



DRY CAPACITORS FOR MOTOR START APPLICATIONS

Life Expectancy & Reliability
Surpasses EIA-463-B Requirements

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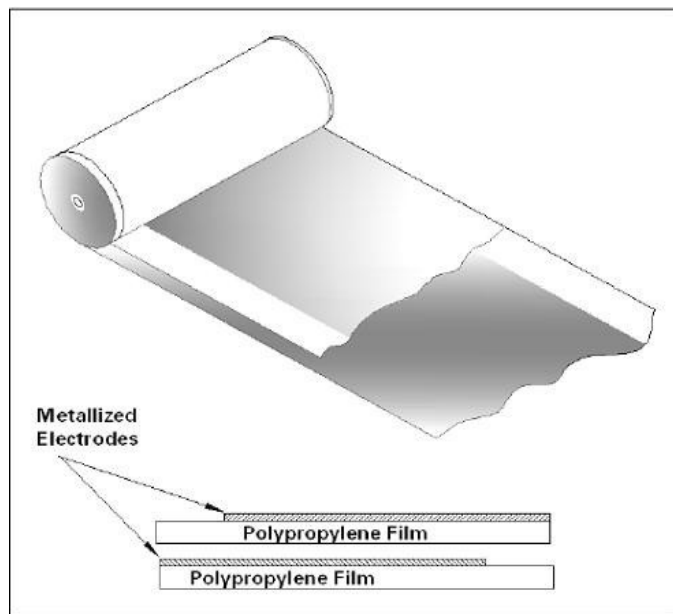
Capcom Capacitors Dry Capacitors for Motor Start Applications

Genteq metallized film (MF) capacitors are unsurpassed in terms of size, weight, performance, and reliability for AC applications. Capcom brings over 60 years of capacitor manufacturing experience to the product lines described in this publication. These capacitors represent the best in product design for long-term reliability. Capcom's materials, product, and process development work continue to provide capacitor users with outstanding total value.

Single phase AC motors that produce very strong starting torque require to have a phase-splitting device that consists of an auxiliary winding with a capacitor in series to produce the necessary phase shift to overcome strong inertia. The capacitor required is normally of large value and they are normally of the electrolytic type. Electrolytic capacitors have the disadvantage of rapidly overheating thus they can not be used for more than 3 seconds and with a maximum of 20 times within an hour. Capcom has developed a Dry Film Capacitor that can replace electrolytic capacitors on start applications that require very high torque and that could take up to 1 minute, depending on the voltage, to reach full speed and still be reliable for up to 700,000 cycles.

Dry Capacitor Construction

Capcom's MF capacitors are manufactured with high-grade metallized polypropylene film. The capacitor film thickness depends on the application, voltage, and conditions. The metallized electrode is several hundred nanometers thick.



The film is wound into capacitor rolls on high-speed, high-precision machines. The winding is extremely tight so that there is not enough space between the layers for corona (localized partial electrical discharges) to occur. The rolls are sprayed on both ends with metal to make the connection to the extremely thin edges of the metallized electrodes. This process is critical to the quality and performance of the capacitors.

The sections are assembled in plastic cases, and encapsulate. They are then subjected to 100% electrical testing for capacitance, dissipation factor, and high potential electrical withstand, both terminal-to-terminal and terminal-to-case.

24D S 119 B 330 P A R

Dry Capacitor

Product Line:

S = Start Capacitor

uF Rating:

119 uF

Terminal Type:

A = Customer Designed

B = Quick Connects

C = Leads

Voltage Rating:

330 VAC

Case Diameter:

L = 1.375"

M = 1.25"

N = 1.57"

P = 1.75"

S = 2.00"

T = 2.50"

Temperature Rating:

A = 70°C

B = 90°C

C = 100°C

R = Bleed Resistor

Data from Example Part Nbr Above:

Product Line:	Motor Start
uF Rating:	119uF
Terminal Type:	Quick Connects
Voltage Rating:	330VAC
Case Diameter:	1.75"
Temperature Rating:	70°C

Dry Capacitors – Motor Start

110,125,165,220,250,& 330 VAC



This capacitor series is **designed specifically for the motor start applications** where the single-phase AC motor is provided with a centrifugal switch, or other device which cuts the capacitor out of the circuit once the full speed is reached. They may be used on either 50 or 60-Hertz systems but should not be used at higher frequencies or in applications where higher frequency harmonics are present. If there are any questions regarding the correct application of these products, please contact your Capcom sales representative.

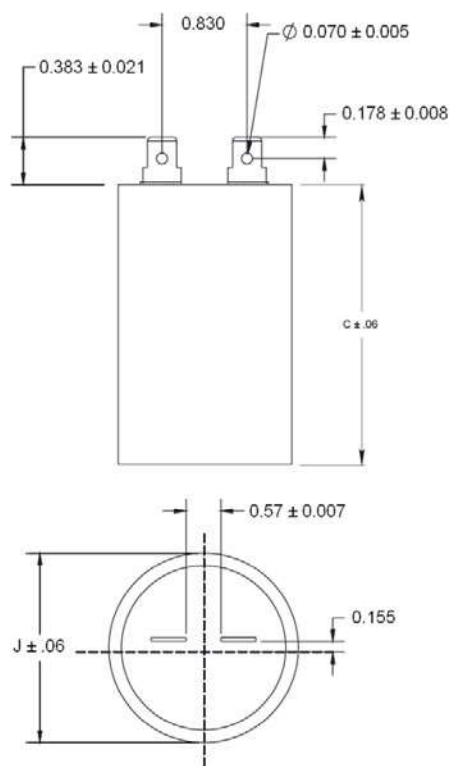
SPECIFICATIONS:

Available Capacitance Range:	24 to 300 μ F (Special Ratings upon request)
Capacitance Tolerance	$\pm 10\%$
Rated Voltage:	see RATING TABLES. RATING IS THE 50/60HZ RMS VOLTAGE for a sinusoidal waveform. (Special Ratings upon request)
Leakage Current:	30 μ A maximum
Frequency	50/60 Hz.
Operating Temperature:	-40°C to +70°C
Storage Temperature:	-40°C to +90°C
Operating Life:	700,000 + Cycles
Dissipation Factor:	0.1% maximum
Case Material/Finish:	Plastic
Terminations:	Combo' terminal: 0.250" x 0.031" quick connect blade:
Encapsulate:	Polyurethane Resin

Dry Capacitors – Motor Start

Single Ratings – 1 Section

Voltage (VAC)	Capacitance (μF)	Catalog Number	Case Style	Base Size (in.)	Can Type	Height C (in.)
110	24.0	24D S 024 B 110 M A R	M	1.25	Round	2.90
	28.0	24D S 028 B 110 M A R	M	1.25	Round	2.90
	34.0	24D S 034 B 110 M A R	M	1.25	Round	2.90
	40.0	24D S 040 B 110 N A R	N	1.57	Round	3.15
	48.0	24D S 048 B 110 N A R	N	1.57	Round	3.15
	53.0	24D S 053 B 110 N A R	N	1.57	Round	3.15
	59.0	24D S 059 B 110 N A R	N	1.57	Round	3.15
	72.0	24D S 072 B 110 P A R	P	1.75	Round	4.50
	80.0	24D S 080 B 110 P A R	P	1.75	Round	4.50
	98.0	24D S 98 B 110 P A R	P	1.75	Round	4.50
	120.0	24D S 120 B 110 P A R	P	1.75	Round	4.50
	145.0	24D S 145 B 110 P A R	P	1.75	Round	4.50
	150.0	24D S 150 B 110 S A R	S	2.00	Round	4.50
	162.0	24D S 162 B 110 S A R	S	2.00	Round	4.50
	177.0	24D S 177 B 110 S A R	S	2.00	Round	4.50
	196.0	24D S 196 B 110 T A R	T	2.50	Round	4.50
	210.0	24D S 210 B 110 T A R	T	2.50	Round	4.50
	229.0	24D S 229 B 110 T A R	T	2.50	Round	4.50
	240.0	24D S 240 B 110 T A R	T	2.50	Round	4.50
	259.0	24D S 259 B 110 T A R	T	2.50	Round	4.50
	270.0	24D S 270 B 110 T A R	T	2.50	Round	4.50
	300.0	24D S 300 B 110 T A R	T	2.50	Round	4.50



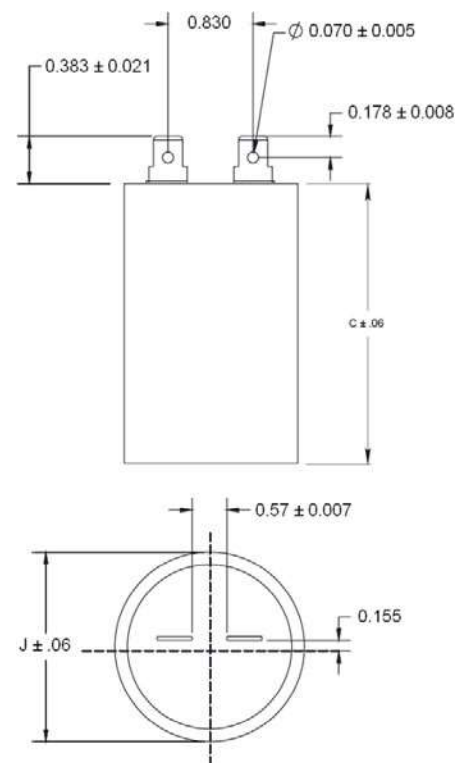
Case Style	K	J
M	1.25	1.25
N	1.57	1.57
P	1.75	1.75
S	2.00	2.00
T	2.50	2.50

Dry Capacitors – Motor Start Single Ratings – 1 Section

Voltage (VAC)	Capacitance (μF)	Catalog Number	Case Style	Base Size (in.)	Can Type	Height C (in.)
125	24.0	24D S 024 B 125 M A R	M	1.25	Round	2.90
	28.0	24D S 028 B 125 M A R	M	1.25	Round	2.90
	34.0	24D S 034 B 125 M A R	M	1.25	Round	2.90
	40.0	24D S 040 B 125 N A R	N	1.57	Round	3.15
	48.0	24D S 048 B 125 N A R	N	1.57	Round	3.15
	53.0	24D S 053 B 125 N A R	N	1.57	Round	3.15
	59.0	24D S 059 B 125 N A R	N	1.57	Round	3.15
	72.0	24D S 072 B 125 P A R	P	1.75	Round	4.50
	80.0	24D S 080 B 125 P A R	P	1.75	Round	4.50
	98.0	24D S 98 B 125 P A R	P	1.75	Round	4.50
	120.0	24D S 120 B 125 P A R	P	1.75	Round	4.50
	145.0	24D S 145 B 125 P A R	P	1.75	Round	4.50
	150.0	24D S 150 B 125 S A R	S	2.00	Round	4.50
	162.0	24D S 162 B 125 S A R	S	2.00	Round	4.50
	177.0	24D S 177 B 125 S A R	S	2.00	Round	4.50
	196.0	24D S 196 B 125 T A R	T	2.50	Round	4.50
	210.0	24D S 210 B 125 T A R	T	2.50	Round	4.50
	229.0	24D S 229 B 125 T A R	T	2.50	Round	4.50
	240.0	24D S 240 B 125 T A R	T	2.50	Round	4.50
	259.0	24D S 259 B 125 T A R	T	2.50	Round	4.50
	270.0	24D S 270 B 125 T A R	T	2.50	Round	4.50
	300.0	24D S 300 B 125 T A R	T	2.50	Round	4.50

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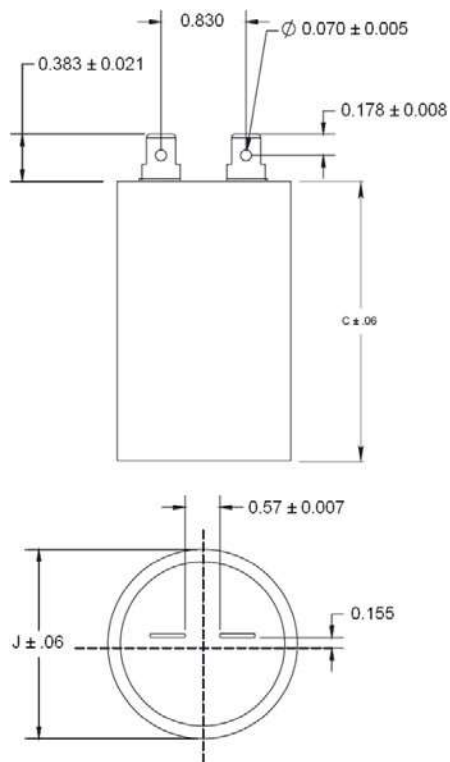
Case Style	K	J
M	1.25	1.25
N	1.57	1.57
P	1.75	1.75
S	2.00	2.00
T	2.50	2.50



Dry Capacitors – Motor Start

Single Ratings – 1 Section

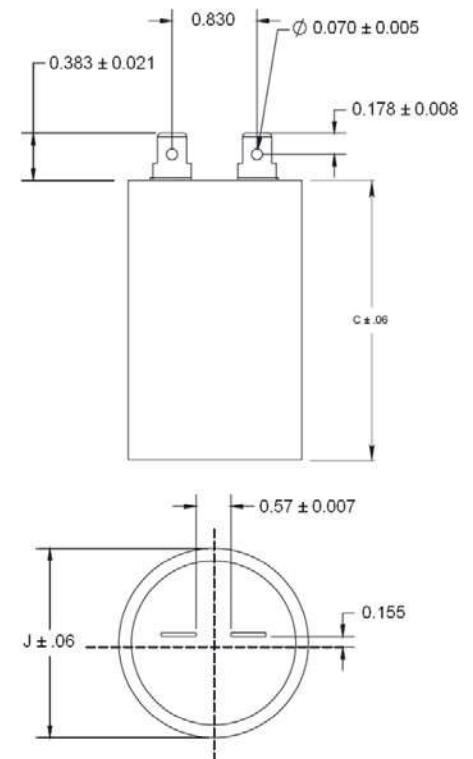
Voltage (VAC)	Capacitance (μF)	Catalog Number	Case Style	Base Size (in.)	Can Type	Height C (in.)
165	24.0	24D S 024 B 165 M A R	M	1.25	Round	2.90
	28.0	24D S 028 B 165 M A R	M	1.25	Round	2.90
	34.0	24D S 034 B 165 M A R	M	1.25	Round	2.90
	40.0	24D S 040 B 165 N A R	N	1.57	Round	3.15
	48.0	24D S 048 B 165 N A R	N	1.57	Round	3.15
	53.0	24D S 053 B 165 N A R	N	1.57	Round	3.15
	59.0	24D S 059 B 165 N A R	N	1.57	Round	3.15
	72.0	24D S 072 B 165 P A R	P	1.75	Round	4.50
	80.0	24D S 080 B 165 P A R	P	1.75	Round	4.50
	98.0	24D S 98 B 165 P A R	P	1.75	Round	4.50
	120.0	24D S 120 B 165 P A R	P	1.75	Round	4.50
	145.0	24D S 145 B 165 P A R	P	1.75	Round	4.50
	150.0	24D S 150 B 165 S A R	S	2.00	Round	4.50
	162.0	24D S 162 B 165 S A R	S	2.00	Round	4.50
	177.0	24D S 177 B 165 S A R	S	2.00	Round	4.50
	196.0	24D S 196 B 165 T A R	T	2.50	Round	4.50
	210.0	24D S 210 B 165 T A R	T	2.50	Round	4.50
	229.0	24D S 229 B 165 T A R	T	2.50	Round	4.50
	240.0	24D S 240 B 165 T A R	T	2.50	Round	4.50
	259.0	24D S 259 B 165 T A R	T	2.50	Round	4.50
	270.0	24D S 270 B 165 T A R	T	2.50	Round	4.50
	300.0	24D S 300 B 165 T A R	T	2.50	Round	4.50



Case	K	J
M	1.25	1.25
N	1.57	1.57
P	1.75	1.75
S	2.00	2.00
T	2.50	2.50

Voltage (VAC)	Capacitance (μF)	Catalog Number	Case Style	Base Size (in.)	Can Type	Height C (in.)
220	24.0	24D S 024 B 220 M A R	M	1.25	Round	2.90
	28.0	24D S 028 B 220 M A R	M	1.25	Round	2.90
	34.0	24D S 034 B 220 M A R	M	1.25	Round	2.90
	40.0	24D S 040 B 220 N A R	N	1.57	Round	3.15
	48.0	24D S 048 B 220 N A R	N	1.57	Round	3.15
	53.0	24D S 053 B 220 N A R	N	1.57	Round	3.15
	59.0	24D S 059 B 220 N A R	N	1.57	Round	3.15
	72.0	24D S 072 B 220 P A R	P	1.75	Round	4.50
	80.0	24D S 080 B 220 P A R	P	1.75	Round	4.50
	98.0	24D S 98 B 220 P A R	P	1.75	Round	4.50
	120.0	24D S 120 B 220 P A R	P	1.75	Round	4.50
	145.0	24D S 145 B 220 P A R	P	1.75	Round	4.50
	150.0	24D S 150 B 220 S A R	S	2.00	Round	4.50
	162.0	24D S 162 B 220 S A R	S	2.00	Round	4.50
	177.0	24D S 177 B 220 S A R	S	2.00	Round	4.50
	196.0	24D S 196 B 220 T A R	T	2.50	Round	4.50
	210.0	24D S 210 B 220 T A R	T	2.50	Round	4.50
	229.0	24D S 229 B 220 T A R	T	2.50	Round	4.50
	240.0	24D S 240 B 220 T A R	T	2.50	Round	4.50
	259.0	24D S 259 B 220 T A R	T	2.50	Round	4.50
	270.0	24D S 270 B 220 T A R	T	2.50	Round	4.50
	300.0	24D S 300 B 220 T A R	T	2.50	Round	4.50

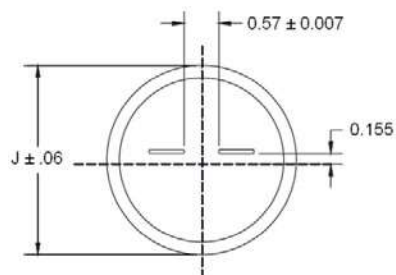
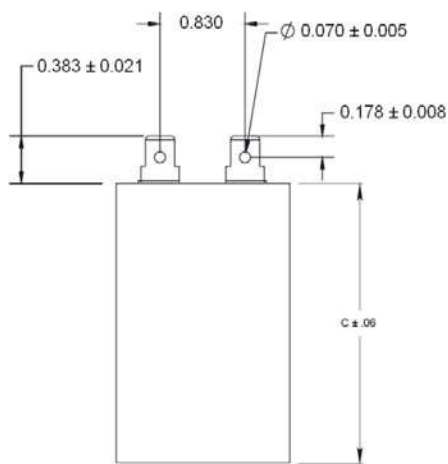
Case Style	K	J
M	1.25	1.25
N	1.57	1.57
P	1.75	1.75
S	2.00	2.00
T	2.50	2.50



Dry Capacitors – Motor Start

Single Ratings – 1 Section

Voltage (VAC)	Capacitance (μF)	Catalog Number	Case Style	Base Size (in.)	Can Type	Height C (in.)
250	24.0	24D S 024 B 250 M A R	M	1.25	Round	2.90
	28.0	24D S 028 B 250 M A R	M	1.25	Round	2.90
	34.0	24D S 034 B 250 M A R	M	1.25	Round	2.90
	40.0	24D S 040 B 250 N A R	N	1.57	Round	3.15
	48.0	24D S 048 B 250 N A R	N	1.57	Round	3.15
	53.0	24D S 053 B 250 N A R	N	1.57	Round	3.15
	59.0	24D S 059 B 250 N A R	N	1.57	Round	3.15
	72.0	24D S 072 B 250 P A R	P	1.75	Round	4.50
	80.0	24D S 080 B 250 P A R	P	1.75	Round	4.50
	98.0	24D S 98 B 250 P A R	P	1.75	Round	4.50
	120.0	24D S 120 B 250 P A R	P	1.75	Round	4.50
	145.0	24D S 145 B 250 P A R	P	1.75	Round	4.50
	150.0	24D S 150 B 250 S A R	S	2.00	Round	4.50
	162.0	24D S 162 B 250 S A R	S	2.00	Round	4.50
	177.0	24D S 177 B 250 S A R	S	2.00	Round	4.50
	196.0	24D S 196 B 250 T A R	T	2.50	Round	4.50
	210.0	24D S 210 B 250 T A R	T	2.50	Round	4.50
	229.0	24D S 229 B 250 T A R	T	2.50	Round	4.50
	240.0	24D S 240 B 250 T A R	T	2.50	Round	4.50
	259.0	24D S 259 B 250 T A R	T	2.50	Round	4.50
	270.0	24D S 270 B 250 T A R	T	2.50	Round	4.50
	300.0	24D S 300 B 250 T A R	T	2.50	Round	4.50

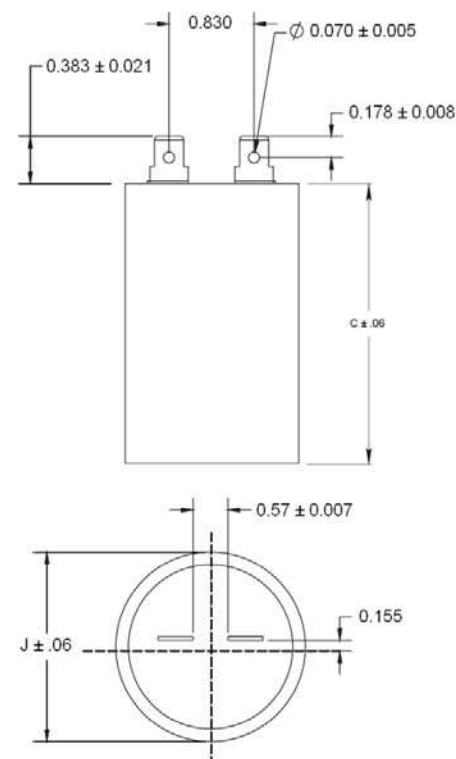


Case Style	K	J
M	1.25	1.25
N	1.57	1.57
P	1.75	1.75
S	2.00	2.00
T	2.50	2.50

Dry Capacitors – Motor Start Single Ratings – 1 Section

Voltage (VAC)	Capacitance (μF)	Catalog Number	Case Style	Base Size (in.)	Can Type	Height C (in.)
330	24.0	24D S 024 B 330 M A R	M	1.25	Round	2.90
	28.0	24D S 028 B 330 M A R	M	1.25	Round	2.90
	34.0	24D S 034 B 330 M A R	M	1.25	Round	2.90
	40.0	24D S 040 B 330 N A R	N	1.57	Round	3.15
	48.0	24D S 048 B 330 N A R	N	1.57	Round	3.15
	53.0	24D S 053 B 330 N A R	N	1.57	Round	3.15
	59.0	24D S 059 B 330 N A R	N	1.57	Round	3.15
	72.0	24D S 072 B 330 P A R	P	1.75	Round	4.50
	80.0	24D S 080 B 330 P A R	P	1.75	Round	4.50
	98.0	24D S 98 B 330 P A R	P	1.75	Round	4.50
	120.0	24D S 120 B 330 P A R	P	1.75	Round	4.50
	145.0	24D S 145 B 330 P A R	P	1.75	Round	4.50
	150.0	24D S 150 B 330 S A R	S	2.00	Round	4.50
	162.0	24D S 162 B 330 S A R	S	2.00	Round	4.50
	177.0	24D S 177 B 330 S A R	S	2.00	Round	4.50
	196.0	24D S 196 B 330 T A R	T	2.50	Round	4.50
	210.0	24D S 210 B 330 T A R	T	2.50	Round	4.50
	229.0	24D S 229 B 330 T A R	T	2.50	Round	4.50
	240.0	24D S 240 B 330 T A R	T	2.50	Round	4.50
	259.0	24D S 259 B 330 T A R	T	2.50	Round	4.50
	270.0	24D S 270 B 330 T A R	T	2.50	Round	4.50
	300.0	24D S 300 B 330 T A R	T	2.50	Round	4.50

Case Style	K	J
M	1.25	1.25
N	1.57	1.57
P	1.75	1.75
S	2.00	2.00
T	2.50	2.50

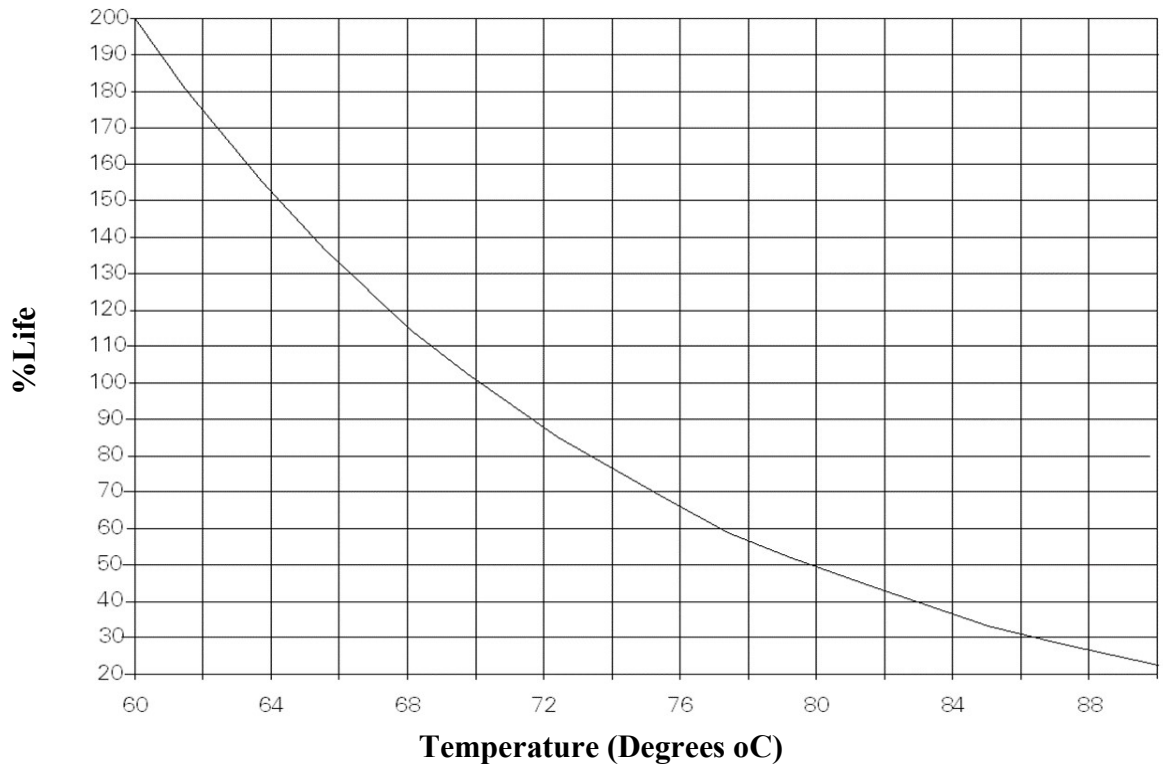


Application Data

Dry Capacitors - Motor Run

LIFE vs TEMPERATURE

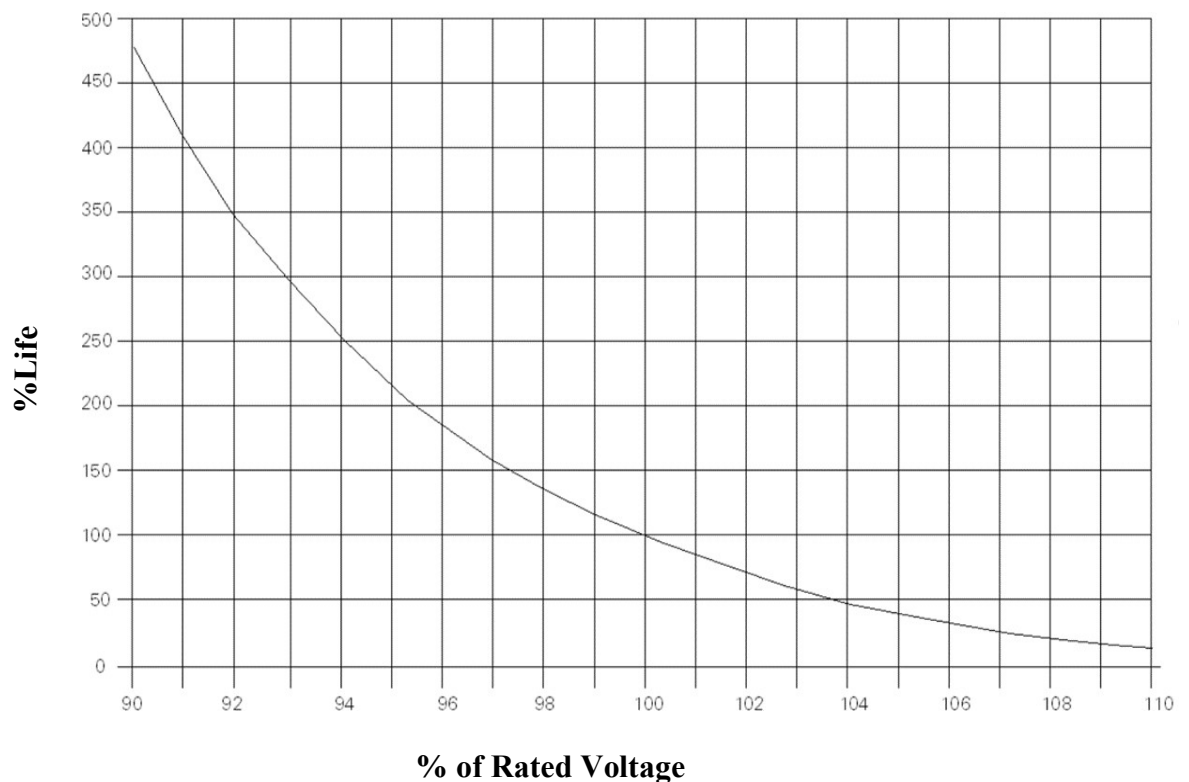
CHART M-1

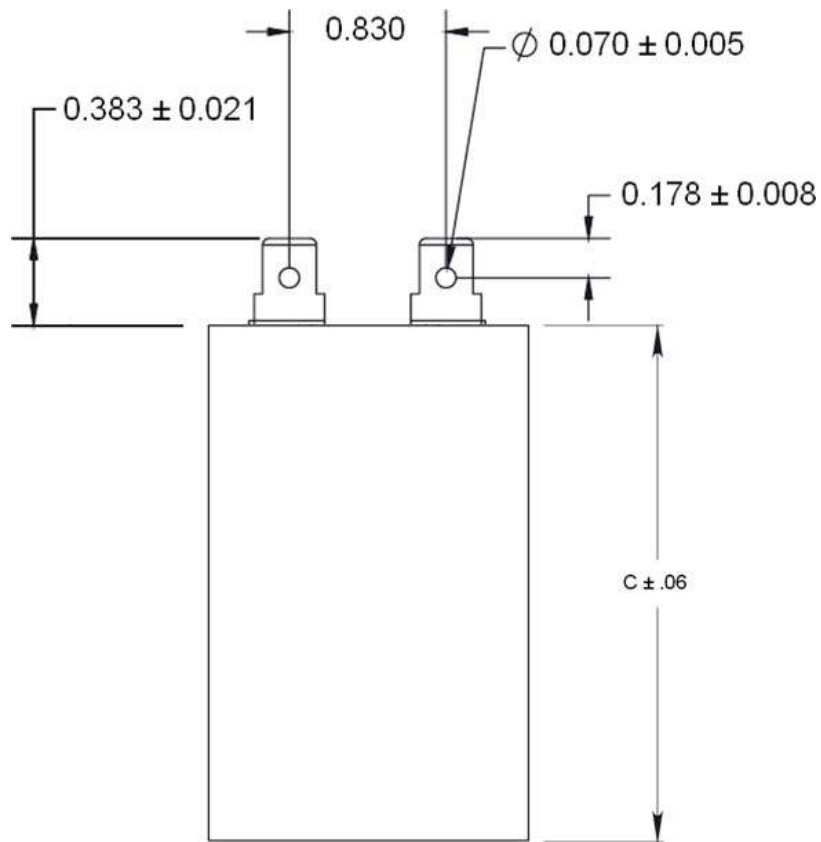


LIFE vs VOLTAGE

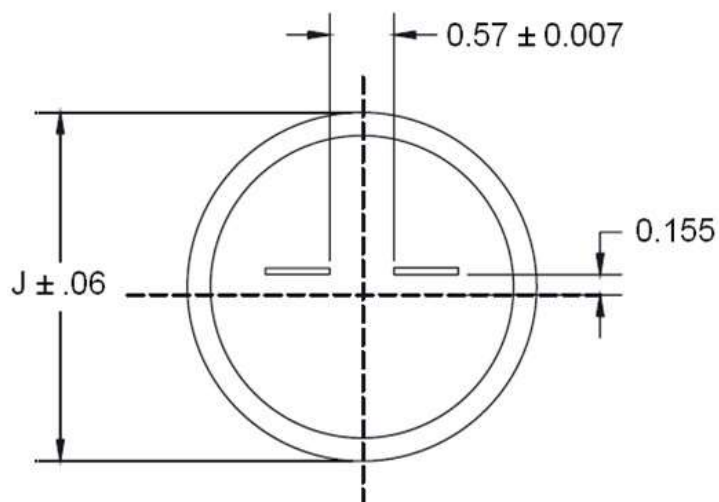
CHART M-2

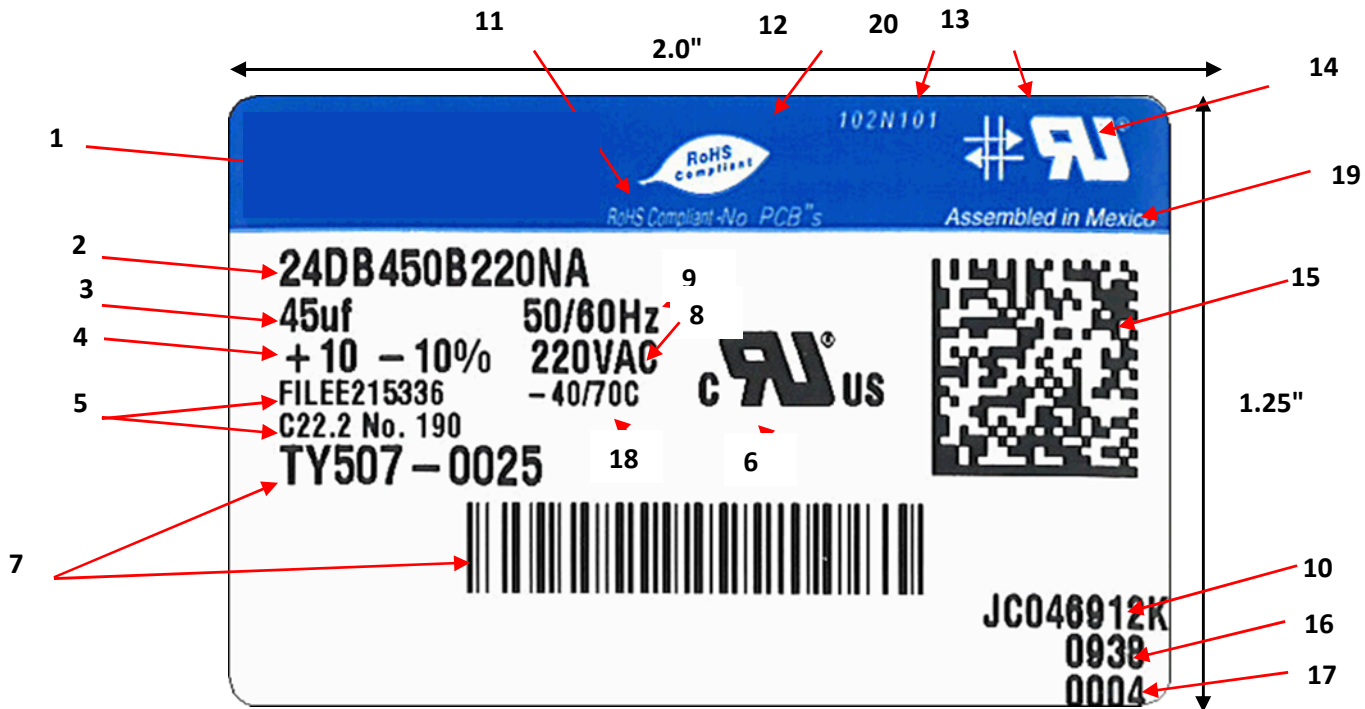
This chart is intended as general reference only. Any indication of extended life by reducing voltage is in no way a guarantee of extended product life.





Case Style	K	J
M	1.25	1.25
N	1.57	1.57
P	1.75	1.75
S	2.00	2.00
T	2.50	2.50





1. Product / Brand
2. Genteq Catalog Model Number
3. Capacitance in Micro-Farads
4. Tolerance
5. UL and CSA File Number
6. Canadian UL Approved Logo
7. Customer Part Number and Bar Code
8. AC Voltage Rating
9. Frequency
10. Manufacturing WIP Job Number
11. RoHS Compliant / No PCBs Statement
12. RoHS Compliant Logo
13. Self-Healing Symbol
14. UL Approved Logo

15. Data Matrix Bar Code
16. Manufacturing Date Code

Example:

<u>09</u>	<u>38</u>
↑	↑
Year (Last Digits of the year)	Fiscal Week

17. Label Sequence Number
18. Operating Temperature
19. Country of Origin
20. Label Part Number (Internal)



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