

30A, 45V Schottky Barrier Surface Mount Rectifier

FEATURES

- AEC-Q101 qualified
- Low power loss, high efficiency
- Ideal for automated placement
- Guard ring for overvoltage protection
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

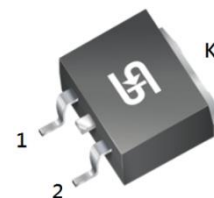
APPLICATIONS

- Low voltage, high freq. inverter
- DC/DC converter
- Freewheeling diodes
- Reverse battery protection
- Car lighting

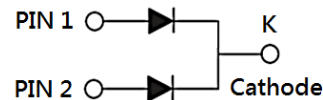
MECHANICAL DATA

- Case: TO-263AB (D²PAK)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 1.40g (approximately)

| KEY PARAMETERS | | |
|----------------|-------------------------------|------|
| PARAMETER | VALUE | UNIT |
| I_F | 30 | A |
| V_{RRM} | 45 | V |
| I_{FSM} | 220 | A |
| T_{JMAX} | 150 | °C |
| Package | TO-263AB (D ² PAK) | |
| Configuration | Dual dies | |



TO-263AB (D²PAK)



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | |
|--|--------------|-------------|------------------|
| PARAMETER | SYMBOL | MBRS3045CTH | UNIT |
| Marking code on the device | | MBRS3045CT | |
| Repetitive peak reverse voltage | V_{RRM} | 45 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 31 | V |
| Forward current | I_F | 30 | A |
| Surge peak forward current, 8.3ms single half sine wave superimposed on rated load | I_{FSM} | 220 | A |
| Critical rate of rise of off-state voltage | dv/dt | 10,000 | V/ μs |
| Junction temperature | T_J | -55 to +150 | °C |
| Storage temperature | T_{STG} | -55 to +150 | °C |

| THERMAL PERFORMANCE | | | |
|--|-----------------|------------|-------------|
| PARAMETER | SYMBOL | TYP | UNIT |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 50 | °C/W |
| Junction-to-case thermal resistance | $R_{\theta JC}$ | 1.5 | °C/W |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|---|---------------|------------|------------|---------------|
| PARAMETER | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
| Forward voltage per diode ⁽¹⁾ | $I_F = 15\text{A}, T_J = 25^\circ\text{C}$ | V_F | - | 0.70 | V |
| | $I_F = 30\text{A}, T_J = 25^\circ\text{C}$ | | - | 0.90 | V |
| | $I_F = 15\text{A}, T_J = 125^\circ\text{C}$ | | - | 0.60 | V |
| | $I_F = 30\text{A}, T_J = 125^\circ\text{C}$ | | - | 0.75 | V |
| Reverse current @ rated V_R per diode ⁽²⁾ | $T_J = 25^\circ\text{C}$ | I_R | - | 200 | μA |
| | $T_J = 125^\circ\text{C}$ | | - | 15 | mA |

Notes:

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

| ORDERING INFORMATION | | |
|-----------------------------|-------------------------------|-------------------|
| ORDERING CODE | PACKAGE | PACKING |
| MBRS3045CTH | TO-263AB (D ² PAK) | 800 / Tape & Reel |

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

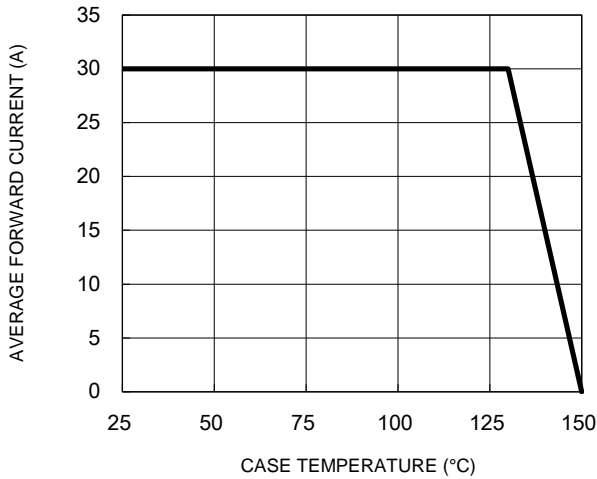


Fig.2 Typical Junction Capacitance

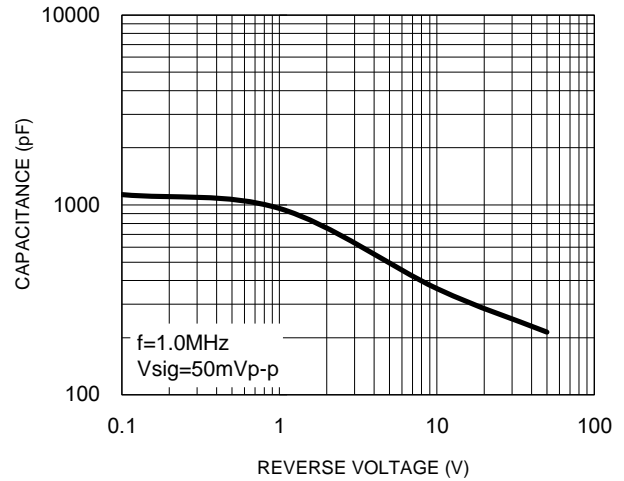


Fig.3 Typical Reverse Characteristics

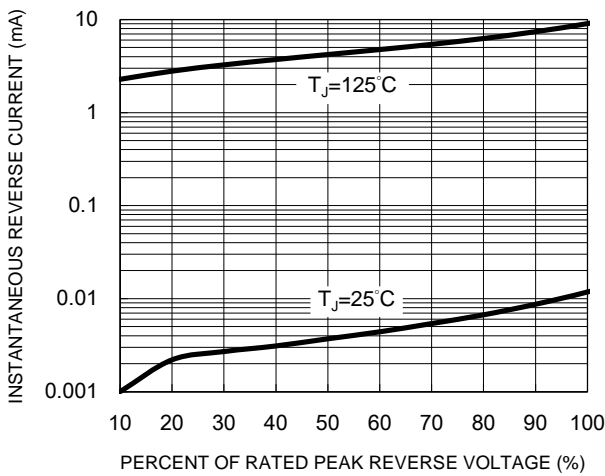


Fig.4 Typical Forward Characteristics

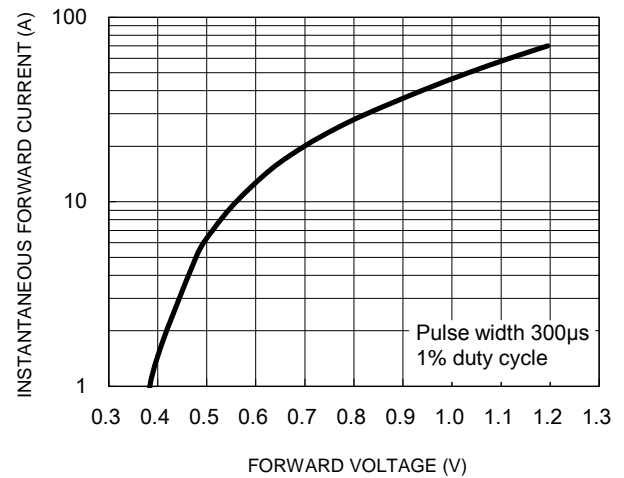
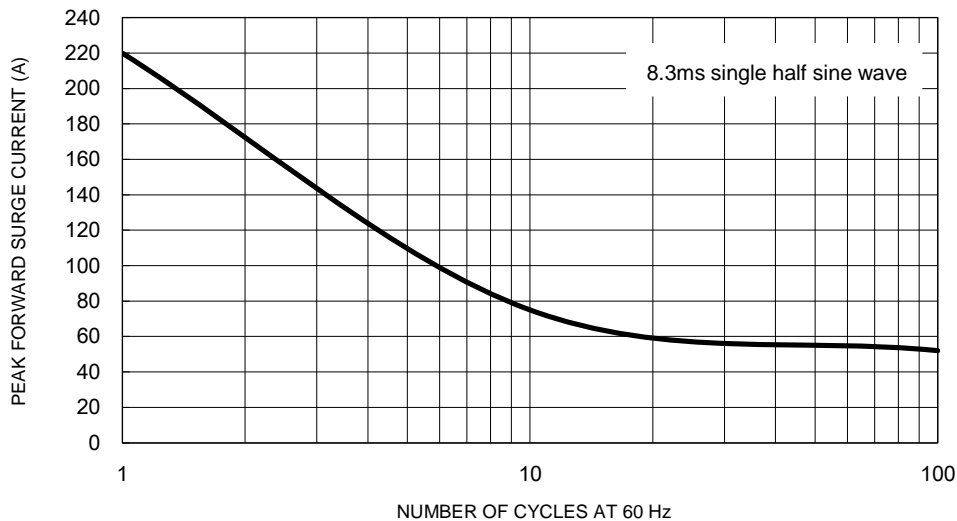


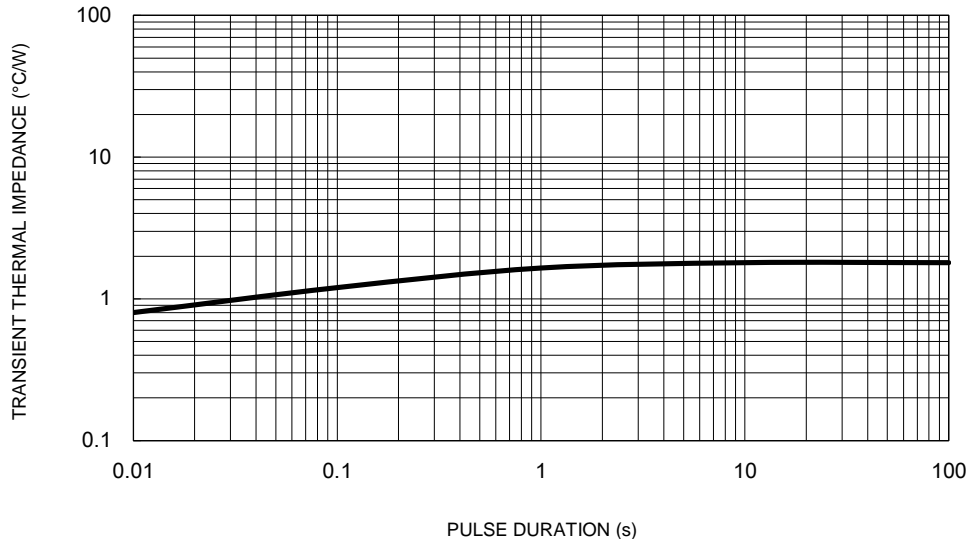
Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

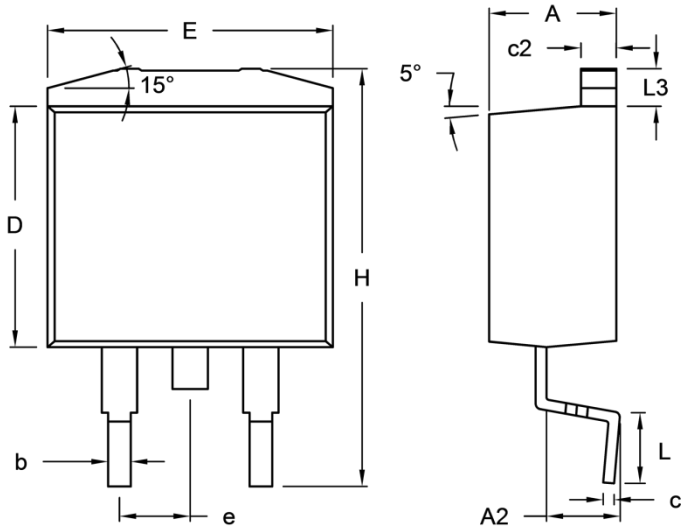
($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.6 Typical Transient Thermal Impedance



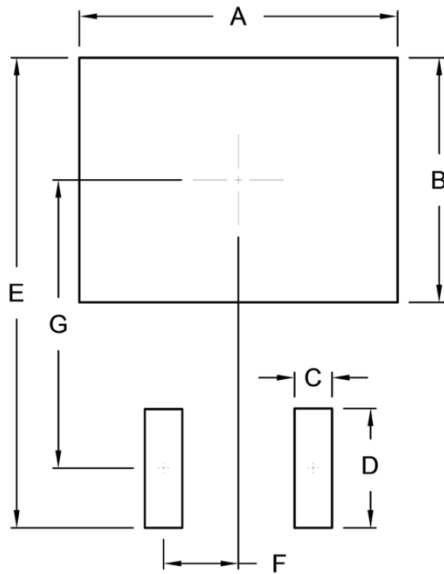
PACKAGE OUTLINE DIMENSIONS

TO-263AB (D²PAK)



| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|-------|-------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.44 | 4.70 | 0.175 | 0.185 |
| A2 | 2.03 | 2.79 | 0.080 | 0.110 |
| b | 0.68 | 0.94 | 0.027 | 0.037 |
| c | 0.36 | 0.53 | 0.014 | 0.021 |
| c2 | 1.14 | 1.40 | 0.045 | 0.055 |
| D | 8.25 | 9.25 | 0.325 | 0.364 |
| E | - | 10.50 | - | 0.413 |
| e | 2.41 | 2.67 | 0.095 | 0.105 |
| H | 14.60 | 15.88 | 0.575 | 0.625 |
| L | 2.29 | 2.79 | 0.090 | 0.110 |
| L3 | 1.14 | 1.40 | 0.045 | 0.055 |

SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A | 10.80 | 0.425 |
| B | 8.30 | 0.327 |
| C | 1.27 | 0.050 |
| D | 4.05 | 0.159 |
| E | 15.95 | 0.628 |
| F | 2.54 | 0.100 |
| G | 9.775 | 0.385 |

MARKING DIAGRAM



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

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