

## GF series

### Features

- ◆ Used in mother board , computer peripheral , etc.
- ◆ Load life 2000 ~5000 Hrs at 105°C
- ◆ Safety vent construction design.
- ◆ For detail specifications , please refer to Engineering Bulletin No.E127
- ◆ RoHS Compliant



### Specifications

Item	Performance Characteristics																
Operating Temperature Range	-55 to +105°C																
Rate Voltage Range	6.3 to 100VDC																
Capacitance Range	4.7 to 6800 µF																
Capacitance Tolerance	±20% (120Hz, +20°C)																
Leakage current (+20°C,max.)	I ≤ 0.01CV 或 3 (µA)																
	After 2 minutes , whichever is greater measured with rated working voltage applied																
Dissipation factor (tgδ)	Working Voltage(VDC)	6.3	10	16	25	35	50	63	100								
	D.F.(%)max	16	14	12	10	9	8	8	8								
	For capacitance > 1000µF , Add 2% per another 1000µF (120Hz, +20°C)																
Low Temperature Characteristics (120Hz)	Impedance ratio max.																
	Working Voltage(VDC)	6.3	10	16	25	35	50	63	100								
	Z-25°C/ Z+20°C	4	3	3	3	3	3	2	2								
	Z-40°C/ Z+20°C	8	6	4	3	3	3	3	3								
For capacitance > 1000µF , Add 0.5 per another 1000µF For Z-25°C/ Z+20°C Add 1.0 per another 1000µF For Z-40°C/ Z+20°C																	
Load Life	Test conditions						<table border="1"> <thead> <tr> <th>D Φ</th> <th>Life hours</th> </tr> </thead> <tbody> <tr> <td>5-6.3Φ</td> <td>2000</td> </tr> <tr> <td>8Φ</td> <td>3000</td> </tr> <tr> <td>≥10Φ</td> <td>5000</td> </tr> </tbody> </table>			D Φ	Life hours	5-6.3Φ	2000	8Φ	3000	≥10Φ	5000
	D Φ	Life hours															
5-6.3Φ	2000																
8Φ	3000																
≥10Φ	5000																
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																	
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																

### Multiplier for Ripple Current vs. Frequency

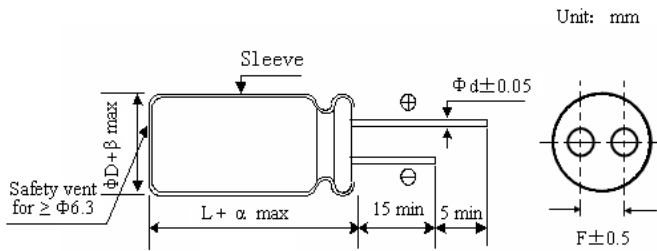
CAP(µF)	50(60)	120	400	1k	10k	50k-100k
Frequency (Hz)						
CAP ≤ 10	0.47	0.59	0.76	0.85	0.97	1.00
10 < CAP ≤ 100	0.52	0.62	0.80	0.89	0.97	1.00
100 < CAP ≤ 1000	0.58	0.72	0.84	0.90	0.98	1.00
1000 < CAP	0.63	0.78	0.87	0.91	0.98	1.00

### Multiplier for Ripple Current vs. Temperature

Temperature °C	45	60	70	85	105
Factor	1.80	1.50	1.45	1.30	1.00

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## Diagram of Dimensions



ΦD	5	6.3	8	10	13	16	18	22	25
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10	12.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8	0.8	1.0
α	(L < 20) + 1.5				(L ≥ 20) + 2.0				
β	(D < 20) + 0.5				(D ≥ 20) + 1.0				

## Standard Ratings

WV Cap(μF)	ΦD × L (mm)					
	6.3V			10V		
	Case Size	Ripple Current	Impedance +20°C	Case Size	Ripple Current	Impedance +20°C
68				5×11	190	0.70
82				5×11	210	0.50
100	5×11	200	0.40	5×11	242	0.31
120	5×11	210	0.38	5×11	261	0.28
150	5×11	225	0.35	6.3×12	300	0.26
180	6.3×12	300	0.32	6.3×12	350	0.22
220	6.3×12	360	0.25	6.3×12	390	0.18
270	6.3×12	377	0.24	6.3×15	460	0.16
330	6.3×12	395	0.20	8×12	540	0.11
390	8×12	576	0.14	8×12	620	0.095
470	8×12	600	0.095	8×12	750	0.075
560	8×16	720	0.087	8×16	870	0.072
680	8×16	800	0.080	8×20	1010	0.068
	10×16	814	0.084			
820	8×20	970	0.070	8×20	1030	0.065
1000	10×13	1000	0.055	8×20	1220	0.050
				10×16	1400	0.042
1200	8×20	1150	0.048	10×20	1560	0.035
	10×16	1180	0.050			
1500	10×20	1400	0.045	10×20	1670	0.032
	10×25	1560	0.043			
1800	10×20	1500	0.041	10×25	2000	0.028
2200	10×25	1720	0.037	13×21	2370	0.025
	13×21	1890	0.039			
2700	13×21	2080	0.034	13×21	2400	0.023
3300	13×21	2290	0.026	13×25	2720	0.021
3900	10×30	2450	0.024	13×30	3000	0.020
	13×25	2670	0.022			
4700	13×30	3200	0.021	13×35	3450	0.019
5600	13×35	3270	0.020	16×32	3460	0.018
6800	16×32	3490	0.018	16×32	3630	0.016

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

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## Standard Ratings

ΦD×L(mm)

WV Cap(μF)	16V			25V		
	Case Size	Ripple Current	Impedance +20°C	Case Size	Ripple Current	Impedance +20°C
39				5×11	210	0.42
47	5×11	200	0.40	5×11	240	0.35
56	5×11	220	0.38	5×11	256	0.31
68	5×11	230	0.35	6.3×12	300	0.28
82	5×11	260	0.31	6.3×12	350	0.24
100	6.3×12	360	0.25	6.3×12	410	0.15
120	6.3×12	365	0.23	6.3×15	490	0.13
50	6.3×12	385	0.21	8×12	540	0.11
180	8×12	520	0.19	8×12	620	0.098
220	8×12	575	0.14	8×12	750	0.075
270	8×12	600	0.12	8×16	850	0.063
330	8×12	740	0.08	8×16	990	0.056
				10×13	1010	0.054
390	8×16	790	0.075	10×13	1050	0.051
470	8×16	990	0.062	8×20	1260	0.045
	10×13	1000	0.058	10×16	1415	0.042
560	8×20	1070	0.057	10×20	1450	0.040
680	8×20	1120	0.055	10×20	1570	0.035
	10×16	1280	0.052			
820	10×20	1400	0.048	10×25	1910	0.032
1000	10×20	1840	0.035	13×21	2340	0.025
1200	10×25	1920	0.032	13×21	2390	0.025
1500	10×25	2050	0.030	13×25	2710	0.023
	13×21	2200	0.029			
1800	13×21	2380	0.026	13×30	3150	0.021
2200	13×25	2750	0.022	13×35	3420	0.018
2700	13×25	3000	0.022	16×32	3480	0.018
3300	13×35	3490	0.018	16×32	3600	0.018
3900	16×25	3520	0.018			
4700	16×32	3770	0.017			

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

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## Standard Ratings

ΦD×L(mm)

WV Cap(μF)	35V			50V		
	Case Size	Ripple Current	Impedance	Case Size	Ripple Current	Impedance
			+20°C			+20°C
22				5×11	220	0.35
27				6.3×12	265	0.34
33	5×11	230	0.32	6.3×12	280	0.32
39	6.3×12	277	0.31	6.3×12	300	0.28
47	6.3×12	340	0.20	8×12	360	0.20
56	6.3×12	375	0.20	8×12	375	0.19
68	6.3×12	400	0.19	8×12	400	0.17
82	8×12	480	0.17	8×12	550	0.12
100	8×12	560	0.15	8×12	730	0.075
120	8×12	585	0.13	8×16	770	0.073
				10×13	790	0.072
150	8×12	680	0.11	10×13	870	0.068
180	8×16	810	0.098	8×20	1060	0.055
				10×16	1090	0.055
220	8×16	1000	0.056	10×16	1385	0.045
	10×13	1060	0.052			
270	10×16	1190	0.050	10×20	1500	0.043
330	8×20	1210	0.041	10×25	1850	0.032
	10×16	1400	0.038			
390	10×20	1550	0.035	13×21	1910	0.031
470	10×20	1850	0.022	13×21	2000	0.030
560	10×25	2040	0.022	13×21	2150	0.028
680	13×21	2260	0.021	13×25	2490	0.026
820	13×25	2630	0.021	13×21	2770	0.025
				16×25	2960	0.024
1000	13×25	2780	0.019	16×25	3000	0.020
1200	13×30	2950	0.019			
	16×25	3150	0.018			
1500	13×35	3350	0.018			
	16×32	3600	0.017			
1800	16×32	3670	0.016			
2200	16×36	3750	0.015			
2700	18×32	3850	0.014			

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

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## Standard Ratings

ΦD×L(mm)

WV Cap(μF)	63V			100V		
	Case Size	Ripple Current	Impedance	Case Size	Ripple Current	Impedance
			+20°C			+20°C
4.7				5×11	105	1.60
5.6				5×11	116	1.49
6.8				5×11	120	1.45
10	5×11	135	0.95	6.3×12	170	0.70
15	6.3×12	168	0.85	8×12	255	0.61
18	6.3×12	170	0.82	8×12	270	0.56
22	6.3×12	250	0.75	8×12	320	0.48
27	6.3×12	260	0.55	8×12	340	0.39
33	6.3×12	270	0.38	8×16	400	0.31
39	8×12	320	0.35	8×16	425	0.29
				10×13	440	0.27
47	8×12	400	0.22	10×13	450	0.25
56	8×12	420	0.22	10×16	540	0.21
68	10×13	500	0.20	10×20	630	0.18
82	8×16	540	0.17	10×20	720	0.15
	10×13	570	0.16			
100	10×13	720	0.14	10×25	890	0.12
120	8×20	790	0.14	10×25	900	0.12
	10×16	835	0.13	13×21	980	0.11
150	10×16	900	0.11	13×21	1100	0.095
180	10×20	1200	0.095	13×25	1250	0.078
220	10×25	1315	0.075	13×30	1420	0.065
				16×21	1270	0.075
270	13×21	1400	0.071	13×35	1630	0.057
				16×25	1570	0.058
330	10×30	1750	0.047	13×40	1650	0.045
	13×25	1870	0.045			
390	13×25	1920	0.044	16×32	1850	0.043
470	13×30	2225	0.041	16×36	1900	0.032
	16×21	1970	0.043	18×32	1700	0.038
560	16×25	2350	0.039	16×41	2170	0.032
				18×32	2100	0.031
680	16×32	2600	0.035	18×36	2400	0.029
820	16×32	2650	0.031			
1000	16×36	2780	0.026			
	18×32	3230	0.028			

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