

## Series: TCF (Epoxy resin molded chip with built-in fuse)

Series TCF is a built-in fuse chip tantalum capacitor based on standard type TC. Fully-molded construction provides excellent mechanical protection, superior moisture resistance and high soldering heat resistance.

### FEATURES

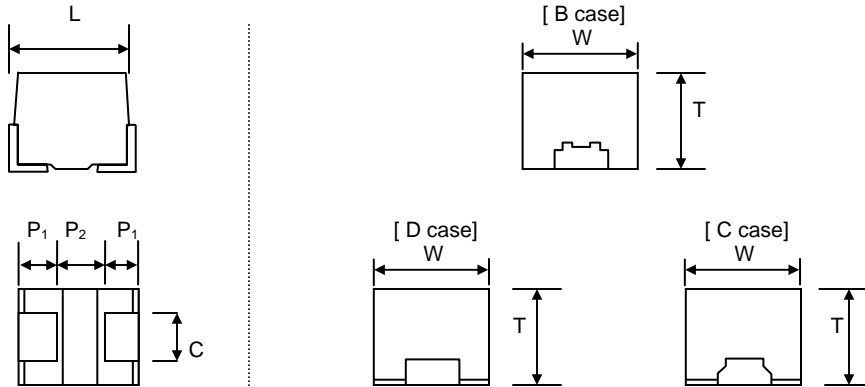
- Built-in fuse functions to melt under a large current and inhibit burning and smoking from capacitor.
- Suitable for filtering of supply with low impedance circuit and bypassing of random noise of source line in ultra high speed logical circuit
- Suitable for surface mounting
- Precise dimensions allow high density mounting. Symmetrical construction of positive and negative terminals provides "Self Alignment".
- Soldering: 260°C for 10 seconds by re-flow or flow soldering



### SPECIFICATIONS

Failure rate level	1%/1000h
Operating temperature range	-55 ~ +85°C to 125°C with voltage derating
Rated voltage	6.3 – 10 – 16 – 20 – 25 – 35 – 50 VDC
Capacitance Range	0.15 ~ 150µF
Capacitance Tolerance	± 10%, ± 20%

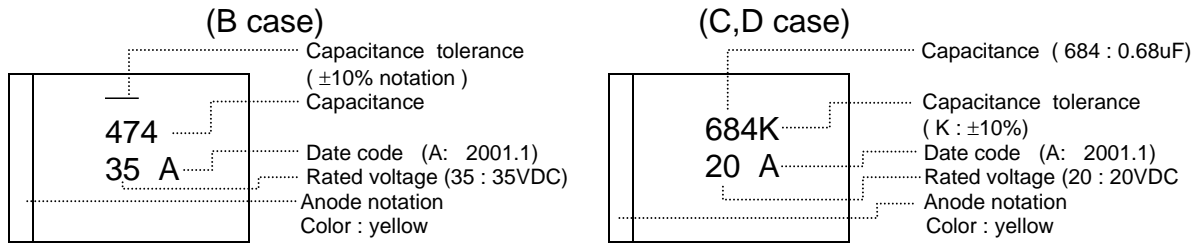
### DIMENSIONS (mm)



Case Code	EIA Code	L ± 0.2	W ± 0.2	T ± 0.2	P <sub>1</sub> ± 0.2	P <sub>2</sub> ± 0.2	C ± 0.1
B	3528	3.5	2.8	1.9	0.8	1.5	2.2
C	6032	6.0	3.2	2.5	1.3	3.0	2.2
D	7343	7.3	4.4	2.8	1.3	4.0	2.4

B, C, D case conform to EIA-535BAAC

## MARKING



## HOW TO ORDER TANTALUM CHIPS

<b>TCF Series</b>	<b>476 Capacitance</b>	<b>K Tolerance</b>	<b>16 Voltage</b>	<b>D Case Size</b>	<b>T Packaging</b>	<b>-P Lead Free</b>
TC=Standard TCL = Low Profile TCF = with Fuse TCLE = Low ESR	Rated capacitance in pF is represented by a three digit number. The first two digits are significant figures of the nominal capacitance. The third digit indicated the number of zeros	M = 20% K = 10%	6.3=06 10=10 16=16 20=20 25=25 35=35 50=50	B C D	T= Tape & Reel Blank = Bulk	-P = Pb free

## STANDARD RATINGS

R.V. (VDC) Cap. (µF)	6.3	10	16	20	25	35	50
0.15							B
0.22							B
0.33							B
0.47							*B, C
0.68							C
1.0					B	B, C	C
1.5				B	B	C	*C, D
2.2			B	B		C	D
3.3			B	*B	C	C, D	D
4.7		B	*B	C	C	D	
6.8		*B	C	C	D	D	
10	*B	*B, C	*B, C	D	D		
15		C	D	*C, D			
22			*C, D	*D			
33		*C, D	D				
47	C	D	*D				
68	*D	*D					
100	*D	*D					
150	*D						

\* available upon request

**RATINGS AND CATALOG NUMBERS**

Rated voltage / Surge Voltage	Catalog number	cap. ( $\mu$ F)	Case code	Max DC LC ( $\mu$ A)			Max Dissipation factor				Max ESR ( $\Omega$ ) 10KHz
				25°C	85°C	125°C	-55°C	20°C	85°C	125°C	
6.3VDC / 8VDC	TCF106-06BT	10	B	0.6	6	7.9	0.08	0.06	0.06	0.08	3.0
	TCF476-06CT	47	C	3.0	30	37	0.08	0.06	0.06	0.08	1.2
	TCF686-06DT	68	D	4.3	43	54	0.08	0.06	0.06	0.08	1.0
	TCF107-06DT	100	D	6.3	63	79	0.15	0.08	0.08	0.10	1.0
10VDC / 13VDC	TCF157-06DT	150	D	9.5	95	118	0.15	0.08	0.08	0.10	1.0
	TCF475-10BT	4.7	B	0.5	5	6.3	0.08	0.06	0.06	0.06	3.0
	TCF685-10BT	6.8	B	0.7	7	8.5	0.08	0.06	0.06	0.08	3.0
	TCF106-10BT	10	B	1.0	10	13	0.08	0.06	0.06	0.08	3.0
	TCF106-10CT	10	C	1.0	10	13	0.08	0.06	0.06	0.06	1.2
	TCF156-10CT	15	C	1.5	15	19	0.08	0.06	0.06	0.06	1.2
	TCF336-10CT	33	C	3.3	33	41	0.08	0.06	0.06	0.08	1.2
	TCF336-10DT	33	D	3.3	33	41	0.08	0.06	0.06	0.06	1.0
16VDC / 20VDC	TCF476-10DT	47	D	4.7	47	59	0.08	0.06	0.06	0.08	1.0
	TCF686-10DT	68	D	6.8	68	85	0.08	0.06	0.06	0.08	1.0
	TCF107-10DT	100	D	10	100	130	0.15	0.08	0.08	0.10	1.0
	TCF225-16BT	2.2	B	0.5	5	6.3	0.08	0.06	0.06	0.06	3.0
	TCF335-16BT	3.3	B	0.5	5	6.3	0.08	0.06	0.06	0.06	3.0
	TCF475-16BT	4.7	B	0.8	8	9.4	0.08	0.06	0.06	0.08	3.0
	TCF685-16CT	6.8	C	1.1	11	14	0.08	0.06	0.06	0.06	1.2
	TCF106-16BT	10	B	1.6	16	20	0.08	0.06	0.06	0.08	3.0
	TCF106-16CT	10	C	1.6	16	20	0.08	0.06	0.06	0.06	1.2
	TCF156-16DT	15	D	2.4	24	30	0.08	0.06	0.06	0.06	1.0
	TCF226-16CT	22	C	3.5	35	44	0.08	0.06	0.06	0.08	1.2
	TCF226-16DT	22	D	3.5	35	44	0.08	0.06	0.06	0.06	1.0
20VDC / 26VDC	TCF336-16DT	33	D	5.3	53	66	0.08	0.06	0.06	0.08	1.0
	TCF476-16DT	47	D	7.5	75	94	0.08	0.06	0.06	0.08	1.0
	TCF155-20BT	1.5	B	0.5	5	6.3	0.08	0.06	0.06	0.06	3.0
	TCF225-20BT	2.2	B	0.5	5	6.3	0.08	0.06	0.06	0.06	3.0
	TCF335-20BT	3.3	B	0.7	7	8.3	0.08	0.06	0.06	0.08	3.0
	TCF475-20CT	4.7	C	0.9	9	12	0.08	0.06	0.06	0.06	1.2
	TCF685-20CT	6.8	C	1.4	14	17	0.08	0.06	0.06	0.06	1.2
	TCF106-20DT	10	C	2.0	20	25	0.08	0.06	0.06	0.06	1.2
	TCF106-20DT	10	D	2.0	20	25	0.08	0.06	0.06	0.06	1.0
	TCF156-20CT	15	C	3.0	30	38	0.08	0.06	0.06	0.08	1.2
	TCF156-20DT	15	D	3.0	30	38	0.08	0.06	0.06	0.08	1.5
	TCF226-20DT	22	D	4.4	44	55	0.08	0.06	0.06	0.08	1.0
25VDC / 32VDC	TCF105-25BT	1.0	B	0.5	5	6.3	0.05	0.04	0.04	0.05	3.0
	TCF155-25BT	1.5	B	0.5	5	6.3	0.08	0.06	0.06	0.06	3.0
	TCF335-25CT	3.3	C	0.8	8	9.6	0.08	0.06	0.06	0.06	1.2
	TCF475-25CT	4.7	C	1.2	12	15	0.08	0.06	0.06	0.06	1.2
	TCF685-25DT	6.8	D	1.7	17	21	0.08	0.06	0.06	0.05	1.0
	TCF106-25DT	10	D	2.5	25	31	0.08	0.06	0.06	0.08	1.5
	TCF105-35BT	1.0	B	0.5	5	6.3	0.05	0.04	0.04	0.05	3.0
	TCF105-35CT	1.0	C	0.5	5	6.3	0.05	0.04	0.04	0.05	3.0
35VDC / 44VDC	TCF155-35CT	1.5	C	0.5	5	6.6	0.08	0.06	0.06	0.06	1.2
	TCF225-35CT	2.2	C	0.8	8	9.6	0.08	0.06	0.06	0.06	1.2
	TCF335-35CT	3.3	C	1.2	12	14	0.08	0.06	0.06	0.06	1.2
	TCF335-35DT	3.3	D	1.2	12	14	0.08	0.06	0.06	0.06	1.0
	TCF475-35DT	4.7	D	1.6	16	21	0.08	0.06	0.06	0.06	1.0
	TCF685-35DT	6.8	D	2.4	24	30	0.08	0.06	0.06	0.08	1.5
	TCF154-50BT	0.15	B	0.5	5	6.3	0.05	0.04	0.04	0.05	5.0
	TCF224-50BT	0.22	B	0.5	5	6.3	0.05	0.04	0.04	0.05	5.0
50VDC / 63VDC	TCF334-50BT	0.33	B	0.5	5	6.3	0.05	0.04	0.04	0.05	3.0
	TCF474-50BT	0.47	B	0.5	5	6.3	0.06	0.04	0.04	0.06	3.0
	TCF474-50CT	0.47	C	0.5	5	6.3	0.05	0.04	0.04	0.05	3.0
	TCF684-50CT	0.68	C	0.5	5	6.3	0.05	0.04	0.04	0.05	3.0
	TCF105-50CT	1.0	C	0.5	5	6.3	0.05	0.04	0.04	0.05	3.0
	TCF155-50CT	1.5	C	0.8	8	9.4	0.08	0.06	0.06	0.08	1.2
	TCF155-50DT	1.5	D	0.8	8	9.4	0.08	0.06	0.06	0.06	1.5
	TCF225-50DT	2.2	D	1.1	11	14	0.08	0.06	0.06	0.06	1.5
	TCF335-50DT	3.3	D	1.7	17	21	0.08	0.06	0.06	0.08	1.0

□ capacitance tolerance code "K" ( $\pm 10\%$ ) or M ( $\pm 20\%$ )