

### Surface Mount Type

Series: **FT** Type: **V**

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



#### ■ Features

- Endurance: 2000 h at 105 °C
- Miniaturized, Low ESR (1 size smaller than series FK)
- 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	25 V.DC to 50 V.DC	
Nominal Cap.Range	10 $\mu$ F to 820 $\mu$ F	
Capacitance Tolerance	$\pm 20$ % (120 Hz/+20 °C)	
DC Leakage Current	$I \leq 0.01$ CV After 2 minutes	
tan $\delta$	Please see the attached High temperature lead-free reflow products list.	
Endurance	After applying rated working voltage for 2000 hours at +105 °C $\pm 2$ °C and then being stabilized at +20 °C, Capacitors shall meet the following limits.	
	Capacitance change	$\pm 30$ % of initial measured value
	tan $\delta$	$\leq 200$ % of 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.	
	Capacitance change	$\pm 10$ % of initial measured value
Resistance to Soldering Heat	tan $\delta$	$\leq$ initial specified value
	DC leakage current	$\leq$ initial specified value

#### ■ Frequency correction factor for ripple current

Cap ( $\mu$ F)	Frequency (Hz)			
	120	1 k	10 k	100 k to
10 to 470	0.65	0.85	0.95	1.00
680 to 820	0.70	0.90	0.95	1.00

#### ■ Marking

Example: 25 V 22  $\mu$ F  
Marking color : BLACK

Negative polarity marking (-)

Capacitance ( $\mu$ F)

Series identification

Rated Voltage Mark

Lot number

Rated Voltage Mark	
E	25 V
V	35 V
H	50 V

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

( ) reference size

Size code	D	L	A, B	H	I	W	P	K
B	4.0	5.8 $\pm 0.3$	4.3	5.5 max.	1.8	0.65 $\pm 0.1$	1.0	0.35 $^{+0.15}_{-0.20}$
C	5.0	5.8 $\pm 0.3$	5.3	6.5 max.	2.2	0.65 $\pm 0.1$	1.5	0.35 $^{+0.15}_{-0.20}$
D	6.3	5.8 $\pm 0.3$	6.6	7.8 max.	2.6	0.65 $\pm 0.1$	1.8	0.35 $^{+0.15}_{-0.20}$
D8	6.3	7.7 $\pm 0.3$	6.6	7.8 max.	2.6	0.65 $\pm 0.1$	1.8	0.35 $^{+0.15}_{-0.20}$
F	8.0	10.2 $\pm 0.3$	8.3	10.0 max.	3.4	0.90 $\pm 0.2$	3.1	0.70 $\pm 0.20$
G	10.0	10.2 $\pm 0.3$	10.3	12.0 max.	3.5	0.90 $\pm 0.2$	4.6	0.70 $\pm 0.20$

(mm)

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.

## ■ High temperature Lead-Free reflow

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.)	ESR (100 kHz) (+20 °C) (Ω)	tan δ (120 Hz) (+20 °C)			Taping  (pcs)
(V)	(μF)	(mm)	(mm)							
25	22	4	5.8	B	160	0.85	0.14	EEEFT1E220AR	(5)	2000
	33	4	5.8	B	160	0.85	0.14	EEEFT1E330AR	(5)	2000
	47	5	5.8	C	240	0.36	0.14	EEEFT1E470AR	(5)	1000
	68	5	5.8	C	240	0.36	0.14	EEEFT1E680AR	(5)	1000
	100	6.3	5.8	D	300	0.26	0.14	EEEFT1E101AP	(5)	1000
	150	6.3	7.7	D8	600	0.16	0.14	EEEFT1E151XAP	(5)	900
	220	6.3	7.7	D8	600	0.16	0.14	EEEFT1E221XAP	(5)	900
	470	8	10.2	F	850	0.08	0.14	EEEFT1E471AP	(6)	500
35	820	10	10.2	G	1190	0.06	0.14	EEEFT1E821AP	(6)	500
	22	4	5.8	B	160	0.85	0.12	EEEFT1V220AR	(5)	2000
	33	5	5.8	C	240	0.36	0.12	EEEFT1V330AR	(5)	1000
	47	5	5.8	C	240	0.36	0.12	EEEFT1V470AR	(5)	1000
	68	6.3	5.8	D	300	0.26	0.12	EEEFT1V680AP	(5)	1000
	100	6.3	5.8	D	300	0.26	0.12	EEEFT1V101AP	(5)	1000
	150	6.3	7.7	D8	600	0.16	0.12	EEEFT1V151XAP	(5)	900
	330	8	10.2	F	850	0.08	0.12	EEEFT1V331AP	(6)	500
50	560	10	10.2	G	1190	0.06	0.12	EEEFT1V561AP	(6)	500
	10	4	5.8	(B)	85	2.30	0.10	EEEFT1H100UAR	(5)	2000
	10	5	5.8	C	165	0.88	0.10	EEEFT1H100AR	(5)	1000
	22	5	5.8	C	165	0.88	0.10	EEEFT1H220AR	(5)	1000
	47	6.3	5.8	D	195	0.68	0.10	EEEFT1H470AP	(5)	1000
	100	6.3	7.7	D8	350	0.34	0.10	EEEFT1H101XAP	(5)	900
	220	8	10.2	F	670	0.18	0.10	EEEFT1H221AP	(6)	500
330	10	10.2	G	900	0.12	0.10	EEEFT1H331AP	(6)	500	

\*Size code( ):Miniaturization product

If Part number exceeds 12 digits, voltage code is abbreviated as follows; 1E→E, 1V→V, 1H→H

The taping dimensions are explained on EE188 of our Catalog. Please use it as a reference guide.

Reflow Profile(Fig-1 to Fig-8) listed on EE186 of our Catalog.