

# MMVL409T1

Preferred Device

## Silicon Tuning Diode

These devices are designed for general frequency control and tuning applications. They provide solid-state reliability in replacement of mechanical tuning methods.

- High Q with Guaranteed Minimum Values at VHF Frequencies
- Controlled and Uniform Tuning Ratio
- Surface Mount Package
- Device Marking: X5

### MAXIMUM RATINGS

Symbol	Rating	Value	Unit
$V_R$	Continuous Reverse Voltage	20	Vdc
$I_F$	Peak Forward Current	200	mAdc

### THERMAL CHARACTERISTICS

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

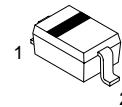
\*FR-4 Minimum Pad



ON Semiconductor™

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## VOLTAGE VARIABLE CAPACITANCE DIODE



PLASTIC  
SOD-323  
CASE 477



### ORDERING INFORMATION

Device	Package	Shipping
MMVL409T1	SOD-323	3000 / Tape & Reel

**Preferred** devices are recommended choices for future use and best overall value.

# MMVL409T1

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

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage ( $I_R = 10 \mu\text{A}$ )	$V_{(BR)R}$	20	—	—	Vdc
Reverse Voltage Leakage Current ( $V_R = 15 \text{Vdc}$ )	$I_R$	—	—	0.1	$\mu\text{A}$
Diode Capacitance Temperature Coefficient ( $V_R = 3.0 \text{Vdc}$ , $f = 1.0 \text{MHz}$ )	$TC_C$	—	300	—	ppm/ $^\circ\text{C}$

Device	$C_T$ , Diode Capacitance $V_R = 3.0 \text{Vdc}$ , $f = 1.0 \text{MHz}$ $\mu\text{F}$			$Q$ , Figure of Merit $V_R = 3.0 \text{Vdc}$ $f = 50 \text{MHz}$	$C_R$ , Capacitance Ratio $C_3/C_8$ $f = 1.0 \text{MHz}(1)$	
	Min	Nom	Max	Min	Min	Max
MMVL409T1	26	29	32	200	1.5	1.9

1.  $C_R$  is the ratio of  $C_T$  measured at 3 Vdc divided by  $C_T$  measured at 8 Vdc.

## TYPICAL CHARACTERISTICS

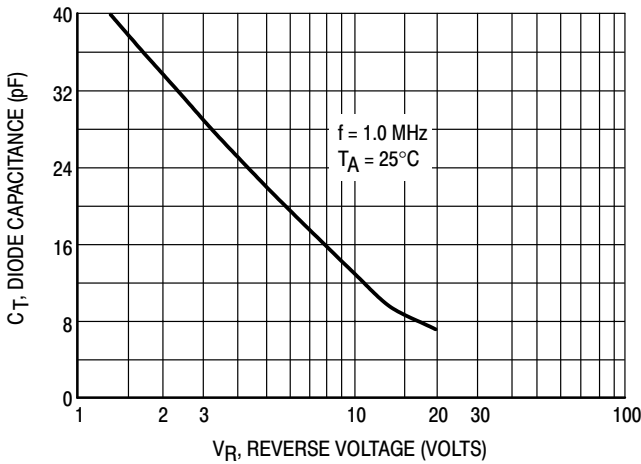


Figure 1. Diode Capacitance

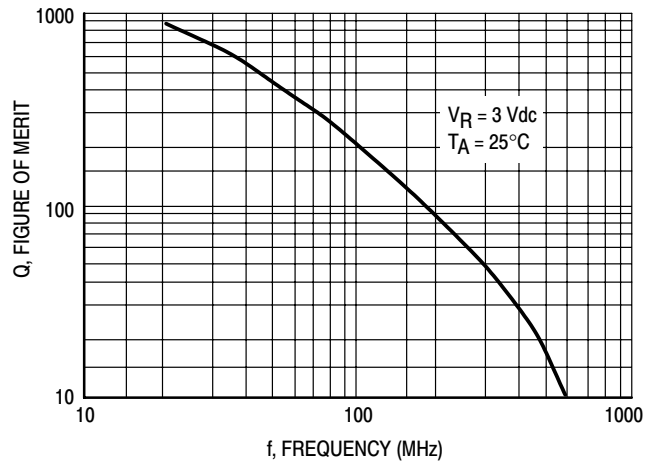


Figure 2. Figure of Merit

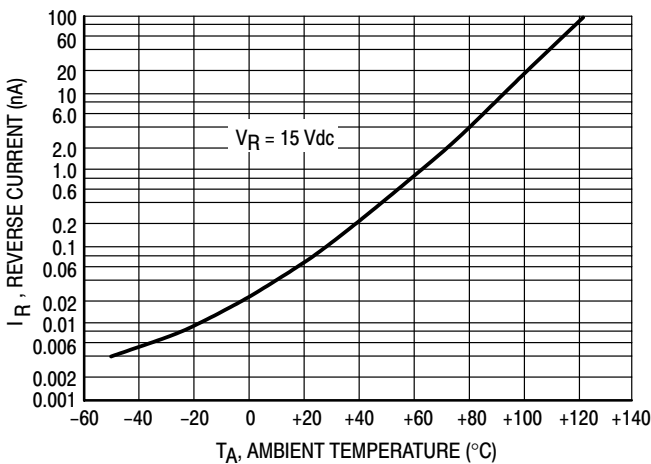


Figure 3. Leakage Current

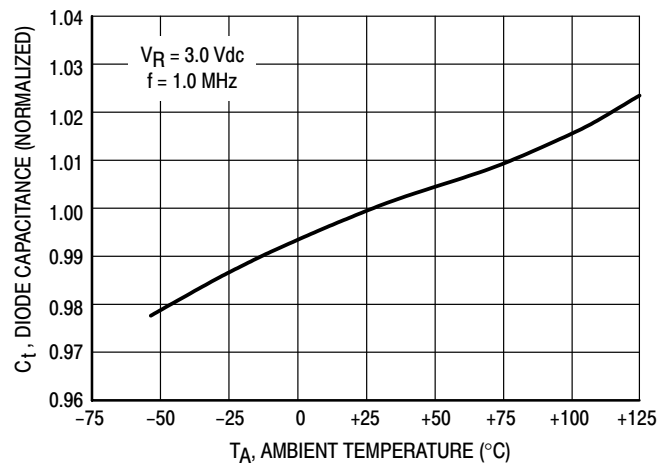
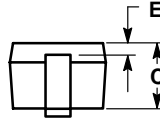
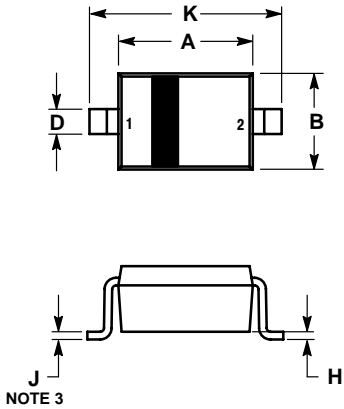


Figure 4. Diode Capacitance

# MMVL409T1

## PACKAGE DIMENSIONS

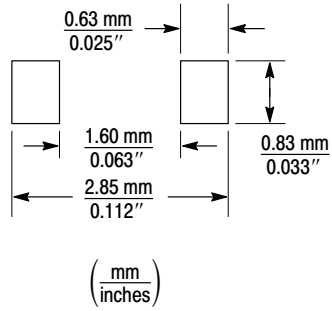
### SOD-323 PLASTIC PACKAGE CASE 477-02 ISSUE A



- 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.


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.60	1.80	0.063	0.071
B	1.15	1.35	0.045	0.053
C	0.80	1.00	0.031	0.039
D	0.25	0.40	0.010	0.016
E	0.15 REF		0.006 REF	
H	0.00	0.10	0.000	0.004
J	0.089	0.177	0.0035	0.0070
K	2.30	2.70	0.091	0.106

- STYLE 1:  
PIN 1. CATHODE  
2. ANODE



### SOD-323 Soldering Footprint

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