

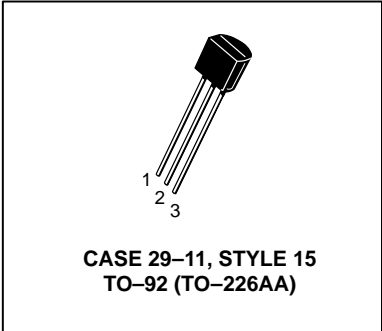
# Silicon Tuning Diode

This device is designed for FM tuning, general frequency control and tuning, or any top-of-the-line application requiring back-to-back diode configurations for minimum signal distortion and detuning.

- High Figure of Merit —  $Q = 140$  (Typ) @  $V_R = 3.0$  Vdc,  $f = 100$  MHz
- Guaranteed Capacitance Range  
37–42 pF @  $V_R = 3.0$  Vdc (MV104)
- Dual Diodes – Save Space and Reduce Cost
- Monolithic Chip Provides Near Perfect Matching – Guaranteed  $\pm 1.0\%$  (Max) Over Specified Tuning Range

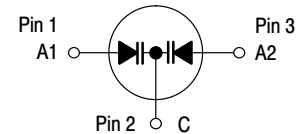
**MV104**

**DUAL  
VOLTAGE VARIABLE  
CAPACITANCE DIODE**



### MAXIMUM RATINGS (EACH DIODE)

Rating	Symbol	Value	Unit
Reverse Voltage	$V_R$	32	Vdc
Forward Current	$I_F$	200	mAdc
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	280 2.8	mW mW/°C
Junction Temperature	$T_J$	+125	°C
Storage Temperature Range	$T_{stg}$	–55 to +150	°C



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

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage ( $I_R = 10 \mu\text{Adc}$ )	$V_{(BR)R}$	32	—	—	Vdc
Reverse Voltage Leakage Current $T_A = 25^\circ\text{C}$ ( $V_R = 30$ Vdc) $T_A = 60^\circ\text{C}$	$I_R$	— —	— —	50 500	nAdc
Diode Capacitance Temperature Coefficient ( $V_R = 4.0$ Vdc, $f = 1.0$ MHz)	$TC_C$	—	280	—	ppm/°C

Device	$C_T$ , Diode Capacitance $V_R = 3.0$ Vdc, $f = 1.0$ MHz pF		$Q$ , Figure of Merit $V_R = 3.0$ Vdc $f = 100$ MHz		$C_R$ , Capacitance Ratio $C_3/C_{30}$ $f = 1.0$ MHz	
	Min	Max	Min	Typ	Min	Max
MV104	37	42	100	140	2.5	2.8

# MV104

## TYPICAL CHARACTERISTICS (Each Diode)

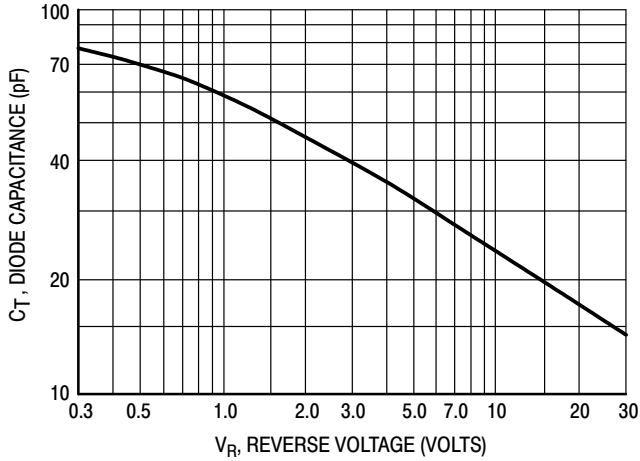


Figure 1. Diode Capacitance (Each Diode)

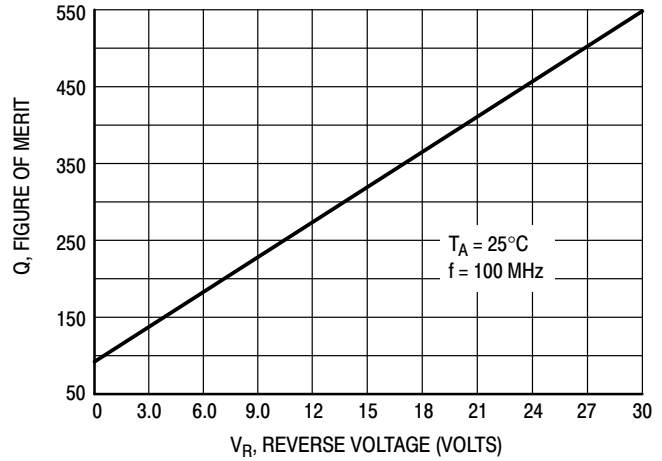


Figure 2. Figure of Merit versus Voltage

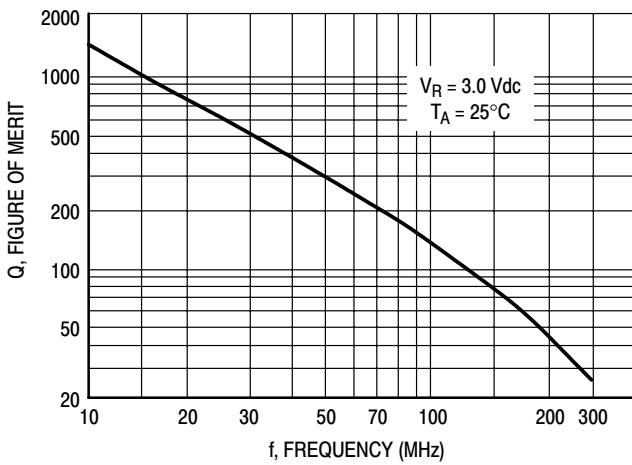


Figure 3. Figure of Merit versus Frequency

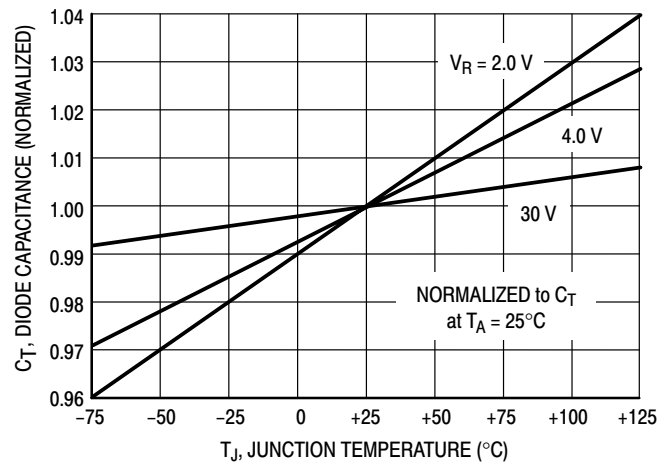


Figure 4. Diode Capacitance versus Temperature

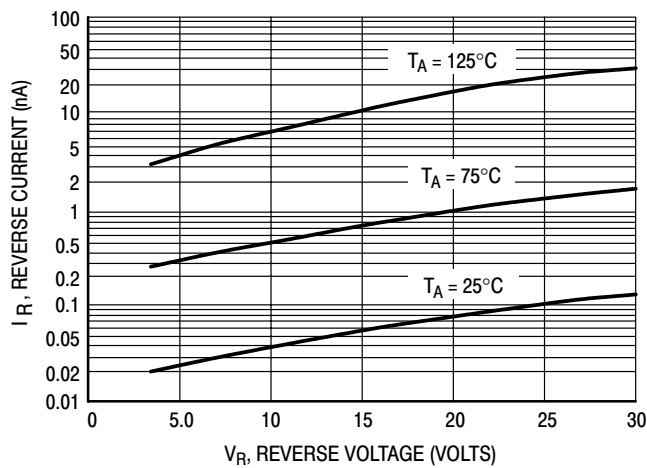
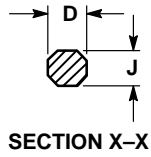
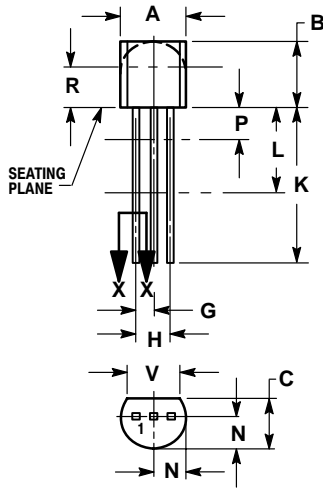


Figure 5. Reverse Current versus Reverse Voltage

# MV104

## PACKAGE DIMENSIONS

### TO-92 (TO-226AA) CASE 29-11 ISSUE AL



YLE 15:  
PIN 1. ANODE 1  
2. CATHODE  
3. ANODE 2

#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---

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