MMVL3102T1

Preferred Device

Silicon Tuning Diode

This device is designed in the Surface Mount package for general frequency control and tuning applications. It provides solid−state reliability in replacement of mechanical tuning methods.

Features

- High Q with Guaranteed Minimum Values at VHF Frequencies
- Controlled and Uniform Tuning Ratio
- Pb−Free Package is Available

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Continuous Reverse Voltage	V_R	30	Vdc
Peak Forward Current	I_F	200	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR−5 Board, T_A = 25°C (Note 1) Derate above 25°C	P_D	200 1.57	mW mW/°C
Thermal Resistance Junction−to−Ambient	$R_{\theta JA}$	635	°C/W
Junction and Storage Temperature	T_J, T_{stg}	150	°C

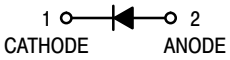
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

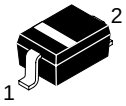
1. FR−4 Minimum Pad

ON Semiconductor®

http://onsemi.com

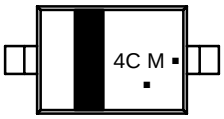
22 pF (Nominal) 30 VOLTS VOLTAGE VARIABLE CAPACITANCE DIODE





PLASTIC
SOD−323
CASE 477
STYLE 1

MARKING DIAGRAM



4C = Device Code
M = Date Code*
▪ = Pb−Free Package

(Note: Microdot may be in either location)
*Date Code orientation may vary depending upon manufacturing location.

ORDERING INFORMATION

Device	Package	Shipping†
MMVL3102T1	SOD−323	3000 / Tape & Reel
MMVL3102T1G	SOD−323 (Pb−Free)	3000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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

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

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage (I_R = 10 μAdc)	$V_{(BR)R}$	30	–	–	Vdc
Reverse Voltage Leakage Current (V_R = 25 Vdc, T_A = 25°C)	I_R	–	–	0.1	μAdc
Diode Capacitance Temperature Coefficient (V_R = 4.0 Vdc, f = 1.0 MHz)	TC_C	–	300	–	ppm/°C

	C_t, Diode Capacitance V_R = 3.0 Vdc, f = 1.0 MHz pF			Q, Figure of Merit V_R = 3.0 Vdc f = 50 MHz	C_R, Capacitance Ratio C_3/C_{25} f = 1.0 MHz	
Device	**Min**	**Nom**	**Max**	**Min**	**Min**	**Typ**
MMVL3102T1	20	22	25	200	4.5	4.8

TYPICAL CHARACTERISTICS

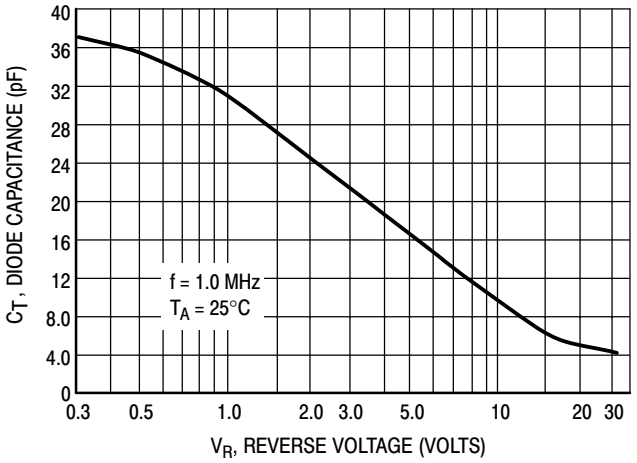


Figure 1. Diode Capacitance

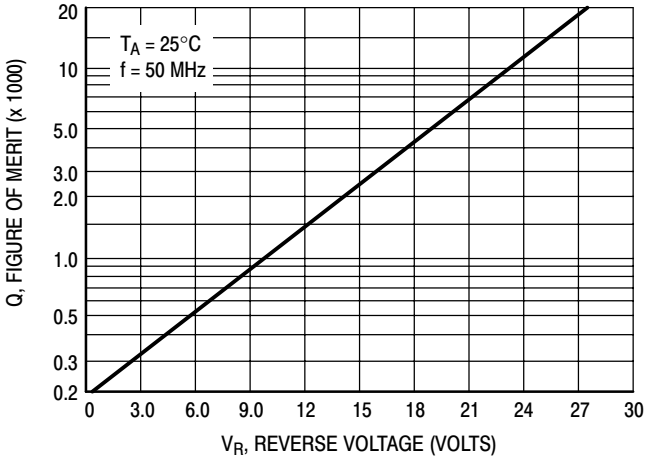


Figure 2. Figure of Merit

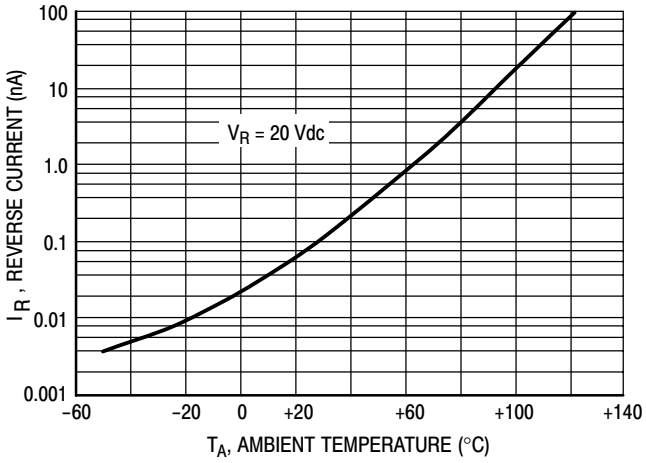


Figure 3. Leakage Current

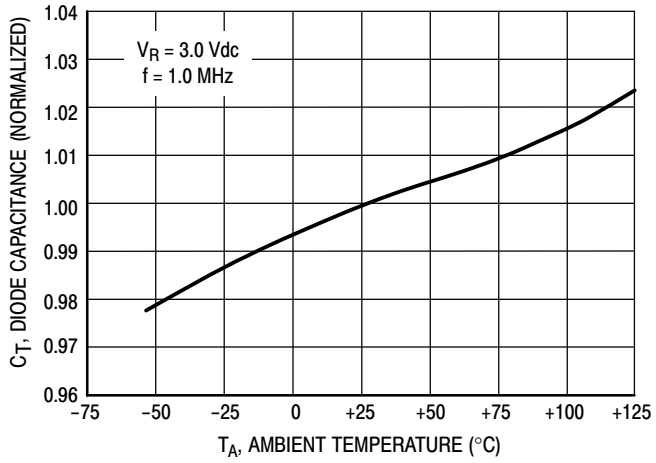


Figure 4. Diode Capacitance

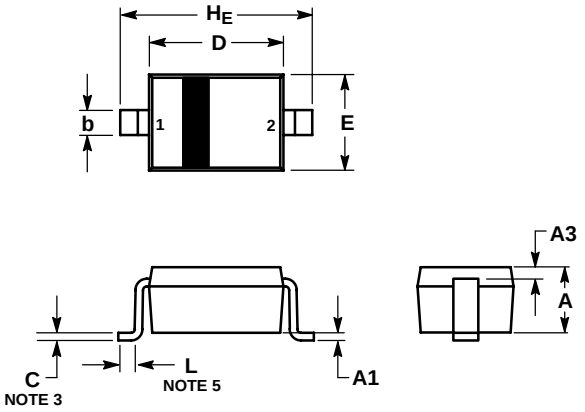
NOTES ON TESTING AND SPECIFICATIONS

C_R is the ratio of C_T measured at 3.0 Vdc divided by C_T measured at 25 Vdc.

MMVL3102T1

PACKAGE DIMENSIONS

SOD−323
CASE 477−02
ISSUE G

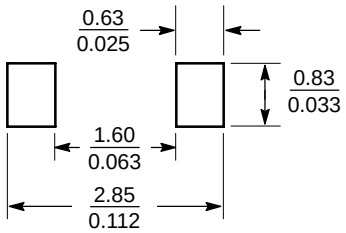


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SOLDER PLATING.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
5. DIMENSION L IS MEASURED FROM END OF RADIUS.

	MILLIMETERS			INCHES		
DIM	**MIN**	**NOM**	**MAX**	**MIN**	**NOM**	**MAX**
A	0.80	0.90	1.00	0.031	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A3	0.15 REF			0.006 REF		
b	0.25	0.32	0.4	0.010	0.012	0.016
C	0.089	0.12	0.177	0.003	0.005	0.007
D	1.60	1.70	1.80	0.062	0.066	0.070
E	1.15	1.25	1.35	0.045	0.049	0.053
L	0.08			0.003		
H_E	2.30	2.50	2.70	0.090	0.098	0.105

STYLE 1:
PIN 1. CATHODE
2. ANODE

SOLDERING FOOTPRINT*



*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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