

### Surface Mount Type

Series: **FK** Type : **V**  
**FK** High temperature Lead-Free reflow (suffix:A\*)

Country of Origin

Japan



- **Features**
  - Endurance: 2000 to 5000h at 105°C
  - Low impedance (40 to 60% less than FC series)
  - Miniaturized(30 to 50% less than FC series)
  - Vibration-proof product is available upon request.( $\phi 8 \leq$ )
  - RoHS directive compliant(Parts No  $\phi 4$  to  $\phi 10$ :EEE\*,  $\phi 12.5$  to :EEV\*)

#### ■ Specifications

Category temp. range	-55 to +105°C										
Rated W.V. Range	6.3 to 100V .DC										
Nominal Cap. Range	3.3 to 6800 $\mu$ F										
Capacitance Tolerance	$\pm 20\%$ (120Hz/+20°C)										
DC Leakage Current	$I \leq 0.01CV$ or $3(\mu A)$ After 2 minutes application of rated working voltage at +20°C. (Whichever is greater)										
tan $\delta$	Please see the attached standard products list										
Characteristics at Low Temperature	W.V. (V)	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 at +105 $\pm$ 2°C for 2000 hours ( $\geq$ dia.12.5 and suffix "G" in dia.8 $\times$ 10.2, dia.10 $\times$ 10.2 are 5000 hours)the capacitors shall meet the limits specified below. Post-test requirement at +20°C.										
	Capacitance change	$\pm 30\%$ of initial measured value (Suffix "G" is 35%)									
	tan $\delta$	$\leq 200\%$ of initial specified value (Suffix "G" is 300%)									
	DC leakage current	$\leq$ initial specified value									
Shelf Life	After storage for 1000 hours at +105 $\pm$ 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 and then being stabilized at +20°C, capacitor shall meet the following limits.										
	Capacitance change	$\pm 10\%$ of initial measured value									
	tan $\delta$	$\leq$ initial specified value									
	DC leakage current	$\leq$ initial specified value									

#### ■ Marking

Example.16V10 $\mu$ F Marking color : BLACK  
 Lead-Free products( $\leq \phi 10$ )

Mark for Lead-Free products (Black circle)

( $\geq \phi 12.5$ )

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

(mm)

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 $\pm$ 0.1	1.0	0.35 -0.20 to +0.15
C	5.0	5.8	5.3	6.5	2.2	0.65 $\pm$ 0.1	1.5	0.35 -0.20 to +0.15
D	6.3	5.8	6.6	7.8	2.6	0.65 $\pm$ 0.1	1.8	0.35 -0.20 to +0.15
D8	6.3	7.7	6.6	7.8	2.6	0.65 $\pm$ 0.1	1.8	0.35 -0.20 to +0.15
E	8.0	6.2	8.3	9.5	3.4	0.65 $\pm$ 0.1	2.2	0.35 -0.20 to +0.15
F	8.0	10.2	8.3	10.0	3.4	0.90 $\pm$ 0.2	3.1	0.70 $\pm$ 0.20
G	10.0	10.2	10.3	12.0	3.5	0.90 $\pm$ 0.2	4.6	0.70 $\pm$ 0.20
H13	12.5	13.5	13.5	15.0	4.7	0.90 $\pm$ 0.3	4.4	0.70 $\pm$ 0.30
J16	16.0	16.5	17.0	19.0	5.5	1.20 $\pm$ 0.3	6.7	0.70 $\pm$ 0.30
K16	18.0	16.5	19.0	21.0	6.7	1.20 $\pm$ 0.3	6.7	0.70 $\pm$ 0.30

### ■ Case size VS Capacitance, Impedance and Ripple current

Impedance;( $\Omega/100\text{kHz}, +20^\circ\text{C}$ ),  
Ripple current;(mA r.m.s./100kHz+105°C) ( ): Miniaturization type

Capacitance ( $\mu\text{F}$ )	W.V.	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)	0.70(1.35)	160(90)	
33				C(B)	0.70(1.35)	160(90)				
47	C(B)	0.70(1.35)	160(90)				D(C)	0.36(0.70)	240(160)	
68							D	0.36	240	
100	D(C)	0.36(0.70)	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				

Capacitance ( $\mu\text{F}$ )	W.V.	25			35			50		
		Size	Impedance	Ripple current	Size	Impedance	Ripple current	Size	Impedance	Ripple current
4.7				B	1.35	90	B	2.90	60	
10	B	1.35	90	C(B)	0.70(1.35)	160(90)	D(C)	0.88(1.52)	165(85)	
22	C	0.70	160	C	0.70	160	D	0.88	165	
33	D(C)	0.36(0.70)	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	
560							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	J16	0.035	1800				
2200	J16	0.035	1800							
3300	K16	0.033	2060							

Capacitance ( $\mu\text{F}$ )	W.V.	63			80			100		
		Size	Impedance	Ripple current	Size	Impedance	Ripple current	Size	Impedance	Ripple current
3.3				C	5.00	25				
4.7	C	3.00	50	D	3.00	40				
10	D	1.50	80	D8	2.40	60				
				E	2.40	60				
22	D8	1.20	120	F	1.30	130	F	1.30	130	
	E	1.20	120							
33	F	0.65	250	F	1.30	130	G	0.70	200	
47	F	0.65	250	G	0.70	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							

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■ Standard Products

Endurance: 105°C 2000h, ≥dia12.5:5000h)

W.V. (V)	Cap. (±20%) (μF)	Case size			Specification			Part No. (RoHS:compliant)	Min. Packaging Qty	
		Dia. (mm)	Length (mm)	Size Code	Ripple current (100kHz) (+105°C) (mA)	Impedance (100kHz) (+20°C) (Ω)	tan δ (120Hz) (+20°C)		Reflow	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
	220	6.3	7.7	D8	280	0.34	0.16	EEEFK1C221XP	(1)	900
		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

The taping dimensions are explained on p.195 of our Catalog. Please use it as a reference guide.  
Reflow Profile(Fig-1 to Fig-6) listed on p.193 of our Catalog.

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.

Apr. 2006

### ■ Standard Products

Endurance: 105°C 2000h, ≥dia12.5:5000h)

W.V.	Cap. (±20%)  (μF)	Case size			Specification			Part No. (RoHS:compliant)	Min. Packaging Q'ty	
		Dia. (mm)	Length (mm)	Size Code	Ripple current (100kHz) (+105°C) (mA)	Impe- dance (100kHz) (+20°C) (Ω)	tan δ (120Hz) (+20°C)			Reflow Taping (pcs)
25	33	5	5.8	C	160	0.70	0.14	EEEFK1E330UR	(1)	1000
		6.3	5.8	D	240	0.36	0.14	EEEFK1E330P	(1)	1000
	47	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	
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	

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Reflow Profile(Fig-1 to Fig-6) listed on p.193 of our Catalog.

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### Standard Products

Endurance: 105°C 2000h, ≥dia12.5:5000h

W.V. (V)	Cap. (±20%) (μF)	Case size			Specification			Part No. (RoHS:compliant)	Reflow	Min. Packaging Q'ty
		Dia. (mm)	Length (mm)	Size Code	Ripple current (100kHz) (+105°C) (mA)	Impe- dance (100kHz) (+20°C) (Ω)	tan δ (120Hz) (+20°C)			Taping (pcs)
50	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	
80	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
	10	6.3	7.7	D8	60	2.40	0.08	EEEFK1K100XP	(1)	900
		8	6.2	E	60	2.40	0.08	EEEFK1K100P	(2)	1000
	22	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	
100	22	8.0	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

The taping dimensions are explained on p.195 of our Catalog.

Please use it as a reference guide.

Reflow Profile(Fig-1 to Fig-6) listed on p.193 of our Catalog.

### ■ Endurance 5000h Products

Endurance: 105°C 5000h

W.V. (V)	Cap. (±20%) (μF)	Case size			Specification			Part No. (RoHS:compliant)	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)		Reflow	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	EEEFK1V471GP	(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

### ■ High temperature Lead-Free reflow Products

Endurance: 105°C 2000h

W.V. (V)	Cap. (±20%) (μF)	Case size			Specification			Part No. (RoHS:compliant)	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)		Reflow	Taping (pcs)
6.3	22	4	5.8	B	90	1.35	0.26	EEEFK0J220AR	(5)	2000
	47	4	5.8	B	90	1.35	0.26	EEEFKJ470UAR	(5)	2000
		5	5.8	C	160	0.70	0.26	EEEFK0J470AR	(5)	1000
	100	5	5.8	C	160	0.70	0.26	EEEFKJ101UAR	(5)	1000
		6.3	5.8	D	240	0.36	0.26	EEEFK0J101AP	(5)	1000
	220	6.3	5.8	D	240	0.36	0.26	EEEFK0J221AP	(5)	1000
	330	6.3	7.7	D8	280	0.34	0.26	EEEFKJ331XAP	(5)	900
		8	6.2	E	300	0.26	0.26	EEEFK0J331AP	(6)	1000
	470	8	10.2	F	600	0.16	0.26	EEEFK0J471AP	(6)	500
	1000	8	10.2	F	600	0.16	0.26	EEEFK0J102AP	(6)	500
1500	10	10.2	G	850	0.08	0.26	EEEFK0J152AP	(6)	500	
10	22	4	5.8	B	90	1.35	0.19	EEEFK1A220AR	(5)	2000
	33	4	5.8	B	90	1.35	0.19	EEEFKA330UAR	(5)	2000
		5	5.8	C	160	0.70	0.19	EEEFK1A330AR	(5)	1000
	150	6.3	5.8	D	240	0.36	0.19	EEEFK1A151AP	(5)	1000
	220	6.3	7.7	D8	280	0.34	0.19	EEEFKA221XAP	(5)	900
		8	6.2	E	300	0.26	0.19	EEEFK1A221AP	(6)	1000

If part number exceeds 12 digits, voltage code is abbreviated as follows; 0J→J, 1A→A, 1C→C, 1E→E, 1V→V  
 The taping dimensions are explained on p.195 of our Catalog. Please use it as a reference guide.  
 Reflow Profile(Fig-1 to Fig-6) listed on p.193 of our Catalog.

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. Apr. 2006

### High temperature Lead-Free reflow Products

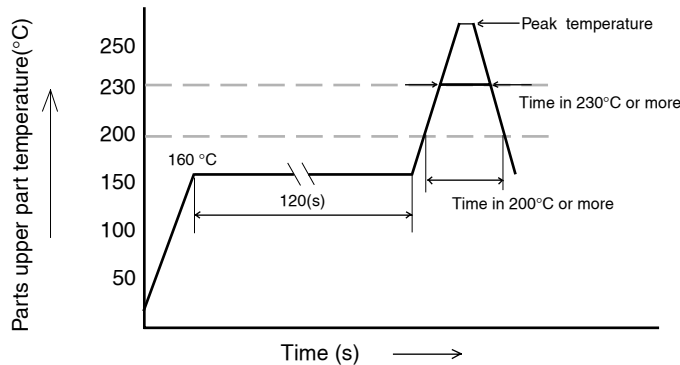
Endurance: 105°C 2000h

W.V. (V)	Cap. (±20%) (μF)	Case size			Specification			Part No. (RoHS:compliant)	Min. Packaging Q'ty	
		Dia. (mm)	Length (mm)	Size Code	Ripple current (100kHz) (+105°C) (mA)	Impe- dance (100kHz) (+20°C) (Ω)	tan δ (120Hz) (+20°C)			Reflow
10	330	8	10.2	F	600	0.16	0.19	EEEFK1A331AP	(6)	500
	470	8	10.2	F	600	0.16	0.19	EEEFK1A471AP	(6)	500
	680	8	10.2	F	600	0.16	0.19	EEEFK1A681AP	(6)	500
	1000	10	10.2	G	850	0.08	0.19	EEEFK1A102AP	(6)	500
16	10	4	5.8	B	90	1.35	0.16	EEEFK1C100AR	(5)	2000
		22	4	5.8	B	90	1.35	0.16	EEEFK220UAR	(5)
	47	5	5.8	C	160	0.70	0.16	EEEFK1C220AR	(5)	1000
		6.3	5.8	C	160	0.70	0.16	EEEFK470UAR	(5)	1000
	68	5	5.8	C	160	0.70	0.16	EEEFK1C470AP	(5)	1000
		6.3	5.8	D	240	0.36	0.16	EEEFK1C680AP	(5)	1000
	100	6.3	5.8	D	240	0.36	0.16	EEEFK1C101AP	(5)	1000
	150	6.3	7.7	D8	280	0.34	0.16	EEEFK1C151XAP	(5)	900
	220	6.3	7.7	D8	280	0.34	0.16	EEEFK221XAP	(5)	900
		8	6.2	E	300	0.26	0.16	EEEFK1C221AP	(6)	1000
	330	8	10.2	F	600	0.16	0.16	EEEFK1C331AP	(6)	500
	470	8	10.2	F	600	0.16	0.16	EEEFK1C471AP	(6)	500
680	10	10.2	G	850	0.08	0.16	EEEFK1C681AP	(6)	500	
25	10	4	5.8	B	90	1.35	0.14	EEEFK1E100AR	(5)	2000
		22	5	5.8	C	160	0.70	0.14	EEEFK1E220AR	(5)
	33	5	5.8	C	160	0.70	0.14	EEEFK330UAR	(5)	1000
		6.3	5.8	D	240	0.36	0.14	EEEFK1E330AP	(5)	1000
	47	6.3	5.8	D	240	0.36	0.14	EEEFK1E470AP	(5)	1000
	68	6.3	5.8	D	240	0.36	0.14	EEEFK1E680AP	(5)	1000
	100	6.3	7.7	D8	280	0.34	0.14	EEEFK1E101XAP	(5)	900
		8	6.2	E	300	0.26	0.14	EEEFK1E101AP	(6)	1000
	150	8	10.2	F	600	0.16	0.14	EEEFK1E151AP	(6)	500
	220	8	10.2	F	600	0.16	0.14	EEEFK1E221AP	(6)	500
	330	8	10.2	F	600	0.16	0.14	EEEFK1E331AP	(6)	500
	470	10	10.2	G	850	0.08	0.14	EEEFK1E471AP	(6)	500
35	4.7	4	5.8	B	90	1.35	0.12	EEEFK1V4R7AR	(5)	2000
	10	4	5.8	B	90	1.35	0.12	EEEFKV100UAR	(5)	2000
		5	5.8	C	160	0.70	0.12	EEEFK1V100AR	(5)	1000
	22	5	5.8	C	160	0.70	0.12	EEEFK1V220AR	(5)	1000
	33	6.3	5.8	D	240	0.36	0.12	EEEFK1V330AP	(5)	1000
	47	6.3	5.8	D	240	0.36	0.12	EEEFK1V470AP	(5)	1000
	68	6.3	7.7	D8	280	0.34	0.12	EEEFKV680XAP	(5)	900
	100	8	10.2	F	600	0.16	0.12	EEEFK1V101AP	(6)	500
	150	8	10.2	F	600	0.16	0.12	EEEFK1V151AP	(6)	500
	220	8	10.2	F	600	0.16	0.12	EEEFK1V221AP	(6)	500
330	10	10.2	G	850	0.08	0.12	EEEFK1V331AP	(6)	500	

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 Reflow Profile(Fig-1 to Fig-6) listed on p.193 of our Catalog.

■ Reflow guaranteed condition

● RoHS compliant



### Lead-Free reflow

Reflow No	Fig.(1)	Fig.(2)	Fig.(3)	Fig.(4)
Category	φ 3 to φ 6.3	φ 8 to φ 10	φ 12.5 to φ 18	EB series only (φ 10 to φ 18)
Peak temperature	250°C	235°C	230°C (220°C)	230°C
Time in peak temperature	5s	5s	5s (s)	5s
Time in 200°C or more	60s	60s	20s (30s)	20s
Time of reflow	1 time	1 time	1 time	1 time

### High temperature Lead-Free reflow

Reflow No	Fig.(5)	Fig.(6)
Category	φ 4 to φ 6.3	φ 8 to φ 10
Peak temperature	260°C (255°C)	245°C
Time around peak temperature	5s in (10s) in 250°C or more	10s in 240°C or more
Time in 230°C or more	30s	30s
Time in 200°C or more	70s	70s
Time of reflow	2 times	2 times

● RoHS not compliant

Category	Dia. φ3 to φ 6.3 EEV- , ECEV- Part No.	Dia. φ8 to φ 10 EEV- , ECEV- Part No.
Reflow condition	<p>Peak temperature/ Time in 200°C or more</p>	<p>Peak temperature/ Time in 200°C or more</p>

\* For reflow, use athermal condition system such as infrared radiation(IR) or hot blast.

\* Vapor heat transfer systems(VPS) are not recommended.

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