

Sprague-Goodman

ENGINEERING BULLETIN
SG-207F
 Supercedes SG-207E

MICROWAVE SAPPHIRE PISTONCAP® TRIMMER CAPACITORS

FEATURES

- Sapphire dielectric
- Very high Q at UHF and microwave frequencies
- Subminiature – smallest PISTONCAP® types
- Choice of 2 configurations and 6 mounting styles to suit all RF structures
- Designed to meet MIL-C-14409D
- Precision high resolution adjustment:
 127 threads per inch for GU series, GW series and GN_1R2_ _
 169 threads per inch for GN_2R5_ _ to GN_8R0_ _
- Extremely stable over temperature, frequency, voltage, etc.

APPLICATIONS

Stable oscillators, frequency multipliers, filters, tuning cavities, coupling, etc.

SPECIFICATIONS

Operating temperature: -55°C to +125°C
 Rated voltage: 500 VDC
 Dielectric withstanding voltage: 1000 VDC
 Contact resistance: 0.01 Ohms
 Insulation resistance: 10⁶ Megohms min at 500 VDC



Torque: 0.1 to 1.0 oz-in (7.2 to 72 g-cm) for GU series and GN_1R2_ _
 0.2 to 2.0 oz-in (14.4 to 144 g-cm) for GW and GN_2R5_ _ to GN_8R0_ _

PART NUMBERING SYSTEM

GU
Sapphire Dielectric

GN
 GU
 GW

C
Mount Type

C = PC Mount
 F = Flange Mount
 L = Horizontal Surface Mount
 N = Leadless
 R = Reverse Lead Mount
 V = Vertical Surface Mount
 Y = Vertical Surface Mount, Wide Lead

Capacitance Code Industry Standard, i.e.

1R2 = 1.2 pF
 100 = 10 pF

00

Modification Suffix

00 = +350 ±100 ppm/°C (no marking)
 01 = as above, with PTFE protective cap
 50 = NPO ± 50 ppm/°C (± 75 for 8 pF models) (dimple or red ID mark on adjustment screw)
 51 = as above, with PTFE protective cap



Sprague-Goodman Electronics, Inc.

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Tect Electronics
The authorized distributor in the Greater China Region

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Fig. 1

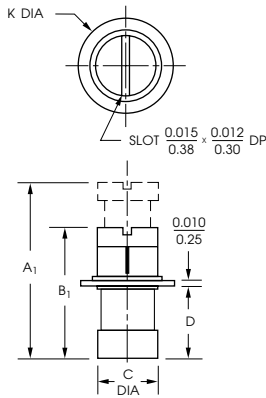
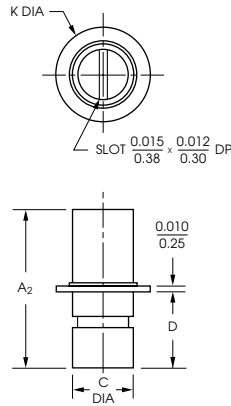


Fig. 2



**Type F -
Flange Mount**



Capacitance (pF)		Q min (250 MHz)	A ₁	B ₁	C ±0.005 0.1	D	K ±0.005 0.1	A ₂	Model No. Fig. 1	Model No. Fig.2
min	max									
0.3	1.2	4000	$\frac{0.20}{5.2}$	$\frac{0.17}{4.4}$	$\frac{0.075}{1.9}$	$\frac{0.09}{2.3}$	$\frac{0.145}{3.68}$	$\frac{0.23}{5.8}$	GUF1R200 GUF1R250	GNF1R200 GNF1R250
0.4	2.5	3000	$\frac{0.20}{5.2}$	$\frac{0.17}{4.4}$	$\frac{0.118}{3.00}$	$\frac{0.09}{2.3}$	$\frac{0.185}{4.70}$	$\frac{0.23}{5.8}$	GWF2R500 GWF2R550	GNF2R500 GNF2R550
0.6	4.5	2000	$\frac{0.33}{8.4}$	$\frac{0.25}{6.5}$	$\frac{0.118}{3.00}$	$\frac{0.15}{3.8}$	$\frac{0.185}{4.70}$	$\frac{0.31}{7.9}$	GWF4R500 GWF4R550	GNF4R500 GNF4R550
0.8	8.0	1000	$\frac{0.57}{14}$	$\frac{0.41}{11}$	$\frac{0.118}{3.00}$	$\frac{0.25}{6.4}$	$\frac{0.185}{4.70}$	$\frac{0.47}{12}$	GWF8R000 GWF8R050	GNF8R000 GNF8R050

Fig. 1

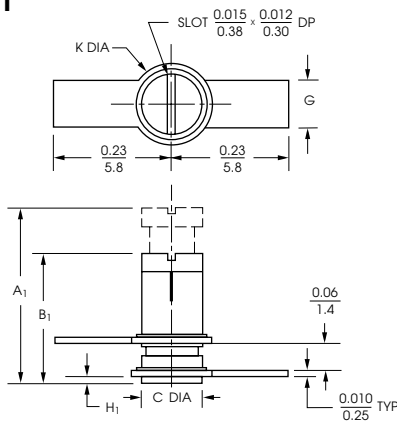
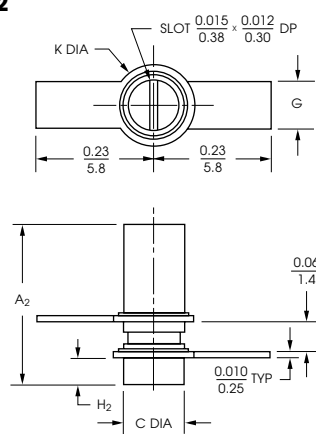
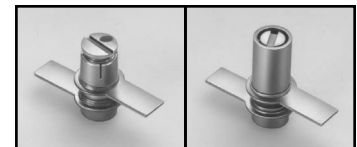


Fig. 2



**Type R -
Reverse Lead Mount**



Capacitance (pF)		Q min (250 MHz)	A ₁	B ₁	C ±0.005 0.1	G	H ₁	K ±0.005 0.1	A ₂	H ₂	Model No. Fig. 1	Model No. Fig.2
min	max											
0.3	1.2	4000	$\frac{0.20}{5.2}$	$\frac{0.17}{4.4}$	$\frac{0.075}{1.9}$	$\frac{0.04}{1.0}$	-	$\frac{0.114}{2.90}$	$\frac{0.23}{5.8}$	$\frac{0.015}{0.38}$	GUR1R200 GUR1R250	GNR1R200 GNR1R250
0.4	2.5	3000	$\frac{0.20}{5.2}$	$\frac{0.17}{4.4}$	$\frac{0.118}{3.00}$	$\frac{0.09}{2.4}$	-	$\frac{0.16}{4.0}$	$\frac{0.23}{5.8}$	$\frac{0.015}{0.38}$	GWR2R500 GWR2R550	GNR2R500 GNR2R550
0.6	4.5	2000	$\frac{0.33}{8.4}$	$\frac{0.25}{6.5}$	$\frac{0.118}{3.00}$	$\frac{0.09}{2.4}$	-	$\frac{0.16}{4.0}$	$\frac{0.31}{7.9}$	$\frac{0.050}{1.3}$	GWR4R500 GWR4R550	GNR4R500 GNR4R550
0.8	8.0	1000	$\frac{0.57}{14}$	$\frac{0.41}{11}$	$\frac{0.118}{3.00}$	$\frac{0.09}{2.4}$	$\frac{0.14}{3.5}$	$\frac{0.16}{4.0}$	$\frac{0.47}{12}$	$\frac{0.14}{3.5}$	GWR8R000 GWR8R050	GNR8R000 GNR8R050

Dimensions are in/mm. Unless otherwise specified, tolerance is ±0.01/0.3, except slot tolerance is +0.001/0.03, -0.002/0.05 and lead thickness tolerance is ±0.002/0.05.

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Fig. 1

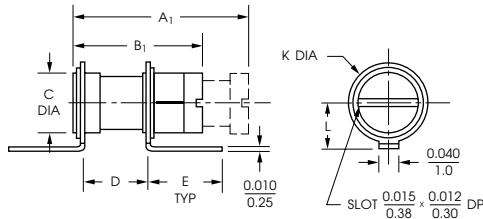
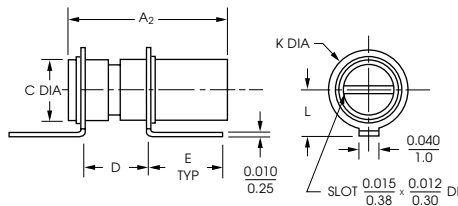
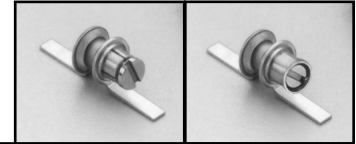


Fig. 2



Type L - Horizontal Surface Mount



Capacitance (pF)		Q min (250 MHz)	A ₁	B ₁	C ±0.005 / 0.1	D	E	K ±0.005 / 0.1	L	A ₂	Model No. Fig. 1	Model No. Fig.2
min	max											
0.3	1.2	4000	0.20 / 5.2	0.17 / 4.4	0.075 / 1.9	0.08 / 2.1	0.171 / 4.34	0.114 / 2.90	0.07 / 1.8	0.23 / 5.8	GUL1R200 GUL1R250	GNL1R200 GNL1R250
0.4	2.5	3000	0.20 / 5.2	0.17 / 4.4	0.118 / 3.00	0.08 / 2.1	0.147 / 3.73	0.158 / 4.01	0.09 / 2.4	0.23 / 5.8	GWL2R500 GWL2R550	GNL2R500 GNL2R550
0.6	4.5	2000	0.33 / 8.4	0.25 / 6.5	0.118 / 3.00	0.13 / 3.3	0.147 / 3.73	0.158 / 4.01	0.09 / 2.4	0.31 / 7.9	GWL4R500 GWL4R550	GNL4R500 GNL4R550
0.8	8.0	1000	0.57 / 14	0.41 / 11	0.118 / 3.00	0.25 / 6.4	0.147 / 3.73	0.158 / 4.01	0.09 / 2.4	0.47 / 12	GWL8R000 GWL8R050	GNL8R000 GNL8R050

Fig. 1

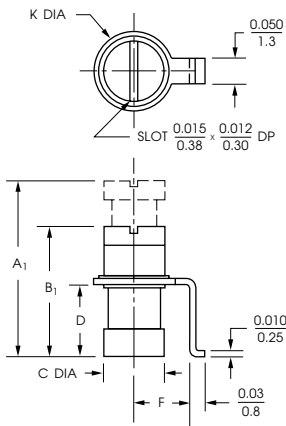
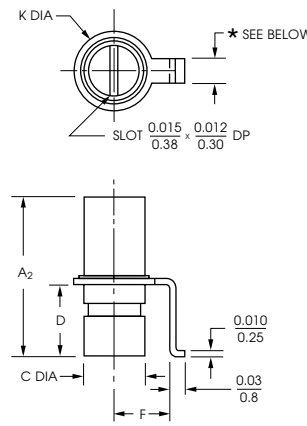


Fig. 2



Type V - Vertical Surface Mount



Capacitance (pF)		Q min (250 MHz)	A ₁	B ₁	C ±0.005 / 0.1	D	F	K ±0.005 / 0.1	A ₂	Model No. Fig. 1	Model No. Fig.2*
min	max										
0.3	1.2	4000	0.20 / 5.2	0.17 / 4.4	0.075 / 1.9	0.09 / 2.3	0.08 / 1.9	0.114 / 2.90	0.23 / 5.8	GUV1R200 GUV1R250	GNV1R200 GNV1R250
0.4	2.5	3000	0.20 / 5.2	0.17 / 4.4	0.118 / 3.00	0.09 / 2.3	0.11 / 2.8	0.158 / 4.01	0.23 / 5.8	GWV2R500 GWV2R550	GN_2R500 GN_2R550
0.6	4.5	2000	0.33 / 8.4	0.25 / 6.5	0.118 / 3.00	0.15 / 3.8	0.11 / 2.8	0.158 / 4.01	0.31 / 7.9	GWV4R500 GWV4R550	GN_4R500 GN_4R550
0.8	8.0	1000	0.57 / 14	0.41 / 11	0.118 / 3.00	0.25 / 6.4	0.11 / 2.8	0.158 / 4.01	0.47 / 12	GWV8R000 GWV8R050	GN_8R000 GN_8R050

* Insert letter "V" or "Y" to select lead width.
GNV series has a lead width of 0.050/1.3
GNY series has a lead width of 0.093/2.4

Dimensions are in/mm. Unless otherwise specified, tolerance is ±0.01/0.3, except slot tolerance is +0.001/0.03, -0.002/0.05 and lead thickness tolerance is ±0.002/0.05.



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Fig. 1

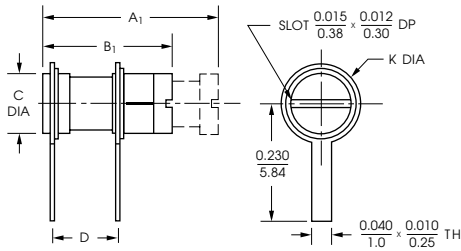
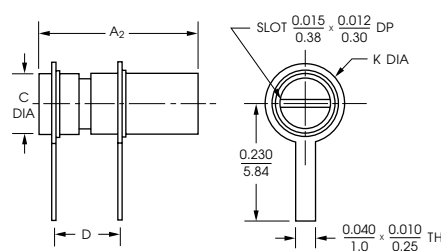
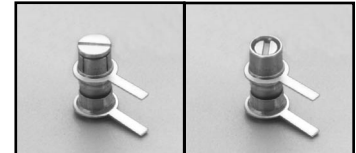


Fig. 2



**Type C -
PC Mount**



Capacitance (pF)		Q min (250 MHz)	A ₁	B ₁	C ± 0.005 / 0.1	D	K ± 0.005 / 0.1	A ₂	Model No. Fig. 1	Model No. Fig. 2
min	max									
0.3	1.2	4000	0.20 / 5.2	0.17 / 4.4	0.075 / 1.9	0.08 / 2.1	0.114 / 2.90	0.23 / 5.8	GUC1R200	GNC1R200
									GUC1R250	GNC1R250
0.4	2.5	3000	0.20 / 5.2	0.17 / 4.4	0.12 / 3.0	0.08 / 2.1	0.158 / 4.01	0.23 / 5.8	GWC2R500	GNC2R500
									GWC2R550	GNC2R550
0.6	4.5	2000	0.33 / 8.4	0.25 / 6.5	0.12 / 3.0	0.13 / 3.3	0.158 / 4.01	0.31 / 7.9	GWC4R500	GNC4R500
									GWC4R550	GNC4R550
0.8	8.0	1000	0.57 / 14	0.41 / 11	0.12 / 3.0	0.25 / 6.4	0.158 / 4.01	0.47 / 12	GWC8R000	GNC8R000
									GWC8R050	GNC8R050

Fig. 1

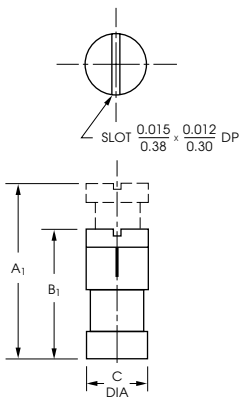
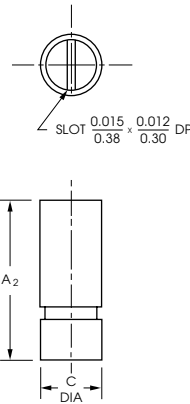


Fig. 2



**Type N -
Leadless**



Capacitance (pF)		Q min (250 MHz)	A ₁	B ₁	C ± 0.005 / 0.1	A ₂	Model No. Fig. 1	Model No. Fig. 2
min	max							
0.3	1.2	4000	0.20 / 5.2	0.17 / 4.4	0.075 / 1.9	0.23 / 5.8	GUN1R200	GNN1R200
							GUN1R250	GNN1R250
0.4	2.5	3000	0.20 / 5.2	0.17 / 4.4	0.12 / 3.0	0.23 / 5.8	GWN2R500	GNN2R500
							GWN2R550	GNN2R550
0.6	4.5	2000	0.33 / 8.4	0.25 / 6.5	0.12 / 3.0	0.31 / 7.9	GWN4R500	GNN4R500
							GWN4R550	GNN4R550
0.8	8.0	1000	0.57 / 14	0.41 / 11	0.12 / 3.0	0.47 / 12	GWN8R000	GNN8R000
							GWN8R050	GNN8R050

Dimensions are in/mm. Unless otherwise specified, tolerance is ±0.01/0.3, except slot tolerance is +0.001/0.03, -0.002/0.05 and lead thickness tolerance is ±0.002/0.05.