

## FREQUENCY LINEAR TUNING VARACTORS

### DESCRIPTION

A Frequency Linear Tuning Varactor (FLTVAR)<sup>TM</sup> is a silicon epitaxial mesa device, designed to provide wide-band Linear Tuning in VCO and filter applications.

These diodes feature thermal oxide passivation for high reliability, low leakage current, and very low surface noise. They offer Q values well above ion-implanted hyperabrupt diodes.

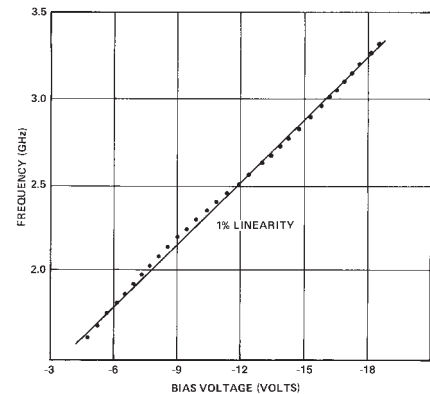
The specifications below apply to chips, or to chips mounted on carriers. Although these chips can be provided in any of our standard packages, this is not recommended for the lower capacitance diodes, because the parallel parasitic capacitance of the package degrades linearity at high bias voltages.

### APPLICATIONS

The GC15000 series of frequency-linear tuning varactors are used in VCO's, filters, amplifiers and modulators for wide band tuning through Ku band. The frequency linear characteristics allow over one octave linear tuning in

suitable circuits, with no need for external linearization. The combination of high Q and low surface noise results in low FM noise in VCO applications. They are particularly useful in modulated VCO's because of their constant sensitivity, and high modulation rate capability.

### ELECTRICAL SPECIFICATIONS: T<sub>A</sub>=25°C



Typical Performance

MODEL NUMBER	JUNCTION <sup>1</sup> CAPACITANCE C <sub>J-4</sub> (pF)	SENSITIVITY <sup>2</sup> TYP	QUALITY FACTOR <sup>3</sup> TYP	TUNING RATION <sup>4</sup> C <sub>J0</sub> / C <sub>JV</sub> TYP
GC15001		0.7		.08
GC15002		1.0		.08
GC15003		2.0		.08
GC15004		5.0		.08
GC15005		10.0		.08
GC15014		22.0		.08
GC15015		33.0		.08
GC15016		48.0		.08
GC15006		0.7		.11
GC15007		1.0		.11
GC15008		2.0		.11
GC15009		5.0		.11
GC15010		10.0		.11
GC15011		22.0		.11
GC15012		33.0		.11
GC15013		48.0		.11

#### NOTES:

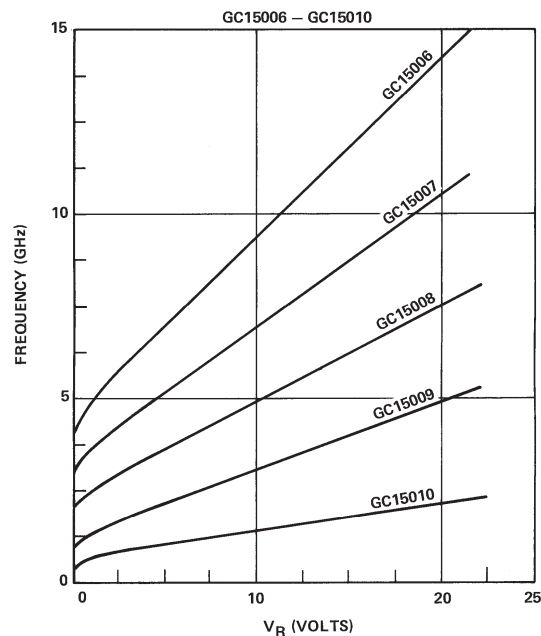
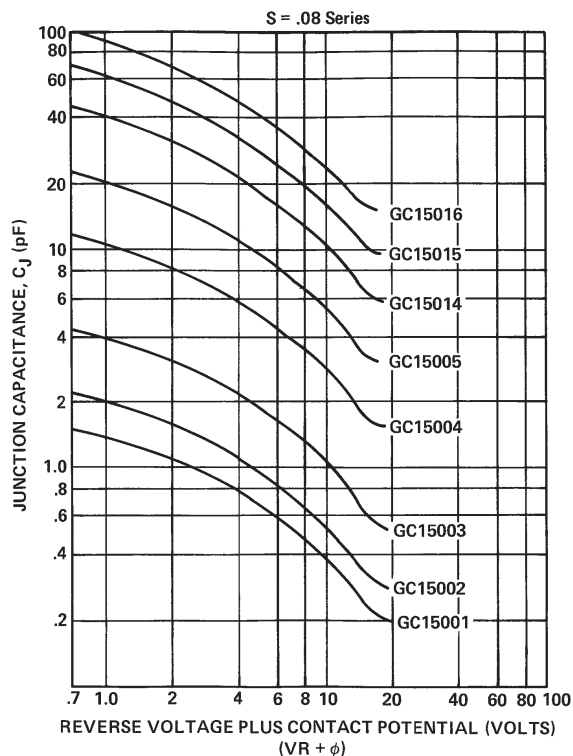
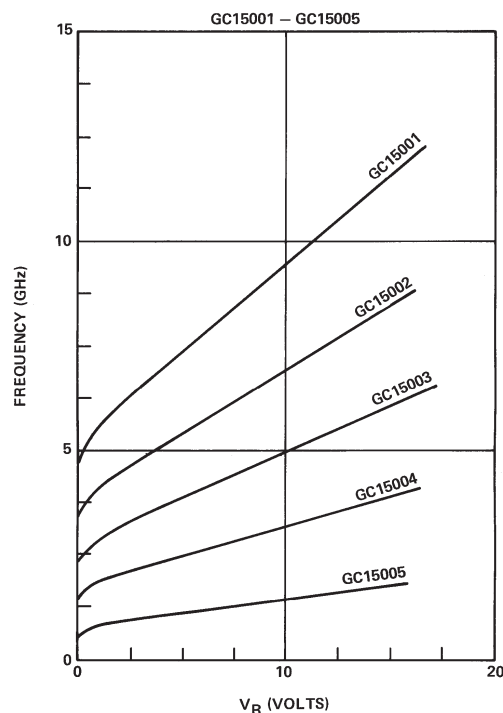
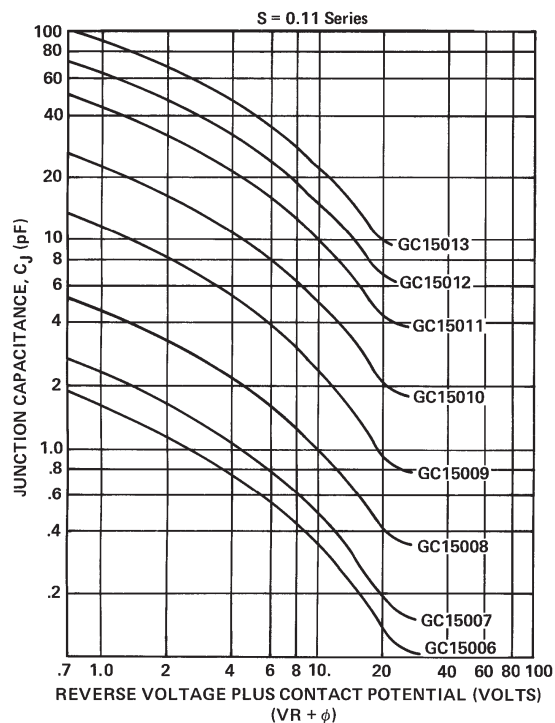
- Other capacitance values are available; consult factory.
- Other S values and tuning ranges can be developed.
- V = 4 V, 50 MHz
- Sensitivity series, S = .08; V = 15 volts.  
Sensitivity series, S = .11; V = 20 volts.

### RATINGS

Minimum Voltage Breakdown:	22 volts at 10μA max
Maximum Leakage Current:	50 nA at 20 volts, 25°C
Capacitance Tolerance:	±10% at -4 volts
Operating Temperature:	-55°C to +150°C
Storage Temperature:	-65°C to +200°C

# Tuning Varactors

## FREQUENCY LINEAR TUNING VARACTORS



Frequency vs Reverse Voltage  
in Single Stage L-C Circuit

Typical Capacitance vs Reverse Voltage

### SEMICONDUCTOR OPERATION

75 Technology Drive • Lowell, MA 01851 • Tel: 978-442-5600 • Fax: 978-937-3748