GC15001 – GC15013

TUNING DIODES

Frequency Linear Tuning Varactors

RoHS Compliant e4 RoHS

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[1]

[1] 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_R	50	nA
Storage Temperature	T_{STG}	-65 to +150	°C
Operating Temperature	T_{OP}	-55 to +125	°C

IMPORTANT:
For the most current data, consult our web site: ***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.

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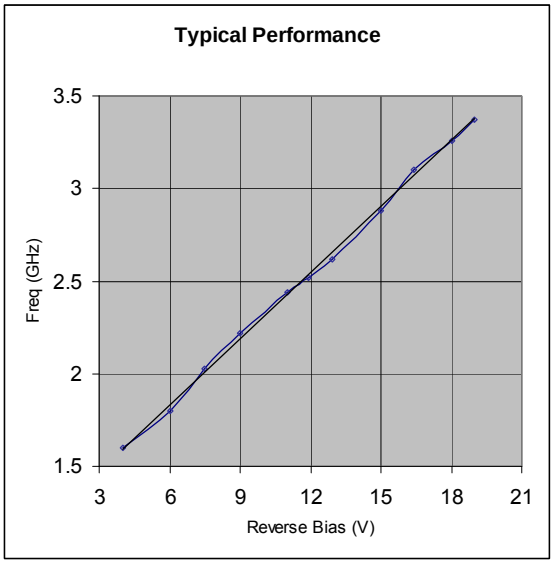
CHIP ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)

Model Number	V_b(V) I_R=10µA (Min)	C_j(pF)[1] @-4V (+/-10%)	C_j(pF) @-20V (Typ)	Sensitivity[2] (Typ)	Tuning Ratio C_J0/C_J15 (Typ)	Tuning Ratio C_J0/C_J20 (Typ)	Q[3] (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

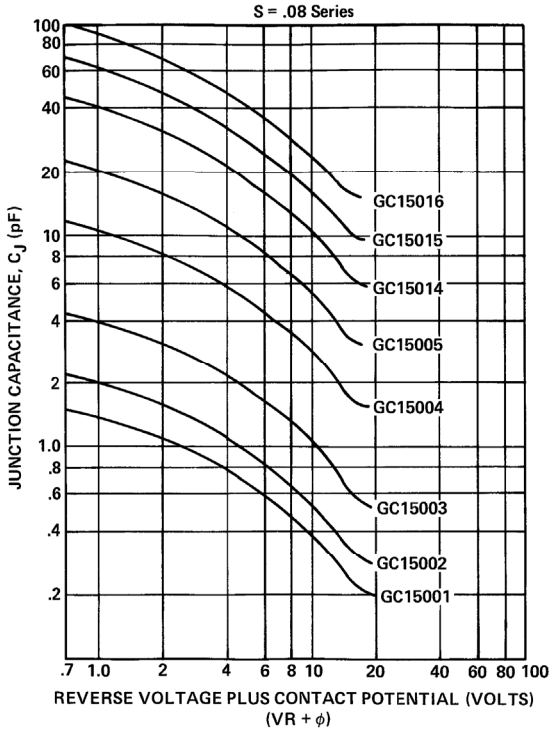
NOTES:

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

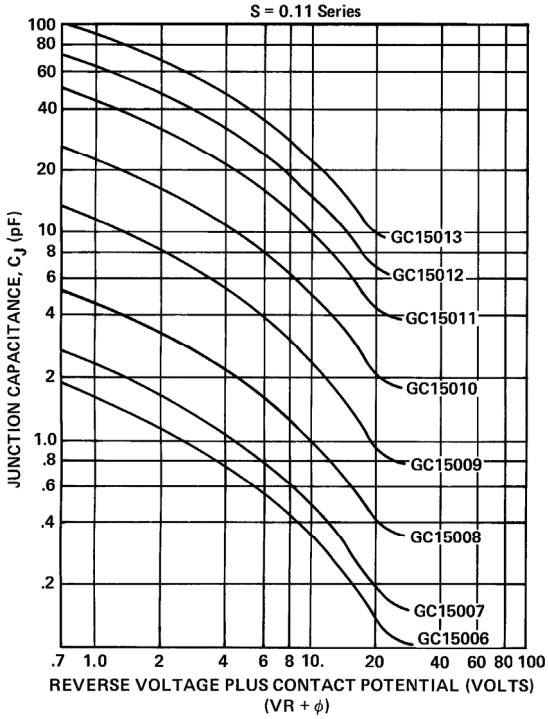
Typical Performance



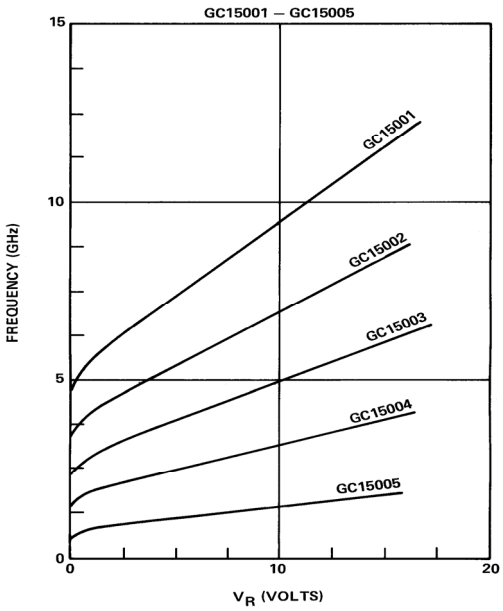
S=0.08, C-V CURVES



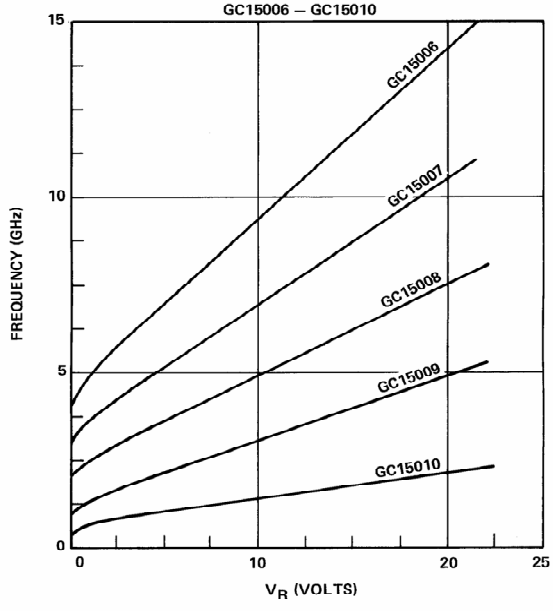
S=0.11, C-V CURVES



FREQUENCY RESPONSE

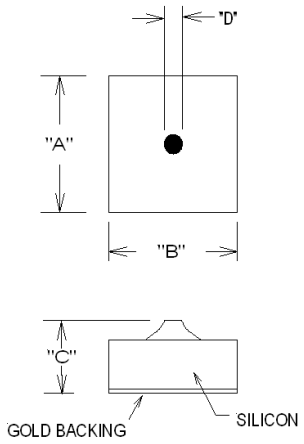


FREQUENCY RESPONSE



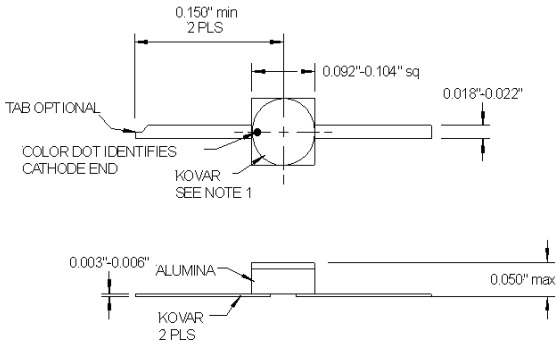
PACKAGE OPTIONS

PACKAGE STYLE 00



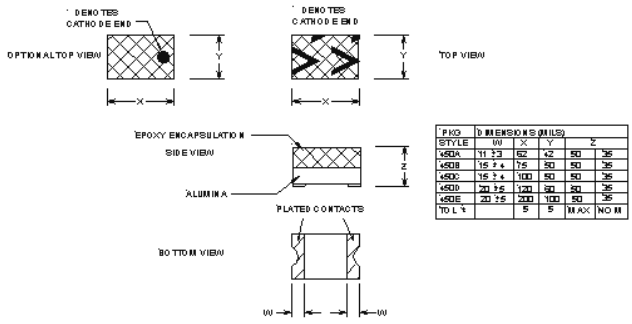
Notes:
Chip style package for hybrid circuits
Dimensions vary by model number
Consult factory for details
Order as GC15xxxx – 00

PACKAGE STYLE 17



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

PACKAGE STYLE 450A - E



PKG STYLE	DIMENSIONS (MILS) W	X	Y	Z		
x450A	11 ±3	62	42	50	36	
x450B	15 ± 4	75	50	50	36	
x450C	15 ± 4	100	50	50	36	
x450D	20 ±5	120	50	50	36	
x450E	20 ±5	200	100	50	36	
TOL ±		5	5	MAX	NOM	

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

MANY OTHER PACKAGE STYLES AVAILABLE ON REQUEST
CONSULT FACTORY