# MV2201, MV2203 (SILICON)
# MV2205, MV2209

VVC

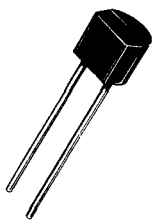
## AFC SILICON EPICAP DIODES

. . . designed specifically for the high volume AFC applications of FM Radio and TV, utilizing the economical PLASTIC PACKAGE.

- Very High Q with Guaranteed Minimum Values
- Guaranteed Uniformity with Minimum and Maximum Tuning Ratio Limits, Assuring Fixed Design
- Nominal Capacitance Values – 6.8 pF Thru 33 pF – Providing Complete AFC Design Flexibility

## VOLTAGE-VARIABLE CAPACITANCE DIODES

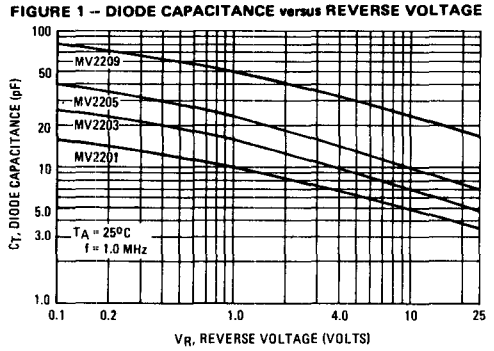
**6.8–33 pF**
**25 VOLTS**

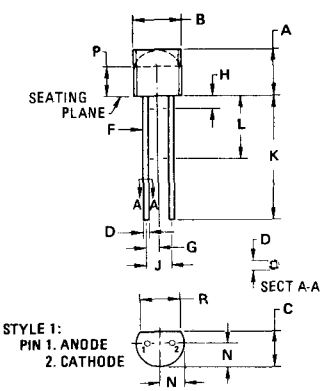


### MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Reverse Voltage | $V_R$ | 25 | Volts |
| Forward Current | $I_F$ | 200 | mA |
| Device Dissipation @ $T_A$ = 25°C<br>Derate above 25°C | $P_D$ | 280<br>2.8 | mW<br>mW/°C |
| Junction Temperature | $T_J$ | +125 | °C |
| Storage Temperature Range | $T_{stg}$ | -65 to +150 | °C |

**FIGURE 1 – DIODE CAPACITANCE versus REVERSE VOLTAGE**




| DIM | MILLIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 4.32 | 5.33 | 0.170 | 0.210 |
| B | 4.45 | 5.21 | 0.175 | 0.205 |
| C | 3.18 | 4.19 | 0.125 | 0.165 |
| D | 0.356 | 0.533 | 0.014 | 0.021 |
| F | 0.407 | 0.482 | 0.016 | 0.019 |
| G | 1.27 BSC | | 0.050 BSC | |
| H | – | 1.27 | – | 0.050 |
| J | 2.54 BSC | | 0.100 BSC | |
| K | 12.70 | – | 0.500 | – |
| L | 6.35 | – | 0.250 | – |
| N | 2.03 | 2.66 | 0.080 | 0.105 |
| P | 2.93 | – | 0.115 | – |
| R | 3.43 | – | 0.135 | – |

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

| Characteristic—All Types | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Reverse Breakdown Voltage ($I_R$ = 10 μAdc) | $BV_R$ | 25 | | – | Vdc |
| Reverse Voltage Leakage Current ($V_R$ = 10 Vdc, $T_A$ = 25°C) | $I_R$ | – | – | 0.5 | μAdc |
| ($V_R$ = 10 Vdc, $T_A$ = 85°C) | | – | – | 5.0 | |
| Forward Voltage Drop ($I_F$ = 250 μAdc) | $V_F$ | – | 0.65 | – | Vdc |
| Series Inductance (f = 250 MHz, lead length ≈ 1/16") | $L_S$ | – | 6.0 | – | nH |
| Case Capacitance (f = 1.0 MHz, lead length ≈ 1/16") | $C_C$ | – | 0.18 | – | pF |

| | $C_T$, Diode Capacitance $V_R$ = 4.0 Vdc, f = 1.0 MHz pF | | Q, Figure of Merit $V_R$ = 4.0 Vdc, f = 50 MHz | TR, Tuning Ratio $C_1/C_{10}$ f = 1.0 MHz | |
|---|---|---|---|---|---|
| Device | Min | Max | Min | Min | Max |
| MV2201 | 5.5 | 8.0 | 300 | 1.9 | 2.3 |
| MV2203 | 8.5 | 11.5 | 200 | 2.0 | 2.4 |
| MV2205 | 13 | 17 | 200 | 2.1 | 2.5 |
| MV2209 | 29 | 37 | 150 | 2.1 | 2.5 |

FIGURE 2 – FIGURE OF MERIT versus REVERSE VOLTAGE

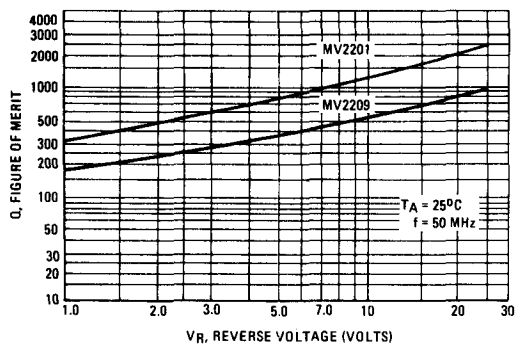



FIGURE 3 – FIGURE OF MERIT versus FREQUENCY

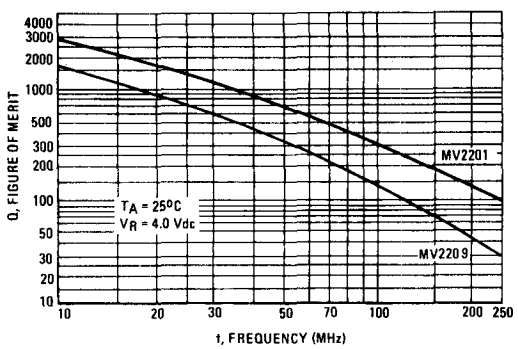
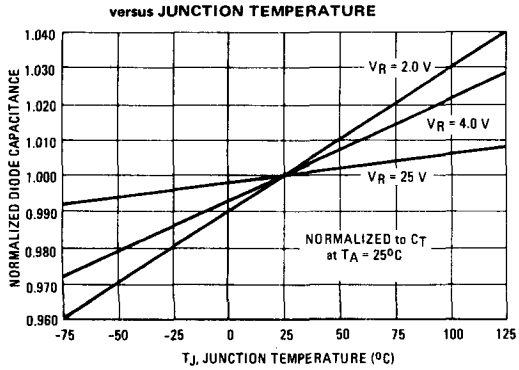



FIGURE 4 – NORMALIZED DIODE CAPACITANCE versus JUNCTION TEMPERATURE




## NOTES ON TESTING AND SPECIFICATIONS

$L_S$ is measured on a package having a short instead of a die, using an impedance bridge (Boonton Radio Model 250A RX Meter).

$C_C$ is measured on a package without a die, using a capacitance bridge (Boonton Electronics Model 75A or equivalent).

Q is calculated by taking the G and C readings of an admittance bridge, such as Boonton Electronics Model 33AS8, at the specified frequency and substituting in the following equation:

$$Q = \frac{2\pi fC}{G}$$