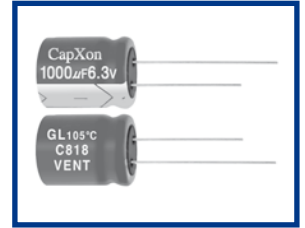


## GL Series Low Impedance, Long Life



### Features

- ◆ Low impedance for high frequency, Anti-Solvent Design.
- ◆ Long Life 2000 ~ 6000 hrs at 105°C depending on case size.
- ◆ Radial type for switching power supply.
- ◆ For detail specifications, please refer to Engineering Bulletin No. E103
- ◆ RoHS Compliant

### Specifications

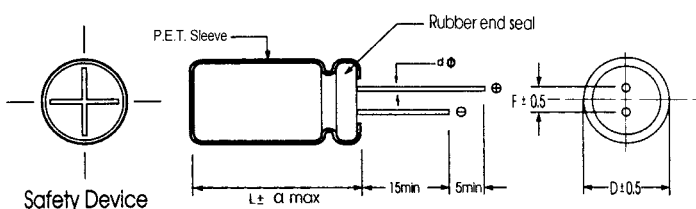
Item	Performance Characteristics																																	
Operating Temperature Range	-55 to +105°C																																	
Rated Voltage Range	6.3 to 63 VDC																																	
Capacitance Range	0.47 to 10000 µF																																	
Capacitance Tolerance	±20% (120Hz, +20°C)																																	
Leakage Current (+20°C, max.)	I ≤ 0.01 CV or 3 (µA) After 2 minutes whichever is greater measured with rated working voltage applied.																																	
Dissipation Factor (tan δ, at 20°C, 120Hz)	<table border="1"> <tr> <th>Working Voltage (VDC)</th> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <th>D.F. (%)max</th> <td>20</td> <td>18</td> <td>16</td> <td>14</td> <td>12</td> <td>10</td> <td>9</td> </tr> </table>		Working Voltage (VDC)	6.3	10	16	25	35	50	63	D.F. (%)max	20	18	16	14	12	10	9																
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D.F. (%)max	20	18	16	14	12	10	9																											
For Capacitance > 1000 µF, add 2% per another 1000 µF.																																		
Low Temperature Characteristics (at 120Hz)	Impedance ratio max																																	
	<table border="1"> <tr> <th>Working Voltage(VDC)</th> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <th>Z-25°C / Z+20°C</th> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>1.5</td> <td>1.5</td> <td>1.5</td> </tr> <tr> <th>Z-40°C / Z+20°C</th> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <th>Z-55°C / Z+20°C</th> <td>8</td> <td>6</td> <td>5</td> <td>5</td> <td>4</td> <td>4</td> <td>4</td> </tr> </table>		Working Voltage(VDC)	6.3	10	16	25	35	50	63	Z-25°C / Z+20°C	4	3	2	2	1.5	1.5	1.5	Z-40°C / Z+20°C	6	4	3	3	2	2	2	Z-55°C / Z+20°C	8	6	5	5	4	4	4
	Working Voltage(VDC)	6.3	10	16	25	35	50	63																										
	Z-25°C / Z+20°C	4	3	2	2	1.5	1.5	1.5																										
Z-40°C / Z+20°C	6	4	3	3	2	2	2																											
Z-55°C / Z+20°C	8	6	5	5	4	4	4																											
For Capacitance > 1000 µF, add 0.5 per another 1000 µF for -25°C / +20°C add 1 per another 1000 µF for -40°C / +20°C add 1.5 per another 1000 µF for -55°C / +20°C																																		
Load Life	Test conditions Duration time :as right Ambient temperature :+105°C Applied voltage :Rated DC working voltage After test requirement at +20°C Capacitance change :≤ ±20% of the initial measured value Dissipation factor :≤ 200% of the initial specified value Leakage current :≤ The initial specified value	<table border="1"> <tr> <th>D φ</th> <th>Life hours</th> </tr> <tr> <td>5 - 6.3 φ</td> <td>2000</td> </tr> <tr> <td>8 φ</td> <td>3000</td> </tr> <tr> <td>≥ 10 φ</td> <td>6000</td> </tr> </table>	D φ	Life hours	5 - 6.3 φ	2000	8 φ	3000	≥ 10 φ	6000																								
	D φ	Life hours																																
5 - 6.3 φ	2000																																	
8 φ	3000																																	
≥ 10 φ	6000																																	
Shelf Life	Test conditions Duration time :1000Hrs Ambient temperature :+105°C Applied voltage :None After test requirement at +20°C:Same limits as Load life. Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes.																																	

Radial

### Multiplier for Ripple Current vs. Frequency

CAP(µF) \ Frequency(Hz)	50(60)	120	400	1K	10K	50K-100K
CAP ≤ 10	0.47	0.59	0.76	0.85	0.97	1
10 < CAP ≤ 100	0.52	0.65	0.80	0.89	0.97	1
100 < CAP ≤ 1000	0.58	0.72	0.84	0.90	0.98	1
1000 < CAP	0.63	0.78	0.87	0.91	0.98	1

### Diagram of Dimensions:(unit:mm)



D φ	5	6.3	8	10	13	16	18	22
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10
d φ	0.5		L < 20 0.5	L ≥ 20 0.6	0.6		0.8	

α	D < 18	D = 18		D > 18
		L < 35.5	L ≥ 35.5	
	1.5	1.5	2.0	2.0

## Case Size

WV	6.3			10			16		
	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance
10							5x11	37	4.00
15							5x11	60	3.52
22				5x11	56	2.60	5x11	70	2.00
27				5x11	57	2.40	5x11	110	1.60
33				5x11	58	2.20	5x11	130	1.26
39				5x11	95	1.85	5x11	150	0.87
47				5x11	120	1.20	5x11	190	0.52
56				5x11	130	1.05	5x11	205	0.49
68				5x11	145	0.89	5x11	210	0.45
82				5x11	170	0.75	6.3x11	250	0.37
100	5x11	185	0.95	5x11	205	0.48	6.3x11	260	0.31
120	5x11	190	0.90	5x11	230	0.44	6.3x11	290	0.29
150	6.3x11	210	0.75	6.3x11	270	0.37	6.3x11	300	0.26
180	6.3x11	240	0.70	6.3x11	290	0.35	6.3x15	370	0.23
							8x11.5	368	0.24
220	6.3x11	300	0.55	6.3x11	330	0.28	6.3x15	470	0.20
							8x11.5	455	0.21
270	6.3x11	310	0.49	6.3x15	370	0.25	8x11.5	490	0.17
				8x11.5	390	0.21			
330	6.3x15	320	0.34	6.3x15	445	0.15	8x11.5	550	0.12
	8x11.5	390	0.30	8x11.5	430	0.16			
470	6.3x15	435	0.25	8x11.5	555	0.115	8x16	745	0.092
	8x11.5	430	0.22				10x12.5	722	0.095
560	8x11.5	480	0.20	8x11.5	620	0.095	10x12.5	780	0.082
680	8x11.5	510	0.18	8x16	630	0.090	10x16	920	0.074
820	8x16	620	0.14	8x20	870	0.084	10x16	1020	0.067
1000	8x16	710	0.10	8x20	1040	0.070	10x20	1180	0.050
	10x12.5	625	0.12	10x16	1010	0.072			
1200	10x16	810	0.095	10x16	1130	0.062	10x25	1370	0.047
1500	10x16	1050	0.074	10x20	1270	0.056	10x25	1470	0.041
1800	10x20	1200	0.065	10x25	1430	0.045	13x20	1630	0.038
				13x20	1450	0.048			
2200	10x20	1300	0.060	13x20	1690	0.040	13x20	1800	0.035
	10x25	1400	0.057				13x25	1950	0.033
2700	10x25	1400	0.055	13x20	1800	0.033	13x25	2050	0.031
	13x20	1410	0.052						
3300	13x20	1500	0.048	13x25	1980	0.029	13x30	2410	0.025
							16x25	2340	0.028
4700	13x25	1800	0.032	13x30	2300	0.025	16x31.5	2650	0.022
	13x30	1950	0.025	16x25	2100	0.029	18x25	2570	0.024
6800	13x30	2020	0.024	16x31.5	2340	0.023	18x31.5	2700	0.020
	16x25	2230	0.021						
8200	16x31.5	2530	0.020	16x35.5	2580	0.019	18x35.5	2830	0.018
10000	16x35.5	2740	0.019	18x31.5	2770	0.017	18x41	3300	0.015

Ripple Current ( mA, rms ) at 105°C 100KHz  
 Max Impedance (Ω) at 20°C 100KHz

φ DxL(mm)

WV Cap(μF)	25			35			50			63		
	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance
0.47							5x11	15	5.00	5x11	16	5.00
1							5x11	25	3.95	5x11	27	3.95
2.2							5x11	33	2.60	5x11	38	2.60
3.3							5x11	45	2.00	5x11	48	2.00
4.7							5x11	58	1.89	5x11	62	1.89
5.6							5x11	80	1.85	5x11	85	1.82
6.8							5x11	85	1.77	5x11	90	1.75
8.2							5x11	90	1.72	5x11	100	1.69
10	5x11	56	2.10	5x11	70	1.90	5x11	100	1.70	5x11	105	1.65
15	5x11	97	1.95	5x11	115	1.72	5x11	110	1.53	5x11	110	1.47
22	5x11	120	1.80	5x11	130	1.36	6.3x11	135	1.00	6.3x11	170	0.80
27	5x11	130	1.56	5x11	140	1.20	6.3x11	160	0.93	6.3x11	190	0.75
33	5x11	150	1.20	5x11	175	0.95	6.3x11	230	0.74	8x11.5	245	0.61
39	5x11	170	0.82	6.3x11	200	0.74	6.3x11	240	0.65	8x11.5	270	0.58
47	5x11	220	0.50	6.3x11	250	0.44	8x11.5	285	0.50	8x11.5	290	0.56
56	5x11	245	0.44	6.3x11	270	0.40	8x11.5	300	0.39	8x11.5	320	0.38
68	6.3x11	270	0.39	6.3x11	300	0.35	8x11.5	340	0.30	8x16	480	0.30
82	6.3x11	285	0.33	6.3x15	350	0.29	8x11.5	400	0.25	8x16	510	0.28
100	6.3x11	300	0.28	6.3x15	390	0.18	8x16	475	0.18	10x16	590	0.24
				8x11.5	380	0.19						
120	6.3x11	350	0.22	8x11.5	460	0.17	8x16	520	0.17	10x16	660	0.16
150	6.3x15	420	0.20	8x16	580	0.15	10x16	675	0.13	10x20	790	0.11
180	6.3x15	440	0.18	8x16	630	0.13	10x16	760	0.095	10x20	850	0.095
	8x11.5	435	0.19									
220	8x11.5	550	0.125	8x16	740	0.095	10x20	900	0.085	10x25	1020	0.082
				10x12.5	720	0.098				13x20	1054	0.080
270	8x11.5	620	0.095	8x20	830	0.086	10x20	950	0.075	13x20	1100	0.072
				10x16	840	0.088						
330	8x16	740	0.085	10x16	995	0.065	10x25	1050	0.068	10x30	1200	0.064
	10x12.5	720	0.082							13x25	1160	0.067
470	10x16	1040	0.065	10x20	1150	0.050	13x20	1490	0.048	16x25	1750	0.048
560	10x16	1070	0.061	10x25	1310	0.048	13x20	1550	0.045	16x25	1830	0.044
680	10x20	1280	0.052	13x20	1440	0.044	13x25	1840	0.041	16x31.5	2070	0.040
820	10x25	1460	0.043	13x20	1600	0.038	13x30	2060	0.036	16x31.5	2100	0.035
1000	10x25	1530	0.039	13x30	1950	0.036	13x40	2200	0.033	16x35.5	2450	0.031
	13x25	1580	0.038				16x31.5	2130	0.030			
1200	13x25	1800	0.036	16x25	2200	0.029	16x31.5	2520	0.027	18x31.5	2500	0.026
1500	13x25	2020	0.032	16x31.5	2520	0.027	16x35.5	2700	0.026	18x35.5	2700	0.025
1800	13x30	2300	0.027	16x31.5	2560	0.026	18x31.5	2800	0.025	18x41	2900	0.024
2200	13x30	2480	0.025	16x31.5	2650	0.025	18x35.5	2900	0.024	18x41	2990	0.023
	16x25	2405	0.027	18x25	2570	0.026						
2700	16x31.5	2670	0.024	18x31.5	2660	0.023	18x41	2970	0.021			
3300	16x31.5	2960	0.020	18x35.5	3000	0.020						
	18x25	3050	0.022									
4700	16x41	3490	0.022	18x41	3300	0.019						
	18x35.5	3520	0.021									
6800	18x41	3600	0.017									

Ripple Current ( mA, rms ) at 105°C 100KHz

Max Impedance (Ω) at 20°C 100KHz