

TUNING VARACTORS

GaAS TUNING VARACTORS

DESCRIPTION

The GC51100 to GC51600 Series Tuning Varactors are abrupt junction gallium arsenide devices featuring the highest Q and lowest series resistance available. Available tuning voltages range from 15 to 60 volts. Modern state-of-the-art epitaxial growth techniques are employed in the manufacture of these devices so that repeatable characteristics and reliable performance is maintained.

These diodes are available in a variety of packages – specific packages are listed in Note 1.

APPLICATIONS

These devices are recommended for use in products requiring ultra high Q voltage variable capacitance such as: tunable VCO's, frequency synthesizers, voltage tunable filters, amplifiers and phase shifters.

Other applications include linear frequency and phase modulators for communications equipment.

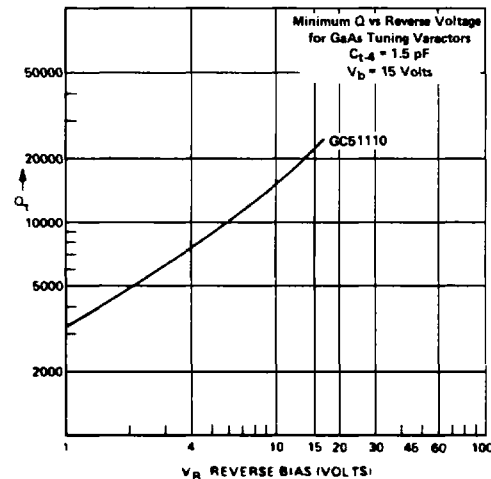
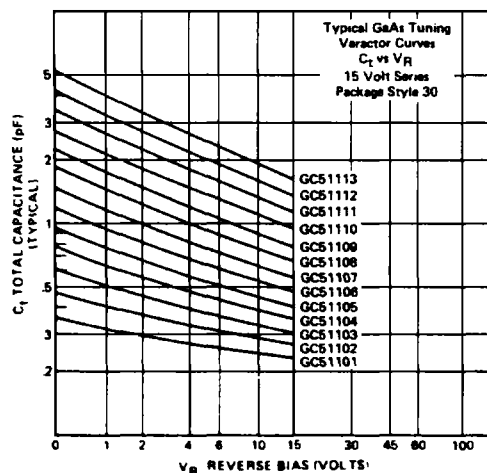
FEATURES

- Optimized for broadband tuning – "C" through Ka band
- Higher "Q" than comparable silicon devices
- High reliability – field proven

ELECTRICAL SPECIFICATIONS

GC51100 SERIES 15-VOLT

MODEL NUMBER	TOTAL CAPACITANCE ¹ (AT 0V, 1MHz) TYPICAL	TOTAL CAPACITANCE ¹ (AT -4V, 1MHz) NOMINAL	CAPACITANCE RATIO (C ₁₀ /C ₁₅) MIN	QUALITY FACTOR ² (Q-4, 50 MHz) MIN	QUALITY FACTOR (Q -4, 1 GHz) MIN
GC51101	.35	.27	1.6	16000	800
GC51102	.47	.33	1.7	15000	750
GC51103	.60	.39	1.9	14000	700
GC51104	.75	.47	2.1	12000	600
GC51105	.95	.56	2.2	11000	550
GC51106	1.15	.68	2.4	9600	480
GC51107	1.4	.82	2.5	8800	440
GC51108	1.8	1.0	2.6	8400	420
GC51109	2.2	1.2	2.7	8000	400
GC51110	2.7	1.5	2.8	7600	370
GC51111	3.3	1.8	2.9	7200	360
GC51112	4.1	2.2	2.9	6800	340
GC51113	5.1	2.7	3.0	6400	320



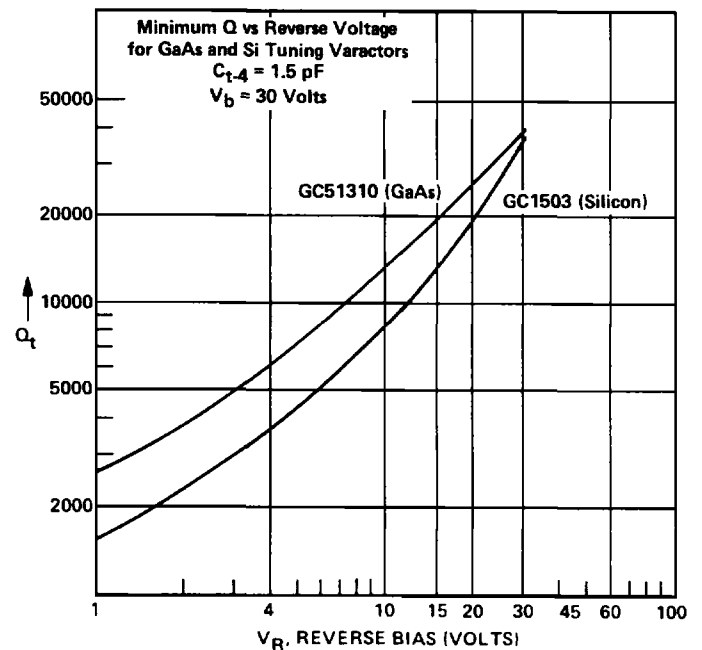
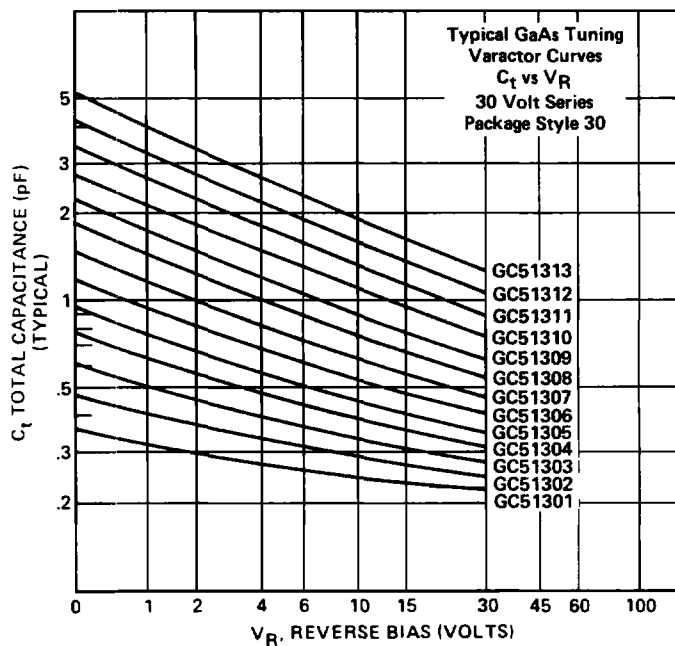
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ELECTRICAL SPECIFICATIONS

GC51300 SERIES 30-VOLT

MODEL NUMBER	TOTAL CAPACITANCE ¹ (AT 0V, 1MHz) TYPICAL	TOTAL CAPACITANCE ¹ (AT -4V, 1MHz) NOMINAL	CAPACITANCE RATIO (C ₁₀ /C ₁₃₀) MIN	QUALITY FACTOR ² (Q-4, 50 MHz) MIN	QUALITY FACTOR (Q-4, 1 GHz) MIN
GC51301	.35	.27	1.6	13000	650
GC51302	.47	.33	1.9	12000	600
GC51303	.60	.39	2.1	11000	550
GC51304	.75	.47	2.4	10000	500
GC51305	.95	.56	2.6	9000	450
GC51306	1.15	.68	2.8	8000	400
GC51307	1.4	.82	3.0	7200	360
GC51308	1.8	1.0	3.2	6800	340
GC51309	2.2	1.2	3.4	6400	320
GC51310	2.7	1.5	3.5	6000	300
GC51311	3.3	1.8	3.7	5800	290
GC51312	4.1	2.2	3.8	5400	270
GC51313	5.1	2.7	3.9	5200	260



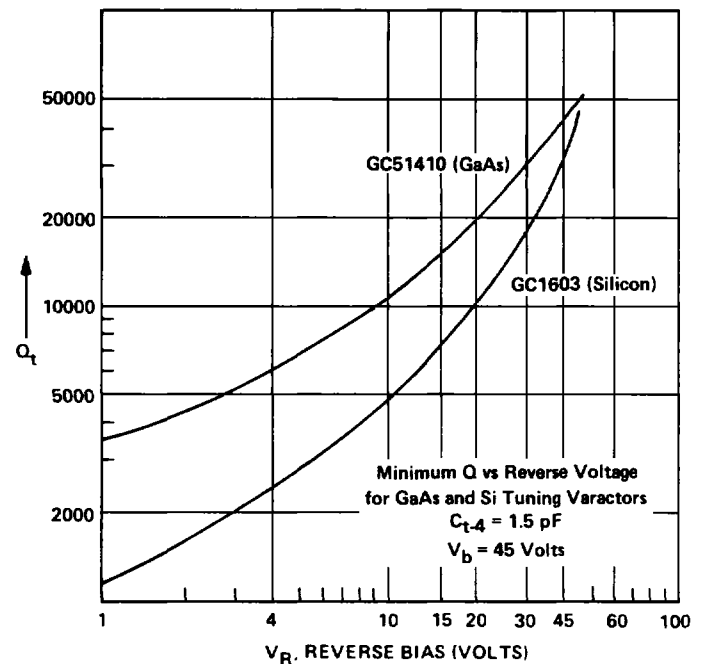
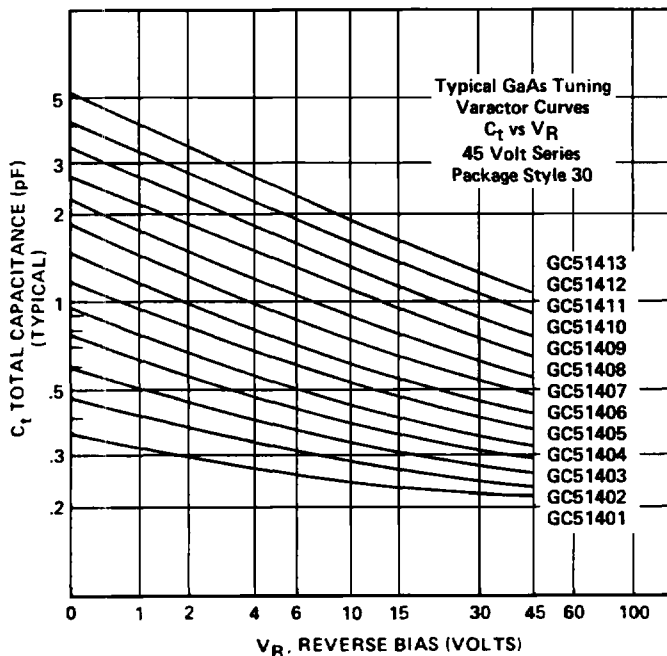
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ELECTRICAL SPECIFICATIONS

GC51400 SERIES 45-VOLT

MODEL NUMBER	TOTAL CAPACITANCE ¹ (AT 0V, 1MHz) TYPICAL	TOTAL CAPACITANCE ¹ (AT -4V, 1MHz) NOMINAL	CAPACITANCE RATIO (C ₁₀ /C ₁₃₀) MIN	QUALITY FACTOR ² (Q-4, 50 MHz) MIN	QUALITY FACTOR (Q -4, 1 GHz) MIN
GC51401	.35	.27	1.6	10000	500
GC51402	.47	.33	2.0	9000	450
GC51403	.60	.39	2.3	8600	430
GC51404	.75	.47	2.6	8900	400
GC51405	.95	.56	2.8	7600	380
GC51406	1.15	.68	3.1	7200	360
GC51407	1.4	.82	3.4	6800	340
GC51408	1.8	1.0	3.6	6400	320
GC51409	2.2	1.2	3.8	5500	290
GC51410	2.7	1.5	4.1	5200	260
GC51411	3.3	1.8	4.2	4800	240
GC51412	4.1	2.2	4.4	4600	230
GC51413	5.1	2.7	4.5	4400	220



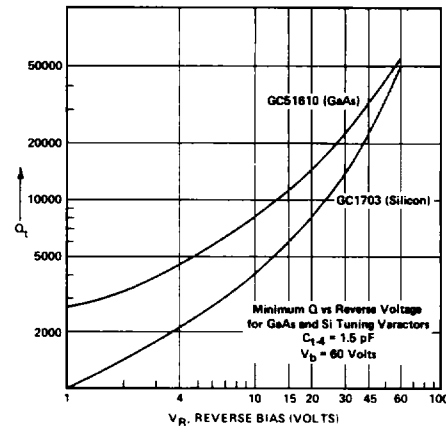
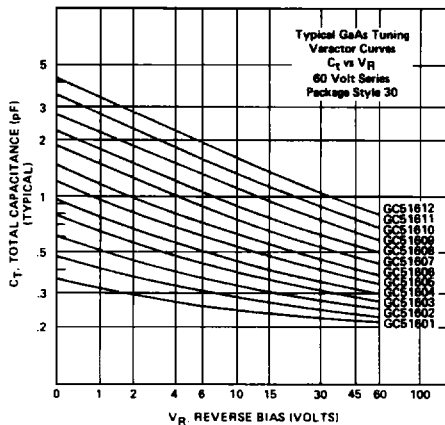
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ELECTRICAL SPECIFICATIONS

GC51600 SERIES 60-VOLT

MODEL NUMBER	TOTAL CAPACITANCE ¹ (AT 0V, 1MHz) TYPICAL	TOTAL CAPACITANCE ¹ (AT -4V, 1MHz) NOMINAL	CAPACITANCE RATIO (C ₁₀ /C ₁₆₀) MIN	QUALITY FACTOR ² (Q-4, 50 MHz) MIN	QUALITY FACTOR (Q -4, 1 GHz) MIN
GC51601	.35	.27	1.7	9000	450
GC51602	.47	.33	2.1	8600	430
GC51603	.60	.39	2.4	8200	410
GC51604	.75	.47	2.7	7800	390
GC51605	.95	.56	3.0	7200	360
GC51606	1.15	.68	3.3	6600	330
GC51607	1.4	.82	3.6	6200	310
GC51608	1.8	1.0	3.9	5800	290
GC51609	2.2	1.2	4.2	5000	250
GC51610	2.7	1.5	4.4	4600	230
GC51611	3.3	1.8	4.6	4400	220
GC51612	4.1	2.2	4.8	4200	210



NOTES

- Specifications shown in the table are based on data taken from diodes mounted in case style 30. Other available case styles are 45, 80, 81, 85, 88 and 89. Note that tuning ratio will vary with each package.
- Capacitance values listed include the package capacitance with a standard tolerance of $\pm 10\%$ at -4 volts. Tighter tolerances, or other special electrical/mechanical variations may be available upon request. Please contact your local representative or the factory direct for your special needs.

Capacitance is measured at 1 MHz at the specified reverse bias.
- Q is determined by the modified DeLoach method, at -4 volts, and extrapolated to 50 MHz.
- The cathode is normally the heatsink end of each package; reverse polarity is available for specific packages at a slightly higher cost.

- All devices are subjected to 24-hour operational burn-in at 80% V_B and at 100°C before final test.

RATINGS

Reverse Leakage Current	2.0 μ A at 80% minimum rated breakdown voltage
Breakdown voltage, V_B :	10 μ A
Temperature Coefficient of Capacitance:	200 ppm/°C at -4 volts
Storage Temperature:	-65°C to +200°C
Operating Temperature:	-55°C to +150°C