Surface Mount Type

Series: FK Type : V

Country of Origin

Japan



■ Features

Endurance: 2000 to 5000h at105°C
Low impedance (40 to 60% less than FCseries)
Miniaturization(30 to 50% less than FC series)
Vibration-proof product is available upon request.(φ8 ≦)

■ Specifications

Category temp. range	-55 to +105°C
Rated W.V. Range	6.3 to 100V .DC
Nominal Cap. Range	3.3 to 6800 μ F
Capacitance Tolerance	±20 % (120Hz/+20°C)
DC Leakage Current	I ≦ 0.01CV or 3(μA) After 2 minutes application of rated working voltage at +20°C. (Whichever is greater)
tan δ	Please see the attached standard products list

Characteristics at Low Temperature (Impedance ratio at 120 Hz)

W.V. (V)	6.3	10	16	25	35	50	63	80	100
Z(-25°C) / Z(+20°C)	2	2	2	2	2	2	2	2	2
Z(-40°C)/ Z(+20°C)	3	3	3	3	3	3	3	3	3
Z(-55°C)/ Z(+20°C)	4	4	4	3	3	3	3	3	3

Endurance

After the life with DC rated working voltage at +105±2°C for 2000 hours (≧ dia.12.5 and suffix "G" in dia.8 to 10mm are 5000 hours)the capacitors shall meet the limits specified below. post-test requirement at +20°C.

Capacitance change	±30% of initial measured value (Suffix "G" is 35%)
tan δ	≦ 200 % of initial specified value (Suffix "G" is 300%)
DC leakage current	≦ initial specified value

Shelf Life

After storage for 1000hours at +105±2 °C with no voltage applied and then being stabilized at +20°C, capacitors shall meet the limits specified in Endurance.(With voltage treatment)

Resistance to Soldering Heat

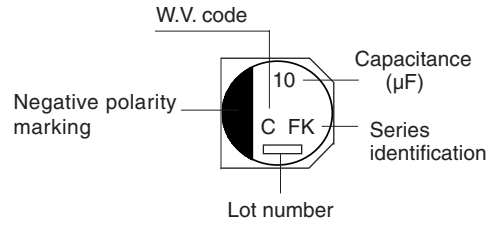
After reflow soldering (Refer to the "Application Guide" for recommended temperature profile.) and then being stabilized at +20°C, capacitor shall meet the following limits.

Capacitance change	±10% of initial measured value
D.F. tan δ	≦ initial specified value
DC leakage current	≦ initial specified value

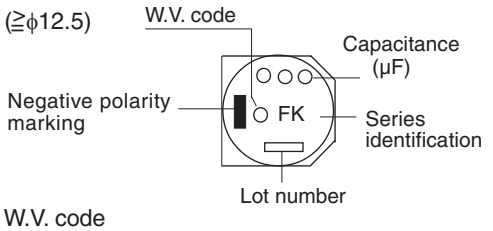
■ Marking

Example.16V10μF

Marking color : BLACK



(≧φ12.5)



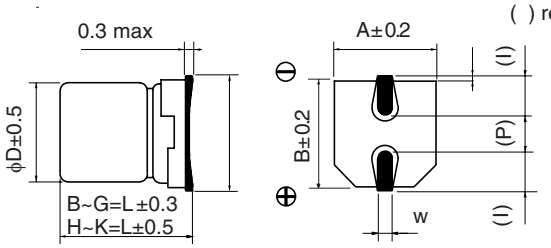
W.V. code

V	6.3	10	16	25	35
Code	j	A	C	E	V

V	50	63	80	100
Code	H	J	K	2A

■ Dimensions in mm (not to scale)

( ) reference size



Size code	D	L	A,B	H max.	I	W	P	K
B	4.0	5.8	4.3	5.5	1.8	0.65±0.1	1.0	0.35 -0.20 to +0.15
C	5.0	5.8	5.3	6.5	2.2	0.65±0.1	1.5	0.35 -0.20 to +0.15
D	6.3	5.8	6.6	7.8	2.6	0.65±0.1	1.8	0.35 -0.20 to +0.15
D8	6.3	7.7	6.6	7.8	2.6	0.65±0.1	1.8	0.35 -0.20 to +0.15
E	8.0	6.2	8.3	9.5	3.4	0.65±0.1	2.2	0.35 -0.20 to +0.15
F	8.0	10.2	8.3	10.0	3.4	0.90±0.2	3.1	0.70 ±0.20
G	10.0	10.2	10.3	12.0	3.5	0.90±0.2	4.6	0.70 ±0.20
H13	12.5	13.5	13.5	15.0	4.7	0.90±0.3	4.4	0.70 ±0.30
J16	16.0	16.5	17.0	19.0	5.5	1.20±0.3	6.7	0.70 ±0.30
K16	18.0	16.5	19.0	21.0	6.7	1.20±0.3	6.7	0.70 ±0.30

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■ Case size VS Capacitance, Impedance and Ripple current

Impedance;(Ω/100kHz,+20°C),
Ripple current;(mA r.m.s./100kHz+105°C)

W.V. / Capacitance (μF)	6.3			10			16		
	Size	Impedance	Ripple current	Size	Impedance	Ripple current	Size	Impedance	Ripple current
10							B	1.35	90
22	B	1.35	90	B	1.35	90	C(B)	0.7(1.35)	160(90)
33				C(B)	0.7(1.35)	160(90)			
47	C(B)	0.7(1.35)	160(90)				D(C)	0.36(0.7)	240(160)
68							D	0.36	240
100	D(C)	0.36(0.7)	240(160)				D	0.36	240
150				D	0.36	240	D8	0.34	280
220	D	0.36	240	D8	0.34	280	D8	0.34	280
				E	0.26	300	E	0.26	300
330	D8	0.34	280	◎F	0.16	600	◎F	0.16	600
	E	0.26	300						
470	◎F	0.16	600	◎F	0.16	600	◎F	0.16	600
680				◎F	0.16	600	◎G	0.08	850
1000	◎F	0.16	600	◎G	0.08	850			
1500	◎G	0.08	850				H13	0.06	1100
2200				H13	0.06	1100			
3300	H13	0.06	1100				J16	0.035	1800
4700				J16	0.035	1800	K16	0.033	2060
6800	J16	0.035	1800	K16	0.033	2060			

W.V. / Capacitance (μF)	25			35			50		
	Size	Impedance	Ripple current	Size	Impedance	Ripple current	Size	Impedance	Ripple current
4.7				B	1.35	90	B	2.9	60
10	B	1.35	90	C(B)	0.7(1.35)	160(90)	D(C)	0.88(1.52)	165(85)
22	C	0.7	160	C	0.7	160	D	0.88	165
33	D(C)	0.36(0.7)	240(160)	D	0.36	240	D8	0.68	195
							E	0.68	195
47	D	0.36	240	D	0.36	240	E(D8)	0.68	195
68	D	0.36	240	D8	0.34	280			
100	D8	0.34	280	D8	0.34	280	◎F	0.34	350
	E	0.26	300	◎F	0.16	600			
150	◎F	0.16	600	◎F	0.16	600	◎G	0.18	670
220	◎F	0.16	600	◎F	0.16	600	◎G	0.18	670
330	◎F	0.16	600	◎G	0.08	850	H13	0.12	900
390							H13	0.12	900
470	◎G	0.08	850	H13	0.06	1100	J16	0.073	1610
680				H13	0.06	1100	J16	0.073	1610
1000	H13	0.06	1100	J16	0.035	1800	J16	0.073	1610
1500				J16	0.035	1800			
2200	J16	0.035	1800						
3300	K16	0.033	2060						

W.V. / Capacitance (μF)	63			80			100		
	Size	Impedance	Ripple current	Size	Impedance	Ripple current	Size	Impedance	Ripple current
3.3				C	5	25			
4.7	C	3	50	D	3	40			
10	D	1.5	80	D8	2.4	60			
				E	2.4	60			
22	D8	1.2	120	F	1.3	130	F	1.3	130
	E	1.2	120	F	1.3	130			
33	F	0.65	250	F	1.3	130	G	0.7	200
47	F	0.65	250	G	0.7	200	H13	0.32	500
68	F	0.65	250	H13	0.32	500	H13	0.32	500
100	G	0.35	400	H13	0.32	500	J16	0.17	793
150	H13	0.16	800	H13	0.32	500	J16	0.17	793
220	H13	0.16	800				K16	0.153	917
330				J16	0.17	793	K16	0.153	917
470	J16	0.082	1410	K16	0.153	917			
680	K16	0.080	1690						

( );Miniaturization type ◎Life time 5000h available upon request(suffix : G)

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W.V. [V.DC]	Cap. [μF]	Part No.	tan δ	R.C. [mA rms]	Imp./ESR [Ω]	Size D	Size L
6.3	22	EEVFK0J220R	0.26	90	1.35	4	5.8
	47	EEVFK0J470UR	0.26	90	1.35	4	5.8
	47	EEVFK0J470R	0.26	160	0.70	5	5.8
	100	EEVFK0J101UR	0.26	160	0.70	5	5.8
	100	EEVFK0J101P	0.26	240	0.36	6.3	5.8
	220	EEVFK0J221P	0.26	240	0.36	6.3	5.8
	330	EEVFK0J331XP	0.26	280	0.34	6.3	7.7
	330	EEVFK0J331P	0.26	300	0.26	8	6.2
	470	EEVFK0J471P	0.26	600	0.16	8	10.2
	1000	EEVFK0J102P	0.26	600	0.16	8	10.2
	1500	EEVFK0J152P	0.26	850	0.080	10	10.2
	3300	EEVFK0J332Q	0.30	1100	0.060	12.5	13.5
	6800	EEVFK0J682M	0.36	1800	0.035	16	16.5
10	22	EEVFK1A220R	0.19	90	1.35	4	5.8
	33	EEVFK1A330UR	0.19	90	1.35	4	5.8
	33	EEVFK1A330R	0.19	160	0.70	5	5.8
	150	EEVFK1A151P	0.19	240	0.36	6.3	5.8
	220	EEVFK1A221XP	0.19	280	0.34	6.3	7.7
	220	EEVFK1A221P	0.19	300	0.26	8	6.2
	330	EEVFK1A331P	0.19	600	0.16	8	10.2
	470	EEVFK1A471P	0.19	600	0.16	8	10.2
	680	EEVFK1A681P	0.49	600	0.16	8	10.2
	1000	EEVFK1A102P	0.19	850	0.080	10	10.2
	2200	EEVFK1A222Q	0.21	1100	0.060	12.5	13.5
	4700	EEVFK1A472M	0.25	1800	0.035	16	16.5
	6800	EEVFK1A682M	0.29	2060	0.033	18	16.5
16	10	EEVFK1C100R	0.16	90	1.35	4	5.8
	22	EEVFK1C220UR	0.16	90	1.35	4	5.8
	22	EEVFK1C220R	0.16	160	0.70	5	5.8
	47	EEVFK1C470UR	0.16	160	0.70	5	5.8
	47	EEVFK1C470P	0.16	240	0.36	6.3	5.8
	68	EEVFK1C680P	0.16	240	0.36	6.3	5.8
	100	EEVFK1C101P	0.16	240	0.36	6.3	5.8
	150	EEVFK1C151XP	0.16	280	0.34	6.3	7.7
	220	EEVFK1C221XP	0.16	280	0.34	6.3	7.7
	220	EEVFK1C221P	0.16	300	0.26	8	6.2
	330	EEVFK1C331P	0.16	600	0.16	8	10.2
	470	EEVFK1C471P	0.16	600	0.16	8	10.2
	680	EEVFK1C681P	0.16	850	0.08	10	10.2
	1500	EEVFK1C152Q	0.16	1100	0.060	12.5	13.5
	3300	EEVFK1C332M	0.20	1800	0.035	16	16.5
	4700	EEVFK1C472M	0.22	2060	0.033	18	16.5
25	10	EEVFK1E100R	0.14	90	1.35	4	5.8
	22	EEVFK1E220R	0.14	160	0.70	5	5.8
	33	EEVFK1E330UR	0.14	160	0.70	5	5.8
	33	EEVFK1E330P	0.14	240	0.36	6.3	5.8
	47	EEVFK1E470P	0.14	240	0.36	6.3	5.8
	68	EEVFK1E680P	0.14	240	0.36	6.3	5.8
	100	EEVFK1E101XP	0.14	280	0.34	6.3	7.7
	100	EEVFK1E101P	0.14	300	0.26	8	6.2
	150	EEVFK1E151P	0.14	600	0.16	8	10.2
	220	EEVFK1E221P	0.14	600	0.16	8	10.2
	330	EEVFK1E331P	0.14	600	0.16	8	10.2
	470	EEVFK1E471P	0.14	850	0.080	10	10.2
	1000	EEVFK1E102Q	0.14	1100	0.060	12.5	13.5
	2200	EEVFK1E222M	0.16	1800	0.035	16	16.5
	3300	EEVFK1E332M	0.18	2060	0.033	18	16.5

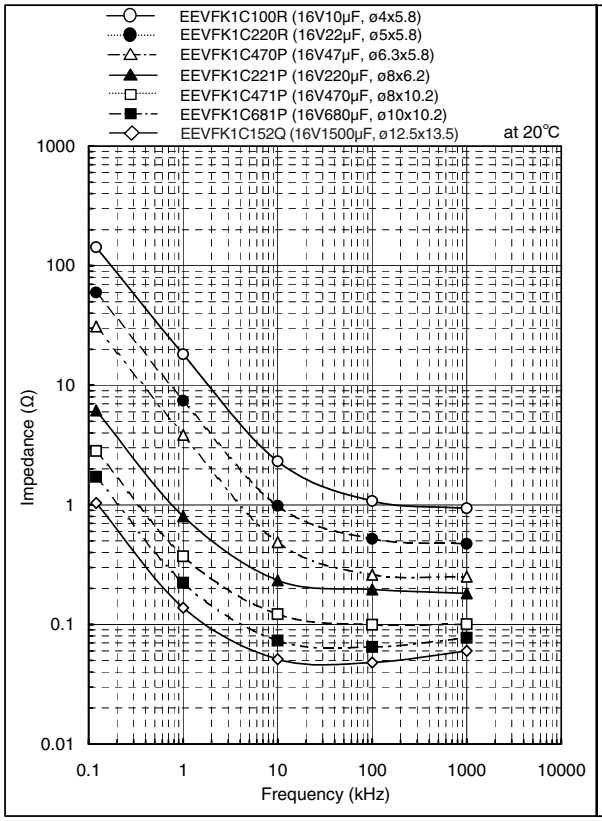
W.V. [V.DC]	Cap. [μF]	Part No.	tan δ	R.C. [mA rms]	Imp./ESR [Ω]	Size D	Size L
35	4.7	EEVFK1V4R7R	0.12	90	1.35	4	5.8
	10	EEVFK1V100UR	0.12	90	1.35	4	5.8
	10	EEVFK1V100R	0.12	160	0.70	5	5.8
	22	EEVFK1V220R	0.12	160	0.70	5	5.8
	33	EEVFK1V330P	0.12	240	0.36	6.3	5.8
	47	EEVFK1V470P	0.12	240	0.36	6.3	5.8
	68	EEVFK1V680XP	0.12	280	0.34	6.3	7.7
	100	EEVFK1V101XP	0.12	280	0.34	6.3	7.7
	100	EEVFK1V101P	0.12	600	0.16	8	10.2
	150	EEVFK1V151P	0.12	600	0.16	8	10.2
	220	EEVFK1V221P	0.12	600	0.16	8	10.2
	330	EEVFK1V331P	0.12	850	0.080	10	10.2
	470	EEVFK1V471Q	0.12	1100	0.060	12.5	13.5
	680	EEVFK1V681Q	0.12	1100	0.060	12.5	13.5
	1000	EEVFK1V102M	0.12	1800	0.035	16	16.5
	1500	EEVFK1V152M	0.12	1800	0.035	16	16.5
50	4.7	EEVFK1H4R7R	0.10	60	2.90	4	5.8
	10	EEVFK1H100UR	0.10	85	1.52	5	5.8
	10	EEVFK1H100P	0.10	165	0.88	6.3	5.8
	22	EEVFK1H220P	0.10	165	0.88	6.3	5.8
	33	EEVFK1H330XP	0.10	195	0.68	6.3	7.7
	33	EEVFK1H330P	0.10	195	0.68	8	6.2
	47	EEVFK1H470XP	0.10	195	0.68	6.3	7.7
	47	EEVFK1H470P	0.10	195	0.68	8	6.2
	100	EEVFK1H101P	0.10	350	0.34	8	10.2
	150	EEVFK1H151P	0.10	670	0.18	10	10.2
	220	EEVFK1H221P	0.10	670	0.18	10	10.2
	330	EEVFK1H331Q	0.10	900	0.12	12.5	13.5
	680	EEVFK1H681M	0.10	1610	0.073	16	16.5
	1000	EEVFK1H102M	0.10	1610	0.073	16	16.5
63	4.7	EEVFK1J4R7R	0.08	50	3.00	5	5.8
	10	EEVFK1J100P	0.08	80	1.50	6.3	5.8
	22	EEVFK1J220XP	0.08	120	1.20	6.3	7.7
	22	EEVFK1J220P	0.08	120	1.20	8	6.2
	33	EEVFK1J330P	0.08	250	0.65	8	10.2
	47	EEVFK1J470P	0.08	250	0.65	8	10.2
	68	EEVFK1J680P	0.08	400	0.35	10	10.2
	100	EEVFK1J101P	0.08	400	0.35	10	10.2
	150	EEVFK1J151Q	0.08	800	0.16	12.5	13.5
	220	EEVFK1J221Q	0.08	800	0.16	12.5	13.5
	470	EEVFK1J471M	0.08	1410	0.082	16	16.5
	680	EEVFK1J681M	0.08	1690	0.080	18	16.5
80	3.3	EEVFK1K3R3R	0.08	25	5.00	5	5.8
	4.7	EEVFK1K4R7P	0.08	40	3.00	6.3	5.8
	10	EEVFK1K100XP	0.08	60	2.40	6.3	7.7
	10	EEVFK1K100P	0.08	60	2.40	8	6.2
	22	EEVFK1K220P	0.08	130	1.30	8	10.2
	33	EEVFK1K330P	0.08	130	1.30	8	10.2
	47	EEVFK1K470P	0.08	200	0.70	10	10.2
	68	EEVFK1K680Q	0.08	500	0.32	12.5	13.5
	100	EEVFK1K101Q	0.08	500	0.32	12.5	13.5
	150	EEVFK1K151Q	0.08	500	0.32	12.5	13.5
	330	EEVFK1K331M	0.08	793	0.17	16	16.5
	470	EEVFK1K471M	0.08	917	0.153	18	16.5
100	22	EEVFK2A220P	0.07	130	1.30	8	10.2
	33	EEVFK2A330P	0.07	200	0.70	10	10.2
	47	EEVFK2A470Q	0.07	500	0.32	12.5	13.5
	68	EEVFK2A680Q	0.07	500	0.32	12.5	13.5
	100	EEVFK2A101M	0.07	793	0.17	16	16.5
	150	EEVFK2A151M	0.07	793	0.17	16	16.5
	220	EEVFK2A221M	0.07	917	0.153	18	16.5
	330	EEVFK2A331M	0.07	917	0.153	18	16.5

Tan δ = at 120Hz/+20°C
Ripple current = at 100kHz/+105°C
Impedance/ESR = at 100kHz/+20°C

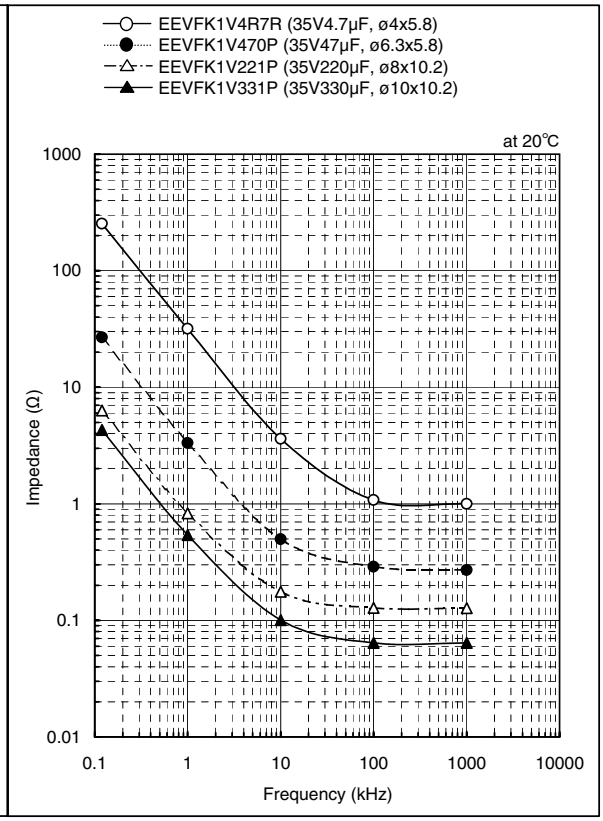
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■ Frequency Characteristics (Impedance)

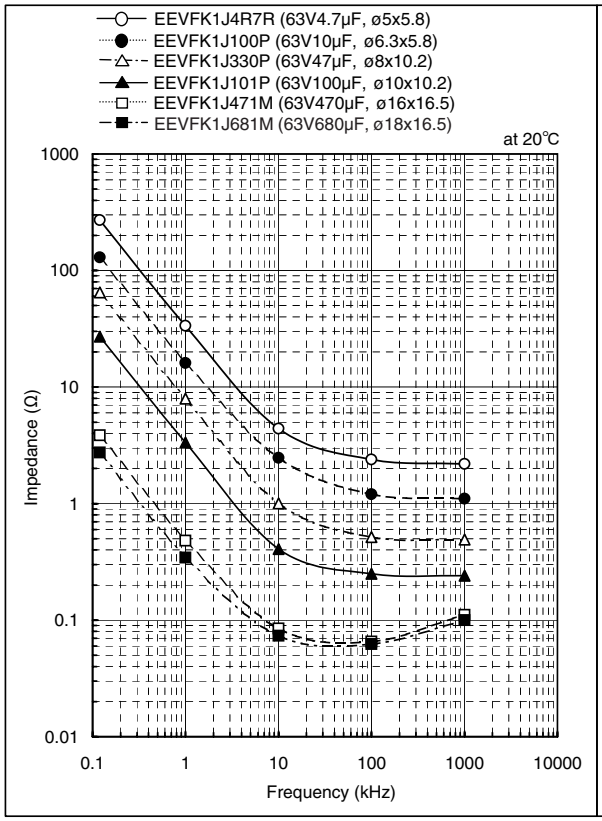
● 16WV



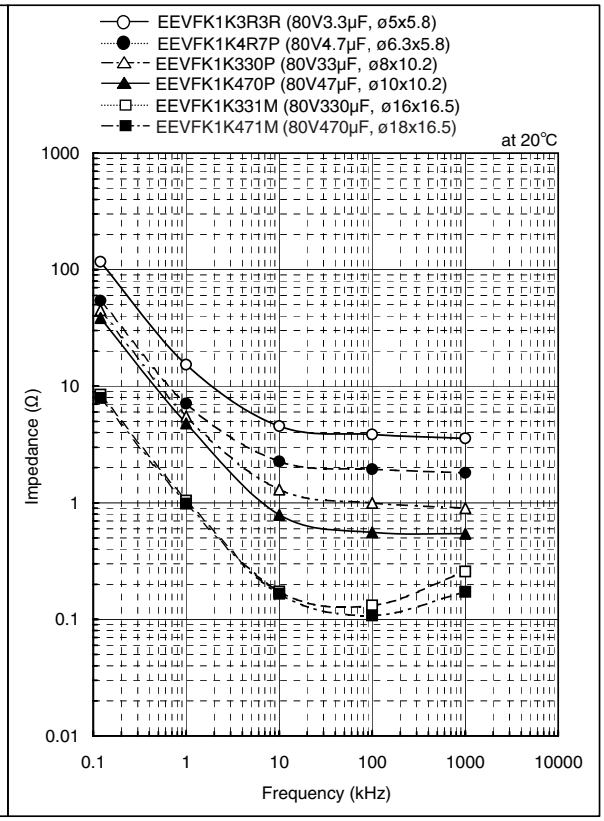
● 35WV



● 63WV



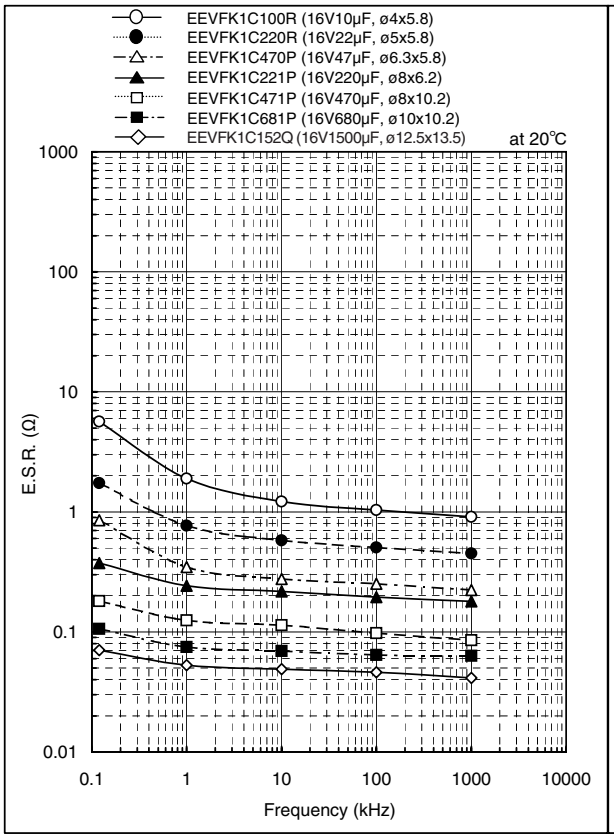
● 80WV



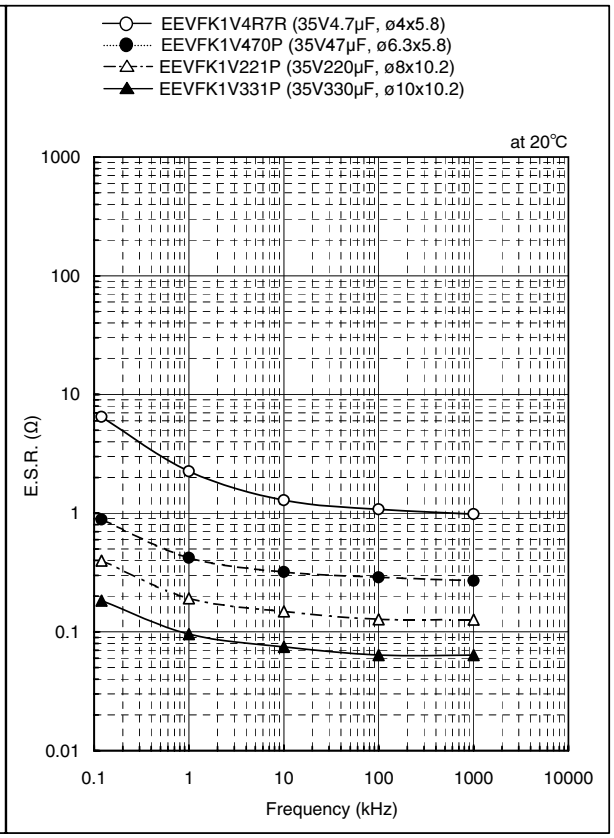
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■ Frequency Characteristics (ESR)

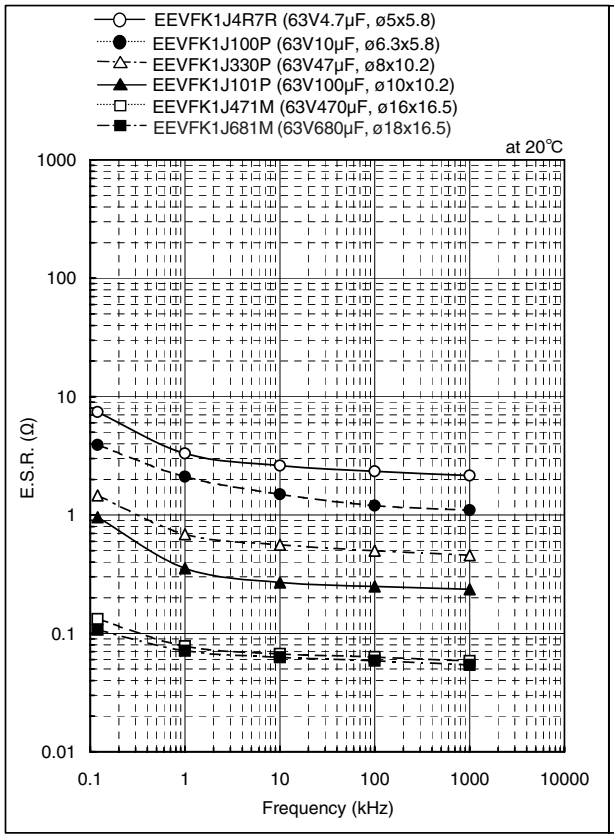
● 16WV



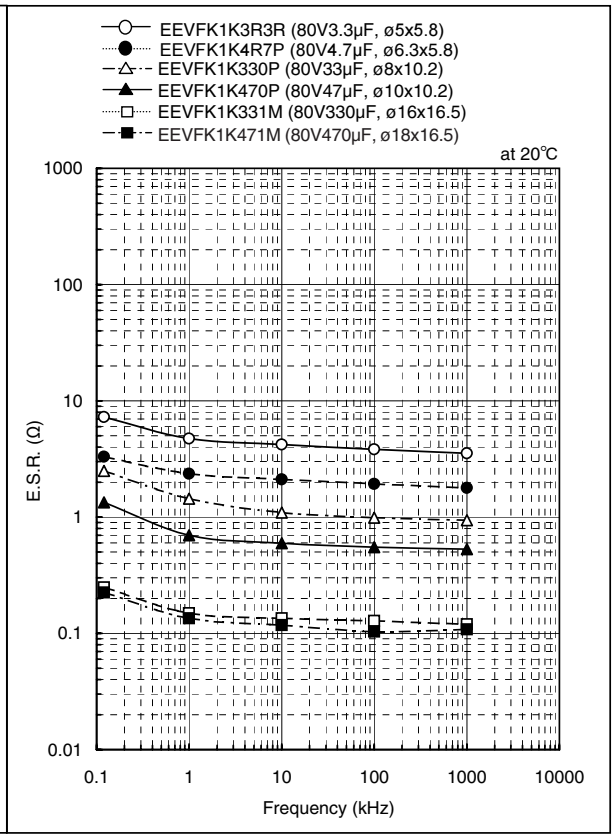
● 35WV



● 63WV



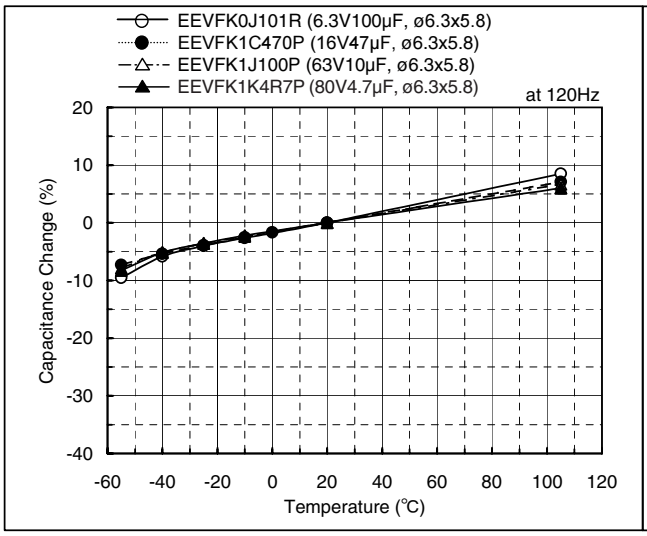
● 80WV

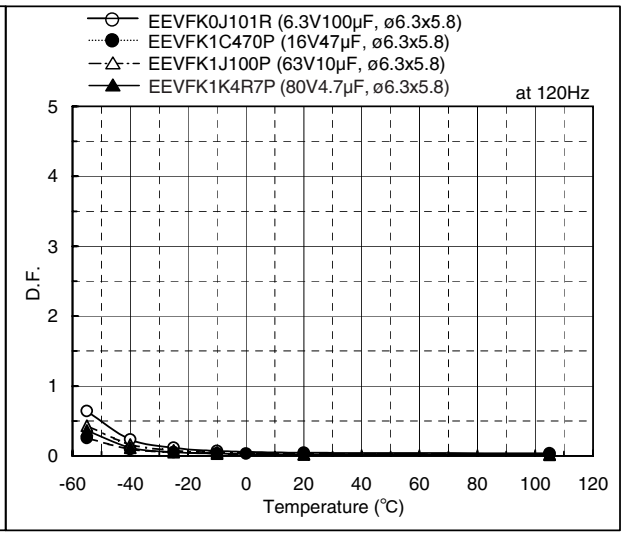


Design and specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.
Whenever a doubt about safety arises from this product, please contact us immediately for technical consultation.

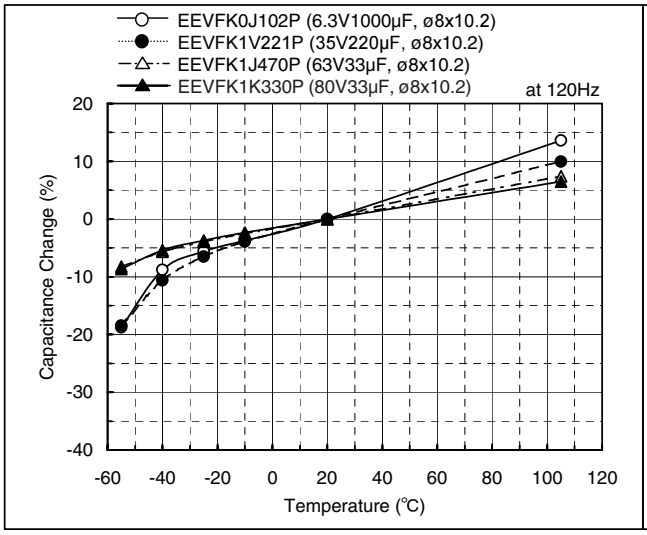
■ Temperature Characteristics

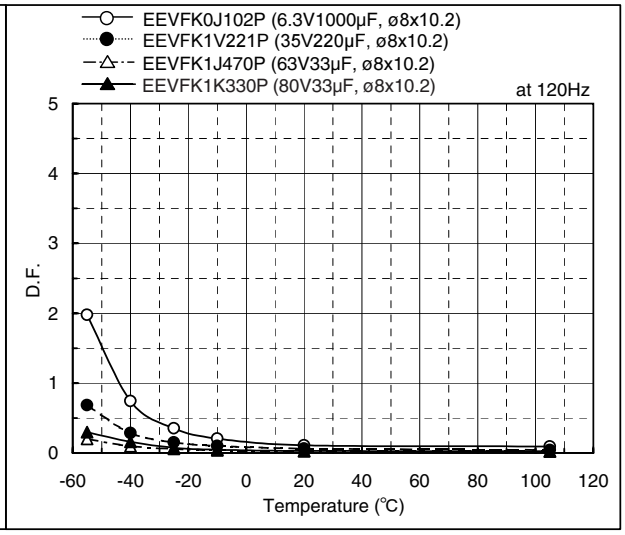
● ø6.3 x 5.8





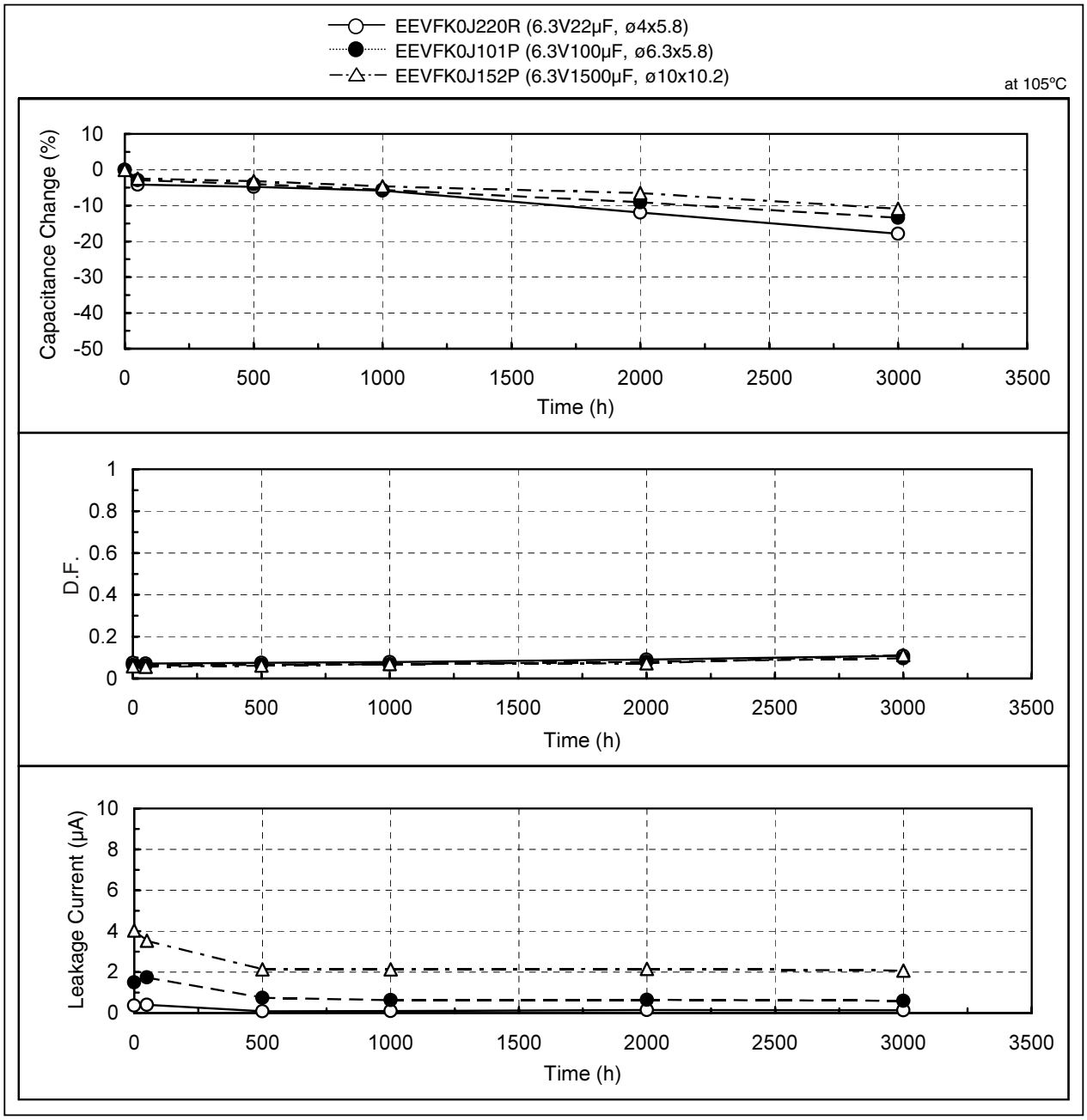
● ø8 x 10.2





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■ Load Life


EEVFK0J220R (6.3V22μF, ø4x5.8)
EEVFK0J101P (6.3V100μF, ø6.3x5.8)
EEVFK0J152P (6.3V1500μF, ø10x10.2)
at 105ºC
Capacitance Change (%)
10
0
-10
-20
-30
-40
-50
0
500
1000
1500
2000
2500
3000
3500
Time (h)
D.F.
1
0.8
0.6
0.4
0.2
0
Time (h)
Leakage Current (μA)
10
8
6
4
2
0
Time (h)