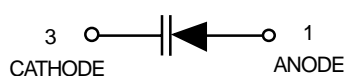


# Silicon Tuning Diode

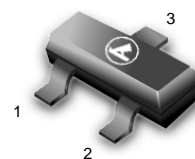
These devices are designed for general frequency control and tuning applications. They provide solid-state reliability in replacement of mechanical tuning methods.

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



**MMBV409LT1**  
**MV409**

VOLTAGE VARIABLE  
CAPACITANCE DIODES



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

## MAXIMUM RATINGS

Rating	Symbol	MBV409	MMBV409LT1	Unit
Reverse Voltage	$V_R$	20	20	Vdc
Forward Current	$I_F$	200	200	mAdc
Forward Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	280 2.8	225 1.8	mW mW/ $^\circ\text{C}$
Junction Temperature	$T_J$	+125		$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150		$^\circ\text{C}$

## DEVICE MARKING

MMBV409LT1 = X5, MV409 = MV409

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

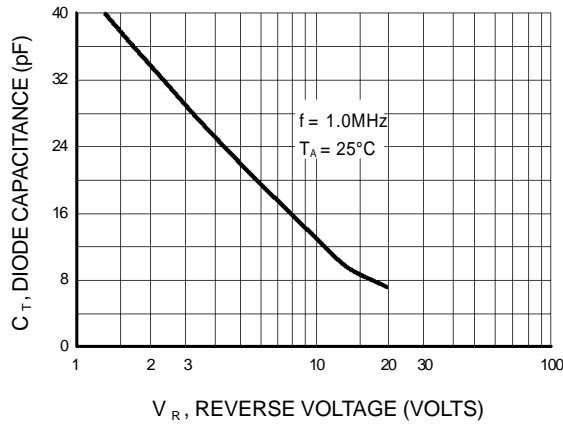
Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage ( $I_R = 10 \mu\text{Adc}$ )	$V_{(BR)R}$	20	—	—	Vdc
Reverse Voltage Leakage Current ( $V_R = 15 \text{Vdc}$ )	$I_R$	—	—	0.1	$\mu\text{Adc}$
Diode Capacitance Temperature Coefficient ( $V_R = 3.0 \text{Vdc}$ , $f = 1.0 \text{MHz}$ )	$TC_C$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

Device	$C_t$ , Diode Capacitance $V_R = 3.0 \text{Vdc}$ , $f = 1.0 \text{MHz}$ pF			$Q$ , 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
MMBV409LT1, MV409	26	29	32	200	1.5	1.9

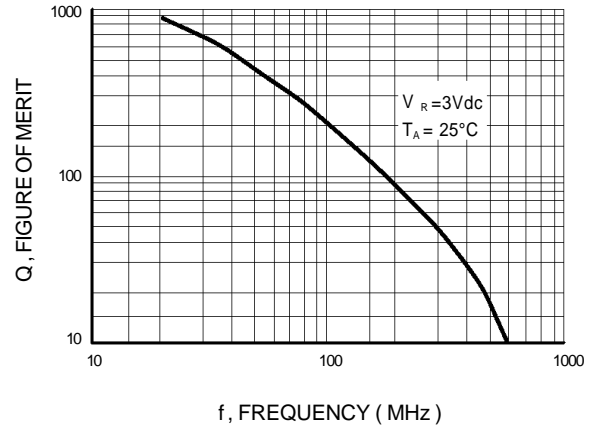
1.  $C_R$  is the ratio of  $C_t$  measured at 3 Vdc divided by  $C_t$  measured at 8 Vdc.

**MMBV409LT1 MV409**

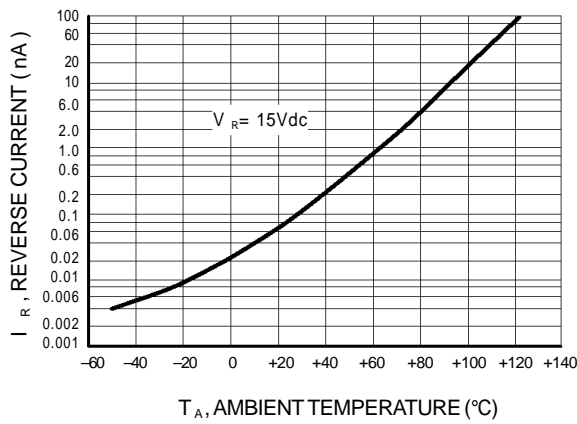
**TYPICAL CHARACTERISTICS**



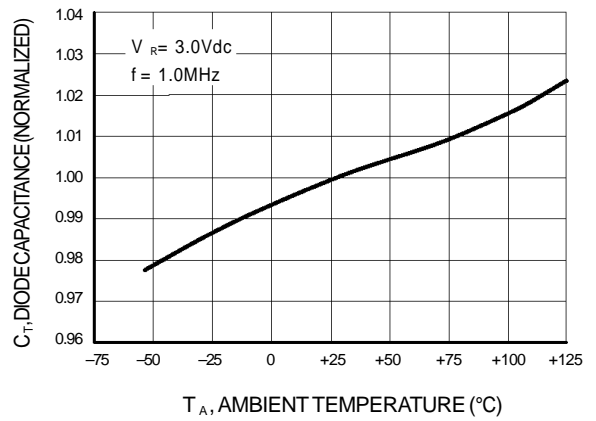
**Figure 1. Diode Capacitance**



**Figure 2. Figure of Merit**



**Figure 3. Leakage Current**



**Figure 4. Diode Capacitance**