

# SOD-123 Schottky Barrier Diodes

## MMSD301T1G, SMMSD301T1G, MMSD701T1G, SMMSD701T1G,

The MMSD301T1, and MMSD701T1 devices are spin-offs of our popular MMBD301LT1, and MMBD701LT1 SOT-23 devices. They are designed for high-efficiency UHF and VHF detector applications. Readily available to many other fast switching RF and digital applications.

### Features

- Extremely Low Minority Carrier Lifetime
- Very Low Capacitance
- Low Reverse Leakage
- AEC Qualified and PPAP Capable
- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant\*

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage MMSD301T1G, SMMSD301T1G MMSD701T1G, SMMSD701T1G	$V_R$	30 70	Vdc
Forward Current (DC) Continuous	$I_F$	200	mA
Forward Power Dissipation $T_A = 25^\circ\text{C}$	$P_F$	225	mW
Junction Temperature	$T_J$	-55 to +125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +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.

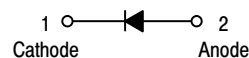


ON Semiconductor®

[www.onsemi.com](http://www.onsemi.com)



SOD-123  
CASE 425  
STYLE 1



### MARKING DIAGRAM



- xx = Specific Device Code  
 XT = MMSD301T1G  
 SMMSD301T1G  
 XH = MMSD701T1G  
 SMMSD701T1G  
 M = Date Code  
 ■ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
MMSD301T1G	SOD-123 (Pb-Free)	3,000 / Tape & Reel
SMMSD301T1G	SOD-123 (Pb-Free)	3,000 / Tape & Reel
MMSD701T1G	SOD-123 (Pb-Free)	3,000 / Tape & Reel
SMMSD701T1G	SOD-123 (Pb-Free)	3,000 / 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.

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

# MMSD301T1G, SMMSD301T1G, MMSD701T1G, SMMSD701T1G,

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage (I <sub>R</sub> = 10 μA) MMSD301T1G, SMMSD301T1G MMSD701T1G, SMMSD701T1G	V <sub>(BR)R</sub>	30 70	- -	- -	V
Diode Capacitance (V <sub>R</sub> = 0 V, f = 1.0 MHz) MMSD301T1G, SMMSD301T1G MMSD701T1G, SMMSD701T1G	C <sub>T</sub>	- -	0.9 0.5	1.5 1.0	pF
Total Capacitance (V <sub>R</sub> = 15 V, f = 1.0 MHz) MMSD301T1G, SMMSD301T1G (V <sub>R</sub> = 20 V, f = 1.0 MHz) MMSD701T1G, SMMSD701T1G	C <sub>T</sub>	- -	0.9 0.5	1.5 1.0	pF
Reverse Leakage (V <sub>R</sub> = 25 V) MMSD301T1G, SMMSD301T1G (V <sub>R</sub> = 35 V) MMSD701T1G, SMMSD701T1G	I <sub>R</sub>	- -	13 9.0	200 200	nAdc
Forward Voltage (I <sub>F</sub> = 1.0 mAdc) MMSD301T1G, SMMSD301T1G (I <sub>F</sub> = 10 mA) (I <sub>F</sub> = 1.0 mAdc) MMSD701T1G, SMMSD701T1G (I <sub>F</sub> = 10 mA)	V <sub>F</sub>	- - - -	0.38 0.52 0.42 0.7	0.45 0.6 0.5 1.0	Vdc

MMSD301T1G, SMMSD301T1G, MMSD701T1G, SMMSD701T1G,

TYPICAL CHARACTERISTICS  
MMSD301T1G, SMMSD301T1G

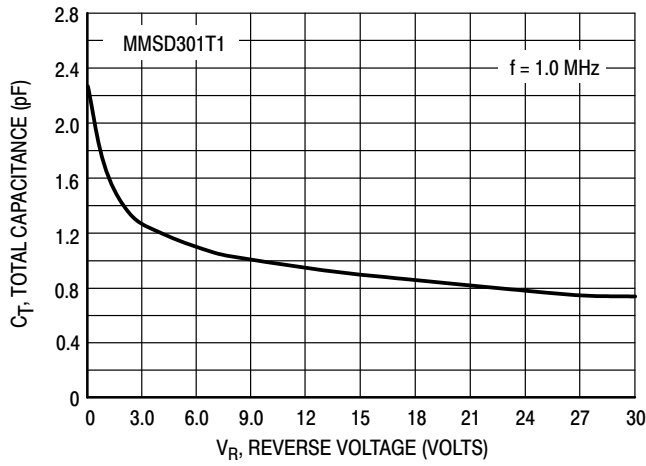


Figure 1. Total Capacitance

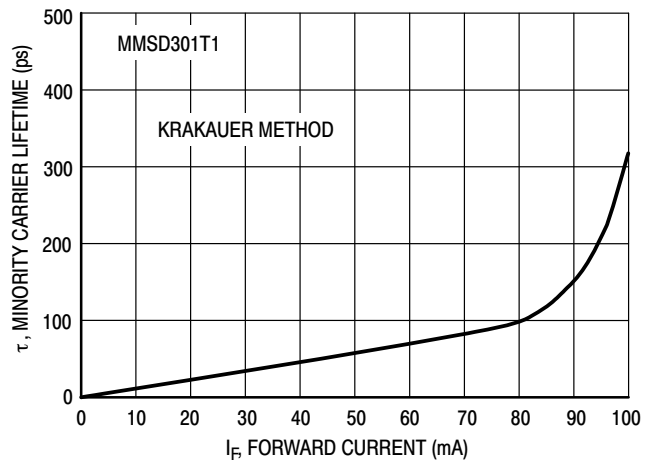


Figure 2. Minority Carrier Lifetime

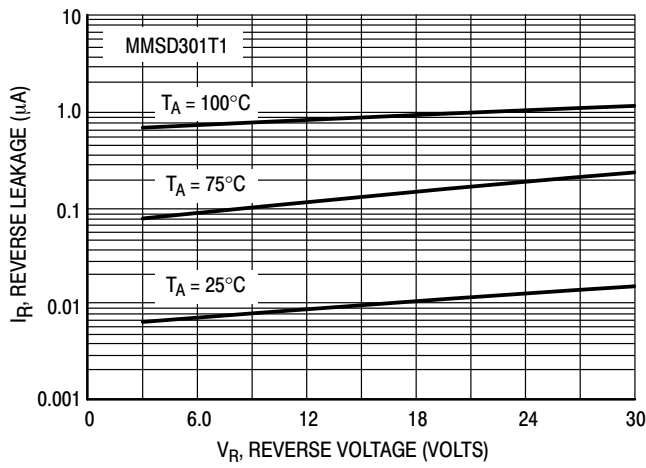


Figure 3. Reverse Leakage

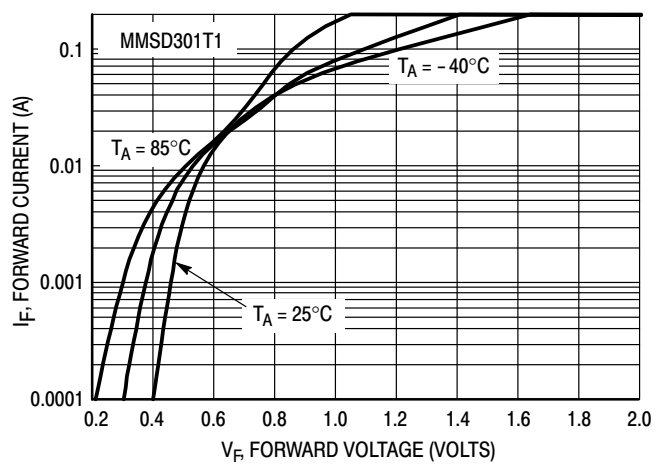
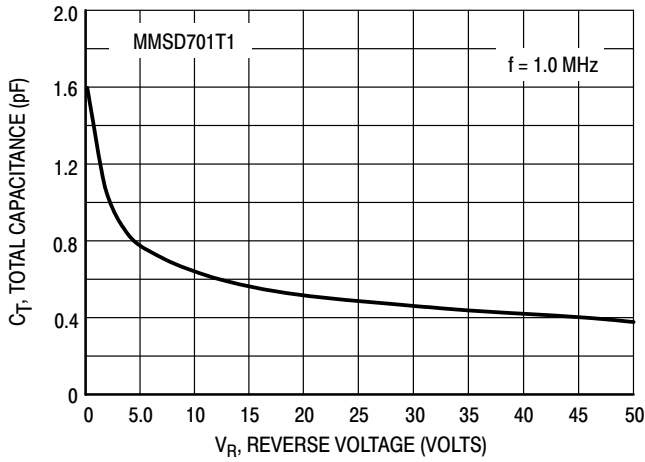


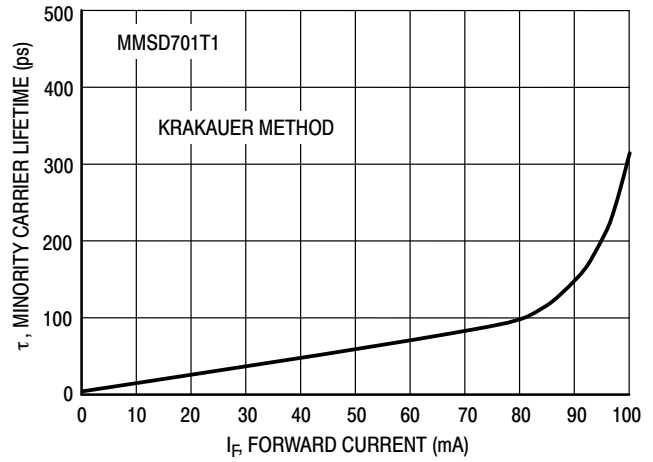
Figure 4. Forward Voltage

**MMSD301T1G, SMMSD301T1G, MMSD701T1G, SMMSD701T1G,**

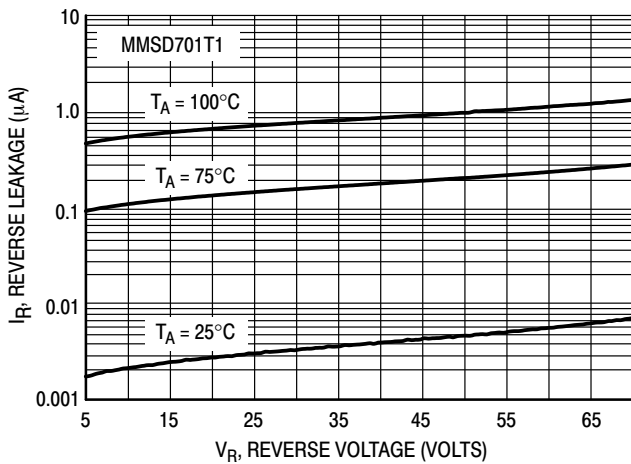
**TYPICAL CHARACTERISTICS  
MMSD701T1G, SMMSD701T1G**



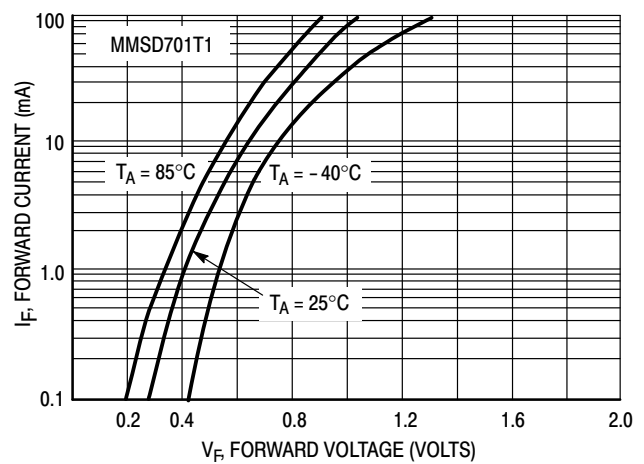
**Figure 5. Total Capacitance**



**Figure 6. Minority Carrier Lifetime**



**Figure 7. Reverse Leakage**



**Figure 8. Forward Voltage**

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

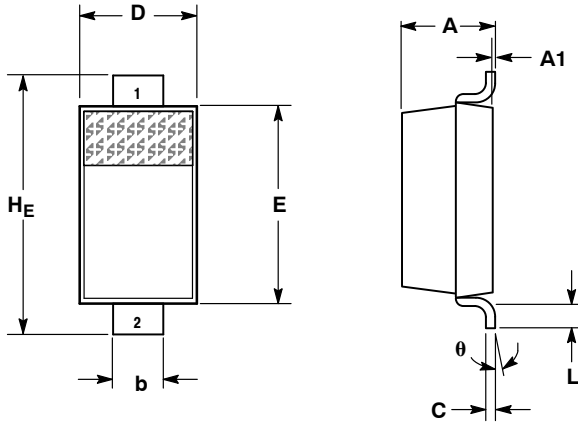
ON Semiconductor®



SCALE 5:1

SOD-123  
CASE 425-04  
ISSUE G

DATE 07 OCT 2009



- NOTES:
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  - CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.94	1.17	1.35	0.037	0.046	0.053
A1	0.00	0.05	0.10	0.000	0.002	0.004
b	0.51	0.61	0.71	0.020	0.024	0.028
c	---	---	0.15	---	---	0.006
D	1.40	1.60	1.80	0.055	0.063	0.071
E	2.54	2.69	2.84	0.100	0.106	0.112
HE	3.56	3.68	3.86	0.140	0.145	0.152
L	0.25	---	---	0.010	---	---
θ	0°	---	10°	0°	---	10°

### GENERIC MARKING DIAGRAM\*



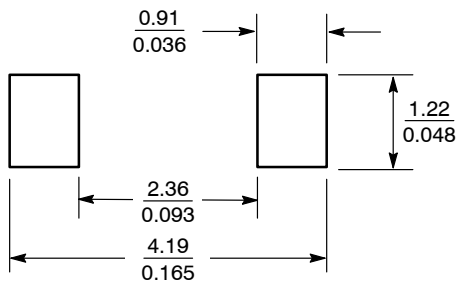
- XXX = Specific Device Code
- M = Date Code
- = Pb-Free Package

(Note: Microdot may be in either location)

\*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.

STYLE 1:  
PIN 1. CATHODE  
2. ANODE

### SOLDERING FOOTPRINT\*



SCALE 10:1 (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.

DOCUMENT NUMBER:	98ASB42927B	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	SOD-123	PAGE 1 OF 1

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

**onsemi**, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## PUBLICATION ORDERING INFORMATION

### LITERATURE FULFILLMENT:

Email Requests to: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**onsemi Website:** [www.onsemi.com](http://www.onsemi.com)

### TECHNICAL SUPPORT

**North American Technical Support:**

Voice Mail: 1 800-282-9855 Toll Free USA/Canada

Phone: 011 421 33 790 2910

**Europe, Middle East and Africa Technical Support:**

Phone: 00421 33 790 2910

For additional information, please contact your local Sales Representative