

Surface Mount Type

Series : **FK** Type : **V**



Features

- Endurance : 105 °C 2000 h to 5000 h
- Low impedance (40 % to 60 % less than FC series)
Miniaturized (30 % to 50 % less than FC series)
- Vibration-proof product is available upon request. ($\phi 8$ mm and larger)
- RoHS compliant

Specifications

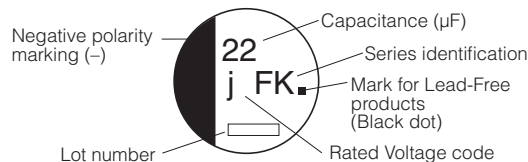
Category temperature range	-55 °C to +105 °C										
Rated voltage range	6.3 V.DC to 100 V.DC										
Capacitance range	3.3 μ F to 6800 μ F										
Capacitance tolerance	$\pm 20\%$ (120 Hz/+20 °C)										
Leakage current	$I \leq 0.01$ CV or 3 (μ A) After 2 minutes (Whichever is greater)										
Dissipation factor ($\tan \delta$)	Please see the attached characteristics list										
Characteristics at low temperature	V.DC	6.3	10	16	25	35	50	63	80	100	(Impedance ratio at 120 Hz)
	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 applying rated working voltage for 2000 hours at +105 °C ± 2 °C and then being stabilized at +20 °C, Capacitors shall meet the following limits. ($\geq \phi 12.5$ and suffix "G" in $\phi 8 \times 10.2$, $\phi 10 \times 10.2$ are 5000 hours)										
	Capacitance change	Within $\pm 30\%$ of the initial value (Suffix "G" is 35 %)									
	$\tan \delta$	$\leq 200\%$ of the initial limit (Suffix "G" is 300 %)									
Shelf life	After storage for 1000 hours at +105 °C ± 2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance (With voltage treatment)										
	After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits.										
Resistance to soldering heat	Capacitance change	Within $\pm 10\%$ of the initial value									
	$\tan \delta$	Within the initial limit									
	DC leakage current	Within the initial limit									
AEC-Q200	AEC-Q200 compliant										

Frequency correction factor for ripple current

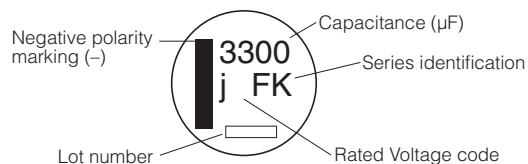
Frequency (Hz)	50, 60	120	1 k	10 k	100 k to
Correction factor	0.70	0.75	0.90	0.95	1.00

Marking

Example : 6.3 V.DC 22 μ F, 6.3 V.DC 3300 μ F
Marking color : BLACK
 $\leq \phi 10$

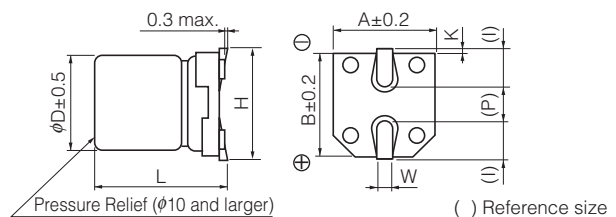


$\geq \phi 12.5$



R. Voltage (V.DC)	6.3	10	16	25	35	50	63	80	100
Code	j	A	C	E	V	H	J	K	2A

Dimensions



(Unit : mm)

Size code	ϕD	L	A,B	H	I	W	P	K
B	4.0	5.8 ± 0.3	4.3	5.5 max.	1.8	0.65 ± 0.1	1.0	0.35 $^{+0.05}_{-0.2}$
C	5.0	5.8 ± 0.3	5.3	6.5 max.	2.2	0.65 ± 0.1	1.5	0.35 $^{+0.05}_{-0.2}$
D	6.3	5.8 ± 0.3	6.6	7.8 max.	2.6	0.65 ± 0.1	1.8	0.35 $^{+0.05}_{-0.2}$
D8	6.3	7.7 ± 0.3	6.6	7.8 max.	2.6	0.65 ± 0.1	1.8	0.35 $^{+0.05}_{-0.2}$
E	8.0	6.2 ± 0.3	8.3	9.5 max.	3.4	0.65 ± 0.1	2.2	0.35 $^{+0.05}_{-0.2}$
F	8.0	10.2 ± 0.3	8.3	10.0 max.	3.4	0.90 ± 0.2	3.1	0.70 ± 0.2
G	10.0	10.2 ± 0.3	10.3	12.0 max.	3.5	0.90 ± 0.2	4.6	0.70 ± 0.2
H13	12.5	13.5 ± 0.5	13.5	15.0 max.	4.7	0.90 ± 0.3	4.4	0.70 ± 0.3
J16	16.0	16.5 ± 0.5	17.0	19.0 max.	5.5	1.20 ± 0.3	6.7	0.70 ± 0.3
K16	18.0	16.5 ± 0.5	19.0	21.0 max.	6.7	1.20 ± 0.3	6.7	0.70 ± 0.3

Characteristics list

Endurance : 105 °C 2000 h (≥ φ12.5 : 5000 h)

Rated voltage (V.DC)	Cap. (±20 %) (μF)	Case size (mm)		Size* code	Specification			Part No.	Reflow	Min. Packaging Qty
		φD	L		Ripple current (100 kHz) (+105 °C) (mA r.m.s.)	Impedance (100 kHz) (+20 °C) (Ω)	tan δ (120 Hz) (+20 °C)			Taping (pcs)
6.3	22	4	5.8	B	90	1.35	0.26	EEEFK0J220R	(1)	2000
	47	4	5.8	(B)	90	1.35	0.26	EEEFK0J470UR	(1)	2000
		5	5.8	C	160	0.70	0.26	EEEFK0J470R	(1)	1000
	100	5	5.8	(C)	160	0.70	0.26	EEEFK0J101UR	(1)	1000
		6.3	5.8	D	240	0.36	0.26	EEEFK0J101P	(1)	1000
	220	6.3	5.8	D	240	0.36	0.26	EEEFK0J221P	(1)	1000
	330	6.3	7.7	D8	280	0.34	0.26	EEEFK0J331XP	(1)	900
		8	6.2	E	300	0.26	0.26	EEEFK0J331P	(2)	1000
	470	8	10.2	F	600	0.16	0.26	EEEFK0J471P	(2)	500
	1000	8	10.2	F	600	0.16	0.26	EEEFK0J102P	(2)	500
	1500	10	10.2	G	850	0.08	0.26	EEEFK0J152P	(2)	500
3300	12.5	13.5	H13	1100	0.06	0.30	EEVFK0J332Q	(3)	200	
6800	16	16.5	J16	1800	0.035	0.36	EEVFK0J682M	(3)	125	
10	22	4	5.8	B	90	1.35	0.19	EEEFK1A220R	(1)	2000
	33	4	5.8	(B)	90	1.35	0.19	EEEFK1A330UR	(1)	2000
		5	5.8	C	160	0.70	0.19	EEEFK1A330R	(1)	1000
	150	6.3	5.8	D	240	0.36	0.19	EEEFK1A151P	(1)	1000
	220	6.3	7.7	D8	280	0.34	0.19	EEEFK1A221XP	(1)	900
		8	6.2	E	300	0.26	0.19	EEEFK1A221P	(2)	1000
	330	8	10.2	F	600	0.16	0.19	EEEFK1A331P	(2)	500
	470	8	10.2	F	600	0.16	0.19	EEEFK1A471P	(2)	500
	680	8	10.2	F	600	0.16	0.19	EEEFK1A681P	(2)	500
	1000	10	10.2	G	850	0.08	0.19	EEEFK1A102P	(2)	500
	2200	12.5	13.5	H13	1100	0.06	0.21	EEVFK1A222Q	(3)	200
4700	16	16.5	J16	1800	0.035	0.25	EEVFK1A472M	(3)	125	
6800	18	16.5	K16	2060	0.033	0.29	EEVFK1A682M	(3)	125	
16	10	4	5.8	B	90	1.35	0.16	EEEFK1C100R	(1)	2000
	22	4	5.8	(B)	90	1.35	0.16	EEEFK1C220UR	(1)	2000
		5	5.8	C	160	0.70	0.16	EEEFK1C220R	(1)	1000
	47	5	5.8	(C)	160	0.70	0.16	EEEFK1C470UR	(1)	1000
		6.3	5.8	D	240	0.36	0.16	EEEFK1C470P	(1)	1000
	68	6.3	5.8	D	240	0.36	0.16	EEEFK1C680P	(1)	1000
	100	6.3	5.8	D	240	0.36	0.16	EEEFK1C101P	(1)	1000
	150	6.3	7.7	D8	280	0.34	0.16	EEEFK1C151XP	(1)	900
		6.3	7.7	D8	280	0.34	0.16	EEEFK1C221XP	(1)	900
	220	8	6.2	E	300	0.26	0.16	EEEFK1C221P	(2)	1000
	330	8	10.2	F	600	0.16	0.16	EEEFK1C331P	(2)	500
	470	8	10.2	F	600	0.16	0.16	EEEFK1C471P	(2)	500
	680	10	10.2	G	850	0.08	0.16	EEEFK1C681P	(2)	500
	1500	12.5	13.5	H13	1100	0.06	0.16	EEVFK1C152Q	(3)	200
3300	16	16.5	J16	1800	0.035	0.20	EEVFK1C332M	(3)	125	
4700	18	16.5	K16	2060	0.033	0.22	EEVFK1C472M	(3)	125	
25	10	4	5.8	B	90	1.35	0.14	EEEFK1E100R	(1)	2000
	22	5	5.8	C	160	0.70	0.14	EEEFK1E220R	(1)	1000
		5	5.8	(C)	160	0.70	0.14	EEEFK1E330UR	(1)	1000
	33	6.3	5.8	D	240	0.36	0.14	EEEFK1E330P	(1)	1000
		6.3	5.8	D	240	0.36	0.14	EEEFK1E470P	(1)	1000
	68	6.3	5.8	D	240	0.36	0.14	EEEFK1E680P	(1)	1000
	100	6.3	7.7	D8	280	0.34	0.14	EEEFK1E101XP	(1)	900
		8	6.2	E	300	0.26	0.14	EEEFK1E101P	(2)	1000
	150	8	10.2	F	600	0.16	0.14	EEEFK1E151P	(2)	500
	220	8	10.2	F	600	0.16	0.14	EEEFK1E221P	(2)	500
	330	8	10.2	F	600	0.16	0.14	EEEFK1E331P	(2)	500
	470	10	10.2	G	850	0.08	0.14	EEEFK1E471P	(2)	500
	1000	12.5	13.5	H13	1100	0.06	0.14	EEVFK1E102Q	(3)	200
	1500	16	16.5	J16	1800	0.035	0.14	EEVFK1E152M	(3)	125
	2200	16	16.5	J16	1800	0.035	0.16	EEVFK1E222M	(3)	125
	3300	18	16.5	K16	2060	0.033	0.18	EEVFK1E332M	(3)	125

* Size code() : Miniaturization product

· Please refer to the page of "Reflow Profile" and "The Taping Dimensions".

· When requesting vibration-proof product, please put the last "V" instead to "P"

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.

Should a safety concern arise regarding this product, please be sure to contact us immediately.

Characteristics list

Endurance : 105 °C 2000 h (≥ φ12.5 : 5000 h)

Rated voltage (V.DC)	Cap. (±20 %) (μF)	Case size (mm)		Size* code	Specification			Part No.	Reflow	Min. Packaging Qty	
		φD	L		Ripple current (100 kHz) (+105 °C) (mA r.m.s.)	Impedance (100 kHz) (+20 °C) (Ω)	tan δ (120 Hz) (+20 °C)			Taping (pcs)	
35	4.7	4	5.8	B	90	1.35	0.12	EEEFK1V4R7R	(1)	2000	
	10	4	5.8	(B)	90	1.35	0.12	EEEFK1V100UR	(1)	2000	
		5	5.8	C	160	0.70	0.12	EEEFK1V100R	(1)	1000	
	22	5	5.8	C	160	0.70	0.12	EEEFK1V220R	(1)	1000	
	33	6.3	5.8	D	240	0.36	0.12	EEEFK1V330P	(1)	1000	
	47	6.3	5.8	D	240	0.36	0.12	EEEFK1V470P	(1)	1000	
	68	6.3	7.7	D8	280	0.34	0.12	EEEFK1V680XP	(1)	900	
	100	6.3	7.7	D8	280	0.34	0.12	EEEFK1V101XP	(1)	900	
		8	10.2	F	600	0.16	0.12	EEEFK1V101P	(2)	500	
	150	8	10.2	F	600	0.16	0.12	EEEFK1V151P	(2)	500	
	220	8	10.2	F	600	0.16	0.12	EEEFK1V221P	(2)	500	
	330	10	10.2	G	850	0.08	0.12	EEEFK1V331P	(2)	500	
	470	12.5	13.5	H13	1100	0.06	0.12	EEVFK1V471Q	(3)	200	
	680	12.5	13.5	H13	1100	0.06	0.12	EEVFK1V681Q	(3)	200	
	1000	16	16.5	J16	1800	0.035	0.12	EEVFK1V102M	(3)	125	
1500	16	16.5	J16	1800	0.035	0.12	EEVFK1V152M	(3)	125		
50	4.7	4	5.8	B	60	2.90	0.10	EEEFK1H4R7R	(1)	2000	
	10	5	5.8	(C)	85	1.52	0.10	EEEFK1H100UR	(1)	1000	
		6.3	5.8	D	165	0.88	0.10	EEEFK1H100P	(1)	1000	
	22	6.3	5.8	D	165	0.88	0.10	EEEFK1H220P	(1)	1000	
	33	6.3	7.7	D8	195	0.68	0.10	EEEFK1H330XP	(1)	900	
		8	6.2	E	195	0.68	0.10	EEEFK1H330P	(2)	1000	
	47	6.3	7.7	D8	195	0.68	0.10	EEEFK1H470XP	(1)	900	
		8	6.2	E	195	0.68	0.10	EEEFK1H470P	(2)	1000	
	100	8	10.2	F	350	0.34	0.10	EEEFK1H101P	(2)	500	
	150	10	10.2	G	670	0.18	0.10	EEEFK1H151P	(2)	500	
	220	10	10.2	G	670	0.18	0.10	EEEFK1H221P	(2)	500	
	330	12.5	13.5	H13	900	0.12	0.10	EEVFK1H331Q	(3)	200	
	390	12.5	13.5	H13	900	0.12	0.10	EEVFK1H391Q	(3)	200	
	470	16	16.5	J16	1610	0.073	0.10	EEVFK1H471M	(3)	125	
	560	16	16.5	J16	1610	0.073	0.10	EEVFK1H561M	(3)	125	
680	16	16.5	J16	1610	0.073	0.10	EEVFK1H681M	(3)	125		
1000	16	16.5	J16	1610	0.073	0.10	EEVFK1H102M	(3)	125		
63	4.7	5	5.8	C	50	3.00	0.08	EEEFK1J4R7R	(1)	1000	
	10	6.3	5.8	D	80	1.50	0.08	EEEFK1J100P	(1)	1000	
	22	6.3	7.7	D8	120	1.20	0.08	EEEFK1J220XP	(1)	900	
		8	6.2	E	120	1.20	0.08	EEEFK1J220P	(2)	1000	
	33	8	10.2	F	250	0.65	0.08	EEEFK1J330P	(2)	500	
	47	8	10.2	F	250	0.65	0.08	EEEFK1J470P	(2)	500	
	68	8	10.2	(F)	250	0.65	0.08	EEEFK1J680UP	(2)	500	
	100	10	10.2	G	400	0.35	0.08	EEEFK1J101P	(2)	500	
	150	12.5	13.5	H13	800	0.16	0.08	EEVFK1J151Q	(3)	200	
	220	12.5	13.5	H13	800	0.16	0.08	EEVFK1J221Q	(3)	200	
	470	16	16.5	J16	1410	0.082	0.08	EEVFK1J471M	(3)	125	
	680	18	16.5	K16	1690	0.08	0.08	EEVFK1J681M	(3)	125	
	3.3	5	5.8	C	25	5.00	0.08	EEEFK1K3R3R	(1)	1000	
	4.7	6.3	5.8	D	40	3.00	0.08	EEEFK1K4R7P	(1)	1000	
		6.3	7.7	D8	60	2.40	0.08	EEEFK1K100XP	(1)	900	
10	8	6.2	E	60	2.40	0.08	EEEFK1K100P	(2)	1000		
	8	10.2	F	130	1.30	0.08	EEEFK1K220P	(2)	500		
33	8	10.2	F	130	1.30	0.08	EEEFK1K330P	(2)	500		
47	10	10.2	G	200	0.70	0.08	EEEFK1K470P	(2)	500		
68	12.5	13.5	H13	500	0.32	0.08	EEVFK1K680Q	(3)	200		
100	12.5	13.5	H13	500	0.32	0.08	EEVFK1K101Q	(3)	200		
150	12.5	13.5	H13	500	0.32	0.08	EEVFK1K151Q	(3)	200		
330	16	16.5	J16	793	0.17	0.08	EEVFK1K331M	(3)	125		
470	18	16.5	K16	917	0.153	0.08	EEVFK1K471M	(3)	125		

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 · Please refer to the page of "Reflow Profile" and "The Taping Dimensions".
 · When requesting vibration-proof product, please put the last "V" instead to "P"

Characteristics list

Endurance : 105 °C 2000 h (≥ φ12.5 : 5000 h)

Rated voltage (V.DC)	Cap. (±20 %) (μF)	Case size (mm)		Size* code	Specification			Part No.	Reflow	Min. Packaging Qty	
		φD	L		Ripple current (100 kHz) (+105 °C) (mA r.m.s.)	Impedance (100 kHz) (+20 °C) (Ω)	tan δ (120 Hz) (+20 °C)			Taping (pcs)	
100	22	8	10.2	F	130	1.30	0.07	EEEFK2A220P	(2)	500	
	33	10	10.2	G	200	0.70	0.07	EEEFK2A330P	(2)	500	
	47	12.5	13.5	H13	500	0.32	0.07	EEVFK2A470Q	(3)	200	
	68	12.5	13.5	H13	500	0.32	0.07	EEVFK2A680Q	(3)	200	
	100	16	16.5	J16	793	0.17	0.07	EEVFK2A101M	(3)	125	
	150	16	16.5	J16	793	0.17	0.07	EEVFK2A151M	(3)	125	
	220	18	16.5	K16	917	0.153	0.07	EEVFK2A221M	(3)	125	
	330	18	16.5	K16	917	0.153	0.07	EEVFK2A331M	(3)	125	

* Size code() : Miniaturization product

· Please refer to the page of "Reflow Profile" and "The Taping Dimensions".

Characteristics list

Endurance : 105 °C 5000 h

Rated voltage (V.DC)	Cap. (±20 %) (μF)	Case size (mm)		Size* code	Specification			Part No.	Reflow	Min. Packaging Qty	
		φD	L		Ripple current (100 kHz) (+105 °C) (mA r.m.s.)	Impedance (100 kHz) (+20 °C) (Ω)	tan δ (120 Hz) (+20 °C)			Taping (pcs)	
6.3	470	8	10.2	F	600	0.16	0.26	EEEFK0J471GP	(2)	500	
	1000	8	10.2	F	600	0.16	0.26	EEEFK0J102GP	(2)	500	
	1500	10	10.2	G	850	0.08	0.26	EEEFK0J152GP	(2)	500	
10	330	8	10.2	F	600	0.16	0.19	EEEFK1A331GP	(2)	500	
	470	8	10.2	F	600	0.16	0.19	EEEFK1A471GP	(2)	500	
	680	8	10.2	F	600	0.16	0.19	EEEFK1A681GP	(2)	500	
	1000	10	10.2	G	850	0.08	0.19	EEEFK1A102GP	(2)	500	
16	330	8	10.2	F	600	0.16	0.16	EEEFK1C331GP	(2)	500	
	470	8	10.2	F	600	0.16	0.16	EEEFK1C471GP	(2)	500	
	680	10	10.2	G	850	0.08	0.16	EEEFK1C681GP	(2)	500	
25	150	8	10.2	F	600	0.16	0.14	EEEFK1E151GP	(2)	500	
	220	8	10.2	F	600	0.16	0.14	EEEFK1E221GP	(2)	500	
	330	8	10.2	F	600	0.16	0.14	EEEFK1E331GP	(2)	500	
	470	10	10.2	G	850	0.08	0.14	EEEFK1E471GP	(2)	500	
35	100	8	10.2	F	600	0.16	0.12	EEEFK1V101GP	(2)	500	
	150	8	10.2	F	600	0.16	0.12	EEEFK1V151GP	(2)	500	
	220	8	10.2	F	600	0.16	0.12	EEEFK1V221GP	(2)	500	
	330	10	10.2	G	850	0.08	0.12	EEEFK1V331GP	(2)	500	
50	100	8	10.2	F	350	0.34	0.10	EEEFK1H101GP	(2)	500	
	150	10	10.2	G	670	0.18	0.10	EEEFK1H151GP	(2)	500	
	220	10	10.2	G	670	0.18	0.10	EEEFK1H221GP	(2)	500	

· Please refer to the page of "Reflow Profile" and "The Taping Dimensions".

· When requesting vibration-proof product, please put the last "V" instead to "P"