

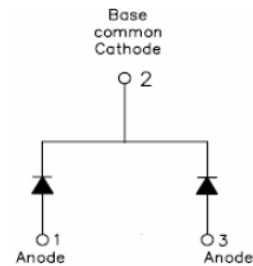
MBR4045CT SCHOTTKY RECTIFIER

Applications:

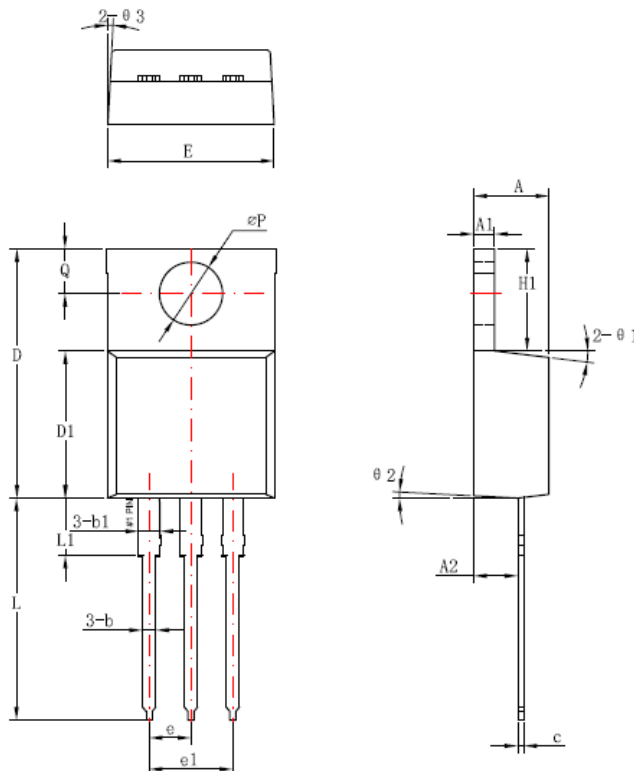
- Switching power supply
- Converters
- Free-Wheeling diodes
- Reverse battery protection

Features:

- 150 °C T_J operation
- Center tap configuration
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- This is a Pb - Free Device
- All SMC parts are traceable to the wafer lot
- Additional testing can be offered upon request

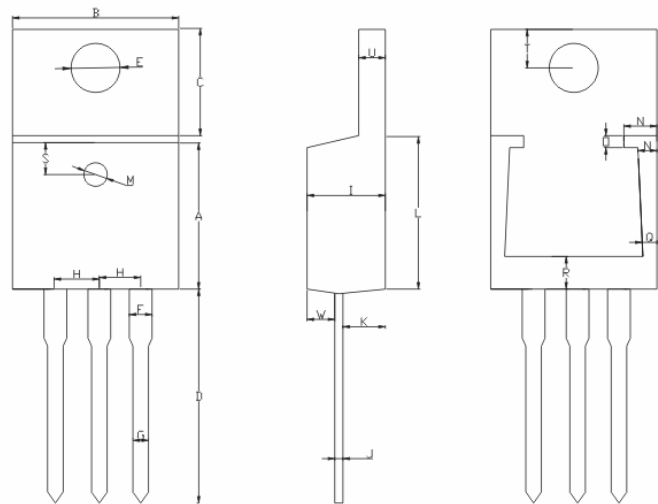


Mechanical Dimensions: In mm



| Symbol | Dimensions in millimeters | | |
|--------|---------------------------|---------|-------|
| | Min | Typical | Max |
| A | 4.42 | 4.57 | 4.72 |
| A1 | 1.17 | 1.27 | 1.37 |
| A2 | 2.59 | 2.69 | 2.89 |
| b | 0.71 | 0.81 | 0.96 |
| b1 | | 1.27 | |
| c | 0.36 | 0.38 | 0.61 |
| D | 14.94 | 15.24 | 15.54 |
| D1 | 8.85 | 9.00 | 9.15 |
| E | 10.01 | 10.16 | 10.31 |
| e | | 2.54 | |
| e1 | | 5.06 | |
| H1 | 6.04 | 6.24 | 6.44 |
| L | 12.7 | 13.56 | 13.78 |
| L1 | | 3.5 | |
| ΦP | 3.74 | 3.84 | 4.04 |
| Q | 2.54 | 2.74 | 2.94 |
| θ1 | | 7° | |
| θ2 | | 3° | |
| θ3 | | 4° | |

OPTION 1(HD)



| | | | |
|--------------------|---------------------|--------------------|---------------------|
| A: 8.5 ± 0.5 | B: 9.5 ± 0.5 | C: 6.4 ± 0.5 | D: 14.1 ± 1 |
| E: 3.84 ± 0.03 | F: 1.27 ± 0.03 | G: 0.85 ± 0.10 | H: 2.54 ± 0.025 |
| I: 4.6 ± 0.5 | J: 0.38 ± 0.015 | K: 2.75 ± 0.25 | L: 9.0 ± 0.5 |
| M: 1.5 ± 0.05 | N: 1.8 ± 0.05 | O: 0.5 ± 0.05 | P: 1.2 ± 0.05 |
| Q: 0.9 ± 0.05 | R: 3.2 ± 0.05 | S: 1.55 ± 0.05 | T: 2.8 ± 0.15 |
| U: 1.27 ± 0.05 | W: 1.27 ± 0.03 | | |

OPTION 2(SR)

TO-220AB

Technical Data
Data Sheet N0743, Rev. -
Marking Diagram:

Green Products



Where XXXXX is YYWWL

MBR = Device Type
40 = Forward Current (40A)
45 = Reverse Voltage (45V)
CT = Configuration
SSG = SSG
YY = Year
WW = Week
L = Lot Number

Cautions: Molding resin
Epoxy resin UL:94V-0

Ordering Information:

| Device | Package | Shipping |
|-----------|-----------------------|--------------|
| MBR4045CT | TO-220AB (Pb-Free) | 50pcs / tube |

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification.

Maximum Ratings:

| Characteristics | Symbol | Condition | Max. | Units |
|--|-------------|---|----------------|-------|
| Peak Inverse Voltage | V_{RWM} | - | 45 | V |
| Max. Average Forward | $I_{F(AV)}$ | @ $T_C = 118^\circ\text{C}$, Rated V_R | 20(per leg) | A |
| | | | 40(per device) | |
| Peak Repetitive Forward Current (per leg) | I_{FRM} | @ $T_C = 118^\circ\text{C}$, Rated V_R Square wave, 20kHz | 40 | A |
| Max. Peak One Cycle Non-Repetitive Surge Current (per leg) | I_{FSM} | 8.3 ms, half Sine pulse | 252 | A |

Electrical Characteristics:

| Characteristics | Symbol | Condition | Max. | Units |
|---------------------------------------|----------|--|--------|------------------|
| Max. Forward Voltage Drop (per leg) * | V_{F1} | @ 20A, Pulse, $T_J = 25\text{ }^\circ\text{C}$ | 0.60 | V |
| | | @ 40A, Pulse, $T_J = 25\text{ }^\circ\text{C}$ | 0.78 | |
| | V_{F2} | @ 20A, Pulse, $T_J = 125\text{ }^\circ\text{C}$ | 0.58 | V |
| | | @ 40A, Pulse, $T_J = 125\text{ }^\circ\text{C}$ | 0.75 | |
| Max. Reverse Current (per leg) * | I_{R1} | @ $V_R = \text{rated } V_R$ $T_J = 25\text{ }^\circ\text{C}$ | 1 | mA |
| | I_{R2} | @ $V_R = \text{rated } V_R$ $T_J = 100\text{ }^\circ\text{C}$ | 50 | mA |
| | I_{R3} | @ $V_R = \text{rated } V_R$ $T_J = 125\text{ }^\circ\text{C}$ | 95 | mA |
| Max. Junction Capacitance (per leg) | C_T | @ $V_R = 5\text{V}$, $T_C = 25\text{ }^\circ\text{C}$ $f_{\text{SIG}} = 1\text{MHz}$ | 900 | pF |
| Typical Series Inductance (per leg) | L_S | Measured lead to lead 5 mm from package body | 8.0 | nH |
| Max. Voltage Rate of Change | dv/dt | - | 10,000 | V/ μs |

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

Thermal-Mechanical Specifications:

| Characteristics | Symbol | Condition | Specification | Units |
|---|-----------------------|--------------------------------------|---------------|--------------------|
| Junction Temperature Range | T_J | - | -55 to +150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | - | -55 to +150 | $^\circ\text{C}$ |
| Maximum Thermal Resistance Junction to Case | $R_{\theta\text{JC}}$ | DC operation | 1.5 | $^\circ\text{C/W}$ |
| Maximum Thermal Resistance, Junction to Case(Per package) | $R_{\theta\text{JC}}$ | DC operation | 50 | $^\circ\text{C/W}$ |
| Maximum Thermal Resistance, Case to Heat Sink | $R_{\theta\text{CS}}$ | Mounting surface, smooth and greased | 0.50 | $^\circ\text{C/W}$ |
| Approximate Weight | wt | - | 2 | g |
| Case Style | TO-220AB | | | |

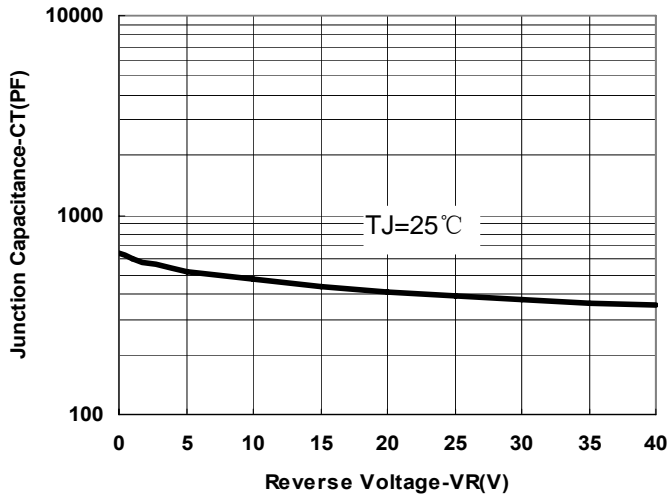


Fig.1-Typical Junction Capacitance

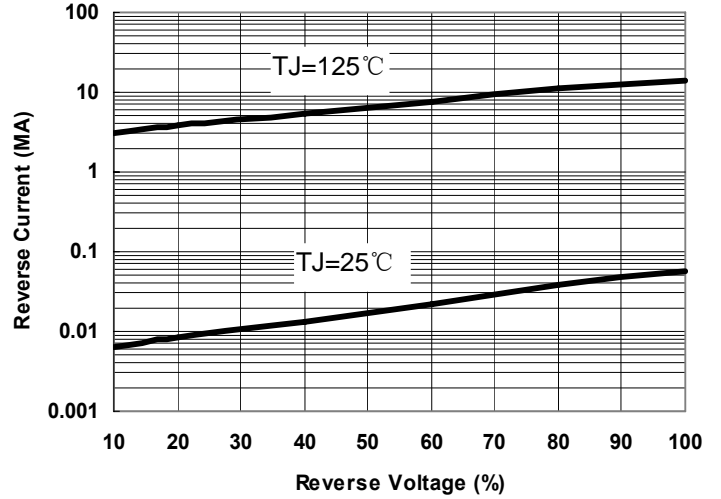


Fig.2-Typical Reverse Characteristics

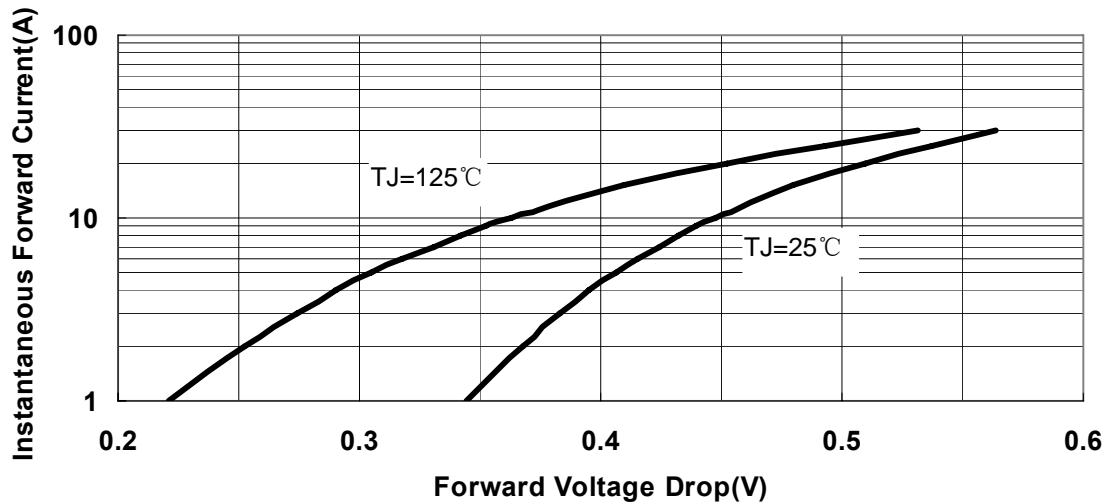


Fig.3-Typical Instantaneous Forward Voltage Characteristics

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