

# MMVL809T1

## Silicon Tuning Diode

This device is designed for 900 MHz frequency control and tuning applications. It provides solid-state reliability in replacement of mechanical tuning methods.

### Features

- Controlled and Uniform Tuning Ratio
- Surface Mount Package
- Available in 8 mm Tape and Reel
- Pb-Free Package is Available

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Continuous Reverse Voltage	$V_R$	20	Vdc
Peak Forward Current	$I_F$	20	mAdc

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, $T_A = 25^\circ\text{C}$ (Note 1) Derate above $25^\circ\text{C}$	$P_D$	200 1.57	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	635	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	$T_J, T_{stg}$	150	$^\circ\text{C}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

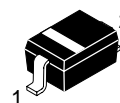
1. FR-4 Minimum Pad



**ON Semiconductor**<sup>®</sup>

<http://onsemi.com>

**4.5 – 6.1 pF  
VOLTAGE VARIABLE  
CAPACITANCE DIODE**



**PLASTIC  
SOD-323  
CASE 477  
STYLE 1**

### MARKING DIAGRAM



5K = Device Code  
M = Date Code\*  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation may vary depending upon manufacturing location.

### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
MMVL809T1	SOD-323	3000 / Tape & Reel
MMVL809T1G	SOD-323 (Pb-Free)	3000 / 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.

# MMVL809T1

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

Characteristics	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage (I <sub>R</sub> = 10 μA <sub>dc</sub> )	V <sub>(BR)R</sub>	20	–	–	V <sub>dc</sub>
Reverse Voltage Leakage Current (V <sub>R</sub> = 15 V <sub>dc</sub> )	I <sub>R</sub>	–	–	50	nA <sub>dc</sub>

Device	C <sub>T</sub> , Diode Capacitance V <sub>R</sub> = 2.0 V <sub>dc</sub> , f = 1.0 MHz pF			Q, Figure of Merit V <sub>R</sub> = 3.0 V <sub>dc</sub> f = 500 MHz	C <sub>R</sub> , Capacitance Ratio C <sub>2</sub> /C <sub>8</sub> (Note 2) f = 1.0 MHz	
	Min	Typ	Max	Typ	Min	Max
MMVL809T1	4.5	5.3	6.1	75	1.8	2.6

2. C<sub>R</sub> is the ratio of C<sub>T</sub> measured at 2.0 V<sub>dc</sub> divided by C<sub>T</sub> measured at 8.0 V<sub>dc</sub>.

## TYPICAL CHARACTERISTICS

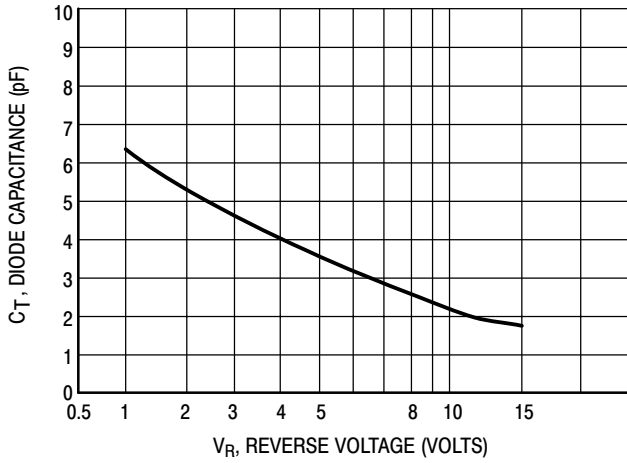


Figure 1. Diode Capacitance

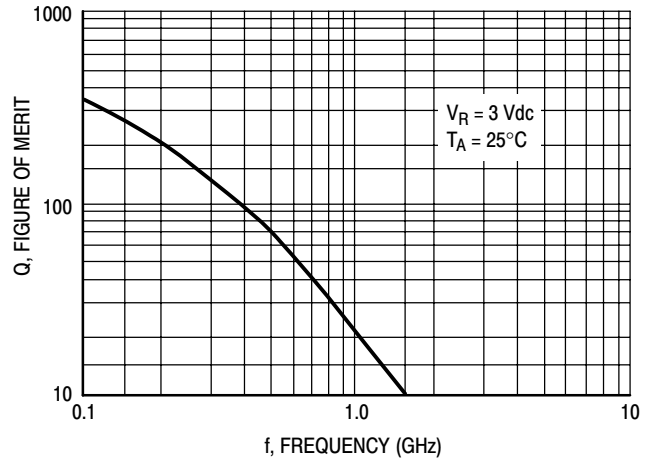


Figure 2. Figure of Merit

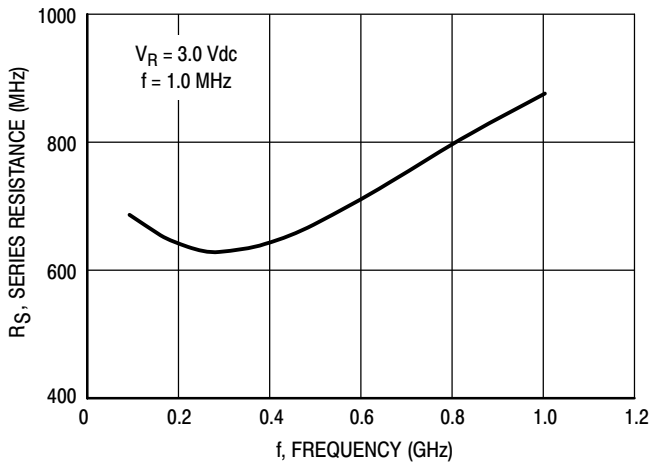


Figure 3. Series Resistance

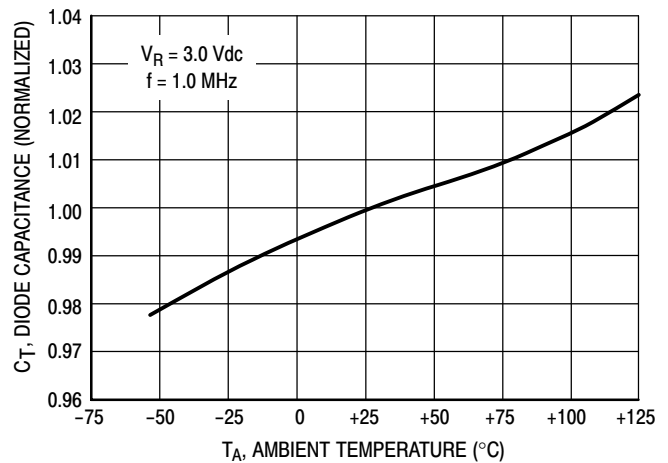
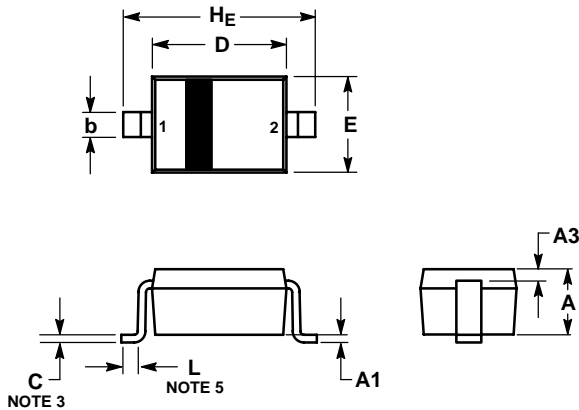


Figure 4. Diode Capacitance

# MMVL809T1

## PACKAGE DIMENSIONS

SOD-323  
CASE 477-02  
ISSUE G



NOTES:

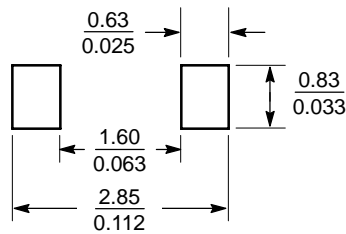
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SOLDER PLATING.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
5. DIMENSION L IS MEASURED FROM END OF RADIUS.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.031	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A3	0.15 REF			0.006 REF		
b	0.25	0.32	0.4	0.010	0.012	0.016
C	0.089	0.12	0.177	0.003	0.005	0.007
D	1.60	1.70	1.80	0.062	0.066	0.070
E	1.15	1.25	1.35	0.045	0.049	0.053
L	0.08			0.003		
HE	2.30	2.50	2.70	0.090	0.098	0.105

STYLE 1:

1. CATHODE
2. ANODE

### 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.

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC 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. "Typical" parameters which may be provided in SCILLC 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. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC 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 SCILLC was negligent regarding the design or manufacture of the part. SCILLC 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:**  
Literature Distribution Center for ON Semiconductor  
P.O. Box 61312, Phoenix, Arizona 850821312 USA  
**Phone:** 4808297710 or 8003443860 Toll Free USA/Canada  
**Fax:** 4808297709 or 8003443867 Toll Free USA/Canada  
**Email:** orderlit@onsemi.com

**N. American Technical Support:** 8002829855 Toll Free  
USA/Canada

**Japan:** ON Semiconductor, Japan Customer Focus Center  
291 Kamimeguro, Meguroku, Tokyo, Japan 1530051  
**Phone:** 81357733850

**ON Semiconductor Website:** <http://onsemi.com>

**Order Literature:** <http://www.onsemi.com/litorder>

For additional information, please contact your local Sales Representative.