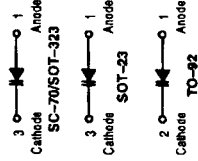


## Silicon Epicap Diodes

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

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



**MBV109T1**  
**MMBV109LT1\***  
**MV209\***

\* Motorola Preferred Device

26-32 pF  
VOLTAGE VARIABLE  
CAPACITANCE DIODES



CASE 419-02, STYLE 3  
SC-70/SOT-323



CASE 316-06, STYLE 6  
SOT-23 (TO-236AB)



CASE 182-02, STYLE 1  
TO-42 (TO-226AC)

### MAXIMUM RATINGS

Rating	Symbol	MBV109T1	MMBV109LT1	MV209	Unit
Reverse Voltage	$V_R$	30	30	30	Vdc
Forward Current	$I_F$	200	200	200	mAdc
Forward Power Dissipation ① $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	280	200	200	mW
		2.8	2.0	1.6	mW/°C
Junction Temperature	$T_J$	+125			°C
Storage Temperature Range	$T_{stg}$	-55 to +150			°C

### DEVICE MARKING

MBV109T1 = J4A, MMBV109LT1 = M4A, MV209 = MV209

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

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage ( $I_R = 10 \mu\text{A}$ )	$V_{BR}(I_R)$	30	—	—	Vdc
Reverse Voltage Leakage Current ( $V_R = 25 \text{ Vdc}$ )	$I_R$	—	—	0.1	$\mu\text{A}$ dc
Diode Capacitance Temperature Coefficient ( $V_R = 3.0 \text{ Vdc}$ , $f = 1.0 \text{ MHz}$ )	TCC	—	300	—	ppm/°C

Device	$C_1$ Diode Capacitance $V_R = 3.0 \text{ Vdc}$ , $f = 1.0 \text{ MHz}$			$C_2$ Capacitance Ratio $C_2/C_{25}$ $f = 1.0 \text{ MHz}$ (Note 1)		
	Min	Norm	Max	Min	Max	Max
MBV109T1, MMBV109LT1, MV209	26	29	32	200	5.0	6.5

1.  $C_2$  is the ratio of  $C_1$  measured at 3 Vdc divided by  $C_1$  measured at 25 Vdc.

MMBV109LT1 is also available in bulk packaging. Use MMBV109L as the device title to order this device in bulk.

† Thermal Clad is a trademark of the Bergquist Company

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

### MBV109T1 MMBV109LT1 MV209

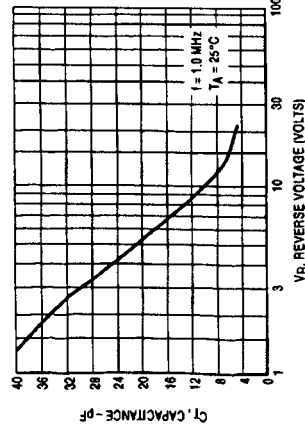


Figure 1. DIODE CAPACITANCE

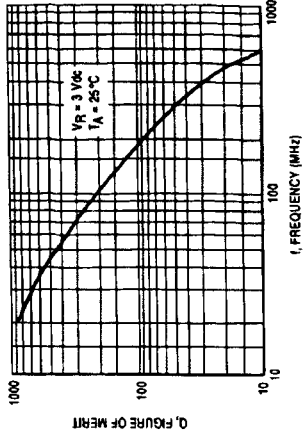


Figure 2. FIGURE OF MERIT

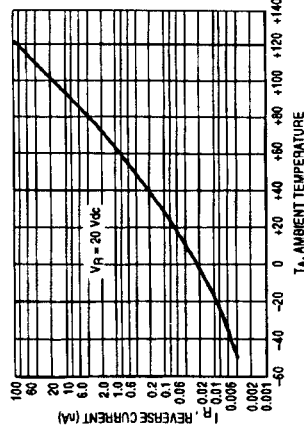


Figure 3. LEAKAGE CURRENT

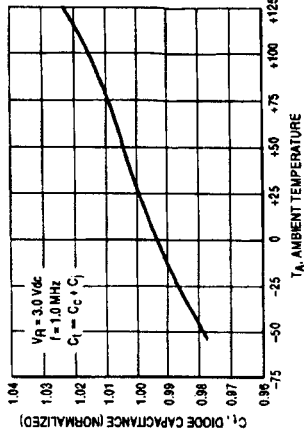


Figure 4. DIODE CAPACITANCE

### NOTES ON TESTING AND SPECIFICATIONS

1.  $C_2$  is the ratio of  $C_1$  measured at 3.0 Vdc divided by  $C_1$  measured at 25 Vdc.