

10A, 35V - 200V Schottky Barrier Rectifier

FEATURES

- AEC-Q101 qualified available
- Low power loss, high efficiency
- Guard ring for overvoltage protection
- High surge current capability
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

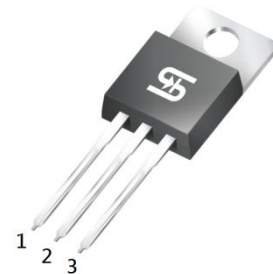
APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- DC to DC converters

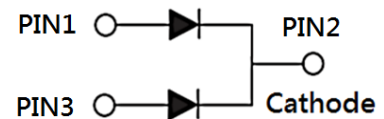
MECHANICAL DATA

- Case: TO-220AB
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Mounting torque: 0.56 N·m maximum
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 1.88g (approximately)

| KEY PARAMETERS | | |
|----------------|-----------|------|
| PARAMETER | VALUE | UNIT |
| I_F | 10 | A |
| V_{RRM} | 35 - 200 | V |
| I_{FSM} | 120 | A |
| T_{JMAX} | 150 | °C |
| Package | TO-220AB | |
| Configuration | Dual dies | |



TO-220AB



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | | | | | | |
|--|--------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|------|
| PARAMETER | SYMBOL | MBR 1035 CT | MBR 1045 CT | MBR 1050 CT | MBR 1060 CT | MBR 1090 CT | MBR 10100 CT | MBR 10150 CT | MBR 10200 CT | UNIT |
| Marking code on the device | | MBR 1035 CT | MBR 1045 CT | MBR 1050 CT | MBR 1060 CT | MBR 1090 CT | MBR 10100 CT | MBR 10150 CT | MBR 10200 CT | |
| Repetitive peak reverse voltage | V_{RRM} | 35 | 45 | 50 | 60 | 90 | 100 | 150 | 200 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 24 | 31 | 35 | 42 | 63 | 70 | 105 | 140 | V |
| Forward current | I_F | 10 | | | | | | | | A |
| Surge peak forward current, 8.3ms single half sine wave superimposed on rated load | I_{FSM} | 120 | | | | | | | | A |
| Peak repetitive reverse surge current ⁽¹⁾ | I_{RRM} | 1 | 0.5 | | | | | | A | |
| Peak repetitive forward current (Rated V_R , Square wave, 20KHz) | I_{FRM} | 10 | | | | | | | | A |

| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | | | | | | |
|--|------------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|------------------|
| PARAMETER | SYMBOL | MBR 1035 CT | MBR 1045 CT | MBR 1050 CT | MBR 1060 CT | MBR 1090 CT | MBR 10100 CT | MBR 10150 CT | MBR 10200 CT | UNIT |
| Critical rate of rise of off-state voltage | dv/dt | 10,000 | | | | | | | | V/ μs |
| Junction temperature | T_J | -55 to +150 | | | | | | | | $^\circ\text{C}$ |
| Storage temperature | T_{STG} | -55 to +150 | | | | | | | | $^\circ\text{C}$ |

Notes:

- $t_p = 2.0\mu\text{s}$, 1.0KHz

| THERMAL PERFORMANCE | | | |
|-------------------------------------|-----------------------|-----|--------------------|
| PARAMETER | SYMBOL | TYP | UNIT |
| Junction-to-case thermal resistance | $R_{\theta\text{JC}}$ | 1.5 | $^\circ\text{C/W}$ |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | | |
|---|--------------------------|--|--------|-----|------|------|
| PARAMETER | | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
| Forward voltage per diode ⁽¹⁾ | MBR1035CT MBR1045CT | $I_F = 5\text{A}$, $T_J = 25^\circ\text{C}$ | V_F | - | 0.70 | V |
| | MBR1050CT MBR1060CT | | | - | 0.80 | V |
| | MBR1090CT MBR10100CT | | | - | 0.85 | V |
| | MBR10150CT MBR10200CT | | | - | 0.88 | V |
| | MBR1035CT MBR1045CT | $I_F = 10\text{A}$, $T_J = 25^\circ\text{C}$ | | - | 0.80 | V |
| | MBR1050CT MBR1060CT | | | - | 0.90 | V |
| | MBR1090CT MBR10100CT | | | - | 0.95 | V |
| | MBR10150CT MBR10200CT | | | - | 0.98 | V |
| | MBR1035CT MBR1045CT | $I_F = 5\text{A}$, $T_J = 125^\circ\text{C}$ | | - | 0.57 | V |
| | MBR1050CT MBR1060CT | | | - | 0.65 | V |
| | MBR1090CT MBR10100CT | | | - | 0.75 | V |
| | MBR10150CT MBR10200CT | | | - | 0.78 | V |
| | MBR1035CT MBR1045CT | $I_F = 10\text{A}$, $T_J = 125^\circ\text{C}$ | | - | 0.67 | V |
| | MBR1050CT MBR1060CT | | | - | 0.75 | V |
| | MBR1090CT MBR10100CT | | | - | 0.85 | V |
| | MBR10150CT MBR10200CT | | | - | 0.88 | V |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | | |
|---|---|---------------------------|---------------|------------|------------|---------------|
| PARAMETER | | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
| Reverse current @ rated V_R per diode ⁽²⁾ | MBR1035CT MBR1045CT MBR1050CT MBR1060CT MBR1090CT MBR10100CT MBR10150CT MBR10200CT | $T_J = 25^\circ\text{C}$ | I_R | - | 100 | μA |
| | MBR1035CT MBR1045CT | $T_J = 125^\circ\text{C}$ | | - | 15 | mA |
| | MBR1050CT MBR1060CT | | | - | 10 | mA |
| | MBR1090CT MBR10100CT | | | - | 2 | mA |
| | MBR10150CT MBR10200CT | | | - | 5 | mA |
| | | | | | | |

Notes:

1. Pulse test with $PW = 0.3\text{ms}$
2. Pulse test with $PW = 30\text{ms}$

| ORDERING INFORMATION | | |
|--|----------------|----------------|
| ORDERING CODE ⁽¹⁾⁽²⁾ | PACKAGE | PACKING |
| MBR10xCT | TO-220AB | 50 / Tube |
| MBR10xCTH | TO-220AB | 50 / Tube |

Notes:

1. "x" defines voltage from 35V(MBR1035CT) to 200V(MBR10200CT)
2. "H" means AEC-Q101 qualified

CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 Forward Current Derating Curve

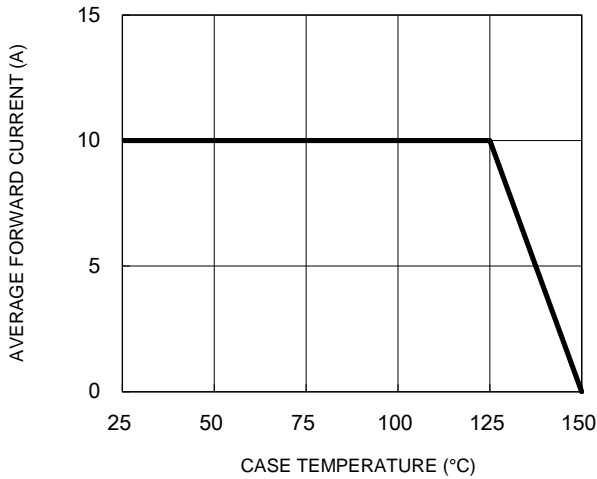


Fig.2 Typical Junction Capacitance

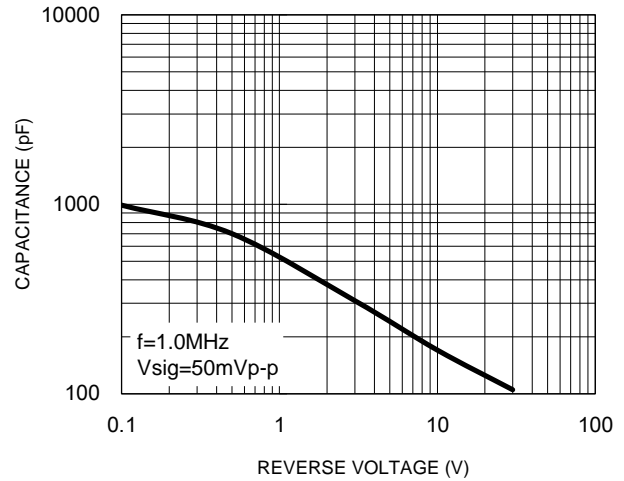


Fig.3 Typical Reverse Characteristics

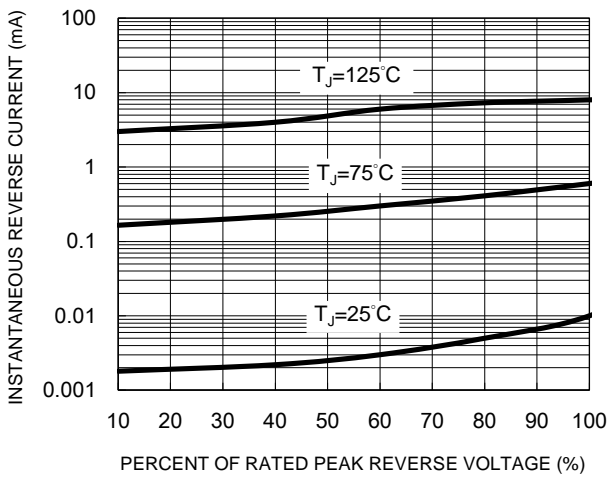


Fig.4 Typical Forward Characteristics

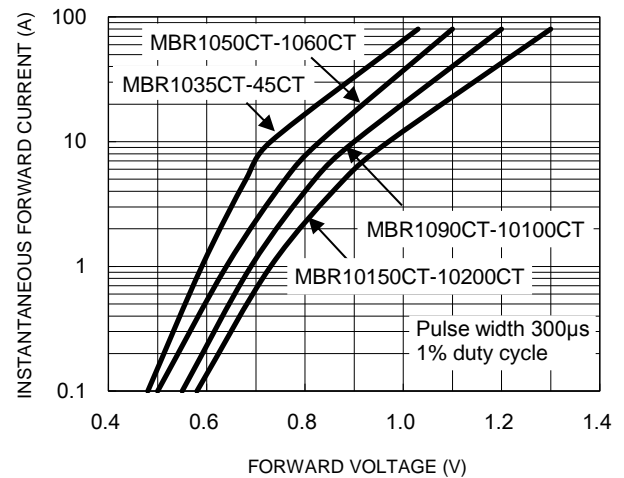
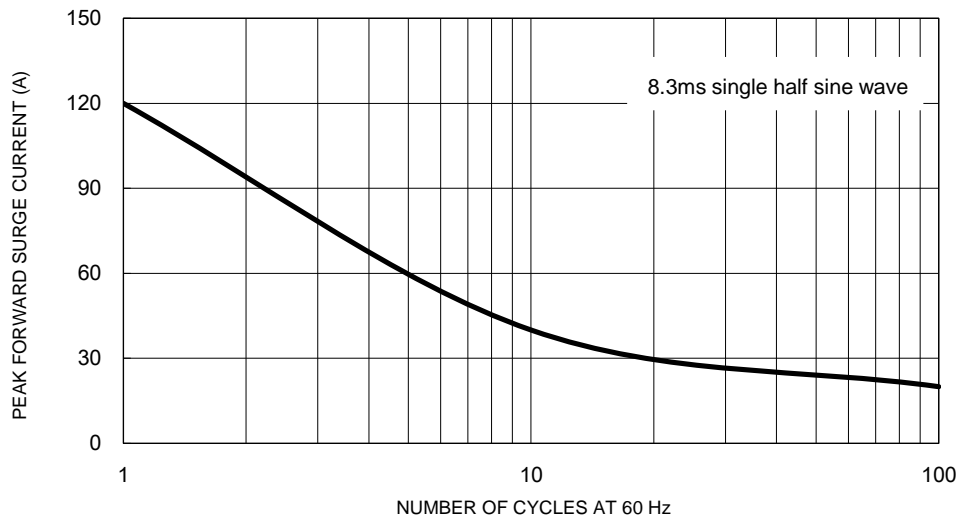


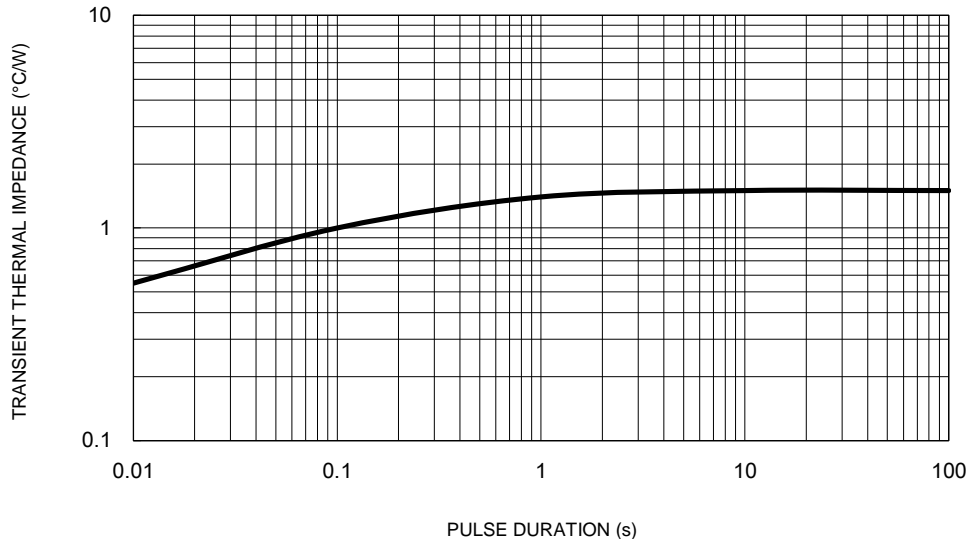
Fig.5 Maximum Non-Repetitive Forward Surge Current



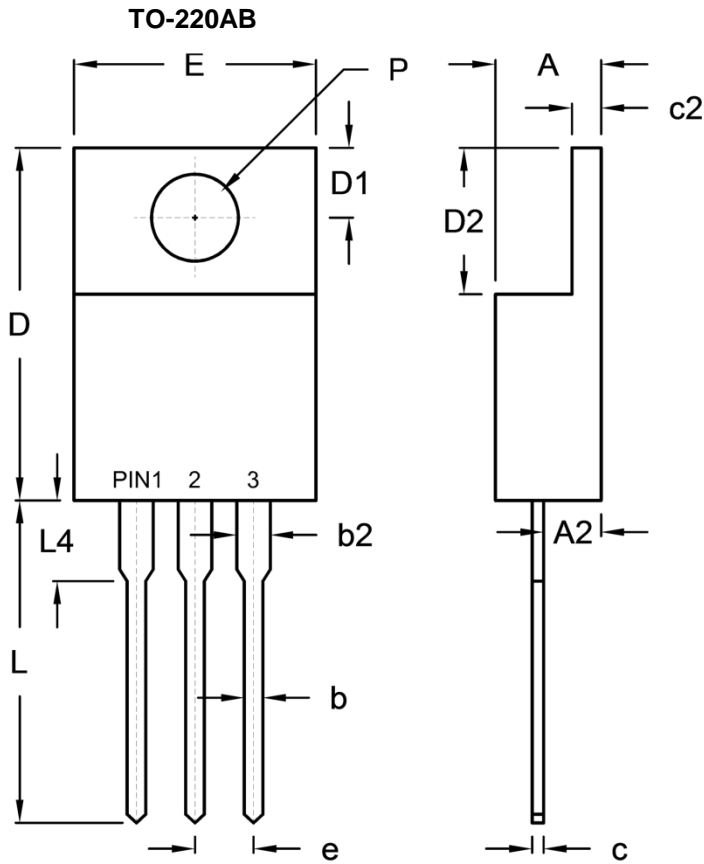
CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.6 Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS



| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|-------|-------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.42 | 4.76 | 0.174 | 0.187 |
| A2 | 2.20 | 2.80 | 0.087 | 0.110 |
| b | 0.68 | 0.94 | 0.027 | 0.037 |
| b2 | 1.14 | 1.77 | 0.045 | 0.070 |
| c | 0.35 | 0.64 | 0.014 | 0.025 |
| c2 | 1.14 | 1.40 | 0.045 | 0.055 |
| D | 14.60 | 16.00 | 0.575 | 0.630 |
| D1 | 2.62 | 3.44 | 0.103 | 0.135 |
| D2 | 5.84 | 6.86 | 0.230 | 0.270 |
| E | - | 10.50 | - | 0.413 |
| e | 2.41 | 2.67 | 0.095 | 0.105 |
| L | 13.19 | 14.79 | 0.519 | 0.582 |
| L4 | 2.80 | 4.20 | 0.110 | 0.165 |
| P | 3.54 | 4.00 | 0.139 | 0.157 |

MARKING DIAGRAM



- P/N = Marking Code
- G = Green Compound
- YWW = Date Code
- F = Factory Code

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