

200mA, 100V Switching Diode

FEATURES

- Designed for mounting on small surface
- Low Capacitance
- Low forward voltage drop
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

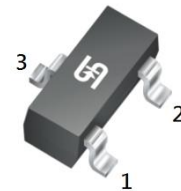
APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

MECHANICAL DATA

- Case: SOT-23
- Molding compound meets UL 94 V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Weight: 8.00mg (approximately)

| KEY PARAMETERS | | |
|------------------------------|--------|------|
| PARAMETER | VALUE | UNIT |
| I_F | 200 | mA |
| V_{RRM} | 100 | V |
| I_{FSM} | 2 | A |
| V_F at $I_F = 10\text{mA}$ | 0.82 | V |
| $T_{J\text{MAX}}$ | 150 | °C |
| Package | SOT-23 | |


SOT-23

| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | |
|---|--------------------|-----------|-------------|------|
| PARAMETER | | SYMBOL | VALUE | UNIT |
| Marking code on the device | MMBD4148 | | 5D | |
| | MMBD4148CA | | A1 | |
| | MMBD4148CC | | A4 | |
| | MMBD4148SE | | A7 | |
| Repetitive peak reverse voltage | | V_{RRM} | 100 | V |
| Forward current | | I_F | 200 | mA |
| Repetitive peak forward surge current | | I_{FRM} | 700 | mA |
| Non-repetitive peak forward surge current | $t = 1\mu\text{s}$ | I_{FSM} | 2 | A |
| | $t = 1\text{s}$ | | 1 | A |
| Junction temperature range | | T_J | -55 to +150 | °C |
| Storage temperature range | | T_{STG} | -55 to +150 | °C |

| THERMAL PERFORMANCE | | | |
|--|-----------------|------------|-------------|
| PARAMETER | SYMBOL | TYP | UNIT |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 357 | °C/W |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|---|---------------|------------|------------|-------------|
| PARAMETER | CONDITIONS | SYMBOL | MIN | MAX | UNIT |
| Forward voltage per diode ⁽¹⁾ | $I_F = 10\text{mA}, T_J = 25^\circ\text{C}$ | V_F | - | 0.82 | V |
| Reverse current per diode ⁽²⁾ | $V_R = 20\text{V}, T_J = 25^\circ\text{C}$ | I_R | - | 25 | nA |
| | $V_R = 75\text{V}, T_J = 25^\circ\text{C}$ | | - | 5 | μA |
| | $V_R = 20\text{V}, T_A = 150^\circ\text{C}$ | | - | 50 | μA |
| Reverse breakdown voltage per diode | $I_R = 5\mu\text{A}, T_J = 25^\circ\text{C}$ | V_{BR} | 75 | - | V |
| | $I_R = 100\mu\text{A}, T_J = 25^\circ\text{C}$ | | 100 | - | V |
| Junction capacitance per diode | $f = 1\text{MHz}, V_R = 0\text{V}$ | C_J | - | 4 | pF |
| Reverse recovery time per diode | $I_F = 10\text{mA}, I_R = 1\text{mA}, R_L = 100\Omega, V_R = 6\text{V}$ | t_{rr} | - | 4 | ns |

Notes:

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

| ORDERING INFORMATION | | |
|------------------------------------|----------------|--------------------------|
| ORDERING CODE⁽¹⁾ | PACKAGE | PACKING |
| MMBD414x RFG | SOT-23 | 3,000 / 7" Tape & Reel |
| MMBD414x R5G | SOT-23 | 10,000 / 13" Tape & Reel |

Notes:

1. "x" defines part no. from "8" to "8SE"

CHARACTERISTICS CURVES

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

Fig.1 Power Derating Curve

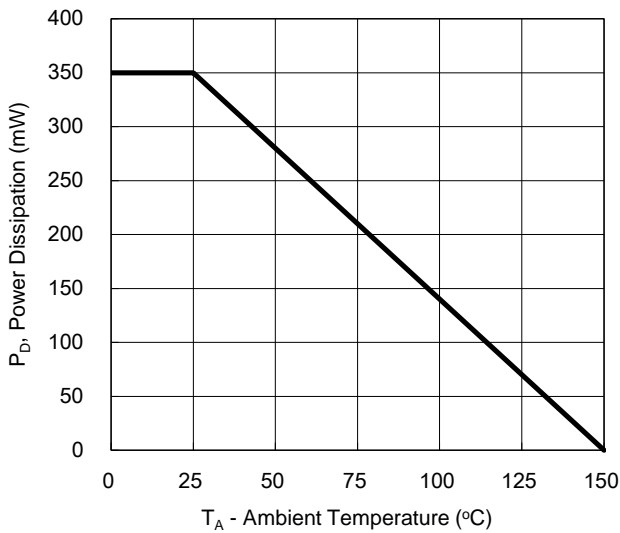


Fig.2 Forward Characteristics

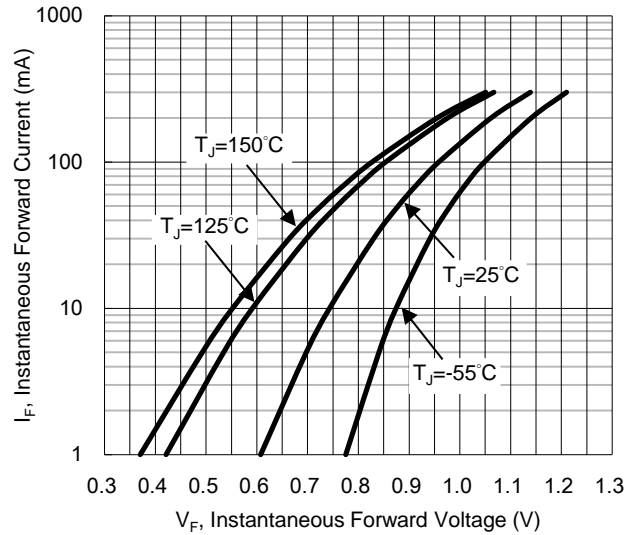


Fig.3 Typical Reverse Characteristics

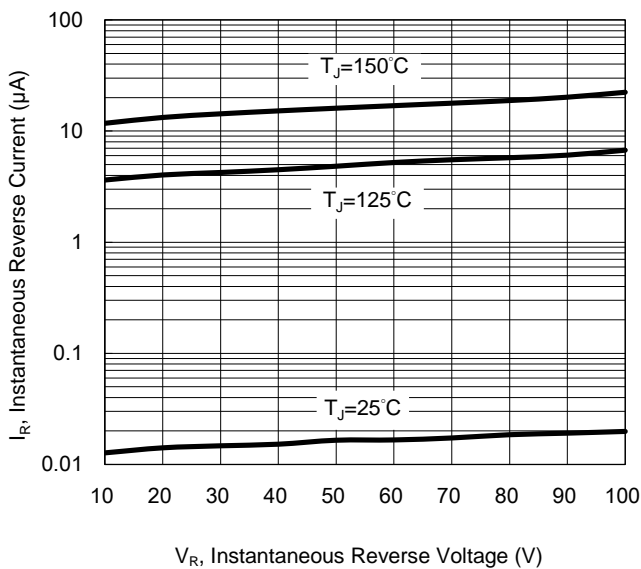
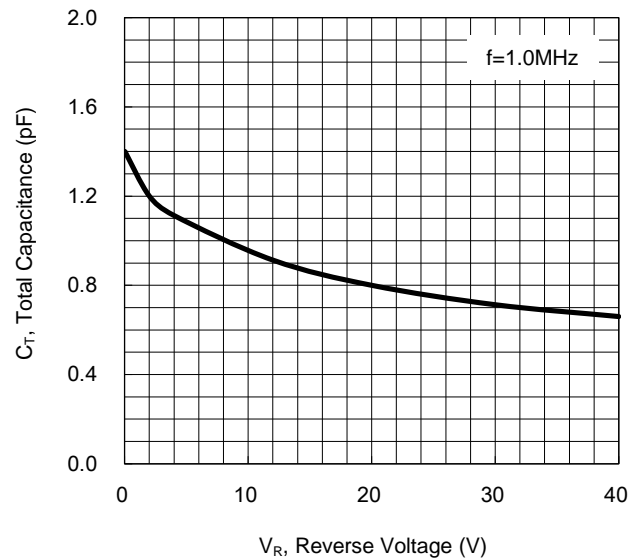
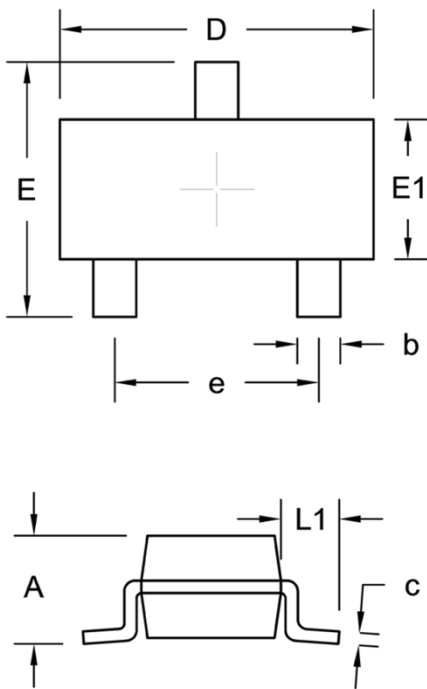


Fig.4 Typical Capacitance vs. Reverse Voltage



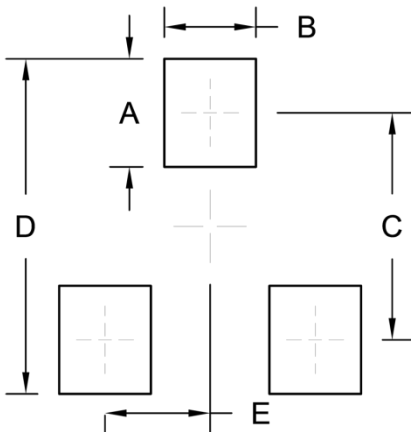
PACKAGE OUTLINE DIMENSIONS

SOT-23



| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|------|-------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.89 | 1.12 | 0.035 | 0.044 |
| b | 0.30 | 0.50 | 0.012 | 0.020 |
| c | 0.08 | 0.20 | 0.003 | 0.008 |
| D | 2.80 | 3.04 | 0.110 | 0.120 |
| E | 2.10 | 2.64 | 0.083 | 0.104 |
| E1 | 1.20 | 1.40 | 0.047 | 0.055 |
| e | 1.90 BSC | | 0.075 BSC | |
| L1 | 0.54 REF. | | 0.021 REF. | |

SUGGESTED PAD LAYOUT

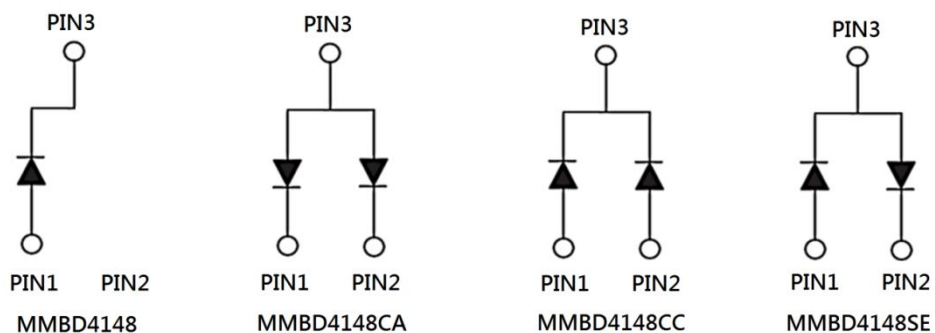


| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A | 1.00 | 0.039 |
| B | 0.85 | 0.033 |
| C | 2.10 | 0.083 |
| D | 3.10 | 0.122 |
| E | 0.98 | 0.039 |

Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

PIN CONFIGURATION



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