

## 350mW, SMD Switching Diode

### FEATURES

- Designed for mounting on small surface
- Low Capacitance
- Low forward voltage drop
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- 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
- Moisture sensitivity level: level 1, per J-STD-020
- Packing code with suffix "G" means green compound (halogen-free)
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: Indicated by cathode band
- Weight: 8 mg (approximately)

| KEY PARAMETERS      |             |      |
|---------------------|-------------|------|
| PARAMETER           | VALUE       | UNIT |
| $I_{F(AV)}$         | 200         | mA   |
| $V_{RRM}$           | 100         | V    |
| $I_{FSM}$           | 2           | A    |
| $V_F$ at $I_F=10mA$ | 1           | V    |
| $T_J$ Max.          | 150         | °C   |
| Package             | SOT-23      |      |
| Configuration       | Single dice |      |



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |               |             |             |      |
|-----------------------------------------------------------------------------|---------------|-------------|-------------|------|
| PARAMETER                                                                   |               | SYMBOL      | PART NUMBER | UNIT |
| Marking code on the device                                                  | MMBD4148      |             | 5D          |      |
|                                                                             | MMBD4148CA    |             | A1          |      |
|                                                                             | MMBD4148CC    |             | A4          |      |
|                                                                             | MMBD4148SE    |             | A7          |      |
| Repetitive peak reverse voltage                                             |               | $V_{RRM}$   | 75          | V    |
| Forward current                                                             |               | $I_{F(AV)}$ | 200         | mA   |
| Repetitive peak forward surge current                                       |               | $I_{FRM}$   | 700         | mA   |
| Non-repetitive peak forward surge current                                   | at $t=1\mu s$ | $I_{FSM}$   | 2           | A    |
|                                                                             | at $t=1s$     |             | 1           |      |
| Junction temperature range                                                  |               | $T_J$       | -55 to +150 | °C   |
| Storage temperature range                                                   |               | $T_{STG}$   | -55 to +150 | °C   |

**THERMAL PERFORMANCE**

| PARAMETER                              | SYMBOL          | LIMIT | 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 <sup>(1)</sup>               | $I_F = 10\text{mA}$ , $T_J = 25^\circ\text{C}$                                      | $V_F$      | -   | 1.0  | V             |
| Reverse current @ rated $V_R$ per diode <sup>(2)</sup> | $V_R = 20\text{V}$ , $T_J = 25^\circ\text{C}$                                       | $I_R$      | -   | 25.0 | nA            |
|                                                        | $V_R = 75\text{V}$ , $T_J = 25^\circ\text{C}$                                       |            | -   | 5.0  | $\mu\text{A}$ |
|                                                        | $V_R = 20\text{V}$ , $T_A = 150^\circ\text{C}$                                      |            | -   | 50.0 |               |
| Reverse breakdown voltage                              | $I_R = 5\mu\text{A}$ , $T_J = 25^\circ\text{C}$                                     | $V_{(BR)}$ | 75  | -    | V             |
|                                                        | $I_R = 100\mu\text{A}$ , $T_J = 25^\circ\text{C}$                                   |            | 100 | -    |               |
| Junction capacitance                                   | 1 MHz, $V_R = 0\text{V}$                                                            | $C_J$      | -   | 4.0  | pF            |
| Reverse recovery time                                  | $I_F = 10\text{mA}$ , $I_R = 1\text{mA}$ ,<br>$R_L = 100\Omega$ , $V_R = 6\text{V}$ | $t_{rr}$   | -   | 4.0  | ns            |

**Notes:**

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

**ORDERING INFORMATION**

| PART NO.               | PACKING CODE | PACKING CODE SUFFIX | PACKAGE | PACKING        |
|------------------------|--------------|---------------------|---------|----------------|
| MMBD414X<br>(Note 1&2) | RF           | G                   | SOT-23  | 3K / 7" Reel   |
|                        | R5           |                     |         | 10K / 13" Reel |

**Notes:**

1. Whole series with green compound
2. "XX" is Device code from "8" to "8SE".

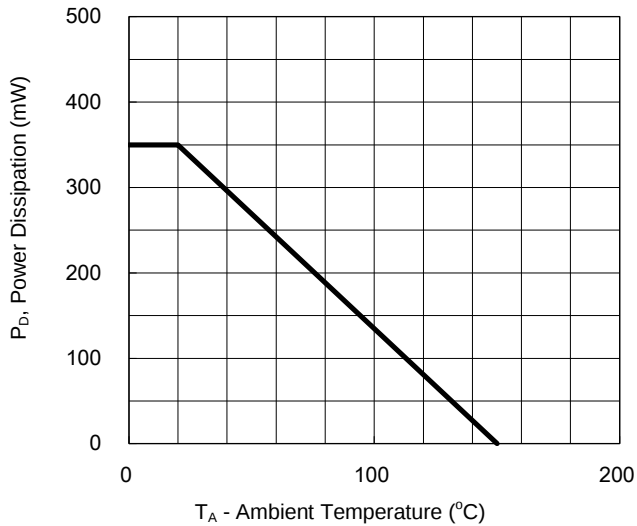
**EXAMPLE**

| EXAMPLE P/N  | PART NO. | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION    |
|--------------|----------|--------------|---------------------|----------------|
| MMBD4148 RFG | MMBD4148 | RF           | G                   | Green compound |

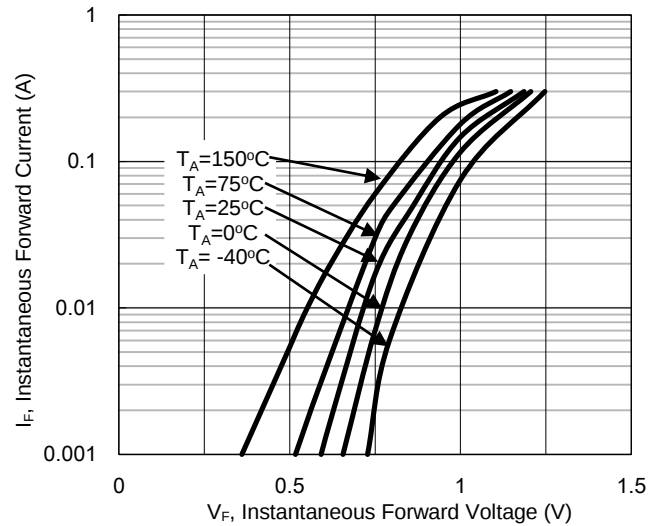
## CHARACTERISTICS CURVES

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

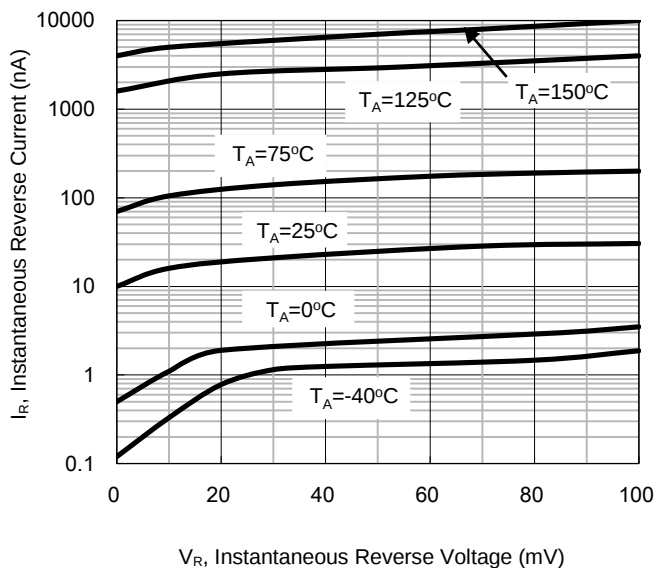
**Fig. 1 Power Derating Curve**



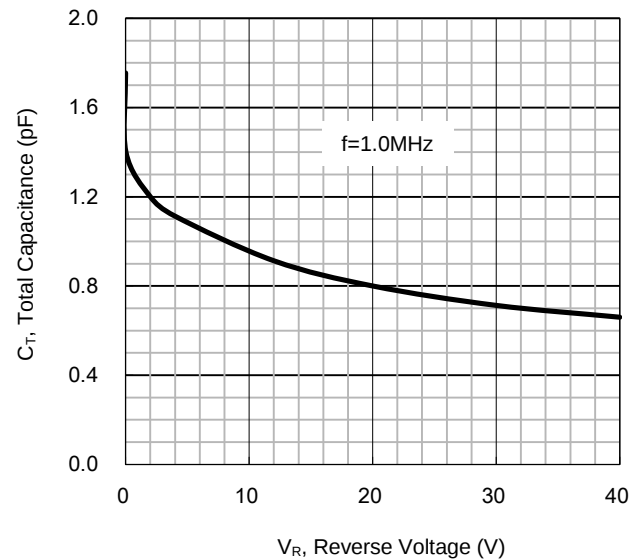
**Fig.2 Forward Characteristics**



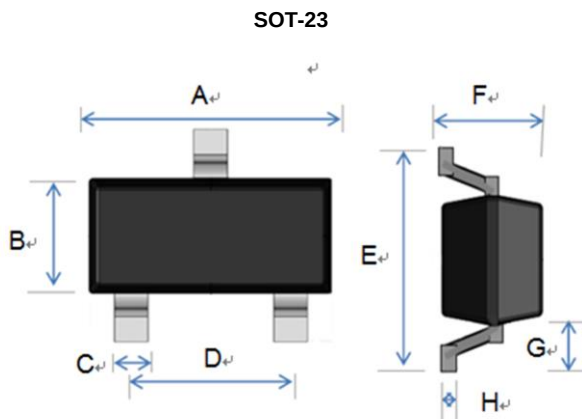
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Capacitance vs. Reverse Voltage**

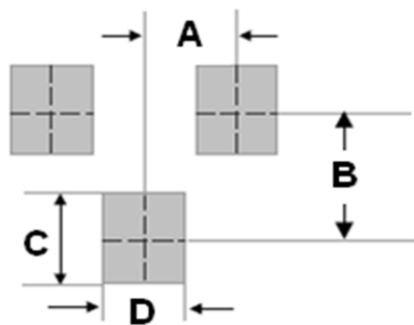


## PACKAGE OUTLINE DIMENSION



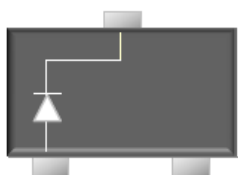
| DIM. | Unit(mm) |      | Unit(inch) |       |
|------|----------|------|------------|-------|
|      | Min      | Max  | Min        | Max   |
| A    | 2.70     | 3.10 | 0.106      | 0.122 |
| B    | 1.10     | 1.50 | 0.043      | 0.059 |
| C    | 0.30     | 0.51 | 0.012      | 0.020 |
| D    | 1.78     | 2.04 | 0.070      | 0.080 |
| E    | 2.10     | 2.64 | 0.083      | 0.104 |
| F    | 0.89     | 1.30 | 0.035      | 0.051 |
| G    | 0.55 REF |      | 0.022 REF  |       |
| H    | 0.10 REF |      | 0.004 REF  |       |

## SUGGEST PAD LAYOUT

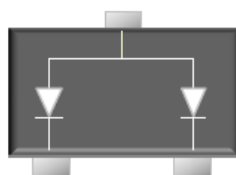


| DIM. | Unit(mm) | Unit(inch) |
|------|----------|------------|
|      | TYP      | TYP        |
| A    | 0.95     | 0.037      |
| B    | 2.00     | 0.079      |
| C    | 0.90     | 0.035      |
| D    | 0.80     | 0.031      |

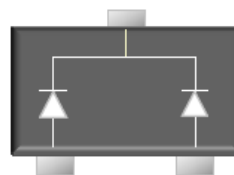
## PIN CONFIGURATION



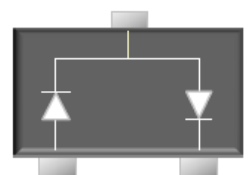
**MMBD4148**



**MMBD4148CA**



**MMBD4148CC**



**MMBD4148SE**

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