

Small Signal Diodes

MMBD1201 - MMBD1205

Features

- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

ABSOLUTE MAXIMUM RATINGS (Note 2, Note 3)

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 s	A
		Pulse Width = 1.0 μs	
T_{STG}	Storage Temperature Range	-55 to + 150	$^\circ\text{C}$
T_J	Operating Junction Temperature	150	$^\circ\text{C}$

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.

- These ratings are based on a maximum junction temperature of 150°C .
- These are steady-state limits. ON Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

THERMAL CHARACTERISTICS

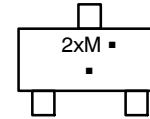
Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

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



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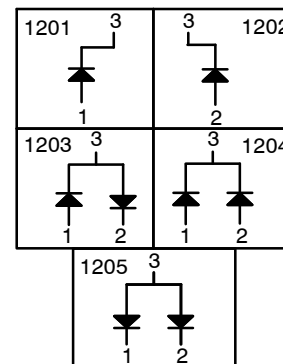
MARKING DIAGRAM



2x = Specific Device Code
x = 4, 5, 6, 7, 8
M = Date Code
▪ = Pb-Free Package

(Note: Microdot may be in either location)

CONNECTION DIAGRAM



ORDERING INFORMATION

Device	Package	Shipping [†]
MMBD1201, MMBD1203, MMBD1204, MMBD1205	SOT-23 (Pb-Free Halide Free)	3000 / Tape & Reel

DISCONTINUED (Note 1)

Device	Package	Shipping [†]
MMBD1202	SOT-23 (Pb-Free Halide Free)	3000 / Tape & Reel

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

- DISCONTINUED:** These devices are not recommended for new design. Please contact your onsemi representative for information. The most current information on these devices may be available on www.onsemi.com.

MMBD1201 – MMBD1205

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	μA
C_T	Total Capacitance	$V_R = 0\ \text{V}, f = 1.0\ \text{MHz}$	–	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

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.

TYPICAL PERFORMANCE CHARACTERISTICS

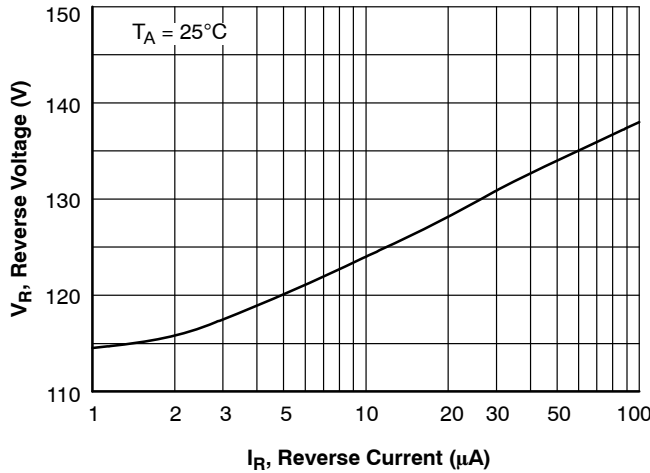


Figure 1. Reverse Voltage vs. Reverse Current
 V_R @ $I_R = 1.0$ to $100\ \mu\text{A}$

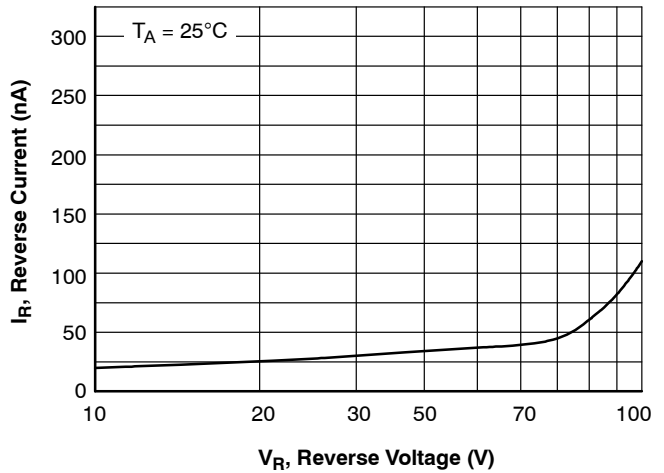


Figure 2. Reverse Current vs. Reverse Voltage
 I_R @ $V_R = 10$ to $100\ \text{V}$

TYPICAL PERFORMANCE CHARACTERISTICS (continued)

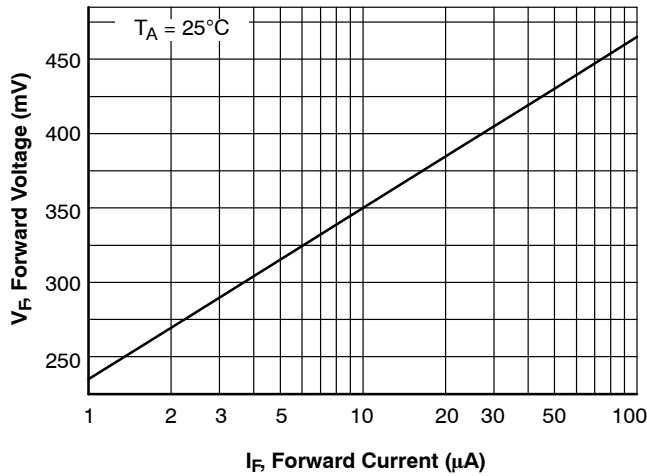


Figure 3. Forward Voltage vs. Forward Current
 V_F @ $I_F = 1.0$ to $100 \mu A$

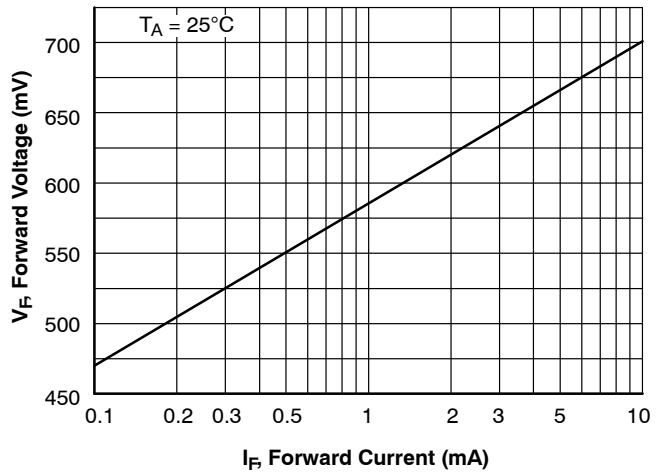


Figure 4. Forward Voltage vs. Forward Current
 V_F @ $I_F = 0.1$ to $10 mA$

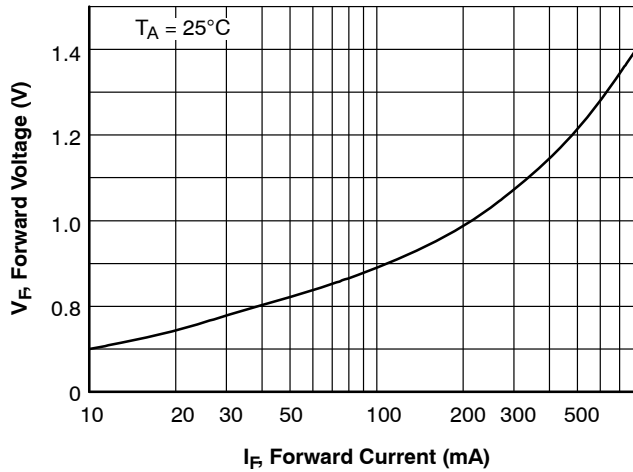


Figure 5. Forward Voltage vs. Forward Current
 V_F @ $I_F = 10$ to $800 mA$

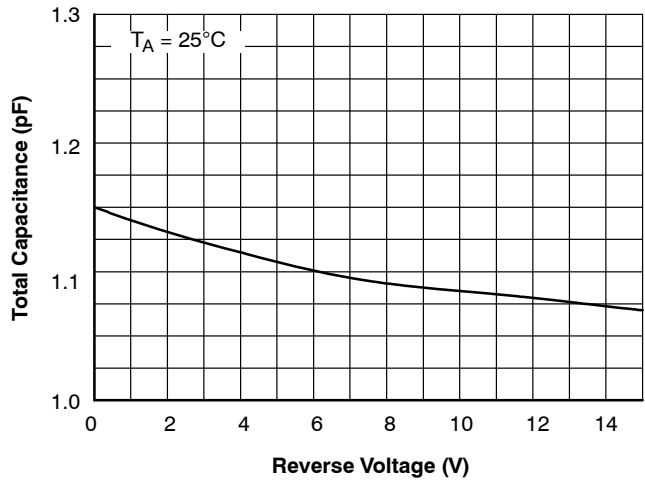


Figure 6. Total Capacitance vs. Reverse Voltage

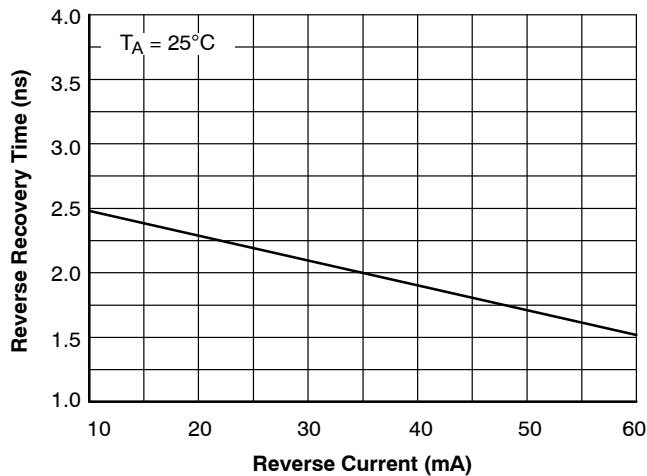


Figure 7. Reverse Recovery Time vs. Reverse Current

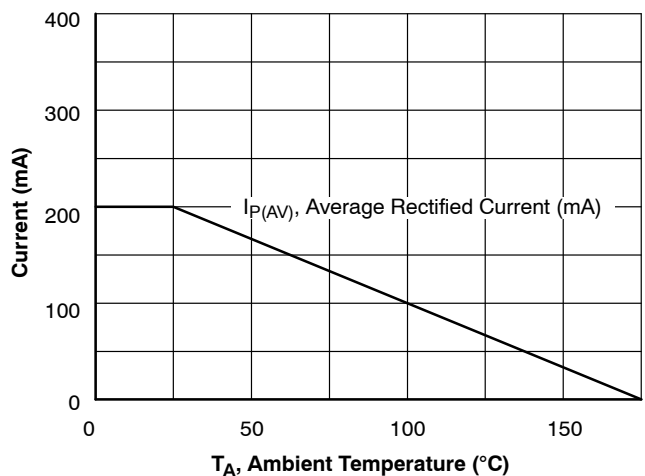


Figure 8. Average Rectified Current ($I_{F(AV)}$) vs. Ambient Temperature (T_A)

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TYPICAL PERFORMANCE CHARACTERISTICS (continued)

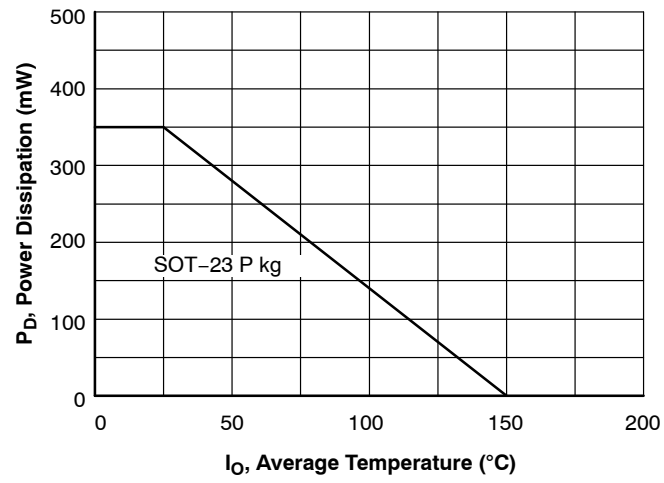


Figure 9. Power Derating Curve



SCALE 4:1

SOT-23 (TO-236) 2.90x1.30x1.00 1.90P
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DATE 14 AUG 2024



MILLIMETERS			
DIM	MIN	NOM	MAX
A	0.89	1.00	1.11
A1	0.01	0.06	0.10
b	0.37	0.44	0.50
c	0.08	0.14	0.20
D	2.80	2.90	3.04
E	1.20	1.30	1.40
e	1.78	1.90	2.04
L	0.30	0.43	0.55
L1	0.35	0.54	0.69
HE	2.10	2.40	2.64
T	0°	---	10°

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSIONS: 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.

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. Some products may not follow the Generic Marking.



RECOMMENDED
MOUNTING FOOTPRINT

* For additional information on our Pb-Free strategy and soldering details, please download the onsemi Soldering and Mounting Techniques Reference Manual, SOLDERM/D.

STYLES ON PAGE 2

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

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