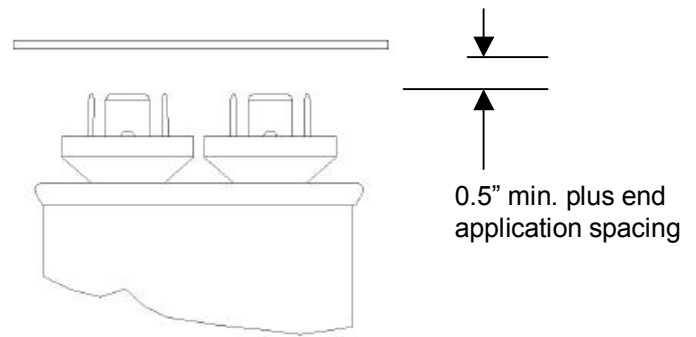


Mounting Considerations

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.

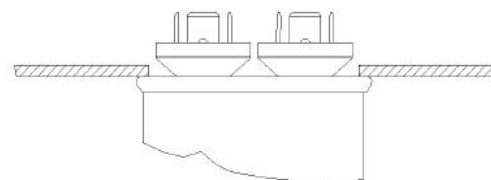
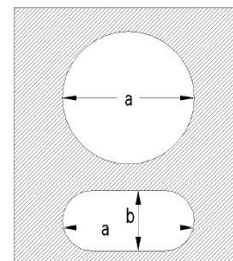


Cut-Out Clearance

In certain instances, capacitors are mounted with the top of the capacitors 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
A	2.00	1.00
B	2.25	1.25
C	2.50	1.62
D	3.25	1.62

Case Style	a
P	1.62
S	1.88
T	2.38



This series of GEM III is **designed specifically for applications such as AC filters where harmonic frequencies greater than 60Hz are common**. Application Data is provided starting on page 9 that gives the Equivalent Series Resistance (ESR) for these units. This allows the user to calculate the losses for each design / application and to ensure that they are kept within the permissible limits. **Any questions** regarding the suitability of a capacitor for a particular application may be referred to Regal-Beloit Engineers by **contacting your Regal-Beloit sales representative**.

SPECIFICATIONS:

Available Capacitance Range:	2 to 120 μ F
Capacitance Tolerance:	\pm 6%
Capacitance Variation with Temperature:	See Chart E-3 on page 13.
Rated Voltage:	See Rating Tables. Rating is the 60Hz RMS voltage for a sinusoidal waveform. For other waveforms refer to the Application Note on page 9.
Leakage Current:	30 μ A maximum
Frequency:	50/60 Hz. For higher frequencies refer to the Application Note on page 10.
Operating Temperature:	-40°C to +70°C
Storage Temperature:	-40°C to +90°C
Operating Life:	60,000 hours with 94% survival (In accordance with the EIA-456 Industry Standard)
Dissipation Factor:	0.1% maximum
Case Material/Finish:	Unpainted Aluminum Case, Tin Plated Steel Cover.
Terminations:	'Combo' terminal: 0.250" x 0.031" quick connect blades
Dielectric Fluid:	Dielektrol VI
Internal Protection:	UL recognized Pressure Sensitive Interrupter. See Ratings Table for Regal-Beloit's UL Code Number listed under Regal-Beloit's UL File E7793 (N). For UL submittals with these capacitors, use the RBC 'Pxxx' number not the Catalog Number. The corresponding generic UL designation that includes the Available Faults Current (AFC) rating is given below. All these capacitors are capable of interrupting available fault currents of up to 10,000 amperes.

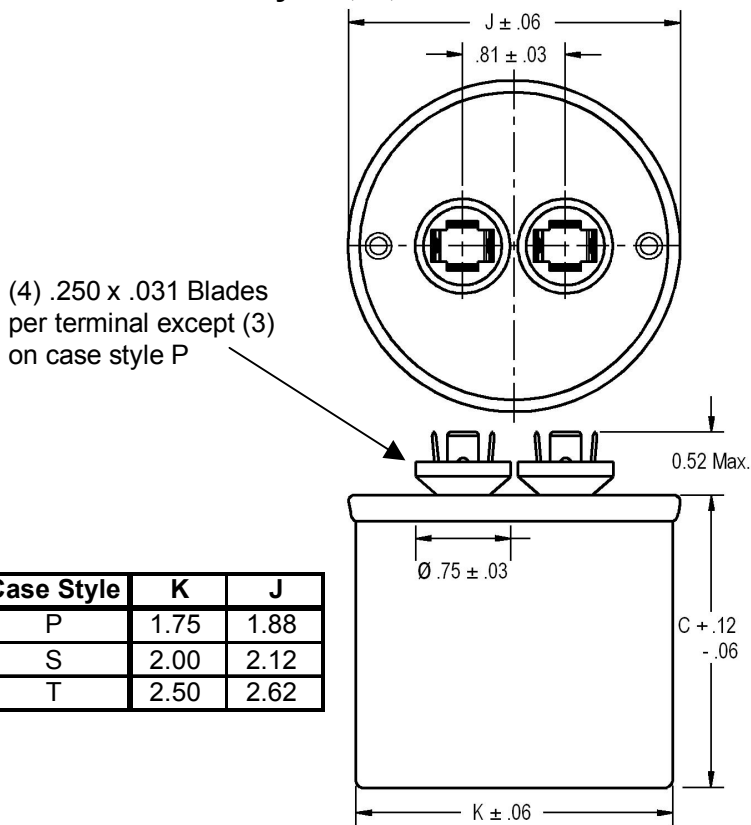
Case Style	RBC Code	Generic UL Code
A	P921	A1000AFC
P	P965	P1000AFC
S	P968	S1000AFC
T	P969	T1000AFC

Gen Purpose AC Capacitors – GEM III

Single Ratings – 1 Section

Voltage (VAC)	Capacitance (μF)	Catalog Number	Case Style	Base Size (in.)	Can Type	Height C (in.)	UL Code
240	15.0	97F8036	P	1.75	Round	2.88	P965
	25.0	97F8037	P	1.75	Round	2.88	P965
	30.0	97F8038	P	1.75	Round	3.88	P965
	35.0	97F8039	P	1.75	Round	3.88	P965
	40.0	97F8040	P	1.75	Round	3.88	P965
	45.0	97F8041	P	1.75	Round	4.75	P965
	50.0	97F8042	P	1.75	Round	4.75	P965
	55.0	97F8043	P	1.75	Round	4.75	P965
	60.0	97F8044	S	2.00	Round	4.75	P968
	65.0	97F8045	S	2.00	Round	4.75	P968
	70.0	97F8046	S	2.00	Round	4.75	P968
	75.0	97F8047	S	2.00	Round	4.75	P968
	80.0	97F8048	T	2.50	Round	3.88	P969
	85.0	97F8049	T	2.50	Round	3.88	P969
	90.0	97F8050	T	2.50	Round	3.88	P969
	95.0	97F8051	T	2.50	Round	4.75	P969
	100.0	97F8052	T	2.50	Round	4.75	P969
120.0	97F8053	T	2.50	Round	4.75	P969	

Case Style P, S, and T



Case Style	K	J
P	1.75	1.88
S	2.00	2.12
T	2.50	2.62

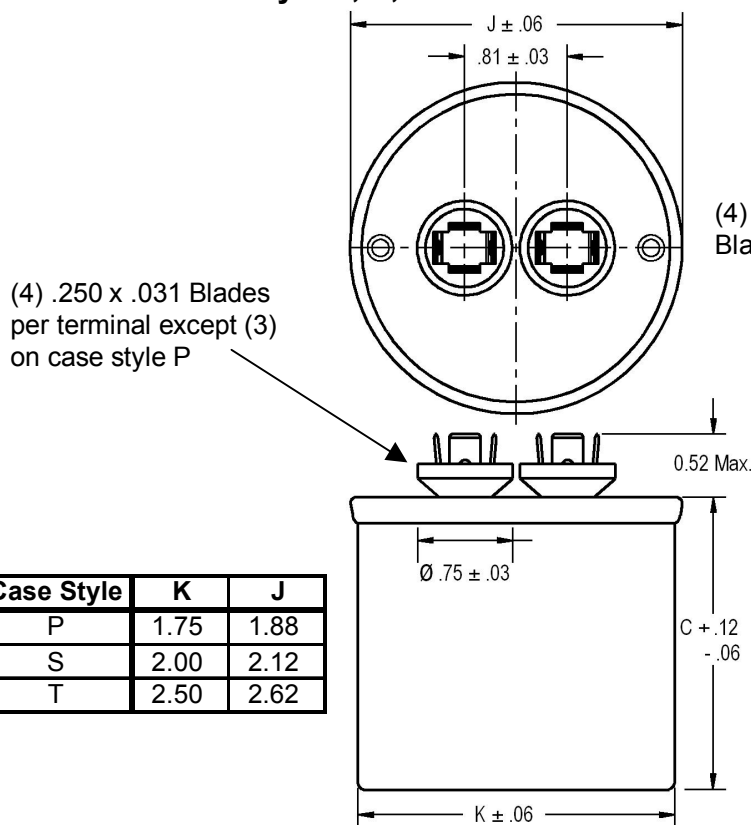
*It is Regal-Beloit's goal to serve you with the most cost effective and highest quality capacitor designs. Standardization to the catalog type shown is a major program at Regal-Beloit. However, Regal-Beloit remains sensitive to your needs and requirements, and will continue to offer the above ratings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

Gen Purpose AC Capacitors – GEM III

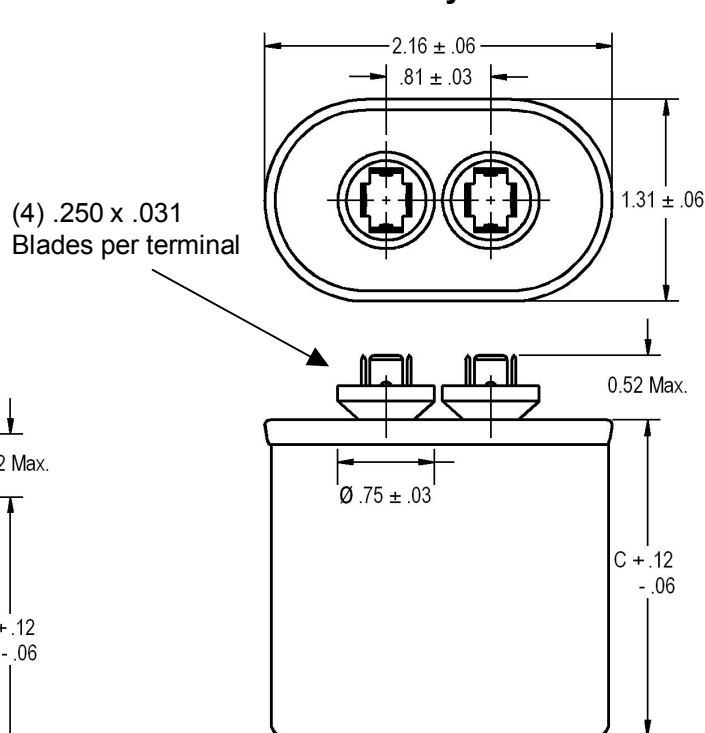
Single Ratings – 1 Section

Voltage (VAC)	Capacitance (μF)	Catalog Number	Case Style	Base Size (in.)	Can Type	Height C (in.)	UL Code
370	3.0	97F8054	A	1.25	Oval	2.12	P921
	4.0	97F8055	A	1.25	Oval	2.12	P921
	5.0	97F8056	A	1.25	Oval	2.88	P921
	6.0	97F8057	A	1.25	Oval	2.88	P921
	7.5	97F8058	A	1.25	Oval	2.88	P921
	10.0	97F8059	A	1.25	Oval	3.88	P921
	12.5	97F8060	A	1.25	Oval	3.88	P921
	15.0	97F8061	P	1.75	Round	2.88	P965
	17.5	97F8062	P	1.75	Round	2.88	P965
	20.0	97F8063	P	1.75	Round	3.88	P965
	25.0	97F8064	P	1.75	Round	3.88	P965
	30.0	97F8065	P	1.75	Round	3.88	P965
	35.0	97F8066	P	1.75	Round	4.75	P965
	40.0	97F8067	P	1.75	Round	4.75	P965
	45.0	97F8068	S	2.00	Round	4.75	P968
	50.0	97F8069	S	2.00	Round	4.75	P968
	55.0	97F8070	S	2.00	Round	4.75	P968
	60.0	97F8071	T	2.50	Round	3.88	P969
	65.0	97F8072	T	2.50	Round	3.88	P969
	70.0	97F8073	T	2.50	Round	4.75	P969

Case Style P, S, and T



Case Style A



*It is Regal-Beloit's goal to serve you with the most cost effective and highest quality capacitor designs. Standardization to the catalog type shown is a major program at Regal-Beloit. However, Regal-Beloit 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).

Gen Purpose AC Capacitors – GEM III

Application Notes – 97F8000 Series – 240 & 370 VAC

ESR Values for 97F8000 Series – Curve Numbers refer to Graphs on Page 10.

Voltage (VAC)	Catalog Number	Capacitance (µF)	ESR (ohms)	Curve Number
240	97F8036	15.0	0.0257	2
	97F8037	25.0	0.0180	2
	97F8038	30.0	0.0228	3
	97F8039	35.0	0.0206	3
	97F8040	40.0	0.0190	3
	97F8041	45.0	0.0241	4
	97F8042	50.0	0.0226	4
	97F8043	55.0	0.0213	4
	97F8044	60.0	0.0215	5
	97F8045	65.0	0.0206	5
	97F8046	70.0	0.0198	5
	97F8047	75.0	0.0191	5
	97F8048	80.0	0.0164	5
	97F8049	85.0	0.0160	5
	97F8050	90.0	0.0156	5
	97F8051	95.0	0.0193	6
	97F8052	100.0	0.0189	6
	97F8053	120.0	0.0176	6

Voltage (VAC)	Catalog Number	Capacitance (µF)	ESR (ohms)	Curve Number
370	97F8054	3.0	0.0700	1
	97F8055	4.0	0.0539	1
	97F8056	5.0	0.0586	2
	97F8057	6.0	0.0499	2
	97F8058	7.5	0.0411	2
	97F8059	10.0	0.0471	3
	97F8060	12.5	0.0392	3
	97F8061	15.0	0.0244	2
	97F8062	17.5	0.0218	2
	97F8063	20.0	0.0281	3
	97F8064	25.0	0.0240	3
	97F8065	30.0	0.0213	3
	97F8066	35.0	0.0262	4
	97F8067	40.0	0.0240	4
	97F8068	45.0	0.0235	5
	97F8069	50.0	0.0222	5
	97F8070	55.0	0.0210	5
	97F8071	60.0	0.0175	5
	97F8072	65.0	0.0169	5
	97F8073	70.0	0.0207	6

The 97F8000 Series of capacitors may be used in AC applications where the voltage waveform is non-sinusoidal. This Application Note is provided to assist in the correct use of the capacitors where higher frequency harmonic currents are present. If you need further assistance please contact Regal-Beloit's Capacitors Operation through your normal sales channel.

Higher frequency currents are commonly encountered in the filter circuits of Static Power Converters. These frequencies range from 180 to 1500 Hz for a 60 Hz system in various combinations of the odd harmonics depending on the type of converter. Generally, there are not significant harmonic currents above the 25th harmonic.

These capacitors can carry a total current of up to 15 amperes RMS (fundamental plus harmonics). The Equivalent Series Resistance (ESR) for each Catalog Number is shown in the ESR tables on this page. This value may be used to calculate the expected watts loss for a particular application. The user must determine the total RMS current (fundamental plus harmonics) for the application. The watts loss is then calculated using the equation:

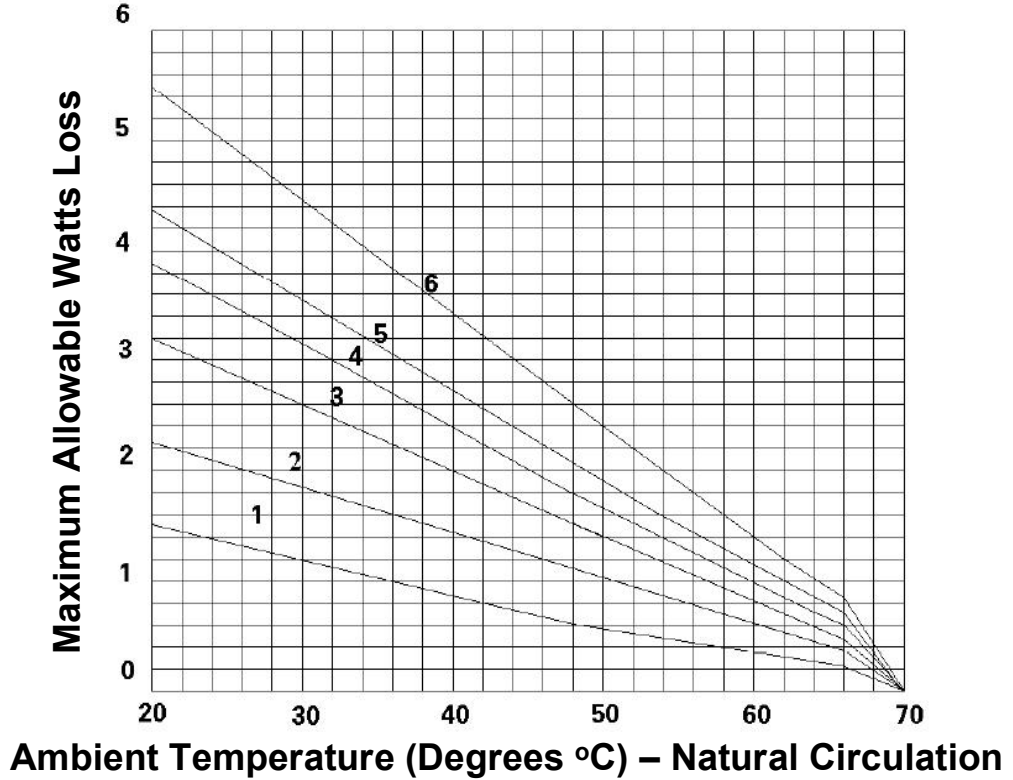
$$W = I^2 \times ESR \quad I = \text{Total RMS current} \quad ESR = \text{Value from ESR Tables}$$

The calculated watts from this equation must not exceed the allowable watts loss shown on the curve corresponding to the particular capacitor. Two sets of curves are shown, one for natural circulation and one for forced air circulation.

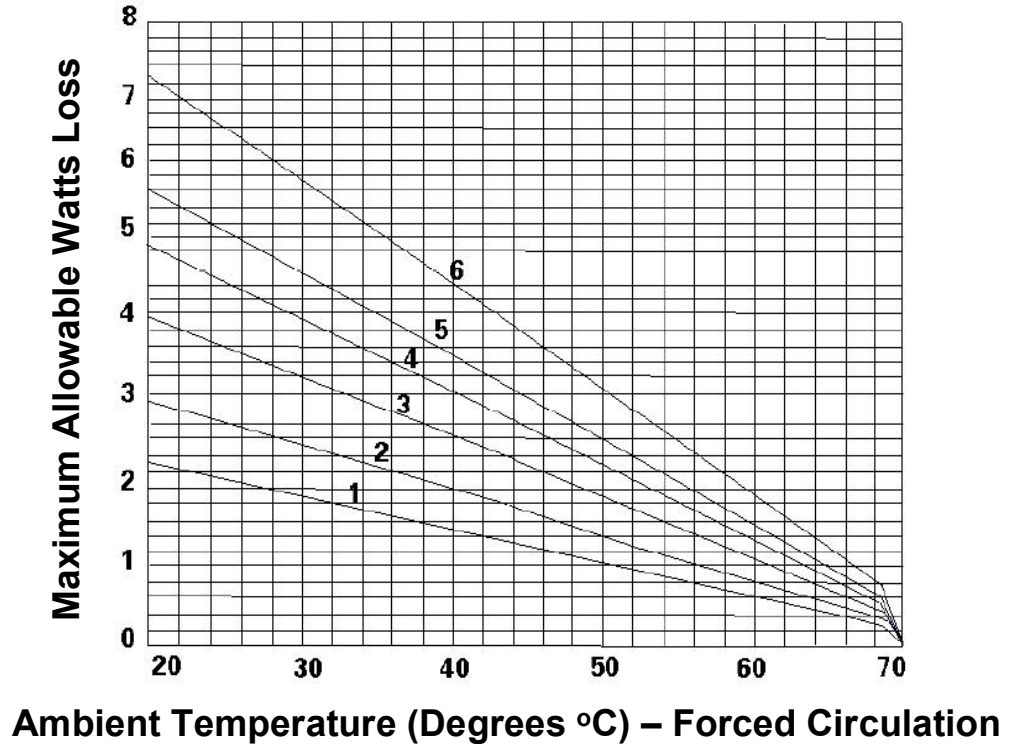
NOTES:

- (1) In no case should the **total RMS current of 15 amperes** be exceeded for any of these capacitors
- (2) Running the capacitors at case temperatures above 70°C will have a significant effect on expected life. (See chart G-1 on page 11).
- (3) Running the capacitors at voltages above the nominal rated voltage will also results in significantly reduced life. (See chart G-2 on page 12).

ALLOWABLE WATTS LOSS – Natural Circulation

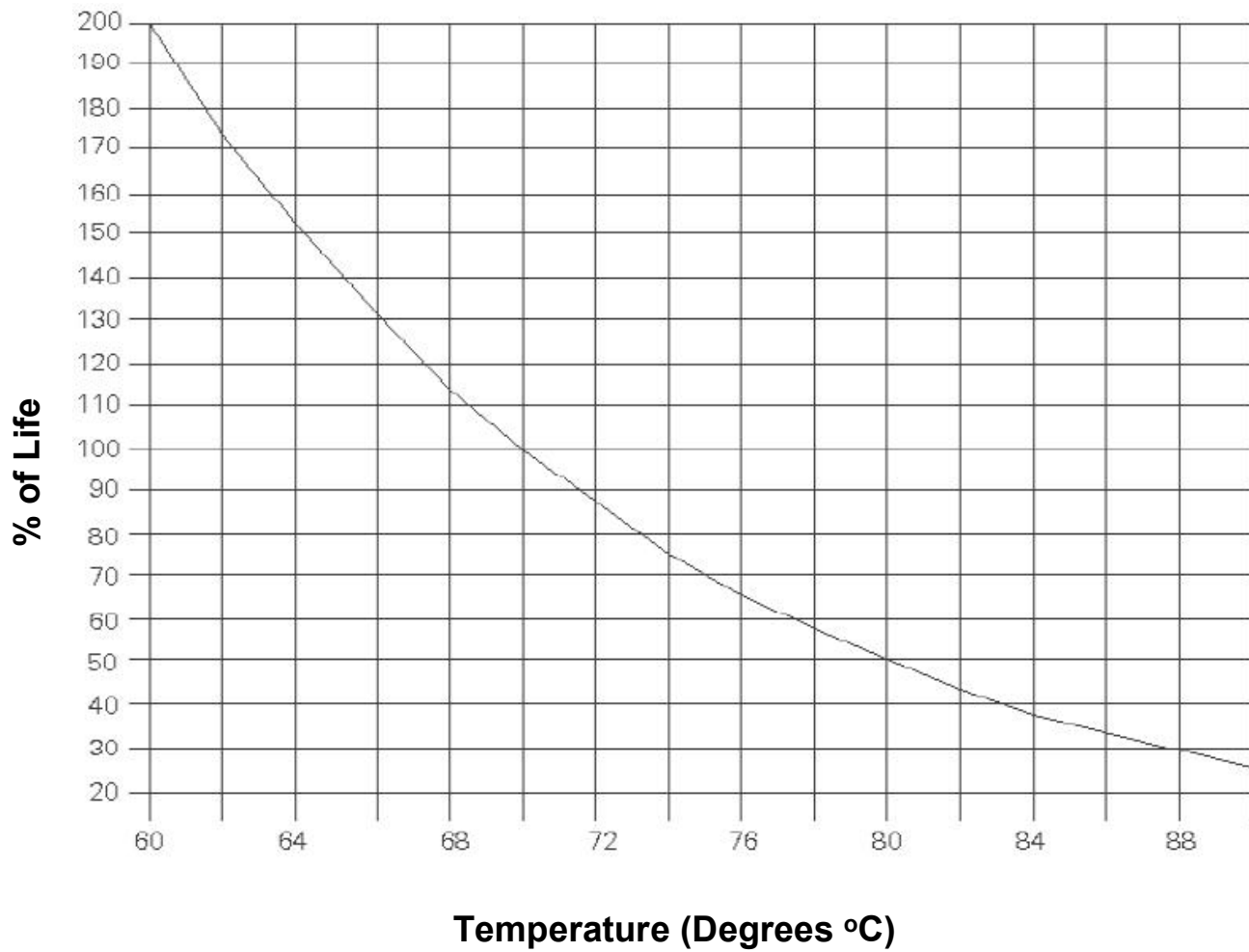


ALLOWABLE WATTS LOSS – Forced Circulation



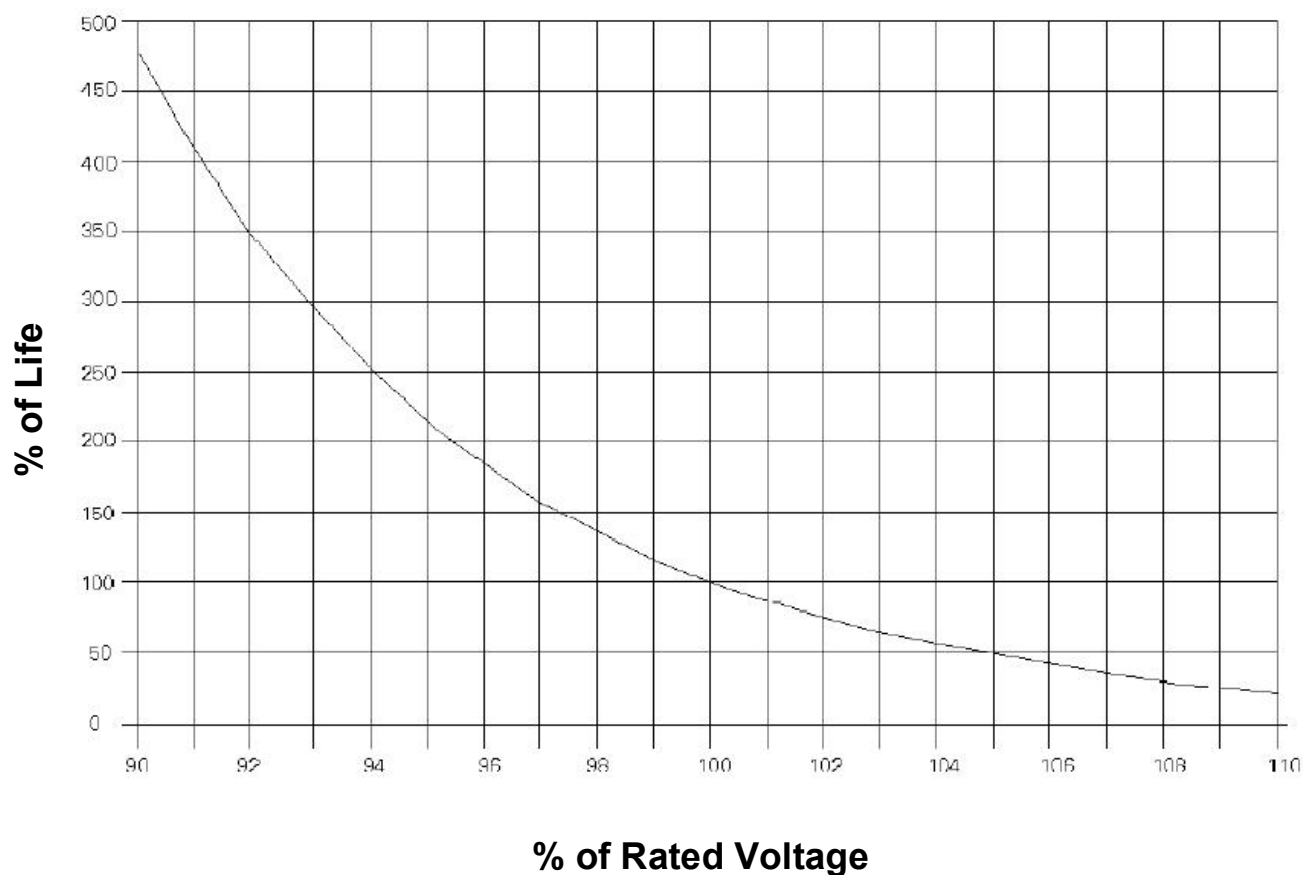
LIFE vs. TEMPERATURE

CHART G-1



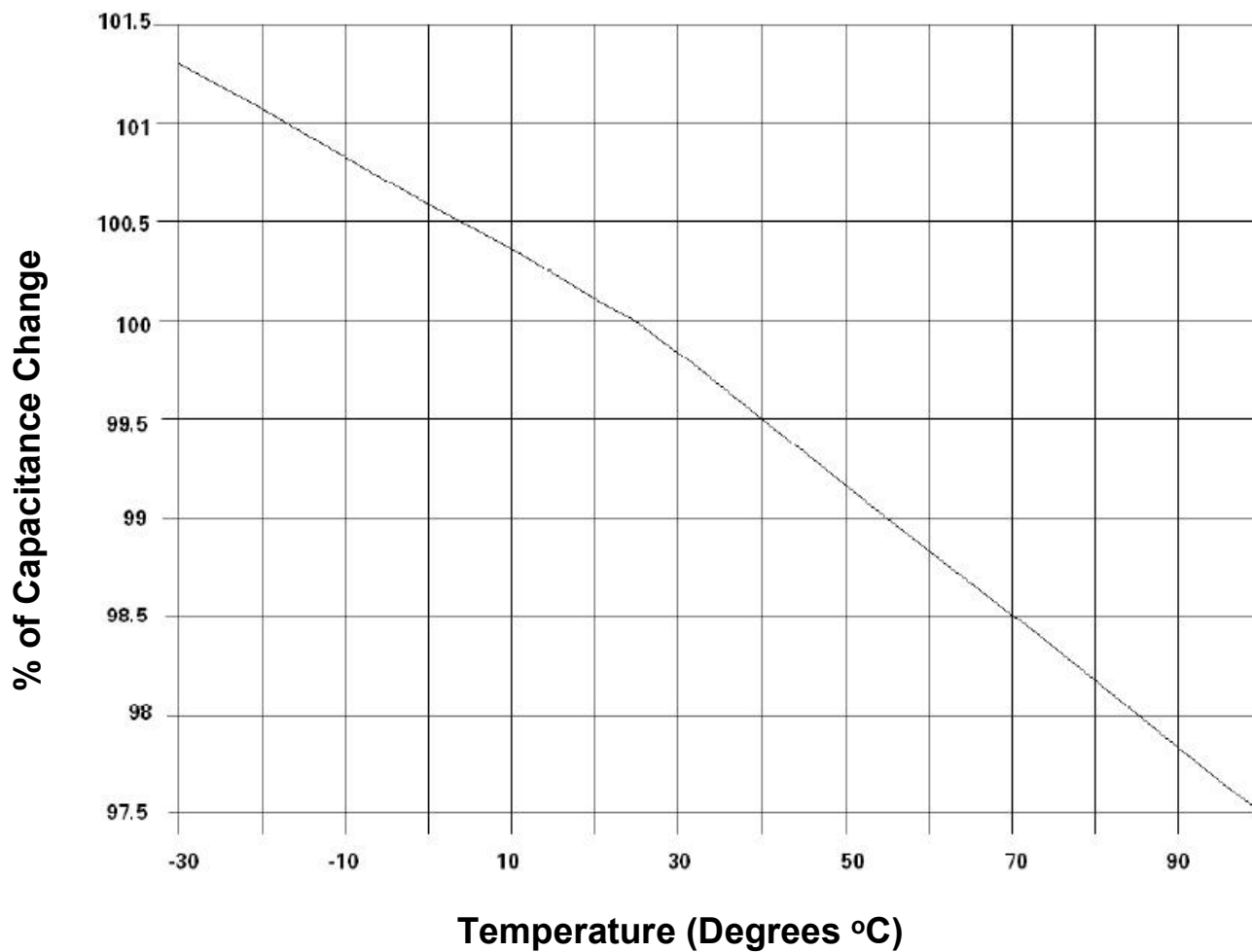
LIFE vs. VOLTAGE

CHART G-2



% CAPACITANCE vs. TEMPERATURE

CHART E-3



This series of GEM III is **designed specifically for general purpose AC applications in power supplies, UPS, and power conversion equipment.** Application Data is provided starting on page 16 that gives the Equivalent Series Resistance (ESR) for each unit. This allows the user to calculate the losses for each design / application and to ensure that they are kept within the permissible limits. **Any questions** regarding the suitability of a capacitor for a particular application may be referred to Regal-Beloit Engineers by **contacting your Regal-Beloit sales representative.**

SPECIFICATIONS:

Available Capacitance Range:	1.5 to 45 μ F
Capacitance Tolerance:	\pm 6%
Capacitance Variation with Temperature:	See Chart E-3 on page 20.
Rated Voltage:	See Rating Tables. Rating is the 60Hz RMS voltage for a sinusoidal waveform. For other waveforms refer to the Application Note on page 16.
Leakage Current:	30 μ A maximum
Frequency:	50/60 Hz. For higher frequencies refer to the Application Note on page 17.
Operating Temperature:	-40°C to +70°C
Storage Temperature:	-40°C to +90°C
Operating Life:	60,000 hours with 94% survival (In accordance with the EIA-456 Industry Standard)
Dissipation Factor:	0.1% maximum
Case Material/Finish:	Unpainted Aluminum Case, Tin Plated Steel Cover. Contact Regal-Beloit if material/finish to meet UL outdoor standards is required.
Terminations:	'Combo' terminal: 0.250" x 0.031" quick connect blades
Dielectric Fluid:	Dielektrol VI
Internal Protection:	UL recognized Pressure Sensitive Interrupter. See Ratings Table for Regal-Beloit's UL Code Number listed under Regal-Beloit's UL File E7793 (N). For UL submittals with these capacitors, use the RBC 'Pxxx' number not the Catalog Number. The corresponding generic UL designation that includes the Available Faults Current (AFC) rating is given below. All these capacitors are capable of interrupting available fault currents of up to 10,000 amperes.

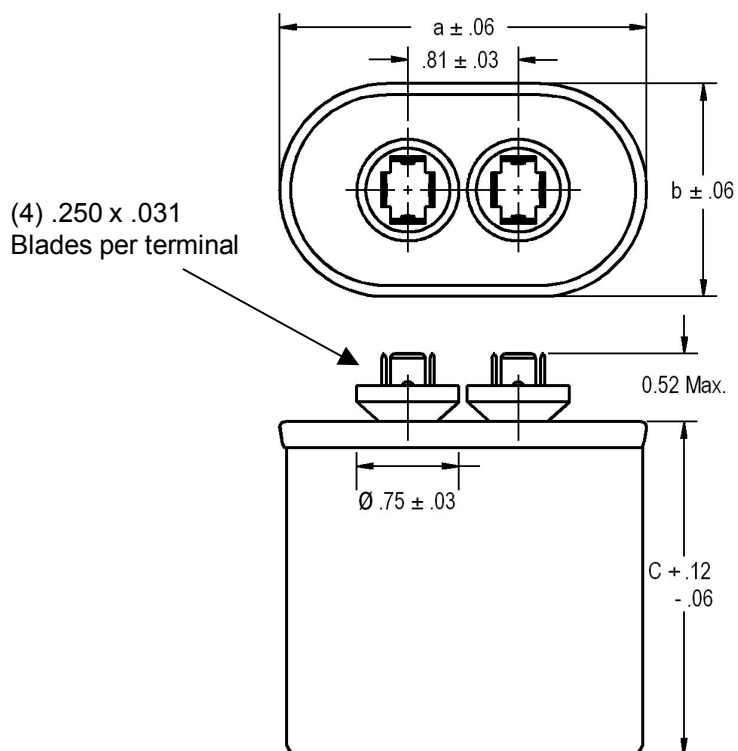
Case Style	RBC Code	Generic UL Code
A	P961	A10000AFC
B	P962	B10000AFC
C	P963	C10000AFC
D	P964	D10000AFC

Gen Purpose AC Capacitors – GEM III

Single Ratings – 1 Section

Voltage (VAC)	Capacitance (μF)	Catalog Number	Case Style	Base Size (in.)	Can Type	Height C (in.)	UL Code
600	1.5	97F8240	A	1.25	Oval	2.12	P961
	2.0	97F8241	A	1.25	Oval	2.12	P961
	2.5	97F8242	A	1.25	Oval	2.88	P961
	3.0	97F8243	A	1.25	Oval	2.88	P961
	4.0	97F8244	A	1.25	Oval	2.88	P961
	5.0	97F8245	A	1.25	Oval	3.88	P961
	6.0	97F8246	A	1.25	Oval	3.88	P961
	7.0	97F8247	A	1.25	Oval	4.75	P961
	8.0	97F8248	A	1.25	Oval	4.75	P961
	10.0	97F8249	B	1.50	Oval	3.88	P962
	12.0	97F8250	B	1.50	Oval	3.88	P962
	15.0	97F8251	B	1.50	Oval	3.88	P962
	18.0	97F8252	B	1.50	Oval	4.75	P962
	20.0	97F8253	B	1.50	Oval	4.75	P962
	25.0	97F8254	C	1.75	Oval	4.75	P963
	30.0	97F8255	D	2.00	Oval	3.88	P964
	35.0	97F8256	D	2.00	Oval	4.75	P964
	40.0	97F8257	D	2.00	Oval	4.75	P964
45.0	97F8258	D	2.00	Oval	4.75	P964	

Case Style 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

*It is **Regal-Beloit's goal** to serve you with the **most cost effective** and **highest quality capacitor** designs. Standardization to the catalog type shown is a major program at Regal-Beloit. However, Regal-Beloit 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).**

Gen Purpose AC Capacitors – GEM III

Application Notes – 97F8200 Series – 600 VAC

ESR Values for 97F8200 Series – Curve Numbers refer to Graphs on Page 17.

Voltage (VAC)	Catalog Number	Capacitance (µF)	ESR (ohms)	Curve Number
600	97F8240	1.5	0.1277	1
	97F8241	2.0	0.0971	1
	97F8242	2.5	0.0984	2
	97F8243	3.0	0.0831	2
	97F8244	4.0	0.0639	2
	97F8245	5.0	0.0723	3
	97F8246	6.0	0.0615	3
	97F8247	7.0	0.0739	4
	97F8248	8.0	0.0657	4
	97F8249	10.0	0.0404	4
	97F8250	12.0	0.0366	4
	97F8251	15.0	0.0309	4
	97F8252	18.0	0.0361	5
	97F8253	20.0	0.0334	5
	97F8254	25.0	0.0294	5
	97F8255	30.0	0.0220	5
	97F8256	35.0	0.0258	6
	97F8257	40.0	0.0240	6
97F8258	45.0	0.0225	6	

The 97F8200 Series of capacitors may be used in AC applications where the voltage waveform is non-sinusoidal. This Application Note is provided to assist in the correct use of the capacitors where higher frequency harmonic currents are present. If you need further assistance please contact Regal-Beloit's Capacitors Operation through your normal sales channel.

Higher frequency currents are commonly encountered in the filter circuits of Static Power Converters. These frequencies range from 180 to 1500 Hz for a 60 Hz system in various combinations of the odd harmonics depending on the type of converter. Generally, there are not significant harmonic currents above the 25th harmonic.

These capacitors can carry a total current of up to 15 amperes RMS (fundamental plus harmonics). The Equivalent Series Resistance (ESR) for each Catalog Number is shown in the ESR tables on this page. This value may be used to calculate the expected watts loss for a particular application. The user must determine the total RMS current (fundamental plus harmonics) for the application. The watts loss is then calculated using the equation:

$$W = I^2 \times ESR \quad I = \text{Total RMS current} \quad ESR = \text{Value from ESR Tables}$$

The calculated watts from this equation must not exceed the allowable watts loss shown on the curve corresponding to the particular capacitor. Two sets of curves are shown, one for natural circulation and one for forced air circulation.

NOTES:

- (1) In no case should the **total RMS current** of **15 amperes** be exceeded for any of these capacitors
- (2) Running the capacitors at case temperatures above 70°C will have a significant effect on expected life. (See chart G-1 on page 18).
- (3) Running the capacitors at voltages above the nominal rated voltage will also results in significantly reduced life. (See chart G-2 on page 19).