

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
- Surface Mount Package
- Device Marking: X5



MMVL409T1

VOLTAGE VARIABLE
CAPACITANCE DIODE



PLASTIC, CASE 477
SOD- 323

ORDERING INFORMATION

Device	Package	Shipping
MMVL409T1	SOD-323	3000 / Tape & Reel

MAXIMUM RATINGS

Symbol	Rating	Value	Unit
V_R	Continuous Reverse Voltage	20	Vdc
I_F	Peak Forward Current	200	mAdc

THERMAL CHARACTERISTICS

Symbol	Characteristic	Max	Unit
P_D	Total Device Dissipation FR-5 Board,* $T_A = 25^\circ\text{C}$ Derate above 25°C	200 1.57	mW mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	635	$^\circ\text{C/W}$
T_J, T_{stg}	Junction and Storage Temperature	150	$^\circ\text{C}$

*FR-4 Minimum Pad

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

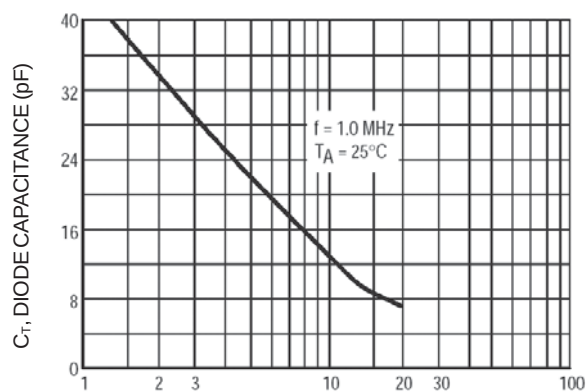
Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage ($I_R = 10 \mu\text{Adc}$)	$V_{(BR)R}$	20	—	—	Vdc
Reverse Voltage Leakage Current ($V_R = 15 \text{ Vdc}$)	I_R	—	—	0.1	μAdc
Diode Capacitance Temperature Coefficient ($V_R = 3.0 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)	TC_C	—	300	—	ppm/ $^\circ\text{C}$

	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 $f = 1.0 \text{ MHz}(1)$	
Device	Min	Nom	Max	Min	Min	Max
MMVL409T1	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.

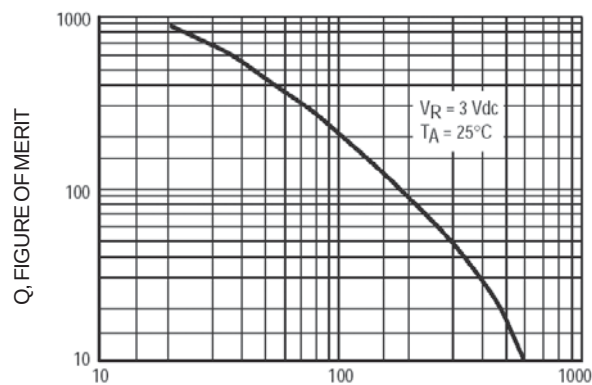
MMVL409T1

TYPICAL CHARACTERISTICS



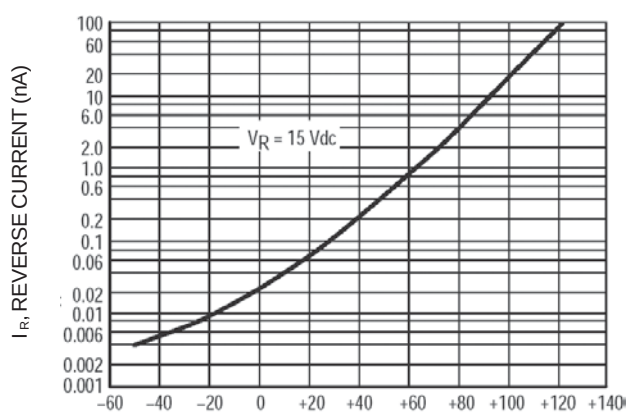
V_R , REVERSE VOLTAGE (VOLTS)

Figure 1. Diode Capacitance



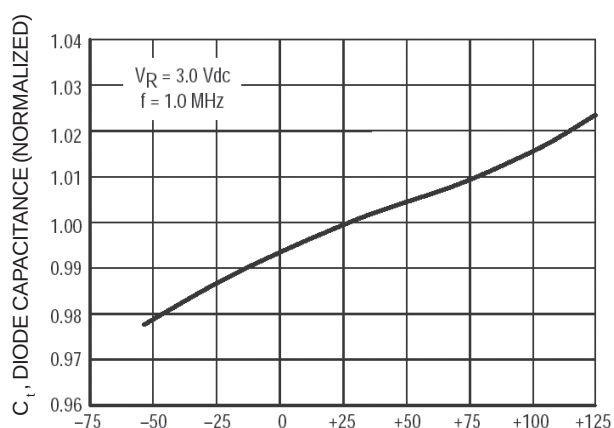
f , FREQUENCY (MHz)

Figure 2. Figure of Merit



T_A , AMBIENT TEMPERATURE (°C)

Figure 3. Leakage Current



T_A , AMBIENT TEMPERATURE (°C)

Figure 4. Diode Capacitance