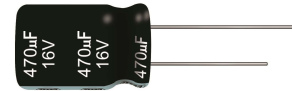




TX Series

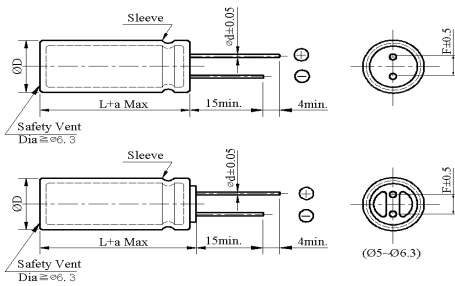
- High-temperature 135°C, high reliability
- Load life 1,000~2,000 hours at 135°C
- For automotive electronics and lighting equipment and other high temperature applications



SPECIFICATIONS

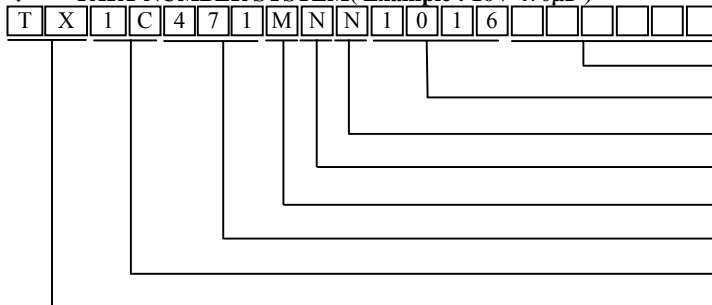
Item	Performance Characteristics												
Category Temperature Range	-55 ~ +135°C												
Working Voltage Range	10 ~ 50Vdc												
Capacitance Range	22 ~ 1000 µF												
Capacitance Tolerance	±20% (at 25°C and 120Hz)												
Dissipation Factor (tanδ) (at 25°C, 120Hz)	<table border="1"> <tr> <td>Rated Voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> </tr> </table>	Rated Voltage (V)	10	16	25	35	50	tanδ(Max)	0.20	0.16	0.14	0.12	0.10
	Rated Voltage (V)	10	16	25	35	50							
tanδ(Max)	0.20	0.16	0.14	0.12	0.10								
The above values should be increased by 0.02 for every additional 1000µF													
Leakage Current	$I \leq 0.03CV$ I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes												
Low Temperature Characteristics Impedance Ratio(MAX)	<table border="1"> <tr> <td>Rated voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>6</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> </tr> </table> <p style="text-align: right;">(at 120Hz)</p>	Rated voltage (V)	10	16	25	35	50	Z(-55°C)/Z(+20°C)	6	4	4	4	4
Rated voltage (V)	10	16	25	35	50								
Z(-55°C)/Z(+20°C)	6	4	4	4	4								
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 1,000~2,000 hours at 135°C												
	<table border="1"> <tr> <td>Capacitance change</td> <td>≒ ±25% of the initial value</td> <td>Size</td> <td>Life time (hours)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≒ 200% of the specified value</td> <td>≒ 10Φ</td> <td>1,000</td> </tr> <tr> <td>Leakage current</td> <td>≒ specified value</td> <td>≒ 12.5Φ</td> <td>2,000</td> </tr> </table>	Capacitance change	≒ ±25% of the initial value	Size	Life time (hours)	Dissipation factor(tanδ)	≒ 200% of the specified value	≒ 10Φ	1,000	Leakage current	≒ specified value	≒ 12.5Φ	2,000
Capacitance change	≒ ±25% of the initial value	Size	Life time (hours)										
Dissipation factor(tanδ)	≒ 200% of the specified value	≒ 10Φ	1,000										
Leakage current	≒ specified value	≒ 12.5Φ	2,000										
Shelf Life	The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 1,000 hours at 135°C without voltage applied. After test : UR to be applied for 30 minutes, 24 to 48 hours before measurement.												
	<table border="1"> <tr> <td>Capacitance change</td> <td>≒ ±25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≒ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≒ 200% of the specified value</td> </tr> </table>	Capacitance change	≒ ±25% of the initial value	Dissipation factor(tanδ)	≒ 200% of the specified value	Leakage current	≒ 200% of the specified value						
Capacitance change	≒ ±25% of the initial value												
Dissipation factor(tanδ)	≒ 200% of the specified value												
Leakage current	≒ 200% of the specified value												
Others	Conforms to JIS-C-5101-4 (1998), characteristic W												

DIMENSIONS (mm)



ΦD	6.3	8	10	12.5 L < 35	12.5 ≥ 35	16
ΦD	ΦD + 0.5 Max					
Φd	0.5	0.6	0.6	0.6	0.8	0.8
F	2.5	3.5	5.0	5.0		7.5
a	L + 1.5 Max		$\cong 35 L + 1.5 \text{ Max}$ $\cong 40 L + 2.0 \text{ Max}$			L + 1.5 Max

PART NUMBER SYSTEM(Example : 16V 470µF)





TX Series

◆ Case size & Permissible rated ripple current: (mA rms) at 135°C / 100KHz

uF \ Vdc	10		16		25	
	ΦD × L	RC	ΦD × L	RC	ΦD × L	RC
22					6.3×11	135
33			6.3×11	155	8×11.5	175
47	6.3×11	180	6.3×11	190	8×11.5	225
100	6.3×11	420	8×11.5	455	8×11.5	480
220	8×11.5	500	10×12.5	590	10×12.5	600
330	10×12.5	580	10×12.5	600	10×16	745
470	10×12.5	620	10×16	755	10×20	900
1000	10×20	900	12.5×20	1010	12.5×25	1290

uF \ Vdc	35		50	
	ΦD × L	RC	ΦD × L	RC
22	8×11.5	170	8×11.5	185
33	8×11.5	185	8×11.5	210
47	8×11.5	240	8×15	280
100	10×12.5	490	10×12.5	490
220	10×16	770	10×20	820
330	10×20	880	12.5×20	900
470	12.5×20	1020	12.5×25	1095
1000	16×25	1450	16×31.5	1510

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Vdc	Cap(uF)	Frequency (Hz)			
		120K	1K	10K	100K
10 ~ 50	<100	0.40	0.75	0.90	1.00
	100 ~ 470	0.50	0.85	0.94	1.00
	>470	0.60	0.87	0.95	1.00