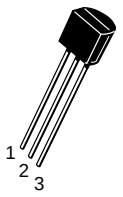
Silicon Tuning Diode

MV104

DUAL VOLTAGE VARIABLE CAPACITANCE 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.

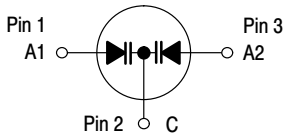
- High Figure of Merit — Q = 140 (Typ) @ V_R = 3.0 Vdc, f = 100 MHz
- Guaranteed Capacitance Range
  37–42 pF @ V_R = 3.0 Vdc (MV104)
- Dual Diodes – Save Space and Reduce Cost
- Monolithic Chip Provides Near Perfect Matching – Guaranteed ± 1.0% (Max) Over Specified Tuning Range



CASE 29–11, STYLE 15
TO–92 (TO–226AA)

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°C Derate above 25°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°C unless otherwise noted) **(EACH DIODE)**

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage (I_R = 10 μAdc)	$V_{(BR)R}$	32	—	—	Vdc
Reverse Voltage Leakage Current T_A = 25°C (V_R = 30 Vdc) T_A = 60°C	I_R	— —	— —	50 500	nAdc
Diode Capacitance Temperature Coefficient (V_R = 4.0 Vdc, f = 1.0 MHz)	TC_C	—	280	—	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 = 100 MHz		C_R, Capacitance Ratio C_3/C_{30} f = 1.0 MHz	
Device	**Min**	**Max**	**Min**	**Typ**	**Min**	**Max**
MV104	37	42	100	140	2.5	2.8

TYPICAL CHARACTERISTICS (Each Diode)

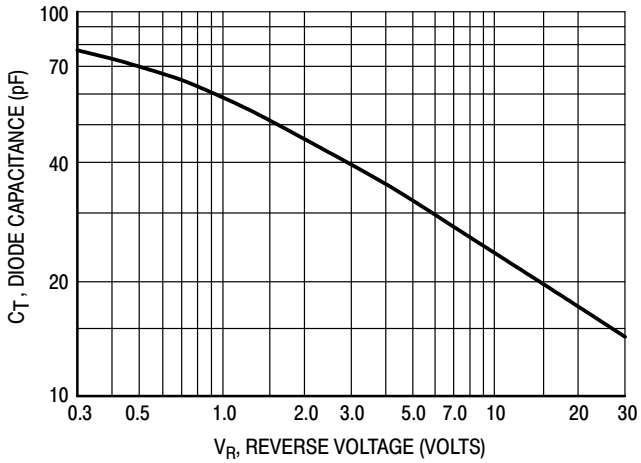


Figure 1. Diode Capacitance (Each Diode)

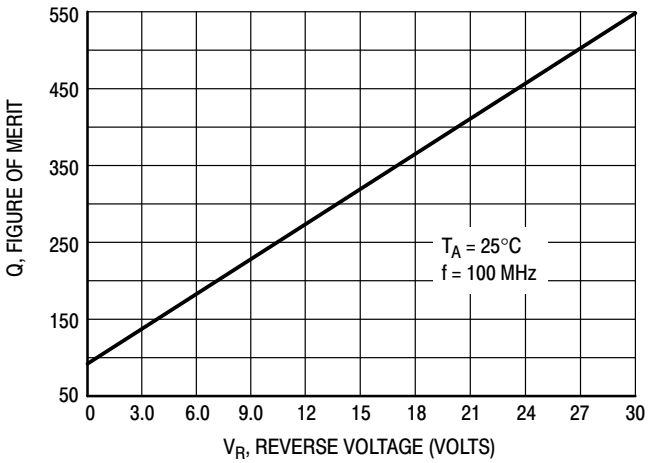


Figure 2. Figure of Merit versus Voltage

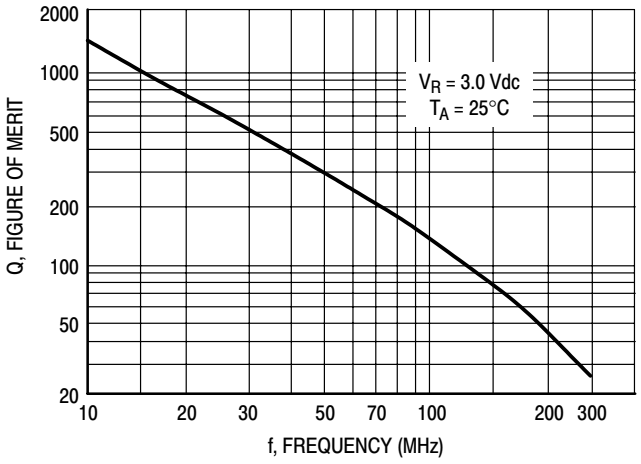


Figure 3. Figure of Merit versus Frequency

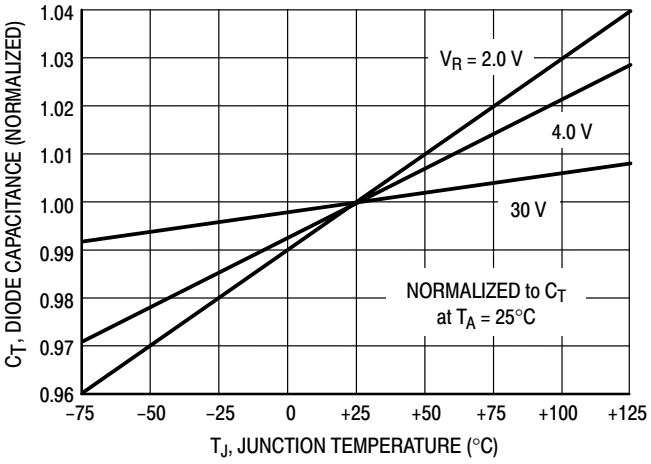


Figure 4. Diode Capacitance versus Temperature

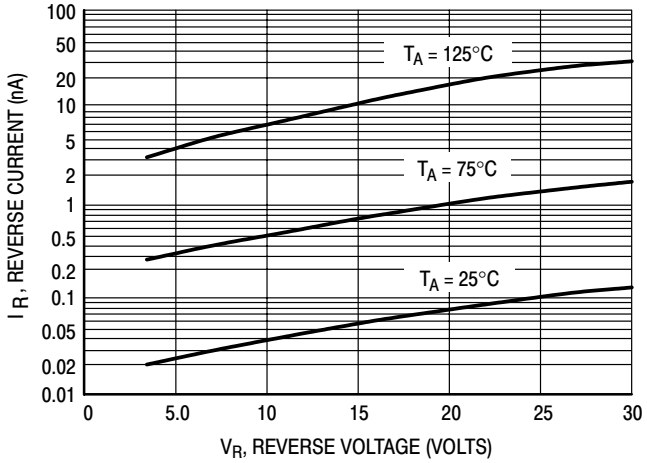
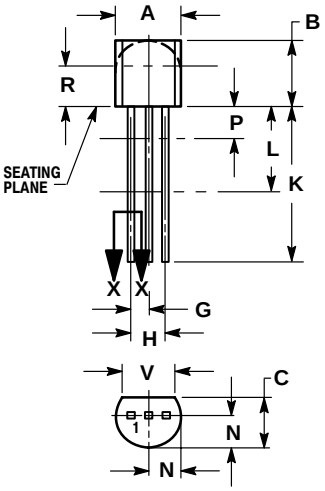
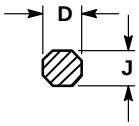


Figure 5. Reverse Current versus Reverse Voltage

PACKAGE DIMENSIONS

TO–92 (TO–226AA)
CASE 29–11
ISSUE AL





SECTION X–X

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.

	INCHES		MILLIMETERS	
DIM	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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