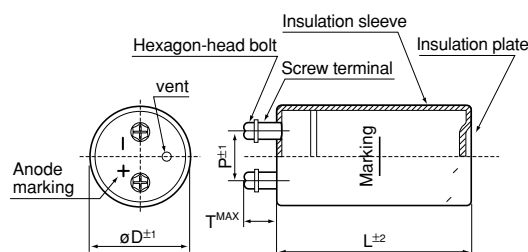


Screw terminal type aluminum electrolytic capacitors

FXR type	[long-life, high-reliability, high-ripple product for inverter] (Warranty of 5,000 hours at 85°C)
GXR type	[long-life, high-ripple product for inverter] (Warranty of 5,000 hours at 105°C)
HCG7 type	[low/medium-voltage standard product] (Warranty of 2,000 hours at 85°C)
HCGF5 type	[standard product for inverter] (Warranty of 2,000 hours at 85°C)
HCGF6 type	[large-capacitance, small-sized product for inverter] (Warranty of 2,000 hours at 85°C)
HCGH type	[105°C, standard product] (Warranty of 2,000 hours at 105°C)
FX2 type	[long-life, small-sized product for inverter] (Warranty of 5,000 hours at 85°C)
FXA type	[long-life, standard product for inverter] (Warranty of 5,000 hours at 85°C)
GXH type	[long-life, high-ripple product for inverter] (Warranty of 5,000 hours at 105°C)
GX2 type	[long-life series, expanded product for inverter] (Warranty of 5,000 hours at 105°C)
GXA type	[long-life product for inverter] (Warranty of 5,000 hours at 105°C)
HXA type	[long-life product for inverter] (Warranty of 20,000 hours at 85°C)

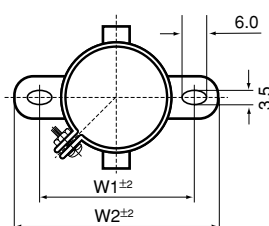
- In the FXR and GXR types, the permissible ripple current is increased 37% by new heat radiation constructions as compare with conventional products (FXG, GXA).
- In the GX2 types, a new 500 V. DC product is added in the GXA series.

Outline of drawings and dimensions (Unit : mm)

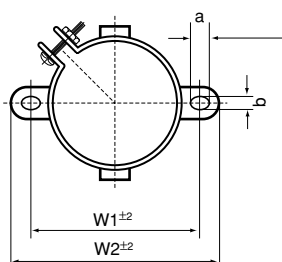


T: 15^{MAX}

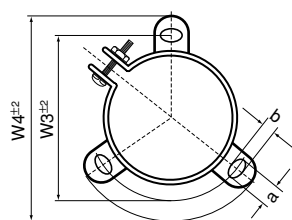
Hexagon-head bolt
Case code (A to F): M5×10
Case code (G): M6×12 (P=32.0)
(G case of FX2 series: M8×16 (P=41.5))
※M6 bolt type can be design if requested



I type
(øD = 36)



I type
(øD = 51 to 90)



Y type
(øD = 51 to 101)

øD	a	b
51 ~ 77	6	4.5
90	7	5

øD	a	b
51 ~ 90	7	4.5
101	8	4.5

Dimensions

(Unit : mm)

Case code	ø D	L	P	I type bracket		Y type bracket	
				W1	W2	W3	W4
A5	36	53	12.7	48.0	58.0		
A6	36	65	12.7	48.0	58.0		
A8	36	83	12.7	48.0	58.0		
A10	36	100	12.7	48.0	58.0		
A12	36	121	12.7	48.0	58.0		
C8	51	83	22.0	(68.0)	(80.0)	63.5	73.0
C10	51	100	22.0	(68.0)	(80.0)	63.5	73.0
C12	51	121	22.0	(68.0)	(80.0)	63.5	73.0
D10	64	100	28.6	(81.0)	(93.0)	76.2	85.1
D12	64	121	28.6	(81.0)	(93.0)	76.2	85.1
D15	64	144	28.6	(81.0)	(93.0)	76.2	85.1
E10	77	100	32.0	(93.5)	(106.0)	88.9	98.4
E12	77	121	32.0	(93.5)	(106.0)	88.9	98.4
E15	77	144	32.0	(93.5)	(106.0)	88.9	98.4
E16	77	160	32.0	(93.5)	(106.0)	88.9	98.4
F15	90	145	32.0	(108.0)	(120.5)	101.6	111.1
F16	90	161	32.0	(108.0)	(120.5)	101.6	111.1
C8R	51	75	22.0	(68.0)	(80.0)	63.5	73.0
C10R	51	96	22.0	(68.0)	(80.0)	63.5	73.0
C12R	51	115	22.0	(68.0)	(80.0)	63.5	73.0
C13R	51	130	22.0	(68.0)	(80.0)	63.5	73.0
D10R	64	96	28.6	(81.0)	(93.0)	76.2	85.1
D12R	64	115	28.6	(81.0)	(93.0)	76.2	85.1
D13R	64	130	28.6	(81.0)	(93.0)	76.2	85.1
D16R	64	155	28.6	(81.0)	(93.0)	76.2	85.1
D20R	64	195	28.6	(81.0)	(93.0)	76.2	85.1
E10R	77	96	32.0	(93.5)	(106.0)	88.9	98.4
E12R	77	115	32.0	(93.5)	(106.0)	88.9	98.4
E13R	77	130	32.0	(93.5)	(106.0)	88.9	98.4
E16R	77	155	32.0	(93.5)	(106.0)	88.9	98.4
E17R	77	171	32.0	(93.5)	(106.0)	88.9	98.4
E20R	77	195	32.0	(93.5)	(106.0)	88.9	98.4
F13R	90	131	32.0	(108.0)	(120.5)	101.6	111.1
F16R	90	157	32.0	(108.0)	(120.5)	101.6	111.1
F17R	90	171	32.0	(108.0)	(120.5)	101.6	111.1
F20R	90	196	32.0	(108.0)	(120.5)	101.6	111.1
F24R	90	236	32.0	(108.0)	(120.5)	101.6	111.1
G18R	101	175	32.0	(108.0)	(120.5)	115	127
G20R	101	195	32.0	(108.0)	(120.5)	115	127
G24R	101	237	32.0	(108.0)	(120.5)	115	127
E12T	77	121	32.0	(93.5)	(106.0)	88.9	98.4
E13T	77	137	32.0	(93.5)	(106.0)	88.9	98.4
E16T	77	161	32.0	(93.5)	(106.0)	88.9	98.4
F11T	90	106	32.0	(108.0)	(120.5)	101.6	111.1
F12T	90	121	32.0	(108.0)	(120.5)	101.6	111.1
F14T	90	137	32.0	(108.0)	(120.5)	101.6	111.1
F16T	90	161	32.0	(108.0)	(120.5)	101.6	111.1
F18T	90	178	32.0	(108.0)	(120.5)	101.6	111.1

Remark 1: Except the external diameter of case of ø 36, the Y-type bracket is used as the standard. If the customer wants the I-type bracket, use the dimensions in parentheses.

Remark 2: As the P dimension for the external diameter of case of ø 101, 32.0 is used as the standard. In the FX2 type, 41.5 is used.

FXR Aluminum Electrolytic Capacitors

(Warranty of 5,000 hours at 85°C)

Features

- Ripple Current increased by 37% (without wind) or 50% (with 0.5m/s wind) by new heat radiation constructions in case of 90 ϕ
- 500V added in the series.



Product Specifications

Items	Specifications
Temperature range	−40°C to +85°C
Capacitance tolerance	±20% (20°C, 120Hz)
Rated voltage	350~500V 0.15 500V 0.20
Leakage current	0.01CV (μA) or 5mA, whichever is smaller.
Dissipation factor	0.15 or less (20°C, 120Hz)
Permissible ripple current	As per the following "Standard value and case size". (85°C, 120Hz)
High-temperature load	After the rated voltage (specified ripple current convolution) is applied at 85°C for 5000 hours: Capacitance tolerance: ±15% or less of the initial value Dissipation factor: 175% or less of the specified initial value Leakage current: Specified initial value or less
Others	JIS C 5101-4.

Ripple current correction coefficient

Temperature (°C)	40	60	85		
Correction coefficient	1.89	1.67	1.00		
Frequency (Hz)	50/60	120	300	1K	≥10K
Correction coefficient	0.7	1.0	1.1	1.3	1.4
Forced wind (m/s)	< 0.5	0.5 ≤			
Correction coefficient	1.0	1.1			

Ripple current should be under 100Arms due to the maximum allowance of M6 terminals.

Product code : (Example) FXR type 400 V 5,600 μF ±20%
E case (ϕ D: 77 mm) product

FXR

2G

562

Y

(E)

Type name

Case code (*)
Type of bracket
Capacitance code
Rated voltage code

* () . case code: If two types of shape exist for the same rating, enter the first English letter of case code.

Standard value and case size

Capacitance		Rated voltage V.DC (Code)			
μ F	Code	350 (2V)	400 (2G)	450 (2W)	500 (2H)
2700	272				E12T 15.0
3300	332				E16T 18.5 F11T 14.7
3900	392			E12T 18.0 F11T 18.6	E16T 20.2 F12T 19.0
4700	472		E13T 20.8 F11T 20.5	E13T 20.8 F12T 21.8	F14T 21.8
5600	562	E12T 21.6 F11T 22.3	E13T 22.7 F12T 23.8	E16T 24.2 F14T 24.9	F16T 25.3
6800	682	E13T 25.0 F12T 26.2	E16T 26.6 F14T 27.4	F16T 29.4	F18T 29.0
8200	822	E16T 29.3 F14T 30.1	F16T 32.2	F16T 32.2	
10000	103	F16T 35.7	F16T 35.7	F18T 36.9	
12000	123	F16T 39.1			

Case code Maximum ripple current (A)
85°C, 120Hz

GXR Aluminum Electrolytic Capacitors

(Warranty of 5,000 hours at 105°C)

Features

- Ripple Current increased by 37% (without wind) or 50% (with 0.5m/s wind) by new heat radiation constructions in case of 90 ϕ



Product Specifications

Items	Specifications
Temperature range	−40°C to +105°C
Capacitance tolerance	±20% (20°C, 120Hz)
Rated voltage	350~450V 0.15 500V 0.20
Leakage current	0.01CV (μA) or 5mA, whichever is smaller.
Dissipation factor	0.15 or less (20°C, 120Hz)
Permissible ripple current	As per the following "Standard value and case size". (105°C, 120Hz)
High-temperature load	After the rated voltage (specified ripple current convolution) is applied at 105°C for 5000 hours: Capacitance tolerance: ±15% or less of the initial value Dissipation factor: 175% or less of the specified initial value Leakage current: Specified initial value or less
Others	JIS C 5101-4.

Ripple current correction coefficient

Temperature (°C)	40	60	85	105	
Correction coefficient	2.44	2.16	2.00	1.00	
Frequency (Hz)	50/60	120	300	1K	≥10K
Correction coefficient	0.7	1.0	1.1	1.3	1.4
Forced wind (m/s)	< 0.5	0.5 ≤			
Correction coefficient	1.0	1.1			

Ripple current should be under 100Arms
due to the maximum allowance of M6 terminals.

Product code : (Example) GXR type 400 V 5,600 μF ±20%
E case (ϕ : 77 mm) product

GXR **2G** **562** **Y** **(E)**

Type name Case code (*)
Type of bracket
Capacitance code
Rated voltage code

* () . case code: If two types of shape exist for the same rating, enter the first English letter of case code.

Standard value and case size

Capacitance		Rated voltage V.DC (Code)					
μ F	Code	350 (2V)		400 (2G)		450 (2W)	
2700	272					E12T	11.5
3300	332					E13T	13.4
						F11T	13.1
3900	392			E12T	13.8	E16T	15.5
				F11T	14.3	F12T	15.2
4700	472	E12T	15.2	E13T	15.9	E16T	17.0
		F11T	15.7	F12T	16.7	F14T	17.5
5600	562	E13T	17.4	E16T	18.6	F16T	20.5
		F12T	18.2	F14T	19.1		
6800	682	E16T	20.5	F16T	22.6	F18T	23.3
		F14T	21.0				
8200	822	F16T	24.8	F16T	24.8		
10000	103	F16T	27.4	F18T	28.3		

Case code Maximum ripple current (A)
105°C, 120Hz

HCG7 Series (Warranty of 2,000 hours at 85°C)

Features

- The size is reduced by 15% of the HCG6 type through improvement of etched foil technology and the same level of permissible ripple current as that of the HCG6 type is provided.



Product Specifications

Items	Specifications
Temperature range	-25°C to +85°C
Capacitance tolerance	±20% (20°C, 120Hz)
Leakage current	0.01CV (μA) or 5mA, whichever is smaller.
Dissipation factor	6.3 to 100 V DC ... Not more than the value shown in "Standard value and case size" (20°C, 120Hz) 160 to 250 V DC ... 0.25 or less (20°C, 120Hz)
Permissible ripple current	As per the following "Standard value and case size". (40°C, 120Hz)
High-temperature load	After the rated voltage (specified ripple current convolution) is applied at 85°C for 2000 hours: Capacitance tolerance: ±15% or less of the initial value Dissipation factor: 175% or less of the specified initial value Leakage current: Specified initial value or less
Others	JIS C 5101-4.

Ripple current correction coefficient

Temperature (°C)	40	55	70	85	
Correction coefficient	1.0	0.81	0.62	0.37	
Frequency (Hz)	50/60	120	300	1K	≥10K
Correction coefficient	0.8	1.0	1.1	1.3	1.4

Ripple current should be under 60 Arms at M5 terminal in accordance with from the permissible current.

Standard value and case size

Capacitance		Rated voltage V.DC (Code)											
μF	Code	6.3 (0J)				10 (1A)				16 (1C)			
6800	682												
10000	103												
15000	153												
22000	223												
33000	333												
47000	473	A5	1.00	13.4		A6	0.90	11.9		A8	0.80	14.8	
68000	683	A6	1.20	14.8		A8	1.20	20.3		A12	1.10	27.7	
100000	104	A8	1.20	19.7		A12	1.20	25.0		C8	1.10	29.4	
150000	154	C8	1.40	25.6		C8	1.40	27.6		C12	1.20	34.0	
220000	224	C10	1.40	33.5		C12	1.50	37.6		D10	1.40	39.7	
330000	334	D10	1.50	43.6		D12	1.80	46.5		E12	1.80	49.2	
470000	474	D12	1.80	50.8		E12	2.30	52.0					
680000	684	E12	2.90	54.4									

Maximum ripple current (A)
at 40°C, 120Hz

Dissipation factor 20°C, 120Hz

Case code

Capacitance		Rated voltage V.DC (Code)														
μF	Code	63 (1J)			80 (1K)			100 (2A)			160 (2C)		200 (2D)		250 (2E)	
1000	102												A6	5.2	A8	5.6
1500	152										A8	6.9	A8	6.9	A12	8.1
2200	222										A10	9.2	A12	9.9	C8	9.9
3300	332							A5	0.15	8.7	C8	12.0	C8	12.0	C12	13.9
4700	472				A5	0.15	10.4	A8	0.15	12.4	C10	15.3	C12	16.6	D10	16.9
6800	682	A5	0.20	10.2	A8	0.22	12.1	A10	0.20	13.2	D10	20.4	D12	21.9	D15	23.5
10000	103	A8	0.30	12.8	A10	0.22	16.0	C8	0.20	16.9	D12	26.5	E12	28.1	E15	30.0
15000	153	A10	0.35	15.1	C8	0.30	20.7	C12	0.20	24.1	E12	34.4				
22000	223	C8	0.40	20.9	C10	0.30	23.5	D10	0.20	25.9						
33000	333	C10	0.40	23.6	D10	0.35	28.5	D15	0.25	33.0						
47000	473	D10	0.40	32.1	D15	0.35	39.0	E15	0.30	37.6						
68000	683	D15	0.50	37.2	E15	0.40	45.3									
100000	104	E15	0.70	41.1												

Maximum ripple current at 40°C,120Hz

Case code

Product code (Example) 100000 250VDC 104

Maximum ripple current (A)
at 40°C, 120Hz

Case code

Ripple current should be under 60Arms

Product symbol : (Example) HCG7 Series A case 6.3V 220,000μF ±20%

HCG7 A 0J 224 Y

Type of bracket
Capacitance code
Rated voltage code
Terminal code A (screw)
Type of series

HCGF5 Series (Warranty of 2,000 hours at 85°C)

- Features
- Standard products that have been used for many years.



HCGF5 Product Specifications

Items	Specifications
Temperature range	−25℃~+85℃
Capacitance tolerance	±20% (20℃,120Hz)
Rated voltage	160~450V.DC
Leakage current	0.01 CV (μ A) or 5 mA, whichever is smaller or less [C = nominal capacitance (μ F), V = rated voltage (V)]
Dissipation factor	160~250V.DC.....0.25 or less (20℃,120Hz) 350~450V.DC.....0.20 or less (20℃,120Hz)
Permissible ripple current	As per the following "Standard value and case size" (40℃, 120 Hz)
High-temperature load	After the rated voltage (specified ripple current convolution) is applied at 85℃ for 2000 hours: Capacitance tolerance: ±15% or less of the initial value Dissipation factor: 175% or less of the specified initial value Leakage current: Specified initial value or less
Others	JIS C 5101-4.

Ripple current correction coefficient

Temperature (°C)	40	60	70	85	
Correction coefficient	1.0	0.75	0.62	0.37	
Frequency (Hz)	50/60	120	300	1K	≥10K
Correction coefficient	0.7	1.0	1.1	1.3	1.4

Ripple current should be under 60Arms at M5 terminal in accordance with from the permissible current.

Product symbol : (Example) HCGF5 Series A case 400V 10,000μF ±20%

HCGF5 A 2G 103 Y

Type of series Type of bracket Capacitance code Rated voltage code Terminal code A (screw)

※ () Put first letter of case code to () in case there are two case sizes in the same CV value.

Standard value and case size

Capacitance		Rated voltage V.DC (Code)							
μF	Code	160 (2C)	200 (2D)	250 (2E)	350 (2V)	400 (2G)	450 (2W)		
270	271						A5	3.7	
330	331					A5	4.1	A8	4.9
390	391				A5	4.5	A8	5.3	A8
470	471				A8	5.8	A8	5.8	A8
560	561				A8	6.4	A8	6.4	A10
680	681				A8	7.0	A10	7.6	A10
820	821				A10	8.3	A10	8.3	C8R
1000	102				A10	9.2	C8R	9.4	C8R
1200	122				C8R	10.3	C8R	10.3	C10R
1500	152			A10	8.7	C8R	11.5	C10R	12.7
1800	182			A10	9.5	C10R	13.9	C10R	13.9
2200	222		A10	10.6	C8R	10.8	C10R	15.4	C13R
2700	272		A12	12.7	C8R	12.0	C13R	19.3	D10R
3300	332	A12	14.0	C8R	13.3	C10R	14.6	C13R	21.4
3900	392	C8R	14.4	C8R	14.4	C12R	17.0	D12R	24.2
4700	472	C8R	15.8	C10R	17.4	D10R	19.2	D13R	27.9
5600	562	C10R	19.0	C12R	20.4	D10R	21.0	E12R	30.7
6800	682	C10R	21.0	C13R	23.7	D12R	24.7	E13R	35.4
8200	822	C12R	24.7	D10R	25.4	D12R	27.1	E16R	41.7
10000	103	D10R	28.0	D10R	28.0	D13R	31.5	F16R	49.0
12000	123	D10R	30.6	E10R	32.6	E12R	34.8	F16R	54.1
15000	153	D13R	38.6	E10R	39.0	E13R	40.8	F20R	66.2
18000	183	D13R	42.2	E13R	44.6	E16R	47.8	F24R	77.9
22000	223	E13R	49.4	E16R	53.0	F16R	56.5		
27000	273	E13R	54.7	F13R	58.2				
33000	333	F13R	64.2	F16R	69.0				
39000	393	F16R	75.3						

Ripple current should be under 60Arms

Case code Maximum ripple current (A) at 40℃,120Hz

HCGF6 Series

(Warranty of 2,000 hours at 85°C)

Features

- The size is reduced by about 14% of the HCGF5 type and the rating 500 V DC is added in the series. A super large case product of ϕ 100 is also added.



HCGF6 Product Specifications

Items	仕様
Temperature range	-25°C ~ +85°C
Capacitance tolerance	±20% (20°C, 120Hz)
Rated voltage	400~500V.DC
Leakage current	0.01 CV (μ A) or 5 mA, whichever is smaller or less [C = nominal capacitance (μ F), V = rated voltage (V)]
Dissipation factor	0.20 or less (20°C, 120Hz)
Permissible ripple current	As per the following "Standard value and case size" (40°C, 120 Hz)
High-temperature load	After the rated voltage (specified ripple current convolution) is applied at 85°C for 2000 hours: Capacitance tolerance: ±15% or less of the initial value Dissipation factor: 175% or less of the specified initial value Leakage current: Specified initial value or less
Others	JIS C 5101-4.

Ripple current correction coefficient

Temperature (°C)	40	60	70	85	
Correction coefficient	1.0	0.75	0.62	0.37	
Frequency (Hz)	50/60	120	300	1K	≥10K
Correction coefficient	0.7	1.0	1.1	1.3	1.4

Ripple current should be under 60Arms at M5 (100Arms at M6 for G case) in accordance with from the permissible current.

Product symbol : (Example) HCGF6 Series A case 400V 10,000 μ F ±20%

HCGF6 A 2G 103 Y ()

Type of series Case code ※
Type of bracket
Capacitance code
Rated voltage code
Terminal code A (screw)

※ () Put first letter of case code to () in case there are two case sizes in the same CV value.

Standard value and case size

Capacitance		Rated voltage V.DC (Code)			
μ F	Code	400 (2G)		450 (2W)	
1200	122				C12R 12.2 D10R 12.5
1500	152				C13R 14.3 D10R 13.9
1800	182			C12R 14.9	D12R 16.4
2200	222	C12R 16.5		C13R 17.3 D10R 16.9	D13R 19.0
2700	272	C13R 19.2 D10R 18.7		D10R 18.7	E12R 21.3
3300	332	D10R 20.7		D12R 22.2	E13R 24.6
3900	392	D12R 24.1		D13R 25.3	E16R 28.7
4700	472	D13R 27.8		E12R 28.1	E17R 32.9 F13R 31.4
5600	562	E12R 30.6		E13R 32.1	E20R 37.8 F16R 36.7
6800	682	E13R 35.4		E16R 37.9	F17R 41.8
8200	822	E16R 41.6		E20R 45.8 F13R 41.5	F20R 48.5 G18R 47.1
10000	103	E20R 50.5 F13R 45.8		F17R 50.6	F24R 57.9 G20R 54.3
12000	123	F16R 53.8		F20R 58.7 G18R 57.0	G24R 64.1
15000	153	F20R 65.7		F24R 70.9 G20R 66.5	
18000	183	F24R 77.7 G18R 69.8		G24R 78.5	
22000	223	G24R 86.8			

Case code Maximum ripple current (A) at 40°C, 120Hz

ALUMINUM ELECTROLYTIC CAPACITORS

HCGH Series (Warranty of 2,000 hours at 105°C)

Features

- Warranty life of 2000 hours at 105°C through improvement of electrolyte liquid



Product Specifications

Items	Specifications
Temperature range	-40°C ~ +105°C
Capacitance tolerance	±20% (20°C, 120Hz)
Rated voltage	25~400V.DC
Leakage current	0.01 CV (μA) or 5 mA, whichever is smaller or less [C = nominal capacitance (μF), V = rated voltage (V)]
Dissipation factor	25 to 100 V DC ... Not more than the value shown in "Standard value and case size". (20°C, 120 Hz) 160 to 400 V DC ... 0.15 or less (20°C, 120 Hz)
Permissible ripple current	As per the following "Standard value and case size". (105°C, 120Hz)
High-temperature load	After the rated voltage (specified ripple current convolution) is applied at 105°C for 2000 hours: Capacitance tolerance: ±15% or less of the initial value Dissipation factor: 175% or less of the specified initial value Leakage current: Specified initial value or less
Others	JIS C 5101-4.

Ripple current correction coefficient

Temperature (°C)	40	55	70	85	105
Correction coefficient	4.9	3.9	3.0	1.8	1.0
Frequency (Hz)	50/60	120	300	1K	≥10K
Correction coefficient	0.8	1.0	1.1	1.3	1.4

Ripple current should be under 60 Arms at M5 terminal in accordance with from the permissible current.

Standard value and case size

Capacitance		Rated voltage V.DC (Code)											
μF	Code	25 (1E)			35 (1V)			50 (1H)			63 (1J)		
1000	102												
1500	152												
2200	222												
3300	332							A5	0.20	2.2	A5	0.15	2.1
4700	472							A5	0.25	2.3	A8	0.15	3.0
6800	682							A5	0.25	2.3	A8	0.15	3.0
10000	103	A5	0.35	2.9	A8	0.30	3.7	A8	0.25	4.1	A10	0.20	4.4
15000	153	A8	0.35	4.2	A8	0.30	4.5	A10	0.30	4.9	C8R	0.25	5.7
22000	223	A8	0.35	5.1	A10	0.35	5.5	C8R	0.35	5.9	C10R	0.30	6.8
33000	333	A10	0.40	6.3	C8R	0.40	6.7	C12R	0.40	7.8	D10R	0.30	9.2
47000	473	C8R	0.40	8.0	C10R	0.45	8.1	D10R	0.40	9.5	D12R	0.35	10.9
68000	683	C12R	0.50	10.0	C12R	0.50	10.0	D12R	0.45	11.6	E12R	0.40	13.0
100000	104	D10R	0.60	11.3	D12R	0.60	12.1	E12R	0.50	14.1	F13R	0.40	17.2
150000	154	D12R	0.80	12.9	E12R	0.70	13.8	F13R	0.50	18.9			
220000	224	E12R	1.00	14.8	F13R	0.70	17.6						
330000	334	F13R	1.00	19.9									

Capacitance		Rated voltage V.DC (Code)							
μF	Code	160 (2C)		200 (2D)		250 (2E)		400 (2G)	
330	331			A5	0.8	A5	0.8		
470	471	A5	1.0	A5	1.0	A5	1.0		
680	681	A5	1.1	A5	1.1	A8	1.4		
1000	102	A8	1.7	A8	1.7	A10	1.9	C8R	2.5
1200	122							C10R	3.0
1500	152	A8	2.0	A10	2.2	C8R	2.3	C12R	3.6
1800	182							C13R	4.1
2200	222	A10	2.7	C8R	2.8	C10R	3.1	D10R	4.5
2700	272							D12R	5.3
3300	332	C8R	3.5	C10R	3.7	D10R	4.2	D13R	6.2
3900	392							D16R	7.2
								E12R	6.8
4700	472	C10R	4.4	D10R	4.9	D12R	5.4	D20R	8.7
								E13R	7.8
5600	562							D20R	9.6
								E16R	9.2
6800	682	D10R	5.9	D12R	6.3	E12R	6.9	F16R	10.7
8200	822							F16R	11.8
10000	103	E10R	7.6	E12R	8.1	E16R	9.3	F20R	14.1
15000	153	E13R	10.3	F13R	10.9	F16R	12.2		
22000	223	F13R	13.2						

Ripple current should be under 60Arms

Maximum ripple current (A)
105°C, 120Hz
Dissipation factor 20°C, 120Hz
Case code

Product symbol : (Example) HCGH Series A case 25V 220,000μF±20%

HCGH A 1E 224 Y

— Type of bracket
— Capacitance code
— Rated voltage code
— Terminal symbol code A (screw)
— Type name

FX2 Series (Warranty of 5,000 hours at 85°C)

Features

- Developed specially for the demand of higher voltage with compact size.
- The size is reduced by around 14% of conventional FXA type through development of electrolyte liquid.
- 500V and 550V added in the series.



Product Specifications

Items	Specifications
Temperature range	-40°C ~ +85°C
Capacitance tolerance	±20% (20°C, 120Hz)
Rated voltage	400~550V.DC
Leakage current	0.01 CV (μA) or 5 mA, whichever is smaller or less [C = nominal capacitance (μF), V = rated voltage (V)]
Dissipation factor	400, 450 V DC ... 0.15 or less (20°C, 120 Hz) 500, 550 V DC ... 0.20 or less (20°C, 120 Hz)
Permissible ripple current	As per the following "Standard value and case size". (85°C, 120 Hz)
High-temperature load	After the rated voltage (specified ripple current convolution) is applied at 85°C for 5000 hours: Capacitance tolerance: ±15% or less of the initial value Dissipation factor: 175% or less of the specified initial value Leakage current: Specified initial value or less
Others	JIS C 5101-4.

Ripple current correction coefficient

Temperature (°C)	40	60	85		
Correction coefficient	1.89	1.67	1.00		
Frequency (Hz)	50/60	120	300	1K	≥10K
Correction coefficient	0.7	1.0	1.1	1.3	1.4

Ripple current should be under 60Arms at M5 (100Arms at M6 for G case) in accordance with from the permissible current.
120Arms (M8 terminal, case code "G")

Product code : (Example) FX2 type 400V 10,000 μF ±20%

FX2	2G	103	Y	(E)	E case (φD:77mm) product
Type name				Case code (*)	
				Type of bracket	
				Capacitance code	
				Rated voltage code	

*(), case code: Put the first English letter of case code into () in case there are two case sizes in the same CV value.

Standard value and case size

Capacitance		Rated voltage V.DC (Code)			
μF	Code	400 (2G)	450 (2W)	500 (2H)	550 (2L)
1000	102				C13R 5.9
1200	122			C12R 6.2 D10R 6.3	D12R 6.8
1500	152			C13R 7.3 D10R 7.1	D13R 8.0
1800	182		C12R 7.6	D12R 8.3	E12R 8.7
2200	222	C12R 8.8	C13R 8.8	D13R 9.6	E13R 10.1
2700	272	C13R 10.2	D10R 9.5	E12R 10.7	E16R 12.0
3300	332	D10R 11.0	D12R 11.2	E13R 12.4	E16R 13.3
3900	392	D12R 12.8	D13R 12.8	E16R 14.4	F16R 15.5
4700	472	D13R 14.8	E12R 14.1	E17R 16.5 F13R 15.8	F17R 17.6
5600	562	E12R 16.2	E13R 16.2	E20R 19.0 F16R 18.6	F20R 20.3
6800	682	E13R 18.7	E16R 19.1	F17R 21.2	F24R 24.1
8200	822	E16R 22.0	E20R 23.0 F13R 21.0	F20R 24.5 G18R 24.2	G24R 27.3
10000	103	E20R 26.7 F13R 24.2	F17R 25.7	F24R 29.3 G20R 27.9	
12000	123	F16R 28.5	F20R 29.7 G18R 29.3	G24R 33.1	
15000	153	F20R 34.8	F24R 35.9 G20R 34.2		
18000	183	F24R 41.2	G24R 40.5		
22000	223	G24R 47.0			

Case code → Maximum ripple current (A) at 85°C, 120Hz

FXA Series (Warranty of 5,000 hours at 85°C)

Features

- Long-life and high-ripple series for inverter realized through adoption of high-reliability organic acid type electrolyte liquid and improvement of etched foil technology for high voltage and manufacturing process.



Product Specifications

Items	Specifications
Temperature range	-40°C ~ +85°C
Capacitance tolerance	±20% (20°C, 120Hz)
Rated voltage	350~450V.DC
Leakage current	0.01 CV (μA) or 5 mA, whichever is smaller or less [C = nominal capacitance (μF), V = rated voltage (V)]
Dissipation factor	0.15 or less (20°C, 120Hz)
Permissible ripple current	As per the following "Standard value and case size". (85°C, 120Hz)
High-temperature load	After the rated voltage (specified ripple current convolution) is applied at 85°C for 5000 hours: Capacitance tolerance: ±15% or less of the initial value Dissipation factor: 175% or less of the specified initial value Leakage current: Specified initial value or less
Others	JIS C 5101-4.

Ripple current correction coefficient

Temperature (°C)	40	60	85		
Correction coefficient	1.89	1.67	1.00		
Frequency (Hz)	50/60	120	300	1K	≥10K
Correction coefficient	0.7	1.0	1.1	1.3	1.4

Ripple current should be under 60 Arms at M5 terminal in accordance with from the permissible current.

Product symbol : (Example) FXA Series 400V 47,000μF ±20%

FXA 2G 472 Y (D)

Type of series
 Case code※
 Type of bracket
 Capacitance code
 Rated voltage code

※ () Put first letter of case code to () in case there are two case sizes in the same CV value.

Standard value and case size

Capacitance		Rated voltage V.DC (Code)					
μF	Code	350 (2V)		400 (2G)		450 (2W)	
1000	102			C8R	5.0	C8R	5.0
1200	122	C8R	5.5	C8R	5.5	C10R	6.0
1500	152	C8R	6.1	C10R	6.7	C12R	7.2
1800	182	C10R	7.4	C10R	7.4	C13R	8.3
2200	222	C10R	8.2	C13R	9.2	D10R	9.0
2700	272	C13R	10.2	D10R	9.9	D12R	10.7
3300	332	C13R	11.3	D12R	11.8	D13R	12.4
3900	392	D12R	12.8	D13R	13.5	D16R	14.5
		-		-		E12R	13.6
4700	472	D13R	14.8	D16R	15.9	D20R	17.5
		-		E12R	14.9	E13R	15.6
5600	562	D16R	17.3	D20R	19.1	E16R	18.3
		E12R	16.3	E13R	17.0	-	
6800	682	D20R	21.1	E16R	20.2	F16R	21.4
		E13R	18.8	-		-	
8200	822	E16R	22.1	F16R	23.5	F16R	23.5
10000	103	F16R	25.9	F16R	25.9	F20R	28.3
12000	123	F16R	28.4	F20R	31.0	F24R	33.6
15000	153	F20R	34.6	F24R	37.5		
18000	183	F24R	41.1				

Case code

Maximum ripple current (A)
at 85°C, 120Hz

GXH Type (High-ripple current product with the guaranty of 5,000 hours at 105°C)

Features

- The permissible ripple current, especially, in the high-temperature zone is improved through increase of heat resistance based on the improvement of etched form technology for high voltage and improvement of cathode foil, electrolyte paper, and electrolyte liquid.



Product Specifications

Items	Specifications
Temperature range	−40℃~+105℃
Capacitance tolerance	±20% (20℃,120Hz)
Rated voltage	400,450V.DC
Leakage current	0.01 CV (μA) or 5 mA, whichever is smaller or less [C = nominal capacitance (μF), V = rated voltage (V)]
Dissipation factor	0.15 or less (20℃,120Hz)
Permissible ripple current	As per the following "Standard value and case size". (105℃, 120 Hz)
High-temperature load	After the rated voltage (specified ripple current convolution) is applied at 105℃ for 5000 hours: Capacitance tolerance: ±15% or less of the initial value Dissipation factor: 175% or less of the specified initial value Leakage current: Specified initial value or less
Others	JIS C 5101-4.

Ripple current correction coefficient

Temperature (°C)	60	85	105		
Correction coefficient	1.7	1.5	1.00		
Frequency (Hz)	50/60	120	300	1K	≥10K
Correction coefficient	0.7	1.0	1.1	1.3	1.4

Ripple current should be under 60 Arms at M5 terminal in accordance with from the permissible current.

Product code : (Example) GXH type 450V 12,000 μF±20%
F case (φD:90mm) product

GXH

2W

123

Y

(F)

Type name

Case code (*)

Type of bracket

Capacitance code

Rated voltage code

* (), case code: Put the first letter of case code into () in case there are two case sizes in the same CV value.

Standard value and case size

Capacitance		Rated voltage V.DC (Code)			
μF	Code	400 (2G)		450 (2W)	
2200	222			D12R	11.6
2700	272	D12R	12.8	D13R	13.4
				E12R	13.8
3300	332	D13R	14.8	D16R	15.7
				E13R	15.8
3900	392	D16R	17.1	D20R	18.6
		E12R	16.6		
4700	472	D20R	20.4	E16R	20.0
		E13R	18.9		
5600	562	E16R	21.8	E20R	23.6
				F16R	23.5
6800	682	F16R	25.9	F20R	27.8
8200	822	F17R	29.2	F20R	30.6
10000	103	F20R	33.8	F24R	36.1
12000	123	F24R	39.5		

Case code Maxim umripple current (A)
105℃,120Hz

GX2 Type (Warranty of 5,000 hours at 105°C)

Features

- Developed specially for the demand of higher voltage like Active Filters.
- Warranty life of 5000hours at 105°C with 500V through development of electrolyte liquid and forming technology.



Product Specifications

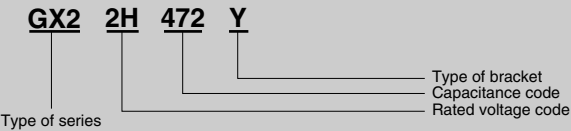
Items	Specifications
Temperature range	−40℃～+105℃
Capacitance tolerance	±20% (20℃,120Hz)
Rated voltage	500V.DC
Leakage current	0.01 CV (μA) or 5 mA, whichever is smaller or less [C = nominal capacitance (μF), V = rated voltage (V)]
Dissipation factor	0.20 or less (20℃,120Hz)
Permissible ripple current	As per the following "Standard value and case size". (105℃,120Hz)
High-temperature load	After the rated voltage (specified ripple current convolution) is applied at 105℃ for 5000 hours: Capacitance tolerance: ±15% or less of the initial value Dissipation factor: 175% or less of the specified initial value Leakage current: Specified initial value or less
Others	JIS C 5101-4.

Ripple current correction coefficient

Temperature (°C)	40	60	85	105	
Correction coefficient	2.44	2.16	2.00	1.00	
Frequency (Hz)	50/60	120	300	1K	≥10K
Correction coefficient	0.7	1.0	1.1	1.3	1.4

Ripple current should be under 60 Arms at M5 terminal in accordance with from the permissible current.

Product code : (Example) GX2 type 500V 4,700μF±20%



Standard value and case size

Capacitance		Rated voltage V.DC (Code)	
μF	Code	500 (2H)	
1000	102	C13R	4.5
1200	122	D12R	5.2
1500	152	D13R	6.1
1800	182	E12R	6.7
2200	222	E13R	7.8
2700	272	E16R	9.3
3300	332	E16R	10.2
3900	392	F16R	11.9
4700	472	F17R	13.5
5600	562	F20R	15.5
6800	682	F24R	18.5

Case code Maximum ripple current (A) at 105℃,120Hz

GXA Type (Warranty of 5,000 hours at 105°C)

Features

- Leading product with heat resistance and long life at 105°C to meet the requirement for high temperature and long life in the inverter circuit.



Product Specifications

Items	Specifications
Temperature range	−40℃~+105℃
Capacitance tolerance	±20% (20℃,120Hz)
Rated voltage	350~450V.DC
Leakage current	0.01 CV (μA) or 5 mA, whichever is smaller or less [C = nominal capacitance (μF), V = rated voltage (V)]
Dissipation factor	0.15 or less (20℃,120Hz)
Permissible ripple current	As per the following "Standard value and case size". (105℃,120Hz)
High-temperature load	After the rated voltage (specified ripple current convolution) is applied at 105℃ for 5000 hours: Capacitance tolerance: ±15% or less of the initial value Dissipation factor: 175% or less of the specified initial value Leakage current: Specified initial value or less
Others	JIS C 5101-4.

Ripple current correction coefficient

Temperature (°C)	40	60	85	105	
Correction coefficient	2.44	2.16	2.00	1.00	
Frequency (Hz)	50/60	120	300	1K	≥10K
Correction coefficient	0.7	1.0	1.1	1.3	1.4

Ripple current should be under 60 Arms at M5 terminal in accordance with from the permissible current.

Product code : (Example) GXA type 350V 4,700 μF±20%
E case (φD:77mm) product

GXA	2V	472	Y	(E)
Type name				Case code (*)
				Type of bracket
				Capacitance code
				Rated voltage code

* (), case code: Put the first letter of case code into () in case there are two case sizes in the same CV value.

Standard value and case size

Capacitance		Rated voltage V.DC (Code)			
μF	Code	350 (2V)		400 (2G)	
1000	102	C8R	3.9	C8R	3.9
1200	122	C8R	4.2	C10R	4.6
1500	152	C10R	5.2	C12R	5.6
1800	182	C10R	5.7	C13R	6.4
2200	222	C13R	7.1	D10R	6.9
2700	272	D10R	7.7	D12R	8.2
		-	-	D13R	8.6
3300	332	D12R	9.1	D16R	11.1
		-	-	E12R	10.4
3900	392	D13R	10.4	D20R	13.4
		-	-	E13R	12.0
4700	472	D16R	12.2	D20R	13.4
		E12R	11.5	E13R	12.0
5600	562	D20R	14.6	D20R	14.6
		E13R	13.1	E16R	14.0
6800	682	E16R	15.5	F16R	16.5
8200	822	F16R	18.1	F16R	18.1
10000	103	F16R	19.9	F20R	21.7
12000	123	F20R	23.8	F24R	25.8
15000	153	F24R	28.8		

Case code Maximum ripple current (A) at 105℃,120Hz

HXA type (Warranty of 20,000 hours at 85°C)

- Features
- High-reliability series with the warranty of 20,000 hours realized through improvement of the FXA type into a longer-life type



Product Specifications

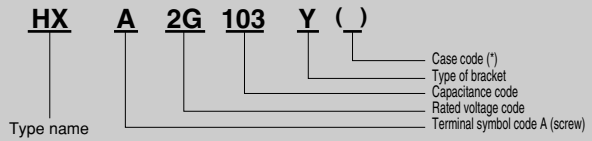
Items	Specifications
Temperature range	−40℃~+85℃
Capacitance tolerance	±20% (20℃,120Hz)
Rated voltage	350~450V.DC
Leakage current	0.01 CV (μA) or 5 mA, whichever is smaller or less [C = nominal capacitance (μF), V = rated voltage (V)]
Dissipation factor	0.15 or less (20℃,120Hz)
Permissible ripple current	As per the following "Standard value and case size". (85℃,120Hz)
High-temperature load	After the rated voltage (specified ripple current convolution) is applied at 85℃ for 20000 hours: Capacitance tolerance: ±15% or less of the initial value Dissipation factor: 175% or less of the specified initial value Leakage current: Specified initial value or less
Others	JIS C 5101-4.

Ripple current correction coefficient

Ambient temperature (℃)	40	60	85		
Correction coefficient	2.44	2.16	1.00		
Frequency (Hz)	50/60	120	300	1K	≥10K
Correction coefficient	0.7	1.0	1.1	1.3	1.4

Ripple current should be under 60 Arms at M5 terminal in accordance with from the permissible current.

Product code : (Example) HXA type 400V 10,000 μF±20%



* (), case code: Put the first letter of case code into () in case there are two case sizes in the same CV value.

Standard value and case size

Capacitance		Rated voltage V. DC (code)					
μF	Code	350 (2V)		400 (2G)		450 (2W)	
1000	102	C8R	3.8	C8R	3.8	C10R	4.2
1200	122	C8R	4.2	C10R	4.6	C12R	5.0
1500	152	C10R	5.2	C12R	5.5	C13R	5.8
1800	182	C10R	5.6	C13R	6.4	D10R	6.2
2200	222	C13R	7.1	D10R	6.9	D12R	7.4
2700	272	D10R	7.6	D12R	8.2	D13R	8.6
		-	-	-	-	E12R	8.7
3300	332	D12R	9.0	D13R	9.5	D16R	10.2
		-	-	-	-	E13R	10.0
3900	392	D13R	10.3	D16R	11.1	D20R	12.2
		-	-	E12R	10.4	-	-
4700	472	D16R	12.2	D20R	13.4	E16R	12.9
		E12R	11.5	E13R	12.0	-	-
5600	562	D20R	14.6	D20R	14.6	E20R	15.4
		E13R	13.1	E16R	14.4	F16R	14.9
6800	682	E16R	15.5	F16R	16.5	F20R	18.0
8200	822	F16R	18.1	F16R	18.1	F20R	19.8
10000	103	F16R	19.9	F20R	21.7	F24R	23.5
12000	123	F20R	23.8	F24R	25.8		
15000	153	F24R	28.8				

Ripple current should be under 60 Arms

Case code Permissible ripple current (A)
85℃,120Hz