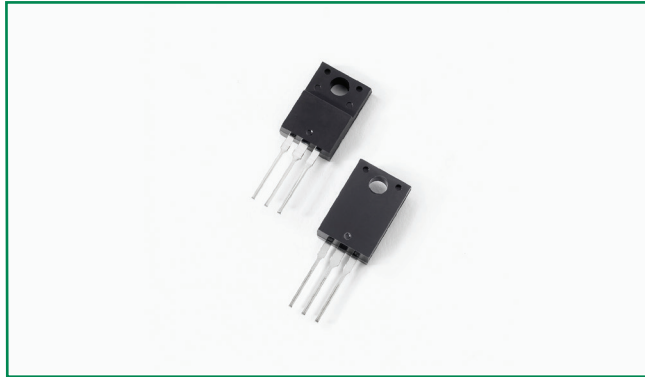
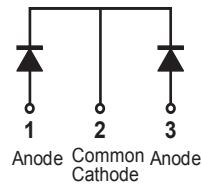


## MBRF2045CT



### Pin out



### Description

Littelfuse MBR series Schottky Barrier Rectifier is designed to meet the general requirements of commercial applications by providing high temperature, low leakage and low  $V_F$  products. It is suitable for high frequency switching mode power supply, free-wheeling diodes and polarity protection diodes.

### Features

- High junction temperature capability
- Guard ring for enhanced ruggedness and long term reliability
- Low forward voltage drop
- High frequency operation
- Common cathode configuration in electrically isolated ITO-220AB package

### Applications

- Switching mode power supply
- Free-wheeling diodes
- DC/DC converters
- Polarity protection diodes

### Maximum Ratings

| Parameters                                            | Symbol      | Test Conditions                                                    | Max                               | Unit |
|-------------------------------------------------------|-------------|--------------------------------------------------------------------|-----------------------------------|------|
| Peak Inverse Voltage                                  | $V_{RWM}$   | -                                                                  | 45                                | V    |
| Average Forward Current                               | $I_{F(AV)}$ | 50% duty cycle @ $T_C = 105^\circ\text{C}$ , rectangular wave form | 10 (per leg)<br>20 (total device) | A    |
| Peak One Cycle Non-Repetitive Surge Current (per leg) | $I_{FSM}$   | 8.3ms, half Sine pulse                                             | 180                               | A    |

### Electrical Characteristics

| Parameters                                                                                     | Symbol    | Test Conditions                                                                                         | Max  | Unit |
|------------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------------------|------|------|
| Forward Voltage Drop*                                                                          | $V_{F1}$  | @ 20A, Pulse, $T_J = 25^\circ\text{C}$                                                                  | 0.84 | V    |
|                                                                                                | $V_{F2}$  | @ 20A, Pulse, $T_J = 125^\circ\text{C}$                                                                 | 0.72 |      |
| Reverse Current (per leg)                                                                      | $I_{R1}$  | @ $V_R = \text{rated } V_R$ , $T_J = 25^\circ\text{C}$                                                  | 1.0  | mA   |
|                                                                                                | $I_{R2}$  | @ $V_R = \text{rated } V_R$ , $T_J = 125^\circ\text{C}$                                                 | 15.0 |      |
| Junction Capacitance (per leg)*                                                                | $C_T$     | @ $V_R = 5\text{V}$ , $T_C = 25^\circ\text{C}$ , $f_{SIG} = 1\text{MHz}$                                | 400  | pF   |
| Typical Series Inductance (per leg)                                                            | $L_S$     | Measured lead to lead 5 mm from package body                                                            | 8.0  | nH   |
| RSM Isolation Voltage<br>( $t = 1.0$ second, R. H. $\leq 30\%$ ,<br>$T_A = 25^\circ\text{C}$ ) | $V_{ISO}$ | Clip mounting, the epoxy body away from the heatsink edge by more than 0.110" along the lead direction. | 4500 | V    |
|                                                                                                |           | Clip mounting, the epoxy body is inside the heatsink.                                                   | 3500 |      |
|                                                                                                |           | Screw mounting, the epoxy body is inside the heatsink.                                                  | 1500 |      |

\* Pulse Width  $< 300\mu\text{s}$ , Duty Cycle  $< 2\%$

### Thermal-Mechanical Specifications

| Parameters                                               | Symbol     | Test Conditions | Max         | Unit |
|----------------------------------------------------------|------------|-----------------|-------------|------|
| Junction Temperature                                     | $T_J$      |                 | -55 to +150 | °C   |
| Storage Temperature                                      | $T_{stg}$  |                 | -55 to +150 | °C   |
| Maximum Thermal Resistance<br>Junction to Case (per leg) | $R_{thJC}$ | DC operation    | 5.0         | °C/W |
| Approximate Weight                                       | wt         |                 | 2           | g    |
| Case Style                                               | ITO-220AB  |                 |             |      |

Figure 1: Typical Forward Characteristics

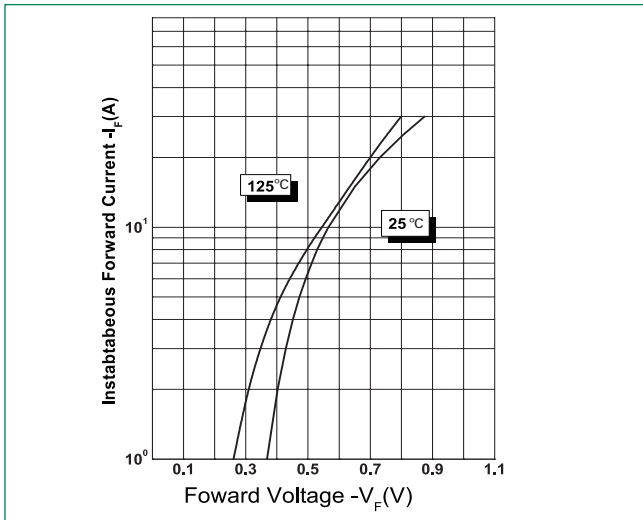


Figure 2: Typical Reverse Characteristics

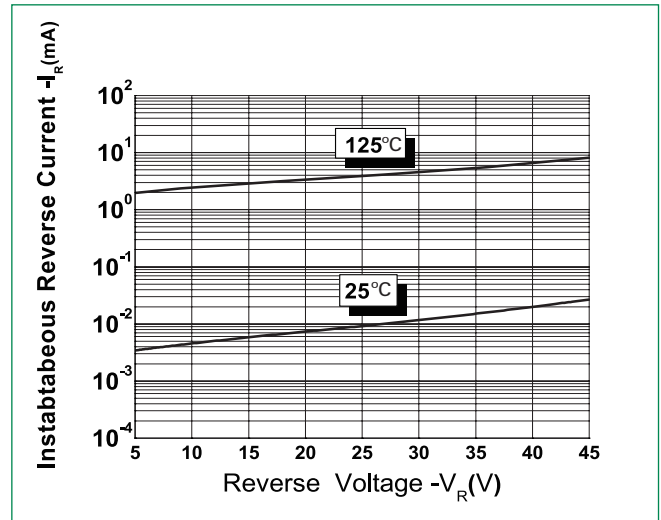
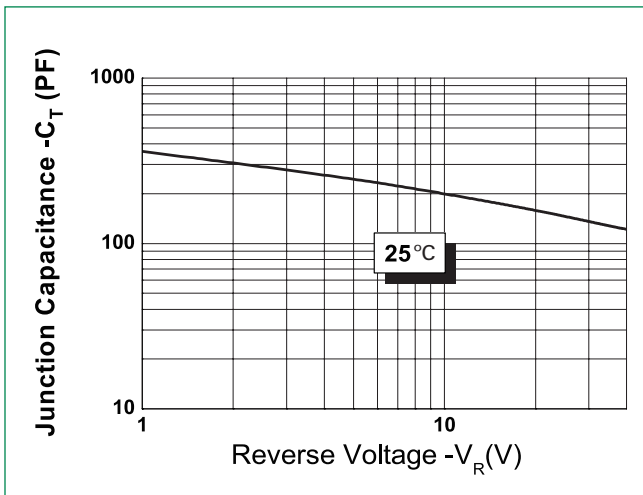
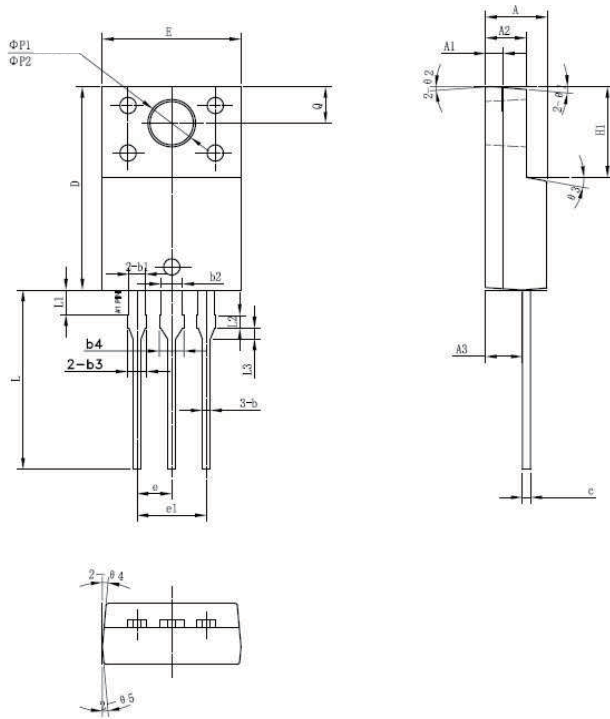


Figure 3: Typical Junction Capacitance



### Dimensions- ITO-220AB

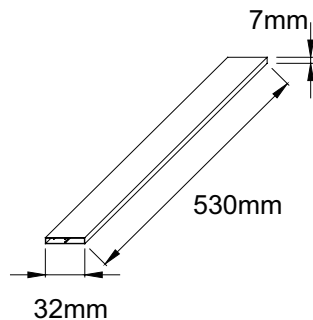


| Symbol     | Millimeters |       |       |
|------------|-------------|-------|-------|
|            | Min         | Typ   | Max   |
| <b>A</b>   | 4.30        | 4.50  | 4.70  |
| <b>A1</b>  | 1.10        | 1.30  | 1.50  |
| <b>A2</b>  | 2.80        | 3.00  | 3.20  |
| <b>A3</b>  | 2.50        | 2.70  | 2.90  |
| <b>b</b>   | 0.50        | 0.60  | 0.75  |
| <b>b1</b>  | 1.10        | 1.20  | 1.35  |
| <b>b2</b>  | 1.50        | 1.60  | 1.75  |
| <b>b3</b>  | 1.20        | 1.30  | 1.45  |
| <b>b4</b>  | 1.60        | 1.70  | 1.85  |
| <b>c</b>   | 0.55        | 0.60  | 0.75  |
| <b>D</b>   | 14.80       | 15.00 | 15.20 |
| <b>E</b>   | 9.96        | 10.16 | 10.36 |
| <b>e</b>   |             | 2.55  |       |
| <b>e1</b>  |             | 5.10  |       |
| <b>H1</b>  | 6.50        | 6.70  | 6.90  |
| <b>L</b>   | 12.70       | 13.20 | 13.70 |
| <b>L1</b>  | 1.60        | 1.80  | 2.00  |
| <b>L2</b>  | 0.80        | 1.00  | 1.20  |
| <b>L3</b>  | 0.60        | 0.80  | 1.00  |
| <b>ØP1</b> | 3.30        | 3.50  | 3.70  |
| <b>ØP2</b> | 2.99        | 3.19  | 3.39  |
| <b>Q</b>   | 2.50        | 2.70  | 2.90  |
| <b>θ1</b>  |             | 5°    |       |
| <b>θ2</b>  |             | 4°    |       |
| <b>θ3</b>  |             | 10°   |       |
| <b>θ4</b>  |             | 5°    |       |
| <b>θ5</b>  |             | 5°    |       |

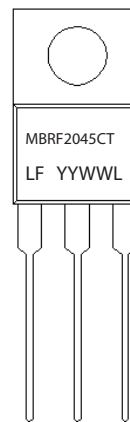
### Packing Options

| Part Number | Marking    | Packing Mode | M.O.Q |
|-------------|------------|--------------|-------|
| MBRF2045CT  | MBFR2045CT | 50pcs / Tube | 1000  |

### Tube Specification



### Part Numbering and Marking System



|     |                         |
|-----|-------------------------|
| MBR | = Device Type           |
| F   | = Package Type          |
| 20  | = Forward Current (20A) |
| 45  | = Reverse Voltage (45V) |
| CT  | = Configuration         |
| LF  | = Littelfuse            |
| YY  | = Year                  |
| WW  | = Week                  |
| L   | = Lot Number            |