

MMBV809LT1

Preferred Device

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
- Available in Surface Mount Package
- Available in 8 mm Tape and Reel
- Pb-Free Packages are Available

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|-----------|-------------|----------------------------|
| Reverse Voltage | V_R | 20 | Vdc |
| Forward Current | I_F | 20 | mAdc |
| Total Power Dissipation (Note 1) @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 225 1.8 | mW mW/ $^\circ\text{C}$ |
| Junction Temperature | T_J | +125 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | -55 to +125 | $^\circ\text{C}$ |

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.

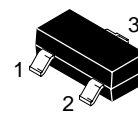
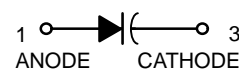
1. FR5 Board 1.0 x 0.75 x 0.62 in.



ON Semiconductor®

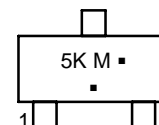
<http://onsemi.com>

4.5–6.1 pF VOLTAGE VARIABLE CAPACITANCE DIODE



SOT-23 (TO-236)
CASE 318
STYLE 8

MARKING DIAGRAM



5K = Specific Device Code

M = Date Code*

▪ = Pb-Free Package

(Note: Microdot may be in either location)

*Date Code orientation and/or overbar may vary depending upon manufacturing location.

ORDERING INFORMATION

| Device | Package | Shipping† |
|-------------|---------------------|----------------------|
| MMBV809LT1 | SOT-23 | 3,000 / Tape & Reel |
| MMBV809LT1G | SOT-23 (Pb-Free) | 3,000 / Tape & Reel |
| MMBV809LT3 | SOT-23 | 10,000 / Tape & Reel |
| MMBV809LT3G | SOT-23 (Pb-Free) | 10,000 / 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.

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

MMBV809LT1

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

| Characteristic – All Types | Symbol | Min | Typ | Max | Unit |
|--|--------------------|-----|-----|-----|------|
| Reverse Breakdown Voltage (I _R = 10 μAdc) | V _{(BR)R} | 20 | – | – | Vdc |
| Reverse Voltage Leakage Current (V _R = 15 Vdc) | I _R | – | – | 50 | nAdc |

| Device | C _t , Diode Capacitance V _R = 2.0 Vdc, f = 1.0 MHz pF | | | Q, Figure of Merit V _R = 3.0 Vdc f = 500 MHz | C _R , Capacitance Ratio C ₂ /C ₈ f = 1.0 MHz (Note 2) | |
|------------|---|-----|-----|---|--|-----|
| | Min | Typ | Max | Typ | Min | Max |
| MMBV809LT1 | 4.5 | 5.3 | 6.1 | 75 | 1.8 | 2.6 |

2. C_R is the ratio of C_t measured at 2.0 Vdc divided by C_t measured at 8.0 Vdc.

TYPICAL CHARACTERISTICS

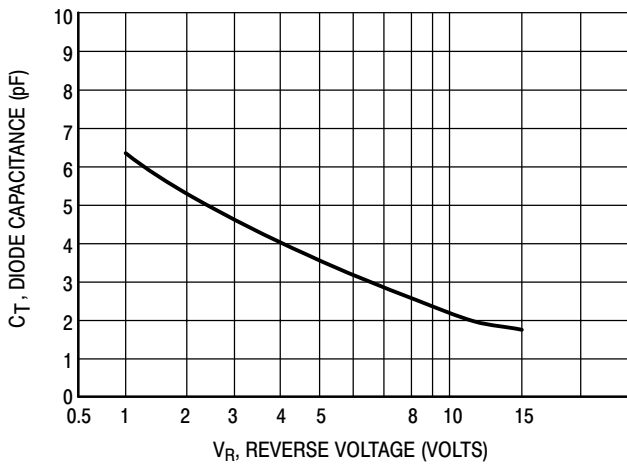


Figure 1. Diode Capacitance

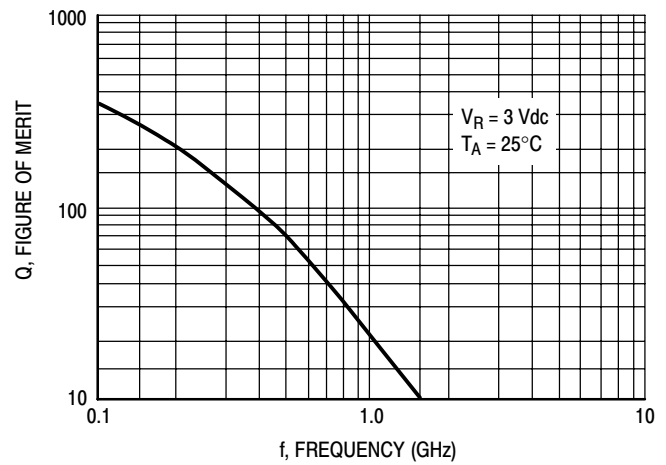


Figure 2. Figure of Merit

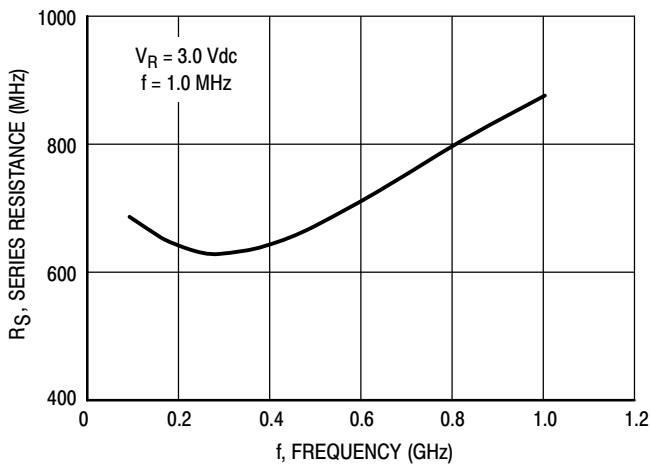


Figure 3. Series Resistance

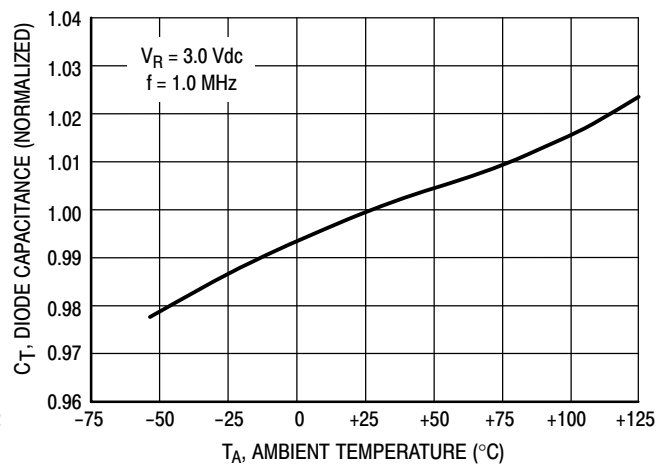
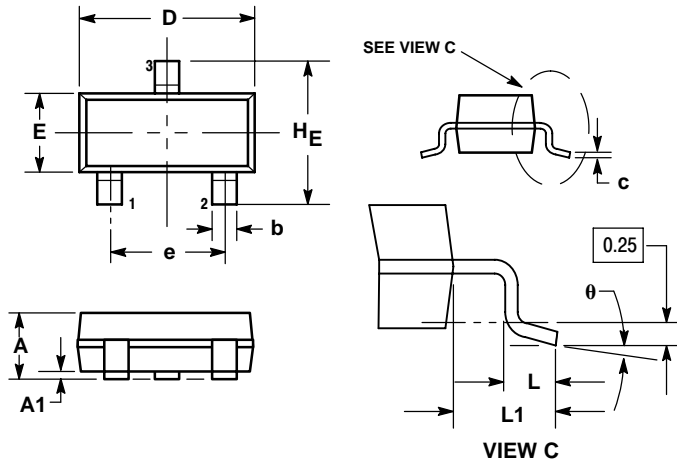


Figure 4. Diode Capacitance

MMBV809LT1

PACKAGE DIMENSIONS

SOT-23 (TO-236)
CASE 318-08
ISSUE AN



NOTES:

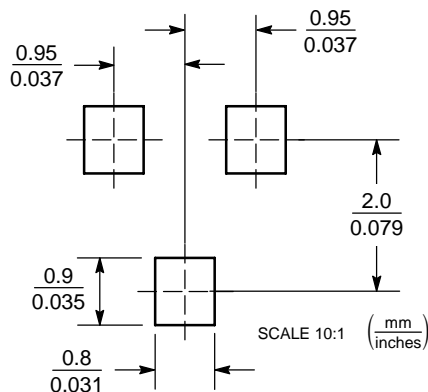
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318-01 THRU -07 AND -09 OBSOLETE, NEW STANDARD 318-08.

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|--------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.89 | 1.00 | 1.11 | 0.035 | 0.040 | 0.044 |
| A1 | 0.01 | 0.06 | 0.10 | 0.001 | 0.002 | 0.004 |
| b | 0.37 | 0.44 | 0.50 | 0.015 | 0.018 | 0.020 |
| c | 0.09 | 0.13 | 0.18 | 0.003 | 0.005 | 0.007 |
| D | 2.80 | 2.90 | 3.04 | 0.110 | 0.114 | 0.120 |
| E | 1.20 | 1.30 | 1.40 | 0.047 | 0.051 | 0.055 |
| e | 1.78 | 1.90 | 2.04 | 0.070 | 0.075 | 0.081 |
| L | 0.10 | 0.20 | 0.30 | 0.004 | 0.008 | 0.012 |
| L1 | 0.35 | 0.54 | 0.69 | 0.014 | 0.021 | 0.029 |
| HE | 2.10 | 2.40 | 2.64 | 0.083 | 0.094 | 0.104 |

STYLE 8:

1. ANODE
2. NO CONNECTION
3. CATHODE

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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