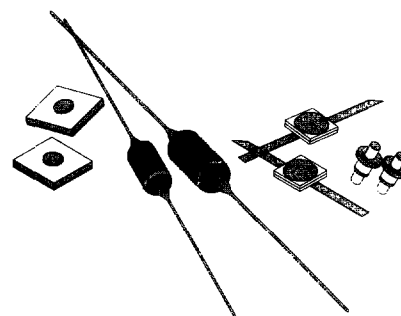


Features

- Low Series Resistance – High Q
- Extensive Selection of Capacitance Values
- Available in a Wide Range of Package Outlines and in Die Form

**Description**

The silicon abrupt junction varactor diode changes capacitance as a function of applied reverse bias voltage, following the square root law ($\gamma \approx 0.5$). While the capacitance change is slower in comparison to an equivalent hyperabrupt diode, the diode Q is higher which allows for a relatively higher frequency application. The simplicity of the wafer process allows the characteristics of an abrupt silicon varactor diode to be highly reproducible. A cross reference table to surface mountable plastic packages and a cross reference table with previous parts are shown.

Maximum Ratings

Reverse Voltage, V_R :	30V
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

CVH2030 Series

Electrical Characteristics

Reverse Breakdown Voltage, V_{BR} (10 μ A): 30V Minimum
 Reverse Leakage Current, I_R (24V): 100 nA Maximum

Chip Part Number	C_j @ 4V (pF)		TR @ 0V/30V	R_s @ 4V, 50 MHz (Ohm)	Q @ 4V, 50 MHz	Part Number		C_t @ 4V (pF)		TR @ 0V/30V	Part Number		C_t @ 4V (pF)		TR @ 0V/30V	C_j @ 4V Nom (pF)	
	Min	Max				Min	Max	Min	Max		Min	Max	Min	Max			Min
CVH2030-01	0.32	0.48	4.5	2.20	3500	CVH2030-01-099-001	0.42	0.58	3.1	0.70	CVH2030-01-023-001	0.54	0.70	2.5	0.47	0.63	3.5
CVH2030-02	0.48	0.72	4.5	1.50	3500	CVH2030-02-099-001	0.58	0.82	3.4	0.94	CVH2030-02-023-001	0.70	0.94	2.8	0.63	0.87	3.7
CVH2030-03	0.72	0.88	4.5	1.25	3400	CVH2030-03-099-001	0.82	0.98	3.7	1.10	CVH2030-03-023-001	0.94	1.10	3.2	0.87	1.03	3.9
CVH2030-04	0.90	1.10	4.5	1.00	3300	CVH2030-04-099-001	1.00	1.20	3.8	1.32	CVH2030-04-023-001	1.12	1.32	3.3	1.05	1.25	3.9
CVH2030-05	1.08	1.32	4.5	0.80	3200	CVH2030-05-099-001	1.18	1.42	3.9	1.54	CVH2030-05-023-001	1.30	1.54	3.5	1.23	1.47	4.0
CVH2030-07	1.35	1.65	4.5	0.70	3000	CVH2030-07-099-001	1.45	1.75	4.0	1.87	CVH2030-07-023-001	1.57	1.87	3.6	1.50	1.80	4.1
CVH2030-08	1.62	1.98	4.5	0.60	2900	CVH2030-08-099-001	1.72	2.08	4.1	2.20	CVH2030-08-023-001	1.84	2.20	3.7	1.77	2.13	4.1
CVH2030-09	1.98	2.42	4.5	0.50	2800	CVH2030-09-099-001	2.08	2.52	4.2	2.84	CVH2030-09-023-001	2.20	2.84	3.8	2.13	2.57	4.2
CVH2030-10	2.43	2.97	4.5	0.45	2600	CVH2030-10-099-001	2.53	3.07	4.2	3.19	CVH2030-10-023-001	2.65	3.19	3.9	2.58	3.12	4.2
CVH2030-11	2.97	3.63	4.5	0.40	2500	CVH2030-11-099-001	3.07	3.73	4.3	3.95	CVH2030-11-023-001	3.19	3.95	4.0	3.12	3.78	4.3
CVH2030-13	3.51	4.29	4.5	0.35	2400	CVH2030-13-099-001	3.61	4.39	4.3	4.51	CVH2030-13-023-001	3.73	4.51	4.1	3.66	4.44	4.3
CVH2030-14	4.23	5.17	4.5	0.30	2200	CVH2030-14-099-001	4.33	5.27	4.3	5.39	CVH2030-14-023-001	4.45	5.39	4.1	4.38	5.32	4.3
CVH2030-15	5.04	6.16	4.5	0.27	2100	CVH2030-15-099-001	5.14	6.26	4.3	6.38	CVH2030-15-023-001	5.26	6.38	4.2	5.19	6.31	4.3
CVH2030-16	6.12	7.48	4.5	0.24	2000	CVH2030-16-099-001	6.22	7.58	4.4	7.70	CVH2030-16-023-001	6.34	7.70	4.2	6.27	7.63	4.4
CVH2030-17	7.38	9.02	4.5	0.22	1800	CVH2030-17-099-001	7.48	9.12	4.4	9.24	CVH2030-17-023-001	7.60	9.24	4.3	7.53	9.17	4.4
CVH2030-19	9.00	11.00	4.5	0.20	1600	CVH2030-19-099-001	9.10	11.10	4.4	11.22	CVH2030-19-023-001	9.22	11.22	4.3	9.15	11.15	4.4
CVH2030-20	10.80	13.20	4.5	0.19	1400	CVH2030-20-099-001	10.90	13.30	4.4	13.42	CVH2030-20-023-001	11.02	13.42	4.3	10.95	13.35	4.4
CVH2030-21	13.50	16.50	4.5	0.18	1200	CVH2030-21-099-001	13.60	16.60	4.4	16.72	CVH2030-21-023-001	13.72	16.72	4.4	13.65	16.65	4.4
CVH2030-22	16.20	19.80	4.5	0.18	1000	CVH2030-22-099-001	16.30	19.90	4.4	20.02	CVH2030-22-023-001	16.42	20.02	4.4	16.35	19.95	4.4
CVH2030-23	19.80	24.20	4.5	0.17	850	CVH2030-23-099-001	19.90	24.30	4.4	24.42	CVH2030-23-023-001	20.02	24.42	4.4	19.95	24.35	4.4
CVH2030-25	24.30	29.70	4.5	0.17	700	CVH2030-25-099-001	24.40	29.80	4.4	29.92	CVH2030-25-023-001	24.52	29.92	4.4	24.45	29.85	4.4
CVH2030-26	29.70	36.30	4.5	0.16	600	CVH2030-26-099-001	29.80	36.40	4.4	36.52	CVH2030-26-023-001	29.92	36.52	4.4	29.85	36.45	4.4
CVH2030-27	35.10	42.90	4.5	0.16	500	CVH2030-27-099-001	35.20	43.00	4.5	43.12	CVH2030-27-023-001	35.32	43.12	4.4	35.25	43.05	4.5
CVH2030-28	42.30	51.70	4.5	0.15	450	CVH2030-28-099-001	42.40	51.80	4.5	51.92	CVH2030-28-023-001	42.52	51.92	4.4	42.45	51.85	4.5
CVH2030-29	50.40	61.60	4.5	0.15	350	CVH2030-29-099-001	50.50	61.70	4.5	61.82	CVH2030-29-023-001	50.62	61.82	4.4	50.55	61.75	4.5

For availability and delivery on other package styles, please consult the factory.

Coaxial Ceramic Package (Cpack = 0.15 pF)
 Outline Drawing Number: 247-001
 Former DVH8821 Series

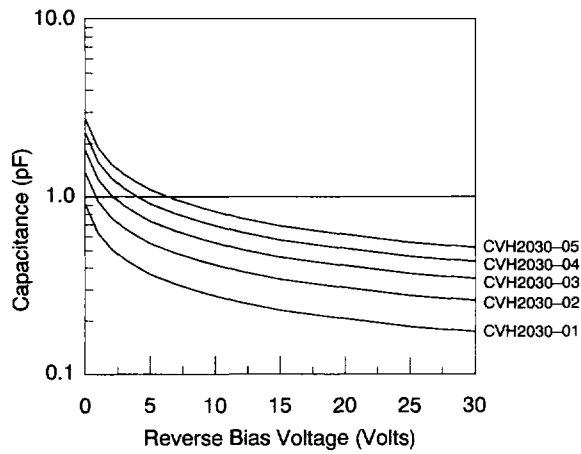
Coaxial Hermetic Ceramic Package (Cpack = 0.22 pF)
 Outline Drawing Number: 023-001
 Former DVH6731 series

Axial Leaded Glass Package (Cpack = 0.10 pF)
 Outline Drawing Number: 099-001 (DO-7)
 Former DVH6730 Series

30V Abrupt Varactor Chip
 Outline Drawing Number: 150 Series
 CVH2030 Series

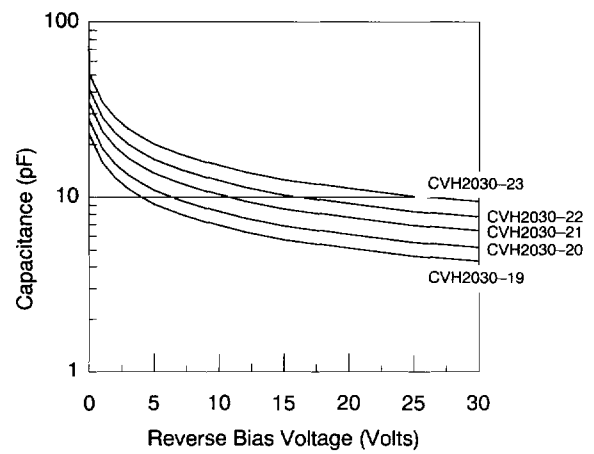
Performance Data

CVH2030-01 to CVH2030-05



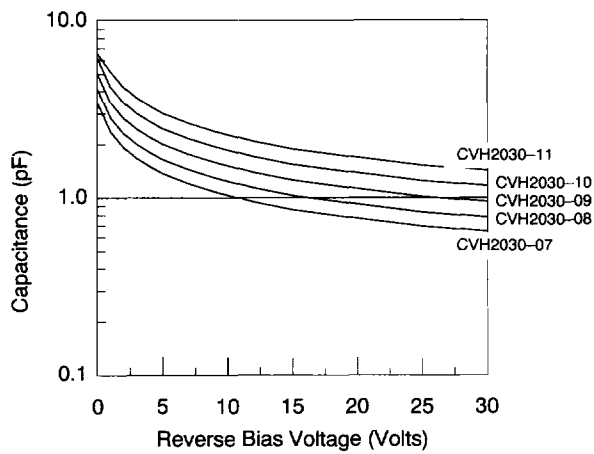
Capacitance vs. Reverse Voltage

CVH2030-19 to CVH2030-23



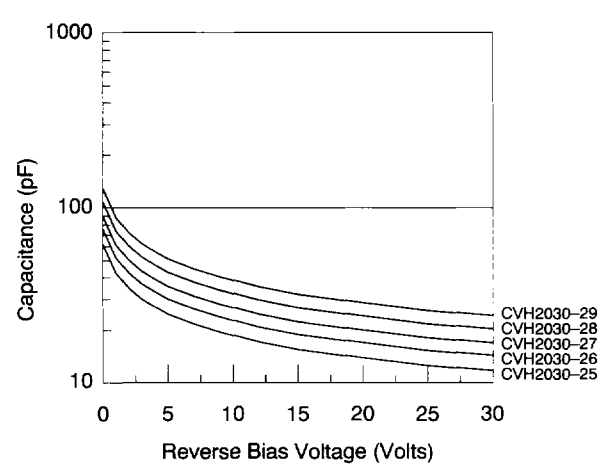
Capacitance vs. Reverse Voltage

CVH2030-07 to CVH2030-11



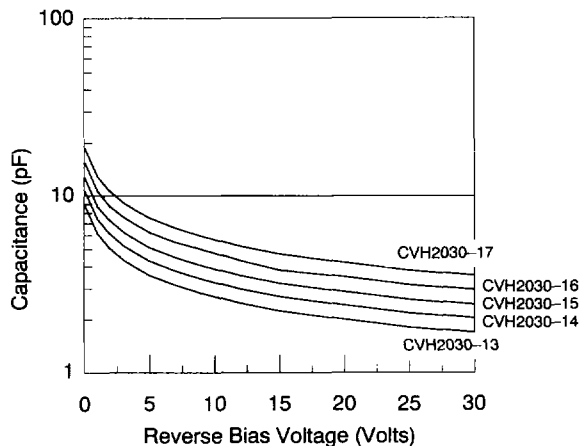
Capacitance vs. Reverse Voltage

CVH2030-25 to CVH2030-29



Capacitance vs. Reverse Voltage

CVH2030-13 to CVH2030-17



Capacitance vs. Reverse Voltage

Package Outlines

The varactor diodes in this series are available as dice and in a variety of package outlines. (Consult factory for availability.) The packages are designed to facilitate the handling of devices and circuit placement. However, the package may also influence the device's performance. Refer to the Outline Drawing section for catalog package outlines, their characteristics, and their effect on the electrical parameters of the diode.

Surface Mountable Packages for High Volume Commercial Applications

Many of the abrupt varactor diodes listed here are available in low cost surface mountable plastic packages. Refer to the Surface Mountable Varactor Diodes in Plastic Packages section for a list of diode parts, packages and their characteristics.

The following table summarizes the surface mountable plastic package equivalents for the Silicon Abrupt diode series:

Chip Part Number	Previous Part Numbers			SOT Equivalents
	Glass	Ceramic		
	099-001	023-001	247-001	
CVH2030-08	DVH6730-08	DVH6731-08	DVH3821-08	SMV1400-08
CVH2030-09	DVH6730-09	DVH6731-09	DVH3821-09	SMV1400-09
CVH2030-10	DVH6730-10	DVH6731-10	DVH3821-10	SMV1400-10
CVH2030-11	DVH6730-11	DVH6731-11	DVH3821-11	SMV1400-11
CVH2030-12	DVH6730-12	DVH6731-12	DVH3821-12	SMV1400-12
CVH2030-13	DVH6730-13	DVH6731-13	DVH3821-13	SMV1400-13
CVH2030-14	DVH6730-14	DVH6731-14	DVH3821-14	SMV1400-14
CVH2030-15	DVH6730-15	DVH6731-15	DVH3821-15	SMV1400-15
CVH2030-16	DVH6730-16	DVH6731-16	DVH3821-16	SMV1400-16
CVH2030-17	DVH6730-17	DVH6731-17	DVH3821-17	SMV1400-17
CVH2030-18	DVH6730-18	DVH6731-18	DVH3821-18	SMV1400-18
CVH2030-19	DVH6730-19	DVH6731-19	DVH3821-19	SMV1400-19
CVH2030-20	DVH6730-20	DVH6731-20	DVH3821-20	SMV1400-20
CVH2030-21	DVH6730-21	DVH6731-21	DVH3821-21	SMV1400-21
CVH2030-22	DVH6730-22	DVH6731-22	DVH3821-22	SMV1400-22

Mathematical Model

Refer to the Application Notes section for a mathematic model of a varactor diode.

Ordering Information

To order an unpackaged die, simply identify the desired die by the part numbers as listed in the table of Electrical Specifications. To order a packaged diode, simply append the package part number to the die part number. For example, CVH2030-14-247-001 represents the varactor diode formed by assembling CVH2030-14 die in a 247-001 package outline.

Abrupt Varactor Diodes for High Reliability Applications

Please refer to the Reliability section for recommended quality assurance and inspection sequences for varactor diodes. This section also covers package outlines available for high reliability applications and simplified ordering instructions.