# **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 <sub>R</sub>	30	V
Total Device Dissipation @ T <sub>A</sub> = 25°C Derate above 25°C	P <sub>F</sub>	200 2.0	mW mW/°C
Operating Junction Temperature Range	TJ	-55 to +125	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°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.



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# 30 VOLTS SILICON HOT-CARRIER DETECTOR AND SWITCHING DIODES







SOT-723 CASE 631AA STYLE 2



AK M = Specific Device Code

= Date Code

#### **ORDERING INFORMATION**

Device	Package	Shipping <sup>†</sup>
MMBD301M3T5G	SOT-723 (Pb-Free)	8000/Tape & Reel

<sup>†</sup>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<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Тур	Max	Unit
Reverse Breakdown Voltage (I <sub>R</sub> = 10 μA)	V <sub>(BR)R</sub>	30	-	-	V
Total Capacitance (V <sub>R</sub> = 15 V, f = 1.0 MHz) Figure 1	C <sub>T</sub>	-	0.9	1.5	pF
Reverse Leakage (V <sub>R</sub> = 25 V) Figure 3	I <sub>R</sub>	-	13	200	nAdc
Forward Voltage (I <sub>F</sub> = 1.0 mAdc) Figure 4	V <sub>F</sub>	-	0.38	0.45	Vdc
Forward Voltage (I <sub>F</sub> = 10 mAdc) Figure 4	V <sub>F</sub>	-	0.52	0.6	Vdc

#### MMBD301M3T5G

# TYPICAL ELECTRICAL CHARACTERISTICS

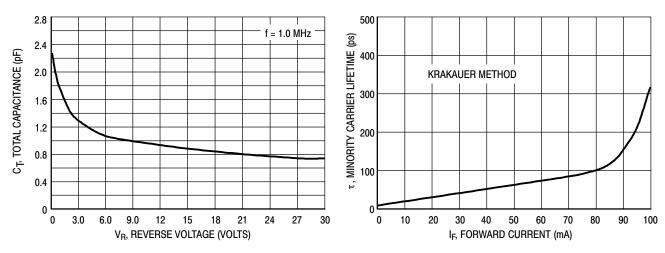


Figure 1. Total Capacitance

Figure 2. Minority Carrier Lifetime

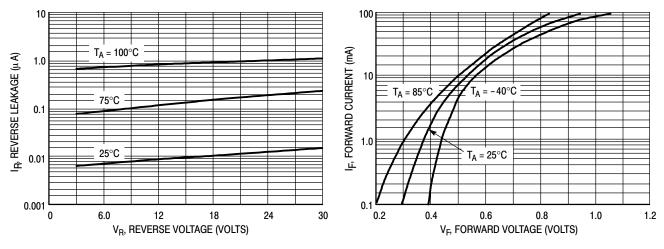


Figure 3. Reverse Leakage

Figure 4. Forward Voltage

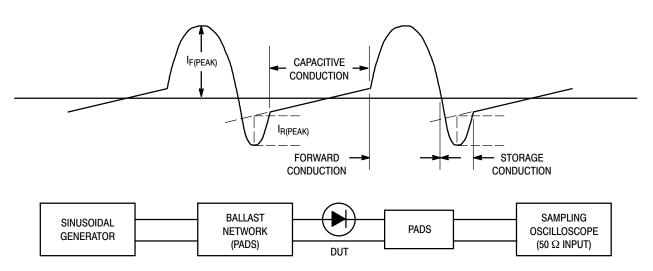
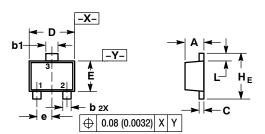


Figure 5. Krakauer Method of Measuring Lifetime

#### MMBD301M3T5G

#### PACKAGE DIMENSIONS

SOT-723 CASE 631AA-01 **ISSUE C** 



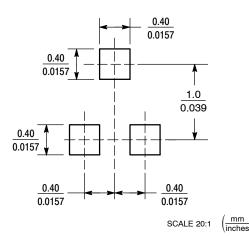
STYLE 2: PIN 1. ANODE 2. N/C 3. CATHODE

#### NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ANSI
- Y14.5M, 1982.
  CONTROLLING DIMENSION: MILLIMETERS.
  MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
- DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS

	MII	LLIMETE	RS	INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
Α	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
С	0.07	0.12	0.17	0.0028	0.0047	0.0067
ם	1.15	1.20	1.25	0.045	0.047	0.049
Е	0.75	0.80	0.85	0.03	0.032	0.034
е	0.40 BSC			0.016 BSC		
ΗE	1.15	1.20	1.25	0.045	0.047	0.049
Ī	0.15	0.20	0.25	0.0059	0.0079	0.0098

#### SOLDERING FOOTPRINT\*



\*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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Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001 Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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