

### 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. (ø8 mm and larger)
- 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 µF to 2200 µF		
Capacitance Tolerance	±20 % (120 Hz/+20 °C)		
DC Leakage Current	I ≤ 0.01 CV After 2 minutes		
tan δ	Please see the attached High temperature lead-free reflow products list.		
Endurance	After applying rated working voltage for 2000 hours at +105 °C±2 °C and then being stabilized at +20 °C, Capacitors shall meet the following limits.		
	Capacitance change	±30 % of initial measured value	
	tan δ	≤ 200 % of initial specified value	
	DC leakage current	≤ 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, capacitor shall meet the following limits.		
	Capacitance change	±10 % of initial measured value	
	tan δ	≤ initial specified value	
	DC leakage current	≤ initial specified value	

#### ■ Frequency correction factor for ripple current

Cap (µF)	Frequency (Hz)			
	120	1 k	10 k	100 k to
10 to 470	0.65	0.85	0.95	1.00
680 to 2200	0.70	0.90	0.95	1.00

#### ■ Marking

Example: 25 V 22 µF  
Marking color : BLACK

Capacitance (µF)  
Series identification  
Rated Voltage Mark  
Lot number

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

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

( ) Reference size  
(mm)

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

**NEW**

■ High temperature Lead-Free reflow

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.)	ESR (100 kHz) (+20 °C) (Ω)	tan δ (120 Hz) (+20 °C)			Taping (pcs)
6.3	100	4	5.8	B	160	0.85	0.26	EEEFT0J101AR	(5)	2000
	220	5	5.8	C	240	0.36	0.26	EEEFT0J221AR	(5)	1000
	330	6.3	5.8	D	300	0.26	0.26	EEEFT0J331AP	(5)	1000
	470	6.3	7.7	D8	600	0.16	0.26	EEEFTJ471XAP	(5)	900
	680	6.3	7.7	D8	600	0.16	0.26	EEEFTJ681XAP	(5)	900
	1500	8	10.2	F	850	0.08	0.26	EEEFT0J152AP	(6)	500
	2200	10	10.2	G	1190	0.06	0.28	EEEFT0J222AP	(6)	500
10	68	4	5.8	B	160	0.85	0.19	EEEFT1A680AR	(5)	2000
	150	5	5.8	C	240	0.36	0.19	EEEFT1A151AR	(5)	1000
	220	6.3	5.8	D	300	0.26	0.19	EEEFT1A221AP	(5)	1000
	330	6.3	7.7	D8	600	0.16	0.19	EEEFTA331XAP	(5)	900
	470	6.3	7.7	D8	600	0.16	0.19	EEEFTA471XAP	(5)	900
	1000	8	10.2	F	850	0.08	0.19	EEEFT1A102AP	(6)	500
	1500	10	10.2	G	1190	0.06	0.19	EEEFT1A152AP	(6)	500
16	47	4	5.8	B	160	0.85	0.16	EEEFT1C470AR	(5)	2000
	68	5	5.8	C	240	0.36	0.16	EEEFT1C680AR	(5)	1000
	100	5	5.8	C	240	0.36	0.16	EEEFT1C101AR	(5)	1000
	150	6.3	5.8	D	300	0.26	0.16	EEEFT1C151AP	(5)	1000
	220	6.3	5.8	D	300	0.26	0.16	EEEFT1C221AP	(5)	1000
	330	6.3	7.7	D8	600	0.16	0.16	EEEFTC331XAP	(5)	900
	680	8	10.2	F	850	0.08	0.16	EEEFT1C681AP	(6)	500
	1000	10	10.2	G	1190	0.06	0.16	EEEFT1C102AP	(6)	500
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	EEEFTE151XAP	(5)	900
	220	6.3	7.7	D8	600	0.16	0.14	EEEFTE221XAP	(5)	900
	470	8	10.2	F	850	0.08	0.14	EEEFT1E471AP	(6)	500
	820	10	10.2	G	1190	0.06	0.14	EEEFT1E821AP	(6)	500
35	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	EEEFTV151XAP	(5)	900
	330	8	10.2	F	850	0.08	0.12	EEEFT1V331AP	(6)	500
	560	10	10.2	G	1190	0.06	0.12	EEEFT1V561AP	(6)	500
50	10	4	5.8	(B)	85	2.30	0.10	EEEFTH100UAR	(5)	2000
		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	EEEFTH101XAP	(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; 0J→J, 1A→A, 1C→C, 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.