

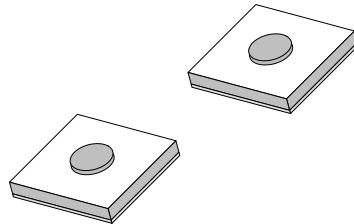
Silicon Low Capacitance Hyperabrupt Junction Varactor Diodes

Alpha

SMV2019 to SMV2023

Features

- Octave Frequency Tuning from 0 to 10 Volts
- Good Linearity Tuning Ratio Without Compensation Network
- Offered in Package Styles Suitable for a Wide Range of Applications



Description

Alpha microwave hyperabrupt diodes are designed for wideband tuning of microwave filters, resonators, and local oscillators. Linear tuning, not possible with conventional abrupt-junction tuning diodes, is accomplished by maintaining an accurate silicon doping profile using ion-implantation precision control techniques.

This series of hyperabrupt diodes offer wide bandwidth tuning with low bias voltage. For example, a 22 volt hyperabrupt diode can provide the same tuning variation as a 90 volt abrupt-junction diode.

When capacitance and tuning ratio values are equal, a hyperabrupt diode will have a Q (measured at -4 volts, 50 MHz) approximately 1/2 to 1/3 that of an abrupt-junction diode.

Electrical Specifications at 25°C

Square Passivated Silicon Chips



Maximum Ratings

Reverse Voltage, V_R :	22V
Forward Current, I_F :	100 mA
Power Dissipation at 25°C:	250 mW
Operating Temperature:	-55 to 150°C
Storage Temperature:	-65 to 200°C

These diodes are available in many Alpha ceramic packages. They can be supplied in chip form or mounted on a variety of packages. All chips are passivated with silicon dioxide for reliability and low leakage current.

The specifications table indicates chip capacitance measured at 1 MHz. For packaged varactors add appropriate package capacitance, e.g., 0.22 pF for package 210, to obtain total capacitance.

Electrical Specifications at 25°C

Square Passivated Silicon Chips



Part Number	V_B @ 10 μ A (V)	I_R @ 17.6V (nA)	C_J @ 4V (pF)		C_J @ 20V (pF)		Q @ 4V 50 MHz	Chip Outline Number
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
► SMV2019-000	22	50	0.68	0.88	0.13	0.23	500	149-801
SMV2020-000	22	50	1.13	1.43	0.23	0.33	500	149-801
SMV2021-000	22	50	1.58	1.98	0.32	0.44	500	149-801
SMV2022-000	22	50	2.48	3.08	0.48	0.68	400	149-801
► SMV2023-000	22	50	4.28	5.28	0.78	1.08	400	149-801

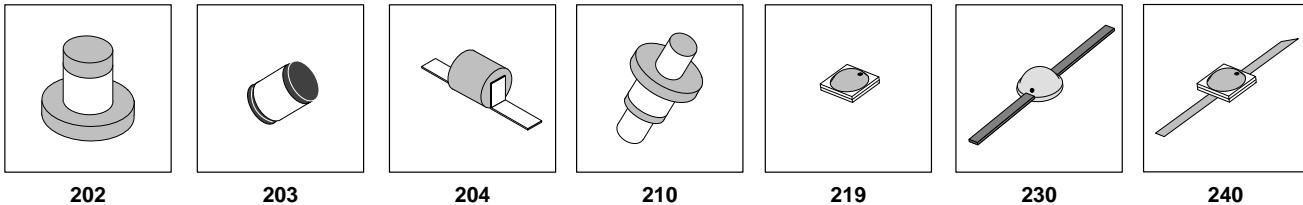
► Available through distribution.

Ordering Information

The following packages are also available. To order part in a different package just replace the dash number with a package style listed below. For example, SMV2019-000 becomes SMV2019-210.

Available Package Outlines: 202, 203, 204, 210, 219, 230, 240

Refer to the Outline Drawings section in this catalog for the total selection of outline (package) dimensions.



Outline Dimensions

149-801

