## MBR2535CT, MBR2545CT

## MBR2545CT is a Preferred Device

## SWITCHMODE ${ }^{\text {m }}$

Power Rectifiers
The MBR2535CT/45CT series uses the Schottky Barrier principle with a platinum barrier metal. These state-of-the-art devices have the following features:

## Features

- Guardring for Stress Protection
- Low Forward Voltage
- $175^{\circ} \mathrm{C}$ Operating Junction Temperature
- $\mathrm{Pb}-$ Free Packages are Available*


## Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 1.9 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: $260^{\circ} \mathrm{C}$ Max. for 10 Seconds
*For additional information on our $\mathrm{Pb}-$ Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor ${ }^{\circledR}$
http://onsemi.com

## SCHOTTKY BARRIER

RECTIFIERS
30 AMPERES
35 and 45 VOLTS

MARKING
DIAGRAM

ORDERING INFORMATION

| Device | Package | Shipping |
| :--- | :---: | :---: |
| MBR2535CT | TO-220 | 50 Units/Rail |
| MBR2535CTG | TO-220 <br> (Pb-Free) | 50 Units/Rail |
| MBR2545CT | TO-220 | 50 Units/Rail |
| MBR2545CTG | TO-220 <br> (Pb-Free) | 50 Units/Rail |

Preferred devices are recommended choices for future use and best overall value.

## MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
| :---: | :---: | :---: | :---: |
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage MBR2535CT MBR2545CT | $V_{\text {RRM }}$ $\mathrm{V}_{\mathrm{RWM}}$ $V_{R}$ | $\begin{aligned} & 35 \\ & 45 \end{aligned}$ | V |
| Average Rectified Forward Current (Rated $\mathrm{V}_{\mathrm{R}}, \mathrm{T}_{\mathrm{C}}=160^{\circ} \mathrm{C}$ ) | $\mathrm{I}_{\text {F (AV) }}$ | 30 | A |
| Peak Repetitive Forward Current, per Diode Leg (Rated $\mathrm{V}_{\mathrm{R}}$, Square Wave, $20 \mathrm{kHz}, \mathrm{T}_{\mathrm{C}}=150^{\circ} \mathrm{C}$ ) | $I_{\text {FRM }}$ | 30 | A |
| Non-Repetitive Peak Surge Current per Diode Leg <br> (Surge Applied at Rated Load Conditions, Halfwave, Single Phase, 60 Hz ) | $\mathrm{I}_{\text {FSM }}$ | 150 | A |
| Peak Repetitive Reverse Surge Current ( 2.0 us, 1.0 kHz ) | $I_{\text {RRM }}$ | 1.0 | A |
| Storage Temperature Range | $\mathrm{T}_{\text {stg }}$ | -65 to +175 | ${ }^{\circ} \mathrm{C}$ |
| Operating Junction Temperature (Note 1) | $\mathrm{T}_{J}$ | -65 to +175 | ${ }^{\circ} \mathrm{C}$ |
| Voltage Rate of Change (Rated $\mathrm{V}_{\mathrm{R}}$ ) | dv/dt | 10,000 | V/us |
| ESD Ratings: Machine Model = C <br> Human Body Model = 3B | ESD | $\begin{aligned} & >400 \\ & >8000 \end{aligned}$ | V |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $\mathrm{dP}_{\mathrm{D}} / \mathrm{dT}_{\mathrm{J}}<1 / \mathrm{R}_{\theta \mathrm{JA}}$.

THERMAL CHARACTERISTICS (Per Leg)

| Characteristic | Symbol | Value | Unit |
| :--- | :---: | :---: | :---: |
| Thermal Resistance, - Junction-to-Case | $\mathrm{R}_{\theta \mathrm{JJC}}$ | 1.5 | ${ }^{\circ} \mathrm{C} / \mathrm{W}$ |
| - | $\mathrm{R}_{\theta \mathrm{JJ}}$ | 50 |  |

2. When mounted using minimum recommended pad size on FR-4 board.

ELECTRICAL CHARACTERISTICS (Per Diode)

| Symbol | Characteristic | Condition | Min | Typ | Max | Unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $V_{F}$ | Instantaneous Forward Voltage (Note 3) | $\begin{aligned} & \mathrm{I}_{\mathrm{F}}=15 \mathrm{Amp}, \mathrm{~T}_{J}=25^{\circ} \mathrm{C} \\ & \mathrm{I}_{\mathrm{F}}=15 \mathrm{Amp}, \mathrm{~T}_{J}=125^{\circ} \mathrm{C} \\ & \mathrm{I}_{\mathrm{F}}=30 \mathrm{Amp}, \mathrm{~T}_{J}=25^{\circ} \mathrm{C} \\ & \mathrm{I}_{\mathrm{F}}=30 \mathrm{Amp}, \mathrm{~T}_{J}=125^{\circ} \mathrm{C} \end{aligned}$ | $\begin{aligned} & - \\ & - \\ & - \end{aligned}$ | $\begin{gathered} - \\ 0.50 \\ - \\ 0.65 \end{gathered}$ | $\begin{aligned} & \hline 0.62 \\ & 0.57 \\ & 0.82 \\ & 0.72 \end{aligned}$ | V |
| $\mathrm{I}_{\mathrm{R}}$ | Instantaneous Reverse Current (Note 3) | Rated dc Voltage, $\mathrm{T}_{J}=25^{\circ} \mathrm{C}$ <br> Rated dc Voltage, $\mathrm{T}_{\mathrm{J}}=125^{\circ} \mathrm{C}$ |  | $9.0$ | $\begin{aligned} & 0.2 \\ & 25 \end{aligned}$ | mA |

3. Pulse Test: Pulse Width $=300 \mu \mathrm{~s}$, Duty Cycle $\leq 2.0 \%$.

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Figure 1. Typical Forward Voltage, Per Leg


Figure 2. Typical Reverse Current, Per Leg


Figure 4. Current Derating, Per Device


Figure 3. Current Derating, Per Device


Figure 5. Forward Power Dissipation

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## PACKAGE DIMENSIONS

TO-220
CASE 221A-09
ISSUE AF

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

| DIM | INCHES |  | MILLIMETERS |  |
| :---: | :---: | :---: | :---: | ---: |
|  | MIN | MAX | MIN | MAX |
| A | 0.570 | 0.620 | 14.48 | 15.75 |
| B | 0.380 | 0.405 | 9.66 | 10.28 |
| C | 0.160 | 0.190 | 4.07 | 4.82 |
| D | 0.025 | 0.035 | 0.64 | 0.88 |
| F | 0.142 | 0.161 | 3.61 | 4.09 |
| G | 0.095 | 0.105 | 2.42 | 2.66 |
| H | 0.110 | 0.155 | 2.80 | 3.93 |
| J | 0.014 | 0.025 | 0.36 | 0.64 |
| K | 0.500 | 0.562 | 12.70 | 14.27 |
| L | 0.045 | 0.060 | 1.15 | 1.52 |
| N | 0.190 | 0.210 | 4.83 | 5.33 |
| Q | 0.100 | 0.120 | 2.54 | 3.04 |
| R | 0.080 | 0.110 | 2.04 | 2.79 |
| S | 0.045 | 0.055 | 1.15 | 1.39 |
| T | 0.235 | 0.255 | 5.97 | 6.47 |
| U | 0.000 | 0.050 | 0.00 | 1.27 |
| V | 0.045 | --- | 1.15 | --- |
| Z | --- | 0.080 | --- | 2.04 |

STYLE 6:
PIN 1. ANODE
2. CATHODE
. ANODE
4. CATHODE

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