

Overview

The C9T capacitor is a polypropylene metallized film capacitor with a cylindrical, aluminium can-type design filled with resin. It uses a 3-phase delta connection and safety device FPU.

Applications

Typical applications power factor correction.

Benefits

- VDE Approved
- Overpressure safety device
- High capacitance density
- Long lifetime
- 3-phase delta connections

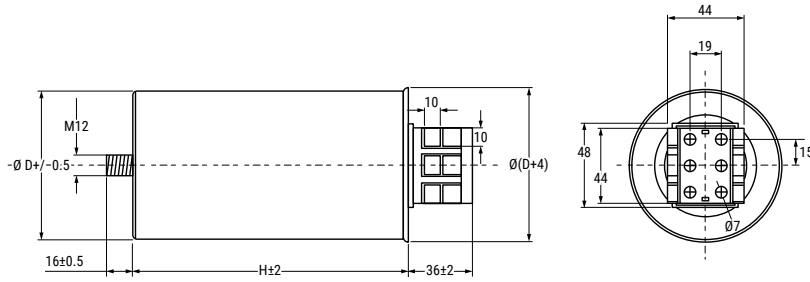


Part Number System

| C9T | S | 5 | M | D | 6137 | AAR | X |
|---|----------|---------------------|-----------------------------|---------------------|---|----------------|--------------|
| Series | Type | Rated Voltage (VAC) | Terminal Style | Internal Connection | Capacitance Code (pF) | Internal Code | Tolerance |
| C9T = Cylindrical Three-Phase Capacitors | S = Slim | 5 = 415 6 = 440 | M = Screw clamp Terminal | D = Delta | Digits 2 – 4 indicate the first three digits of the capacitance value*. First digit indicates the number of zeros to be added. | AAR = Standard | X = -5%/+10% |

* Capacitance Code (8th – 11th digit) -> Single Capacitive Element Value

Dimensions – Millimeters



| D | H | Mounting Stud (M) |
|------|-----|-------------------|
| ±0.5 | ±2 | |
| 75 | 160 | M12 x 16 |
| 75 | 230 | M12 x 16 |
| 75 | 280 | M12 x 16 |
| 85 | 160 | M12 x 16 |
| 85 | 230 | M12 x 16 |
| 85 | 280 | M12 x 16 |

Qualifications

| | |
|----------------------|--------------------------|
| Reference Standards | IEC 831-1/2 |
| | Approved VDE-REG.Nr.F064 |
| Protected 10,000 AFC | -25°C to +70°C |

General Technical Data

| | |
|------------------------------|--|
| Reference Standards | IEC 60831-1/2 |
| | Approved VDE-REG.Nr.F064 |
| | UL810 compliant |
| Dielectric | Polypropylene film |
| | Non-Inductive type winding |
| Climatic Category | -25/D - IEC 60831-1 |
| | Maximum: 55°C |
| | Highest mean over any period of 24 hours: 45°C |
| | Highest mean over any period of one year: 35°C |
| Maximum Hot Spot Temperature | +70°C |
| Endurance Test IEC 60831-2 | IEC 60831-2 clause 17.1-17.2 |

Electrical Characteristics

| | |
|-----------------------|---|
| Rated Voltage | Un = (see table) Vrms |
| Over Voltage | IEC 60831-1 clause 20: |
| | 1,10*UN – 8 hours in every 24 hours |
| | 1,15* UN – 30 minutes in every 24 hours |
| | 1,20* UN – 5 minutes in the lifetime |
| | 1,30* UN – 1 minutes in the lifetime |
| Capacitance Tolerance | -5% +10% (X) |

Mechanical Characteristics

| | |
|---|----------------------------|
| Maximum Torque: | 6 [N*m] for Terminal screw |
| | 12 [N*m] for M12 Bolt |
| Installation | Whatever position |
| Aluminum deck with self extinguishing UL94 V0 plastic cover | |

Life Expectancy

| | |
|---------------------------------|---|
| Life Expectancy | 100,000 hours at U_{rms} with $T_{hs} \leq 70^{\circ}C$ |
| Capacitance drop at end of life | -5% (typical) |
| Failure rate IEC 61709 | $300 \cdot 10^{-9}$ components/hours |

Test Method

| | |
|--|--|
| Test voltage term to term (Utt) | $2,15 \cdot U_{rms}$ for 2 seconds at $25^{\circ}C$ |
| Test voltage term to case (Utc) | 3600 V – 50 Hz for 2 seconds |
| Relative Humidity | Annual average $\leq 80\%$ at $24^{\circ}C$ |
| | On 30 days/year permanently 100%. On other days occasionally 90%. |
| | Dewing not admitted |
| Capacitance Deviation in Temperature Range ($-40..+50^{\circ}C$) | $\pm 1.5\%$ maximum on capacitance value at $20^{\circ}C$ |
| Damp Heat | IEC 60068-2-78 |
| Change of Temperature | IEC 60068-2-14 |
| Vibration Strength | IEC 60068-2-6 |


NOTICE: Care should be taken to ensure that there still is electrical clearance of 15 mm between terminations and other live or earthed parts above the capacitor, in case of safety device activation.

Table 1 – Ratings & Part Number Reference

| Capacitance Value | Voltage | Dimensions (mm) | | Rated Current | Qn | Operating Frequency | dV/dt | Packaging Quantity | Part Number |
|-------------------|---------|-----------------|-----|---------------|------|---------------------|-------|--------------------|-----------------|
| | | Ø | H | | | | | | |
| µF | VAC | | | A | kVAr | Hz | V/µs | | |
| 3 x 31.1 | 415 | 75 | 160 | 9 | 5.0 | 50 | 30 | 12 | C9TS5MD5311AARX |
| 3 x 46.0 | 415 | 75 | 160 | 14 | 7.5 | 50 | 30 | 12 | C9TS5MD5460AARX |
| 3 x 61.5 | 415 | 85 | 160 | 18 | 10.0 | 50 | 30 | 9 | C9TS5MD5615AARX |
| 3 x 77.0 | 415 | 75 | 230 | 23 | 12.5 | 50 | 30 | 12 | C9TS5MD5770AARX |
| 3 x 92.2 | 415 | 85 | 230 | 27 | 15.0 | 50 | 30 | 9 | C9TS5MD5920AARX |
| 3 x 108.0 | 415 | 75 | 280 | 32 | 17.5 | 50 | 30 | 12 | C9TS5MD6108AARX |
| 3 x 123.0 | 415 | 75 | 280 | 36 | 20.0 | 50 | 30 | 12 | C9TS5MD6123AARX |
| 3 x 154.0 | 415 | 85 | 280 | 45 | 25.0 | 50 | 30 | 9 | C9TS5MD6154AARX |
| 3 x 27.4 | 440 | 75 | 160 | 9 | 5.0 | 50 | 30 | 12 | C9TS6MD5274AARX |
| 3 x 41.1 | 440 | 75 | 160 | 13 | 7.5 | 50 | 30 | 12 | C9TS6MD5411AARX |
| 3 x 54.8 | 440 | 85 | 160 | 17 | 10.0 | 50 | 30 | 9 | C9TS6MD5548AARX |
| 3 x 68.5 | 440 | 75 | 230 | 21 | 12.5 | 50 | 30 | 12 | C9TS6MD5685AARX |
| 3 x 83.0 | 440 | 85 | 230 | 26 | 15.0 | 50 | 30 | 9 | C9TS6MD5830AARX |
| 3 x 96.0 | 440 | 75 | 280 | 30 | 17.5 | 50 | 30 | 12 | C9TS6MD5960AARX |
| 3 x 110.0 | 440 | 75 | 280 | 34 | 20.0 | 50 | 30 | 12 | C9TS6MD6110AARX |
| 3 x 137.0 | 440 | 85 | 280 | 43 | 25.0 | 50 | 30 | 9 | C9TS6MD6137AARX |

(* Maximum admissible RMS current. This ≤ 70°C.

Marking

| | | | | | |
|---|---|--|---------------------|---|--|
| CEI EN 60831/1-2 |  | Via Sagittario, 1/3 40037 Sasso Marconi (BO) ITALY Tel (+39) 051 939.111 http://www.kemet.com | — Manufacturer Logo | | |
| ATTENZIONE!! PER ACCEDERE, DISINSERIRE, ATTENDERE 3 MINUTI METTERE I TERMINALI IN CORTO CIRCUITO E A TERRA ATTENTION!! AVANT D'OUVRIR ATTENDEZ 3 MINUTES, METTEZ LE BORNES EN COURT-CIRCUIT AT A' LA TERRE | | ATTENTION!! TO OPEN SWITCH OFF, WAIT 3 MINUTES PLACE TERMINALS ON SHORT CIRCUIT AND ON GROUND ACHTUNG!! VOR DEM OFFNEN, NETZ AUSSCHALTEN 3 MINUTEN WARTEN KURZSCHLIESSEN UND BERDEN | | — Safety Warning | |
| THREE PHASE SELF HEALING CAPACITOR VDE-REG.-Nr.F064 | | | | | |
| PART NUMBER | C9TS6MD6137AARX | M/A | | — Part Number, Batch Number and Production Date | |
| REACTIVE POWER Qn | 25 | kvar | RATED CURRENT In | 43 A | — Rated Reactive Power and Current |
| RATED VOLTAGE Urms | 440 | V | INSULATING LEVEL | 3/8 KV | — Rated Voltage and Insulating Level |
| NOMINAL FREQUENCY Fn | 50 | Hz | CONNECTIONS | DELTA | — Rated Frequency and Internal Connections |
| TEMPERATURE CLASS -25/D - INDOOR USE ONLY OVERPRESSURE SAFETY DEVICE - NO PCBs | | | | — Climatic Class | |

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Dissipation Factor

Dissipation factor is a complex function involved with capacitor inefficiency. The $\tan \delta$ may vary up and down with increased temperature. For more information, refer to Performance Characteristics.

Sealing

Hermetically Sealed Capacitors

As the temperature increases, the pressure inside the capacitor increases. If the internal pressure is high enough, it can cause a breach in the capacitor. Such a breach can result in leakage, impregnation, filling fluid, or moisture susceptibility.

Barometric Pressure

The altitude at which hermetically sealed capacitors are operated controls the capacitor's voltage rating. As the barometric pressure decreases, the susceptibility to terminal arc-over increases. Non-hermetic capacitors can be affected by internal stresses due to pressure changes. These effects can be in the form of capacitance changes, dielectric arc-over, and/or low insulation resistance. Altitude can also affect heat transfer. Heat that is generated in an operation cannot be dissipated properly, and high RI^2 losses and eventual failure can result.

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