# MBR20100CS

SCHOTTKY RECTIFIERS

Pb RoHS Pb-Free COMPLIANT

| VOLTAGE: | 100 Volts | CURRENT: | 20 Amperes | Package: | TO-252 | Marking And Polarity |
|---|---|---|---|---|---|---|

## FEATURES

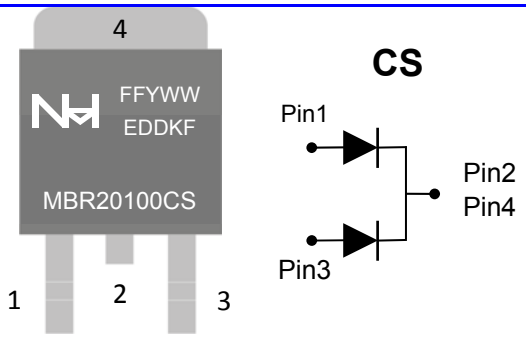
- Plane Schottky Potential Barrier Chip
- Low Forward Voltage Drop For High Efficiency
- Low Leakage Current For High Reliability
- High Forward Surge Capability For High Reliability
- High Frequency Operation

## MECHANICAL DATA

- **Package:** Molding Compound Meets UL 94 V-0 Flammability Rating, RoHS-Compliant
- **Polarity:** As Marked On Case
- **Mounting Position:** Any
- Weight:App. 0.321 Grams（0.01132 Ounce)

## TYPICAL APPLICATIONS

- For Use In High Frequency Inverters,Switching Mode Power Supply AC/DC Converters,LED Driver Etc.Applications




Remark:

①. NH=niuhang trademark

②. FF=Product line code,According to actual changes

YWW=Date code,According to actual changes

EDDKF=Inernal code,According to actual changes

③. MBR20100CS=Model

Single Phase,Half Wave,60Hz,Resistive Or Inductive Load.For Capacitive Load,Derate Current By 20%

## Maximum Ratings (Ta=25℃ Unless otherwise specified)

| Parameter | Test Conditions | Symbol | MBR20100CS | Unit |
|---|---|---|---|---|
| Maximum Repetitive Peak Reverse Voltage | | $V_{RRM}$ | 100 | V |
| Maximum RMS Voltag | | $V_{RMS}$ | 70 | V |
| Maximum DC Blocking Voltage | | $V_{DC}$ | 100 | V |
| Maximum Average Forward Rectified Current | @TC= 100 °C | $I_{F(AV)}$ | 20 | A |
| Peak Forward Surge Current | 8.3ms Single Half Sine-wave Superimposed On Rate Load | $I_{FSM}$ | 160 | A |
| Current Squared Time Per Diode | t<8.3ms | $I^2t$ | 106.2 | $A^2sec$ |

## Electrical Characteristcs (Ta=25℃ Unless otherwise specified )

| Parameter | Test Conditions | | Symbol | MBR20100CS | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Instaneous forward voltage per diode (note1) | Ta=25℃ | $I_F$= 10.0 A | $V_F$ | -- | 0.83 | 0.95 | V |
| | Ta=125℃ | | | -- | 0.75 | 0.87 | |
| Maximum DC Reverse Current at Rated DC Blocking Voltage (Note 1) | Ta=25℃ | $V_R$= $V_{RRM}$ | $I_{RRM}$ | -- | 1 | 5 | uA |
| | Ta=125℃ | $V_R$= 80%*$V_{RRM}$ | | -- | 1 | 5 | mA |
| Typical Junction Capacitance Per Diode | 4.0 V,1MHz | | $C_J$ | -- | 600 | -- | pF |

## Thermal Characteristcs (Ta=25℃ Unless otherwise specified )

| Parameter | Symbol | MBR20100CS | Unit |
|---|---|---|---|
| Operating Junction Temperature Range | $T_J$ | -55 to 175 | ℃ |
| Storage Temperature Range | $T_{STD}$ | -55 to 175 | |
| Typical thermal resistance (Note 2) | $R_{\theta JA}$ | 45 | |
| | $R_{\theta JC}$ | 3 | ℃/W |

Notes: 1.Pulse Test: 300 Us Pulse Width,1% Duty Cycle

2.Device Mounted On Device Mounted On 10cm*10cm*1mm copper pad areas.

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## Typical Characteristics Curves

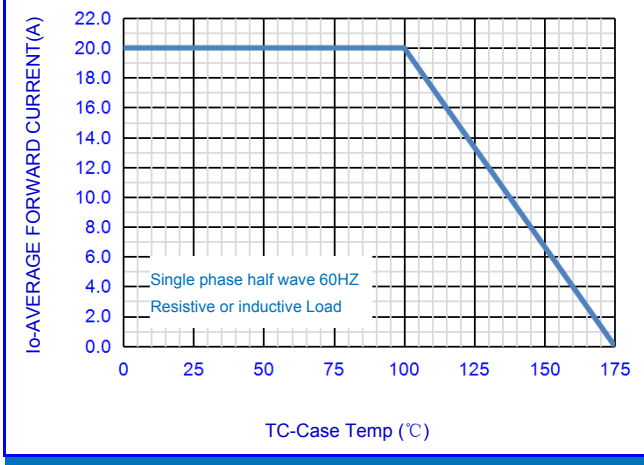


Fig.1-FORWARD CURRENT DERATING CURVE

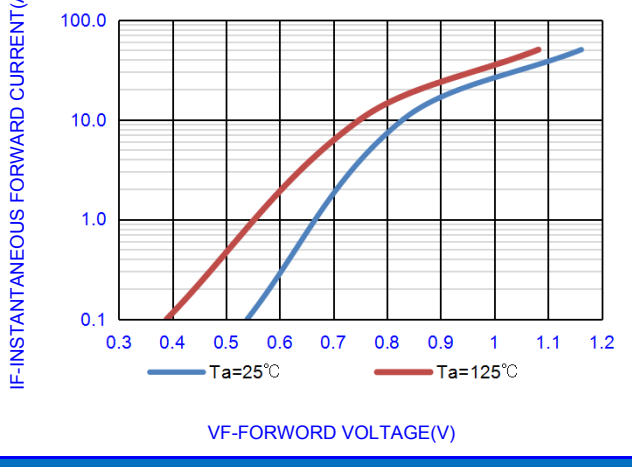


Fig.2- TYPICAL INSTANTANEOUS FORWARD

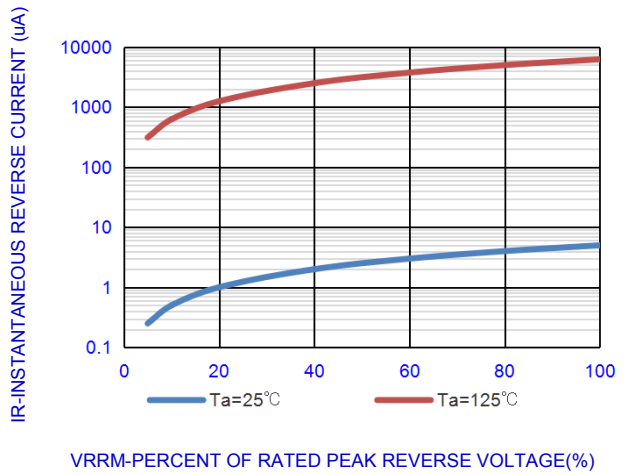


Fig.3- TYPICAL REVERSE CHARACTERISTICS

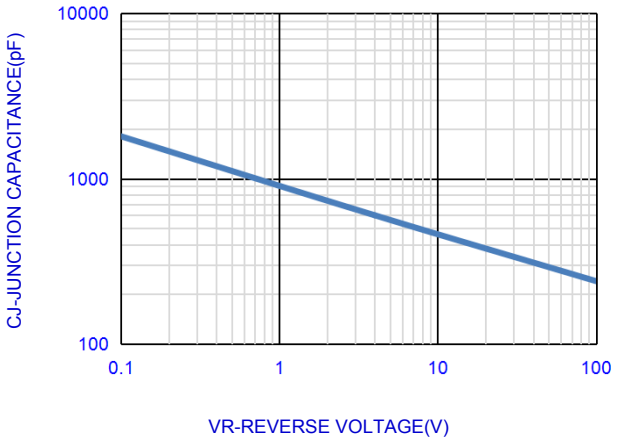


Fig.4- TYPICAL JUNCTION CAPACITANCE

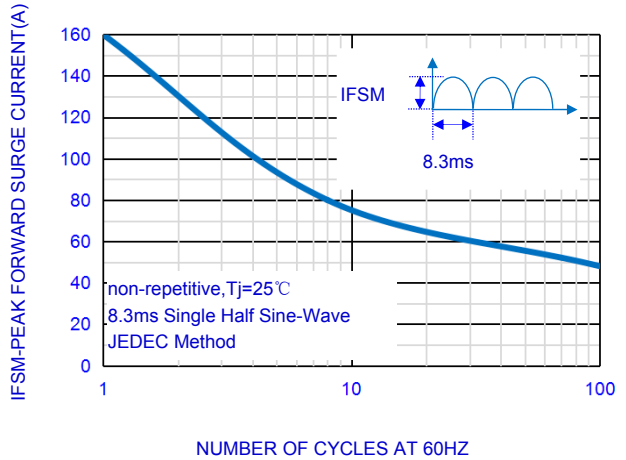


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

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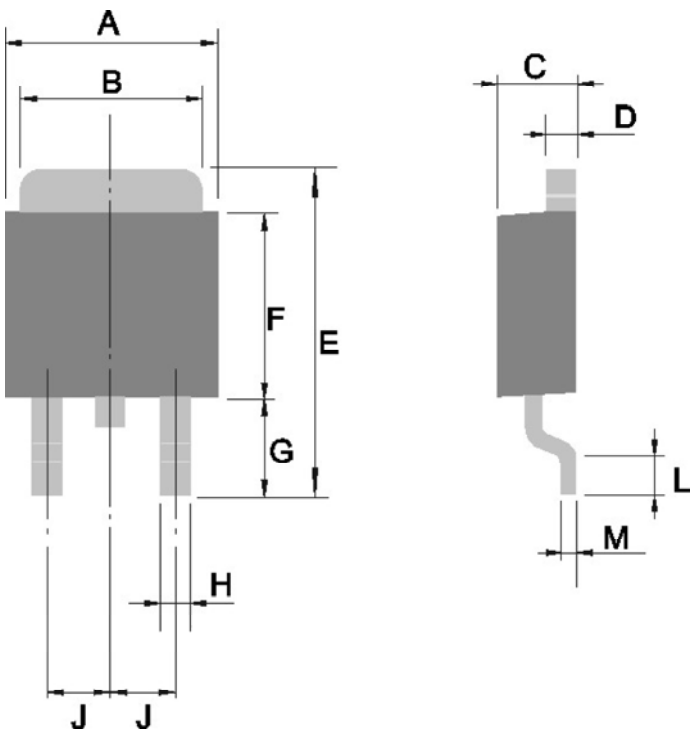
## OUTLINE DRAWINGS

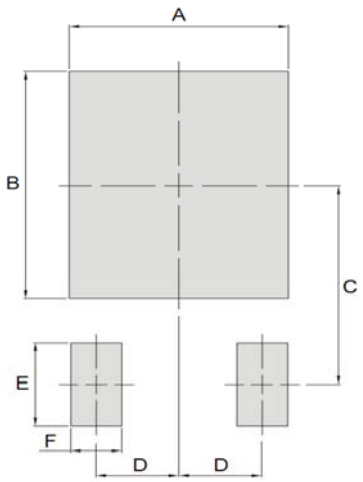
TO-252




| OUTLINE DIMENSIONS | | | | | | |
|---|---|---|---|---|---|---|
| Dim. | Milimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 6.100 | - | 7.100 | 0.240 | - | 0.280 |
| B | 4.800 | - | 5.800 | 0.189 | - | 0.228 |
| C | 1.950 | - | 2.550 | 0.077 | - | 0.100 |
| D | 0.350 | - | 0.750 | 0.014 | - | 0.030 |
| E | 9.250 | - | 10.750 | 0.364 | - | 0.423 |
| F | 5.600 | - | 6.600 | 0.220 | - | 0.260 |
| G | 2.500 | - | 3.100 | 0.098 | - | 0.122 |
| H | 0.650 | - | 1.050 | 0.026 | - | 0.041 |
| J | 2.100 | - | 2.500 | 0.083 | - | 0.098 |
| L | 1.000 | - | 1.400 | 0.039 | - | 0.055 |
| M | 0.350 | - | 0.750 | 0.014 | - | 0.030 |

## OUTLINE DRAWINGS

TO-252




| OUTLINE DIMENSIONS | | | | | | |
|---|---|---|---|---|---|---|
| Dim. | Milimeters | | | 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

| Package Code | Package Method | Inner Box Size L×W×H(mm) | Quantity (Pcs/Inner Box) | Outer Carton Size L×W×H(mm) | Quantity (Pcs/Carton) |
|---|---|---|---|---|---|
| TO-252 | Tape Reel | 340×340×50 | 5000 | 360x360x260 | 25000 |

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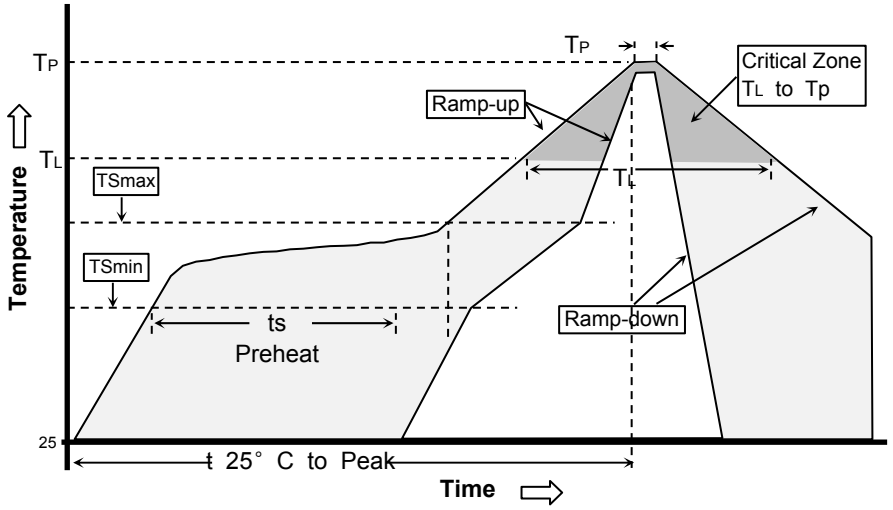
## Recommended wave soldering condition

| 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 (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) | <br>100°C<br>150°C<br>60-120 seconds | <br>150°C<br>200°C<br>60-180 seconds |
| Time maintained above:<br>−Temperature (TL)<br>− Time (tL) | <br>183°C<br>60-150 seconds | <br>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.

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