



20A SCHOTTKY BARRIER RECTIFIER

Product Summary

| MBRD20100CT (Per Leg) | | | | | |
|-----------------------|--------------------|-------------------------------------|--------------------------------------|--|--|
| V _{RRM} (V) | I _O (A) | V _{F (MAX)} (V) @ +25°C | I _{R (MAX)} (mA) @ +25°C | | |
| 100 | 10 | 0.84 | 0.1 | | |

Description and Applications

This Schottky Barrier Rectifier has been designed to meet the stringent requirements of commercial applications.

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



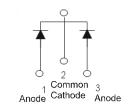
TO252 (DPAK) Top View

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)

Mechanical Data

- Case: TO252 (DPAK)
- 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(§3)
- Polarity: See Below
- Weight: TO252 (DPAK) 0.317 Grams (Approximate)



Package Pin Out Configuration

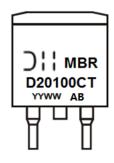
Ordering Information (Note 4)

| Part Number | Case | Packaging |
|----------------|--------------|------------------|
| MBRD20100CT-13 | TO252 (DPAK) | 2500 pieces/reel |

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
- 4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



MBRD20100CT = Product Type Marking Code AB = Foundry and Assembly Code YYWW = Date Code Marking YY = Last Two Digits of Year (ex: 14 = 2014) WW = Week (01 - 53)



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

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

| Characteristic | | Symbol | Value | Unit |
|---|----------------------|---------------------|----------|------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | | Vrrm Vrwm Vrm | 100 | V |
| Average Rectified Output Current | (Per Leg) (Total) | Io | 10 20 | А |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | | I _{FSM} | 150 | А |

Thermal Characteristics (Per Leg)

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Typical Thermal Resistance, Junction to Case (Note 5) | R _{eJC} | 6 | °C/W |
| Typical Thermal Resistance, Junction to Ambient (Note 5) | R ₀ JA | 22 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +175 | °C |

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

| Characteristic | Symbol | Min | Тур | Max | Unit | Test Condition |
|--------------------------|----------------|-----|-----------|--------------|---------------------------------------|---|
| Forward Voltage Drop | V_{F} | | 0.79 — | 0.84 0.72 | · · · · · · · · · · · · · · · · · · · | I _F = 10A, T _J = +25°C I _F = 10A, T _J = +125°C |
| Leakage Current (Note 6) | I _R | | 1 1 | 0.1 10 | m A | V _R = 100V, T _J = +25°C V _R = 100V, T _J = +125°C |

Notes: 5. Test with 2inch Al board.

^{6.} Short duration pulse test used to minimize self-heating effect.

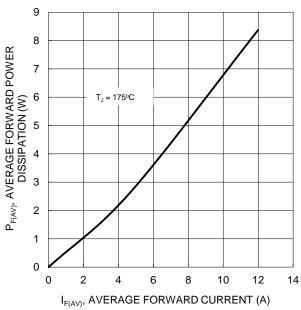
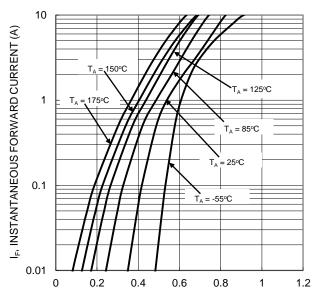
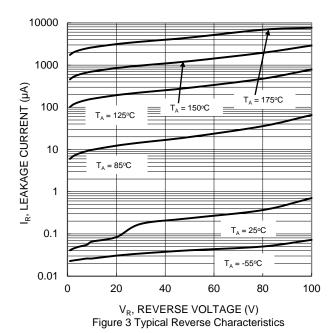


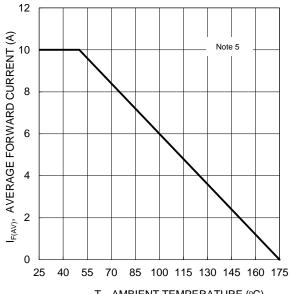
Figure 1 Forward Power Dissipation



V_F, INSTANTANEOUS FORWARD VOLTAGE (V) Figure 2 Typical Forward Characteristics





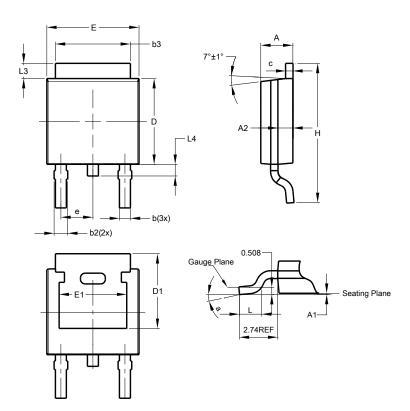


 ${\rm T_{A}}$, AMBIENT TEMPERATURE (°C) Figure 4 Forward Current Derating

Package Outline Dimensions

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.

(1) Package Type: TO252 (DPAK)

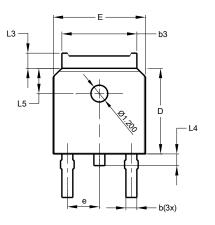


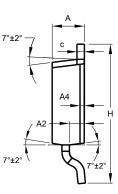
| TO252 (DPAK) | | | | |
|----------------------|------|-------|-------|--|
| Dim | Min | Max | Тур | |
| Α | 2.19 | 2.39 | 2.29 | |
| A 1 | 0.00 | 0.13 | 0.08 | |
| A2 | 0.97 | 1.17 | 1.07 | |
| b | 0.64 | 0.88 | 0.783 | |
| b2 | 0.76 | 1.14 | 0.95 | |
| b3 | 5.21 | 5.46 | 5.33 | |
| O | 0.45 | 0.58 | 0.531 | |
| D | 6.00 | 6.20 | 6.10 | |
| D1 | 5.21 | - | - | |
| е | - | - | 2.286 | |
| Е | 6.45 | 6.70 | 6.58 | |
| E1 | 4.32 | - | - | |
| Н | 9.40 | 10.41 | 9.91 | |
| Г | 1.40 | 1.78 | 1.59 | |
| L3 | 0.88 | 1.27 | 1.08 | |
| L4 | 0.64 | 1.02 | 0.83 | |
| а | 0° | 10° | - | |
| All Dimensions in mm | | | | |

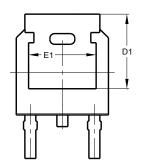


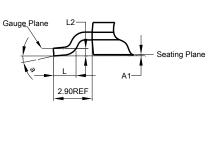
Package Outline Dimensions (Cont.)

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version. (2) Package Type: TO252 (DPAK) (Type TH)



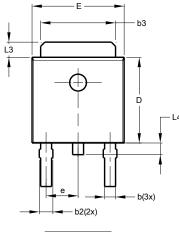


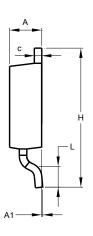


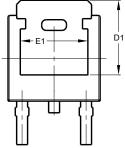


| | TO252 (DPAK) (Type TH) | | | | |
|-----|---------------------------|---------|-------|--|--|
| Dim | Min Max Typ | | | | |
| Α | 2.20 | 2.38 | 2.30 | | |
| A1 | 0.00 | 0.10 | 1 | | |
| A2 | 0.97 | 1.17 | 1.07 | | |
| A4 | | .10 RE | | | |
| b | 0.72 | 0.85 | 0.78 | | |
| b3 | 5.23 | 5.45 | 5.33 | | |
| С | 0.47 | 0.58 | 0.53 | | |
| D | 6.00 | 6.20 | 6.10 | | |
| D1 | 5.30 REF | | | | |
| е | 2.286 BSC | | | | |
| Е | 6.50 | 6.70 | 6.60 | | |
| E1 | 4.70 | 4.92 | 4.83 | | |
| Η | 9.90 | 10.10 | 10.30 | | |
| L | 1.40 | 1.70 | 1.60 | | |
| L2 | 0 | .51 BS | C | | |
| L3 | 0.90 | 1.25 | - | | |
| L4 | 0.60 | 1.00 | 0.80 | | |
| L5 | 1.70 | 1.90 | 1.80 | | |
| а | 0° | 8° | - | | |
| All | Dimen | sions i | n mm | | |

(3) Package Type: TO252 (DPAK) (Type BR)





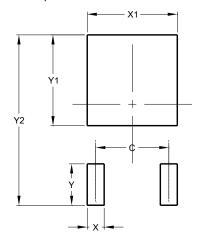


| | TO252 (DPAK) | | | | |
|----------------------|--------------|------|-----|--|--|
| | (Type BR) | | | | |
| Dim | Min | Max | Тур | | |
| Α | 2.20 | 2.40 | - | | |
| A1 | 0.00 | 0.10 | - | | |
| b | 0.50 | 0.70 | - | | |
| b3 | 5.20 | 5.40 | - | | |
| С | 0.45 | 0.55 | - | | |
| D | 5.95 | 6.25 | - | | |
| D1 | 5.10 | 5.50 | - | | |
| Ε | 6.45 | 6.70 | - | | |
| E1 | 4.71 | 4.91 | - | | |
| е | 2.24 | 2.34 | | | |
| Н | 9.45 | 9.95 | - | | |
| L | 1.25 | 1.75 | - | | |
| L3 | 0.95 | 1.25 | - | | |
| L4 | 0.60 | 0.90 | - | | |
| All Dimensions in mm | | | | | |



Suggested Pad layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



| Dimensions | Value (in mm) | | |
|------------|---------------|--|--|
| С | 4.572 | | |
| Х | 1.060 | | |
| X1 | 5.632 | | |
| Υ | 2.600 | | |
| Y1 | 5.700 | | |
| Y2 | 10.700 | | |

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