

# SCREW TERMINAL TYPE ALUMINUM ELECTROLYTIC CAPACITORS

**UPGRADE!**

## VF Series

Useful of 4,000 hours at 85°C

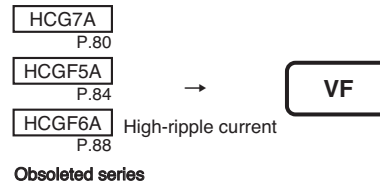
Standard



- Conform RoHS

### Features

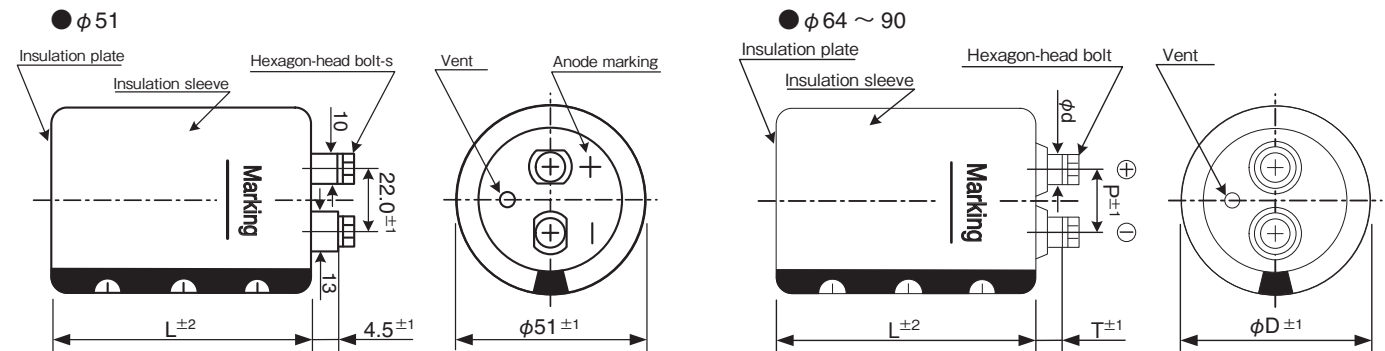
- Ripple current increased by 10% by new heat radiation construction with HCGF6A series.



### Product Specifications

Items	Specifications
Temperature range	- 40°C ~ + 85°C (6.3 ~ 600V.DC) - 25°C ~ + 85°C (650V.DC)
Rated voltage	6.3 ~ 650V.DC
Capacitance tolerance	±20% (20°C, 120Hz)
Leakage current	0.01CV (µA) or 5mA, whichever is smaller or less (20°C, after 5 minutes) [C = nominal capacitance (µF), V = rated voltage (V)]
Dissipation factor	Less than the value specified in the standard products table. (20°C, 120Hz)
Permissible ripple current	As specified in the standard product table. (85°C, 120Hz)
Endurance	After the rated voltage with specified ripple current is applied at 85°C for 2,000 hours : Capacitance change : Within ±15% of the initial value measured Dissipation factor : 175% or less than the initial value specified Leakage current : Less than or equal to the initial value specified
Shelf life	The following specification shall be meet when the capacitor are restored to 20°C after storage of 500 hours at 85°C with no voltage applied. Before the measurement, the capacitor shall be preconditioned by applying the voltage treatment according to Item 4.1 of JIS C 5101-4. Capacitance change : Within ±15% of the initial value mesured Dissipation factor : 175% or less than the initial value specified Leakage current : Less than or equal to the initial value specified
Others	JIS C 5101-4

### Dimensions



### Ripple current correction coefficient

Temperature correction coefficient

Correction coefficient	Temperature(°C)	
	60	85
	6.3 ~ 100V.DC	2.19
	160 ~ 250V.DC	2.02
	350 ~ 650V.DC	1.67

Frequency · Forced wind correction coefficient

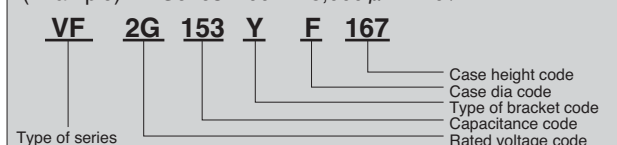
Correction coefficient	Frequency(Hz)			
	120	300	1K	≥ 10K
	1.0	1.1	1.3	1.4
	Forced wind(m/s) < 0.5		0.5 ≤	
	1.0	1.1		

(unit : mm)

φD	P	T	φd	Hexagon-head bolt	Cap material
51	22.0	4.5	—	M5×10	Phenol resin
64	28.6	8.0	11.0	M5×10	Phenol resin
77	31.5	8.0	11.0	M5×10	Phenol resin
90	31.5	7.0	11.0	M5×10	Phenol resin

### Product code

(Example) VF Series 400 V 15,000 µF ±20%



Terminal permissible currents : 60Arms for M5.

Please use this type of capacitor at a terminal current below the permissible.

Refer to page 21 for product code.

Bracket

- Refer to page 22-23 for shapes and dimensions.

- Product names in the Standard Products Table correspond to the bracket for Type Y, but Type I bracket may be used (Type of bracket code = I).

- If bracket are not necessary, enter "N" for the type of bracket code.

- Bracket will be delivered separately.

# SCREW TERMINAL TYPE ALUMINUM ELECTROLYTIC CAPACITORS

VF Series

Standard Products Table

Rated Voltage (V. DC)	Capacitance (μF)	Case size φD×L(mm)	tanδ 20°C, 120Hz	Ripple current (Arms) 85°C, 120Hz	ESR(typ.) (mΩ) 20°C, 100Hz	Z max (mΩ) 20°C, 10kHz	ESL(typ.) (nH)	Product name
6.3	330,000	64×94	1.50	16.1	8	9	22	VF0J334YD094
	470,000	64×107	1.80	18.6	7	8	22	VF0J474YD107
	560,000	64×123	2.40	19.7	6	7	22	VF0J564YD123
		77×95	2.40	18.3	6	7	24	VF0J564YE095
680,000	77×108	2.90	20.1	5	7	24	VF0J684YE108	
10	330,000	64×94	1.80	17.2	5	6	22	VF1A334YD094
	390,000	64×107	2.00	18.7	4	6	22	VF1A394YD107
	470,000	64×123	2.30	21.1	4	6	22	VF1A474YD123
		77×95	2.30	19.4	4	6	24	VF1A474YE095
	560,000	77×108	3.00	21.0	3	5	24	VF1A564YE108
	680,000	77×124	3.70	23.8	3	5	24	VF1A684YE124
90×97		3.70	22.9	3	5	24	VF1A684YF097	
16	270,000	64×94	1.60	16.2	4	6	22	VF1C274YD094
	330,000	64×123	1.80	18.3	4	6	22	VF1C334YD123
		77×95	1.80	18.0	4	6	24	VF1C334YE095
	390,000	77×108	2.40	19.5	4	5	24	VF1C394YE108
	470,000	77×124	2.90	22.0	3	5	24	VF1C474YE124
		90×97	2.90	21.9	3	5	24	VF1C474YF097
560,000	90×110	3.20	23.7	3	5	24	VF1C564YF110	
25	180,000	64×94	1.20	13.7	5	6	22	VF1E184YD094
	220,000	64×107	1.20	15.1	4	5	22	VF1E224YD107
	270,000	64×123	1.40	17.2	4	5	22	VF1E274YD123
	330,000	77×95	1.40	19.2	4	5	24	VF1E334YE095
	390,000	77×108	2.10	20.8	4	5	24	VF1E394YE108
		77×124	2.30	23.4	3	5	24	VF1E474YE124
	470,000	90×97	2.30	22.9	3	5	24	VF1E474YF097
560,000		90×110	2.30	24.8	3	4	24	VF1E564YF110
35	120,000	64×94	1.00	12.9	5	7	22	VF1V124YD094
	150,000	64×107	1.00	14.4	5	7	22	VF1V154YD107
	180,000	64×123	1.20	16.3	5	7	22	VF1V184YD123
		77×95	1.20	15.2	5	7	24	VF1V184YE095
	220,000	77×108	1.20	16.8	5	7	24	VF1V224YE108
	270,000	77×124	1.80	19.0	4	6	24	VF1V274YE124
		90×97	1.80	18.8	4	6	24	VF1V274YF097
330,000	90×110	2.00	20.7	4	6	24	VF1V334YF110	
50	82,000	64×94	0.70	12.1	7	8	22	VF1H823YD094
	100,000	64×107	0.70	13.4	6	7	22	VF1H104YD107
	150,000	64×123	0.90	16.8	5	7	22	VF1H154YD123
		77×95	0.90	13.9	5	7	24	VF1H154YE095
	180,000	77×108	1.40	15.2	5	6	24	VF1H184YE108
	220,000	77×124	1.50	17.2	4	6	24	VF1H224YE124
		90×97	1.50	16.5	4	6	24	VF1H224YF097
270,000	90×110	1.50	18.2	3	5	24	VF1H274YF110	
63	56,000	64×94	0.50	13.3	8	9	22	VF1J563YD094
	68,000	64×107	0.50	14.6	7	8	22	VF1J683YD107
	82,000	64×123	0.70	16.5	7	8	22	VF1J823YD123
	100,000	77×95	0.70	15.5	7	8	24	VF1J104YE095
	120,000	77×108	1.10	16.9	6	7	24	VF1J124YE108
		77×124	1.20	19.3	6	7	24	VF1J154YE124
	150,000	90×97	1.20	18.3	6	7	24	VF1J154YF097
180,000	90×110	1.20	19.9	5	6	24	VF1J184YF110	

ALUMINUM ELECTROLYTIC CAPACITORS

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Standard Products Table

Rated Voltage (V. DC)	Capacitance ( $\mu$ F)	Case size $\phi$ D $\times$ L(mm)	$\tan\delta$ 20°C, 120Hz	Ripple current (Arms) 85°C, 120Hz	ESR(typ.) (m $\Omega$ ) 20°C, 100Hz	Z max (m $\Omega$ ) 20°C, 10kHz	ESL(typ.) (nH)	Product name
80	39,000	64 $\times$ 94	0.35	12.8	6	7	22	VF1K393YD094
	47,000	64 $\times$ 107	0.35	14.0	6	7	22	VF1K473YD107
	56,000	64 $\times$ 123	0.40	15.7	5	7	22	VF1K563YD123
		77 $\times$ 95	0.40	15.3	5	7	24	VF1K563YE095
	68,000	77 $\times$ 108	0.40	16.8	4	7	24	VF1K683YE108
		77 $\times$ 124	0.60	18.9	3	6	24	VF1K823YE124
82,000	90 $\times$ 97	0.60	18.1	3	6	24	VF1K823YF097	
	100,000	90 $\times$ 110	0.70	19.8	3	6	24	VF1K104YF110
100	22,000	64 $\times$ 94	0.20	9.6	8	9	22	VF2A223YD094
	33,000	64 $\times$ 107	0.25	11.7	6	7	22	VF2A333YD107
	39,000	64 $\times$ 123	0.30	13.1	5	7	22	VF2A393YD123
		77 $\times$ 95	0.30	12.8	5	7	24	VF2A393YE095
	47,000	77 $\times$ 108	0.30	14.0	5	7	24	VF2A473YE108
		77 $\times$ 124	0.45	15.6	4	6	24	VF2A563YE124
56,000	90 $\times$ 97	0.45	15.8	4	6	24	VF2A563YF097	
	68,000	90 $\times$ 110	0.50	17.3	4	6	24	VF2A683YF110
160	12,000	64 $\times$ 94	0.25	12.3	12	15	22	VF2C123YD094
	15,000	64 $\times$ 107	0.25	13.7	11	12	22	VF2C153YD107
		64 $\times$ 123	0.25	15.4	9	11	22	VF2C183YD123
	18,000	77 $\times$ 95	0.25	17.4	9	11	24	VF2C183YE095
		64 $\times$ 147	0.25	16.8	8	8	22	VF2C223YD147
	22,000	77 $\times$ 108	0.25	19.1	8	8	24	VF2C223YE108
		77 $\times$ 124	0.25	21.7	7	8	24	VF2C273YE124
	27,000	90 $\times$ 97	0.25	24.6	7	8	24	VF2C273YF097
77 $\times$ 148		0.25	23.5	6	7	24	VF2C333YE148	
33,000	90 $\times$ 110	0.25	27.0	6	7	24	VF2C333YF110	
	39,000	90 $\times$ 126	0.25	29.1	5	7	24	VF2C393YF126
200	12,000	64 $\times$ 94	0.25	12.3	12	14	22	VF2D123YD094
	15,000	64 $\times$ 123	0.25	14.1	10	13	22	VF2D153YD123
		77 $\times$ 95	0.25	15.8	10	13	24	VF2D153YE095
	18,000	64 $\times$ 147	0.25	15.2	8	12	22	VF2D183YD147
		77 $\times$ 108	0.25	17.3	8	12	24	VF2D183YE108
	22,000	77 $\times$ 124	0.25	19.6	7	7	24	VF2D223YE124
		90 $\times$ 97	0.25	22.2	7	7	24	VF2D223YF097
	27,000	77 $\times$ 148	0.25	21.3	6	7	24	VF2D273YE148
90 $\times$ 110		0.25	24.4	6	7	24	VF2D273YF110	
33,000	90 $\times$ 126	0.25	26.7	5	7	24	VF2D333YF126	
250	8,200	64 $\times$ 94	0.25	10.2	15	16	22	VF2E822YD094
	10,000	64 $\times$ 123	0.25	11.5	12	14	22	VF2E103YD123
		64 $\times$ 147	0.25	12.4	10	11	22	VF2E123YD147
	12,000	77 $\times$ 95	0.25	14.2	10	11	24	VF2E123YE095
		77 $\times$ 124	0.25	16.2	8	11	24	VF2E153YE124
	15,000	90 $\times$ 97	0.25	18.3	8	11	24	VF2E153YF097
		77 $\times$ 148	0.25	17.4	7	10	24	VF2E183YE148
	18,000	90 $\times$ 110	0.25	19.9	7	10	24	VF2E183YF110
22,000		90 $\times$ 126	0.25	21.8	6	8	24	VF2E223YF126

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350	1,800	51×75	0.20	7.4	55	58	21	VF2V182YC075
	2,200	51×96	0.20	8.5	45	47	21	VF2V222YC096
	2,700	51×109	0.20	9.8	37	39	21	VF2V272YC109
	3,300	51×125	0.20	11.2	30	32	21	VF2V332YC125
	4,700	64×94	0.20	15.1	21	22	22	VF2V472YD094
	5,600	64×107	0.20	16.4	18	19	22	VF2V562YD107
	6,800	64×123	0.20	18.6	15	15	22	VF2V682YD123
		77×95	0.20	20.9	15	15	24	VF2V682YE095
	8,200	64×147	0.20	20.1	12	15	22	VF2V822YD147
		77×108	0.20	22.9	12	15	24	VF2V822YE108
	10,000	64×187	0.20	22.9	10	15	22	VF2V103YD187
		77×124	0.20	25.9	10	15	24	VF2V103YE124
	12,000	90×97	0.20	29.3	10	15	24	VF2V103YF097
		77×148	0.20	27.8	8	13	24	VF2V123YE148
	15,000	90×126	0.20	31.7	8	13	24	VF2V123YF126
		77×188	0.20	31.9	7	10	24	VF2V153YE188
18,000	90×150	0.20	35.2	7	10	24	VF2V153YF150	
	77×228	0.20	36.0	7	10	24	VF2V183YE228	
22,000	90×167	0.20	37.9	7	10	24	VF2V183YF167	
	90×230	0.20	41.1	6	9	24	VF2V223YF230	
27,000	90×268	0.20	43.0	5	7	24	VF2V273YF268	
400	1,500	51×75	0.20	6.8	68	73	21	VF2G152YC075
	2,200	51×96	0.20	8.5	47	50	21	VF2G222YC096
	2,700	51×109	0.20	9.8	38	41	21	VF2G272YC109
	3,300	51×125	0.20	11.2	31	34	21	VF2G332YC125
	3,900	64×94	0.20	13.7	26	28	22	VF2G392YD094
	4,700	64×107	0.20	15.0	21	22	22	VF2G472YD107
	5,600	64×123	0.20	16.9	18	19	22	VF2G562YD123
		77×95	0.20	19.0	18	19	24	VF2G562YE095
	6,800	64×147	0.20	18.3	15	15	22	VF2G682YD147
		77×108	0.20	20.8	15	15	24	VF2G682YE108
	8,200	64×187	0.20	20.8	12	15	22	VF2G822YD187
		77×124	0.20	23.5	12	15	24	VF2G822YE124
		90×97	0.20	26.6	12	15	24	VF2G822YF097
	10,000	77×148	0.20	25.4	10	15	24	VF2G103YE148
		90×110	0.20	29.1	10	15	24	VF2G103YF110
	12,000	77×188	0.20	28.5	8	13	24	VF2G123YE188
90×126		0.20	31.7	8	13	24	VF2G123YF126	
15,000	77×228	0.20	32.9	8	10	24	VF2G153YE228	
	90×167	0.20	34.6	8	10	24	VF2G153YF167	
18,000	90×190	0.20	38.2	6	9	24	VF2G183YF190	
22,000	90×230	0.20	41.1	5	7	24	VF2G223YF230	
27,000	90×268	0.20	43.0	4	6	24	VF2G273YF268	
450	1,200	51×75	0.20	6.3	86	90	21	VF2W122YC075
	1,500	51×96	0.20	7.5	69	72	21	VF2W152YC096
	1,800	51×109	0.20	8.4	57	60	21	VF2W182YC109
	2,200	51×125	0.20	9.4	47	50	21	VF2W222YC125
	2,700	64×94	0.20	11.7	38	40	22	VF2W272YD094
	3,300	64×107	0.20	12.9	30	35	22	VF2W332YD107
	3,900	64×123	0.20	14.4	27	32	22	VF2W392YD123
		77×95	0.20	16.2	27	32	24	VF2W392YE095
	4,700	77×108	0.20	17.8	21	21	24	VF2W472YE108
	5,600	64×147	0.20	17.0	20	20	22	VF2W562YD147
		77×124	0.20	19.9	20	20	24	VF2W562YE124
		90×97	0.20	22.5	20	20	24	VF2W562YF097
	6,800	64×187	0.20	19.4	15	18	22	VF2W682YD187
		77×148	0.20	21.4	15	18	24	VF2W682YE148
	8,200	90×110	0.20	24.6	15	18	24	VF2W682YF110
		77×165	0.20	24.0	14	16	24	VF2W822YE165
10,000	90×126	0.20	26.8	14	16	24	VF2W822YF126	
	77×188	0.20	26.7	10	15	24	VF2W103YE188	
12,000	90×150	0.20	29.4	10	15	24	VF2W103YF150	
	77×228	0.20	30.2	9	12	24	VF2W123YE228	
15,000	90×167	0.20	31.7	9	12	24	VF2W123YF167	
18,000	90×190	0.20	35.7	7	10	24	VF2W153YF190	
22,000	90×230	0.20	38.1	6	9	24	VF2W183YF230	
27,000	90×268	0.20	39.8	5	7	24	VF2W223YF268	

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500	820	51 $\times$ 75	0.20	4.7	117	110	21	VF2H821YC075
	1,000	51 $\times$ 96	0.20	5.6	96	90	21	VF2H102YC096
	1,200	51 $\times$ 109	0.20	6.3	80	75	21	VF2H122YC109
	1,500	51 $\times$ 125	0.20	7.2	64	60	21	VF2H152YC125
	1,800	64 $\times$ 94	0.20	9.1	53	50	22	VF2H182YD094
	2,200	64 $\times$ 107	0.20	10.0	40	35	22	VF2H222YD107
	2,700	64 $\times$ 123	0.20	11.4	37	33	22	VF2H272YD123
			77 $\times$ 95	0.20	12.9	37	33	24
	3,300	64 $\times$ 147	0.20	12.4	36	32	22	VF2H332YD147
			77 $\times$ 108	0.20	14.2	36	32	24
	3,900	64 $\times$ 164	0.20	13.9	27	29	22	VF2H392YD164
		77 $\times$ 124	0.20	15.8	27	29	24	VF2H392YE124
		90 $\times$ 97	0.20	17.9	27	29	24	VF2H392YF097
	4,700	64 $\times$ 187	0.20	15.4	25	25	22	VF2H472YD187
			77 $\times$ 148	0.20	17.0	25	25	24
		90 $\times$ 110	0.20	19.5	25	25	24	VF2H472YF110
	5,600	77 $\times$ 165	0.20	18.9	23	21	24	VF2H562YE165
		90 $\times$ 126	0.20	21.1	23	21	24	VF2H562YF126
6,800	77 $\times$ 188	0.20	20.9	20	18	24	VF2H682YE188	
	90 $\times$ 150	0.20	23.1	20	18	24	VF2H682YF150	
8,200	77 $\times$ 228	0.20	23.8	17	16	24	VF2H822YE228	
	90 $\times$ 167	0.20	25.0	17	16	24	VF2H822YF167	
10,000	90 $\times$ 190	0.20	27.8	14	16	24	VF2H103YF190	
12,000	90 $\times$ 230	0.20	29.6	12	14	24	VF2H123YF230	
15,000	90 $\times$ 268	0.20	31.4	10	12	24	VF2H153YF268	
550	560	51 $\times$ 75	0.20	3.9	200	215	21	VF2L561YC075
	680	51 $\times$ 96	0.20	4.5	165	177	21	VF2L681YC096
	820	51 $\times$ 109	0.20	5.1	137	147	21	VF2L821YC109
	1,000	51 $\times$ 125	0.20	5.9	112	120	21	VF2L102YC125
	1,200	64 $\times$ 94	0.20	7.2	93	100	22	VF2L122YD094
	1,500	64 $\times$ 107	0.20	8.1	74	80	22	VF2L152YD107
	1,800	64 $\times$ 123	0.20	9.1	61	50	22	VF2L182YD123
			77 $\times$ 95	0.20	10.3	61	50	24
	2,200	64 $\times$ 147	0.20	9.9	53	50	22	VF2L222YD147
			77 $\times$ 108	0.20	11.3	53	50	24
	2,700	64 $\times$ 164	0.20	11.3	40	35	22	VF2L272YD164
			90 $\times$ 97	0.20	14.5	40	35	24
	3,300	64 $\times$ 187	0.20	12.6	38	32	22	VF2L332YD187
			77 $\times$ 124	0.20	14.2	38	32	24
		90 $\times$ 110	0.20	16.0	38	32	24	VF2L332YF110
	3,900	77 $\times$ 165	0.20	15.4	30	27	24	VF2L392YE165
		90 $\times$ 126	0.20	17.2	30	27	24	VF2L392YF126
	4,700	77 $\times$ 188	0.20	17.0	25	20	24	VF2L472YE188
90 $\times$ 150		0.20	18.8	25	20	24	VF2L472YF150	
5,600	77 $\times$ 228	0.20	19.2	20	17	24	VF2L562YE228	
	90 $\times$ 167	0.20	20.2	20	17	24	VF2L562YF167	
6,800	90 $\times$ 190	0.20	22.4	17	17	24	VF2L682YF190	
8,200	90 $\times$ 230	0.20	23.9	14	14	24	VF2L822YF230	
10,000	90 $\times$ 268	0.20	25.0	12	12	24	VF2L103YF268	
600	560	51 $\times$ 75	0.20	2.9	225	169	21	VF600V561YC075
	680	51 $\times$ 96	0.20	3.4	186	139	21	VF600V681YC096
	820	51 $\times$ 109	0.20	3.9	154	116	21	VF600V821YC109
	1,000	51 $\times$ 125	0.20	4.4	126	95	21	VF600V102YC125
	1,500	64 $\times$ 107	0.20	8.7	84	63	22	VF600V152YD107
	1,800	64 $\times$ 123	0.20	9.8	70	53	22	VF600V182YD123
			77 $\times$ 95	0.20	11.0	70	53	24
	2,200	64 $\times$ 147	0.20	10.6	58	44	22	VF600V222YD147
			77 $\times$ 108	0.20	12.1	58	44	24
	2,700	64 $\times$ 164	0.20	12.1	47	35	22	VF600V272YD164
			77 $\times$ 124	0.20	13.8	47	35	24
		90 $\times$ 97	0.20	15.6	47	35	24	VF600V272YF097
	3,300	64 $\times$ 187	0.20	13.5	39	29	22	VF600V332YD187
			77 $\times$ 148	0.20	14.9	39	29	24
	3,900	90 $\times$ 110	0.20	17.1	39	29	24	VF600V332YF110
			77 $\times$ 165	0.20	16.5	33	25	24
	4,700	90 $\times$ 126	0.20	18.5	33	25	24	VF600V392YF126
			77 $\times$ 188	0.20	18.3	27	20	24
5,600	90 $\times$ 150	0.20	20.2	27	20	24	VF600V472YF150	
		77 $\times$ 228	0.20	20.6	23	17	24	VF600V562YE228
6,800	90 $\times$ 167	0.20	21.6	23	17	24	VF600V562YF167	
		90 $\times$ 230	0.20	23.4	19	14	24	VF600V682YF230

ALUMINUM ELECTROLYTIC CAPACITORS

Standard Products Table

Rated Voltage (V. DC)	Capacitance ( $\mu$ F)	Case size $\phi$ D $\times$ L (mm)	$\tan\delta$ 20°C, 120Hz	Ripple current (Arms) 85°C, 120Hz	ESR (typ.) (m $\Omega$ ) 20°C, 100Hz	Z max (m $\Omega$ ) 20°C, 10kHz	ESL (typ.) (nH)	Product name
650	820	64 $\times$ 94	0.20	6.3	157	118	22	VF650V821YD094
	1,000	64 $\times$ 107	0.20	6.9	129	97	22	VF650V102YD107
	1,200	64 $\times$ 123	0.20	7.8	107	81	22	VF650V122YD123
		77 $\times$ 95	0.20	8.8	107	81	24	VF650V122YE095
	1,500	64 $\times$ 147	0.20	8.6	86	65	22	VF650V152YD147
		77 $\times$ 108	0.20	9.8	86	65	24	VF650V152YE108
		90 $\times$ 97	0.20	11.3	86	65	24	VF650V152YF110
	1,800	77 $\times$ 124	0.20	11.0	71	54	24	VF650V182YE124
		90 $\times$ 110	0.20	12.3	71	54	24	VF650V182YF110
	2,200	77 $\times$ 148	0.20	11.9	58	44	24	VF650V222YE148
90 $\times$ 126		0.20	13.5	58	44	24	VF650V222YF126	

ALUMINUM ELECTROLYTIC CAPACITORS

### Life time graph

Useful life depending on ambient temperature  $T_a$  and ripple current operating conditions  $I$  versus rated ripple current at 85°C, 120Hz

