

## SPECIFICATION

### ACROSS-THE-LINE AND INTERFERENCE SUPPRESSION CAPACITORS CLASS X1 --- CTX

---

1. REFERENCE STANDARDS: UL 60384-14, CSA C22.2  
USED FOR ACROSS-THE LINE CAPACITORS, ANTENNA-COUPLING AND  
LINE-BY-PASS COMPONENTS.  
ENEC            EN 60384-14 : 2005  
CQC            GB/T14472-1998  
USED FOR RADIO INTERFERENCE SUPPRESSION CAPACITORS.
2. RATED VOLTAGE : 310/350 VAC, 50 ~ 60 Hz
3. CAPACITANCE RANGE : 0.0047  $\mu\text{F}$  ~ 1.0 $\mu\text{F}$
4. CAPACITANCE TOLERANCE : J ( $\pm 5\%$  ), K ( $\pm 10\%$  ), M ( $\pm 20\%$  ), U (+10-5% )
5. DIELECTRIC : METALLIZED POLYPROPYLENE FILM
6. DISSIPATION FACTOR TAN  $\delta$  : LESS THAN 0.1% AT 1K Hz/20 °C  
VOLTAGE 1.0 VAC (CAPACITANCE : 1K Hz/20 °C, VOLTAGE 1.0 VAC)
7. INSULATION RESISTANCE : BETWEEN TERMINALS
  - (1) LESS THAN OR EQUAL TO 0.33  $\mu\text{F}$   $\cong 3 \times 10^4 \text{ M}\Omega$
  - (2) GREATER THAN 0.33  $\mu\text{F}$   $\cong 1 \times 10^4 \text{ M}\Omega/\mu\text{F}$MEASURED AT 100  $\pm$  15 VDC, 60 Sec./20 °C
8. WITHSTAND VOLTAGE :
  - a) BETWEEN TERMINALS.... 1505VDC FOR 60 Sec.OR 2000VDC FOR 1 Sec.  
CUT-OFF CURRENT : 10mA
  - b) BETWEEN TERMINALS AND CASE....2200 VAC 60 Hz FOR 60 Sec.
9. CLIMATIC CATEGORY : IN ACCORDANCE WITH DIN 40040 GMF  
G (MINIMUM LIMIT TEMPERATURE) = - 40 °C  
L (MAXIMUM LIMIT TEMPERATURE) = + 110 °C  
F (HUMIDITY CATEGORY) = AVERAGE RELATIVE HUMIDITY  $\cong 75\%$ 
  - 95% FOR 30 DAYS PER YEAR CONTINUOUSLY
  - 85% FOR THE REMAINING DAYS OCCASIONALLY
10. DRY HEAT RESISTANCE :  
IN ACCORDANCE WITH DIN 40046 SHEET 1 OR IEC 68-2-2 TEST BA. CONDITIONS  
TEST TEMPERATURE : 110  $\pm$  2 °C  
TEST DURATION : 16 HOURS  
TEST CRITERIA :
  - (1) APPEARANCE : NO VISIBLE DAMAGE AND NO LEAKAGE
  - (2) WITHSTAND VOLTAGE : 0.66 x RATED WITHSTAND VOLTAGE 60 Sec.
  - (3) CAPACITANCE CHANGE :  $\cong \pm 5\%$  OF THE INITIAL VALUE
  - (4) INSULATION RESISTANCE :  $\cong 50\%$  OF INITIAL SPECIFIED VALUE
11. COLD RESISTANCE :  
IN ACCORDANCE WITH DIN 40046 SHEET 1 OR IEC 68-2-1 TEST BA. CONDITIONS  
TEST TEMPERATURE : -40  $\pm$  2 °C  
TEST DURATION : 2 HOURS  
TEST CRITERIA :

- (1) APPEARANCE : NO VISIBLE DAMAGE
- (2) WITHSTAND VOLTAGE : 0.66 x RATED WITHSTAND VOLTAGE 60 Sec.
- (3) CAPACITANCE CHANGE :  $\cong \pm 5 \%$  OF THE INITIAL VALUE

12. HUMIDITY TEST CONDITIONS :

TEST TEMPERATURE :  $40 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$

RELATIVE HUMIDITY : 90 – 95 %

TEST DURATION : 500 HOURS

TEST CRITERIA :

- (1) WITHSTAND VOLTAGE : 0.66 x RATED WITHSTAND VOLTAGE 60 Sec.
- (2) CAPACITANCE DRIFT :  $\cong \pm 5 \%$  OF THE INITIAL VALUE
- (3) DISSIPATION FACTOR :  $\cong 200 \%$  OF INITIAL SPECIFIED VALUE
- (4) INSULATION RESISTANCE :  $\cong 50 \%$  OF INITIAL SPECIFIED VALUE

13. LIFE TEST CONDITIONS :

TEST TEMPERATURE :  $110 \text{ }^\circ\text{C} \pm 3 \text{ }^\circ\text{C}$

TEST VOLTAGE : 438 VAC AND 1,000 VAC/60 HZ FOR A PERIOD OF 0.1 Sec. ONCE EACH HOUR

TEST DURATION : 1,000 HOURS

TEST CRITERIA :

- (1) APPEARANCE : NO VISIBLE DAMAGE AND NO LEAKAGE
- (2) WITHSTAND VOLTAGE : 0.66 x RATED WITHSTAND VOLTAGE 60 Sec.
- (3) CAPACITANCE DRIFT :  $\cong \pm 10 \%$  OF THE INITIAL VALUE
- (4) DISSIPATION FACTOR :  $\cong 0.6 \times 10 (0.06 \%)$  OF INCREASED VALUE
- (5) INSULATION RESISTANCE :  $\cong 50 \%$  OF SPECIFIED VALUE

14. SOLDERABILITY CONDITIONS :

SOLDER BATH TEMPERATURE & MATERIAL :

$230 \pm 5 \text{ }^\circ\text{C}$ , 60 % OF TIN (Sn) + 40 % OF LEAD (Pb)

SOLDER BATH TEMPERATURE & MATERIAL :

$270 \pm 5 \text{ }^\circ\text{C}$ , 99.96 % OF TIN (Sn) + 0.04 % OF SILVER (Ag)

SOLDER TIME :  $3 \pm 0.5$  Sec. TEST CRITERIA : 75% OF THE SURFACE TINNING

15. SOLDERING HEAT RESISTANCE :

IN ACCORDANCE WITH DIN 40046 SHEET 18 OR IEC 68-2-20 TEST TA.1 & TB.1 CONDITIONS

SOLDER BATH TEMPERATURE :  $260 \pm 5 \text{ }^\circ\text{C}$

SOLDER TIME :  $5 \pm 1$  Sec.

CAPACITANCE BODY MAY LIE ON PRINTING CIRCUIT BOARD

TEST CRITERIA :

- (1) APPEARANCE : NO DAMAGE AND GOOD TINNING
- (2) CAPACITANCE CHANGE :  $\cong \pm 3 \%$  OF THE INITIAL VALUE

16. VIBRATION RESISTANCE :

IN ACCORDANCE WITH DIN 40046 SHEET 8 OR IEC 68-2-6 TEST FC CONDITIONS

FREQUENCY RANGE : 10 - 55 HZ

DISPLACEMENT AMPLITUDE : 0.75 mm

CONFORMING TO MAX. : 10 g

TEST DURATION : 6 HOURS

TEST CRITERIA :

(1) APPEARANCE : NO VISIBLE DAMAGE

(2) CAPACITANCE CHANGE :  $\leq \pm 2 \%$  OF THE INITIAL VALUE

17. TENSILE STRENGTH OF TERMINALS

IN ACCORDANCE WITH DIN 40046 SHEET 19 OR IEC 68-2-21 TEST UA.1

CONDITIONS

TERMINAL	LOAD FORCE	HOLDING TIMES
DIA. (mm)	KG (N)	Sec.
$\leq 0.5$	0.5 (5)	10
$> 0.5$ TO $< 0.8$	1.0 (10)	10
$> 0.8$	2.0 (20)	20

TEST CRITERIA : NO WIRE BREAKAGE AND NO DAMAGE OF CAPACITOR

18. BENDING OF TERMINALS

IN ACCORDANCE WITH DIN 40046 SHEET 19 OR IEC 68-2-21 TEST UB. CONDITIONS

LOAD FORCE : 0.5 KG (5N)

BENDING TIME : TWO CONSECUTIVE BENDS (4 x 90 °C)

TEST CRITERIA : NO WIRE BREAKAGE AND DAMAGE OF CAPACITOR

19. APPROVED BY :

UL · CUL FILE NO. 20130503-E193049 (0.0047uF/350V~1.0uF/350V)

ENEC FILE NO. ENEC-01936-M1 (0.0047uF~1.0uF/350V)

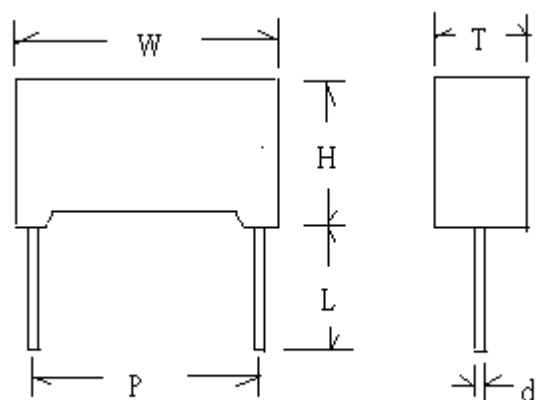
CQC FILE NO. CQC03001008997 (0.0047uF~10uF/310V)

20. MARKING :

CAPACITORS ARE MARKED WITH TYPE IDENTIFICATION CAPACITANCE, CAPACITANCE TOLERANCE, RATED VOLTAGE, TEMPERATURE RANGE, NAME OF MANUFACTURE, DATE OF MANUFACTURE AND APPROVED CERTIFICATION MARKS.

Marking Example:

**0.0047 ~ 1.0 uF**



Product No.	Capacitance uF	Rated-Voltage VAC	PVC Wire(W±0.75) Dimensions in mm				
			W±0.5	H±0.5	T±0.5	P±0.5	d±0.05
CTX472K350VP10	0.0047	350	13	11	5	10	0.6
CTX472K350VP15	0.0047	350	18	10	5	15	0.8
CTX562K350VP10	0.0056	350	13	11	5	10	0.6
CTX562K350VP15	0.0056	350	18	10	5	15	0.8
CTX682K350VP10	0.0068	350	13	11	5	10	0.6
CTX682K350VP15	0.0068	350	18	10	5	15	0.8
CTX822K350VP10	0.0082	350	13	11	5	10	0.6
CTX822K350VP15	0.0082	350	18	10	5	15	0.8
CTX103K350VP10	0.01	350	13	11	5	10	0.6
CTX103K350VP15	0.01	350	18	10	5	15	0.8
CTX123K350VP10	0.012	350	13	11	5	10	0.6
CTX123K350VP15	0.012	350	18	10	5	15	0.8
CTX153K350VP10	0.015	350	13	11	5	10	0.6
CTX153K350VP15	0.015	350	18	10	5	15	0.8
CTX223K350VP10	0.022	350	13	11	5	10	0.6
CTX223K350VP15	0.022	350	17	11	5.5	15	0.8
CTX273K350VP10	0.027	350	13	11	5	10	0.6
CTX273K350VP15	0.027	350	18	10	5	15	0.8
CTX333K350VP10	0.033	350	13	11	5	10	0.6
CTX333K350VP15	0.033	350	18	10	5	15	0.8
CTX393K350VP10	0.039	350	13	12	6	10	0.6
CTX393K350VP15	0.039	350	18	10	5	15	0.8
CTX473K350VP10	0.047	350	13	12	6	10	0.6
CTX473K350VP15	0.047	350	18	10	5	15	0.8
CTX563K350VP15	0.056	350	18	10	5	15	0.8
CTX683K350VP10	0.068	350	12	14	8	10	0.6
CTX683K350VP15	0.068	350	17	11	5.5	15	0.8
CTX823K350VP15	0.082	350	18	12	6	15	0.8
CTX104K350VP15	0.1	350	18	13.5	6	15	0.8

CTX124K350VP15	0.12	350	18	13.5	7.5	15	0.8
CTX154K350VP15	0.15	350	17	15.5	7.5	15	0.8
CTX184K350VP15	0.18	350	17	15.5	7.5	15	0.8
CTX224K350VP15	0.22	350	18	16.5	8.5	15	0.8
CTX224K350VP225	0.22	350	26.5	16.5	7	22.5	0.8
CTX274K350VP15	0.27	350	17	16.5	9.5	15	0.8
CTX274K350VP225	0.27	350	26.5	16.5	7	22.5	0.8
CTX334K350VP15	0.33	350	17	19	11	15	0.8
CTX334K350VP225	0.33	350	26.5	17	8.5	22.5	0.8
CTX394K350VP225	0.39	350	25	19	8.5	22.5	0.8
CTX474K350VP225	0.47	350	26.5	19	10	22.5	0.8
CTX474K350VP275	0.47	350	31.5	20	11	27.5	0.8
CTX564K350VP225	0.56	350	26	22	12	22.5	0.8
CTX564K350VP275	0.56	350	31.5	20	11	27.5	0.8
CTX604K350VP225	0.60	350	26	22	12	22.5	0.8
CTX604K350VP275	0.60	350	31.5	20	11	27.5	0.8
CTX684K350VP225	0.68	350	26	22	12	22.5	0.8
CTX684K350VP275	0.68	350	31.5	20	11	27.5	0.8
CTX824K350VP275	0.82	350	31.5	22.5	13	27.5	0.8
CTX105K350VP275	1.0	350	31.5	22.5	13	27.5	0.8
CTX105K350VP325	1.0	350	37	24	13.5	32.5	0.8