

### Surface Mount Type

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

Low impedance



#### ■ 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

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)

Size code	D	L	A, B	H	I	W	P	K
B	4.0	5.4 <sup>+0.1</sup> <sub>-0.2</sub>	4.3	5.5 max.	1.8	0.65 $\pm$ 0.1	1.0	0.35 <sup>+0.15</sup> <sub>-0.20</sub>
C	5.0	5.4 <sup>+0.1</sup> <sub>-0.2</sub>	5.3	6.5 max.	2.2	0.65 $\pm$ 0.1	1.5	0.35 <sup>+0.15</sup> <sub>-0.20</sub>
D	6.3	5.4 <sup>+0.1</sup> <sub>-0.2</sub>	6.6	7.8 max.	2.6	0.65 $\pm$ 0.1	1.8	0.35 <sup>+0.15</sup> <sub>-0.20</sub>
E	8.0	6.2 $\pm$ 0.3	8.3	9.5 max.	3.4	0.65 $\pm$ 0.1	2.2	0.35 <sup>+0.15</sup> <sub>-0.20</sub>
F	8.0	10.2 $\pm$ 0.3	8.3	10.0 max.	3.4	0.90 $\pm$ 0.2	3.1	0.70 $\pm$ 0.2
G	10.0	10.2 $\pm$ 0.3	10.3	12.0 max.	3.5	0.90 $\pm$ 0.2	4.6	0.70 $\pm$ 0.2

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00 Sep. 2010

■ 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	EEEFC0J220R	(1)	2000	
	47	5	5.4	C	95	0.26	1.80	EEEFC0J470R	(1)	1000	
	68	6.3	5.4	D	140	0.26	1.00	EEEFC0J680P	(1)	1000	
	100	6.3	5.4	D	140	0.26	1.00	EEEFC0J101P	(1)	1000	
	220	8	6.2	E	230	0.26	0.40	EEEFC0J221P	(2)	1000	
	330	8	10.2	F	450	0.26	0.30	EEEFC0J331P	(2)	500	
	1000	10	10.2	G	670	0.26	0.15	EEEFC0J102P	(2)	500	
	1500	10	10.2	G	670	0.26	0.15	EEEFC0J152P	(2)	500	
10	33	5	5.4	C	95	0.19	1.80	EEEFC1A330R	(1)	1000	
	100	8	6.2	E	230	0.19	0.40	EEEFC1A101P	(2)	1000	
	150	8	6.2	E	230	0.19	0.40	EEEFC1A151P	(2)	1000	
	220	8	10.2	F	450	0.19	0.30	EEEFC1A221P	(2)	500	
	470	10	10.2	G	670	0.19	0.15	EEEFC1A471P	(2)	500	
	1000	10	10.2	G	670	0.19	0.15	EEEFC1A102P	(2)	500	
16	10	4	5.4	B	60	0.16	3.00	EEEFC1C100R	(1)	2000	
	22	5	5.4	C	95	0.16	1.80	EEEFC1C220R	(1)	1000	
	47	6.3	5.4	D	140	0.16	1.00	EEEFC1C470P	(1)	1000	
	68	8	6.2	E	230	0.16	0.40	EEEFC1C680P	(2)	1000	
	100	8	6.2	E	230	0.16	0.40	EEEFC1C101P	(2)	1000	
	220	10	10.2	G	670	0.16	0.15	EEEFC1C221P	(2)	500	
	330	10	10.2	G	670	0.16	0.15	EEEFC1C331P	(2)	500	
	470	10	10.2	G	670	0.16	0.15	EEEFC1C471P	(2)	500	
	680	10	10.2	G	670	0.16	0.15	EEEFC1C681P	(2)	500	
25	6.8	4	5.4	B	60	0.14	3.00	EEEFC1E6R8R	(1)	2000	
	22	6.3	5.4	D	140	0.14	1.00	EEEFC1E220P	(1)	1000	
	33	6.3	5.4	D	140	0.14	1.00	EEEFC1E330P	(1)	1000	
	47	8	6.2	E	230	0.14	0.40	EEEFC1E470P	(2)	1000	
	68	8	10.2	F	450	0.14	0.30	EEEFC1E680P	(2)	500	
	100	8	10.2	F	450	0.14	0.30	EEEFC1E101P	(2)	500	
	220	10	10.2	G	670	0.14	0.15	EEEFC1E221P	(2)	500	
	330	10	10.2	G	670	0.14	0.15	EEEFC1E331P	(2)	500	
	470	10	10.2	G	670	0.14	0.15	EEEFC1E471P	(2)	500	
35	1	4	5.4	B	60	0.12	3.00	EEEFC1V1R0R	(1)	2000	
	2.2	4	5.4	B	60	0.12	3.00	EEEFC1V2R2R	(1)	2000	
	3.3	4	5.4	B	60	0.12	3.00	EEEFC1V3R3R	(1)	2000	
	4.7	4	5.4	B	60	0.12	3.00	EEEFC1V4R7R	(1)	2000	
	6.8	5	5.4	C	95	0.12	1.80	EEEFC1V6R8R	(1)	1000	
	10	5	5.4	C	95	0.12	1.80	EEEFC1V100R	(1)	1000	
	22	6.3	5.4	D	140	0.12	1.00	EEEFC1V220P	(1)	1000	
	33	8	6.2	E	230	0.12	0.40	EEEFC1V330P	(2)	1000	
	47	8	6.2	E	230	0.12	0.40	EEEFC1V470P	(2)	1000	
	100	10	10.2	G	670	0.12	0.15	EEEFC1V101P	(2)	500	
	220	10	10.2	G	670	0.12	0.15	EEEFC1V221P	(2)	500	
	330	10	10.2	G	670	0.12	0.15	EEEFC1V331P	(2)	500	
	50	1	4	5.4	B	30	0.12	5.00	EEEFC1H1R0R	(1)	2000
		2.2	4	5.4	B	30	0.12	5.00	EEEFC1H2R2R	(1)	2000
3.3		4	5.4	B	30	0.12	5.00	EEEFC1H3R3R	(1)	2000	
4.7		5	5.4	C	50	0.12	3.00	EEEFC1H4R7R	(1)	1000	
10		6.3	5.4	D	70	0.12	2.00	EEEFC1H100P	(1)	1000	
22		8	6.2	E	120	0.12	0.70	EEEFC1H220P	(2)	1000	
33		8	10.2	F	300	0.12	0.60	EEEFC1H330P	(2)	500	
47		10	10.2	G	500	0.12	0.30	EEEFC1H470P	(2)	500	
100		10	10.2	G	500	0.12	0.30	EEEFC1H101P	(2)	500	
220		10	10.2	G	500	0.12	0.30	EEEFC1H221P	(2)	500	

The taping dimensions are explained on EE188 of our Catalog.  
Please use it as a reference guide.  
Reflow Profile (Fig-1 to Fig-11) listed on EE186 of our Catalog.

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