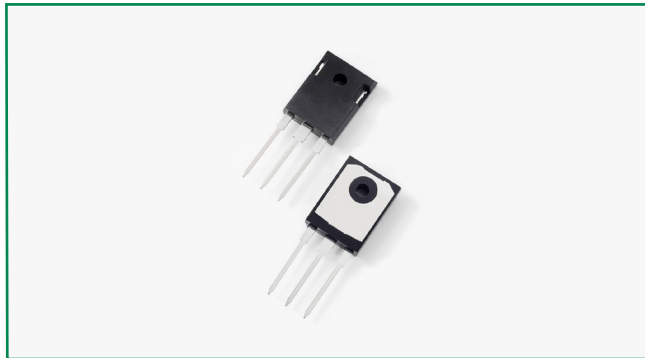
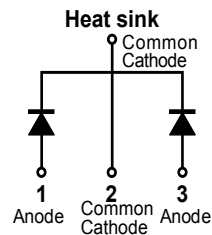


### MBR6045WT



#### 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
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Common cathode configuration in TO-247AD package
- Low forward voltage drop

#### Applications

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

#### Maximum Ratings

| Parameters                                            | Symbol      | Test Conditions                                                                                              | Max                        | Unit |
|-------------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------|----------------------------|------|
| Peak Reverse Voltage                                  | $V_{RWM}$   | -                                                                                                            | 45                         | V    |
| Average Forward Current                               | $I_{F(AV)}$ | 50% duty cycle @ $T_C = 135^\circ\text{C}$<br>rectangular wave form                                          | 30(per leg)<br>60(per leg) | A    |
| Repetitive Avalanche Current(per leg)                 | $I_{AR}$    | Current decaying linearly to zero in 1μsec<br>frequency limited by $T_J$ max. $V_A = 1.5 \times V_R$ typical | 6                          | A    |
| Peak One Cycle Non-Repetitive Surge Current (per leg) | $I_{FSM}$   | 8.3 ms, half Sine pulse                                                                                      | 432                        | A    |
| Non-Repetitive Avalanche Energy(per leg)              | $E_{AS}$    | $T_J = 25^\circ\text{C}$ , $I_{AS} = 4\text{A}$ , $L = 3.4\text{mH}$                                         | 27                         | mJ   |

#### Electrical Characteristics

| Parameters                       | Symbol   | Test Conditions                                                          | Max    | Unit |
|----------------------------------|----------|--------------------------------------------------------------------------|--------|------|
| Forward Voltage Drop (per leg) * | $V_{F1}$ | @ 30A, Pulse, $T_J = 25^\circ\text{C}$                                   | 0.65   | V    |
|                                  | $V_{F2}$ | @ 30A, Pulse, $T_J = 125^\circ\text{C}$                                  | 0.55   |      |
| Reverse Current (per leg) *      | $I_{R1}$ | @ $V_R = \text{rated } V_{DC}$ , $T_J = 25^\circ\text{C}$                | 1.0    | mA   |
|                                  | $I_{R2}$ | @ $V_R = \text{rated } V_{DC}$ , $T_J = 125^\circ\text{C}$               | 150    |      |
| Junction Capacitance (per leg)   | $C_T$    | @ $V_R = 5\text{V}$ , $T_C = 25^\circ\text{C}$ , $f_{SIG} = 1\text{MHz}$ | 1400   | pF   |
| Series Inductance (per leg)      | $L_S$    | Measured lead to lead 5 mm from package body                             | 7.5    | nH   |
| Voltage Rate of Change           | $dv/dt$  |                                                                          | 10,000 | V/μs |

\* Pulse Width < 300μs, Duty Cycle < 2%

### Thermal-Mechanical Specifications

| Parameters                                       | Symbol     | Test Conditions                      | Max                                  | Unit |
|--------------------------------------------------|------------|--------------------------------------|--------------------------------------|------|
| Junction Temperature Range                       | $T_J$      |                                      | -55 to +150                          | °C   |
| Storage Temperature Range                        | $T_{stg}$  |                                      | -55 to +150                          | °C   |
| Maximum Thermal Resistance<br>Junction to Case   | $R_{thJC}$ | DC operation                         | 1.0 (Per device)<br>0.5 (Per device) | °C/W |
| Maximum Thermal Resistance,<br>Case to Heat Sink | $R_{thCS}$ | Mounting surface, smooth and greased | 0.24                                 | °C/W |
| Approximate Weight                               | wt         |                                      | 6.7                                  | g    |
| Case Style                                       |            | TO-247AD                             |                                      |      |

Figure 1: Typical Forward Characteristics

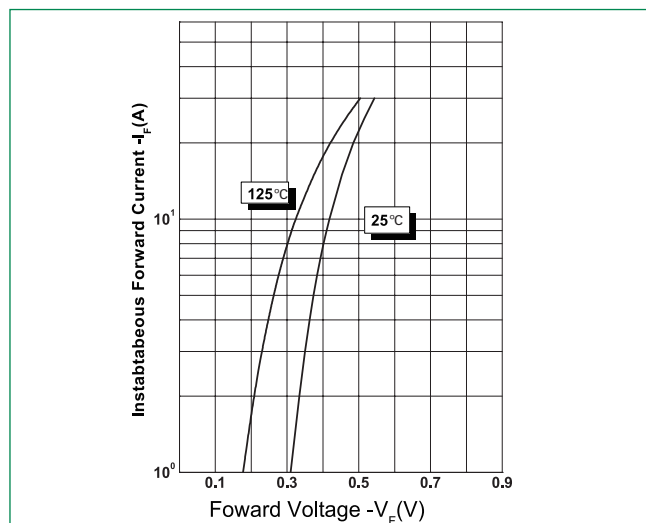


Figure 2: Typical Reverse Characteristics

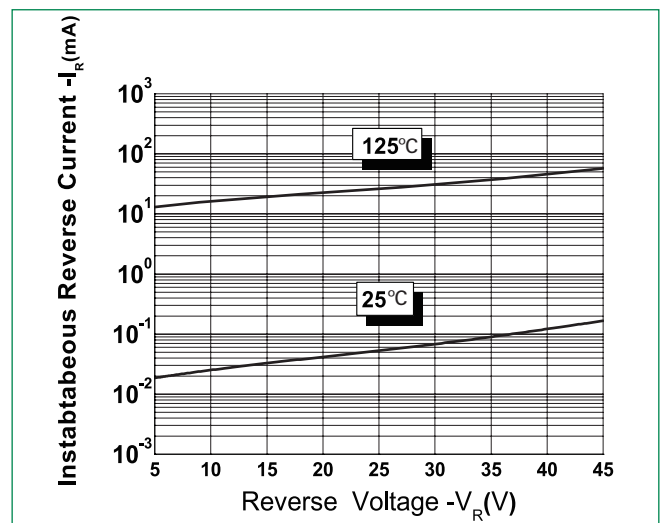
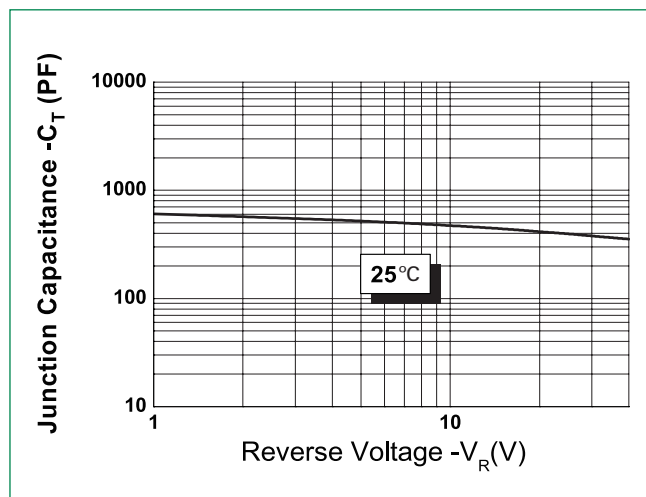
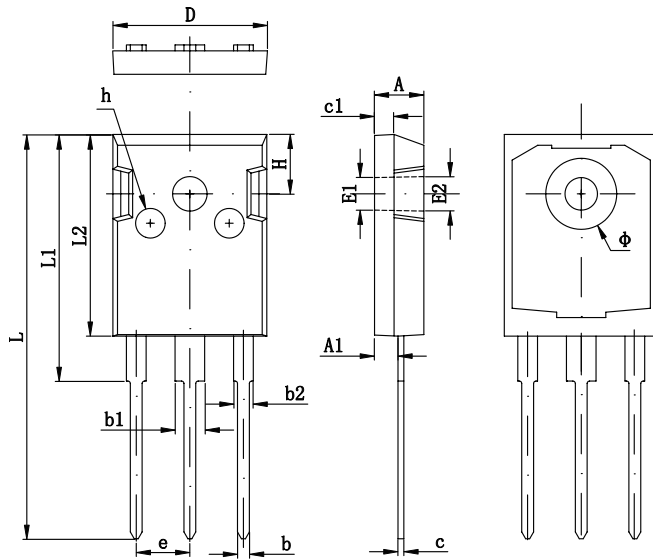


Figure 3: Typical Junction Capacitance



### Dimensions- TO-247AD



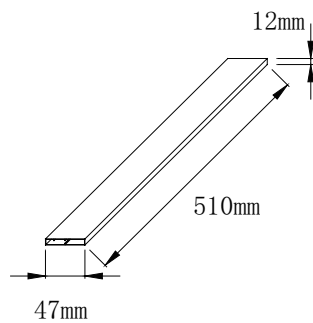
| Symbol | Millimeters |        |
|--------|-------------|--------|
|        | Min         | Max    |
| A      | 4.70        | 5.31   |
| A1     | 2.21        | 2.61*  |
| A2     | 1.50        | 2.49   |
| b      | 0.99        | 1.40   |
| b1     | 1.65        | 2.39   |
| b2     | 2.59        | 3.43   |
| c      | 0.38        | 0.89   |
| D      | 20.30*      | 21.46  |
| D1     | 13.08       | -      |
| D2     | 0.51        | 1.35   |
| E      | 14.80*      | 16.26  |
| E1     | 13.46       | -      |
| E2     | 4.32        | 5.49   |
| E3     | 1.45*       | 2.74   |
| e      | 5.461 BSC   |        |
| L      | 19.42*      | 20.85* |
| L1     | -           | 4.60*  |
| P      | 3.35*       | 3.70*  |
| P1     | -           | 7.40*  |
| Q      | 5.38        | 6.20   |
| S      | 5.83*       | 6.25*  |

Footnote \*: The spec. does not comply with JEDEC spec.

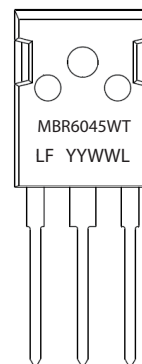
### Packing Options

| Part Number | Marking   | Packing Mode | M.O.Q |
|-------------|-----------|--------------|-------|
| MBR6045WT   | MBR6045WT | 30pcs / Tube | 300   |

### Tube Specification



### Part Numbering and Marking System



MBR = Device Type  
 60 = Forward Current (60A)  
 45 = Reverse Voltage (45V)  
 WT = Configuration  
 LF = Littelfuse  
 YY = Year  
 WW = Week  
 L = Lot Number