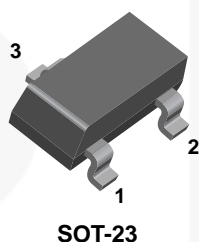
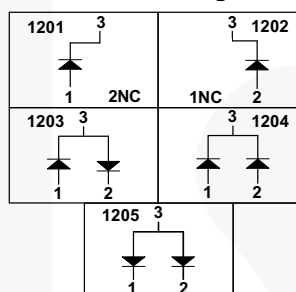




July 2015

# MMBD1201 / MMBD1202 / MMBD1203 / MMBD1204 / MMBD1205

## Small Signal Diodes

**Connection Diagram**

### Ordering Information

| Part Number | Top Mark | Package   | Packing Method |
|-------------|----------|-----------|----------------|
| MMBD1201    | 24       | SOT-23 3L | Tape and Reel  |
| MMBD1202    | 25       | SOT-23 3L | Tape and Reel  |
| MMBD1203    | 26       | SOT-23 3L | Tape and Reel  |
| MMBD1204    | 27       | SOT-23 3L | Tape and Reel  |
| MMBD1205    | 28       | SOT-23 3L | Tape and Reel  |

### Absolute Maximum Ratings<sup>(1), (2)</sup>

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol      | Parameter                                 |                               | Value       | Unit             |
|-------------|---|-------------------------------|-------------|------------------|
| $V_{RRM}$   | Maximum Repetitive Reverse Voltage        |                               | 100         | V                |
| $I_{F(AV)}$ | Average Rectified Forward Current         |                               | 200         | mA               |
| $I_{FSM}$   | Non-Repetitive Peak Forward Surge Current | Pulse Width = 1.0 second      | 1.0         | A                |
|             |   | Pulse Width = 1.0 microsecond | 2.0         |                  |
| $T_{STG}$   | Storage Temperature Range                 |                               | -55 to +150 | $^\circ\text{C}$ |
| $T_J$       | Operating Junction Temperature            |                               | 150         | $^\circ\text{C}$ |

#### Notes:

1. These ratings are based on a maximum junction temperature of  $150^\circ\text{C}$ .
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

MMBD1201 / MMBD1202 / MMBD1203 / MMBD1204 / MMBD1205 — Small Signal Diodes

## Thermal Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

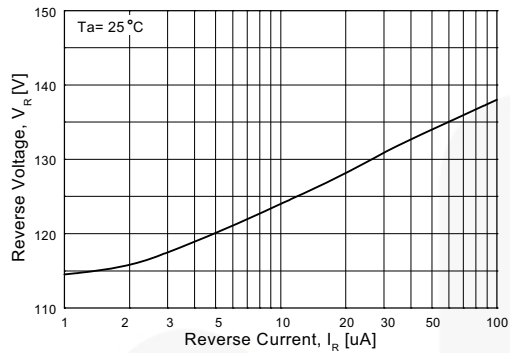
| Symbol          | Parameter                               | Value | Unit                      |
|-----------------|---|-------|---------------------------|
| $P_D$           | Power Dissipation                       | 350   | mW                        |
|                 | Derate Above $25^\circ\text{C}$         | 2.8   | mW/ $^\circ\text{C}$      |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient | 357   | $^\circ\text{C}/\text{W}$ |

## Electrical Characteristics

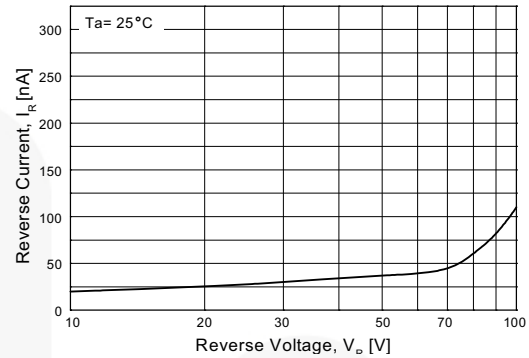
Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol   | Parameter             | Conditions  | Min. | Max. | Unit          |
|----------|-----------------------|---|------|------|---------------|
| $V_R$    | Breakdown Voltage     | $I_R = 100\ \mu\text{A}$  | 100  |      | V             |
| $V_F$    | Forward Voltage       | $I_F = 1.0\ \text{mA}$  | 550  | 600  | mV            |
|          |                       | $I_F = 10\ \text{mA}$   | 660  | 740  | mV            |
|          |                       | $I_F = 100\ \text{mA}$  | 820  | 920  | mV            |
|          |                       | $I_F = 200\ \text{mA}$  | 0.87 | 1.0  | V             |
|          |                       | $I_F = 300\ \text{mA}$  |      | 1.1  | V             |
| $I_R$    | Reverse Current       | $V_R = 20\ \text{V}$  |      | 25   | nA            |
|          |                       | $V_R = 50\ \text{V}$  |      | 50   | nA            |
|          |                       | $V_R = 50\ \text{V}, T_A = 150^\circ\text{C}$                           |      | 100  | $\mu\text{A}$ |
| $C_T$    | Total Capacitance     | $V_R = 0, f = 1.0\ \text{MHz}$  |      | 2.0  | pF            |
| $t_{rr}$ | Reverse Recovery Time | $I_F = I_R = 10\ \text{mA}, I_{RR} = 1.0\ \text{mA}, R_L = 100\ \Omega$ |      | 4.0  | nS            |

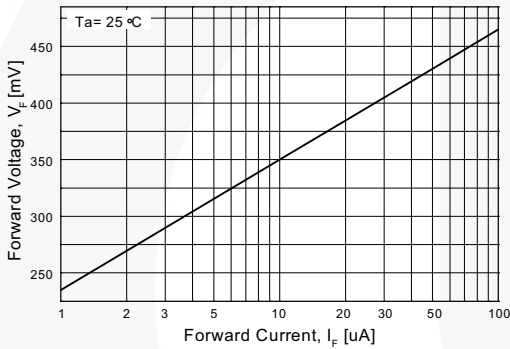
## Typical Performance Characteristics



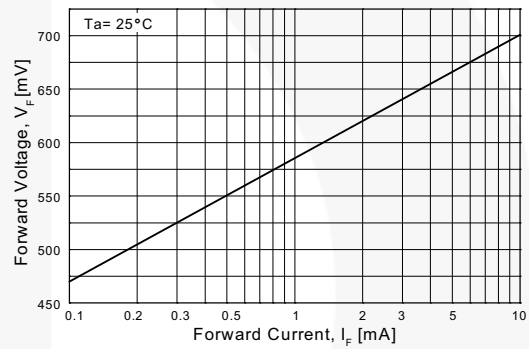
**Figure 1. Reverse Voltage vs. Reverse Current**  
 $V_R$  @  $I_R = 1.0$  to  $100 \mu A$



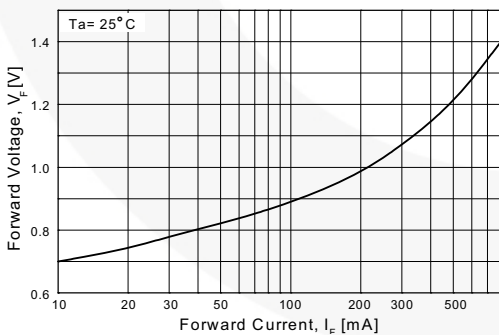
**Figure 2. Reverse Current vs. Reverse Voltage**  
 $I_R$  @  $V_R = 10$  to  $100 V$



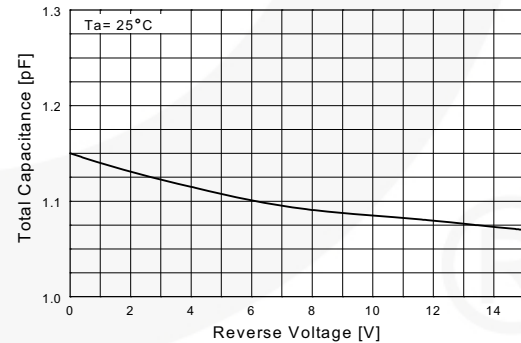
**Figure 3. Forward Voltage vs. Forward Current**  
 $V_F$  @  $I_F = 1.0$  to  $100 \mu A$



**Figure 4. Forward Voltage vs. Forward Current**  
 $V_F$  @  $I_F = 0.1$  to  $10 mA$



**Figure 5. Forward Voltage vs. Forward Current**  
 $V_F$  @  $I_F = 10$  to  $800 mA$



**Figure 6. Total Capacitance vs. Reverse Voltage**

## Typical Performance Characteristics (Continued)

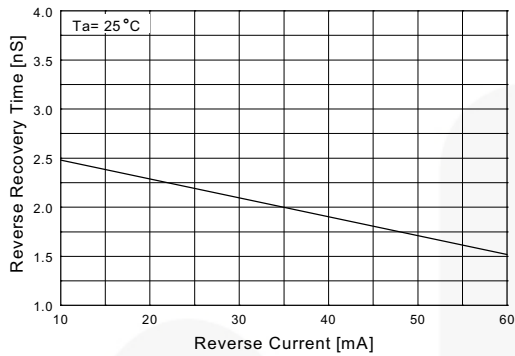


Figure 7. Reverse Recovery Time vs. Reverse Current

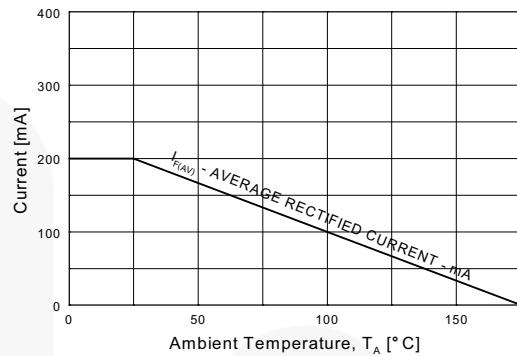


Figure 8. Average Rectified Current ( $I_{F(AV)}$ ) vs. Ambient Temperature ( $T_A$ )

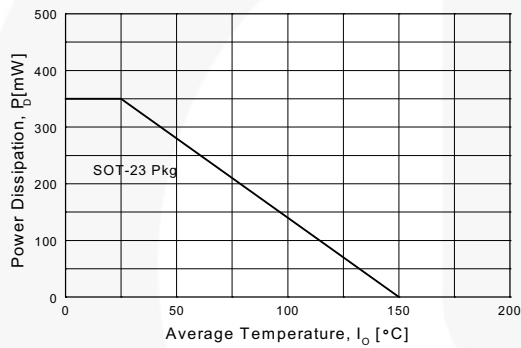
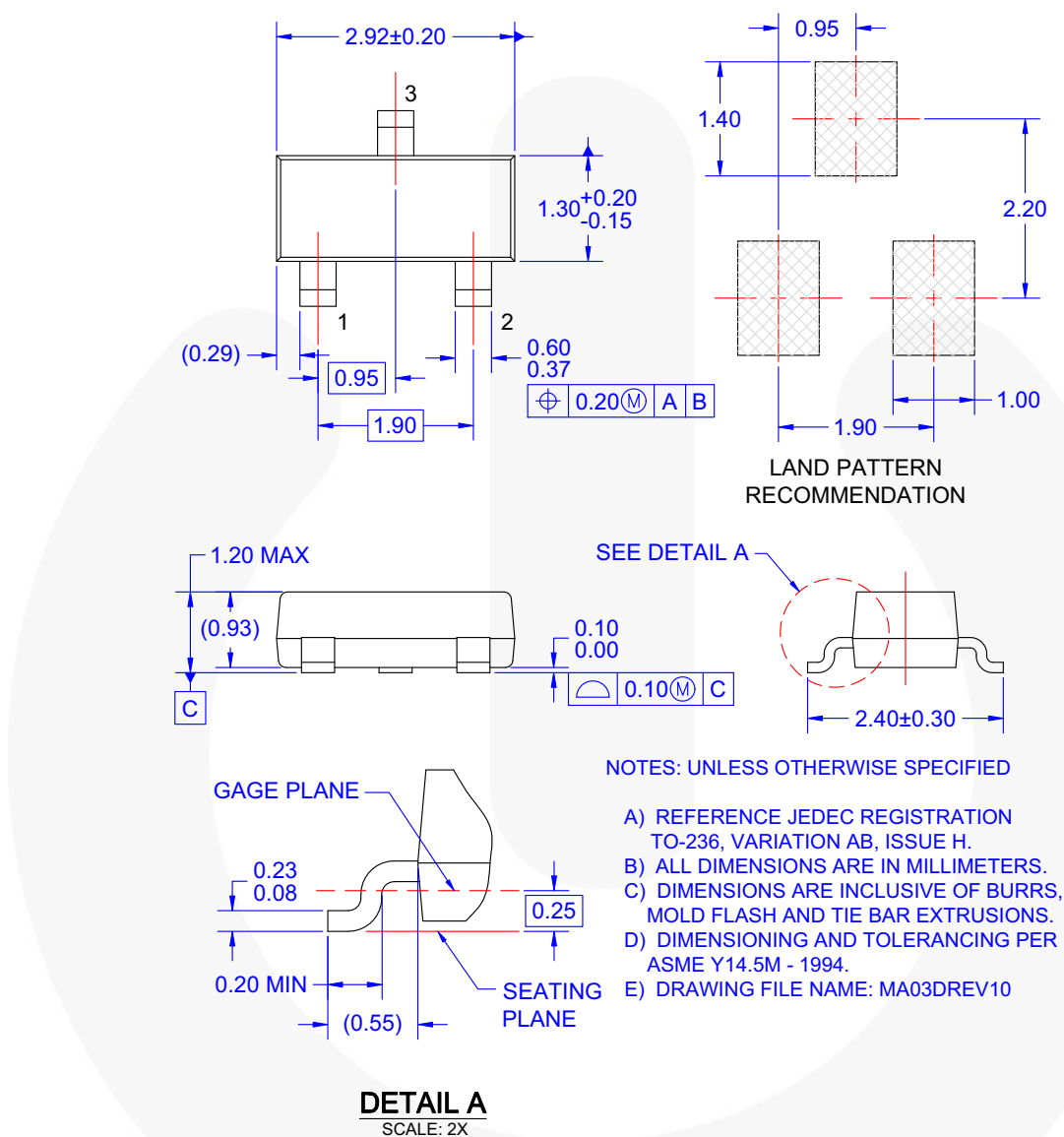


Figure 9. Power Derating Curve

## Physical Dimensions



**Figure 10. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE**





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