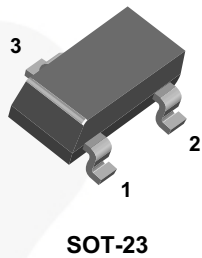


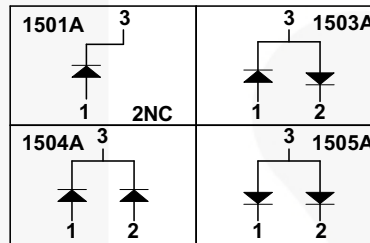


November 2014

# MMBD1501A / MMBD1503A / MMBD1504A / MMBD1505A Small Signal Diodes



Connection Diagrams



## Ordering Information

Part Number	Top Mark	Package	Packing Method
MMBD1501A	A11	SOT-23 3L	Tape and Reel
MMBD1503A	A13	SOT-23 3L	Tape and Reel
MMBD1503A_D87Z	A13	SOT-23 3L	Tape and Reel
MMBD1504A	A14	SOT-23 3L	Tape and Reel
MMBD1505A	A15	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	200	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
		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.

MMBD1501A / MMBD1503A / MMBD1504A / MMBD1505A — 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
$R_{\theta JA}$	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	$I_R = 5.0 \mu\text{A}$	200		V
$V_F$	Forward Voltage	$I_F = 1.0 \text{ mA}$	620	720	mV
		$I_F = 10 \text{ mA}$	720	830	mV
		$I_F = 50 \text{ mA}$	800	890	mV
		$I_F = 100 \text{ mA}$	830	930	mV
		$I_F = 200 \text{ mA}$	0.87	1.10	V
		$I_F = 300 \text{ mA}$	0.90	1.15	V
$I_R$	Reverse Current	$V_R = 125 \text{ V}$		1.0	nA
		$V_R = 125 \text{ V}, T_A = 150^\circ\text{C}$		3.0	$\mu\text{A}$
		$V_R = 180 \text{ V}$		10.0	nA
		$V_R = 180 \text{ V}, T_A = 150^\circ\text{C}$		5.0	$\mu\text{A}$
$C_T$	Total Capacitance	$V_R = 0, f = 1.0 \text{ MHz}$		4.0	pF

### Typical Performance Characteristics

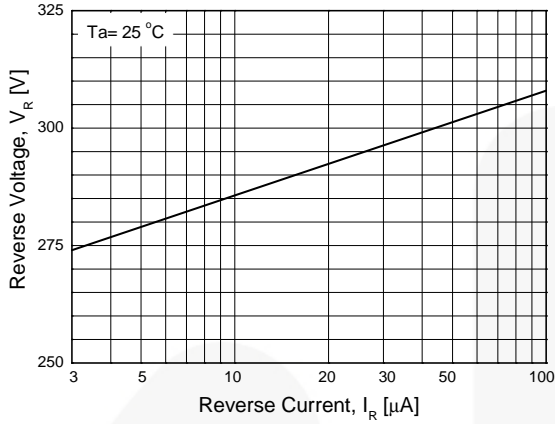


Figure 1. Reverse Voltage vs. Reverse Current  
BV - 3.0 to 100  $\mu$ A

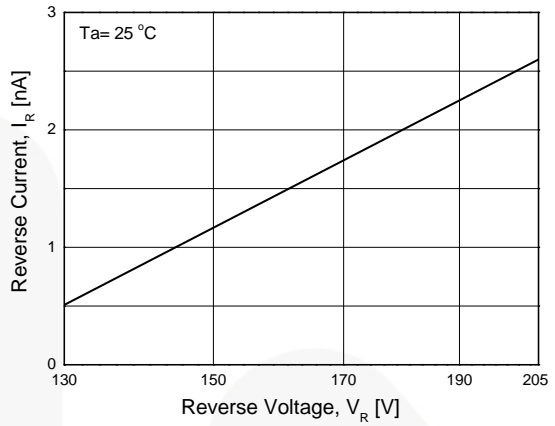


Figure 2. Reverse Current vs. Reverse Voltage  
IR - 130 to 205 V

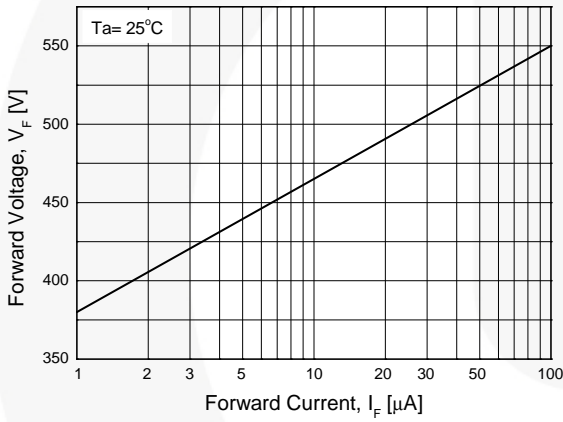


Figure 3. Forward Voltage vs. Forward Current  
VF - 1 to 100  $\mu$ A

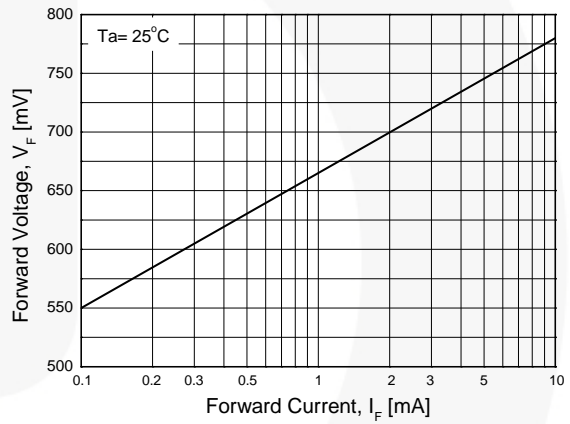


Figure 4. Forward Voltage vs. Forward Current  
VF - 0.1 to 10 mA

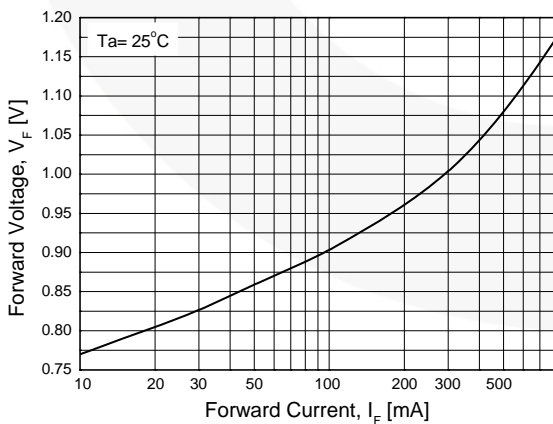


Figure 5. Forward Voltage vs. Forward Current  
VF - 10 to 800 mA

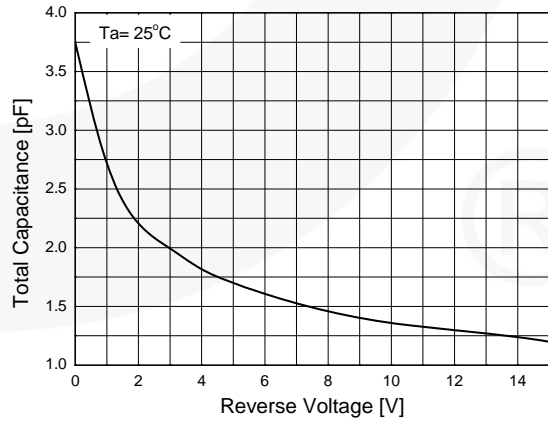


Figure 6. Total Capacitance vs. Reverse Voltage  
VR - 0 to 15 V

Typical Performance Characteristics (Continued)

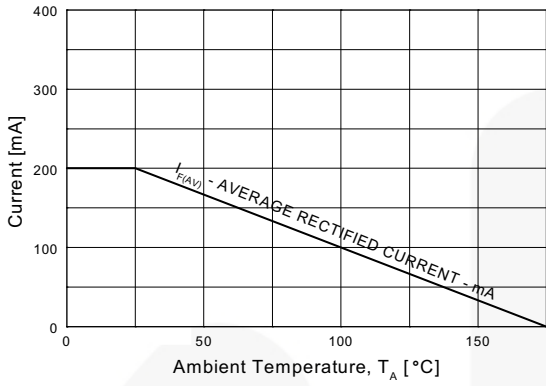


Figure 7. Average Rectified Current ( $I_{F(AV)}$ ) vs. Ambient Temperature ( $T_A$ )

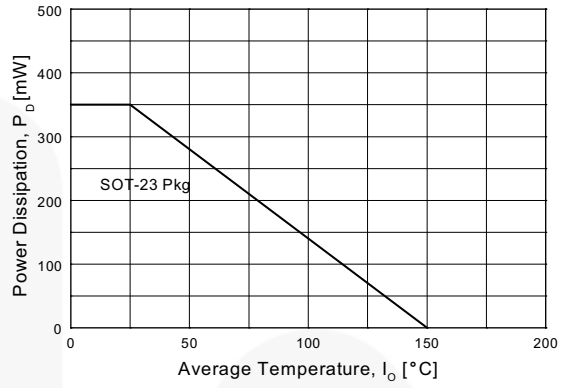
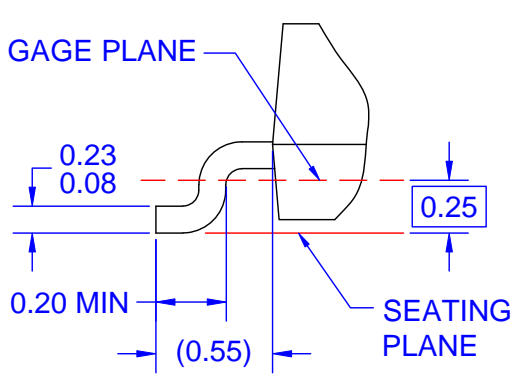
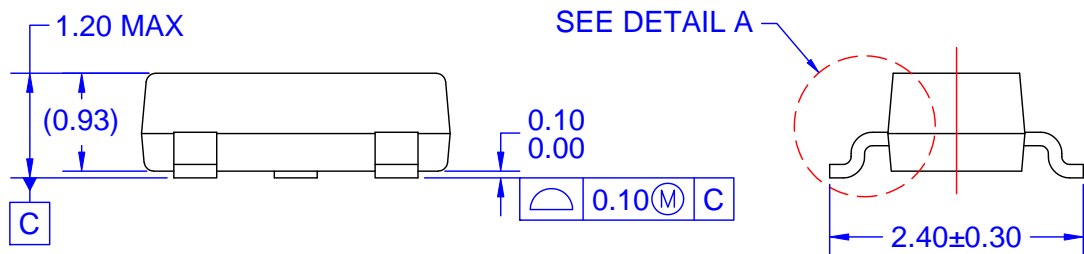
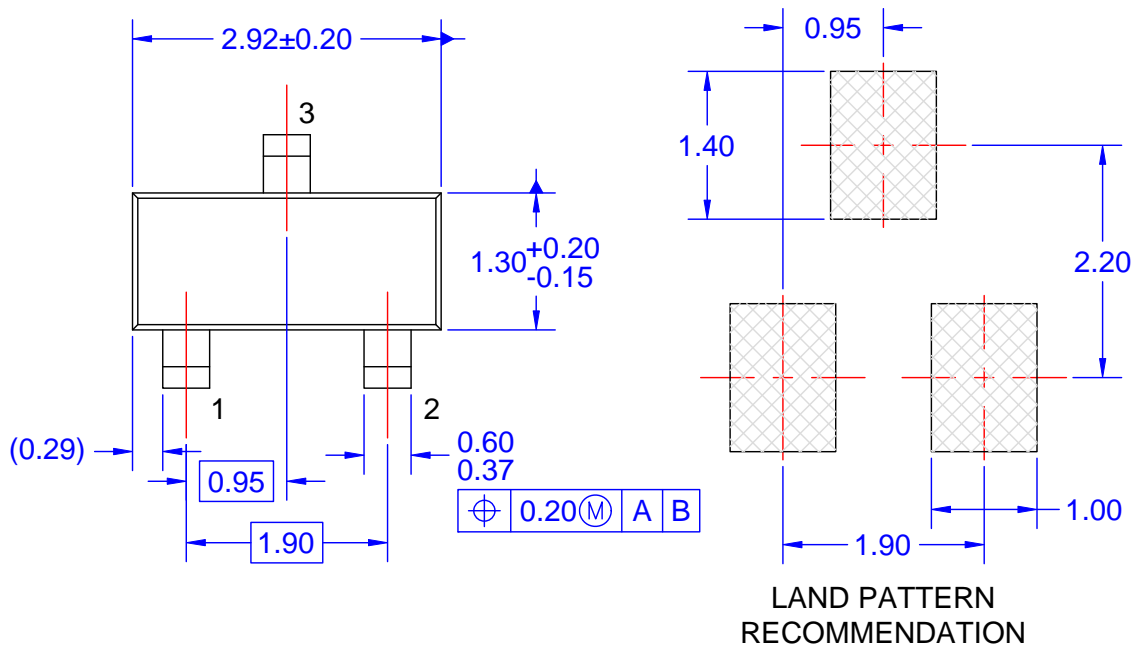


Figure 8. Power Derating Curve





**DETAIL A**  
 SCALE: 2X

- NOTES: UNLESS OTHERWISE SPECIFIED
- A) REFERENCE JEDEC REGISTRATION TO-236, VARIATION AB, ISSUE H.
  - B) ALL DIMENSIONS ARE IN MILLIMETERS.
  - C) DIMENSIONS ARE INCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
  - D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M - 1994.
  - E) DRAWING FILE NAME: MA03DREV10



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