



**THE DATASHEET OF  
MBRB1545CT-T**



**Features and Benefits**

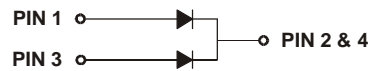
- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- High Surge Capability
- High Current Capability and Low Forward Voltage Drop
- Surge Overload Rating to 150A Peak
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Applications
- **Lead Free Finish, RoHS Compliant (Note 1)**

**Mechanical Data**

- Case: D<sup>2</sup>PAK
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Tin. Solderable per MIL-STD-202, Method 208 **(E3)**
- Polarity: See Diagram
- Weight: 1.7 grams (approximate)



Top View



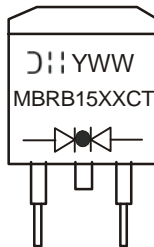
Polarity

**Ordering Information** (Note 2)

| Device       | Packaging          | Shipping                 |
|--------------|--------------------|--------------------------|
| MBRB1530CT-T | D <sup>2</sup> PAK | 800/Tape & Reel, 13-inch |
| MBRB1535CT-T | D <sup>2</sup> PAK | 800/Tape & Reel, 13-inch |
| MBRB1540CT-T | D <sup>2</sup> PAK | 800/Tape & Reel, 13-inch |
| MBRB1545CT-T | D <sup>2</sup> PAK | 800/Tape & Reel, 13-inch |

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes  
 2. For packaging details, visit our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



MBRB15XXCT = Product Type Marking Code Where  
 xx = 30, 35, 40 or 45, Depending on Device Type  
 D:: = Manufacturers' Code Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 2 for 2002)  
 WW = Week Code (01 to 53)

**Maximum Ratings** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

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

| Characteristic   | Symbol       | MBRB 1530CT | MBRB 1535CT | MBRB 1540CT | MBRB 1545CT | Unit |
|--|--------------|-------------|-------------|-------------|-------------|------|
| Peak Repetitive Reverse Voltage  | $V_{RRM}$    | 30          | 35          | 40          | 45          | V    |
| Working Peak Reverse Voltage   | $V_{RWM}$    |             |             |             |             |      |
| DC Blocking Voltage  | $V_R$        |             |             |             |             |      |
| RMS Reverse Voltage  | $V_{R(RMS)}$ | 21          | 24.5        | 28          | 31.5        | V    |
| Average Rectified Output Current @ $T_C = 105^\circ\text{C}$                                     | $I_O$        | 15          |             |             |             | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$    | 150         |             |             |             | A    |

**Thermal Characteristics**

| Characteristic                                  | Symbol          | Value                   | Unit               |
|---|-----------------|-------------------------|--------------------|
| Typical Thermal Resistance Junction to Terminal | $R_{\theta JT}$ | 3.0                     | $^\circ\text{C/W}$ |
| Operating Temperature Range (Note 3)            | $T_J$           | $V_R \leq 80\% V_{RRM}$ | -65 to +150        |
|   |                 | $V_R \leq 50\% V_{RRM}$ | $\leq 180$         |
|   |                 | DC Forward Mode         | $\leq 200$         |
| Storage Temperature Range                       | $T_{STG}$       | -65 to +175             | $^\circ\text{C}$   |

**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic  | Symbol   | Value  | Unit                   |
|---|----------|--------|------------------------|
| Forward Voltage, per Element @ $I_F = 7.5\text{A}$                | $V_{FM}$ | 0.7    | V                      |
| Voltage Rate of Change  | $dv/dt$  | 10,000 | $\text{V}/\mu\text{s}$ |
| Peak Reverse Current @ $T_A = 25^\circ\text{C}$                   | $I_{RM}$ | 0.1    | mA                     |
| at Rated DC Blocking Voltage (Note 4) @ $T_A = 100^\circ\text{C}$ |          | 15     |                        |
| Maximum Reverse Recovery Time (Note 5)                            | $t_{rr}$ | 30     | ns                     |
| Typical Total Capacitance (Note 6)                                | $C_T$    | 250    | pF                     |

- Notes:
- The heat generated must be less than the thermal conductivity from Junction-to-Ambient:  $dP_D/dT_J < 1/R_{\theta JA}$
  - 300 $\mu\text{s}$  pulse width, 2% duty cycle.
  - Reverse recovery test conditions:  $I_F = 0.5\text{A}$ ,  $I_R = 1.0\text{A}$ ,  $I_{rr} = 0.25\text{A}$  (see figure 1).
  - Measured at 1.0 MHz and applied reverse voltage of 4.0V DC.

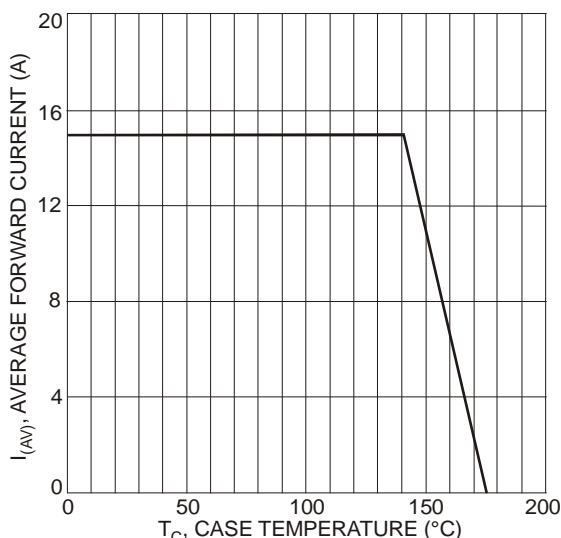


Fig. 1 Forward Current Derating Curve

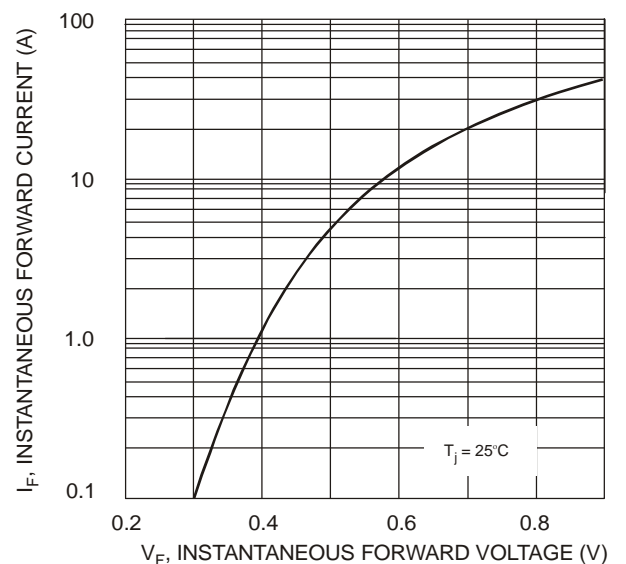


Fig. 2 Typical Forward Characteristics, per Element

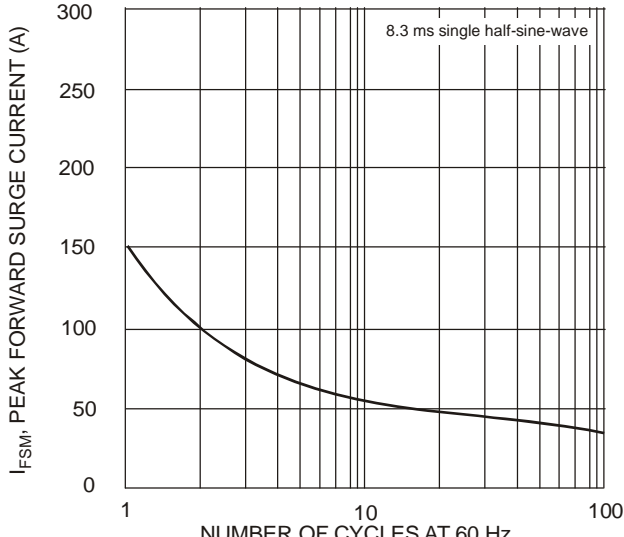


Fig. 3 Max Non-Repetitive Surge Current

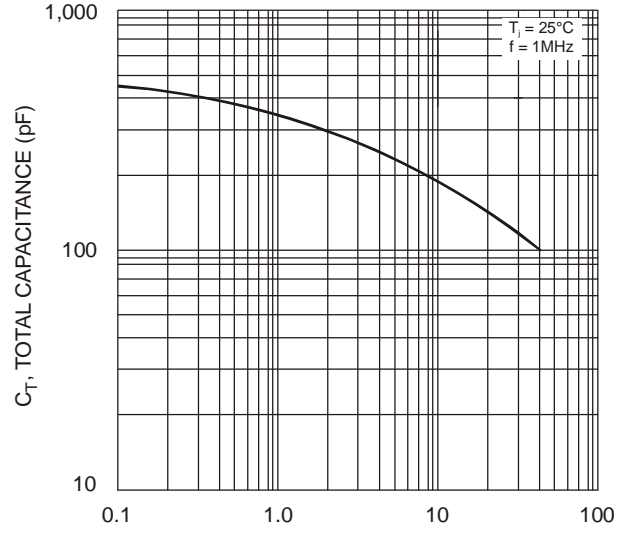


Fig. 4 Typical Total Capacitance

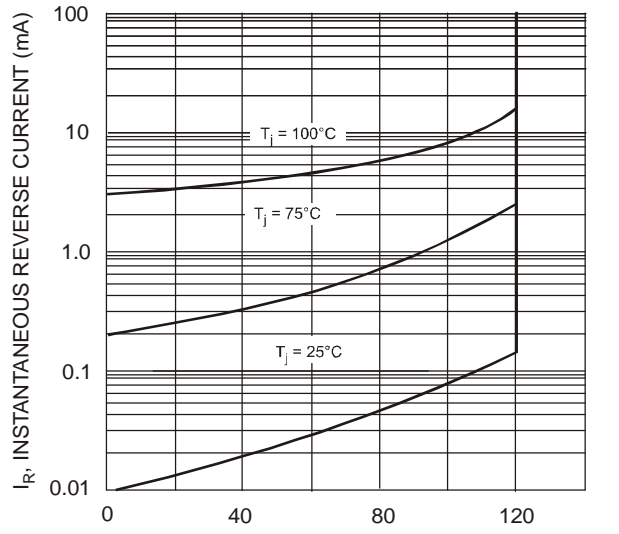
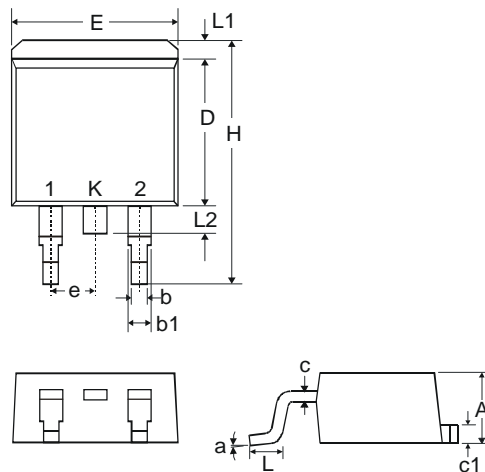


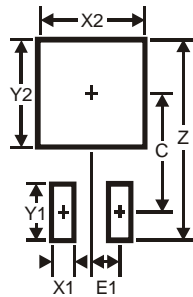
Fig. 5 Typical Reverse Characteristics, per element

**Package Outline Dimensions**



| D <sup>2</sup> PAK          |          |       |
|-----------------------------|----------|-------|
| Dim                         | Min      | Max   |
| A                           | 4.07     | 4.82  |
| b                           | 0.51     | 0.99  |
| b1                          | 1.15     | 1.77  |
| c                           | 0.356    | 0.58  |
| c1                          | 1.143    | 1.65  |
| D                           | 8.39     | 9.65  |
| E                           | 9.66     | 10.66 |
| e                           | 2.54 Typ |       |
| H                           | 14.61    | 15.87 |
| L                           | 1.78     | 2.79  |
| L1                          | —        | 1.67  |
| L2                          | —        | 1.77  |
| a                           | 0°       | 8°    |
| <b>All Dimensions in mm</b> |          |       |

## Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 16.9          |
| X1         | 1.1           |
| X2         | 10.8          |
| Y1         | 3.5           |
| Y2         | 11.4          |
| C          | 9.5           |
| E1         | 2.5           |

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