



GE Capacitors

By REGAL-BELOIT

CPD 511

03 / 07



A-C Capacitors for HID Lighting Applications



Capacitor Application Data Sheet

To ensure correct selection of a capacitor for your application, please provide the information indicated below. This sheet may be duplicated or additional copies may be obtained from RBC.

Of particular importance are the voltages and current waveforms complete with values of voltage and current over a complete cycle.

Send this data to your local RBC Sales Representative or directly to:

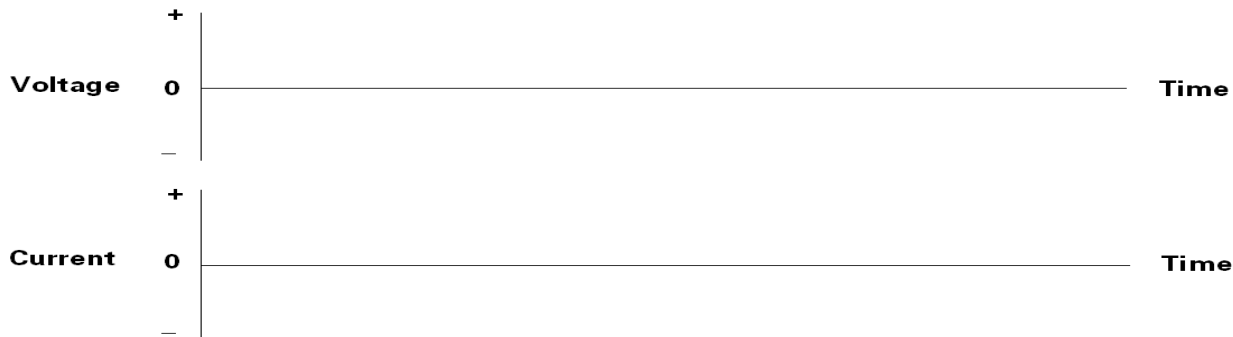
GE Capacitors by Regal Beloit
11970 PELLICANO DR., SUITE 300
EL PASO, TEXAS 79936
USA

Fax: (915) 849-5799

PRIMARY INFORMATION (Essential)

1. **Application:** _____
2. **Capacitance:** _____ **Tolerance:** _____
3. **Peak Voltage:** _____ **RMS Voltage:** _____
4. **Peak Current:** _____ **RMS Current:** _____
5. **Transient Voltage:** _____ **Duration:** _____ **Freq. Of Occurrence:** _____
6. **Frequency or Repetition Rate (Hz):** _____ **Duty Cycle:** _____
7. **Ambient Temperature:** _____ **Max.:** _____ **Min.:** _____
8. **Capacitor Charge Time:** _____ **Discharge Time:** _____
9. **Required Operating Life (Hours):** _____

10. Waveforms:



SECONDARY INFORMATION (Provide as Appropriate)

11. **Physical Size Limitations:** _____
12. **Mounting Requirements:** _____
13. **Applicable Specifications:** _____
14. **Type of cooling Available:** _____
15. **Unusual Atmospheric Conditions:** _____
16. **Other special Requirements:** _____
17. **Number of samples Required:** _____
18. **Potential Usage:** _____



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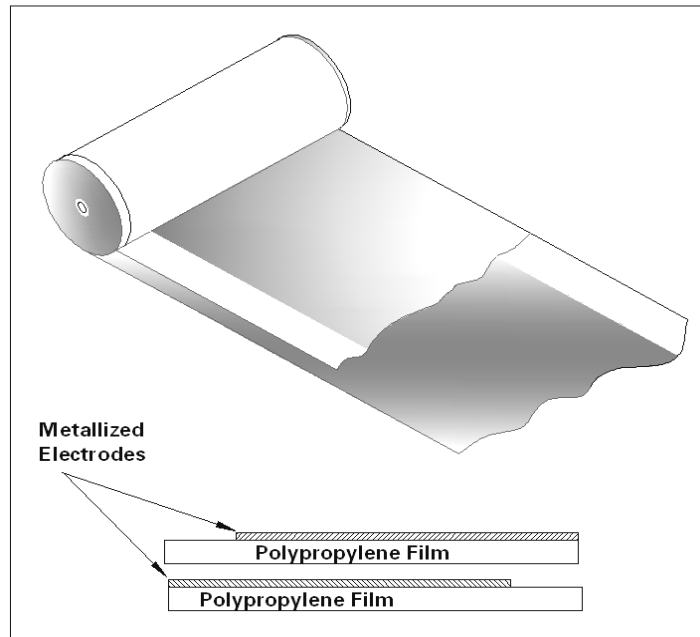
Descriptive Information

RBC Capacitors for HID Lighting Purpose Applications

Metallized film capacitors are unsurpassed in terms of size, weight, performance, and reliability for AC applications. RBC - 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 and safe operation. RBC's materials, product, and process development work continue to provide capacitor users with outstanding total value.

The Gem III HID Lighting Capacitors are designed specifically for HID Lighting applications where the capacitors are used as part of the ballast circuit for mercury vapor, metal halide, and high-pressure sodium lamps. The units are designed to operate at temperatures up to 90°C, which is the normal requirement for HID ballast capacitors. Due to advances in material technology and breakthroughs in proprietary capacitor manufacturing processes, selected ratings are now available for operation up to 100°C for 60,000 hours.

GEM III Construction



RBC 's Gem III capacitors are manufactured with high-grade metallized polypropylene film. This film is in the range of 5 to 10 microns thick, depending on the application voltage and conditions. The metallized electrode is several hundred angstroms 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 connection to the extremely thin edges of the metallized electrodes. This process is critical to the quality and performance of the capacitors.

The rolls are assembled in metal cases, RBC's proprietary Dielektrol VI liquid is introduced under vacuum, and the capacitors are sealed. 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.

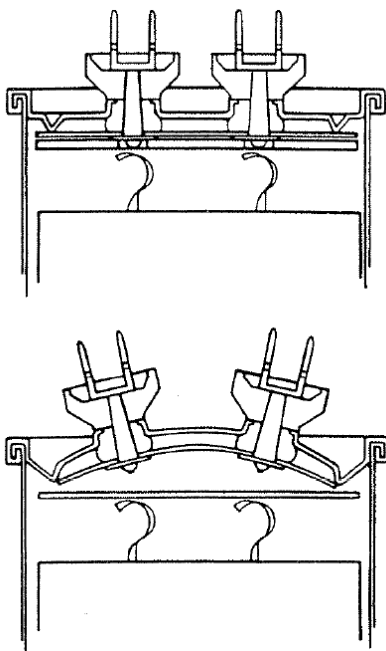
Pressure Sensitive Interrupter

All the capacitors listed in this publication contain RBC's Pressure Sensitive Interrupter (PSI). This device, developed by RBC, is designed to sense the build-up of pressure within the capacitor if a fault occurs and to interrupt the internal electrical connections before the case can rupture.

The PSI carries U.L. * recognition for applications where the specified fault currents are not exceeded. The fault current is the maximum current that is available from the circuit to flow through the capacitor if the capacitor were to become a short circuit with zero impedance. **It is the responsibility of the capacitor user to determine what the available fault current is for a particular application.**

In the Catalog Number listings a four character U.L. Code, Pxxx, is given. This number is part of the listing for RBC in U.L. File No. E7793. When applying to U.L. for approvals or recognition of equipment using these capacitors refer to the Pxxx number and not the Catalog Number of the capacitor in question.

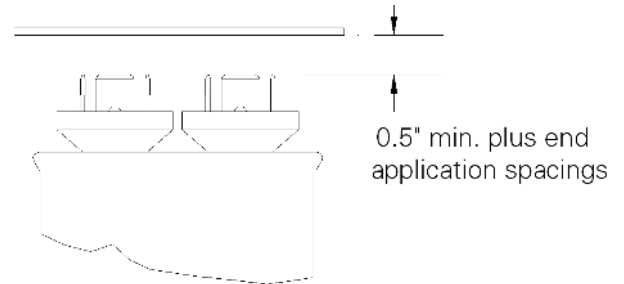
Proper operation of the PSI requires that the cover be able to expand without restriction. The following mounting considerations should be noted in mounting these capacitors.



*Underwriter's Laboratories

Vertical Clearance

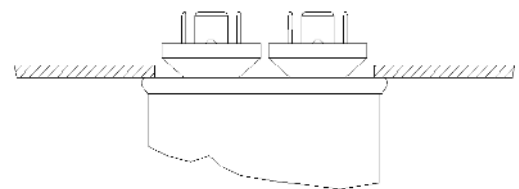
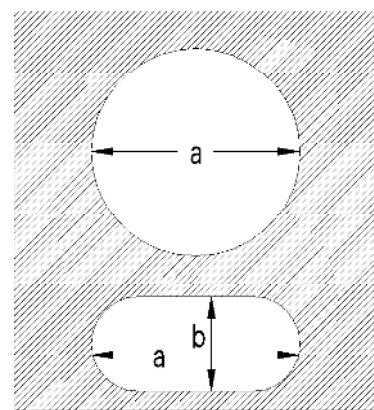
There must be sufficient clearance between the tops of the terminals (and/or the assembled wire connectors) and a plane perpendicular to the capacitor terminals. This clearance must be at least 0.5 inches plus the electrical spacing requirements of the end application.



Cut-Out Clearance

In certain instances capacitors are mounted with the top of the capacitor case resting against the chassis and the terminals protruding through the chassis. Care must be taken to see that the cutout in the chassis is large enough. The following dimensions are recommended.

Case Style	a	b	Case Style	a
A	2.00	1.00	P	1.62
B	2.25	1.25	S	1.88
C	2.50	1.62	T	2.38
D	3.25	1.62		



280, 330, 400, 480, 540 and 580 Volts AC

This capacitor series is designed specifically for HID Lighting applications where the capacitors are used as part of the ballast circuit for mercury vapor, metal halide, and high-pressure sodium lamps. The units are designed to operate at up to 90 °C which is the normal requirement for HID ballast capacitors. Due to advances in material technology and breakthroughs in proprietary capacitor manufacturing processes, selected ratings are now available for operation up to 100°C for 60,000 hrs.



SPECIFICATIONS:

Available Capacitance Range:	5 to 60 μ F
Capacitance Tolerance:	\pm 3%
Capacitance Variation with Temperature:	See chart L-3 on page 9.
Rated Voltage:	See Rating Tables.
Leakage Current:	30 μ A maximum
Frequency:	50/60 Hz.
Operating Temperature:	-40 °C to +90 °C and up to 100 °C MAX on selected ratings (See page 12)
Storage Temperature:	-40 °C to +90 °C
Operating Life:	60,000 hours with 90% survival
Dissipation Factor:	0.1% maximum
Case Material/Finish:	Unpainted Aluminum case, Ternplate steel cover.
Terminations:	'Combo' terminal: 0.250" x 0.031" quick connect blades plus a solderable fork on each terminal.
Dielectric Fluid:	Dielektrol VI
Internal Protection:	UL recognized Pressure Sensitive Interrupter. The UL code Numbers in the Ratings Table are the numbers listed under RBC's UL File E7793 (N). When including these capacitors in a UL submittals use this RBC 'Pxxx' number not the Catalog Number. The generic UL designations corresponding to the RBC numbers are given below. This number includes the Available Faults Current (AFC) rating. All these capacitors are capable of interrupting available fault currents of up to 10,000 amperes.

*STANDARD RATINGS

280 VOLTS AC				
Capacitance (µF)	Catalog Number	Case Style	Height C (in.)	UL Code
OVAL Case				
6	97F6801	A	2.12	P921
8	97F6857	A	2.88	P921
10	97F6858	A	2.88	P921
10	97F6805	B	2.12	P922
12	97F6871	A	3.88	P921
15	97F6860	B	2.88	P922
17.5	97F6812	B	2.88	P922
20	97F6861	B	3.88	P922
20	97F6862	C	2.88	P923
22.5	97F6855	B	3.88	P922
24	97F6873	B	3.88	P922
24	97F6864	C	2.88	P923
26	97F6868	B	2.88	P922
28	97F6824	B	3.88	P922
28	97F6823	C	2.88	P923
29	97F6846	B	3.88	P922
34	97F6854	B	3.88	P922
35	97F6865	C	3.88	P923
40	97F6866	C	3.88	P923
42	97F6869	B	3.88	P922
45	97F6850	C	3.88	P923
48	97F6836	C	3.88	P923
48	97F6872	D	2.88	P924
52	97F6867	D	3.88	P924
ROUND Case				
22.5	97F6516	P	2.88	P965
24	97F6522	P	2.88	P965
30	97F6533	P	3.88	P965
35	97F6538	P	3.88	P965
38	97F6509	P	3.88	P965
40	97F6530	P	3.88	P965
45	97F6540	S	3.88	P968
48	97F6541	S	3.88	P968

330 VOLTS AC				
Capacitance (µF)	Catalog Number	Case Style	Height C (in.)	UL Code
OVAL Case				
2.5	97F6788	A	2.12	P921
5	97F6764	A	2.88	P921
6	97F6765	A	2.88	P921
7	97F6766	A	2.88	P921
8	97F6703	A	2.88	P921
10	97F6763	A	3.88	P921
10	97F6767	B	2.88	P922
11	97F6762	B	2.88	P922
12	97F6746	A	3.88	P921
12	97F6760	B	2.88	P922
13	97F6708	B	2.88	P922
13.5	97F6749	B	2.88	P922
14	97F6768	B	2.88	P922
15	97F6758	B	3.88	P922
16	97F6769	B	3.88	P922
17.5	97F6761	B	3.88	P922
17.5	97F6770	C	2.88	P923
18	97F6771	B	3.88	P922
18	97F6779	C	2.88	P923
19	97F6715	B	3.88	P922
20	97F6716	B	3.88	P922
21	97F6745	B	3.88	P922
22.5	97F6773	C	3.88	P923
24	97F6759	B	3.88	P922
24	97F6774	C	3.88	P923
26	97F6755	B	3.88	P922
28	97F6776	C	3.88	P923
29	97F6780	C	3.88	P923
30	97F6726	C	3.88	P923
32	97F6727	C	3.88	P923
34	97F6757	C	3.88	P923
36	97F6784	C	3.88	P923
45	97F6778	D	3.88	P924
ROUND Case				
7	97F6531	P	2.88	P965
8	97F6518	P	2.88	P965
10	97F6515	P	2.88	P965
14	97F6506	P	2.88	P965
15	97F6504	P	2.88	P965
16	97F6519	P	2.88	P965
17.5	97F6505	P	2.88	P965
24	97F6537	P	3.88	P965
28	97F6521	P	3.88	P965

* It is RBC's goal to serve you with the most cost effective and the highest quality capacitor designs. Standardization to the catalog type shown is a major program at RBC. However, RBC remains sensitive to your needs and requirements, and will continue to offer the above ratings (and more) in case configurations to meet your application (s).



400 VOLTS AC				
Capacitance (μF)	Catalog Number	Case Style	Height C(in.)	UL Code
OVAL Case				
7.5	97F6656	A	3.88	P921
10	97F6601	A	3.88	P921
10	97F6606	B	2.88	P922
12	97F6659	B	3.88	P922
12	97F6660	C	2.88	P923
13	97F6698	B	3.88	P922
14	97F6661	C	2.88	P923
15	97F6602	B	3.88	P922
15	97F6621	C	2.88	P923
18	97F6658	C	2.88	P923
24	97F6622	C	3.88	P923
24	97F6623	D	2.88	P924
26	97F6926	B	3.88	P922
ROUND Case				
10	97F6526	P	2.88	P965
14	97F6539	P	2.88	P965
15	97F6517	P	2.88	P965
24	97F6535	P	3.88	P965
26	27L709	S	3.88	P968

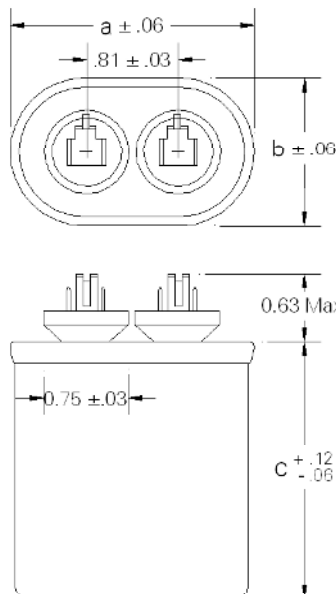
480 VOLTS AC				
Capacitance (μF)	Catalog Number	Case Style	Height C(in.)	UL Code
OVAL Case				
3	97F6676	A	2.88	P921
4	97F6677	A	2.88	P921
4.5	97F6678	A	2.88	P921
5	97F6681	A	2.88	P921
6.5	97F6695	A	3.88	P921
8.5	97F6692	B	2.88	P922
10	97F6907	B	3.88	P922
12	97F6674	B	3.88	P922
14	97F6673	B	3.88	P922
15	97F6685	B	3.88	P922
16	97F6675	C	3.88	P923
20	97F6694	C	3.88	P923
21	97F6683	C	3.88	P923
24	97F6680	C	3.88	P923
24	97F6679	D	2.88	P924
28	97F6918	C	4.75	P923

CASE STYLES P and S

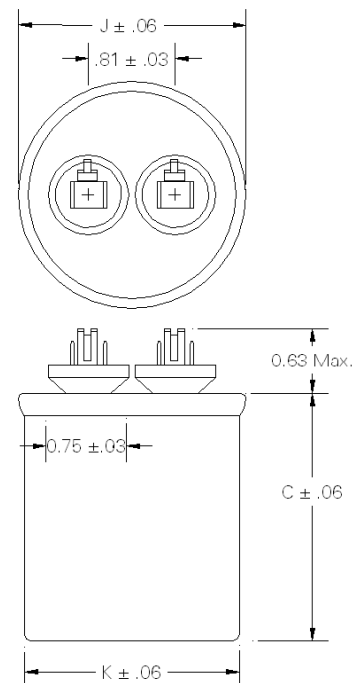
Case Style	K	J
P	1.75	1.88
S	2.00	2.12

CASE STYLES A, B, C and D

Case Style	a	b
A	2.16	1.31
B	2.69	1.56
C	2.91	1.91
D	3.66	1.97



(2). 250 x .031 Blades & fork per terminal

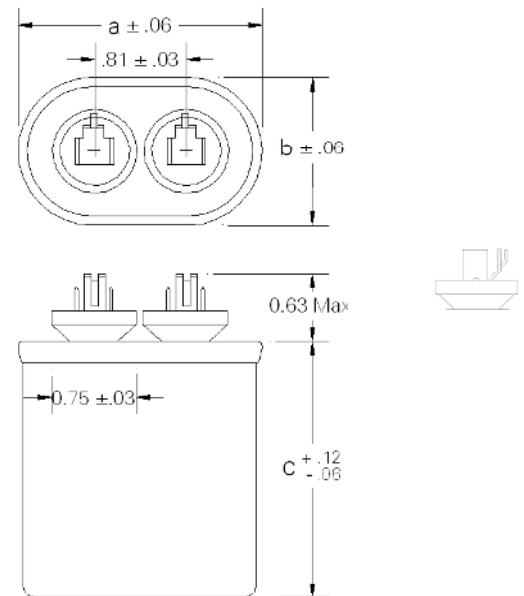


*STANDARD RATINGS

540 VOLTS AC				
Capacitance (μF)	Catalog Number	Case Style	Height C(in.)	UL Code
OVAL Case				
7.5	27L176	B	2.88	P962
10.5	97F6935	C	2.88	P963
13	97F6924	B	3.88	P962
16	97F6919	C	3.88	P963
16	97F6920	B	3.88	P962
18	97F6933	C	3.88	P963
22.5	97F6951	C	4.75	P963
22.5	97F6956	D	3.88	P964
26	97F6921	C	4.75	P963
26	97F6934	D	3.88	P964
32	97F6923	D	3.88	P964
35	97F6940	D	4.75	P964
36	97F6952	D	4.75	P964

580 VOLTS AC				
Capacitance (μF)	Catalog Number	Case Style	Height C(in.)	UL Code
OVAL Case				
8	27L791	B	3.88	P962
10	97F6930	B	3.88	P962
14.5	97F6948	B	3.88	P962
20	97F6931	C	4.75	P963
21	97F6946	C	4.75	P963
24	97F6945	C	4.75	P963
26	97F6921	C	4.75	P963

CASE STYLES A, B, C and D



Case Style	a	b
A	2.16	1.31
B	2.69	1.56
C	2.91	1.91
D	3.66	1.97

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DUAL SECTION

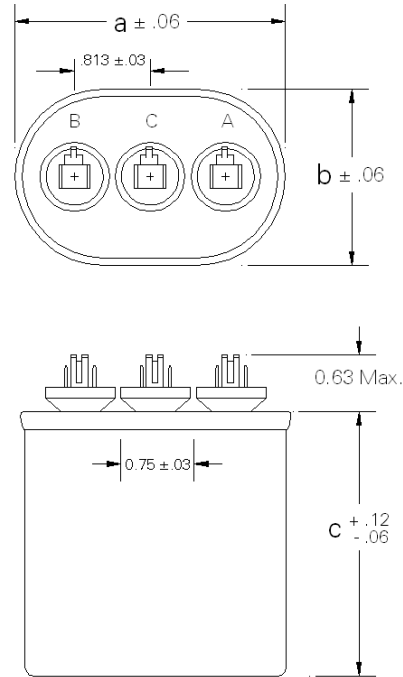
RBC offers a variety of dual section HID Lighting capacitors.

Voltage Rating: 280 thru 580 VAC

All other specifications are the same as Single section HID product offerings.

Various capacitance combinations are available ; limited by case base sizes.

CONTACT LOCAL SALES REPRESENTATIVE OR FACTORY FOR SPECIFIC REQUIREMENTS.



MAIN SECTION: C to A
AUXILIARY SECTION: B to C

Case Style	a	b
C	2.91	1.91
D	3.66	1.97

Life Vs Temperature

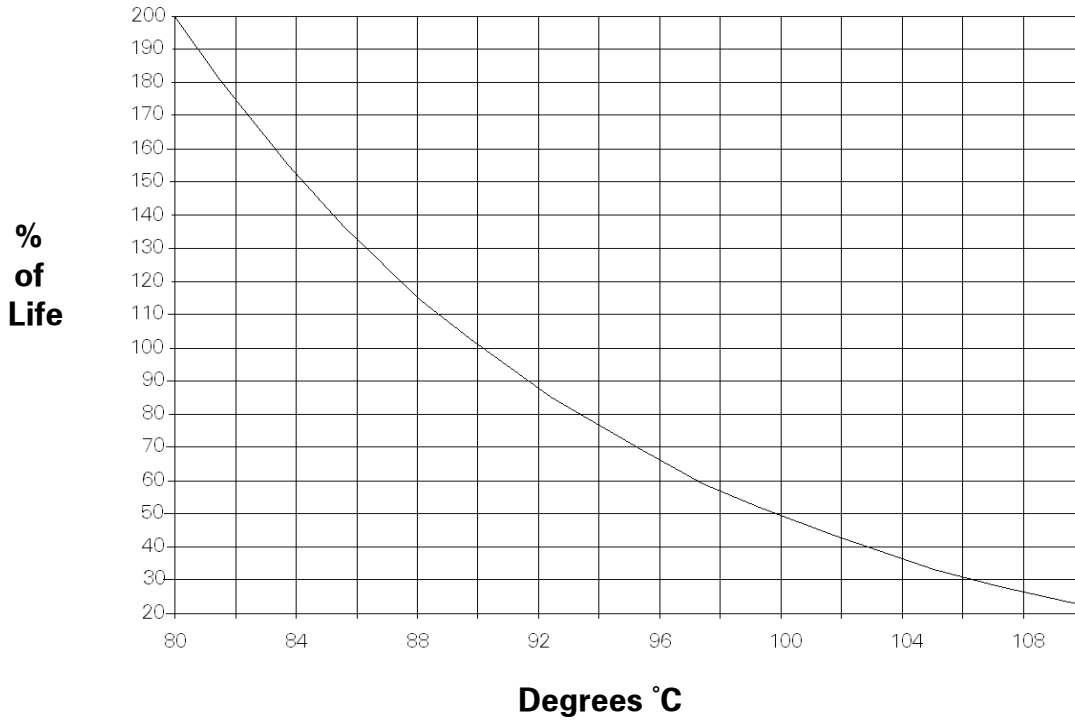


Chart L-1

Life Vs Voltage

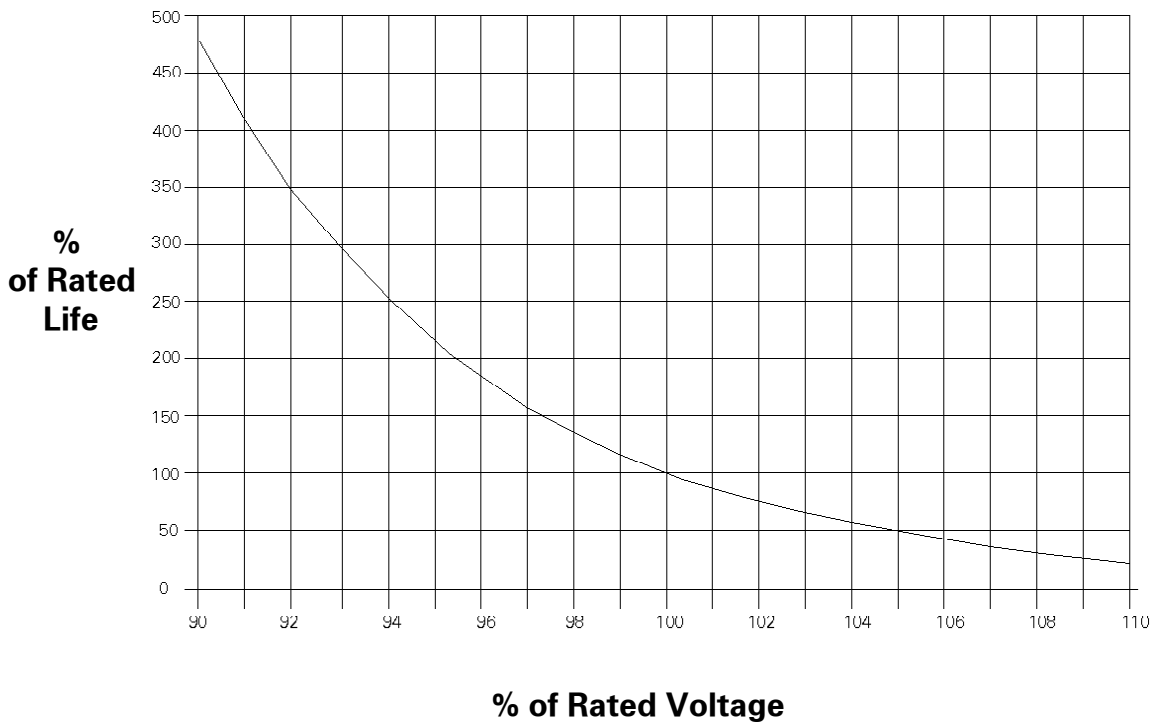
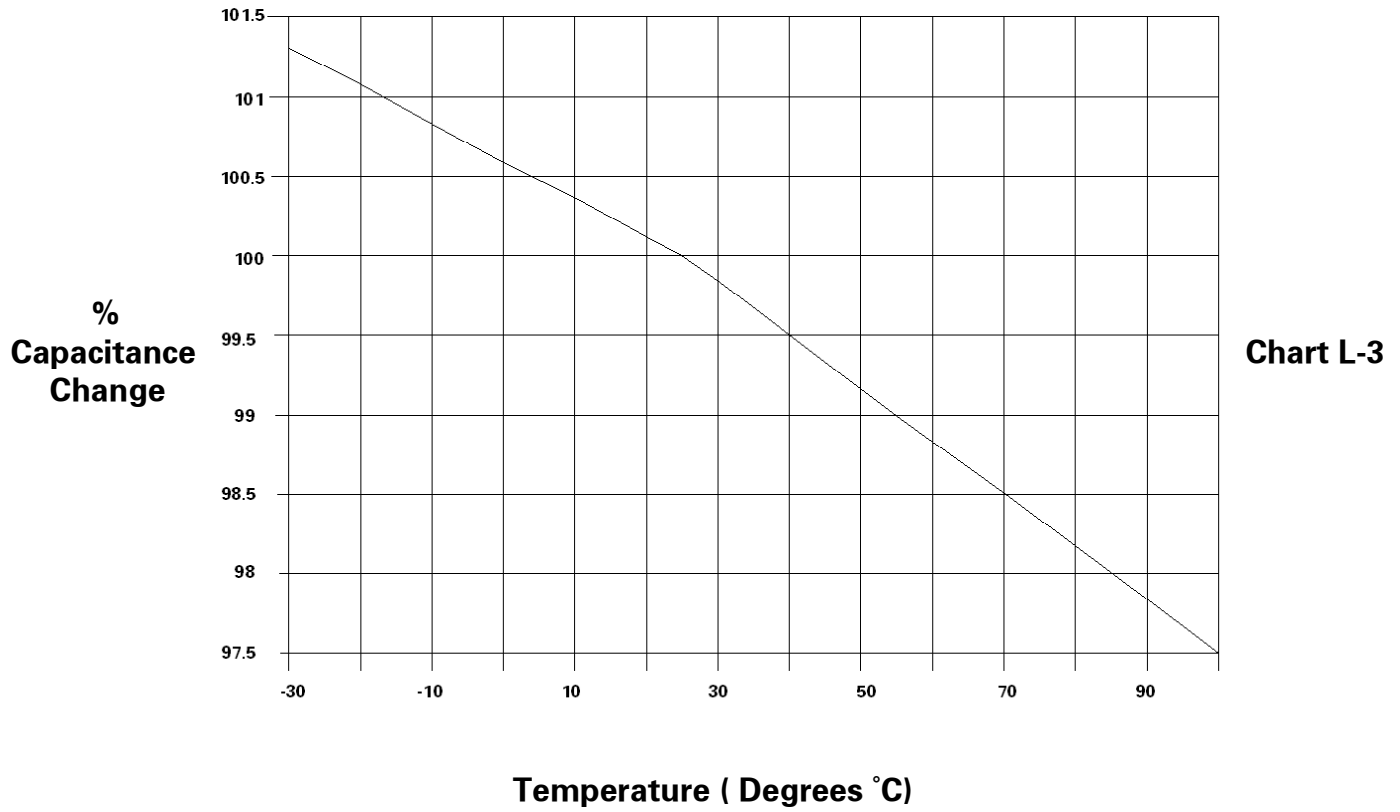


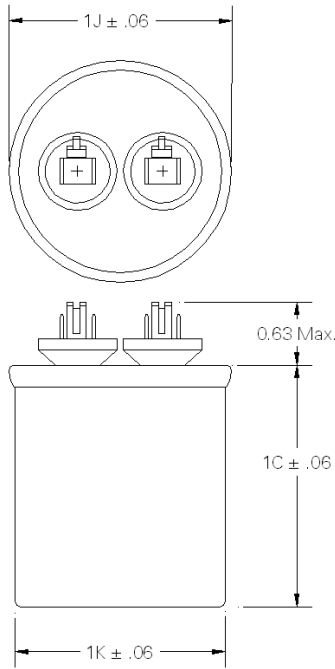
Chart L-2



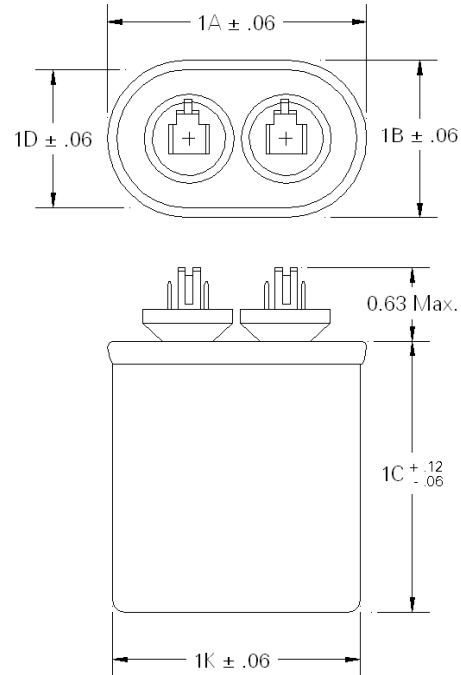
Percent Capacitance Vs Temperature



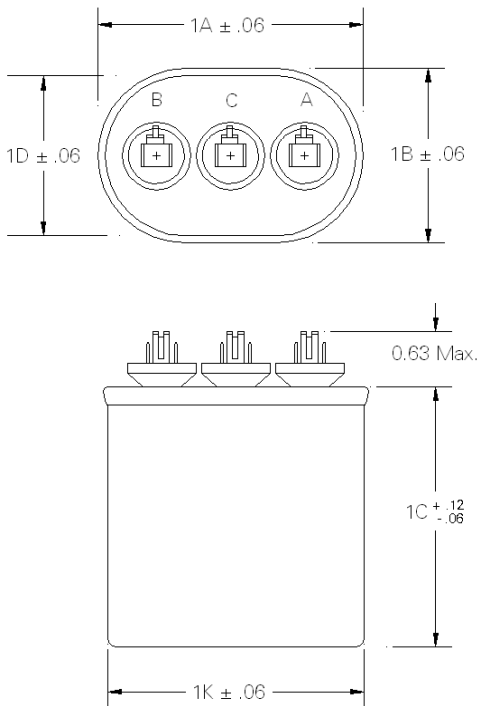
Round Case Style (P,S,T)



Oval Case Style (A,B,C,D)



Dual Oval Case Style

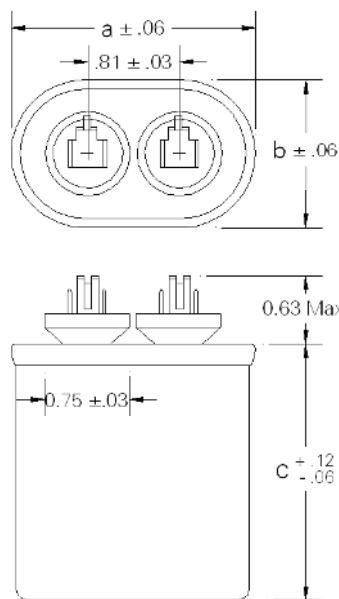


Oval Case Style		Dimensions			
		1A	1B	1D	1K
A	Oval	2.16	1.31	1.21	2.06
B	Oval	2.69	1.56	1.47	2.58
C	Oval	2.91	1.91	1.81	2.81
D	Oval	3.66	1.97	1.88	3.56
C	Dual Oval	2.91	1.91	1.81	2.81
Round Case Style		Dimensions			
		1K			1J
P	Round	1.75	—	—	1.88
S	Round	2.00	—	—	2.12
T	Round	2.50	—	—	2.62

Single Ratings

Capacitance (μF)	Catalog Number	Case Style	Height C (in.)	UL Code
280 VOLTS AC				
48	27L7000	C	3.88	P923
330 VOLTS AC				
14	27L7002	A	3.12	P921
26	27L7003	C	2.88	P923
360 VOLTS AC				
24	27L7004	C	3.12	P923
400 VOLTS AC				
10	27L7001	C	2.88	P922
24	27L7009	C	3.12	P923

Oval Case Style (A,B,C,D)



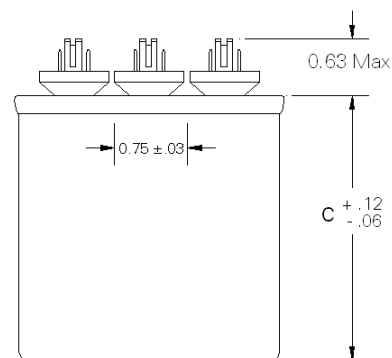
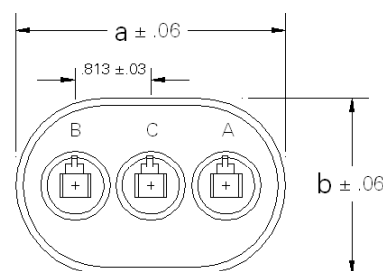
Case Style	a	b
A	2.16	1.31
C	2.91	1.91

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However, RBC remains sensitive to your needs and requirements, and will continue to offer the above ratings (and more) in case configurations to meet your application (s).

Dual Ratings

Capacitance (μF)		Catalog Number	Case Style	Height C (in.)	UL Code
(Main)	(Aux.)				
280 VOLTS AC					
36	12	27L7005	C	3.88	P923
330 VOLTS AC					
11	6	27L7008	C	3.88	P923
18	8	27L7007	C	2.88	P923



MAIN SECTION: C to A
AUXILIARY SECTION: B to C

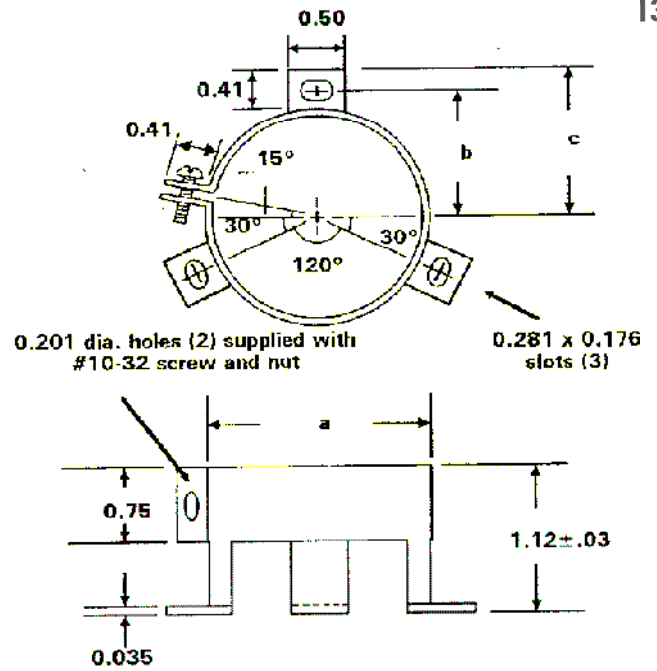
Case Style	a	b
C	2.91	1.91
D	3.66	1.97



UNIVERSAL WRAP AROUND BRACKETS

ROUND CASE STYLES

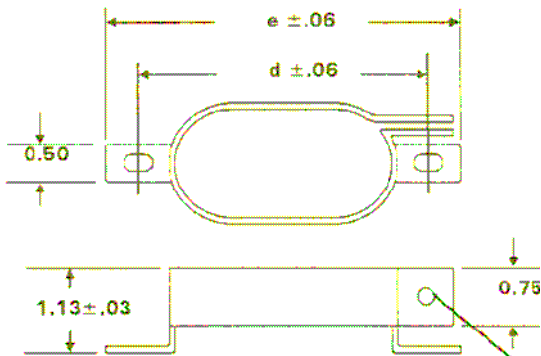
Case Style	Bracket Part Number	a	b	c
P	295A6016P31	1.75	1.12	1.31
S	295A6016P32	2.00	1.25	1.44
T	295A6016P33	2.50	1.50	1.69



UNIVERSAL WRAP AROUND BRACKETS

OVAL CASE STYLES

Case Style	Bracket Part Number	d	e
A	128A2244ACP21	2.69	3.13
B	128A2244ABP25	3.27	3.70
C	128A2244ABP22	3.44	3.88
D	128A2244ABP23	4.19	4.63

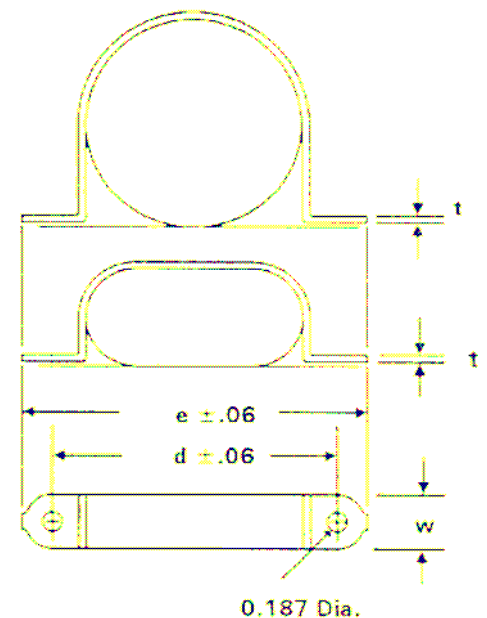


(2) .156 dia holes supplied with # 6-32 screw and nut

WRAP AROUND BRACKETS

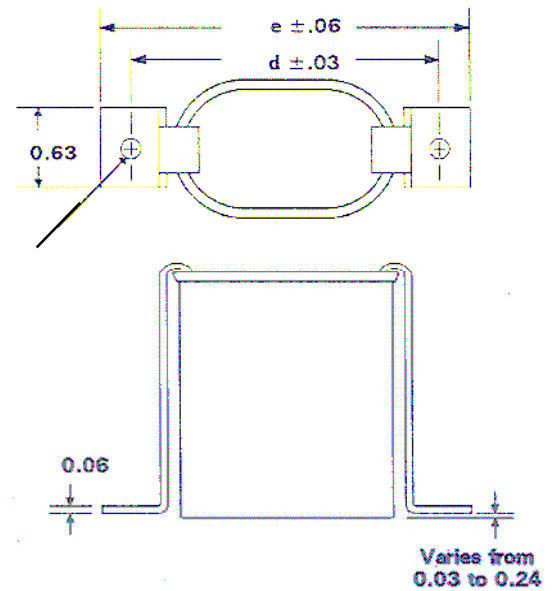
ROUND AND OVAL CASE STYLES

Case Style	Bracket Part Number	d	e	w	t
A	K9827065P21	2.56	2.94	0.50	0.02
B	K9827065P31	3.06	3.50	0.63	0.02
C	614A301P61	3.31	3.81	0.75	0.03
D	614A301P51	4.06	4.56	0.75	0.03
P	279A7235P24	2.50	2.88	0.75	0.04
S	279A7235P22	2.75	3.12	0.75	0.04
T	279A7235P23	3.25	3.62	0.75	0.04



FOOTED BRACKETS

Case Height	Bracket Part Number	Case Style	d	e
2.12	302C920P210	A	2.56	3.00
2.88	302C920P113	B	3.13	3.56
3.88	302C920P115	C	3.38	3.81
4.75	302C920P116	D	4.13	4.56
5.75	302C920P209	P	2.33	2.76
		S	2.57	3.00
		T	3.07	3.50

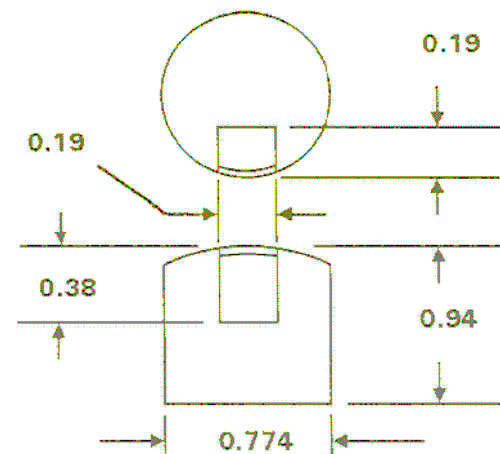
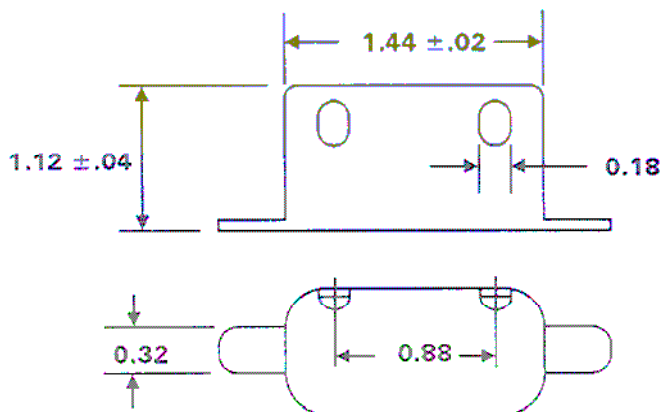


PROTECTIVE BOOT

Boot Part Number	Temperature Rating
178A3744P21	105 °C

PROTECTIVE CAP

Cap Part Number:	115A1552P23
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AVAILABLE RBC COMPONENT CAPACITOR PUBLICATIONS		
Publication	Description	Replaces
CPD-510	AC Motor Run Capacitors	CPD-501
CPD-511	AC HID Lighting Capacitors	CPD-501
CPD-512	AC General Purpose Capacitors	CPD-501
CPD-517	Power Electrolytic Capacitors (General)	New Pub.

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