

MMBD301M3T5G

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

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	30	V
Forward Current (DC)	I_F	200 (Max)	mA
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_F	200 2.0	mW mW/ $^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 to $+125$	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to $+150$	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

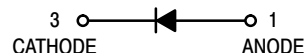
Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage ($I_R = 10 \mu\text{A}$)	$V_{(BR)R}$	30	–	–	V
Total Capacitance ($V_R = 15$ V, $f = 1.0$ MHz) Figure 1	C_T	–	0.9	1.5	pF
Reverse Leakage ($V_R = 25$ V) Figure 3	I_R	–	13	200	nAdc
Forward Voltage ($I_F = 1.0$ mAdc) Figure 4	V_F	–	0.38	0.45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



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30 VOLTS SILICON HOT-CARRIER DETECTOR AND SWITCHING DIODES



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.

TYPICAL ELECTRICAL CHARACTERISTICS

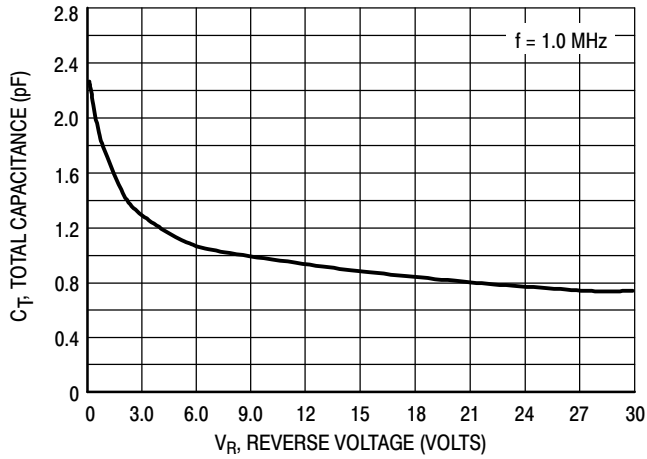


Figure 1. Total Capacitance

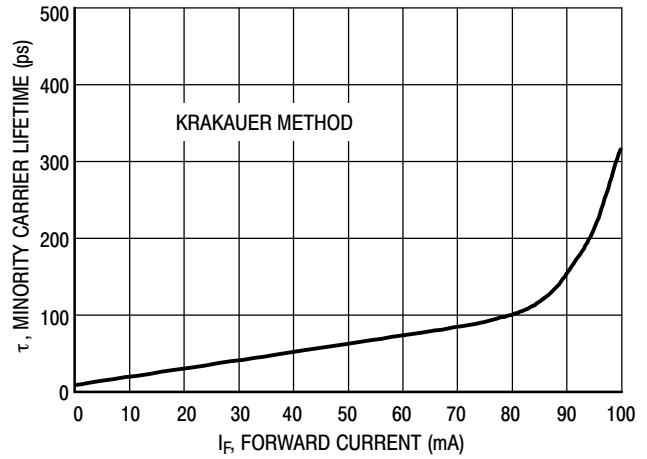


Figure 2. Minority Carrier Lifetime

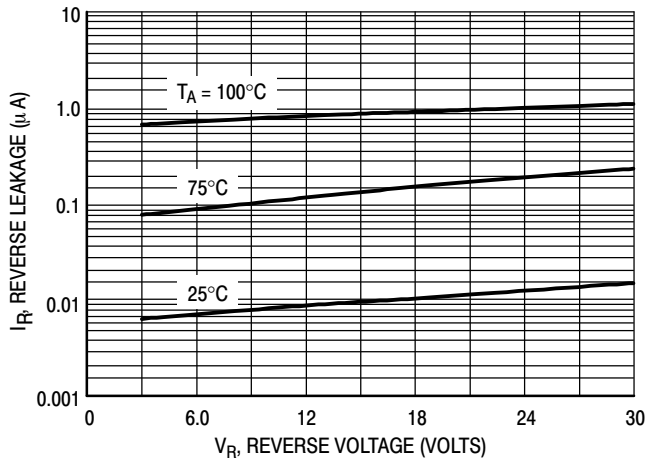


Figure 3. Reverse Leakage

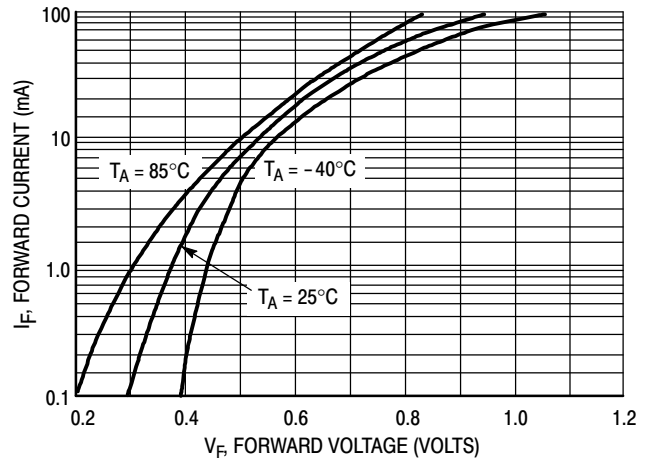


Figure 4. Forward Voltage

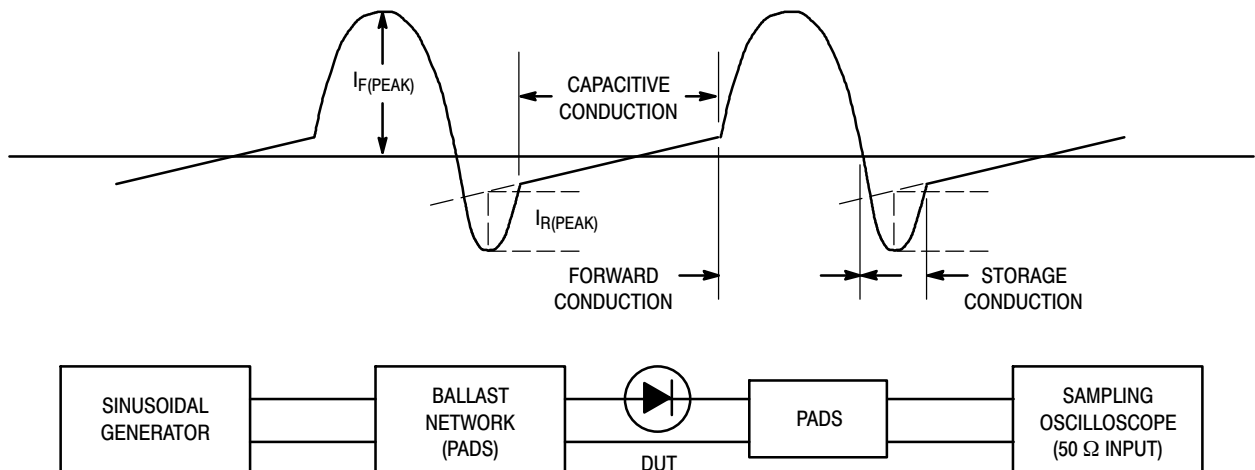
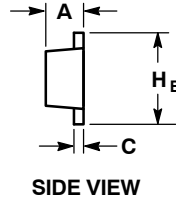
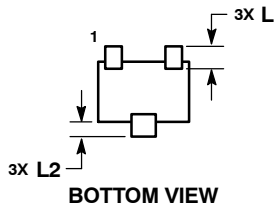
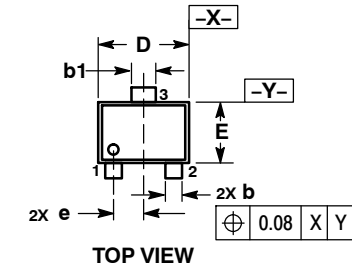


Figure 5. Krakauer Method of Measuring Lifetime

MMBD301M3T5G

PACKAGE DIMENSIONS

SOT-723
CASE 631AA
ISSUE D



NOTES:

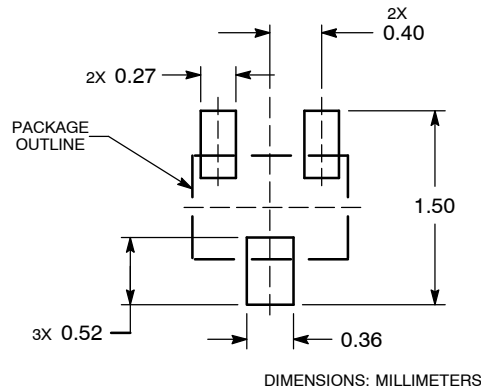
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

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 2:


- PIN 1. ANODE
- N/C
- CATHODE

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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