

Type PC Power Conversion Capacitors



Type PC capacitors are designed to meet the demands of filter applications rich in system total harmonic distortion (THD). This series has a dual protection system utilizing self healing metallized polypropylene and a mechanical pressure interrupter to ensure a safe open circuit mode in the event of overload or end of life. (*)

Highlights

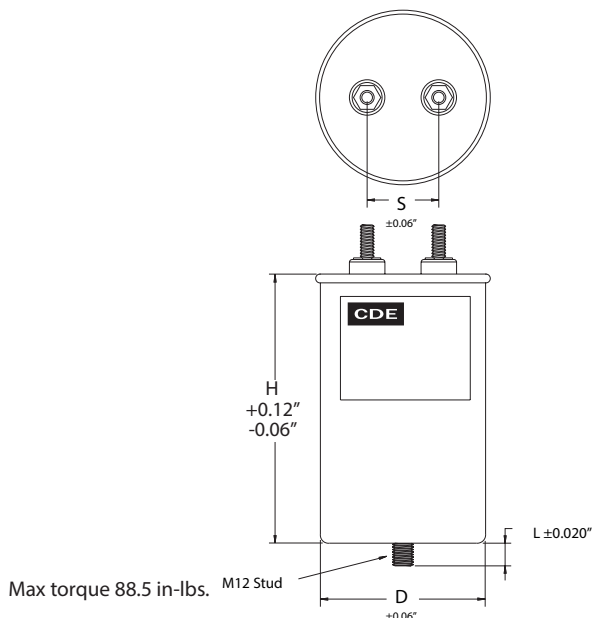
- Uninterruptable power supplies (UPS)
- AC Tuned filters (harmonic reduction)
- AC Input filtering
- Line conditioning
- Noise suppression
- Variable speed drives
- Wind turbine motoring

Specifications

Capacitance Range	20 μ F to 125 μ F
Capacitance Tolerance	\pm 5% Standard, \pm 10%, \pm 6 and \pm 3% available
Rated Voltage	300 Vac, 500 Vac, 700 Vac
Operating Temperature Range	-40 $^{\circ}$ C to +70 $^{\circ}$ C, 85 $^{\circ}$ C heavy duty option available
Maximum Permissible Voltage (Vmax)	110% of rated rms voltage 120% of rated peak voltage ($1.2 \times \sqrt{2} \times V_{rms}$)
Maximum Permissible Current (Imax)	135% of nominal rms current based on the combined effects of harmonics, over voltages capacitances and tolerances
Terminations	M6x1 Threaded tinplated brass terminals standard, other sizes available
Maximum Rated Current (Irms)	85A (Limited by the terminals)
Service Life Objective	60,000 h w/94% survival rate
FIT (Failure In Time)	$\leq 300 \times 10^9$ component h
Maximum Short Circuit Current (available fault current)	10 kA (according to UL 810)
Notes	Additional ratings, size and terminals are available upon request. Case diameters available up to 4.57", low-loss / low ESR option and rack mounting solution available.

[RoHS Compliant](#)

Outline Drawing



Construction Details	
Case Material	Extruded aluminum with steel or aluminum cover
Encapsulation	Environmentally safe dielectric fluid

Case Diameter (in)	S Dimension (in)	L Dimension (in)
2.50	1.250	0.487
3.00	1.375	0.630
3.50	1.375	0.630

(*) The capacitor's safety pressure interrupter is designed to disconnect the capacitor element as the cover expands upward due to gas pressure build up. Catastrophic failure may result if movement of the cover and or terminals are restricted. Rigid bus bars are not recommended as they may restrict movement of the cover or terminals. Customers are advised to provide at least 0.5" clearance above the cover to allow for its expansion.

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Part Numbering System

PC	S	T	30	A	150	J	569	S
Series	Type	Base Size	Voltage (Vrms)	Case Material	Capacitance	Tolerance (%)	Case Height (in)	Terminals
PC	S = Standard Cell H = Harmonic Rated Cell	T = 2½" Round (63.5 mm) V = 3" Round (76 mm) X = 3.5" Round (88 mm) W = 3.35" Round (85 mm) Y = 3.94" Round (100 mm) Z = 4.57" Round (116 mm)	30 = 300 50 = 500 70 = 700	A = Aluminum case and cover T = Aluminum case w/steel cover	Capacitance value	J = ±5%	Expressed as 3 digit number rounded and displayed without decimal point	S = Studs

Ratings

CDE Catalog Number	Cn (µF)	Rs (Ω)	E.S.L. (nH)	I peak (A)	dV/dT (V/µs)	Rth (hs) (°C/W)	Max Power (W)			Case Diameter		Case Height		SA (in²)
							25 °C	50 °C	70 °C	(in)	(mm)	(in)	(mm)	
300 Vrms 424 Vpeak														
PCST30A50J291S	50	0.0028	44	2127	43	8.63	7.0	4.1	1.7	2.5	63.5	2.91	74	33
PCST30A75J391S	75	0.0035	75	2040	27	6.95	8.6	5.0	2.2	2.5	63.5	3.91	99	41
PCST30A100J475S	100	0.0044	102	1926	19	5.97	10.0	5.9	2.5	2.5	63.5	4.75	121	47
PCSV30A125J475S	125	0.0036	102	2908	23	4.78	12.6	7.3	3.1	3.0	76.0	4.75	121	59
500 Vrms 707 Vpeak														
PCST50T40J475S	40	0.0047	102	1252	31	5.97	10.0	5.9	2.5	2.5	63.5	4.75	121	47
PCSV50T60J475S	60	0.0037	102	1877	31	4.78	12.6	7.3	3.1	3.0	76.0	4.75	121	59
PCSV50T80J475S	80	0.0033	102	2503	31	4.78	12.6	7.3	3.1	3.0	76.0	4.75	121	59
PCSV50T110J572S	110	0.0039	133	2522	23	4.13	14.5	8.5	3.6	3.0	76.0	5.72	145	68
PCSV50T125J572S	125	0.0037	133	2865	23	3.42	17.5	10.2	4.4	3.5	88.0	5.72	145	82
700 Vrms 990 Vpeak														
PCST70T20J475S	20	0.0060	102	883	44	5.97	10.0	5.9	2.5	2.5	63.5	4.75	121	47
PCST70T30J572S	30	0.0071	133	970	32	5.14	11.7	6.8	2.9	2.5	63.5	5.72	145	55
PCST70T40J616S	40	0.0083	147	1020	26	4.83	12.4	7.2	3.1	2.5	63.5	6.16	157	58
PCSV70T50J616S	50	0.0071	147	1275	26	3.89	15.4	9.0	3.9	3.0	76.0	6.16	157	72
PCSV70T60J616S	60	0.0062	147	1530	26	3.89	15.4	9.0	3.9	3.0	76.0	6.16	157	72

Performance Notes

I max: Maximum rms current value for continuous operation (A)

I peak: Maximum current amplitude for continuous operation (A)

Rs: Equivalent series resistance – Ohmic resistances (Ohm)

Dielectric Dissipation Factor: $\tan \delta$ (Polypropylene: 0.0002)

T_{hs}: Hot spot temperature within the capacitor: $T_{hs} = T_a + (P_{total} \cdot 280 / SA)$

T_a: Ambient temperature

R_{th}: Thermal resistance: °C/ Watt, indicates hot spot temperature rise due to power dissipation losses

P_{max}: Maximum power dissipation: $P_{max} = (85 °C - T_a) / R_{th}$ (Watts)

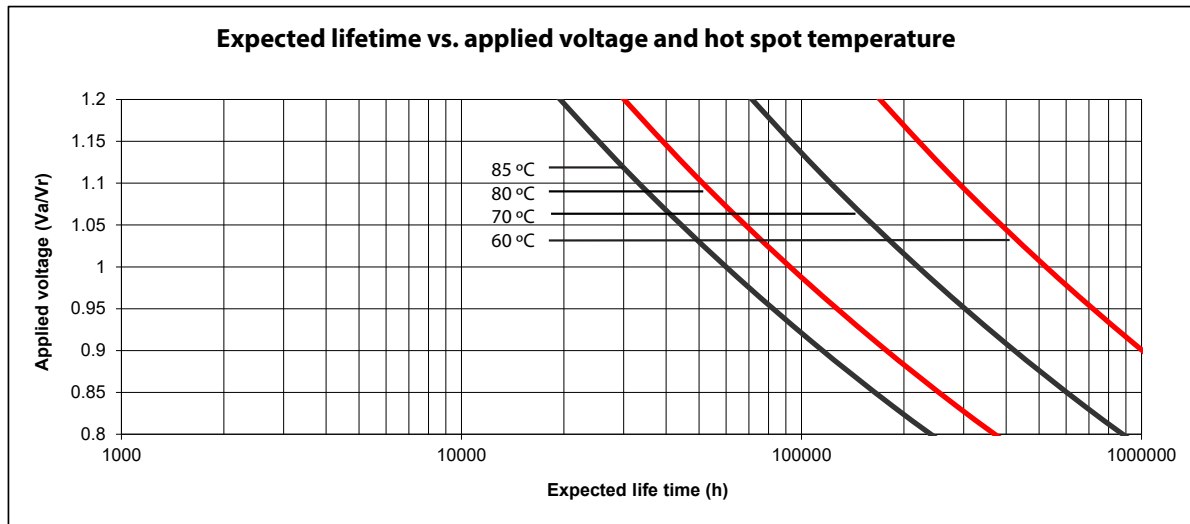
P_{Total}: Total Power generated by Dielectric and Ohmic Losses: $P = V_{peak}^2 \cdot C \cdot TT \cdot F \cdot DF$ (Watts) given Voltage

$P = I^2 \cdot [R_s + (X_C \cdot DF)]$ (Watts) given Current

Where $P_{Total} = P_{Fund} + P_{Harm1} + P_{Harm2} + \dots + P_{Harm\infty}$

Design life: 60,000 hours 94% survival T_{hs} : 85 °C

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