

### GF SERIES ■ LOW IMPEDANCE 105°C TYPE

#### KEY FEATURES



- ALUMINUM ELECTROLYTIC CAPACITOR • THT type
- Endurance: 105°C • 2 000 hours up to 5 000 hours
- Low impedance and high ripple current
- Wide capacitance range
- Optimized low temperature type



#### SPECIFICATIONS

Items		Performance Characteristics								
Operating Temperature Range		-40 ~ +105°C								
Rated Voltage Range	$V_R$	6.3 ~ 100V DC								
Surge Voltage	$V_S$	$V_S = 1.15 \cdot V_R$								
Capacitance Range	$C_R$	4.7 ~ 6800 $\mu$ F								
Cap. Tolerance	$\Delta C$	$\pm 20\%$ (120Hz • 20°C)								
Leakage Current (20°C • $V_R$ applied)	$I_{LEAK}$	$\leq 0.01 \cdot C_R \cdot V_R$ or 3 $\mu$ A, whichever is greater • After 2 minutes [ $I_{LEAK}$ ( $\mu$ A) ; $C_R$ ( $\mu$ F) ; $V_R$ (V) ]								
Dissipation Factor % (20°C • 120Hz)	$\tan \delta$	$V_R$ (V DC)	6.3	10	16	25	35	50	63	100
		$\tan \delta$ (%)	16	14	12	10	9	8	8	8
		For $C_R \geq 1000\mu$ F, add 2% per every multiple 1000 $\mu$ F of rated capacitance value								
Low Temperature Characteristics at 120Hz	Z ratio max.	$V_R$ (V DC)	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 > 1000 $\mu$ F								
		Z-25°C/Z+20°C	Add 0.5 for every multiple 1000 $\mu$ F of rated capacitance value							
Z-40°C/Z+20°C	Add 1 for every multiple 1000 $\mu$ F of rated capacitance value									
Lifetime Test										
Endurance 105°C ( $V_R$ & $I_R$ applied)	Test	2 000 hours						$\phi$ D 5 ~ 6.3 mm		
		3 000 hours						$\phi$ D 8 mm		
		5 000 hours						$\phi$ D $\geq$ 10 mm		
	$\Delta C/C_R$	$\leq \pm 20\%$ of initial measured value								
	$\tan \delta$	$\leq 200\%$ of initial specified value								
$I_{Leak}$	$\leq$ the initial specified value									
Shelf Life 105°C ( $V_R = 0$ )	Test	1 000 hours								
	$\Delta C/C_R$	$\leq \pm 20\%$ of initial measured value								
	$\tan \delta$	$\leq 200\%$ of initial specified value								
	$I_{Leak}$	$\leq$ the initial specified value								
		Before measurement: Restore capacitor to 20°C, apply $V_R$ for 30 min according JIS-C-5101-4								

**STANDARD RATINGS**

Part number shows bulk version with straight leads

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Z - Max. Impedance +20°C - 100kHz (m $\Omega$ )	$I_R$ - Max. Ripple Current +105°C - 100kHz (mA rms)	CapXon Part Number
6.3	100	5	11	400	200	GF101M6R3C110A
	120	5	11	380	210	GF121M6R3C110A
	150	5	11	350	225	GF151M6R3C110A
	180	6.3	11	320	300	GF181M6R3E110A
	220	6.3	11	250	360	GF221M6R3E110A
	270	6.3	11	240	377	GF271M6R3E110A
	330	6.3	11	200	395	GF331M6R3E110A
	390	8	11.5	140	576	GF391M6R3F115A
	470	8	11.5	95	600	GF471M6R3F115A
	560	8	16	87	720	GF561M6R3F160A
	680	8	16	80	800	GF681M6R3F160A
	680	10	16	84	814	GF681M6R3G160A
	820	8	20	70	970	GF821M6R3F200A
	1000	10	12.5	55	1000	GF102M6R3G125A
	1200	8	20	48	1150	GF122M6R3F200A
	1200	10	16	50	1180	GF122M6R3G160A
	1500	10	20	45	1400	GF152M6R3G200A
	1500	10	25	43	1560	GF152M6R3G250A
	1800	10	20	41	1500	GF182M6R3G200A
	2200	10	25	37	1720	GF222M6R3G250A
	2200	13	20	39	1890	GF222M6R3I200A
	2700	13	20	34	2080	GF272M6R3I200A
	3300	13	20	26	2290	GF332M6R3I200A
	3900	10	30	24	2450	GF392M6R3G300A
	3900	13	25	22	2670	GF392M6R3I250A
	4700	13	30	21	3200	GF472M6R3I300A
5600	13	35	20	3270	GF562M6R3I350A	
6800	16	31.5	18	3490	GF682M6R3J315A	
10	68	5	11	700	190	GF680M010C110A
	82	5	11	500	210	GF820M010C110A
	100	5	11	310	242	GF101M010C110A
	120	5	11	280	261	GF121M010C110A
	150	6.3	11	260	300	GF151M010E110A
	180	6.3	11	220	350	GF181M010E110A
	220	6.3	11	180	390	GF221M010E110A
	270	6.3	15	160	460	GF271M010E150A
	330	8	11.5	110	540	GF331M010F115A
	390	8	11.5	95	620	GF391M010F115A
	470	8	11.5	75	750	GF471M010F115A
	560	8	16	72	870	GF561M010F160A
	680	8	20	68	1010	GF681M010F200A
	820	8	20	65	1030	GF821M010F200A
1000	8	20	50	1220	GF102M010F200A	

See "PACKAGING INFORMATION" to taped or formed products.

**STANDARD RATINGS**

Part number shows bulk version with straight leads

V <sub>R</sub> (V)	C <sub>R</sub> (μF)	∅ D (mm)	L (mm)	Z - Max. Impedance +20°C - 100kHz (mΩ)	I <sub>R</sub> - Max. Ripple Current +105°C - 100kHz (mA rms)	CapXon Part Number
10	1000	10	16	42	1400	GF102M010G160A
	1200	10	20	35	1560	GF122M010G200A
	1500	10	20	32	1670	GF152M010G200A
	1800	10	25	28	2000	GF182M010G250A
	2200	13	20	25	2370	GF222M010I200A
	2700	13	20	23	2400	GF272M010I200A
	3300	13	25	21	2720	GF332M010I250A
	3900	13	30	20	3000	GF392M010I300A
	4700	13	35	19	3450	GF472M010I350A
	5600	16	31.5	18	3460	GF562M010J315A
6800	16	31.5	16	3630	GF682M010J315A	
16	47	5	11	400	200	GF470M016C110A
	56	5	11	380	220	GF560M016C110A
	68	5	11	350	230	GF680M016C110A
	82	5	11	310	260	GF820M016C110A
	100	6.3	11	250	360	GF101M016E110A
	120	6.3	11	230	365	GF121M016E110A
	150	6.3	11	210	385	GF151M016E110A
	180	8	11.5	190	520	GF181M016F115A
	220	8	11.5	140	575	GF221M016F115A
	270	8	11.5	120	600	GF271M016F115A
	330	8	11.5	80	740	GF331M016F115A
	390	8	16	75	790	GF391M016F160A
	470	8	16	62	990	GF471M016F160A
	470	10	12.5	58	1000	GF471M016G125A
	560	8	20	57	1070	GF561M016F200A
	680	8	20	55	1120	GF681M016F200A
	680	10	16	52	1280	GF681M016G160A
	820	10	20	48	1400	GF821M016G200A
	1000	10	20	35	1840	GF102M016G200A
	1200	10	25	32	1920	GF122M016G250A
	1500	10	25	30	2050	GF152M016G250A
	1500	13	20	29	2200	GF152M016I200A
	1800	13	20	26	2380	GF182M016I200A
	2200	13	25	22	2750	GF222M016I250A
2700	13	25	22	3000	GF272M016I250A	
3300	13	35	18	3490	GF332M016I350A	
3900	16	25	18	3520	GF392M016J250A	
4700	16	31.5	17	3770	GF472M016J315A	
25	39	5	11	420	210	GF390M025C110A
	47	5	11	350	240	GF470M025C110A
	56	5	11	310	256	GF560M025C110A
	68	6.3	11	280	300	GF680M025E110A

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**STANDARD RATINGS**

Part number shows bulk version with straight leads

$V_R$ (V)	$C_R$ ( $\mu F$ )	$\phi D$ (mm)	L (mm)	Z - Max. Impedance +20°C - 100kHz (m $\Omega$ )	$I_R$ - Max. Ripple Current +105°C - 100kHz (mA rms)	CapXon Part Number
25	82	6.3	11	240	350	GF820M025E110A
	100	6.3	11	150	410	GF101M025E110A
	120	6.3	15	130	490	GF121M025E150A
	150	8	11.5	110	540	GF151M025F115A
	180	8	11.5	98	620	GF181M025F115A
	220	8	11.5	75	750	GF221M025F115A
	270	8	16	63	850	GF271M025F160A
	330	8	16	56	990	GF331M025F160A
	330	10	12.5	54	1010	GF331M025G125A
	390	10	12.5	51	1050	GF391M025G125A
	470	8	20	45	1260	GF471M025F200A
	470	10	16	42	1415	GF471M025G160A
	560	10	20	40	1450	GF561M025G200A
	680	10	20	35	1570	GF681M025G200A
	820	10	25	32	1910	GF821M025G250A
	1000	13	20	25	2340	GF102M025I200A
	1200	13	20	25	2390	GF122M025I200A
	1500	13	25	23	2710	GF152M025I250A
	1800	13	30	21	3150	GF182M025I300A
	2200	13	35	18	3420	GF222M025I350A
2700	16	31.5	18	3480	GF272M025J315A	
3300	16	31.5	18	3600	GF332M025J315A	
35	33	5	11	320	230	GF330M035C110A
	39	6.3	11	310	277	GF390M035E110A
	47	6.3	11	200	340	GF470M035E110A
	56	6.3	11	200	375	GF560M035E110A
	68	6.3	11	190	400	GF680M035E110A
	82	8	11.5	170	480	GF820M035F115A
	100	8	11.5	150	560	GF101M035F115A
	120	8	11.5	130	585	GF121M035F115A
	150	8	11.5	110	680	GF151M035F115A
	180	8	16	98	810	GF181M035F160A
	220	8	16	56	1000	GF221M035F160A
	220	10	12.5	52	1060	GF221M035G125A
	270	10	16	50	1190	GF271M035G160A
	330	8	20	41	1210	GF331M035F200A
	330	10	16	38	1400	GF331M035G160A
	390	10	20	35	1550	GF391M035G200A
	470	10	20	34	1850	GF471M035G200A
	560	10	25	31	2040	GF561M035G250A
	680	13	20	29	2260	GF681M035I200A
	820	13	25	21	2630	GF821M035I250A
1000	13	25	19	2780	GF102M035I250A	

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**STANDARD RATINGS**

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V <sub>R</sub> (V)	C <sub>R</sub> (μF)	∅ D (mm)	L (mm)	Z • Max. Impedance +20°C • 100kHz (mΩ)	I <sub>R</sub> • Max. Ripple Current +105°C • 100kHz (mA rms)	CapXon Part Number
35	1200	13	30	19	2950	GF122M035I300A
	1200	16	25	18	3150	GF122M035J250A
	1500	13	35	18	3350	GF152M035I350A
	1500	16	31.5	17	3600	GF152M035J315A
	1800	16	31.5	16	3670	GF182M035J315A
	2200	16	31.5	15	3750	GF222M035J315A
	2700	18	31.5	14	3850	GF272M035K315A
50	22	5	11	350	220	GF220M050C110A
	27	6.3	11	340	265	GF270M050E110A
	33	6.3	11	320	280	GF330M050E110A
	39	6.3	11	280	300	GF390M050E110A
	47	8	11.5	200	360	GF470M050F115A
	56	8	11.5	190	385	GF560M050F115A
	68	8	11.5	170	400	GF680M050F115A
	82	8	11.5	120	550	GF820M050F115A
	100	8	11.5	75	730	GF101M050F115A
	120	8	16	73	770	GF121M050F160A
	120	10	12.5	72	790	GF121M050G125A
	150	10	12.5	68	870	GF151M050G125A
	180	8	20	55	1060	GF181M050F200A
	180	10	16	55	1090	GF181M050G160A
	220	10	16	45	1385	GF221M050G160A
	270	10	20	43	1500	GF271M050G200A
	330	10	25	32	1850	GF331M050G250A
	390	13	20	31	1910	GF391M050I200A
	470	13	20	30	2000	GF471M050I200A
	560	13	20	28	2150	GF561M050I200A
680	13	25	26	2490	GF681M050I250A	
820	13	30	25	2770	GF821M050I300A	
820	16	25	24	2960	GF821M050J250A	
1000	16	25	20	3000	GF102M050J250A	
63	10	5	11	950	135	GF100M063C110A
	15	6.3	11	850	168	GF150M063E110A
	18	6.3	11	820	170	GF180M063E110A
	22	6.3	11	750	250	GF220M063E110A
	27	6.3	11	550	260	GF270M063E110A
	33	6.3	11	380	270	GF330M063E110A
	39	8	11.5	350	320	GF390M063F115A
	47	8	11.5	220	400	GF470M063F115A
	56	8	11.5	220	420	GF560M063F115A
	68	10	12.5	200	500	GF680M063G125A
	82	8	16	170	540	GF820M063F160A
	82	10	12.5	160	570	GF820M063G125A

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**STANDARD RATINGS**

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V <sub>R</sub> (V)	C <sub>R</sub> (μF)	∅ D (mm)	L (mm)	Z • Max. Impedance +20°C • 100kHz (mΩ)	I <sub>R</sub> • Max. Ripple Current +105°C • 100kHz (mA rms)	CapXon Part Number
63	100	10	12.5	140	720	GF101M063G125A
	120	8	20	140	790	GF121M063F200A
	120	10	16	130	835	GF121M063G160A
	150	10	16	110	900	GF151M063G160A
	180	10	20	95	1200	GF181M063G200A
	220	10	25	75	1315	GF221M063G250A
	270	13	20	71	1400	GF271M063I200A
	330	10	30	47	1750	GF331M063G300A
	330	13	25	45	1870	GF331M063I250A
	390	13	25	44	1920	GF391M063I250A
	470	13	30	41	2225	GF471M063I300A
	470	16	20	43	1970	GF471M063J200A
	560	16	25	39	2350	GF561M063J250A
	680	16	31.5	35	2600	GF681M063J315A
	820	16	31.5	31	2650	GF821M063J315A
	1000	16	35.5	26	2780	GF102M063J355A
1000	18	31.5	28	3230	GF102M063K315A	
100	4.7	5	11	1600	105	GF4R7M100C110A
	5.6	5	11	1490	116	GF5R6M100C110A
	6.8	5	11	1450	120	GF6R8M100C110A
	10	6.3	11	700	170	GF100M100E110A
	15	8	11.5	610	255	GF150M100F115A
	18	8	11.5	560	270	GF180M100F115A
	22	8	11.5	480	320	GF220M100F115A
	27	8	11.5	390	340	GF270M100F115A
	33	8	16	310	400	GF330M100F160A
	39	8	16	290	425	GF390M100F160A
	39	10	12.5	270	440	GF390M100G125A
	47	10	12.5	250	450	GF470M100G125A
	56	10	16	210	540	GF560M100G160A
	68	10	20	180	630	GF680M100G200A
	82	10	20	150	720	GF820M100G200A
	100	10	25	120	890	GF101M100G250A
	120	10	25	120	900	GF121M100G250A
	120	13	20	110	980	GF121M100I200A
	150	13	20	95	1100	GF151M100I200A
	180	13	25	78	1250	GF181M100I250A
	220	13	30	65	1420	GF221M100I300A
	220	16	20	75	1270	GF221M100J200A
	270	13	35	57	1630	GF271M100I350A
	270	16	25	58	1570	GF271M100J250A
330	13	40	45	1650	GF331M100I400A	
390	16	31.5	43	1850	GF391M100J315A	
470	16	35.5	32	1900	GF471M100J355A	

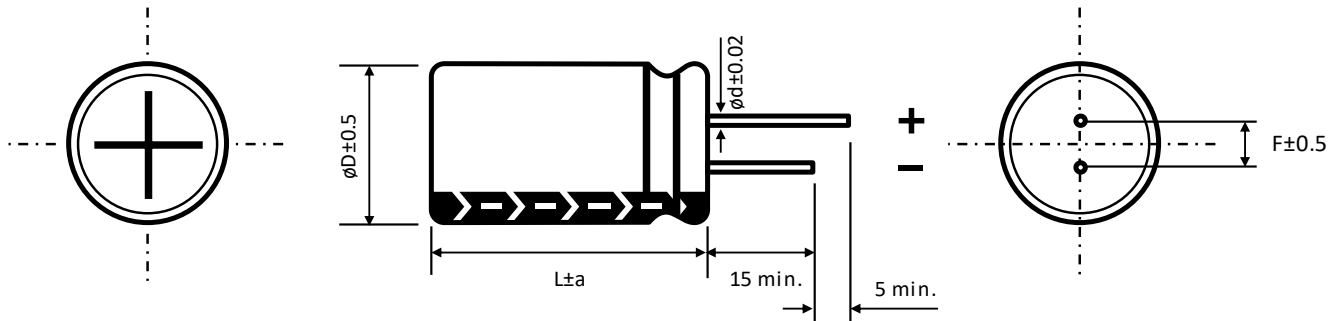
See "PACKAGING INFORMATION" to taped or formed products.

**STANDARD RATINGS**

Part number shows bulk version with straight leads

$V_R$ (V)	$C_R$ ( $\mu F$ )	$\phi D$ (mm)	L (mm)	Z - Max. Impedance +20°C - 100kHz (m $\Omega$ )	$I_R$ - Max. Ripple Current +105°C - 100kHz (mA rms)	CapXon Part Number
100	470	18	31.5	38	1700	GF471M100K315A
	560	16	40	32	2170	GF561M100J400A
	560	18	31.5	31	2100	GF561M100K315A
	680	18	35.5	29	2400	GF681M100K355A

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**DIMENSIONS** - All dimensions in mm


$\phi D$	5	6.3	8		10	13	16	18
F	2	2.5	3.5		5	5	7.5	7.5
$\phi d$	0.5		L < 20	L $\geq$ 20	0.6		0.8	
			0.5	0.6				




a	$\phi D < 16$	$\phi D = 16$		$\phi D = 18$		
	1.5	L = 25 to 35.5		L < 25 and L $\geq$ 40		L = 25 to 31.5
		1.5		2		L < 25 and L $\geq$ 35.5
				1.5	2	

**MULTIPLIER  $K_f$  for RIPPLE CURRENT vs. FREQUENCY**

$C_R$ ( $\mu F$ ) / Frequency (Hz)	50/60	100/120	400	1k	10k	50k ~ 100k
$C_R \leq 10$	0.47	0.59	0.76	0.85	0.97	1
$10 < C_R \leq 100$	0.52	0.62	0.8	0.89	0.97	1
$100 < C_R \leq 1000$	0.58	0.72	0.84	0.9	0.98	1
$1000 \leq C_R$	0.63	0.78	0.87	0.91	0.98	1

## PRECAUTIONS, GUIDELINES AND PACKAGING INFORMATION

Unless otherwise agreed in individual specifications, all products are subject to our “General Precautions and Guidelines” as well as our “Packaging Information”. Please refer to the following links in the table.

		
<a href="#">General Precautions &amp; Guidelines</a>	<a href="#">Packaging Information</a>	<a href="#">3D Models</a>

### DISCLAIMER

All product related data (e.g. specification, statements and general information) are subject to change without any notice. It is necessary that the customer observes all product related technical / application information and handling instructions.

CapXon products are designed and manufactured according to severe quality and safety standards. Under no circumstance, CapXon warrants that any CapXon product is suitable for the purposes intended for your application, even CapXon knows the application. It is customer's duty and obligation to check and make sure that CapXon products are suitable for the purposes intended and select the correct and proper CapXon product. Customers are requested to perform a sufficient validation and reliability evaluation to assure needed safety level and reliability performance by suitable designs and to apply proper safeguards (e.g. redundancies, protective circuits).

Particular operating conditions (ambient temperature, ripple current, voltage, thermal resistance, etc.) as well as storage, production or assembly may affect the performance and the lifetime of the capacitor. Please consult CapXon for lifetime estimation, failure mode considerations or worst-case scenarios according to the product technology, product tolerances / deviations or change of the characteristics of the capacitor due to shipment, storage, handling, production and usage.

For aerospace or military application, life-saving, life-sustaining, safety critical applications or any application where failure may cause severe personal injury or death, please consult us before design-in the capacitor in your application.

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