

Surface Mount Type

Series: **FP** Type: **V**

FP High temperature Lead-Free reflow (suffix:A*)



■ Features

- Low ESR (30 % to 50 % less than FK series)
- Endurance: 2000 h at 105 °C
- Vibration-proof product is available upon request. ($\phi 8 \leq$)
- RoHS directive compliant

■ Specifications

Category Temp. Range	-55 °C to +105 °C												
Rated W.V. Range	6.3 V.DC to 50 V.DC												
Nominal Cap. Range	10 μ F to 1800 μ F												
Capacitance Tolerance	± 20 % (120 Hz/+20 °C)												
DC Leakage Current	$I \leq 0.01 CV$ or 3 (μ 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						
	Z(-25 °C)/Z(+20 °C)	2	2	2	2	2	2						
	Z(-40 °C)/Z(+20 °C)	3	3	3	3	3	3						
	Z(-55 °C)/Z(+20 °C)	4	4	4	3	3	3						
(Impedance ratio at 120 Hz)													
Endurance	After applying rated working voltage at +105 °C ± 2 °C for 2000 hours the capacitors shall meet the limits specified below. Post-test requirement at +20 °C												
	Capacitance change	± 30 % of initial measured value											
	$\tan \delta$	≤ 200 % of initial specified value											
	DC leakage current	$\leq$ initial specified value											
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)												
Resistance to Soldering Heat	After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits.												
	Capacitance change												

■ Standard Products

Endurance : 105 °C 2000 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.)	E.S.R. (100 kHz) (+20 °C) (Ω)	tan δ (120 Hz) (+20 °C)			Taping
(V)	(μF)	(mm)	(mm)							(pcs)
6.3	22	4	5.8	B	160	0.85	0.26	EEEF0J220AR	(5)	2000
	47	4	5.8	(B)	160	0.85	0.26	EEEF0J470UAR	(5)	2000
		5	5.8	C	240	0.36	0.26	EEEF0J470AR	(5)	1000
	100	5	5.8	(C)	240	0.36	0.26	EEEF0J101UAR	(5)	1000
		6.3	5.8	D	300	0.26	0.26	EEEF0J101AP	(5)	1000
	220	6.3	5.8	D	300	0.26	0.26	EEEF0J221AP	(5)	1000
	330	6.3	7.7	D8	600	0.16	0.26	EEEF0J331XAP	(5)	900
		8	6.2	E	500	0.18	0.26	EEEF0J331AP	(6)	1000
	470	8	10.2	F	850	0.08	0.26	EEEF0J471AP	(6)	500
	1000	8	10.2	F	850	0.08	0.26	EEEF0J102AP	(6)	500
10	1500	10	10.2	G	1190	0.06	0.26	EEEF0J152AP	(6)	500
	1800	10	10.2	(G)	850	0.08	0.26	EEEF0J182UAP	(6)	500
	22	4	5.8	B	160	0.85	0.19	EEEF1A220AR	(5)	2000
	33	4	5.8	(B)	160	0.85	0.19	EEEF1A330UAR	(5)	2000
		5	5.8	C	240	0.36	0.19	EEEF1A330AR	(5)	1000
	150	6.3	5.8	D	300	0.26	0.19	EEEF1A151AP	(5)	1000
	220	6.3	7.7							

Standard Products

Endurance : 105 °C 2000 h

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 (100 kHz) (+105 °C) (mA r.m.s.)	E.S.R. (100 kHz) (+20 °C) (Ω)	tan δ (120 Hz) (+20 °C)			Taping (pcs)
35	10	4	5.8	(B)	160	0.85	0.12	EEEFV100UAR	(5)	2000
	22	5	5.8	C	240	0.36	0.12	EEEFV1V220AR	(5)	1000
	33	6.3	5.8	D	300	0.26	0.12	EEEFV1V330AP	(5)	1000
	47	6.3	5.8	D	300	0.26	0.12	EEEFV1V470AP	(5)	1000
	68	6.3	7.7	D8	600	0.16	0.12	EEEFV680XAP	(5)	900
	100	6.3	7.7	D8	600	0.16	0.12	EEEFV101XAP	(5)	900
		8	10.2	F	850	0.08	0.12	EEEFV1V101AP	(6)	500
	150	8	10.2	F	850	0.08	0.12	EEEFV1V151AP	(6)	500
	220	8	10.2	F	850	0.08	0.12	EEEFV1V221AP	(6)	500
	330	10	10.2	G	1190	0.06	0.12	EEEFV1V331AP	(6)	500
50	390	10	10.2	(G)	850	0.08	0.12	EEEFV391UAP	(6)	500
	100	8	10.2	F	670	0.18	0.10	EEEFV1H101AP	(6)	500
	220	10	10.2	G	900	0.12	0.10	EEEFV1H221AP	(6)	500

* Size code():Miniaturization product

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.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.