

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.

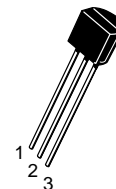
- High Figure of Merit — $Q = 140$ (Typ) @ $V_R = 3.0$ Vdc, $f = 100$ MHz
- Guaranteed Capacitance Range
37–42 pF @ $V_R = 3.0$ Vdc (MV104)
- Dual Diodes – Save Space and Reduce Cost
- Monolithic Chip Provides Near Perfect Matching – Guaranteed $\pm 1.0\%$ (Max) Over Specified Tuning Range

MAXIMUM RATINGS (EACH DIODE)

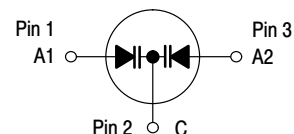
| Rating | Symbol | Value | Unit |
|---|------------------|-------------|----------------------------|
| Reverse Voltage | V_R | 32 | Vdc |
| Forward Current | I_F | 200 | mAdc |
| Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 280 2.8 | mW mW/ $^\circ\text{C}$ |
| Junction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

MV104

**DUAL
VOLTAGE VARIABLE
CAPACITANCE DIODE**



CASE 29–11, STYLE 15
TO–92 (TO–226AA)



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/ $^\circ\text{C}$ |

| | 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)

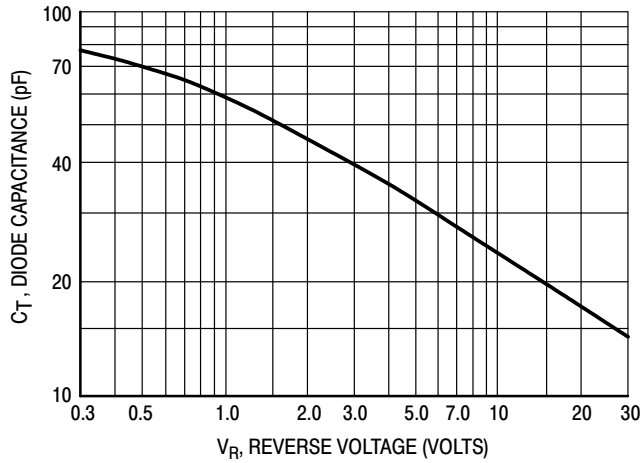


Figure 1. Diode Capacitance (Each Diode)

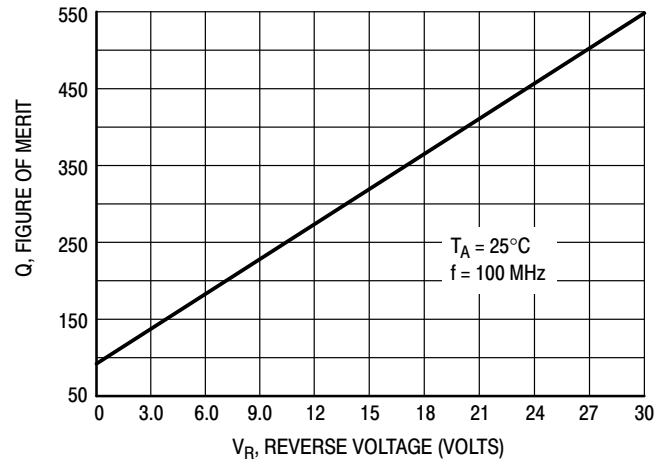


Figure 2. Figure of Merit versus Voltage

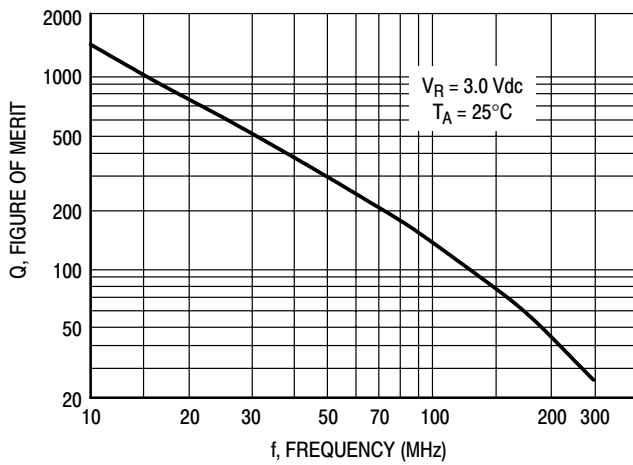


Figure 3. Figure of Merit versus Frequency

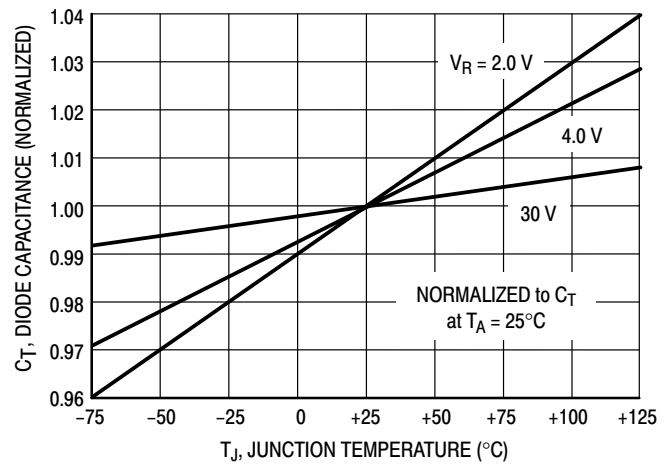


Figure 4. Diode Capacitance versus Temperature

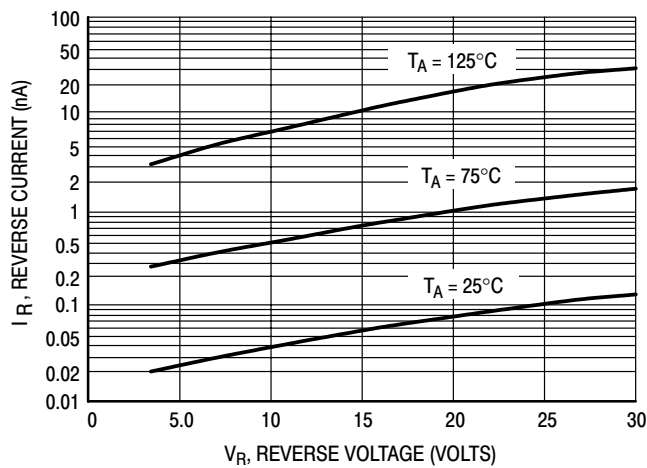
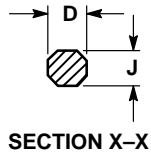
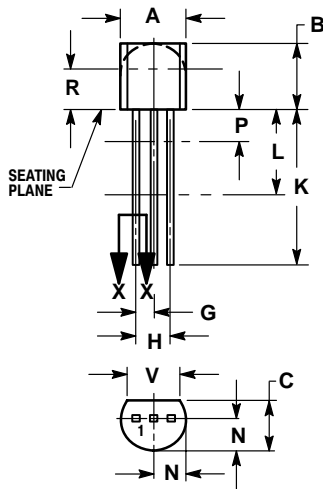


Figure 5. Reverse Current versus Reverse Voltage

MV104

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.

| 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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