OBSOLETE – PART DISCONTINUED

## Product Summary

MBR2045CTI (Per Leg)

| $V_{RRM}$ (V) | $I_O$ (A) | $V_{F\ (MAX)}$ (V) @ +25°C | $I_{R\ (MAX)}$ (mA) @ +25°C |
|---|---|---|---|
| 45 | 10 | 0.65 | 0.1 |

## Features and Benefits

- Guard Ring Die Construction for Transient Protection
- High Surge Current Capability
- Low Forward Voltage Drop
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Description

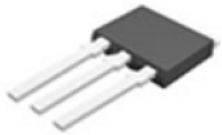
This Schottky Barrier Rectifier has been designed to meet requirements of Consumer grade Applications.

## Applications

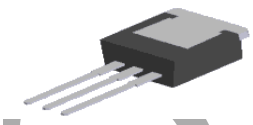
- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode

## Mechanical Data

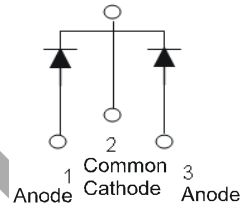
- Case: TO251
- Case Material: Molded Plastic, "Green" Molding compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe Solderable per MIL-STD-202, Method 208 e3
- Polarity: See Below
- Weight: 0.382 grams (Approximate)



TO251
Top View



TO251
Bottom View




Package Pin Out
Configuration

## Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---|---|---|
| MBR2045CTI | TO251 | 75 Pieces/Tube |

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

## Marking Information


= Manufactures' Code Marking
MBR2045CTI = Product Type Marking Code
AB = Foundry and Assembly Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 16 = 2016)
WW = Week (01 to 53)

## Maximum Ratings (Per Leg) (@$T_A$ = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_{RM}$ | 45 | V |
| Average Rectified Output Current (Per Leg)<br>(Total) | $I_O$ | 10<br>20 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 130 | A |

## Thermal Characteristics (Per Leg)

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Typical Thermal Resistance, Junction to Case (Note 5) | $R_{\theta JC}$ | 16 | °C/W |
| Typical Thermal Resistance, Junction to Ambient (Note 5) | $R_{\theta JA}$ | 80 | °C/W |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | -55 to +150 | °C |

## Electrical Characteristics (Per Leg) (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Forward Voltage Drop | $V_F$ | —<br>—<br>—<br>— | 0.58<br>0.53<br>0.72<br>0.66 | 0.65<br>0.60<br>0.80<br>0.73 | V | $I_F$ = 10A, $T_J$ = +25°C<br>$I_F$ = 10A, $T_J$ = +125°C<br>$I_F$ = 20A, $T_J$ = +25°C<br>$I_F$ = 20A, $T_J$ = +125°C |
| Leakage Current (Note 6) | $I_R$ | —<br>— | —<br>— | 0.1<br>15 | mA | $V_R$ = 45V, $T_J$ = +25°C<br>$V_R$ = 45V, $T_J$ = +125°C |

Notes: 5. FR-4 PCB, 2oz.Copper, minimum recommended pad layout per http://www.diodes.com/package-outlines.html.
6. Short duration pulse test used to minimize self-heating effect.

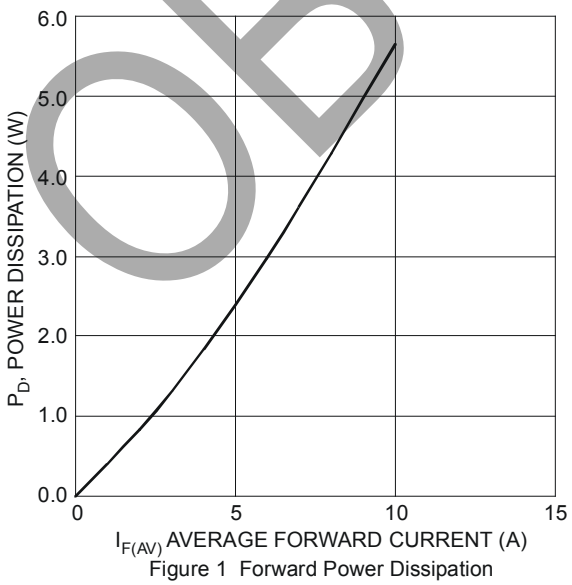


Figure 1 Forward Power Dissipation

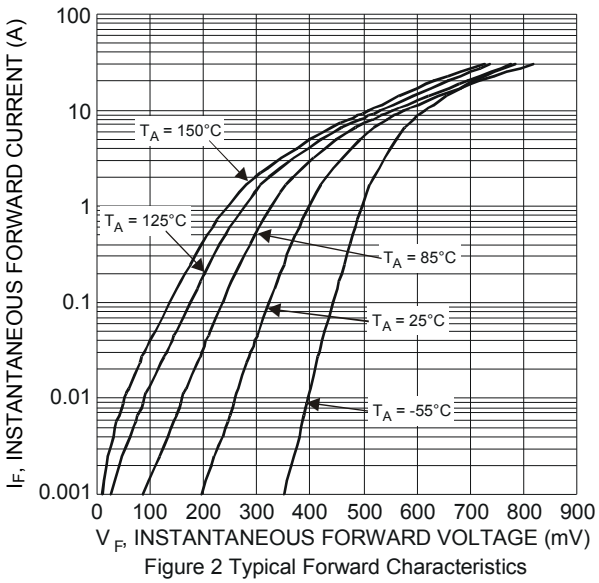


Figure 2 Typical Forward Characteristics

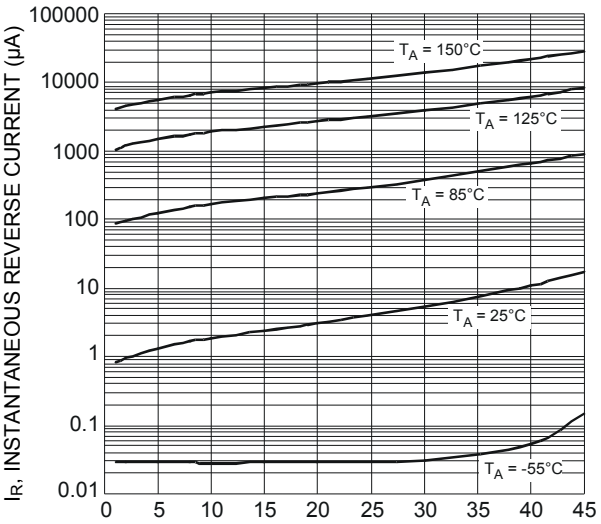



Figure 3 Typical Reverse Characteristics

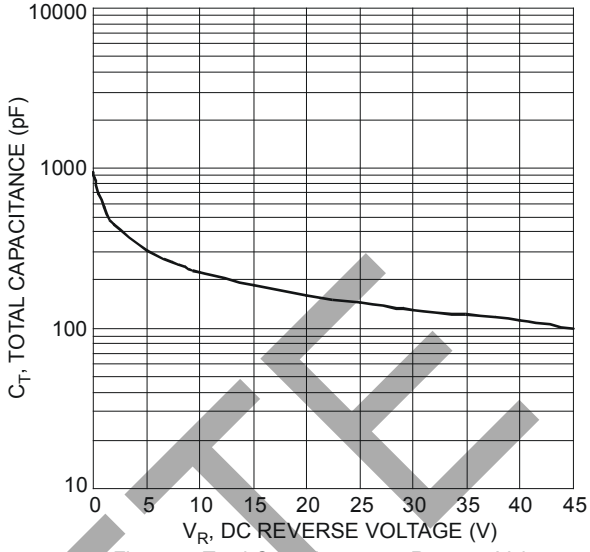



Figure 4 Total Capacitance vs. Reverse Voltage

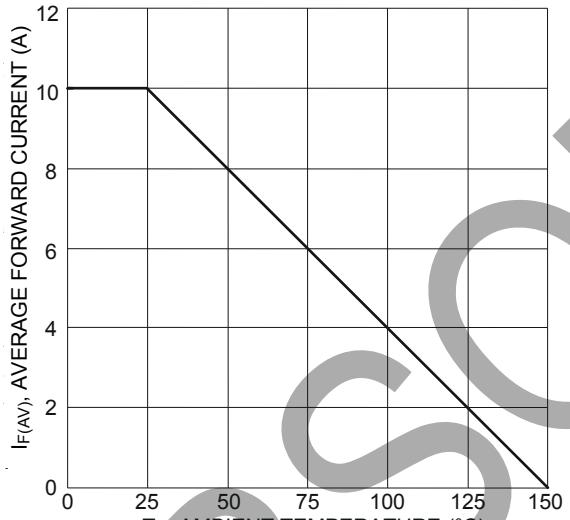



Figure 5 Forward Current Derating Curve

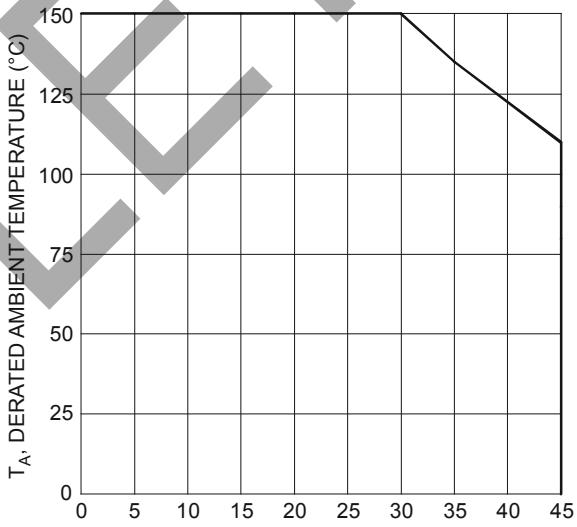
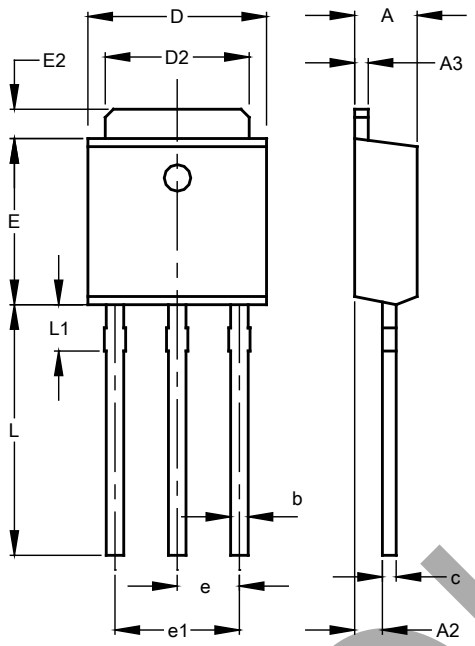



Figure 6 Operating Temperature Derating

## Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

**TO251**




| TO251 | | |
|---|---|---|
| **Dim** | **Min** | **Max** |
| **A** | 2.20 | 2.40 |
| **A2** | 0.95 | 1.15 |
| **A3** | 0.45 | 0.55 |
| **b** | 0.55 | 0.74 |
| **c** | 0.45 | 0.55 |
| **D** | 6.45 | 6.75 |
| **D2** | 5.20 | 5.40 |
| **E** | 5.95 | 6.25 |
| **E2** | 0.95 | 1.25 |
| **e** | 2.24 | 2.34 |
| **e1** | 4.43 | 4.73 |
| **L** | 9.00 | 9.40 |
| **L1** | 1.30 | 1.70 |
| **All Dimensions in mm** | | |

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