

# MBR565DS

## SCHOTTKY RECTIFIERS



VOLTAGE: 65 Volts

CURRENT: 5.0 Amperes

TO-252

Marking and Polarity

### FEATURES

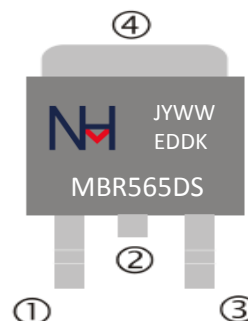
- Low Forward Voltage Drop for high efficiency
- Low leakage current for high reliability
- High forward surge capability for high reliability

### MECHANICAL DATA

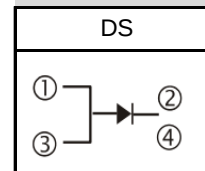
- Package:** TO-252
- Mounting Position:** Any
- Lead Free:** Lead Free Finish, RoHS Compliant
- Weight:** App.0.325 grams (0.0113 ounce)

### TYPICAL APPLICATIONS

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



### Polarity mark



### Remark:

- NH=niu hang trademark
- J=Product line code,According to actual changes  
YWW=Data code,According to actual changes  
EDDK=Inter control code,According to actual changes
- MBR565DS = Modle

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

| Parameter                                                                                                    | Symbol      | MBR565DS | Unit               |
|--------------------------------------------------------------------------------------------------------------|-------------|----------|--------------------|
| Maximum repetitive peak reverse voltage                                                                      | $V_{RRM}$   | 65       | V                  |
| Maximum RMS voltage                                                                                          | $V_{RMS}$   | 46       | V                  |
| Maximum DC blocking voltage                                                                                  | $V_{DC}$    | 65       | V                  |
| Maximum average forward rectified current(see fig.1)                                                         | $I_{F(AV)}$ | 5.0      | A                  |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL) | $I_{FSM}$   | 80       | A                  |
| Current Squared Time Per Diode(t<8.3ms)                                                                      | $I^2t$      | 26.56    | A <sup>2</sup> sec |

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

| Parameter                                                                 | Test Conditions           | Symbol    | MBR565DS |      |      | Unit |
|---------------------------------------------------------------------------|---------------------------|-----------|----------|------|------|------|
|                                                                           |                           |           | Min.     | Typ. | Max. |      |
| Maximum instantaneous forward voltage (Note 1)                            | Ta=25°C IF= 5.0 A         | $V_F$     | --       | 0.68 | 0.76 | V    |
| Maximum instantaneous reversecurrent at rated DC blockingvoltage (Note 1) | Ta=25°C @ $V_{RRM}$       | $I_{RRM}$ | --       | 10   | 50   | uA   |
|                                                                           | Ta=125°C @ 80%* $V_{RRM}$ |           | --       | 2    | 10   | mA   |
| Typical junction capacitance                                              | 4V,1MHz                   | $C_J$     | --       | 360  | --   | pF   |

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

| Parameter                                        | Symbol          | MBR565DS   | Unit |
|--------------------------------------------------|-----------------|------------|------|
| Operating junction and storage temperature range | $T_J$           | -40 to 150 | °C   |
| Storage temperature range                        | $T_{STG}$       | -40 to 150 |      |
| Typical thermal resistance (Note 2)              | $R_{\theta JA}$ | 25         | °C/W |
|                                                  | $R_{\theta JL}$ | 8          |      |

- Note:
- Pulse width < 300 uS, Duty cycle < 2%
  - P.C.B mounted with 10cm\*10cm\*1mm copper pad areas.

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RATING AND CHARACTERISTIC CURVES

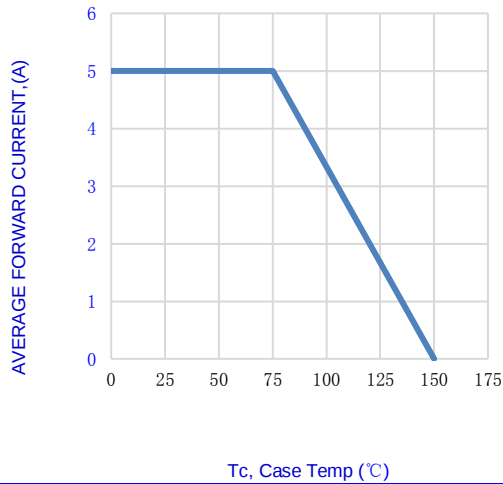


Fig.1-FORWARD CURRENT DERATING CURVE

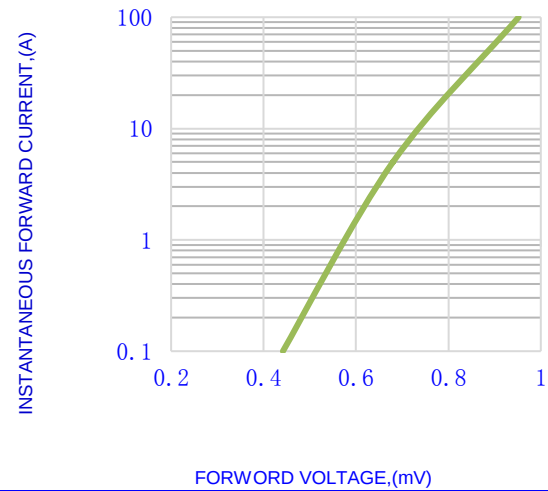


Fig.2- TYPICAL INSTANTANEOUS FORWARD

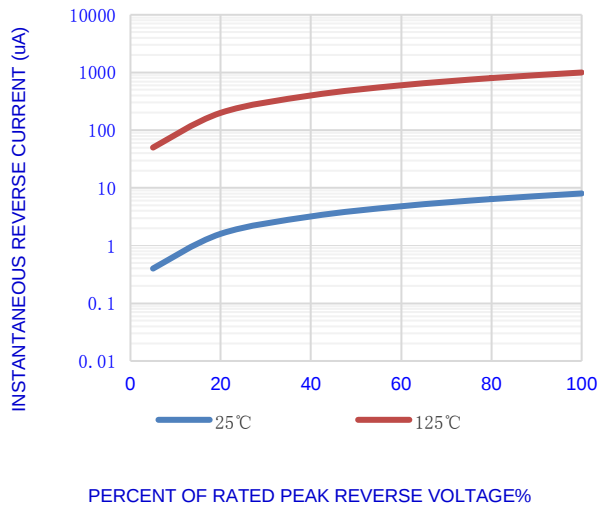


Fig.3- TYPICAL REVERSE CHARACTERISTICS

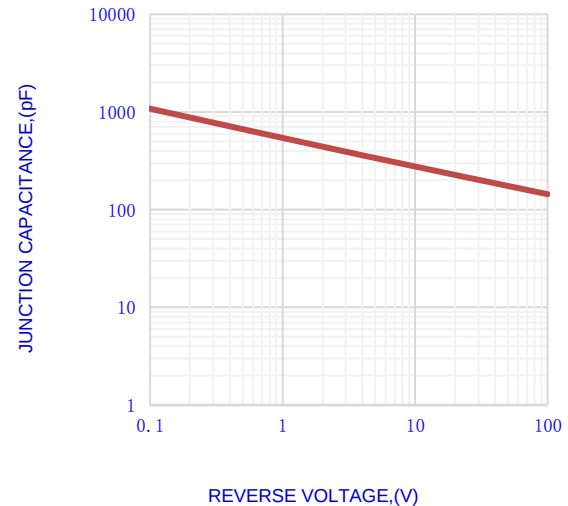


Fig.4-TYPICAL JUNCTION CAPACITANCE

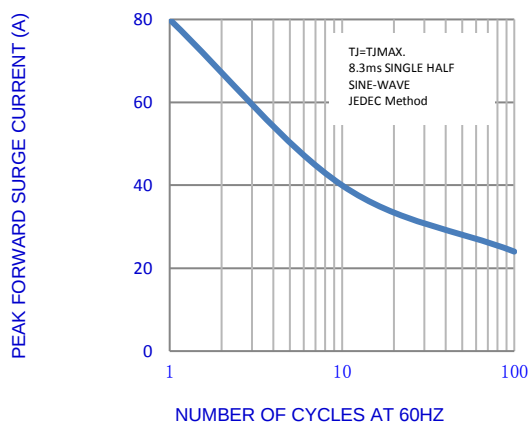


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

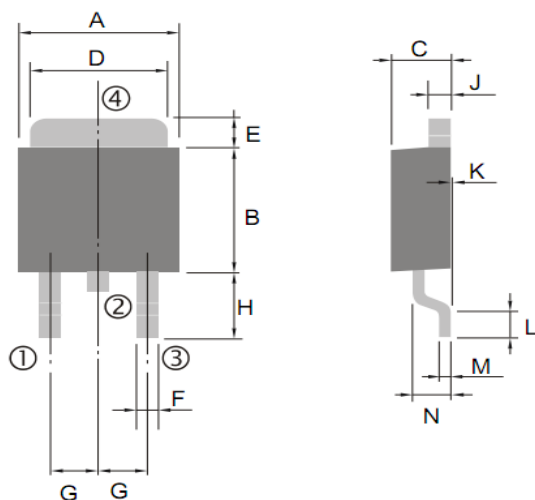
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## SCHOTTKY RECTIFIERS



### OUTLINE DRAWINGS

### TO-252



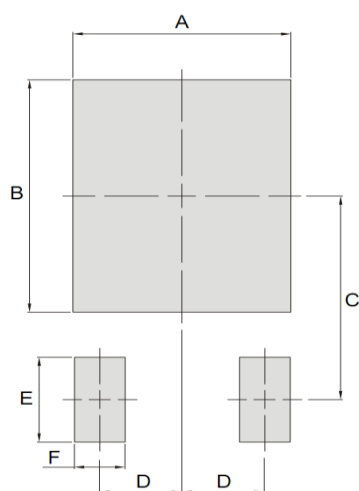
#### OUTLINE DIMENSIONS

| DIM. | Millimeters |       |       | Inches |       |       |
|------|-------------|-------|-------|--------|-------|-------|
|      | Min.        | Typ.  | Max.  | Min.   | Typ.  | Max.  |
| A    | 6.400       | -     | 6.800 | 0.252  | -     | 0.268 |
| B    | 5.200       | -     | 6.200 | 0.205  | -     | 0.244 |
| C    | 2.100       | -     | 2.500 | 0.083  | -     | 0.098 |
| D    | 4.800       | -     | 5.500 | 0.189  | -     | 0.217 |
| E    | 1.000       | -     | 1.600 | 0.039  | -     | 0.063 |
| F    | 0.500       | -     | 1.000 | 0.020  | -     | 0.039 |
| G    | 2.100       | -     | 2.500 | 0.083  | -     | 0.098 |
| H    | 2.800       | -     | 3.500 | 0.110  | -     | 0.138 |
| J    | 0.400       | -     | 0.600 | 0.016  | -     | 0.024 |
| K    | -           | 0.080 | -     | -      | 0.003 | -     |
| L    | 0.900       | -     | 1.400 | 0.035  | -     | 0.055 |
| M    | -           | 0.500 | -     | -      | 0.020 | -     |
| N    | 1.300       | -     | 1.800 | 0.051  | -     | 0.071 |

MBR565D

### RECOMMENDED LAYOUT DRAWINGS

### TO-252



#### RECOMMENDED LAYOUT DIMENSIONS

| Dim. | Millimeters |      |      | Inches |       |      |
|------|-------------|------|------|--------|-------|------|
|      | Min.        | Typ. | Max. | Min.   | Typ.  | Max. |
| A    | -           | 6.09 | -    | -      | 0.24  | -    |
| B    | -           | 7.57 | -    | -      | 0.298 | -    |
| C    | -           | 6.64 | -    | -      | 0.261 | -    |
| D    | -           | 2.3  | -    | -      | 0.091 | -    |
| E    | -           | 2.76 | -    | -      | 0.109 | -    |
| F    | -           | 1.42 | -    | -      | 0.056 | -    |

### PACKING INFORMATION

### TO-252

| Package Method | Reel Size (mm) | Quantity (pcs/reel) | Inner Box Size L×W×H(mm) | Quantity (pcs/Inner Box) | Outer Carton Size L×W×H(mm) | Quantity (pcs/carton) |
|----------------|----------------|---------------------|--------------------------|--------------------------|-----------------------------|-----------------------|
| Tape Reel      | Φ330           | 2500                | 340×340×50               | 5000                     | 360×360×260                 | 25000                 |

**MBR565DS**

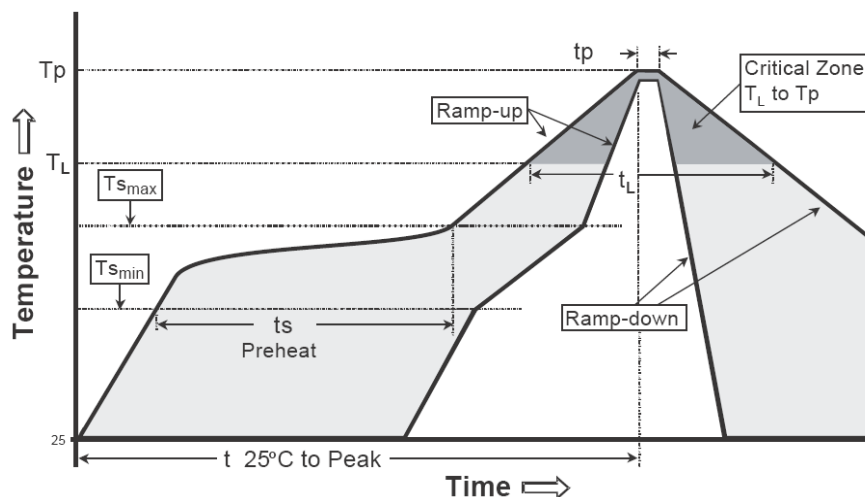
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**Recommended wave soldering condition**

| 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<br>(T <sub>smax</sub> to T <sub>p</sub> )                                                     | 3°C/second max.                  | 3°C/second max.                  |
| Preheat<br>-Temperature Min(TS min)<br>-Temperature Max(TS max)<br>-Time(t <sub>s</sub> min to t <sub>s</sub> max) | 100°C<br>150°C<br>60-120 seconds | 150°C<br>200°C<br>60-180 seconds |
| Time maintained above:<br>-Temperature (T <sub>L</sub> )<br>- Time (t <sub>L</sub> )                               | 183°C<br>60-150 seconds          | 217°C<br>60-150 seconds          |
| Peak Temperature(T <sub>p</sub> )                                                                                  | 240 +0/-5 °C                     | 260 +0/-5 °C                     |
| Time within 5°C of actual peak<br>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.

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