Taiwan Semiconductor

30A, 100V Schottky Barrier Rectifier

FEATURES

TAIWAN

• AEC-Q101 qualified available

EMICONDUCTOR

- 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

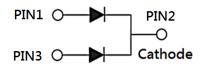
- Case: TO-220AB
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Mounting torque: 0.56 N·m maximum
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 1.90g (approximately)

| KEY PARAMETERS | | |
|--------------------|-----------|------|
| PARAMETER | VALUE | UNIT |
| I _F | 30 | А |
| V _{RRM} | 100 | V |
| I _{FSM} | 150 | А |
| T _{J MAX} | 175 | °C |
| Package | TO-220AB | |
| Configuration | Dual dies | |









| ABSOLUTE MAXIMUM RATINGS (T _A = 25°C unless otherwise noted) | | | |
|--|---------------------|-------------|------|
| PARAMETER | SYMBOL | MBR30H100CT | UNIT |
| Marking code on the device | | MBR30H100CT | |
| Repetitive peak reverse voltage | V _{RRM} | 100 | V |
| Reverse voltage, total rms value | V _{R(RMS)} | 70 | V |
| Forward current | I _F | 30 | А |
| Surge peak forward current, 8.3ms single half sine wave superimposed on rated load | I _{FSM} | 150 | А |
| Peak repetitive reverse surge current ⁽¹⁾ | I _{RRM} | 1 | А |
| Peak repetitive forward current (Rated V _R , Square wave, 20KHz) | I _{FRM} | 30 | A |
| Critical rate of rise of off-state voltage | dv/dt | 10,000 | V/µs |
| Junction temperature | TJ | -55 to +175 | °C |
| Storage temperature | T _{STG} | -55 to +175 | °C |

- Notes:
- 1. tp = 2.0µs, 1.0KHz



| THERMAL PERFORMANCE | | | |
|-------------------------------------|------------------|-----|------|
| PARAMETER | SYMBOL | ТҮР | UNIT |
| Junction-to-case thermal resistance | R _{eJC} | 2 | °C/W |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^{\circ}C$ unless otherwise noted) | | | | | |
|--|--|----------------|-----|------|------|
| PARAMETER | CONDITIONS | SYMBOL | ТҮР | MAX | UNIT |
| Forward voltage per diode ⁽¹⁾ | $I_F = 15A, T_J = 25^{\circ}C$ | VF | - | 0.85 | V |
| | $I_F = 30A, T_J = 25^{\circ}C$ | | - | 0.98 | V |
| | I _F = 15A, T _J = 125°C | | - | 0.75 | V |
| | $I_F = 30A, T_J = 125^{\circ}C$ | | - | 0.85 | V |
| Reverse current @ rated V _R per diode ⁽²⁾ | $T_J = 25^{\circ}C$ | I | - | 10 | μA |
| | T _J = 125°C | I _R | - | 2 | mA |

Notes:

1. Pulse test with PW = 0.3ms

2. Pulse test with PW = 30ms

| ORDERING INFORMATION | | |
|------------------------------|----------|-----------|
| ORDERING CODE ⁽¹⁾ | PACKAGE | PACKING |
| MBR30H100CT | TO-220AB | 50 / Tube |
| MBR30H100CTH | TO-220AB | 50 / Tube |

Notes:

1. "H" means AEC-Q101 qualified



CHARACTERISTICS CURVES

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

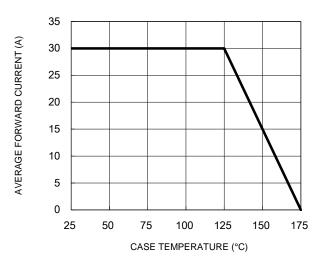
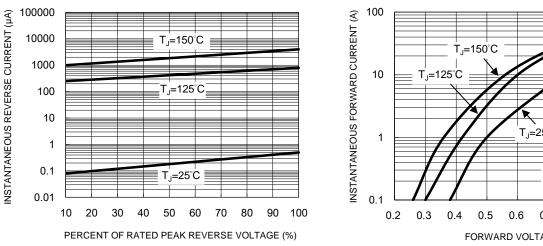


Fig.1 Forward Current Derating Curve

Fig.3 Typical Reverse Characteristics



10000 CAPACITANCE (pF) 1000 100 f=1.0MHz Vsig=50mVp-p 10 0.1 10 100 1 REVERSE VOLTAGE (V)

Fig.2 Typical Junction Capacitance

Fig.4 Typical Forward Characteristics

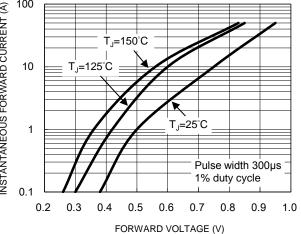
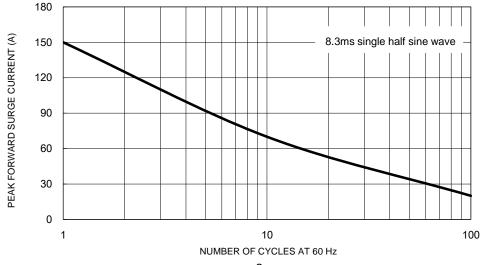


Fig.5 Maximum Non-Repetitive Forward Surge Current





CHARACTERISTICS CURVES

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

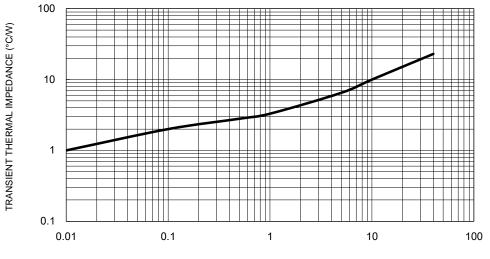


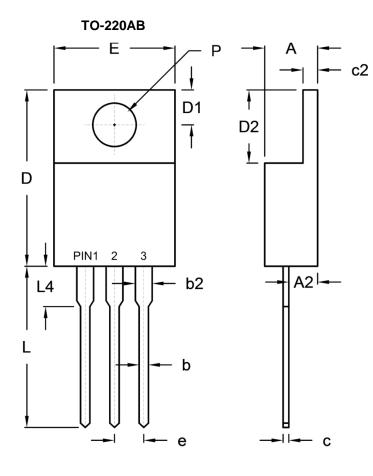
Fig.6 Typical Transient Thermal Impedance

PULSE DURATION (s)

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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 |
| с | 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 |
| е | 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 |
| Р | 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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