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Sprague-Goodman

ENGINEERING BULLETIN
SG-207F
Supersedes 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: 10⁹ 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	C Mount Type	Capacitance Code Industry Standard, i.e.	00 Modification Suffix
GN	C = PC Mount	1R2 = 1.2 pF	00 = +350 ±100 ppm/°C (no marking)
GU	F = Flange Mount	100 = 10 pF	01 = as above, with PTFE protective cap
GW	L = Horizontal Surface Mount		50 = NPO ± 50 ppm/°C (± 75 for 8 pF models) (dimple or red ID mark on adjustment screw)
	N = Leadless		51 = as above, with PTFE protective cap
	R = Reverse Lead Mount		
	V = Vertical Surface Mount		
	Y = Vertical Surface Mount, Wide Lead		



Sprague-Goodman Electronics, Inc.
1700 SHAMES DRIVE, WESTBURY, NY 11590
TEL: 516-334-8700 • FAX: 516-334-8771
E-MAIL: info@spraguegoodman.com



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Fig. 1

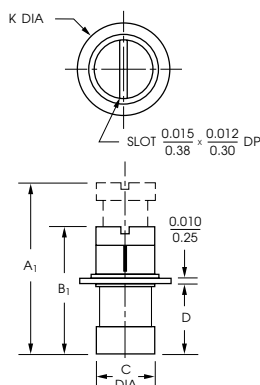
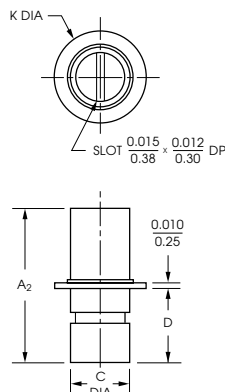
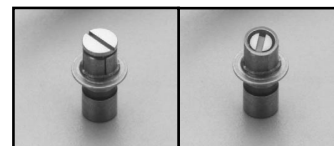


Fig. 2



**Type F -
Flange Mount**



Capacitance (pF)		Q min (250 MHz)	A ₁	B ₁	C $\pm \frac{0.005}{0.1}$	D	K $\pm \frac{0.005}{0.1}$	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

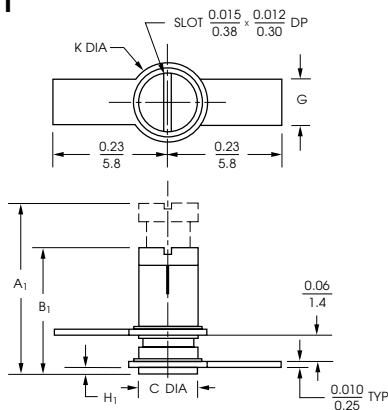
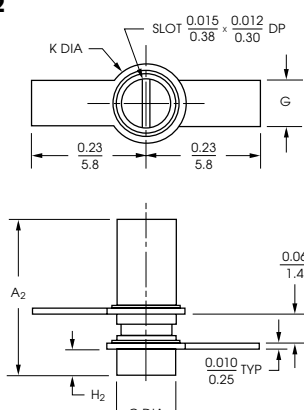


Fig. 2



**Type R -
Reverse Lead Mount**



Capacitance (pF)		Q min (250 MHz)	A ₁	B ₁	C $\pm \frac{0.005}{0.1}$	G	H ₁	K $\pm \frac{0.005}{0.1}$	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 $\pm 0.01/0.3$, except slot tolerance is $+0.001/0.03$, $-0.002/0.05$ and lead thickness tolerance is $\pm 0.002/0.05$.

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Fig. 1

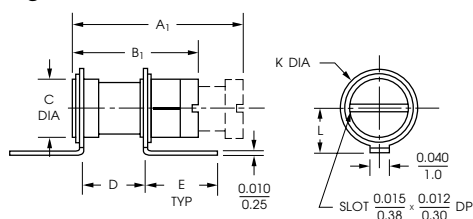
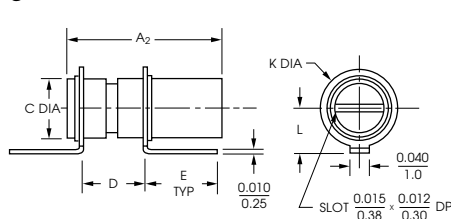
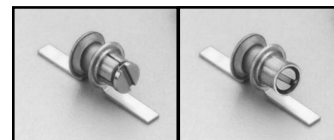


Fig. 2



**Type L -
Horizontal Surface Mount**



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

Fig. 1

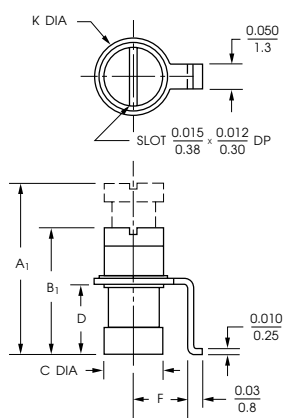
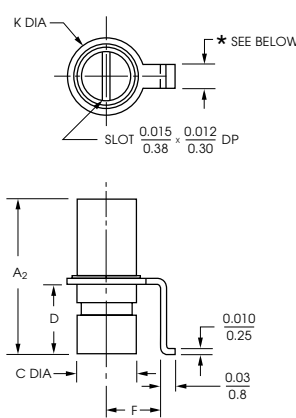


Fig. 2



**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		
min	max									Model No. Fig. 1	Model No. Fig.2*
0.3	1.2	4000	<u>0.20</u> 5.2	<u>0.17</u> 4.4	<u>0.075</u> 1.9	<u>0.09</u> 2.3	<u>0.08</u> 1.9	<u>0.114</u> 2.90	<u>0.23</u> 5.8	GUV1R200	GNV1R200
			GUV1R250	GNV1R250							
0.4	2.5	3000	<u>0.20</u> 5.2	<u>0.17</u> 4.4	<u>0.118</u> 3.00	<u>0.09</u> 2.3	<u>0.11</u> 2.8	<u>0.158</u> 4.01	<u>0.23</u> 5.8	GWV2R500	GN_2R500
			GWV2R550	GN_2R550							
0.6	4.5	2000	<u>0.33</u> 8.4	<u>0.25</u> 6.5	<u>0.118</u> 3.00	<u>0.15</u> 3.8	<u>0.11</u> 2.8	<u>0.158</u> 4.01	<u>0.31</u> 7.9	GWV4R500	GN_4R500
			GWV4R550	GN_4R550							
0.8	8.0	1000	<u>0.57</u> 14	<u>0.41</u> 11	<u>0.118</u> 3.00	<u>0.25</u> 6.4	<u>0.11</u> 2.8	<u>0.158</u> 4.01	<u>0.47</u> 12	GWV8R000	GN_8R000
			GWV8R050	GN_8R050							

* Insert letter "V" or "Y" to select lead width.

GNV series has a lead width of 0.050/1.3

GNV 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

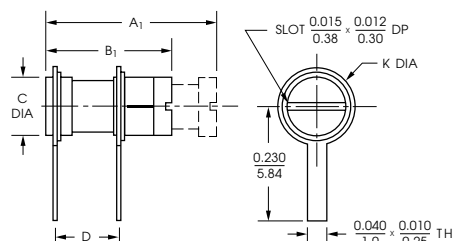
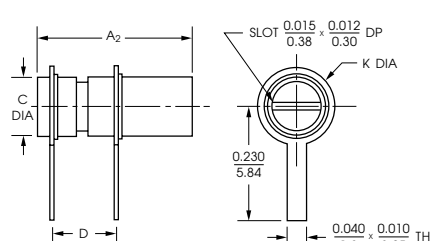
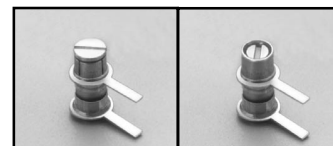


Fig. 2



**Type C -
PC Mount**



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

Fig. 1

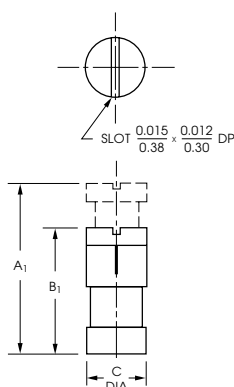
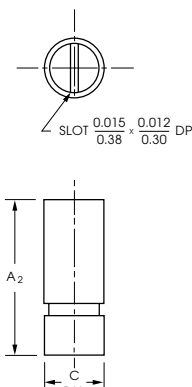


Fig. 2



**Type N -
Leadless**



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

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