

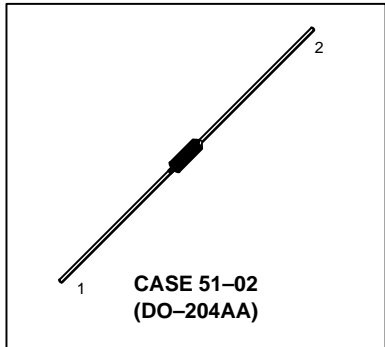
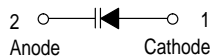
# Silicon Hyper-Abrupt Tuning Diodes

These devices are designed with high capacitance and a capacitance change of greater than TEN TIMES for a bias change from 2.0 to 10 volts. They provide tuning over broad frequency ranges; tune AM radio broadcast band, general AFC and tuning applications in lower RF frequencies.

- High Capacitance: 120–250 pF
- Large Capacitance Change with Small Bias Change
- Guaranteed High Q
- Available in Standard Axial Glass Packages

**MV1403**  
**MV1404**  
**MV1405**

**120–250 pF**  
**12 VOLTS**  
**HIGH TUNING RATIO**  
**VOLTAGE-VARIABLE**  
**CAPACITANCE DIODES**



## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage	$V_R$	12	Vdc
Forward Current	$I_F$	250	mAdc
Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	400 2.67	mW mW/°C
Junction Temperature	$T_J$	+125	°C
Storage Temperature Range	$T_{stg}$	-65 to +200	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage ( $I_R = 10 \mu\text{Adc}$ )	$V_{(BR)R}$	12	—	—	Vdc
Reverse Voltage Leakage Current ( $V_R = 10 \text{Vdc}$ , $T_A = 25^\circ\text{C}$ )	$I_R$	—	—	0.1	$\mu\text{Adc}$
Series Inductance ( $f = 250 \text{MHz}$ , Lead Length $\approx 1/16''$ )	$L_S$	—	5.0	—	nH
Case Capacitance ( $f = 1.0 \text{MHz}$ , Lead Length $\approx 1/16''$ )	$C_C$	—	0.25	—	pF

Device	$C_T$ , Diode Capacitance			$Q$ , Figure of Merit	TR, Tuning Ratio	
	$V_R = 2.0 \text{Vdc}$ , $f = 1.0 \text{MHz}$ pF			$V_R = 2.0 \text{Vdc}$ , $f = 1.0 \text{MHz}$	$C_1/C_{10}$ $f = 1.0 \text{MHz}$	$C_2/C_{10}$ $f = 1.0 \text{MHz}$
	Min	Nom	Max	Min	Min	Min
MV1403	140	175	210	200	—	10
MV1404	96	120	144	200	—	10
MV1405	200	250	300	200	—	10

TYPICAL CHARACTERISTICS

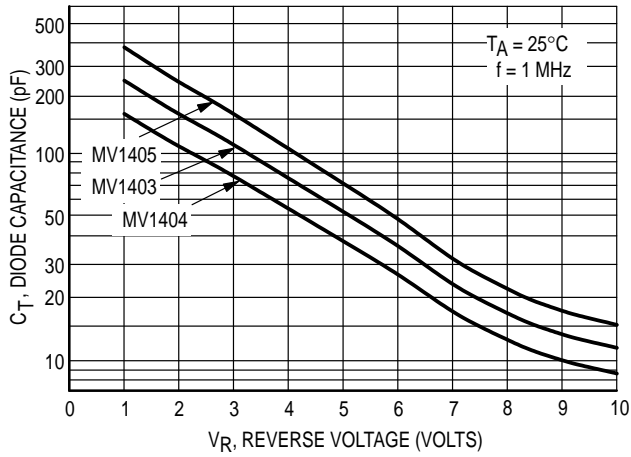


Figure 1. Diode Capacitance versus Reverse Voltage

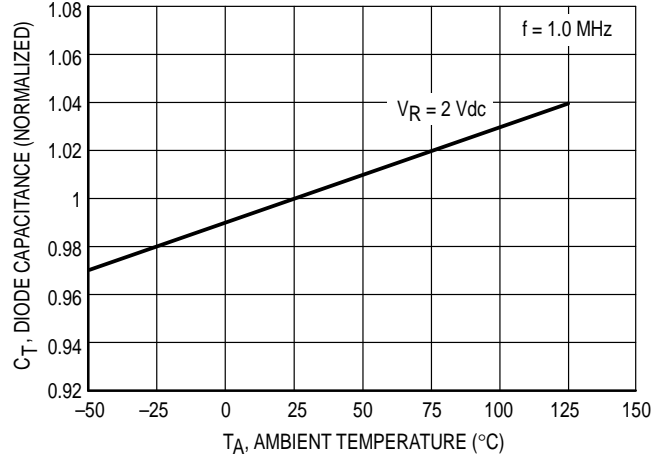


Figure 2. Diode Capacitance versus Ambient Temperature

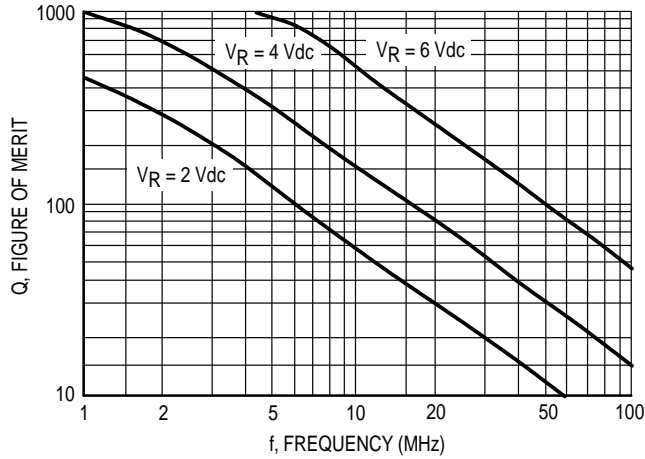
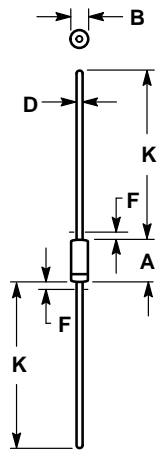


Figure 3. Figure of Merit versus Frequency

PACKAGE DIMENSIONS



NOTES:

1. PACKAGE CONTOUR OPTIONAL WITHIN DIA B AND LENGTH A. HEAT SLUGS, IF ANY, SHALL BE INCLUDED WITHIN THIS CYLINDER, BUT SHALL NOT BE SUBJECT TO THE MIN LIMIT OF DIA B.
2. LEAD DIA NOT CONTROLLED IN ZONES F, TO ALLOW FOR FLASH, LEAD FINISH BUILDUP, AND MINOR IRREGULARITIES OTHER THAN HEAT SLUGS.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	5.84	7.62	0.230	0.300
B	2.16	2.72	0.085	0.107
D	0.46	0.56	0.018	0.022
F	—	1.27	—	0.050
K	25.40	38.10	1.000	1.500

All JEDEC dimensions and notes apply.

**CASE 51-02  
(DO-204AA)  
ISSUE E**

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