

TUNING VARACTORS

60-VOLT SILICON TUNING VARACTORS

DESCRIPTION

The GC1700 series tuning varactors are silicon abrupt junction devices. They offer the highest Q and lowest resistance available in 60 volt tuning diodes.

A unique silicon dioxide passivation process assures greater stability, reliability, and low leakage currents at higher temperatures.

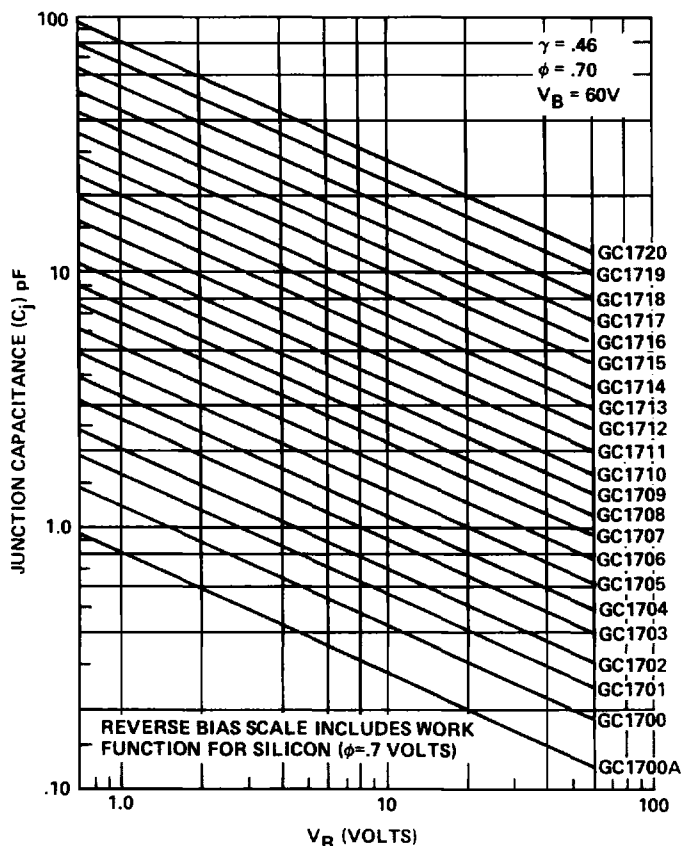
APPLICATIONS

The GC1700 series tuning varactors are used for both narrow and wide band tuning through S-Band.

These devices are used in circuits requiring a high Q voltage variable capacitance such as: tunable filters and amplifiers, voltage controlled oscillators, frequency synthesizers and continuous phase shifters. They are also useful as frequency and phase modulators in communications applications.

Standard capacitance tolerance is $\pm 10\%$. Diodes can be optimized for custom electrical or mechanical specifications upon request.

All specifications shown on the following page are based on the style 30 package. Other ceramic or glass packages are available. Chips mounted on carriers with gold wire/ribbon leads are also available.



Typical Junction Capacitance vs Reverse Bias

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ELECTRICAL SPECIFICATIONS

T_A = 25°C

MODEL NUMBER	TOTAL CAPACITANCE ¹ (AT -4V, 1 MHz) C _{t-4} (pF)	QUALITY FACTOR ² (AT -4V, 50 MHz) Q-4 (MIN)	CAPACITANCE RATIO ¹ (C _{t0} /C _{t60}) (MIN)
GC1700A	0.6	2200	4.5
GC1700	0.8	2100	4.6
GC1701	1.0	2000	4.8
GC1702	1.2	1800	5.0
GC1703	1.5	1800	5.3
GC1704	1.8	1700	5.5
GC1705	2.2	1700	5.8
GC1706	2.7	1600	5.9
GC1707	3.3	1600	6.0
GC1708	3.9	1400	6.0
GC1709	4.7	1400	6.5
GC1710	5.6	1400	6.5
GC1711	6.8	1300	6.5
GC1712	8.2	1300	7.0
GC1713	10.0	1200	7.0
GC1714	12.0	1200	7.0
GC1715	15.0	1100	7.0
GC1716	18.0	1000	7.0
GC1717	22.0	1000	7.0
GC1718	27.0	900	7.0
GC1719	33.0	800	7.0
GC1720	39.0	800	7.0

NOTES:

- These values include a package capacitance of .18pF.
- Q is calculated from: $Q = \frac{1}{2\pi f R_s C_j}$ where f = 50 MHz and
R_s = Series resistance measured at 1 GHz using transmission loss techniques.
Capacitance is measured at 1 MHz.
- Due to Die size, only case styles 11 and 55 are available for GC1718 to GC1720. Styles 15, 80, 85 and 89 are available for GC1700A to GC1710. When ordering, specify the desired case style by adding its number as a suffix to the basic part number. Some other case styles are available on request.

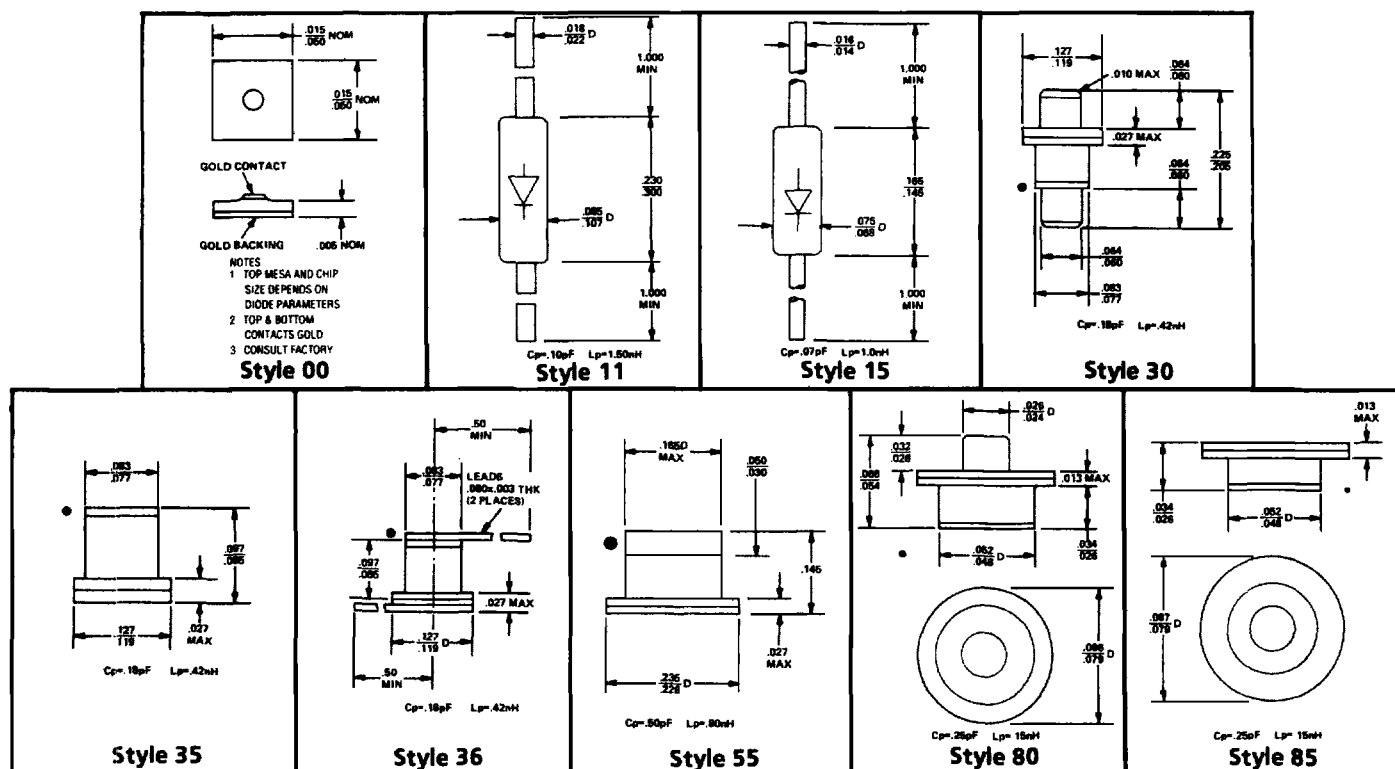
RATINGS

Minimum Voltage breakdown:	60 volts at 10 µA max
Maximum Leakage Current:	0.02 µA at 55 volts and 25°C 2.0 µA at 25 volts and 125°C
Capacitance-Temperature Coefficient:	300 ppm/°C at V _R = -4V
Operating Temperature:	-55°C to +150°C
Storage Temperature:	-65°C to +200°C

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PACKAGE STYLES



(•) Heat sink end. Dimensions are in inches.

Other Package Styles Are Available Upon Request

The cathode is the heat sink end of each package. Reverse polarity is available at a slightly higher cost.

ENGINEERING NOTES: