MMBD301M3

Silicon Hot-Carrier Diode

SCHOTTKY Barrier Diode

The MMBD301M3T5G device is a spin−off of our popular SOT−23 three−leaded device. It is designed primarily for high−efficiency UHF and VHF detector applications. It is readily adaptable to many other fast switching RF and digital applications and is housed in the SOT−723 surface mount package. This device is ideal for low−power surface mount applications where board space is at a premium.

Features

- Extremely Low Minority Carrier Lifetime − 15 ps (Typ)
- Very Low Capacitance − 1.5 pF (Max) @ V_R = 15 V
- Reduces Board Space
- These Devices are Pb−Free and Halogen Free/BFR Free

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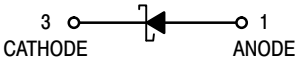
30 VOLTS
SILICON HOT−CARRIER DETECTOR AND SWITCHING DIODES



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	30	V
Forward Current (DC)	I_F	200 (Max)	mA
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_F	200 2.0	mW mW/°C
Operating Junction Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	T_{stg}	−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.

MARKING DIAGRAM

SOT−723
CASE 631AA
STYLE 2

AK = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
MMBD301M3T5G	SOT−723 (Pb−Free)	8000/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.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage (I_R = 10 μA)	$V_{(BR)R}$	30	–	–	V
Total Capacitance (V_R = 15 V, f = 1.0 MHz) Figure 1	C_T	–	0.9	1.5	pF
Reverse Leakage (V_R = 25 V) Figure 3	I_R	–	13	200	nAdc
Forward Voltage (I_F = 1.0 mAdc) Figure 4	V_F	–	0.38	0.45	Vdc
Forward Voltage (I_F = 10 mAdc) Figure 4	V_F	–	0.52	0.6	Vdc

TYPICAL ELECTRICAL CHARACTERISTICS

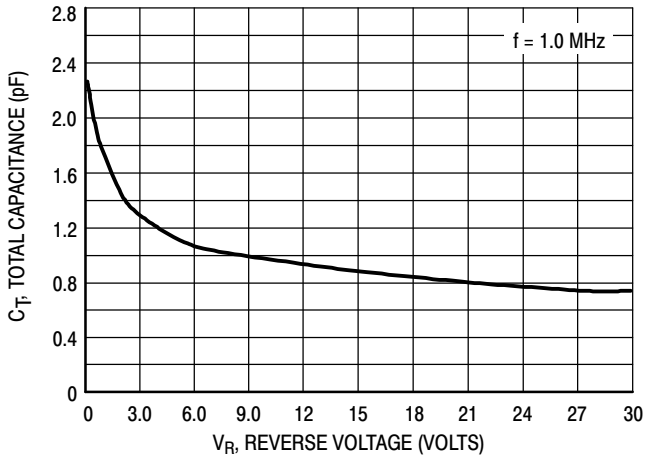


Figure 1. Total Capacitance

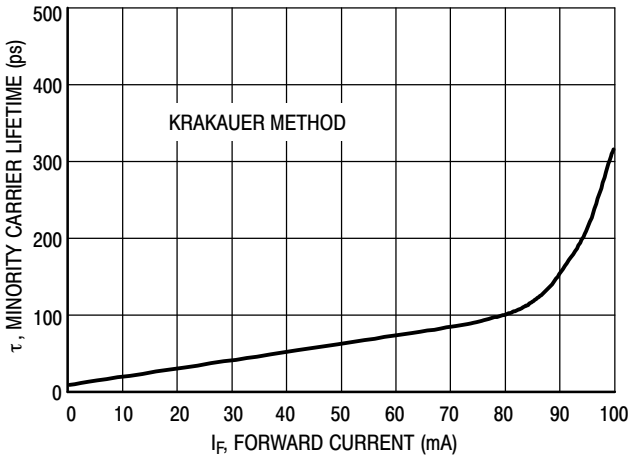


Figure 2. Minority Carrier Lifetime

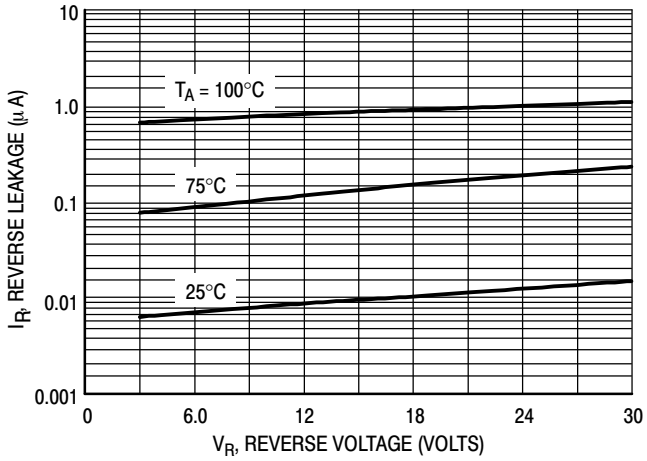


Figure 3. Reverse Leakage

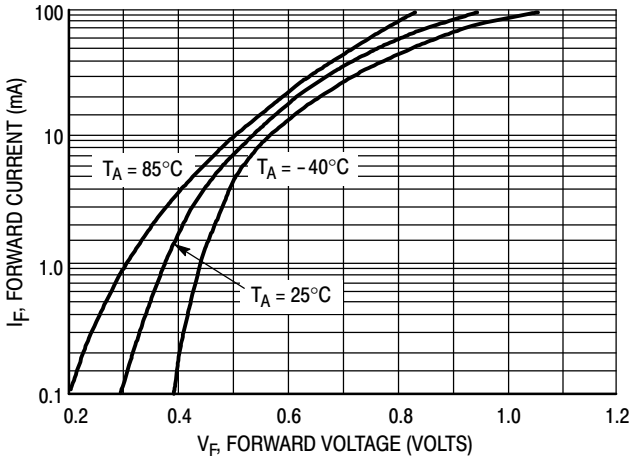


Figure 4. Forward Voltage

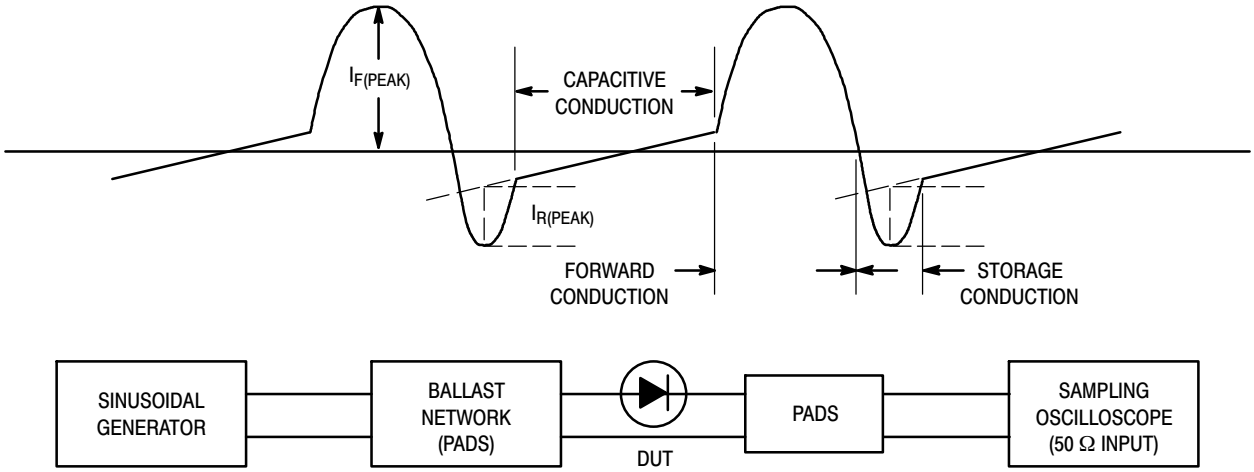


Figure 5. Krakauer Method of Measuring Lifetime

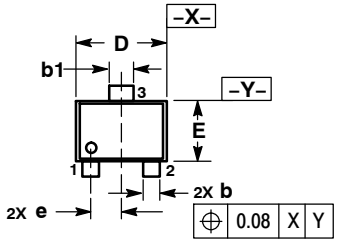
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

ON Semiconductor®

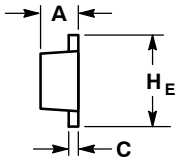
SOT−723
CASE 631AA−01
ISSUE D

DATE 10 AUG 2009

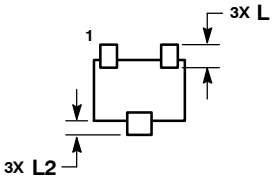
SCALE 4:1



TOP VIEW



SIDE VIEW



BOTTOM VIEW

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 BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

	MILLIMETERS		
DIM	MIN	NOM	MAX
A	0.45	0.50	0.55
b	0.15	0.21	0.27
b1	0.25	0.31	0.37
C	0.07	0.12	0.17
D	1.15	1.20	1.25
E	0.75	0.80	0.85
e	0.40 BSC		
H E	1.15	1.20	1.25
L	0.29 REF		
L2	0.15	0.20	0.25

STYLE 1:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

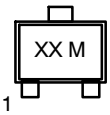
STYLE 2:
PIN 1. ANODE
2. N/C
3. CATHODE

STYLE 3:
PIN 1. ANODE
2. ANODE
3. CATHODE

STYLE 4:
PIN 1. CATHODE
2. CATHODE
3. ANODE

STYLE 5:
PIN 1. GATE
2. SOURCE
3. DRAIN

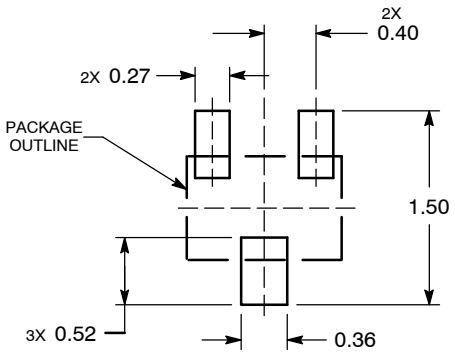
GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Date Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G”, may or not be present.

RECOMMENDED SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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STATUS:	ON SEMICONDUCTOR STANDARD	
NEW STANDARD:		
DESCRIPTION:	SOT−723	PAGE 1 OF 2

ISSUE	REVISION	DATE
O	RELEASED FOR PRODUCTION. REQ. BY D. TRUHITTE.	07 AUG 2003
A	CHANGED DIMS A, b, b1, C, AND D. REQ. BY D. TRUHITTE.	11 NOV 2003
B	CHANGED DIMS b AND b1. REQ. BY D. TRUHITTE.	15 MAR 2004
C	ADDED STYLE 5. REQ. BY S. WINSTON.	01 AUG 2006
D	ADDED BOTTOM VIEW. CHANGED DIMENSION L TO L2. ADDED NEW L DIMENSION. UPDATED SOLDER FOOTPRINT. REQ. BY D. TRUHITTE.	10 AUG 2009

PUBLICATION ORDERING INFORMATION

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