

# MMBV3102LT1

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 ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

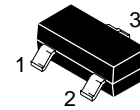
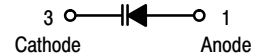
Rating	Symbol	Value	Unit
Reverse Voltage	$V_R$	30	Vdc
Forward Current	$I_F$	200	mAdc
Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	225 1.8	mW mW/ $^\circ\text{C}$
Junction Temperature	$T_J$	+125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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.



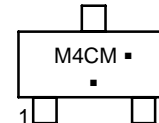
**ON Semiconductor**<sup>®</sup>

<http://onsemi.com>



**SOT-23 (TO-236)  
CASE 318  
STYLE 8**

### MARKING DIAGRAM



M4C = Specific Device Code  
M = Date Code\*  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation and/or overbar may vary depending upon manufacturing location.

### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
MMBV3102LT1	SOT-23	3,000 / Tape & Reel
MMBV3102LT1G	SOT-23 (Pb-Free)	3,000 / Tape & Reel

<sup>†</sup>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.

# MMBV3102LT1

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

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage ( $I_R = 10 \mu\text{A}$ )	$V_{(BR)R}$	30	–	–	Vdc
Reverse Voltage Leakage Current ( $V_R = 25 \text{ Vdc}$ , $T_A = 25^\circ\text{C}$ )	$I_R$	–	–	0.1	$\mu\text{A}$
Diode Capacitance Temperature Coefficient ( $V_R = 4.0 \text{ Vdc}$ , $f = 1.0 \text{ MHz}$ )	$TC_C$	–	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 $C_3/C_{25}$ $f = 1.0 \text{ MHz}$	
	Min	Nom	Max	Min	Min	Typ
MMBV3102LT1	20	22	25	200	4.5	4.8

## TYPICAL CHARACTERISTICS

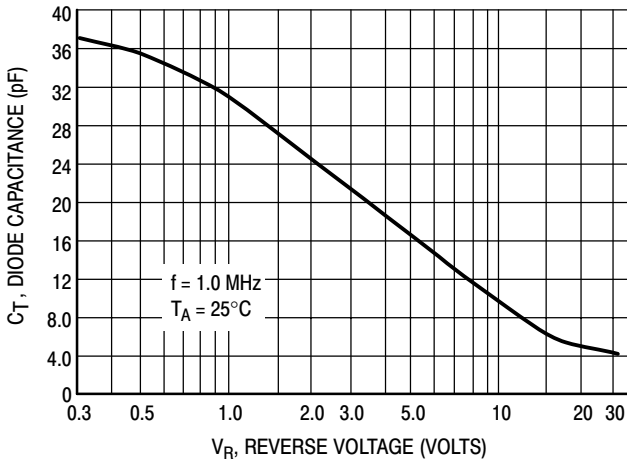


Figure 1. Diode Capacitance

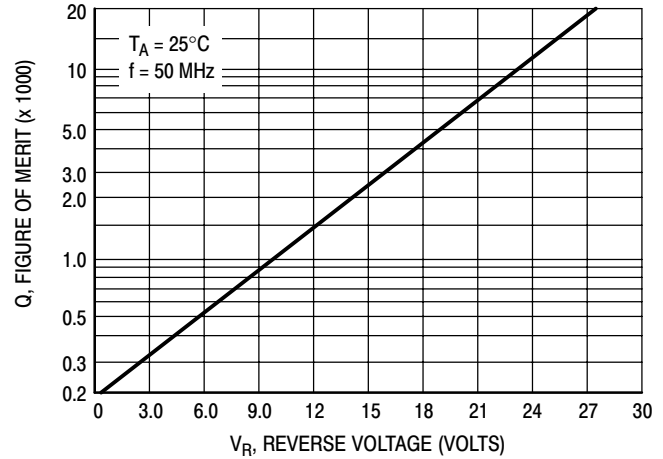


Figure 2. Figure of Merit

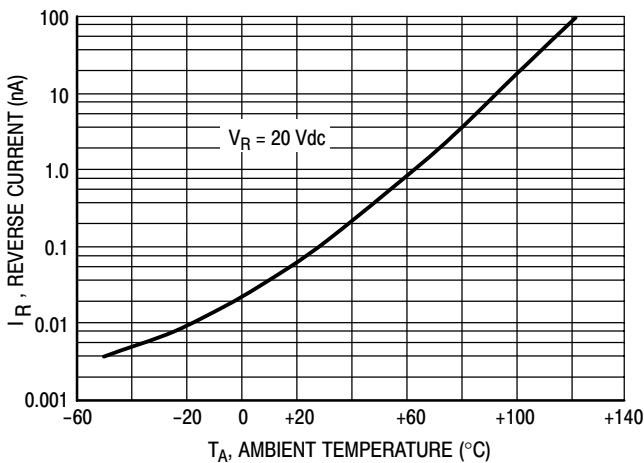


Figure 3. Leakage Current

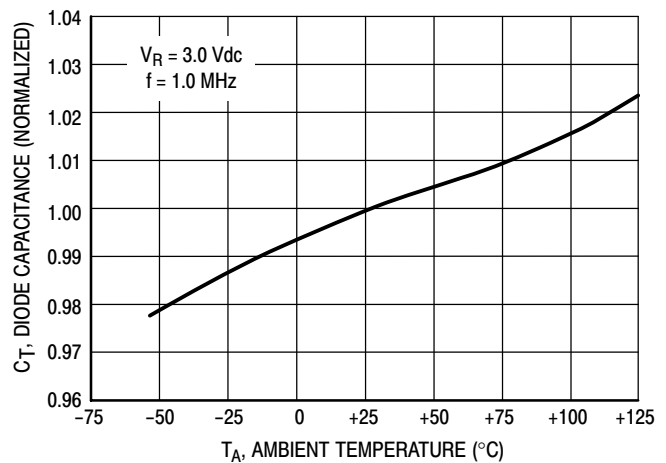


Figure 4. Diode Capacitance

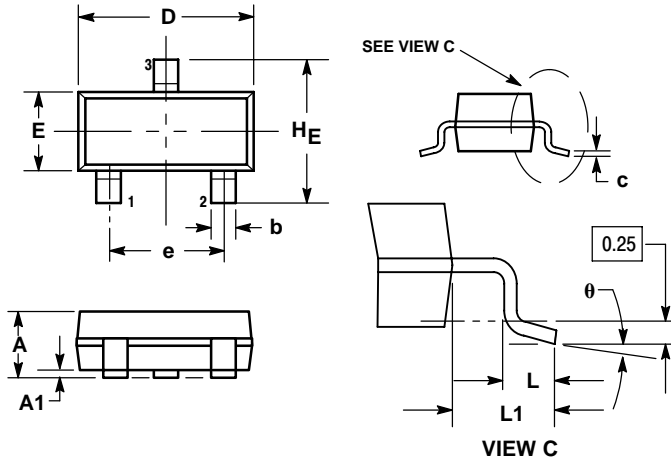
## NOTES ON TESTING AND SPECIFICATIONS

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

# MMBV3102LT1

## PACKAGE DIMENSIONS

SOT-23 (TO-236)  
CASE 318-08  
ISSUE AN



### NOTES:

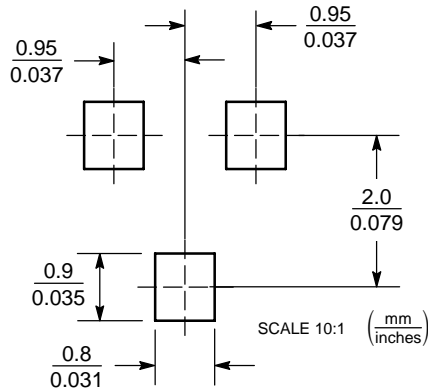
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318-01 THRU -07 AND -09 OBSOLETE, NEW STANDARD 318-08.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.10	0.20	0.30	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
HE	2.10	2.40	2.64	0.083	0.094	0.104

### STYLE 8:

1. ANODE
2. NO CONNECTION
3. CATHODE

### 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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