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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°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.

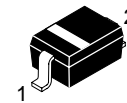
1. FR-4 Minimum Pad



ON Semiconductor[®]

<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 [†] |
|------------|----------------------|-----------------------|
| MMVL809T1 | SOD-323 | 3000 / Tape & Reel |
| MMVL809T1G | SOD-323 (Pb-Free) | 3000 / 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.

MMVL809T1

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

| Characteristics | Symbol | Min | Typ | Max | Unit |
|---|--------------------|-----|-----|-----|------------------|
| Reverse Breakdown Voltage (I _R = 10 μA _{dc}) | V _{(BR)R} | 20 | – | – | V _{dc} |
| Reverse Voltage Leakage Current (V _R = 15 V _{dc}) | I _R | – | – | 50 | nA _{dc} |

| Device | C _T , Diode Capacitance V _R = 2.0 V _{dc} , f = 1.0 MHz pF | | | Q, Figure of Merit V _R = 3.0 V _{dc} f = 500 MHz | C _R , Capacitance Ratio C ₂ /C ₈ (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_R is the ratio of C_T measured at 2.0 V_{dc} divided by C_T measured at 8.0 V_{dc}.

TYPICAL CHARACTERISTICS

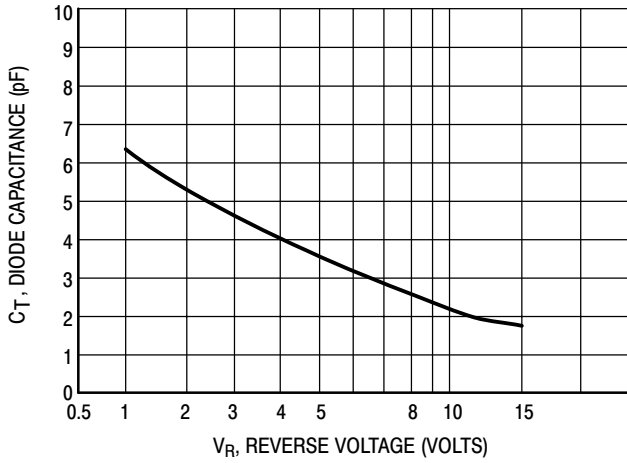


Figure 1. Diode Capacitance

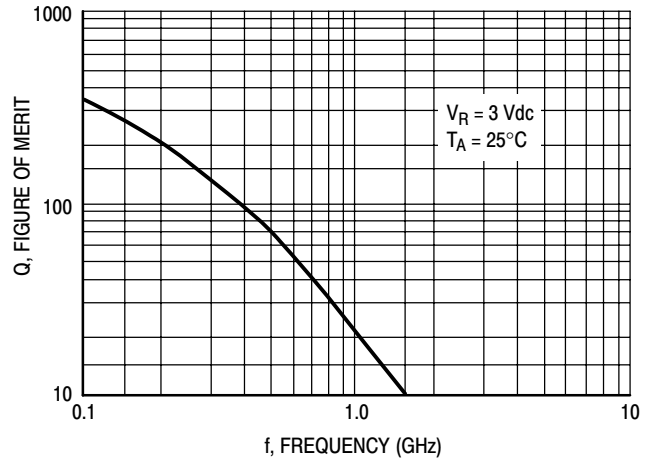


Figure 2. Figure of Merit

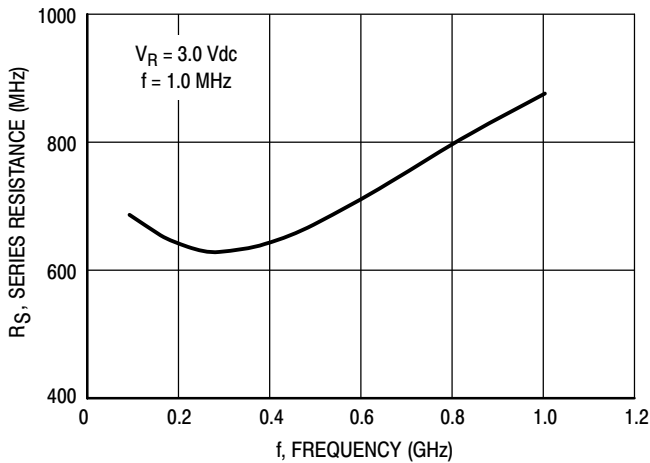


Figure 3. Series Resistance

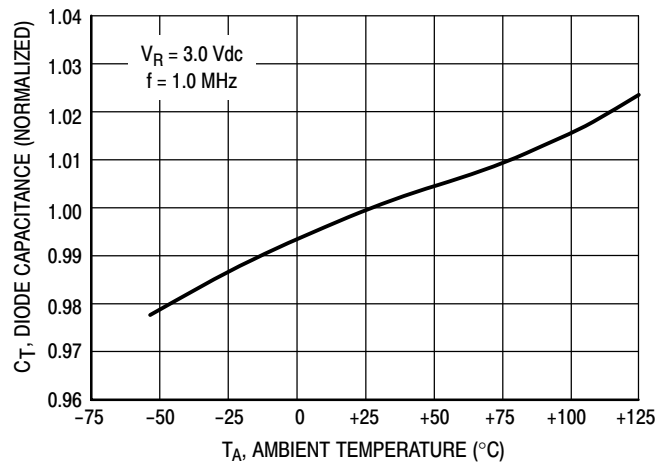


Figure 4. Diode Capacitance

MECHANICAL CASE OUTLINE

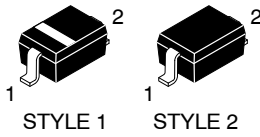
PACKAGE DIMENSIONS

ON Semiconductor®

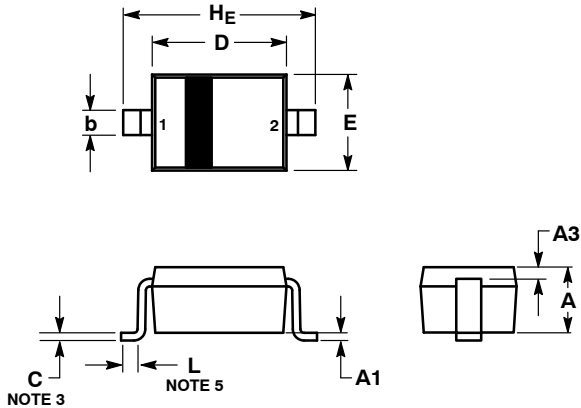


SOD-323
CASE 477-02
ISSUE H

DATE 13 MAR 2007



SCALE 4:1

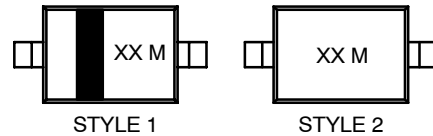


NOTES:

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 |

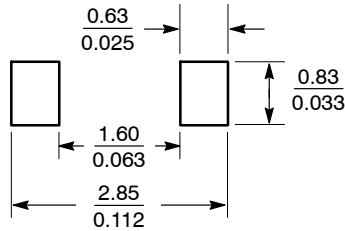
GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Date Code

*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.

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.

STYLE 1:
PIN 1. CATHODE (POLARITY BAND)
2. ANODE

STYLE 2:
NO POLARITY

| | | |
|-------------------------|--------------------|--|
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| DESCRIPTION: | SOD-323 | PAGE 1 OF 1 |

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