLINE DIMENSIONS**

| Dim. | Milimeters |      |       | Inches |      |      |
|------|------------|------|-------|--------|------|------|
|      | Min.       | Typ. | Max.  | Min.   | Typ. | Max. |
| A    | 4.40       | -    | 4.60  | 0.17   | -    | 0.18 |
| A1   | 2.00       | -    | 2.50  | 0.08   | -    | 0.10 |
| b    | 0.70       | -    | 0.90  | 0.03   | -    | 0.04 |
| b1   | 1.10       | -    | 1.40  | 0.04   | -    | 0.06 |
| c    | 0.40       | -    | 0.70  | 0.02   | -    | 0.03 |
| c1   | 1.20       | -    | 1.40  | 0.05   | -    | 0.06 |
| D    | 9.80       | -    | 10.40 | 0.39   | -    | 0.41 |
| E    | 8.90       | -    | 9.80  | 0.35   | -    | 0.39 |
| E1   | 12.50      | -    | 12.95 | 0.49   | -    | 0.51 |
| e    | -          | 2.54 | -     | -      | 0.10 | -    |
| e1   | 4.90       | -    | 5.20  | 0.19   | -    | 0.20 |
| F    | 2.65       | -    | 3.00  | 0.10   | -    | 0.12 |
| h    | 0.00       | -    | 0.30  | 0.00   | -    | 0.01 |
| L    | 12.90      | -    | 13.40 | 0.51   | -    | 0.53 |
| L1   | 2.80       | -    | 3.40  | 0.11   | -    | 0.13 |
| Φ    | 3.40       | -    | 3.80  | 0.13   | -    | 0.15 |

**OUTLINE DRAWINGS**



**TO-220F**

**OUTLINE DIMENSIONS**

| Dim. | Milimeters |       |       | Inches |        |        |
|------|------------|-------|-------|--------|--------|--------|
|      | Min.       | Typ.  | Max.  | Min.   | Typ.   | Max.   |
| A    | 9.91       | 10.21 | 10.41 | 0.3902 | 0.4020 | 0.4098 |
| B    | 15.30      | 16.00 | 16.50 | 0.6024 | 0.6299 | 0.6496 |
| C    | 6.20       | 6.75  | 7.20  | 0.2441 | 0.2657 | 0.2835 |
| D    | 4.44       | 4.70  | 4.80  | 0.1748 | 0.1850 | 0.1890 |
| E    | 2.45       | 2.57  | 3.55  | 0.0965 | 0.1012 | 0.1398 |
| F    | 12.50      | 13.50 | 14.50 | 0.4921 | 0.5315 | 0.5709 |
| G    | 2.20       | 2.70  | 3.20  | 0.0866 | 0.1063 | 0.1260 |
| H    | 0.35       | 0.50  | 0.58  | 0.0138 | 0.0197 | 0.0228 |
| J    | 2.60       | 3.20  | 4.00  | 0.1024 | 0.1260 | 0.1575 |
| M    | 2.35       | 2.50  | 2.70  | 0.0925 | 0.0984 | 0.1063 |
| N    | 4.88       | 5.00  | 5.28  | 0.1921 | 0.1969 | 0.2079 |
| R    | 0.58       | 0.82  | 0.94  | 0.0228 | 0.0323 | 0.0370 |
| O    | 3.25       | 3.55  | 3.75  | 0.1280 | 0.1398 | 0.1476 |
| P    | 2.15       | 3.30  | 3.50  | 0.0846 | 0.1299 | 0.1378 |

**PACKING INFORMATION**

| Package Code | Package Method | Tube Size L×W×H(mm) | Quantity (pcs/Tube) | Inner Box Size L×W×H(mm) | Quantity (pcs/Inner Box) | Outer Carton Size L×W×H(mm) | Quantity (pcs/carton) |
|--------------|----------------|---------------------|---------------------|--------------------------|--------------------------|-----------------------------|-----------------------|
| TO-220AB     | Tube           | 530x35x8            | 50                  | 560x155x55               | 1000                     | 570×284×185                 | 5000                  |
| TO-220F      | Tube           | 530x35x8            | 50                  | 560x155x55               | 1000                     | 570×284×185                 | 5000                  |

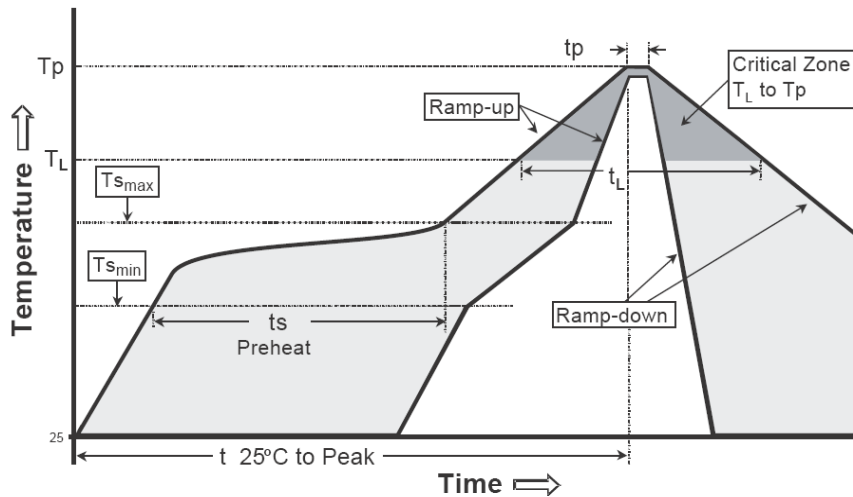
**MBR20150DCT, MBR20150DFCT**  
SCHOTTKY BARRIER RECTIFIERS



**Recommended wave soldering condition**

| Product         | Peak Temperature | Soldering Time  |
|-----------------|------------------|-----------------|
| Pb-free devices | 260 +0/-5 °C     | 5 +1/-1 seconds |

**Recommended temperature profile for IR reflow**



| Profile feature                                                                            | Sn-Pb eutectic Assembly          | Pb-free Assembly                 |
|--------------------------------------------------------------------------------------------|----------------------------------|----------------------------------|
| Average ramp-up rate (Tsmax to Tp)                                                         | 3°C/second max.                  | 3°C/second max.                  |
| Preheat<br>-Temperature Min(TS min)<br>-Temperature Max(TS max)<br>-Time(ts min to ts max) | 100°C<br>150°C<br>60-120 seconds | 150°C<br>200°C<br>60-180 seconds |
| Time maintained above:<br>-Temperature (TL)<br>- Time (tL)                                 | 183°C<br>60-150 seconds          | 217°C<br>60-150 seconds          |
| Peak Temperature(TP)                                                                       | 240 +0/-5 °C                     | 260 +0/-5 °C                     |
| Time within 5°C of actual peak temperature(tp)                                             | 10-30 seconds                    | 20-40 seconds                    |
| Ramp down rate                                                                             | 6°C/second max.                  | 6°C/second max.                  |
| Time 25 °C to peak temperature                                                             | 6 minutes max.                   | 8 minutes max.                   |

Note : All temperatures refer to topside of the package, measured on the package body surface.

**MBR20150DCT, MBR20150DFCT**  
**SCHOTTKY BARRIER RECTIFIERS**



**Disclaimer**

- Reproducing and modifying information of the document is prohibited without permission from niuhang Electronics co., LTD
- Niuhan Electronics co., LTD. reserves the rights to make changes of the content herein the document anytime without notification.
- Niuhan Electronics co., LTD. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Niuhan Electronics co., LTD. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Niuhan Electronics co., LTD. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments requiring high level of reliability or relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, transportation equipment, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Niuhan Electronics co., LTD. for any damages resulting from such improper use or sale.
- When the appearance of the product and chip size does not change, in order to product the customer. quality, change the internal structure and the production process Niuhan can not notify