

**DESCRIPTION**

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

These diodes feature superior passivation for high reliability, low leakage current, and 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.

This series of diodes meets RoHS requirements per EU Directive 2002/95/EC. The standard terminal finish is gold unless otherwise specified. Consult the factory if you have special requirements.

**KEY FEATURES**

- Wideband Linear Tuning
- Very Low Phase Noise
- Exceptional Q.
- Computer Controlled Grown Junction Epitaxy
- Functional through Ku Band
- Octave Tuning
- RoHS Compliant<sup>1</sup>

<sup>1</sup> Most products are supplied with a Gold finish and are suitable for RoHS complaint assembly. Consult factory for details.

**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.

**APPLICATIONS/BENEFITS**

- VCOs
- Filters
- Modulators
- Amplifiers

**ABSOLUTE MAXIMUM RATINGS AT 25° C  
(UNLESS OTHERWISE SPECIFIED)**

Rating	Symbol	Value	Unit
Maximum Leakage Current @ 20 Volts	I <sub>R</sub>	50	nA
Storage Temperature	T <sub>STG</sub>	-65 to +150	°C
Operating Temperature	T <sub>OP</sub>	-55 to +125	°C

**IMPORTANT:**

For the most current data, consult our web site: [www.microsemi.com](http://www.microsemi.com)  
 Specifications are subject to change, consult the factory for further information.



These devices are ESD sensitive and must be handled use using ESD precautions.

**CHIP ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)**

Model Number	V <sub>b</sub> (V) I <sub>R</sub> =10μA (Min)	C <sub>j</sub> (pF) <sup>1</sup> @-4V (+/-10%)	C <sub>j</sub> (pF) @-20V (Typ)	Sensitivity <sup>2</sup> (Typ)	Tuning Ratio C <sub>J0</sub> /C <sub>J15</sub> (Typ)	Tuning Ratio C <sub>J0</sub> /C <sub>J20</sub> (Typ)	Q <sup>3</sup> (Typ)
GC15001-00	22	0.7	0.2	.08	8:1	--	1400
GC15002-00	22	1.0	0.3	.08	8:1	--	1300
GC15003-00	22	2.0	0.55	.08	8:1	--	1200
GC15004-00	22	5.0	1.3	.08	8:1	--	1100
GC15005-00	22	10.0	2.4	.08	8:1	--	900
GC15014-00	22	22.0	6.9	.08	8:1	--	600
GC15015-00	22	33.0	9.8	.08	8:1	--	500
GC15016-00	22	48.0	14.0	.08	8:1	--	400
GC15006-00	22	0.7	0.14	.11	--	13:1	1200
GC15007-00	22	1.0	0.2	.11	--	13:1	1000
GC15008-00	22	2.0	0.4	.11	--	13:1	900
GC15009-00	22	5.0	0.9	.11	--	13:1	800
GC15010-00	22	10.0	2.0	.11	--	13:1	700
GC15011-00	22	22.0	4.1	.11	--	13:1	500
GC15012-00	22	33.0	6.8	.11	--	13:1	400
GC15013-00	22	48.0	10.0	.11	--	13:1	200

**NOTES:**

1. F = 1MHz. Other capacitance values are available; consult factory.
2. Sensitivity series, S = .08; V = 15 volts.  
Sensitivity series, S = .11; V = 20 volts.
3. V=4 V, 50 MHz



**S=0.08, C-V CURVES**

**S=0.11, C-V CURVES**

**FREQUENCY RESPONSE**

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**PACKAGE OPTIONS**
**PACKAGE STYLE 00**


Notes:  
 Chip style package for hybrid circuits  
 Dimensions vary by model number  
 Consult factory for details  
 Order as GC15xxxx – 00

**PACKAGE STYLE 17**


Notes:  
 Hermetic – Stripline -Surface Mount Package  
 Order as GC15xxxx – 17

**PACKAGE STYLE 450A - E**


Notes:  
 Non-Hermetic – Surface Mount Package  
 Order as GC15xxxx – 450A or 450B

MANY OTHER PACKAGE STYLES AVAILABLE ON REQUEST  
 CONSULT FACTORY