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 ìGî india.8 to 10 are 5000hours)the capacitors shall meet the limits specified below. post-test requirement at +20°C.

Capacitance change	±30% of initial measured value (Suffix ìGî is 35%)
tan δ	≦ 200 % of initial specified value (Suffix ìGî 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

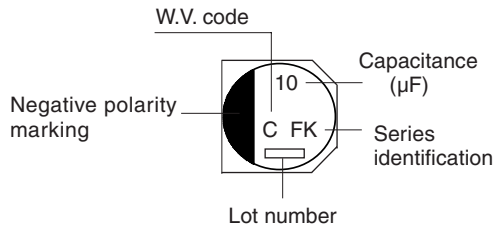
After reflow soldering (Refer to page 184 for recommendable temperature profile.) and then being stabilized at +20°C, capacitor shall meet the following limits.

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

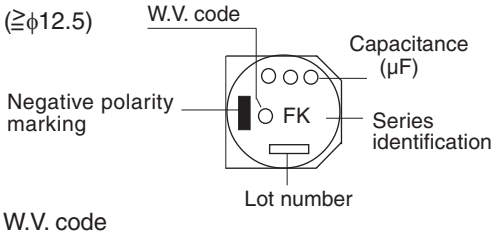
■ Marking

Example.16V10μF

Marking color : BLACK



(≧φ12.5)



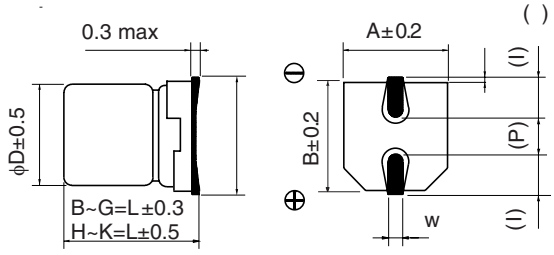
W.V. code

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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■ Standard Products

W.V. (V)	Cap. (±20%) (μF)	Case size			Specification			Part No.	Min.Packaging Q'ty
		Dia. (mm)	Length (mm)	Size Code	Ripple current (100kHz) (+105°C) (mA)	Impedance (100kHz) (+20°C) (Ω)	tan δ (120Hz) (+20°C)		Taping (pcs)
6.3	22	4	5.8	B	90	1.35	0.26	EEVFK0J220R	2000
	47	4	5.8	B	90	1.35	0.26	EEVFK0J470UR	2000
		5	5.8	C	160	0.70	0.26	EEVFK0J470R	1000
	100	5	5.8	C	160	0.70	0.26	EEVFK0J101UR	1000
		6.3	5.8	D	240	0.36	0.26	EEVFK0J101P	1000
	220	6.3	5.8	D	240	0.36	0.26	EEVFK0J221P	1000
	330	6.3	7.7	D8	280	0.34	0.26	EEVFK0J331XP	900
		8	6.2	E	300	0.26	0.26	EEVFK0J331P	1000
	470	8	10.2	F	600	0.16	0.26	EEVFK0J471P	500
	1000	8	10.2	F	600	0.16	0.26	EEVFK0J102P	500
	1500	10	10.2	G	850	0.08	0.26	EEVFK0J152P	500
	3300	12.5	13.5	H13	1100	0.06	0.30	EEVFK0J332Q	200
	6800	16	16.5	J16	1800	0.035	0.36	EEVFK0J682M	125
10	22	4	5.8	B	90	1.35	0.19	EEVFK1A220R	2000
	33	4	5.8	B	90	1.35	0.19	EEVFK1A330UR	2000
		5	5.8	C	160	0.70	0.19	EEVFK1A330R	1000
	150	6.3	5.8	D	240	0.36	0.19	EEVFK1A151P	1000
	220	6.3	7.7	D8	280	0.34	0.19	EEVFK1A221XP	900
		8	6.2	E	300	0.26	0.19	EEVFK1A221P	1000
	330	8	10.2	F	600	0.16	0.19	EEVFK1A331P	500
	470	8	10.2	F	600	0.16	0.19	EEVFK1A471P	500
	680	8	10.2	F	600	0.16	0.19	EEVFK1A681P	500
	1000	10	10.2	G	850	0.08	0.19	EEVFK1A102P	500
	2200	12.5	13.5	H13	1100	0.06	0.21	EEVFK1A222Q	200
	4700	16	16.5	J16	1800	0.035	0.25	EEVFK1A472M	125
	6800	18	16.5	K16	2060	0.033	0.29	EEVFK1A682M	125
16	10	4	5.8	B	90	1.35	0.16	EEVFK1C100R	2000
	22	4	5.8	B	90	1.35	0.16	EEVFK1C220UR	2000
		5	5.8	C	160	0.70	0.16	EEVFK1C220R	1000
	47	5	5.8	C	160	0.70	0.16	EEVFK1C470UR	1000
		6.3	5.8	D	240	0.36	0.16	EEVFK1C470P	1000
	68	6.3	5.8	D	240	0.36	0.16	EEVFK1C680P	1000
	100	6.3	5.8	D	240	0.36	0.16	EEVFK1C101P	1000
	150	6.3	7.7	D8	280	0.34	0.16	EEVFK1C151XP	900
	220	6.3	7.7	D8	280	0.34	0.16	EEVFK1C221XP	900
		8	6.2	E	300	0.26	0.16	EEVFK1C221P	1000
	330	8	10.2	F	600	0.16	0.16	EEVFK1C331P	500
	470	8	10.2	F	600	0.16	0.16	EEVFK1C471P	500
	680	10	10.2	G	850	0.08	0.16	EEVFK1C681P	500
	1500	12.5	13.5	H13	1100	0.06	0.16	EEVFK1C152Q	200
	3300	16	16.5	J16	1800	0.035	0.20	EEVFK1C332M	125
	4700	18	16.5	K16	2060	0.033	0.22	EEVFK1C472M	125
25	10	4	5.8	B	90	1.35	0.14	EEVFK1E100R	2000
	22	5	5.8	C	160	0.7	0.14	EEVFK1E220R	1000

The taping dimension are explained on p.187 of our Catalog.
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Endurance: 2000 to 5000h at 105°C

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■ Standard Products

W.V.	Cap. (±20%) (μF)	Case size Dia. (mm)	Length (mm)	Size Code	Specification Ripple current (100kHz) (+105°C) (mA)	Impedance (100kHz) (+20°C) (Ω)	tan δ (120Hz) (+20°C)	Part No.	Min.Packaging Q'ty Taping (pcs)
25	33	5	5.8	C	160	0.7	0.14	EEVFK1E330UR	1000
		6.3	5.8	D	240	0.36	0.14	EEVFK1E330P	1000
	47	6.3	5.8	D	240	0.36	0.14	EEVFK1E470P	1000
	68	6.3	5.8	D	240	0.36	0.14	EEVFK1E680P	1000
	100	6.3	7.7	D8	280	0.34	0.14	EEVFK1E101XP	900
		8	6.2	E	300	0.26	0.14	EEVFK1E101P	1000
	150	8	10.2	F	600	0.16	0.14	EEVFK1E151P	500
	220	8	10.2	F	600	0.16	0.14	EEVFK1E221P	500
	330	8	10.2	F	600	0.16	0.14	EEVFK1E331P	500
	470	10	10.2	G	850	0.08	0.14	EEVFK1E471P	500
	1000	12.5	13.5	H13	1100	0.06	0.14	EEVFK1E102Q	200
	2200	16	16.5	J16	1800	0.035	0.16	EEVFK1E222M	125
	3300	18	16.5	K16	2060	0.033	0.18	EEVFK1E332M	125
35	4.7	4	5.8	B	90	1.35	0.12	EEVFK1V4R7R	2000
	10	4	5.8	B	90	1.35	0.12	EEVFK1V100UR	2000
		5	5.8	C	160	0.70	0.12	EEVFK1V100R	1000
	22	5	5.8	C	160	0.70	0.12	EEVFK1V220R	1000
	33	6.3	5.8	D	240	0.36	0.12	EEVFK1V330P	1000
	47	6.3	5.8	D	240	0.36	0.12	EEVFK1V470P	1000
	68	6.3	7.7	D8	280	0.34	0.12	EEVFK1V680XP	900
	100	6.3	7.7	D8	280	0.34	0.12	EEVFK1V101XP	900
		8	10.2	F	600	0.16	0.12	EEVFK1V101P	500
	150	8	10.2	F	600	0.16	0.12	EEVFK1V151P	500
	220	8	10.2	F	600	0.16	0.12	EEVFK1V221P	500
	330	10	10.2	G	850	0.08	0.12	EEVFK1V331P	500
	470	12.5	13.5	H13	1100	0.06	0.12	EEVFK1V471Q	200
	680	12.5	13.5	H13	1100	0.06	0.12	EEVFK1V681Q	200
	1000	16	16.5	J16	1800	0.035	0.12	EEVFK1V102M	125
	1500	16	16.5	J16	1800	0.035	0.12	EEVFK1V152M	125
50	4.7	4	5.8	B	60	2.9	0.10	EEVFK1H4R7R	2000
	10	5	5.8	C	85	1.52	0.10	EEVFK1H100UR	1000
		6.3	5.8	D	165	0.88	0.10	EEVFK1H100P	1000
	22	6.3	5.8	D	165	0.88	0.10	EEVFK1H220P	1000
	33	6.3	7.7	D8	195	0.68	0.10	EEVFK1H330XP	900
		8	6.2	E	195	0.68	0.10	EEVFK1H330P	1000
	47	6.3	7.7	D8	195	0.68	0.10	EEVFK1H470XP	900
		8	6.2	E	195	0.68	0.10	EEVFK1H470P	1000
	100	8	10.2	F	350	0.34	0.10	EEVFK1H101P	500
	150	10	10.2	G	670	0.18	0.10	EEVFK1H151P	500
	220	10	10.2	G	670	0.18	0.10	EEVFK1H221P	500
	330	12.5	13.5	H13	900	0.12	0.10	EEVFK1H331Q	200
	390	12.5	13.5	H13	900	0.12	0.10	EEVFK1H391Q	200
	470	16	16.5	J16	1610	0.073	0.10	EEVFK1H471M	125
	680	16	16.5	J16	1610	0.073	0.10	EEVFK1H681M	125
	1000	16	16.5	J16	1610	0.073	0.10	EEVFK1H102M	125

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Endurance: 2000 to 5000h at 105°C

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■ Standard Products

W.V. (V)	Cap. (±20%) (μF)	Case size Dia. (mm)	Length (mm)	Size Code	Specification Ripple current (100kHz) (+105°C) (mA)	Impedance (100kHz) (+20°C) (Ω)	tan δ (120Hz) (+20°C)	Part No.	Min.Packaging Q'ty Taping (pcs)
63	4.7	5	5.8	C	50	3.0	0.08	EEVFK1J4R7R	1000
	10	6.3	5.8	D	80	1.5	0.08	EEVFK1J100P	1000
	22	6.3	7.7	D8	120	1.2	0.08	EEVFK1J220XP	900
		8	6.2	E	120	1.2	0.08	EEVFK1J220P	1000
	33	8	10.2	F	250	0.65	0.08	EEVFK1J330P	500
	47	8	10.2	F	250	0.65	0.08	EEVFK1J470P	500
	68	8	10.2	F	250	0.65	0.08	EEVFK1J680UP	500
	100	10	10.2	G	400	0.35	0.08	EEVFK1J101P	500
	150	12.5	13.5	H13	800	0.16	0.08	EEVFK1J151Q	200
	220	12.5	13.5	H13	800	0.16	0.08	EEVFK1J221Q	200
	470	16	16.5	J16	1410	0.082	0.08	EEVFK1J471M	125
	680	18	16.5	K16	1690	0.08	0.08	EEVFK1J681M	125
80	3.3	5	5.8	C	25	5.0	0.08	EEVFK1K3R3R	1000
	4.7	6.3	5.8	D	40	3.0	0.08	EEVFK1K4R7P	1000
	10	6.3	7.7	D8	60	2.4	0.08	EEVFK1K100XP	900
		8	6.2	E	60	2.4	0.08	EEVFK1K100P	1000
	22	8	10.2	F	130	1.3	0.08	EEVFK1K220P	500
	33	8	10.2	F	130	1.3	0.08	EEVFK1K330P	500
	47	10	10.2	G	200	0.7	0.08	EEVFK1K470P	500
	68	12.5	13.5	H13	500	0.32	0.08	EEVFK1K680Q	200
	100	12.5	13.5	H13	500	0.32	0.08	EEVFK1K101Q	200
	150	12.5	13.5	H13	500	0.32	0.08	EEVFK1K151Q	200
	330	16	16.5	J16	793	0.17	0.08	EEVFK1K331M	125
	470	18	16.5	K16	917	0.153	0.08	EEVFK1K471M	125
100	22	8.0	10.2	F	130	1.3	0.07	EEVFK2A220P	500
	33	10	10.2	G	200	0.7	0.07	EEVFK2A330P	500
	47	12.5	13.5	H13	500	0.32	0.07	EEVFK2A470Q	200
	68	12.5	13.5	H13	500	0.32	0.07	EEVFK2A680Q	200
	100	16	16.5	J16	793	0.17	0.07	EEVFK2A101M	125
	150	16	16.5	J16	793	0.17	0.07	EEVFK2A151M	125
	220	18	16.5	K16	917	0.153	0.07	EEVFK2A221M	125
	330	18	16.5	K16	917	0.153	0.07	EEVFK2A331M	125

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