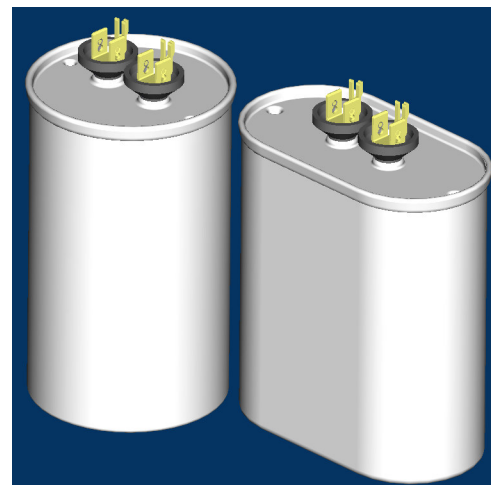


# General Purpose AC Capacitors – Gem III

## 240 and 370 Volts AC

This series of Gem III is specifically designed for applications such as AC filters where harmonic frequencies greater than 60Hz are common. Application Data is provided starting on page 5 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 RBC Engineers through your RBC sales representative.



### SPECIFICATIONS:

<b>Available Capacitance Range:</b>	2 to 120 $\mu$ F
<b>Capacitance Tolerance:</b>	$\pm$ 6%
<b>Capacitance Variation with Temperature:</b>	See chart E-3 on page 9.
<b>Rated Voltage:</b>	See Rating Tables. Rating is the 60Hz RMS voltage for a sinusoidal waveform. For other waveforms refer to the Application Note on page 6.
<b>Leakage Current:</b>	30 $\mu$ A maximum
<b>Frequency:</b>	50/60 Hz. For higher frequencies refer to the Application Note on page 7.
<b>Operating Temperature:</b>	-40 °C to +70 °C
<b>Storage Temperature:</b>	-40 °C to +90 °C
<b>Operating Life:</b>	60,000 hours with 94% survival
<b>Dissipation Factor:</b>	0.1% maximum
<b>Case Material/Finish:</b>	Unpainted Aluminum case, Ternplate steel cover.
<b>Terminations:</b>	0.250" x 0.031" quick connect blades.
<b>Dielectric Fluid:</b>	Dielektrol VI
<b>Internal Protection:</b>	UL recognized Pressure Sensitive Interrupter. See Ratings Table for RBC's Code Number listed under RBC's UL. File E7793 (N). For UL submittals with these capacitors use the RBC 'Pxxx' number <b>not</b> the Catalog Number. The corresponding generic UL designation that includes the Available Fault 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	A10000AFC
P	P965	P10000AFC
S	P968	S10000AFC
T	P969	T10000AFC

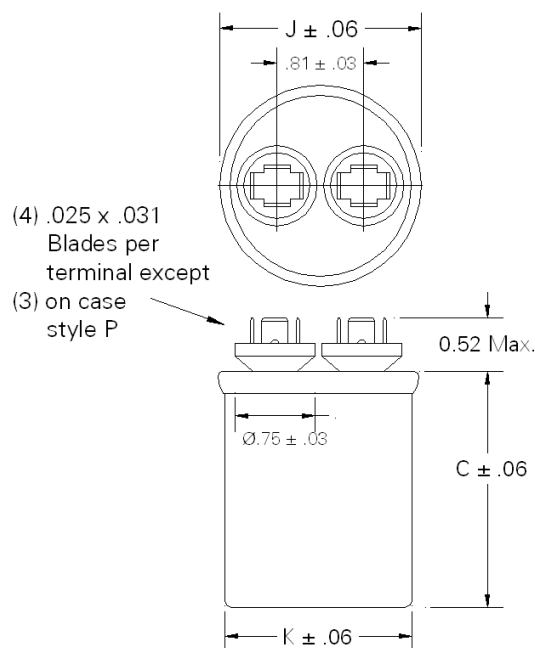
## 240 and 370 Volts AC \*STANDARD RATINGS

Capacitance ( $\mu$ F)	Catalog Number	Case Style	Height C (ins)	UL Code
<b>240 Volts A-C Nominal</b>				
15	97F8036	P	2.88	P965
25	97F8037	P	2.88	P965
30	97F8038	P	3.88	P965
35	97F8039	P	3.88	P965
40	97F8040	P	3.88	P965
45	97F8041	P	4.75	P965
50	97F8042	P	4.75	P965
55	97F8043	P	4.75	P965
60	97F8044	S	4.75	P968
65	97F8045	S	4.75	P968
70	97F8046	S	4.75	P968
75	97F8047	S	4.75	P968
80	97F8048	T	3.88	P969
85	97F8049	T	3.88	P969
90	97F8050	T	3.88	P969
95	97F8051	T	4.75	P969
100	97F8052	T	4.75	P969
120	97F8053	T	4.75	P969
<b>370 Volts A-C Nominal</b>				
3	97F8054	A	2.12	P921
4	97F8055	A	2.12	P921
5	97F8056	A	2.88	P921
6	97F8057	A	2.88	P921
7.5	97F8058	A	2.88	P921
10	97F8059	A	3.88	P921
12.5	97F8060	A	3.88	P921
15	97F8061	P	2.88	P965
17.5	97F8062	P	2.88	P965
20	97F8063	P	3.88	P965
25	97F8064	P	3.88	P965
30	97F8065	P	3.88	P965
35	97F8066	P	4.75	P965
40	97F8067	P	4.75	P965
45	97F8068	S	4.75	P968
50	97F8069	S	4.75	P968
55	97F8070	S	4.75	P968
60	97F8071	T	3.88	P969
65	97F8072	T	3.88	P969
70	97F8073	T	4.75	P969

\* 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.

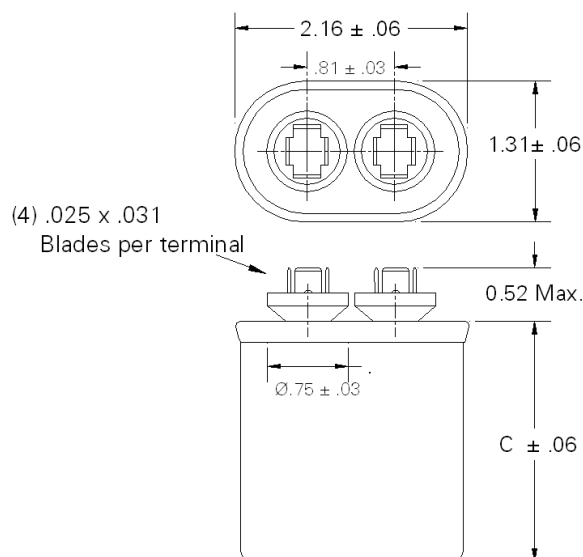
However, RBC remains sensitive to your needs and requirements, and will continue to offer the above ratings (and more) in case configurations to meet your application (s).

## 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

## Case Style A



## 97F8000 Series 240 and 370 Volts AC

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 RBC'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 25<sup>th</sup> 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:

$$W = I^2 \times ESR$$

Where **I** = Total RMS current

And **ESR** = 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 8 )

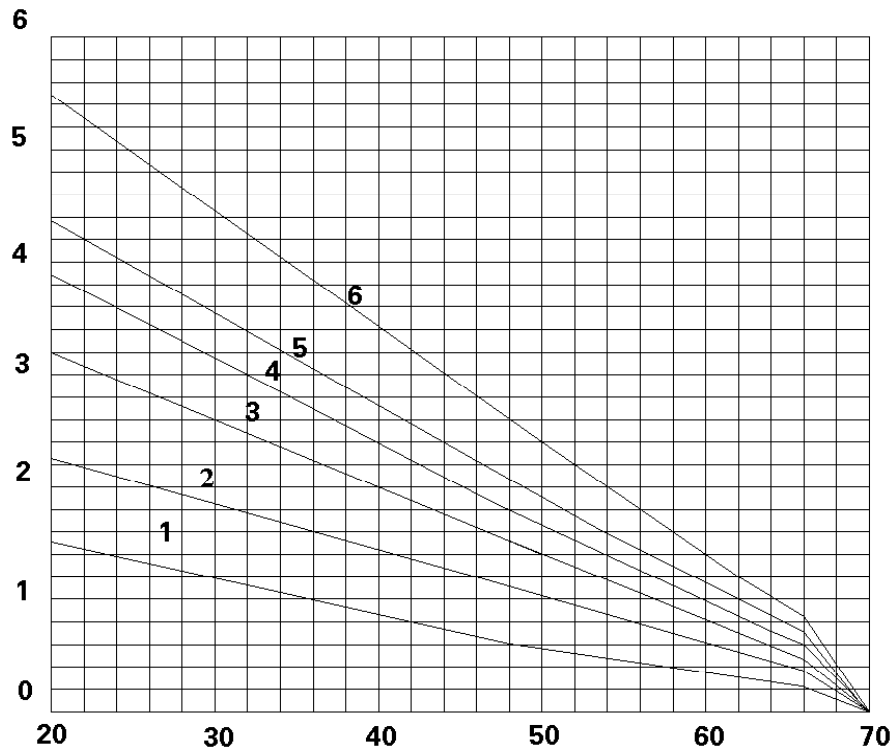
(3) Running the capacitors at voltages above the nominal rated voltage will also result in significantly reduced life. (See chart G-2 on page 8 )

ESR Values for 97F8000 Series:  
Curve Numbers refer to Graphs  
on Page

Catalog Number	μF	ESR ohms	Curve Number
<b>240 Volts AC Nominal</b>			
97F8036	15	0.0257	2
97F8037	25	0.0180	2
97F8038	30	0.0228	3
97F8039	35	0.0206	3
97F8040	40	0.0190	3
97F8041	45	0.0241	4
97F8042	50	0.0226	4
97F8043	55	0.0213	4
97F8044	60	0.0215	5
97F8045	65	0.0206	5
97F8046	70	0.0198	5
97F8047	75	0.0191	5
97F8048	80	0.0164	5
97F8049	85	0.0160	5
97F8050	90	0.0156	5
97F8051	95	0.0193	6
97F8052	100	0.0189	6
97F8053	120	0.0176	6
<b>370 Volts AC Nominal</b>			
97F8054	3	0.0700	1
97F8055	4	0.0539	1
97F8056	5	0.0586	2
97F8057	6	0.0499	2
97F8058	7.5	0.0411	2
97F8059	10	0.0471	3
97F8060	12.5	0.0392	3
97F8061	15	0.0244	2
97F8062	17.5	0.0218	2
97F8063	20	0.0281	3
97F8064	25	0.0240	3
97F8065	30	0.0213	3
97F8066	35	0.0262	4
97F8067	40	0.0240	4
97F8068	45	0.0235	5
97F8069	50	0.0222	5
97F8070	55	0.0210	5
97F8071	60	0.0175	5
97F8072	65	0.0169	5
97F8073	70	0.0207	6

Natural Circulation

Maximum Allowable  
Watts Loss

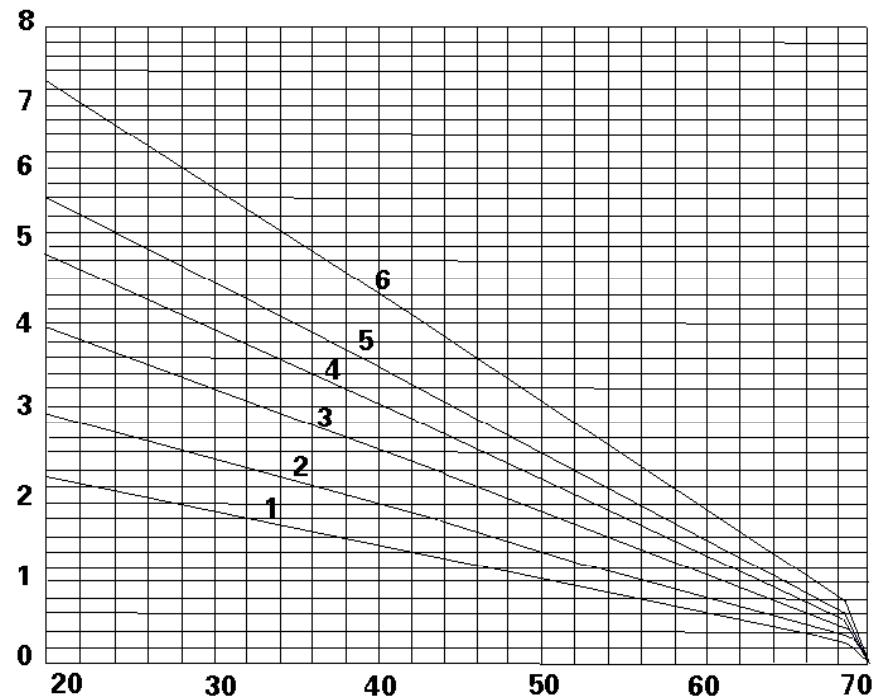


Ambient Temperature (°C) – Natural Circulation

Allowable Watts Loss - 97F8000 ( 240 and 370 Volt ) Series

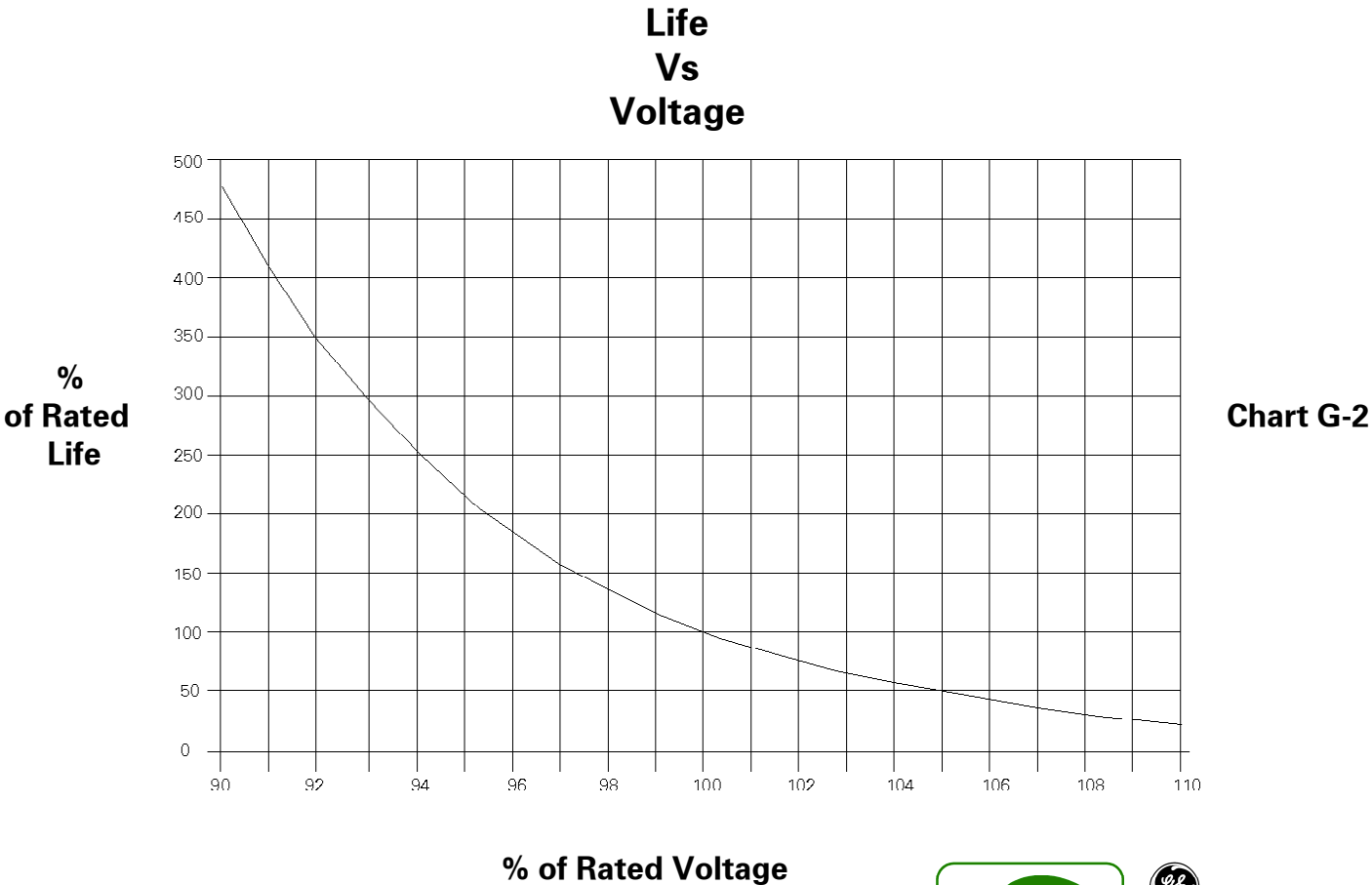
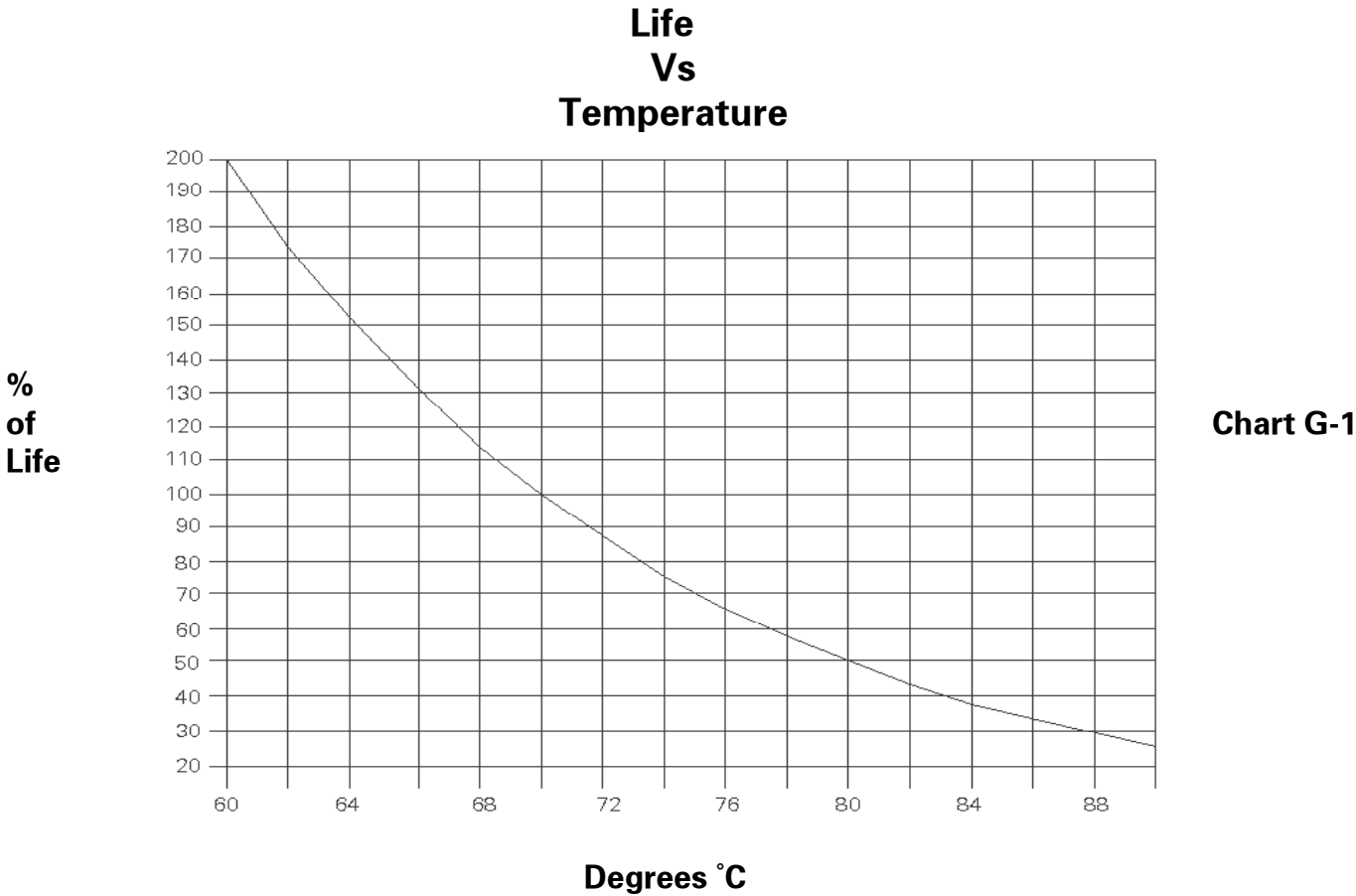
Forced Circulation

Maximum Allowable  
Watts Loss



Ambient Temperature (°C) – Forced Circulation





Percent Capacitance Vs Temperature

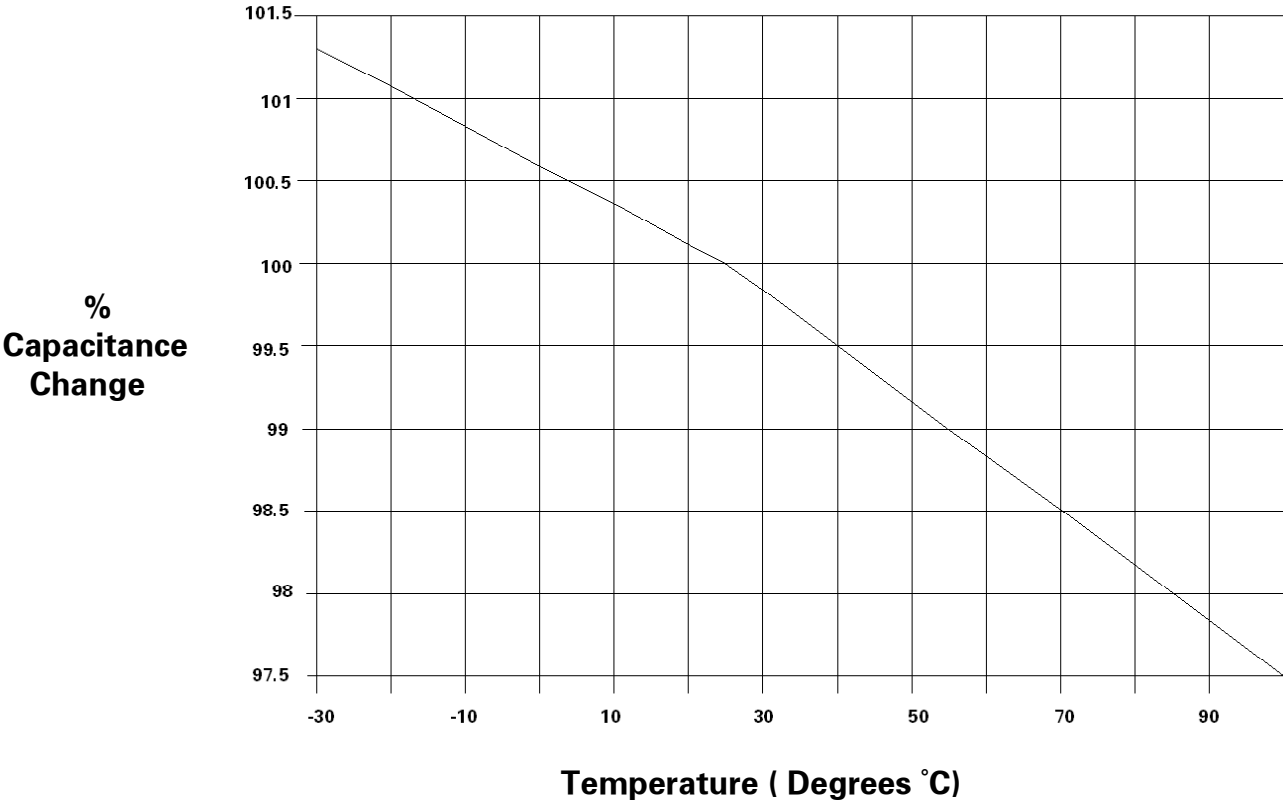


Chart E-3

