

# GF series

## FEATURES

- Enabled high ripple current by a reduction of impedance at high frequency range
- Load life: 105°C 2000 hours

## SPECIFICATIONS

Item	Characteristics							
Operating Temperature Range	-55°C~+105°C							
Rated Voltage Range	6.3~50W.V.							
Capacitance Range	1.0~6800 μF							
Capacitance Tolerance	± 20%(20°C, 120Hz)							
Leakage Current (MAX)	I=0.01CV or 3μA whichever is greater.(After 2 minutes) I=Leakage Current(μA), C=Nominal Capacitance(μF), V=Rated Voltage(V)							
Dissipation Factor (tan δ)	When nominal capacitance is over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF							
	Rated voltage (V)	6.3	10	16	25	35	50	MAX (20°C 120Hz)
Low Temperature Stability Impedance Ratio	Tanδ	0.22	0.19	0.16	0.14	0.12	0.10	
	Rated Voltage(V)	6.3	10	16	25	35	50	
	Z(-25°C)/Z(+20°C)	2	2	2	2	2	2	MAX (120Hz)
Load Life	Z(-55°C)/Z(+20°C)	3	3	3	3	3	3	
	After life test at conditions stated in the table below, the capacitors shall meet the following requirement							
	Capacitance Change	within ±25% of the initial value				Case Dia	Life Time(hrs)	
Dissipation Factor	Not more than 200% of the specified value.				φ D ≤ 6.3	2000		
Leakage Current	Not more than the specified value.				φ D = 8	3000		
					φ D = 10	4000		
Shelf Life					φ D ≥ 12.5	5000		
	After leaving capacitors under no load at 105°C for 1000 hours and applying voltage according to JIS C-5102 4-3, they meet the specified value for load life characteristics listed above.							
Standard	According to JIS C 5141							

## MULTIPLIER FOR RIPPLE CURRENT

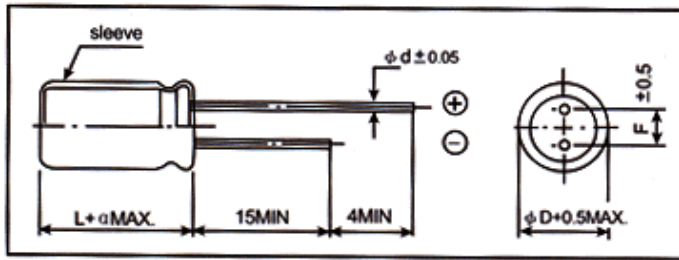
### Frequency coefficient

Frequency(Hz) \ Cap(μF)	60(50)	120	1K	10K	100K≤
22-33	0.45	0.55	0.75	0.90	1.00
39-330	0.60	0.70	0.85	0.95	1.00
390-1000	0.65	0.75	0.90	0.98	1.00
1200-6800	0.75	0.80	0.95	1.00	1.00

### Temperature coefficient

Temperature	40°C	55°C	65°C	75°C	85°C	105°C
Coefficient	2.41	2.41	2.12	2.00	1.70	1.00

## DIMENSIONS (mm)



$\phi D$	5	6.3	8	10	12.5	16	18
$\phi d$	0.5		0.6			0.8	
F	2.0	2.5	3.5	5.0		7.5	
$\alpha$	$L \leq 16: \alpha=1.5, L \geq 20: \alpha=2.0$						

## STANDARD SIZE ,MAXIUM PERMISSIBLE RIPPLE CURRENT,IMPEDANCE

Ripple Current (mA r.m.s./ 105°C,100kHz)

Rated voltage 6.3V (OJ)				
Nominal capacitance ( $\mu F$ )	Size $\phi D \times L$ (mm)	Ripple Current	Impedance ( $\Omega$ MAX)	
			20°C,100kHz	-10°C,100kHz
150	5x11	260	0.29	0.95
330	6.3x11	410	0.12	0.40
560	8x11.5	770	0.071	0.21
820	8x16	1000	0.055	0.16
1200	8x20	1300	0.040	0.12
1000	10x12.5	1030	0.052	0.15
1200	10x16	1450	0.037	0.11
1500	10x20	1830	0.024	0.068
2200	10x23	2170	0.022	0.066
3300	12.5x20	2360	0.020	0.051
3900	12.5x25	2780	0.017	0.044
4700	12.5x30	3300	0.016	0.041
5600	12.5x35	3400	0.014	0.038
5600	16x20	3180	0.017	0.043
6800	16x25	3470	0.015	0.041

Ripple Current (mA r.m.s./ 105°C,100kHz)

Rated voltage 10V (1A)				
Nominal capacitance ( $\mu$ F)	Size	Ripple Current	Impedance ( $\Omega$ MAX)	
	$\phi$ DxL(mm)		20°C,100kHz	-10°C,100kHz
100	5x11	260	0.29	0.95
220	6.3x11	410	0.12	0.40
470	8x11.5	770	0.071	0.21
680	8x16	1000	0.055	0.16
1000	8x20	1300	0.040	0.12
680	10x12.5	1030	0.052	0.15
1000	10x16	1450	0.037	0.11
1200	10x20	1830	0.024	0.068
1500	10x23	2170	0.022	0.066
2200	12.5x20	2360	0.020	0.051
3300	12.5x25	2780	0.017	0.044
3900	12.5x30	3300	0.016	0.041
4700	12.5x35	3400	0.014	0.038
3900	16x20	3180	0.017	0.043
5600	16x25	3470	0.015	0.041

Ripple Current (mA r.m.s./ 105°C,100kHz)

Rated voltage 16V (1C)				
Nominal capacitance ( $\mu$ F)	Size	Ripple Current	Impedance ( $\Omega$ MAX)	
	$\phi$ DxL(mm)		20°C,100kHz	-10°C,100kHz
56	5x11	260	0.29	0.95
120	6.3x11	410	0.12	0.40
330	8x11.5	770	0.071	0.21
470	8x16	1000	0.055	0.16
680	8x20	1300	0.040	0.12
470	10x12.5	1030	0.052	0.15
680	10x16	1450	0.037	0.11
1000	10x20	1830	0.024	0.068
1200	10x23	2170	0.022	0.066
1500	12.5x20	2360	0.020	0.051
2200	12.5x25	2780	0.017	0.044
2700	12.5x30	3300	0.016	0.041
3300	12.5x35	3400	0.014	0.038
2700	16x20	3180	0.017	0.043
3900	16x25	3470	0.015	0.041

Ripple Current (mA r.m.s./ 105°C, 100kHz)

Rated voltage 25V (1E)				
Nominal capacitance ( $\mu$ F)	Size	Ripple Current	Impedance ( $\Omega$ MAX)	
	$\phi$ DxL(mm)		20°C, 100kHz	-10°C, 100kHz
100	5x11	260	0.29	0.95
220	6.3x11	410	0.12	0.40
470	8x11.5	770	0.071	0.21
680	8x16	1000	0.055	0.16
1000	8x20	1300	0.040	0.12
680	10x12.5	1030	0.052	0.15
1000	10x16	1450	0.037	0.11
1200	10x20	1830	0.024	0.068
1500	10x23	2170	0.022	0.066
2200	12.5x20	2360	0.020	0.051
3300	12.5x25	2780	0.017	0.044
3900	12.5x30	3300	0.016	0.041
4700	12.5x35	3400	0.014	0.038
3900	16x20	3180	0.017	0.043
5600	16x25	3470	0.015	0.041

Ripple Current (mA r.m.s./ 105°C, 100kHz)

Rated voltage 35V (1V)				
Nominal capacitance ( $\mu$ F)	Size	Ripple Current	Impedance ( $\Omega$ MAX)	
	$\phi$ DxL(mm)		20°C, 100kHz	-10°C, 100kHz
33	5x11	260	0.29	0.95
56	6.3x11	410	0.12	0.40
150	8x11.5	770	0.071	0.21
220	8x16	1000	0.055	0.16
270	8x20	1300	0.040	0.12
220	10x12.5	1030	0.052	0.15
330	10x16	1450	0.037	0.11
470	10x20	1830	0.024	0.068
560	10x23	2170	0.022	0.066
680	12.5x20	2360	0.020	0.051
1000	12.5x25	2780	0.017	0.044
1200	12.5x30	3300	0.016	0.041
1500	12.5x35	3400	0.014	0.038
1200	16x20	3180	0.017	0.043
1800	16x25	3470	0.015	0.041

Ripple Current (mA r.m.s./ 105°C, 100kHz)

Rated voltage 50V (1H)				
Nominal capacitance ( $\mu$ F)	Size	Ripple Current	Impedance ( $\Omega$ MAX)	
	$\Phi$ DxL(mm)		20°C, 100kHz	-10°C, 100kHz
22	5x11	240	0.33	1.10
56	6.3x11	400	0.13	0.48
100	8x11.5	740	0.075	0.21
120	8x16	980	0.060	0.17
180	8x20	1200	0.045	0.13
150	10x12.5	980	0.060	0.17
220	10x16	1370	0.041	0.11
270	10x20	1590	0.029	0.087
330	10x23	1880	0.027	0.084
470	12.5x20	2050	0.026	0.067
560	12.5x25	2430	0.022	0.058
680	12.5x30	2870	0.020	0.050
820	12.5x35	2980	0.018	0.050
820	16x20	2740	0.022	0.058
1000	16x25	3050	0.020	0.055

Ripple Current (mA r.m.s./ 105°C, 100kHz)

Cap( $\mu$ F)	W.V	6.3	10	16	25	35	50
		0J	1A	1C	1E	1V	1H
22							5x11
33						5x11	
47					5x11		
56				5x11		6.3x11	6.3x11
100			5x11		6.3x11		8x11.5
120				6.3x11			8x16
150	5x11					8x11.5	10x12.5
180							8x20
220			6.3x11		8x11.5	8x16 10x12.5	10x16
270						8x20	10x20
330	6.3x11			8x11.5	8x16 10x12.5	10x16	10x23
470			8x11.5	8x16 10x12.5	8x20 10x16	10x20	12.5x20
560	8x11.5					10x23	12.5x25
680			8x16 10x12.5	8x20 10x16	10x20	12.5x20	12.5x30
820	8x16				10x23		12.5x35 16x20
1000	10x12.5		8x20 10x16	10x20	12.5x20	12.5x25	16x25
1200	8x20 10x16		10x20	10x23		12.5x30 16x20	
1500	10x20		10x23	12.5x20	12.5x25	12.5x35	
1800	10x23				12.5x30 16x20	16x25	
2200			12.5x20	12.5x25	12.5x35		
2700				12.5x30 16x20	16x25		
3300	12.5x20		12.5x25	12.5x35			
3900	12.5x25		12.5x30 16x20	16x25			
4700	12.5x30		12.5x35				
5600	12.5x35 16x20		16x25				
6800	16x25						