

Silicon Tuning Diode

These devices are designed in the popular Plastic Surface Mount Package for high volume requirements of FM Radio and TV tuning and AFC, general frequency control and tuning applications. They provide solid–state reliability in replacement of mechanical tuning methods.

- High Q
- Controlled and Uniform Tuning Ratio
- Standard Capacitance Tolerance 10%
- Complete Typical Design Curves
- Device Marking: 4G

ORDERING INFORMATION				
Device	Package	Shipping		
MMVL2101T1	SOD-323	3000 / Tape & Reel		

MAXIMUM RATINGS

Symbol	Rating	Value	Unit		
V _R	Continuous Reverse Voltage	30	Vdc		
I _F	Peak Forward Current	200	mAdc		
HERMALCHARACTERISTICS					
Symbol	Characteristic	Max	Unit		
P₀	Total Device Dissipation FR–5 Board,*	200	mW		
	$T_A = 25^{\circ}C$				
	Derate above 25°C	1.57	mW/°C		
R _{®JA}	Thermal Resistance Junction to Ambient	635	°C/W		
T _J , T _{stg}	Junction and Storage Temperature	150	°C		

*FR-4 Minimum Pad

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

Characteristic	Symbol	Min	Тур	Max	Unit
Reverse BreakdownVoltage	V _{(BR)R}	30	_	_	Vdc
$(I_R = 10 \ \mu Adc)$					
Reverse Voltage Leakage Current	I _R	_	_	0.1	μAdc
$(V_R = 25 \text{ Vdc}, T_A = 25^{\circ}\text{C})$					
Diode Capacitance Temperature Coefficient	TCc	_	280	_	ppm/°C
$(V_R = 4.0 \text{ Vdc}, f = 1.0 \text{ MHz})$					

	C _t , Diode Capacitance V _R = 4.0 Vdc, f = 1.0 MHz pF		Q, Figure of Merit V _R = 4.0 Vdc f = 50 MHz	TR, Tuning Ratio C ₂ /C ₃₀ f = 1.0 MHz		
Device	Min	Nom	Max	Min	Min	Max
MMVL2101T1	6.1	6.8	7.5450	2.5	2.7	3.2

1. C_T, DIODE CAPACITANCE

 $\label{eq:constraint} \begin{array}{l} (C_{\text{T}}=C_{\text{C}}+C_{\text{J}}). \ C_{\text{T}} \ \text{is measured at 1.0} \\ \text{MHz using a capacitance bridge} \\ (\text{Boonton Electronics Model 75A or equivalent}). \end{array}$

2. TR, TUNING RATIO

TR is the ratio of C_T measured at 2.0 Vdc divided by C_T measured at 30 Vdc.

PARAMETER TEST METHODS

3. Q, FIGURE OF MERIT

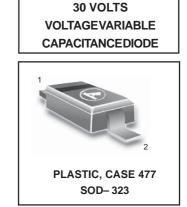
Q is calculated by taking the G and C readings of an admittance bridge at the specified frequency and substituting in the following equations: $Q = 2\pi fC/G$

(Boonton Electronics Model 33AS8 or equivalent). Use Lead Length $\stackrel{\bullet}{=}$ 1/16".

4. TCc, DIODE CAPACITANCE TEMPERATURE COEFFICIENT

 $\label{eq:comparing C_T} \begin{array}{l} \text{TC}_c \text{ is guaranteed by comparing } C_T \text{ at } V_R = 4.0 \text{ Vdc}, \\ \text{f} = 1.0 \text{ MHz}, \text{T}_A = -65^\circ\text{C} \text{ with } C_T \text{ at } V_R = 4.0 \text{ Vdc}, \text{f} = 1.0 \text{ MHz}, \text{T}_A = +85^\circ\text{C} \text{ in the following equation, which} \\ \text{defines } \text{TC}_c: \end{array}$

defines roc. $TC_{c} = \left| \frac{C_{T}(+85^{\circ}C) - C_{T}(-65^{\circ}C)}{85+65} \right| \cdot \frac{10^{6}}{C_{T}(25^{\circ}C)}$ Accuracy limited by measurement of C_T to ±0.1 pF.



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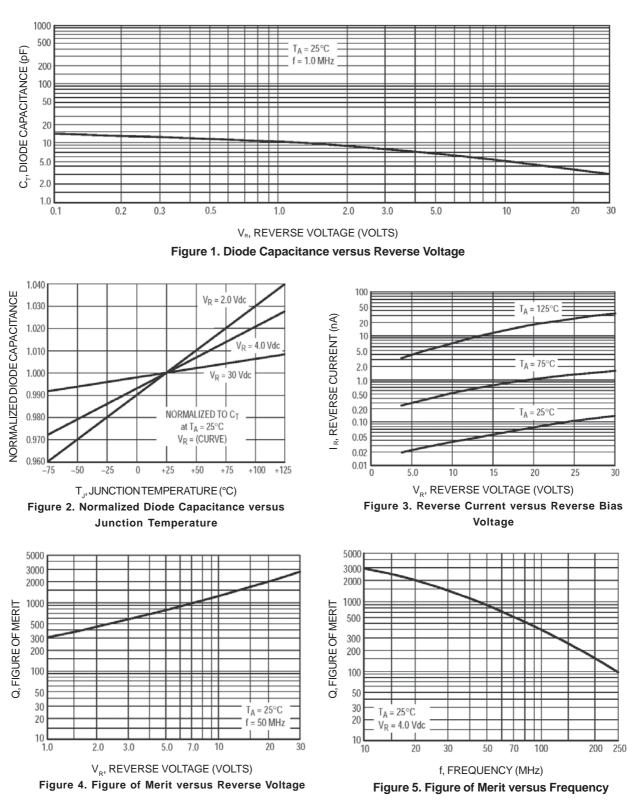
ANODE

MMVL2101T1





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TYPICAL DEVICE CHARACTERISTICS