

### Surface Mount Type

Series: **FC** Type: **V**



#### ■ Features

- Endurance : 105 °C 1000 h
- Low impedance (1/2 for HA series)
- Vibration-proof product is available upon request. ( $\phi 8 \leq$ )
- RoHS directive compliant

#### ■ Specifications

Category Temp. Range	-40 °C to +105 °C							
Rated W.V. Range	6.3 V.DC to 50 V.DC							
Nominal Cap. Range	1 $\mu$ F to 1500 $\mu$ F							
Capacitance Tolerance	$\pm 20$ % (120 Hz/+20 °C)							
DC Leakage Current	$I \leq 0.01 CV$ or 3 ( $\mu$ A) After 2 minutes (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	(Impedance ratio at 120 Hz)
	Z(-25 °C) / Z(+20 °C)	2	2	2	2	2	2	
	Z(-40 °C) / Z(+20 °C)	3	3	3	3	3	3	
Endurance	After applying rated working voltage for 1000 hours at +105 °C $\pm 2$ °C and then being stabilized at +20 °C, Capacitors shall meet the following limits.							
	Capacitance change	$\pm 20$ % of initial measured value						
	$\tan \delta$	$\leq 200$ % of initial specified value						
	DC leakage current	$\leq$ initial specified value						
Shelf Life	After storage for 1000 hours at +105 °C $\pm 2$ °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance.(With voltage treatment)							
	After reflow soldering and then being stabilized at +20 °C, capacitor shall meet the following limits.							
Resistance to Soldering Heat	Capacitance change	$\pm 10$ % of initial measured value						
	$\tan \delta$	$\leq$ initial specified value						
	DC leakage current	$\leq$ initial specified value						

#### ■ Marking

Example: 6.3 V 22  $\mu$ F  
Marking color : BLACK

Rated Voltage Mark

j	6.3 V
A	10 V
C	16 V
E	25 V
V	35 V
H	50 V

#### ■ Dimensions in mm (not to scale)

( ) reference size

Size code	D	L	A, B	H max.	I	W	P	K
B	4.0	5.4	4.3	5.5	1.8	0.65 $\pm 0.1$	1.0	0.35-0.20 to +0.15
C	5.0	5.4	5.3	6.5	2.2	0.65 $\pm 0.1$	1.5	0.35-0.20 to +0.15
D	6.3	5.4	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 $\pm 0.2$
G*	10.0	10.2	10.3	12.0	3.5	0.90 $\pm 0.2$	4.6	0.70 $\pm 0.2$

(mm)

■ Standard Products

Endurance : 105 °C 1000 h

W.V.	Cap. (±20 %)	Case size			Specification			Part No. (RoHS:compliant)	Reflow	Min. Packaging Q'ty
		Dia.	Length	Size Code	Ripple Current (100 kHz) (+105°C) (mA r.m.s.)	tan δ (120 Hz) (+20 °C)	Impedance (100 kHz) (+20 °C) (Ω)			Taping  (pcs)
(V)	(μF)	(mm)	(mm)							
6.3	22	4	5.4	B	60	0.26	3.00	EEEF0J220R	(1)	2000
	47	5	5.4	C	95	0.26	1.80	EEEF0J470R	(1)	1000
	68	6.3	5.4	D	140	0.26	1.00	EEEF0J680P	(1)	1000
	100	6.3	5.4	D	140	0.26	1.00	EEEF0J101P	(1)	1000
	220	8	6.2	E	230	0.26	0.40	EEEF0J221P	(2)	1000
	330	8	10.2	F	450	0.26	0.30	EEEF0J331P	(2)	500
	1000	10	10.2	G	670	0.26	0.15	EEEF0J102P	(2)	500
10	1500	10	10.2	G	670	0.26	0.15	EEEF0J152P	(2)	500
	33	5	5.4	C	95	0.19	1.80	EEEF1A330R	(1)	1000
	100	8	6.2	E	230	0.19	0.40	EEEF1A101P	(2)	1000
	150	8	6.2	E	230	0.19	0.40	EEEF1A151P	(2)	1000
	220	8	10.2	F	450	0.19	0.30	EEEF1A221P	(2)	500
	470	10	10.2	G	670	0.19	0.15	EEEF1A471P	(2)	500
16	1000	10	10.2	G	670	0.19	0.15	EEEF1A102P	(2)	500
	10	4	5.4	B	60	0.16	3.00	EEEF1C100R	(1)	2000
	22	5	5.4	C	95	0.16	1.80	EEEF1C220R	(1)	1000
	47	6.3	5.4	D	140	0.16	1.00	EEEF1C470P	(1)	1000
	68	8	6.2	E	230	0.16	0.40	EEEF1C680P	(2)	1000
	100	8	6.2	E	230	0.16	0.40	EEEF1C101P	(2)	1000
	220	10	10.2	G	670	0.16	0.15	EEEF1C221P	(2)	500
	330	10	10.2	G	670	0.16	0.15	EEEF1C331P	(2)	500
	470	10	10.2	G	670	0.16	0.15	EEEF1C471P	(2)	500
	680	10	10.2	G	670	0.16	0.15	EEEF1C681P	(2)	500
25	6.8	4	5.4	B	60	0.14	3.00	EEEF1E6R8R	(1)	2000
	22	6.3	5.4	D	140	0.14	1.00	EEEF1E220P	(1)	1000
	33	6.3	5.4	D	140	0.14	1.00	EEEF1E330P	(1)	1000
	47	8	6.2	E	230	0.14	0.40	EEEF1E470P	(2)	1000
	68	8	10.2	F	450	0.14	0.30	EEEF1E680P	(2)	500
	100	8	10.2	F	450	0.14	0.30	EEEF1E101P	(2)	500
	220	10	10.2	G	670	0.14	0.15	EEEF1E221P	(2)	500
	330	10	10.2	G	670	0.14	0.15	EEEF1E331P	(2)	500
35	470	10	10.2	G	670	0.14	0.15	EEEF1E471P	(2)	500
	1	4	5.4	B	60	0.12	3.00	EEEF1V1R0R	(1)	2000
	2.2	4	5.4	B	60	0.12	3.00	EEEF1V2R2R	(1)	2000
	3.3	4	5.4	B	60	0.12	3.00	EEEF1V3R3R	(1)	2000
	4.7	4	5.4	B	60	0.12	3.00	EEEF1V4R7R	(1)	2000
	6.8	5	5.4	C	95	0.12	1.80	EEEF1V6R8R	(1)	1000
	10	5	5.4	C	95	0.12	1.80	EEEF1V100R	(1)	1000
	22	6.3	5.4	D	140	0.12	1.00	EEEF1V220P	(1)	1000
	33	8	6.2	E	230	0.12	0.40	EEEF1V330P	(2)	1000
	47	8	6.2	E	230	0.12	0.40	EEEF1V470P	(2)	1000
	100	10	10.2	G	670	0.12	0.15	EEEF1V101P	(2)	500
50	220	10	10.2	G	670	0.12	0.15	EEEF1V221P	(2)	500
	330	10	10.2	G	670	0.12	0.15	EEEF1V331P	(2)	500
	1	4	5.4	B	30	0.12	5.00	EEEF1H1R0R	(1)	2000
	2.2	4	5.4	B	30	0.12	5.00	EEEF1H2R2R	(1)	2000
	3.3	4	5.4	B	30	0.12	5.00	EEEF1H3R3R	(1)	2000
	4.7	5	5.4	C	50	0.12	3.00	EEEF1H4R7R	(1)	1000
	10	6.3	5.4	D	70	0.12	2.00	EEEF1H100P	(1)	1000
	22	8	6.2	E	120	0.12	0.70	EEEF1H220P	(2)	1000
	33	8	10.2	F	300	0.12	0.60	EEEF1H330P	(2)	500
47	10	10.2	G	500	0.12	0.30	EEEF1H470P	(2)	500	
100	10	10.2	G	500	0.12	0.30	EEEF1H101P	(2)	500	
220	10	10.2	G	500	0.12	0.30	EEEF1H221P	(2)	500	

The taping dimensions are explained on p.177 of our Catalog.  
Please use it as a reference guide.  
Reflow Profile (Fig-1 to Fig-11) listed on p.175 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.