Aluminum Can Power Film Capacitors

C9T, 415 – 440 VAC, 3–Phase PFC

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

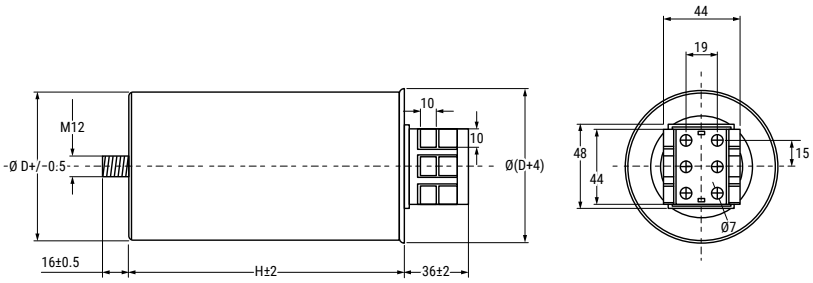
- VDE Approved
- Overpressure safety device
- High capacitance density
- Long lifetime
- 3-phase delta connections

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 $T_{hs} \leq 70°C$
Capacitance drop at end of life	–5% (typical)
Failure rate IEC 61709	300*10–9 components/hours

Test Method

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

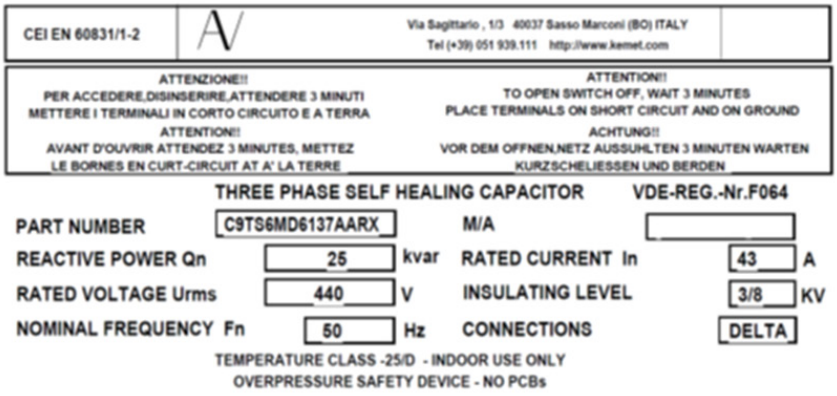
NOTICE: *Care should be taken to ensure that there still is electrical clearance of 15 mm between terminations and other live or earthed parts above the capacitor, in case of safety device activation.*

Table 1 – Ratings & Part Number Reference

Capacitance Value	Voltage	Dimensions (mm)		Rated Current	Qn	Operating Frequency	dV/dt	Packaging Quantity	Part Number
µF	VAC	Ø	H	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. Ths ≤ 70°C.

Marking



— Manufacturer Logo

— Safety Warning

— Self-healing Dielectric and Approval

— Part Number, Batch Number and Production Date

— Rated Reactive Power and Current

— Rated Voltage and Insulating Level

— Rated Frequency and Internal Connections

— Climatic Class

Environmental Compliance

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Dissipation Factor

Dissipation factor is a complex function involved with capacitor inefficiency. The tgδ 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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Although all product–related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated or that other measures may not be required.

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