Tuning Varactors

FREQUENCY LINEAR TUNING VARACTORS

DESCRIPTION

A Frequency Linear Tuning Varactor (FLTVAR)TM is a silicon epitaxial mesa device, designed to provide wideband 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.

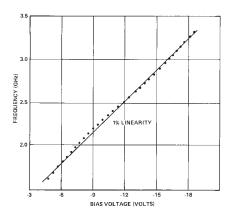
The specifications below apply to chips, or to chips mounted on carriers. Although these chips can be provided in any of our standard packages, this is not recommended for the lower capacitance diodes, because the parallel parasitic capacitance of the package degrades linearity at high bias voltages.

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_A=25°C



MODEL NUMBER	JUNCTIO N ¹ CAPACIT ANCE C _{J-4} (pF)	SENSITIV ITY ² TYP	QUALITY FACTOR ³ TYP	TUNING RATION ⁴ C _J 0 / C _J V TYP	Typical Perfor	mance
GC15001		0.7		.08	1500	6:1
GC15002		1.0		.08	1450	6:1
GC15003		2.0		.08	1400	6:1
GC15004		5.0		.08	1300	6:1
GC15005		10.0		.08	900	6:1
GC15014		22.0		.08	600	6:1
GC15015		33.0		.08	475	6:1
GC15016		48.0		.08	400	6:1
GC15006		0.7		.11	900	11:1
GC15007		1.0		.11	875	11:1
GC15008		2.0		.11	850	11:1
GC15009		5.0		.11	825	11:1
GC15010		10.0		.11	800	11:1
GC15011		22.0		.11	600	11:1
GC15012		33.0		.11	475	11:1
GC15013		48.0		.11	400	11:1

NOTES:

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

RATINGS

Minimum Voltage Breakdown:

Maximum Leakage Current:

Capacitance Tolerance:

Operating Temperature:

Storage Temperature:

22 volts at 10μA max

50 nA at 20 volts, 25°C

±10% at -4 volts

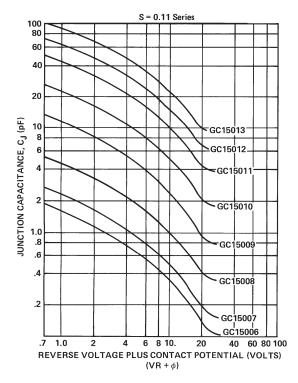
-55°C to +150°C

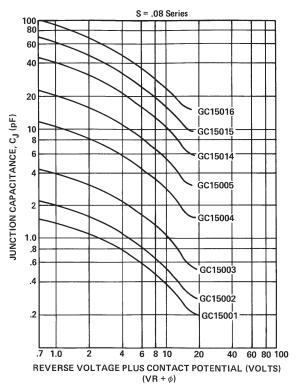
-65°C to +200°C



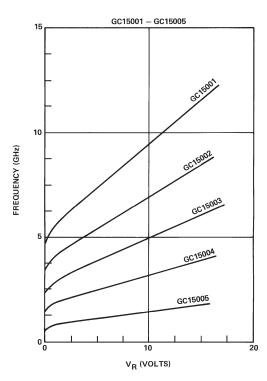
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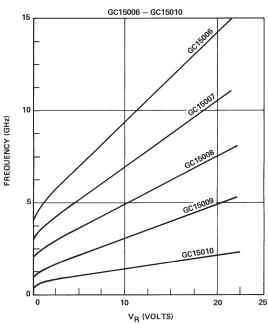
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Typical Capacitance vs Reverse Voltage





Frequency vs Reverse Voltage in Single Stage L-C Circuit

