

# Small Signal Diode

## MMBD4148SE, MMBD4148CC, MMBD4148CA

### Features

- These are Pb-Free Devices

### MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Maximum Repetitive Reverse Voltage	V <sub>RRM</sub>	100	V
Average Rectified Forward Current	I <sub>F(AV)</sub>	200	mA
Non-Repetitive Peak Forward Surge Current Pulse Width = 1.0 s Pulse Width = 1.0 μs	I <sub>FSM</sub>	1.0 2.0	A
Operating Junction Temperature Range	T <sub>J</sub>	150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

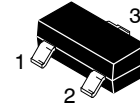
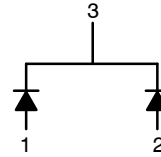
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	350	mW
Thermal Resistance, Junction-to-Ambient	R <sub>θJA</sub>	357	°C/W

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Breakdown Voltage I <sub>R</sub> = 5.0 μA I <sub>R</sub> = 100 μA	V <sub>R</sub>	75 100	- -	- -	V
Forward Voltage I <sub>F</sub> = 10 mA	V <sub>F</sub>	-	-	1.0	V
Reverse Leakage Current V <sub>R</sub> = 20 V V <sub>R</sub> = 20 V, T <sub>A</sub> = 150°C V <sub>R</sub> = 75 V	I <sub>R</sub>	- - -	- - -	25 50 5.0	nA μA μA
Total Capacitance V <sub>R</sub> = 0 V, f = 1.0 MHz	C <sub>T</sub>	-	-	4.0	pF
Reverse Recovery Time I <sub>F</sub> = 10 mA, V <sub>R</sub> = 6.0 V, I <sub>RR</sub> = 1.0 mA, R <sub>L</sub> = 100 Ω	t <sub>rr</sub>	-	-	4.0	ns

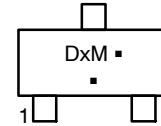
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

### CONNECTION DIAGRAM



SOT-23 (TO-236)  
CASE 318-08

### MARKING DIAGRAM



- Dx = Device Code  
x = 4, 5, 6
- M = Assembly Operation Month
- = Pb-Free Package

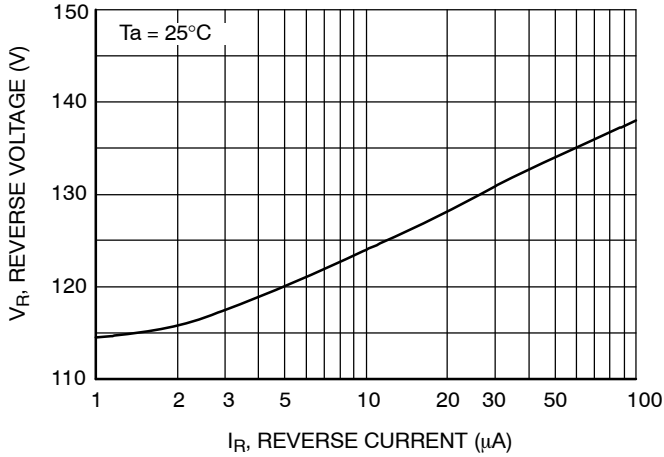
(Note: Microdot may be in either location)

### ORDERING INFORMATION

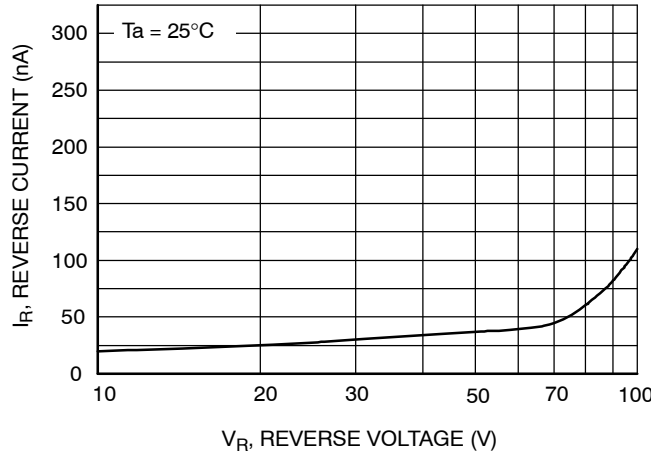
See detailed ordering and shipping information on page 4 of this data sheet.

# MMBD4148SE, MMBD4148CC, MMBD4148CA

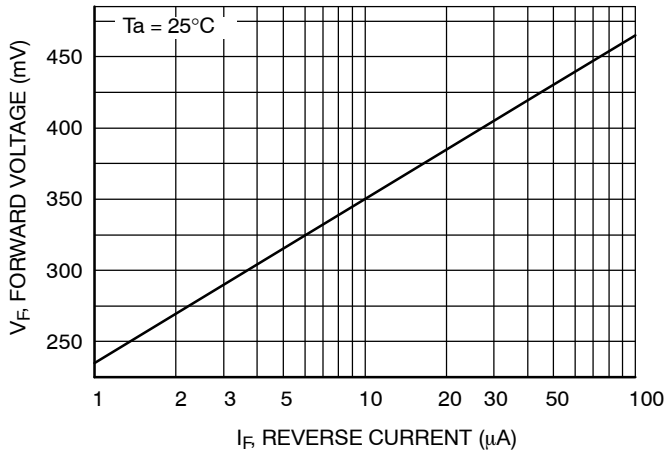
## TYPICAL PERFORMANCE CHARACTERISTICS



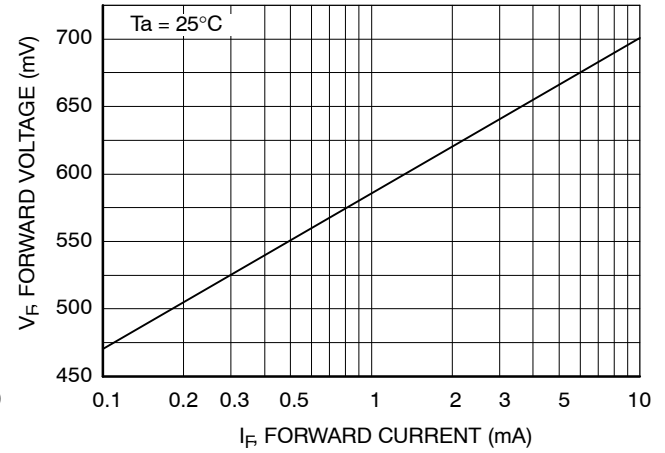
**Figure 1. Reverse Voltage vs. Reverse Current**  
BV – 1.0 to 100  $\mu$ A



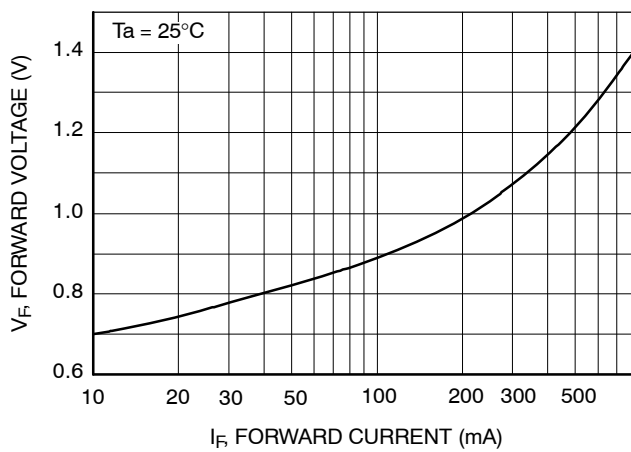
**Figure 2. Reverse Current vs. Reverse Voltage**  
IR – 10 to 100 V



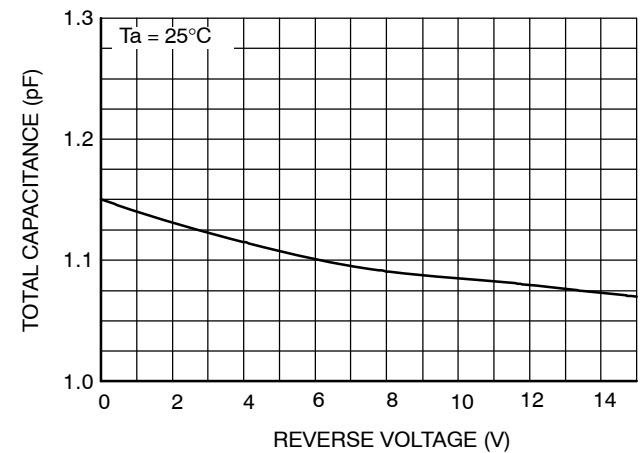
**Figure 3. Forward Voltage vs. Forward Current**  
VF – 1.0 to 100  $\mu$ A



**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**

MMBD4148SE, MMBD4148CC, MMBD4148CA

TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

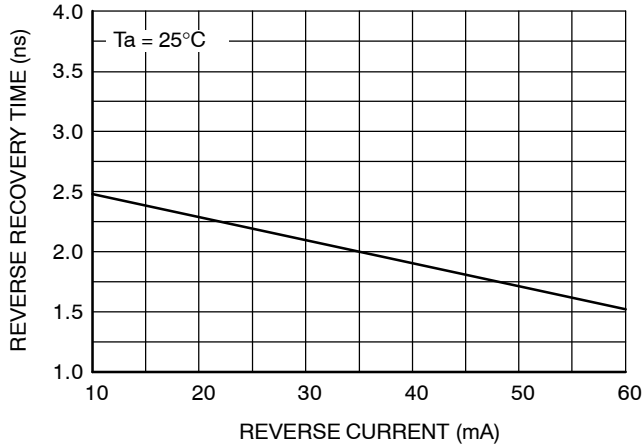


Figure 7. Reverse Recovery Time vs. Reverse Current  
TRR - IR 10 mA to 60 mA

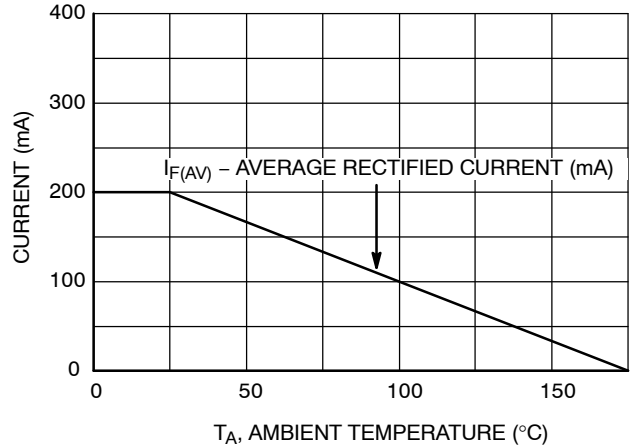


Figure 8. Average Rectified Current ( $I_{F(AV)}$ )  
vs. Ambient Temperature ( $T_A$ )

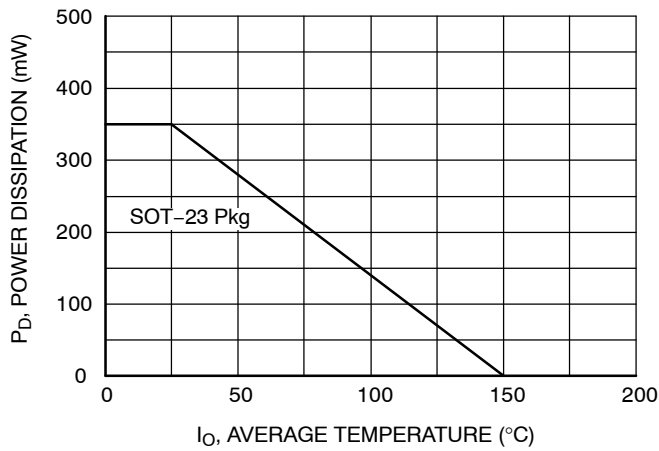


Figure 9. Power Derating Curve

# MMBD4148SE, MMBD4148CC, MMBD4148CA

## ORDERING INFORMATION

Part Number	Top Mark	Package	Shipping†
MMBD4148SE	D4	SOT-23 (Pb-Free)	3,000 / Tape & Reel
MMBD4148CC	D5		3,000 / Tape & Reel
MMBD4148CA	D6		3,000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

ON Semiconductor®



**SOT-23 (TO-236)**  
**CASE 318-08**  
**ISSUE AS**

DATE 30 JAN 2018

SCALE 4:1



**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.039	0.044
A1	0.01	0.06	0.10	0.000	0.002	0.004
b	0.37	0.44	0.50	0.015	0.017	0.020
c	0.08	0.14	0.20	0.003	0.006	0.008
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.080
L	0.30	0.43	0.55	0.012	0.017	0.022
L1	0.35	0.54	0.69	0.014	0.021	0.027
HE	2.10	2.40	2.64	0.083	0.094	0.104
T	0°	---	10°	0°	---	10°

**RECOMMENDED SOLDERING FOOTPRINT**



**GENERIC MARKING DIAGRAM\***



XXX = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present.

- |   |   |   |  |
|---|---|---|--|
| STYLE 1 THRU 5:<br>CANCELLED                                | STYLE 6:<br>PIN 1. BASE<br>2. EMITTER<br>3. COLLECTOR       | STYLE 7:<br>PIN 1. EMITTER<br>2. BASE<br>3. COLLECTOR       | STYLE 8:<br>PIN 1. ANODE<br>2. NO CONNECTION<br>3. CATHODE |
| STYLE 9:<br>PIN 1. ANODE<br>2. ANODE<br>3. CATHODE          | STYLE 10:<br>PIN 1. DRAIN<br>2. SOURCE<br>3. GATE           | STYLE 11:<br>PIN 1. ANODE<br>2. CATHODE<br>3. CATHODE-ANODE | STYLE 12:<br>PIN 1. CATHODE<br>2. CATHODE<br>3. ANODE      |
| STYLE 13:<br>PIN 1. SOURCE<br>2. DRAIN<br>3. GATE           | STYLE 14:<br>PIN 1. CATHODE<br>2. GATE<br>3. ANODE          | STYLE 15:<br>PIN 1. GATE<br>2. CATHODE<br>3. ANODE          | STYLE 16:<br>PIN 1. ANODE<br>2. CATHODE<br>3. CATHODE      |
| STYLE 17:<br>PIN 1. NO CONNECTION<br>2. ANODE<br>3. CATHODE | STYLE 18:<br>PIN 1. NO CONNECTION<br>2. CATHODE<br>3. ANODE | STYLE 19:<br>PIN 1. CATHODE<br>2. ANODE<br>3. CATHODE-ANODE | STYLE 20:<br>PIN 1. CATHODE<br>2. ANODE<br>3. GATE         |
| STYLE 21:<br>PIN 1. GATE<br>2. SOURCE<br>3. DRAIN           | STYLE 22:<br>PIN 1. RETURN<br>2. OUTPUT<br>3. INPUT         | STYLE 23:<br>PIN 1. ANODE<br>2. ANODE<br>3. CATHODE         | STYLE 24:<br>PIN 1. GATE<br>2. DRAIN<br>3. SOURCE          |
| STYLE 25:<br>PIN 1. ANODE<br>2. CATHODE<br>3. GATE          | STYLE 26:<br>PIN 1. CATHODE<br>2. ANODE<br>3. NO CONNECTION | STYLE 27:<br>PIN 1. CATHODE<br>2. CATHODE<br>3. CATHODE     | STYLE 28:<br>PIN 1. ANODE<br>2. ANODE<br>3. ANODE          |

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