

# MMBV109LT1, MV209

Preferred Devices

## Silicon Epicap Diodes

Designed for general frequency control and tuning applications; providing solid-state reliability in replacement of mechanical tuning methods.

### Features

- High Q with Guaranteed Minimum Values at VHF Frequencies
- Controlled and Uniform Tuning Ratio
- Available in Surface Mount Package
- Pb-Free Packages are Available

### MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

| Rating  | Symbol    | Value       | Unit                       |
|---|-----------|-------------|----------------------------|
| Reverse Voltage   | $V_R$     | 30          | Vdc                        |
| Forward Current   | $I_F$     | 200         | mAdc                       |
| Forward Power Dissipation<br>MMBV109LT1<br>@ $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$<br>MV209 | $P_D$     | 200<br>2.0  | mW<br>mW/ $^\circ\text{C}$ |
| @ $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$   |           | 200<br>1.6  | mW<br>mW/ $^\circ\text{C}$ |
| Junction Temperature  | $T_J$     | +125        | $^\circ\text{C}$           |
| Storage Temperature Range   | $T_{stg}$ | -55 to +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.

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

| Characteristic   | Symbol      | Min | Typ | Max | Unit                  |
|--|-------------|-----|-----|-----|-----------------------|
| Reverse Breakdown Voltage<br>( $I_R = 10 \mu\text{Adc}$ )                                      | $V_{(BR)R}$ | 30  | -   | -   | Vdc                   |
| Reverse Voltage Leakage Current<br>( $V_R = 25 \text{Vdc}$ )                                   | $I_R$       | -   | -   | 0.1 | $\mu\text{Adc}$       |
| Diode Capacitance Temperature Coefficient<br>( $V_R = 3.0 \text{Vdc}$ , $f = 1.0 \text{MHz}$ ) | $TC_C$      | -   | 300 | -   | ppm/ $^\circ\text{C}$ |



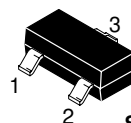
ON Semiconductor®

<http://onsemi.com>

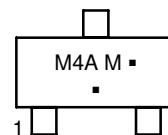
## 26–32 pF VOLTAGE VARIABLE CAPACITANCE DIODES



### MARKING DIAGRAMS



SOT-23 (TO-236)  
CASE 318-08  
STYLE 8



M4A = Device Code

M = Date Code\*

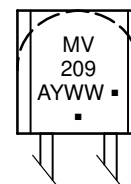
▪ = Pb-Free Package

(Note: Microdot may be in either location)

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



TO-92 (TO-226AC)  
CASE 182  
STYLE 1



MV209 = Device Code

A = Assembly Location

Y = Year

WW = Work Week

▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

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

# MMBV109LT1, MV209

| Device      | Package             | Shipping†            | C <sub>t</sub> , Diode Capacitance<br>V <sub>R</sub> = 3.0 Vdc, f = 1.0 MHz<br>pF |     |     | Q, Figure of Merit<br>V <sub>R</sub> = 3.0 Vdc<br>f = 50 MHz | C <sub>R</sub> , Capacitance Ratio<br>C <sub>3</sub> /C <sub>25</sub><br>f = 1.0 MHz (Note 1) |     |
|-------------|---------------------|----------------------|---|-----|-----|--|---|-----|
|             |                     |                      | Min   | Nom | Max | Min  | Min   | Max |
| MMBV109LT1  | SOT-23              | 3,000 / Tape & Reel  | 26  | 29  | 32  | 200  | 5.0   | 6.5 |
| MMBV109LT1G | SOT-23<br>(Pb-Free) | 3,000 / Tape & Reel  |   |     |     |  |   |     |
| MMBV109LT3  | SOT-23              | 10,000 / Tape & Reel |   |     |     |  |   |     |
| MMBV109LT3G | SOT-23<br>(Pb-Free) | 10,000 / Tape & Reel |   |     |     |  |   |     |
| MV209       | TO-92               | 1,000 Units / Bag    |   |     |     |  |   |     |
| MV209G      | TO-92<br>(Pb-Free)  | 1,000 Units / Bag    |   |     |     |  |   |     |

1. C<sub>R</sub> is the ratio of C<sub>t</sub> measured at 3 Vdc divided by C<sub>t</sub> measured at 25 Vdc.

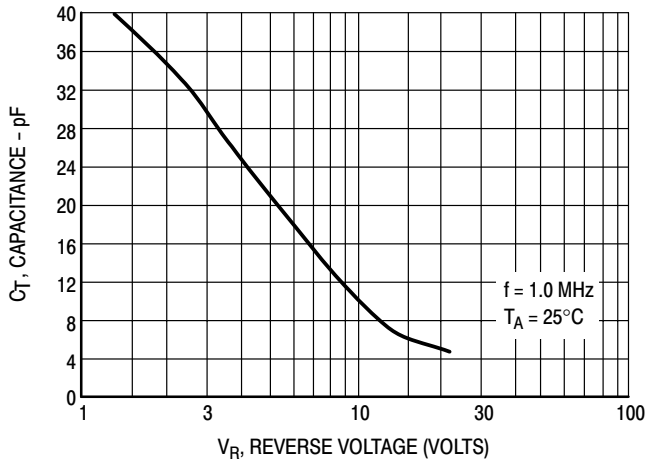


Figure 1. DIODE CAPACITANCE

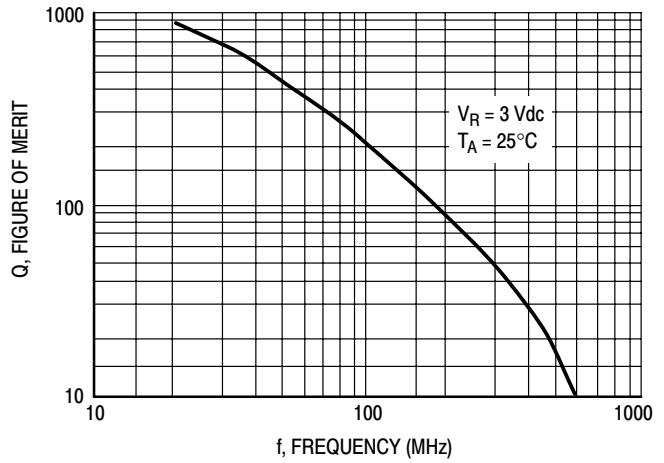


Figure 2. FIGURE OF MERIT

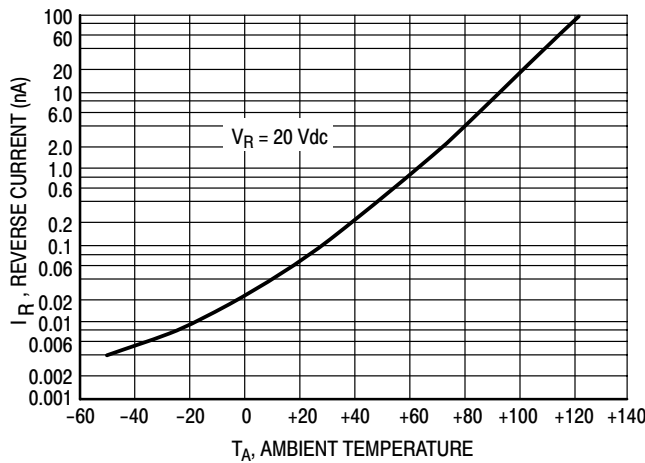


Figure 3. LEAKAGE CURRENT

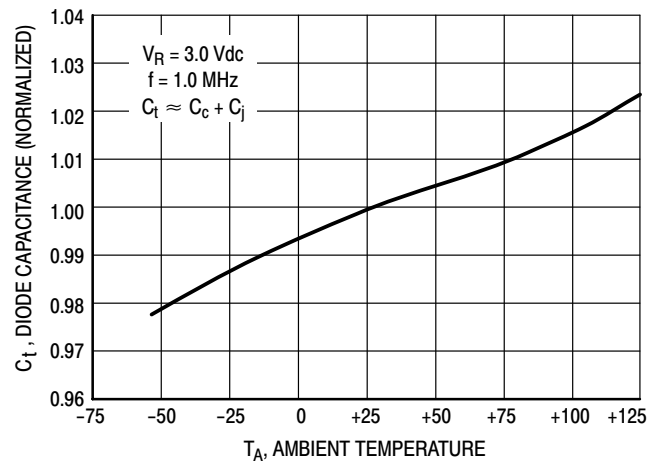


Figure 4. DIODE CAPACITANCE

## NOTES ON TESTING AND SPECIFICATIONS