

# capacitors



## SE4 SERIES

### METALLIZED POLYESTER SURFACE MOUNT POWER SUPPLY CAPACITOR

**for hi-rel surface-mount decoupling power applications, requiring high current carrying capability with high DV/DT and peak current – that are exposed to high solder reflow temperature**

- WITHSTANDS HIGH SOLDER REFLOW ■ HIGH OPERATING TEMPERATURE ■ HIGH RELIABILITY
- 100% ENCAPSULATION ■ NON-DELAMINATING ■ HIGH CAPACITANCE ■ LOW ESR & ESL

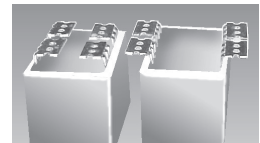
The SE4 is a new type of hi-rel surface-mount film capacitor with reliability that is comparable to MIL-PFR-55514. It was developed to meet the “next generation” challenges facing the electronic industry. The SE4 is an ideal replacement for unencapsulated PPS, polyester and ceramic capacitors. It has the ability to withstand solder reflow to 260°C and has capabilities to operate at +125° C without showing any signs of degrading by solder process.

Other performance characteristics include voltages to 200 VDC, DV/DT as high as 217 v/μs and peak current to 1736 amps. The line offers capacitance values to 40.0 μF in a compact case, which allows for miniaturization and/or increased pcb density.

What makes this all possible is a unique design and assembly combined with total encapsulation. This

ensures operational integrity and long service life. It also protects from humidity (as high as 90%), flux removing solvents as well as other hostile atmospheres.

Two styles of lead frame configurations are offered. The “Gull Wing” style lends itself to visual inspection. The “J” style is ideal for pcb space utilization.



With the introduction of the SE4, the circuit designer has a surface mount polyester power supply capacitor that incorporates a unique combination of capabilities to increase circuit performance. Production and overall system cost savings can also be realized.

# specifications

## CONSTRUCTION

Extended metallized polyester film.

## ENCLOSURE

Thermoplastic enclosure filled with specially formulated thermally conductive epoxy.

## TERMINATIONS

Tab: Solder plated brass.

## QUALITY CONTROL

Capacitors are tested 100% for:

- ESR
- CAPACITANCE TOLERANCE
- DISSIPATION FACTOR
- DIELECTRIC WITHSTANDING VOLTAGE
- INSULATION RESISTANCE

Process and inspection data is maintained on file and is available on special request.

## MARKING

All capacitors are marked with the company initials EC and/or EC trademark, type (SE4), capacitance, tolerance, rated D.C. working voltage and date code.

## DATE CODE

The first two digits of the date code represent the year, the second two digits the week, i.e., 0152 is the 52nd week of 2001, 0202 is the 2nd week of 2002.

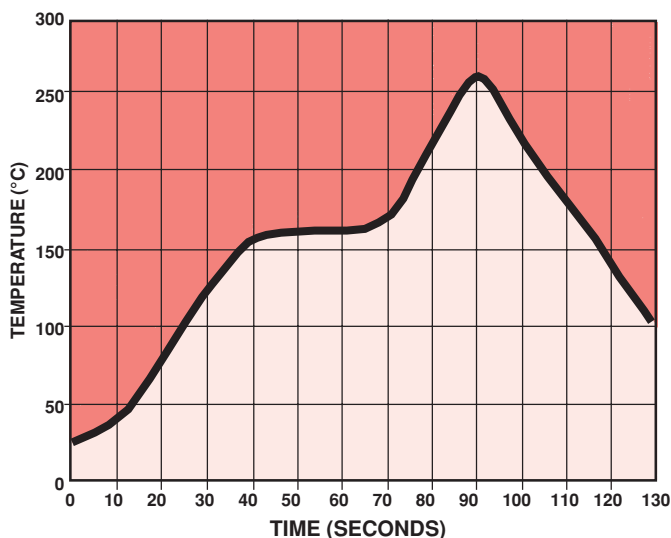
## QUALITY ASSURANCE

Emphasis is placed on quality assurance. The functions of raw material inspection, manufacturing process inspection and final product inspection are constantly being monitored by our Quality Control Department. Complete procedures are described in our quality control manual. Electronic Concepts, Inc. will continue to advance the state-of-the-art by utilizing leading edge technology, ultra-miniature capacitor designs and establish reliability procedures.

In the construction of the components described, the full intent of the specification will be met. Electronic Concepts, Inc., however, reserves the right to depart from detail specifications to allow for improvement in the design of its products. However, components made under military approvals will be done so in accordance with specification requirements.

This information is believed to be accurate and reliable. However, Electronic Concepts, Inc. assumes no responsibility for its use, nor for any infringement of patents or other rights of third parties which may result.

REFLOW SOLDERING TEMPERATURE PROFILE

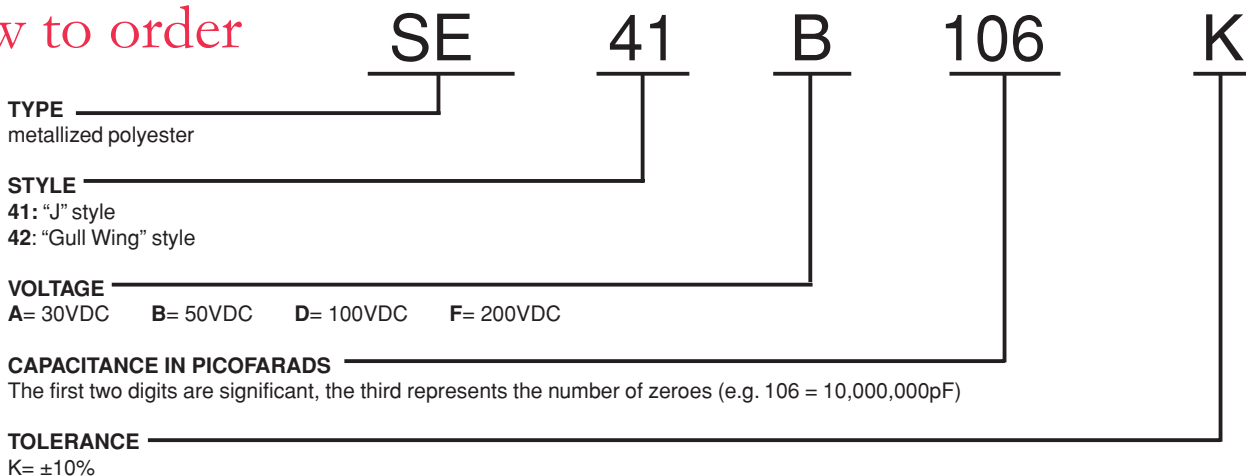


## ENVIRONMENTAL

Type SE4 withstands the following tests in accordance with MIL-STD-202:

Test	Method	Test Condition
Vibration	204	D
Immersion	104	B
Shock	213	I
Humidity	103	B
Thermal Shock	107	A

## how to order



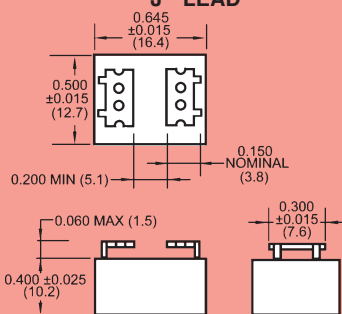
# electrical data

PART NUMBER	VALUE $\mu\text{F}\pm 10\%$	VOLTAGE VDC	CASE SIZE	ESR(100kHz) OHMS	I <sub>pk</sub> AMPS
SE4_A755K	7.5	30	1	0.007	390
SE4_A156K	15.0	30	3	0.006	780
SE4_A206K	20.0	30	2	0.005	868
SE4_A406K	40.0	30	4	0.005	1736
SE4_B405K	4.0	50	1	0.013	260
SE4_B805K	8.0	50	3	0.008	520
SE4_B106K	10.0	50	2	0.007	651
SE4_B206K	20.0	50	4	0.005	1302
SE4_D155K	1.5	100	1	0.031	163
SE4_D305K	3.0	100	3	0.016	326
SE4_D355K	3.5	100	2	0.014	380
SE4_D705K	7.0	100	4	0.008	760
SE4_F334K	0.33	200	1	0.125	72
SE4_F684K	0.68	200	3	0.250	144
SE4_F105K	1.0	200	2	0.044	217
SE4_F205K	2.0	200	4	0.022	434

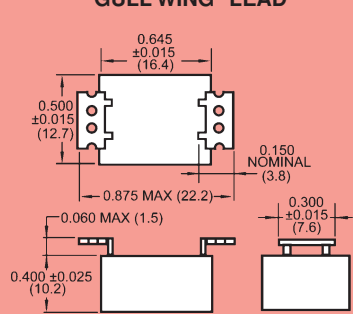
## case types

### CASE 1

#### 41 STYLE "J" LEAD

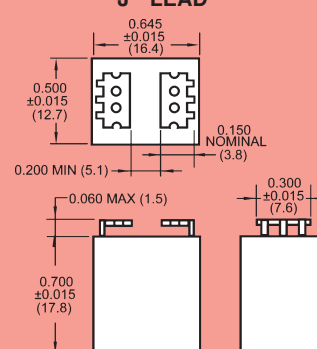


#### 42 STYLE "GULL WING" LEAD

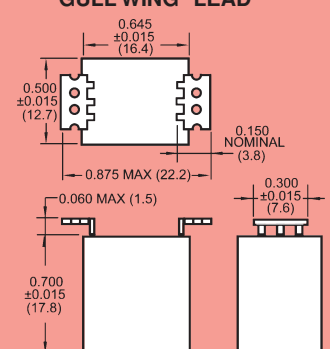


### CASE 2

#### 41 STYLE "J" LEAD



#### 42 STYLE "GULL WING" LEAD

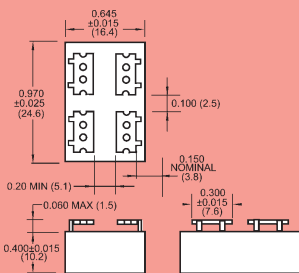


METRIC DIMENSIONS IN PARENTHESIS

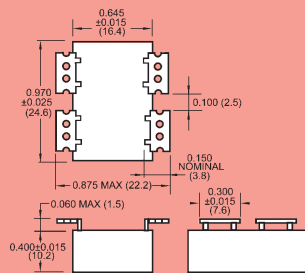
dv/dt v/μs	ESL nH	Fres kHz	CONTINUOUS RMS CURRENT (100kHz)					
			25°C	45°C	65°C	85°C	105°C	125°C
43	<10	559	6.7	6.1	5.2	4.4	3.1	0.9
43	<10	395	13.4	12.2	10.5	8.7	6.3	1.8
43	<10	375	15.7	14.1	12.2	10.0	7.3	2.1
43	<10	265	31.4	28.2	24.5	20.0	14.6	4.2
65	<10	838	5.9	5.4	4.6	3.8	2.7	0.8
65	<10	593	11.8	10.7	9.3	7.7	5.4	1.6
65	<10	530	12.2	10.9	9.4	7.8	5.6	1.6
65	<10	375	24.3	21.8	18.9	15.5	11.2	3.2
108	<10	1370	3.8	3.4	3.0	2.5	1.8	0.5
108	<10	968	7.7	6.9	6.1	5.0	3.5	1.0
108	<10	897	7.4	6.7	5.8	4.8	3.4	1.0
108	<10	593	14.9	13.4	11.7	9.6	6.9	1.9
217	<10	2920	1.8	1.6	1.4	1.2	0.9	0.2
217	<10	2030	3.7	3.2	2.9	2.4	1.8	0.5
217	<10	1680	4.3	3.9	3.4	2.8	2.0	0.6
217	<10	1190	8.6	7.8	6.7	5.6	4.0	1.1

## CASE 3

### 41 STYLE "J" LEAD

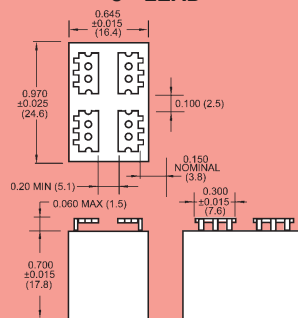


### 42 STYLE "GULL WING" LEAD

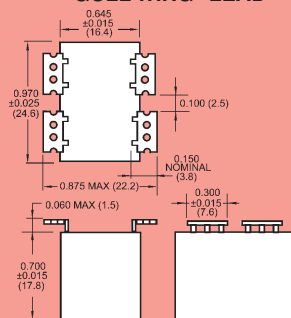


## CASE 4

### 41 STYLE "J" LEAD



### 42 STYLE "GULL WING" LEAD



# performance CHARACTERISTICS

## OPERATING TEMPERATURE RANGE

Operating: -55°C to +125°C with 50% linear voltage derating from 85°C to +125°C.  
Storage: -55°C to +125°C.

## INSULATION RESISTANCE

When measured at rated voltage for a minimum of 60 seconds per microfarad, the insulation resistance equals or exceeds the following values:

Temperature	25°C
Megohms x Microfarads	5,000

## DISSIPATION FACTOR

When measured at 1kHz and 25°C, the dissipation factor will not exceed 1.0%.

## CAPACITANCE RANGE

From .33 to 40 microfarads. Capacitance is measured at 25°C at/or referenced to a frequency of 1kHz.

## TYPICAL CAPACITANCE CHANGE

Capacitance change versus temperatures for these capacitors will not exceed the following:

Temperature degree C°	-55	+85	+125
Percent change	-3.0	+3.0	+15

## DIELECTRIC STRENGTH

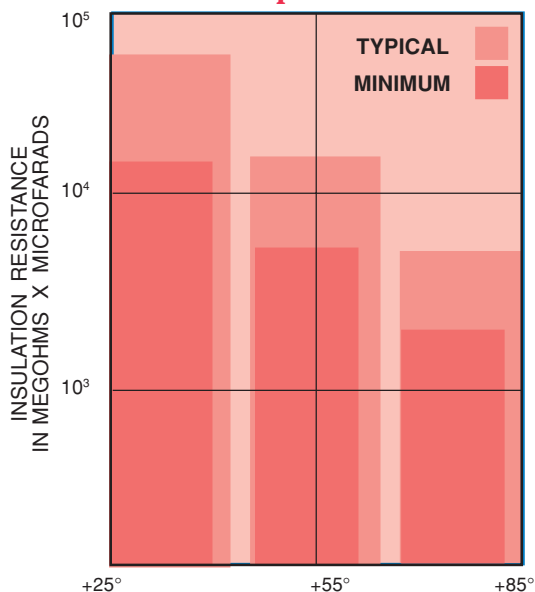
Capacitance withstands a DC potential of 150% rated voltage applied between the terminals for two (2) minutes without permanent breakdown. Test voltage is applied and discharged through one ohm per volt minimum at 25°C.

## VOLTAGE RATING

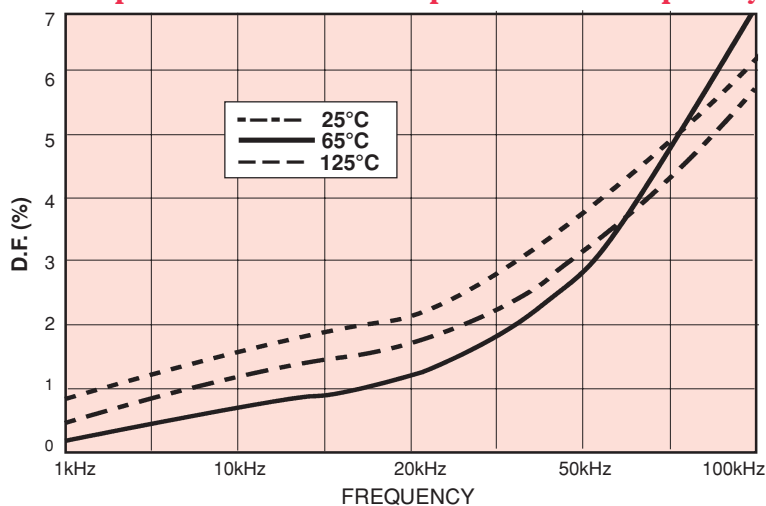
DC working voltage ratings are from 30 to 200VDC with 50% linear voltage derating from 85°C to +125°C.

## electrical characteristics vs. temperature (centigrade)

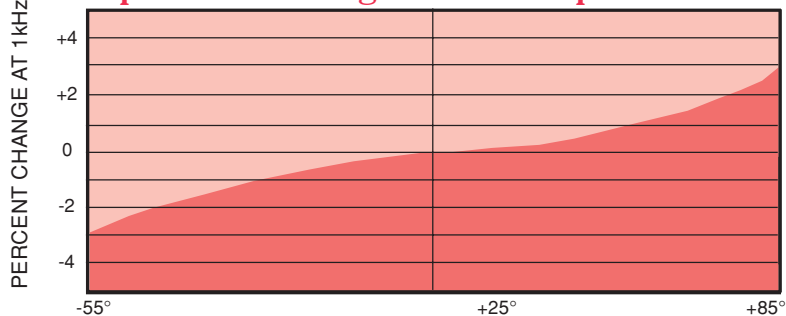
### insulation resistance versus temperature



### dissipation factor vs temperature & frequency



### capacitance change versus temperature





*More "firsts" than anyone else!*

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