

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) @ $V_R = 15\text{ V}$
- Reduces Board Space
- This is a Halide-Free Device
- This is a Pb-Free Device

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|-----------|-------------|----------------------------|
| Reverse Voltage | V_R | 30 | V |
| 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)

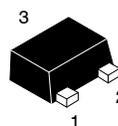
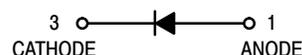
| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|-------------|-----|------|------|------|
| Reverse Breakdown Voltage ($I_R = 10\ \mu\text{A}$) | $V_{(BR)R}$ | 30 | – | – | V |
| Total Capacitance ($V_R = 15\text{ V}$, $f = 1.0\text{ MHz}$) Figure 1 | C_T | – | 0.9 | 1.5 | pF |
| Reverse Leakage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



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30 VOLTS SILICON HOT-CARRIER DETECTOR AND SWITCHING DIODES



SOT-723
CASE 631AA
STYLE 2

MARKING DIAGRAM



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.

MMBD301M3T5G

TYPICAL ELECTRICAL CHARACTERISTICS

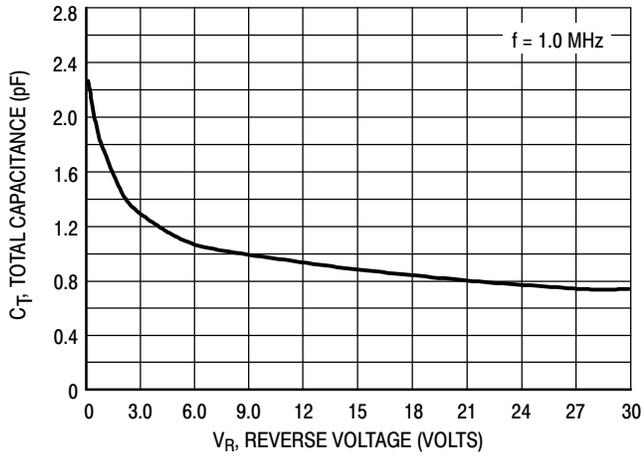


Figure 1. Total Capacitance

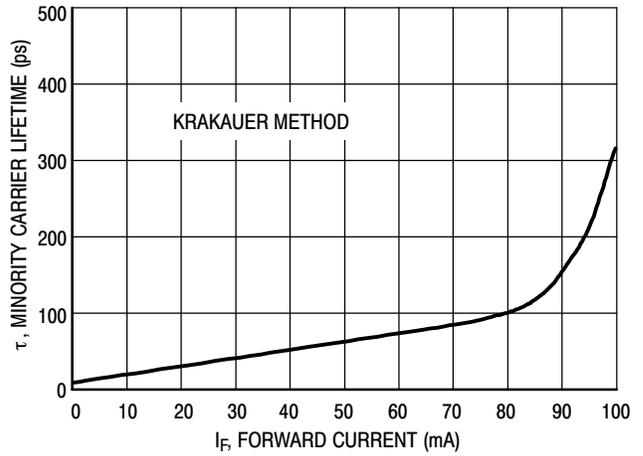


Figure 2. Minority Carrier Lifetime

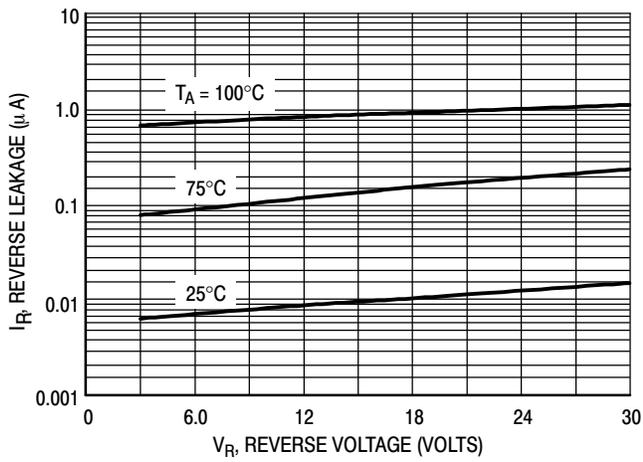


Figure 3. Reverse Leakage

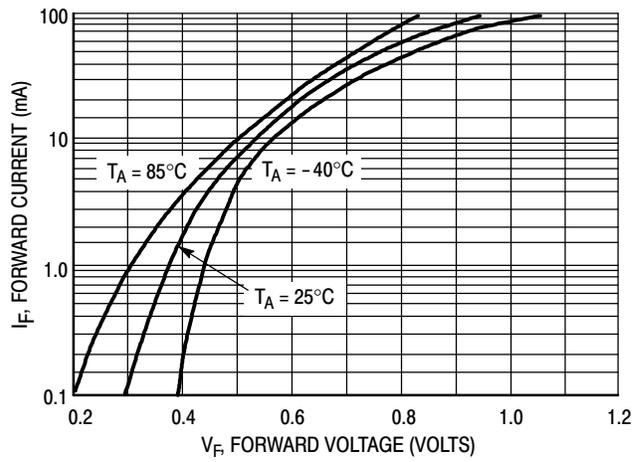


Figure 4. Forward Voltage

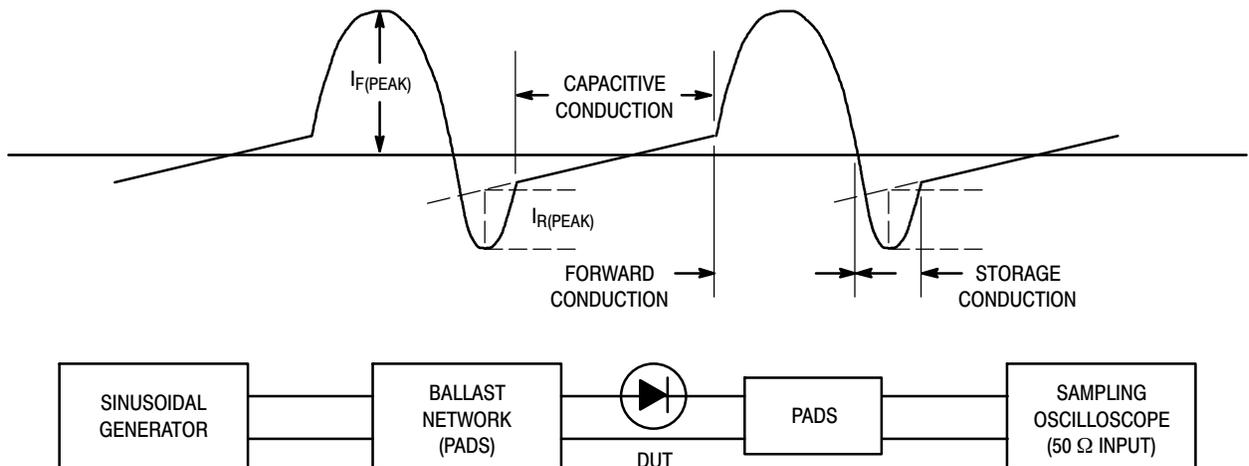
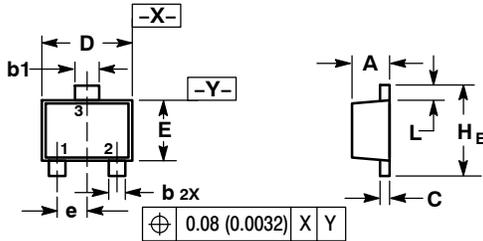


Figure 5. Krakauer Method of Measuring Lifetime

MMBD301M3T5G

PACKAGE DIMENSIONS

SOT-723
CASE 631AA-01
ISSUE C



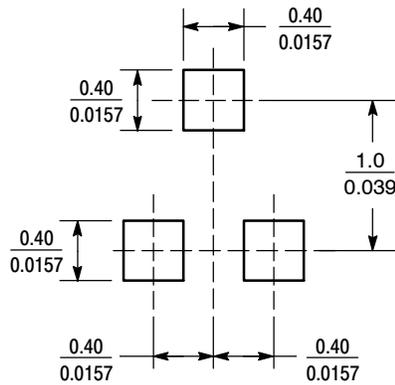
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
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.

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|-----------|--------|--------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.45 | 0.50 | 0.55 | 0.018 | 0.020 | 0.022 |
| b | 0.15 | 0.21 | 0.27 | 0.0059 | 0.0083 | 0.0106 |
| b1 | 0.25 | 0.31 | 0.37 | 0.010 | 0.012 | 0.015 |
| C | 0.07 | 0.12 | 0.17 | 0.0028 | 0.0047 | 0.0067 |
| D | 1.15 | 1.20 | 1.25 | 0.045 | 0.047 | 0.049 |
| E | 0.75 | 0.80 | 0.85 | 0.03 | 0.032 | 0.034 |
| e | 0.40 BSC | | | 0.016 BSC | | |
| H E | 1.15 | 1.20 | 1.25 | 0.045 | 0.047 | 0.049 |
| L | 0.15 | 0.20 | 0.25 | 0.0059 | 0.0079 | 0.0098 |

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

SOLDERING FOOTPRINT*



SCALE 20:1 (mm/inches)

*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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- Техническая поддержка проекта;
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Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.