

# TUNING VARACTORS

## 45-VOLT SILICON TUNING VARACTORS

### DESCRIPTION

The GC1600 series tuning varactors are silicon abrupt junction devices. They offer the highest Q and lowest resistance available in 45 volt tuning diodes.

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

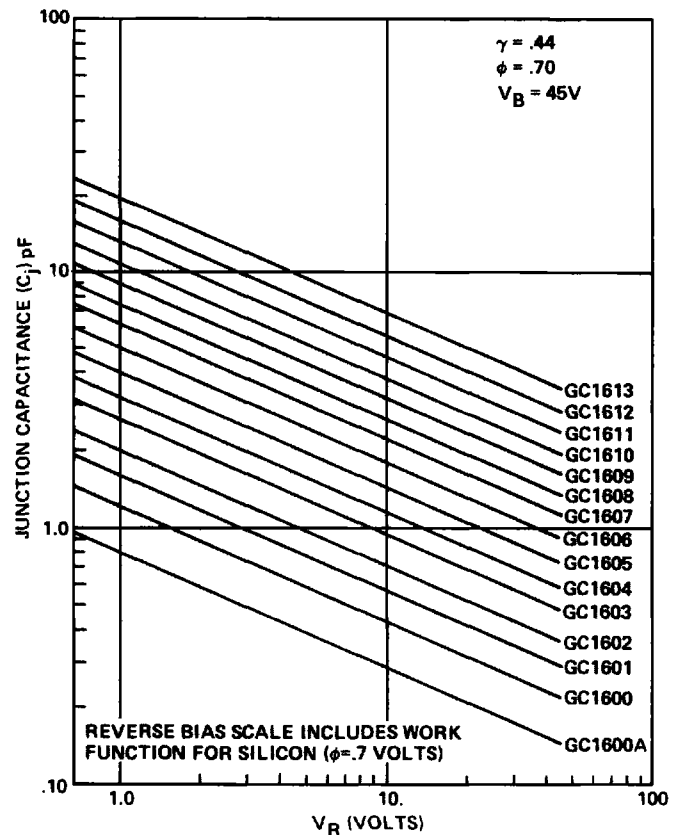
### APPLICATIONS

The GC-1600 series tuning varactors are used for both narrow and wide band tuning through X-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<sub>A</sub> = 25°C

MODEL NUMBER	TOTAL CAPACITANCE <sup>1</sup> (AT -4V, 1 MHz) C <sub>t-4</sub> (pF)	QUALITY FACTOR <sup>2</sup> (AT -4V, 50 MHz) Q <sub>-4</sub> (MIN)	CAPACITANCE RATIO <sup>1</sup> (C <sub>t0</sub> /C <sub>t45</sub> ) (MIN)
GC1600A	0.6	3000	4.0
GC1600	0.8	2900	4.2
GC1601	1.0	2800	4.4
GC1602	1.2	2800	4.5
GC1603	1.5	2300	4.8
GC1604	1.8	2300	4.9
GC1605	2.2	2200	5.0
GC1606	2.7	2000	5.2
GC1607	3.3	2000	5.3
GC1608	3.9	1900	5.4
GC1609	4.7	1900	5.4
GC1610	5.6	1700	5.5
GC1611	6.8	1700	5.5
GC1612	8.2	1500	5.6
GC1613	10.0	1500	5.6

### 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<sub>s</sub> = Series resistance measured at 1 GHz using transmission loss techniques.  
Capacitance is measured at 1 MHz.
- Standard case styles include : 00, 15, 30, 35, 36, 80, 85, 88 and 89. When ordering, specify the desired case style by adding its number as a suffix to the basic part number. Other case styles are available on request.

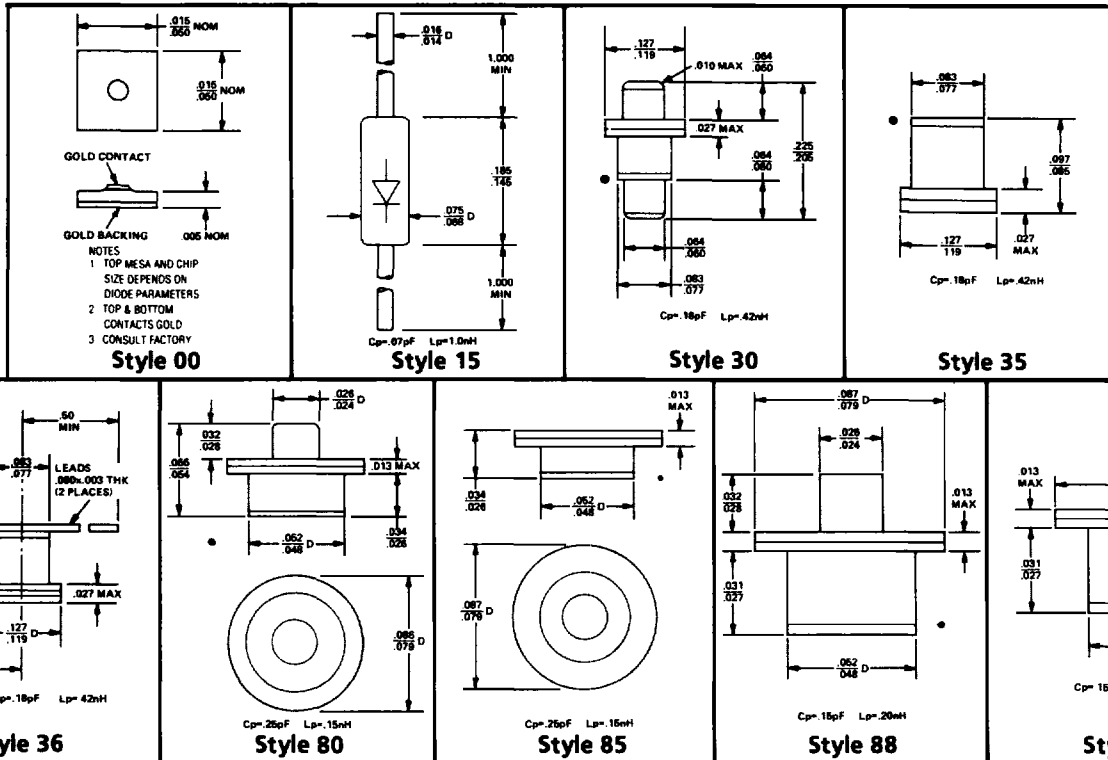
### RATINGS

Minimum Voltage breakdown:	45 volts at 10 μA max
Maximum Leakage Current:	0.02 μA at 35 volts and 25°C 2.0 μA at 35 volts and 125°C
Capacitance-Temperature Coefficient:	300 ppm/°C at V <sub>R</sub> = -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: