

## 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

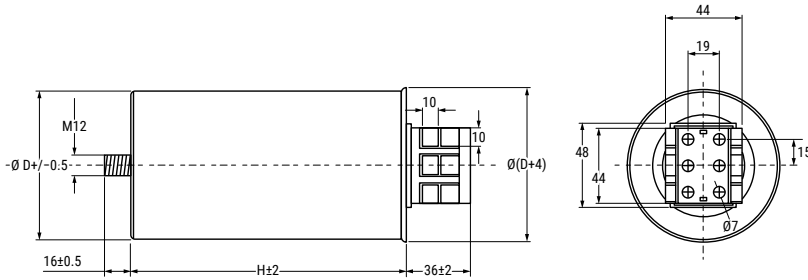
- VDE Approved
- Overpressure safety device
- High capacitance density
- Long lifetime
- 3-phase delta connections



## 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%

## 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		— Self-healing Dielectric and Approval		
REACTIVE POWER Qn	25	kvar	RATED CURRENT In	43	A	— Part Number, Batch Number and Production Date
RATED VOLTAGE Urms	440	V	INSULATING LEVEL	3/8	KV	— Rated Reactive Power and Current
NOMINAL FREQUENCY Fn	50	Hz	CONNECTIONS	DELTA		— Rated Voltage and Insulating Level
TEMPERATURE CLASS -25/D - INDOOR USE ONLY OVERPRESSURE SAFETY DEVICE - NO PCBs				— Rated Frequency and Internal Connections		
				— Climatic Class		

## Environmental Compliance

As a leading global supplier of electronic components and an environmentally conscious company, KEMET continually aspires to improve the environmental effects of our manufacturing processes and our finished electronic components.

In Europe (RoHS Directive) and in some other geographical areas such as China (China RoHS), legislation has been enacted to prevent or otherwise limit the use of certain hazardous materials, including lead (Pb), in electronic equipment. KEMET monitors legislation globally to ensure compliance and endeavors to adjust our manufacturing processes and/or electronic components as may be required by applicable law.

For military, medical, automotive, and some commercial applications, the use of lead (Pb) in the termination is necessary and/or required by design. KEMET is committed to communicating RoHS compliance to our customers. Information related to RoHS compliance will be provided in data sheets and using specific identifiers on the packaging labels.

All KEMET power film capacitors are RoHS compliant.

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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 RI2 losses and eventual failure can result.

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