

# Type SF Motor-Run and Power Supply Capacitors

## Oil Filled/Impregnated, AC Rated, Metallized Polypropylene Capacitors



Type SF, AC rated metallized polypropylene capacitors provide starting torque and power factor correction for split phase motors typically used in refrigeration and air conditioning motor-run applications. Type SF also may be used to provide noise suppression, voltage regulation and line current reduction in power supply applications.

### Highlights

- ♦ Self healing
- ♦ Fault Current Protection up to 10,000 amps AFC
- ♦ Low energy consumption
- ♦ 4 - tine, 1/4" quick connect lug terminals are standard
- ♦ Meets EIA Standard EIA-456-A
- ♦ UL recognized File Number E71645
- ♦ CSA File Number 223507

### Specifications

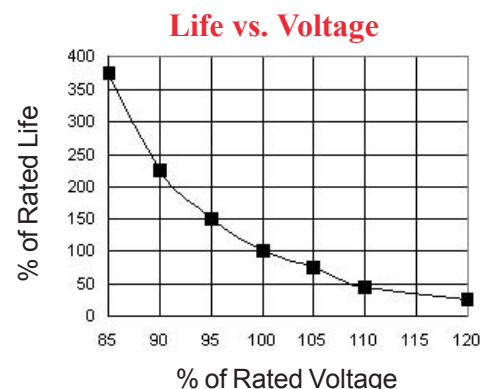
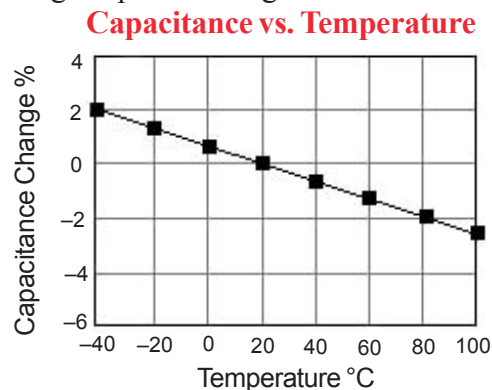
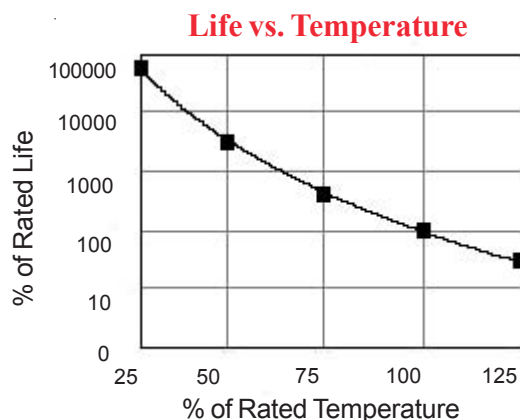
|                               |                                                                                        |
|-------------------------------|----------------------------------------------------------------------------------------|
| <b>Capacitance Range:</b>     | 5.0 $\mu$ F to 120.0 $\mu$ F                                                           |
| <b>Voltage Range:</b>         | 240 Vac to 660 Vac                                                                     |
| <b>Capacitance Tolerance:</b> | $\pm 10\%$ standard, $\pm 6\%$ and $\pm 3\%$ available                                 |
| <b>Temperature Range:</b>     | $-40^{\circ}\text{C}$ to $70^{\circ}\text{C}$ standard, $90^{\circ}\text{C}$ available |
| <b>Dissipation Factor:</b>    | $<0.1\%$                                                                               |

### Service Life Objective

The service life objective for this series is 60,000 hours of operating life with a 94% survival rate when operated at full voltage, 60 Hz, and rated ambient temperature. AC capacitors are frequently used at voltages and ambient temperatures other than rated conditions. Service life may be estimated under specific conditions of temperature and voltage by using the curves as shown below and to the right.

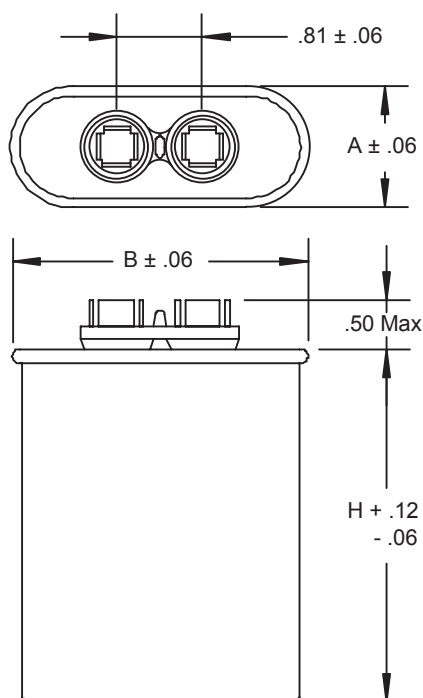
### Capacitance vs. Temperature

The Capacitance vs. Temperature curve may be used to determine the capacitance change as a function of temperature. capacitance varies by no more than  $\pm 3\%$  over the operating temperature range.



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## Type SF - Oval Case Style



| Dimensions (Inches) |      |      |           |
|---------------------|------|------|-----------|
| Case Code           | A    | B    | H         |
| A                   | 1.31 | 2.16 | see table |
| C                   | 1.91 | 2.91 | see table |
| D                   | 1.97 | 3.66 | see table |

## Ratings - Oval Case Style

| Cap. (μF)                          | Stock Items | Catalog Part Number | Case Code | H (inches) |
|------------------------------------|-------------|---------------------|-----------|------------|
| 240 Vac Oval 70°C Case Temperature |             |                     |           |            |
| 4.0                                | *           | SFA24S4K219B        | A         | 2.19       |
| 5.0                                | *           | SFA24S5K219B        | A         | 2.19       |
| 6.0                                | *           | SFA24S6K219B        | A         | 2.19       |
| 7.5                                | *           | SFA24S7.5K219B      | A         | 2.19       |
| 10.0                               | *           | SFA24S10K219B       | A         | 2.19       |
| 15.0                               | *           | SFA24S15K263B       | A         | 2.63       |
| 20.0                               | *           | SFA24S20K303B       | A         | 3.03       |
| 25.0                               | *           | SFC24S25K269B       | C         | 2.69       |
| 30.0                               | *           | SFC24S30K269B       | C         | 2.69       |
| 35.0                               | *           | SFC24S35K269B       | C         | 2.69       |
| 40.0                               | *           | SFC24S40K303B       | C         | 3.03       |
| 45.0                               | *           | SFC24S45K303B       | C         | 3.03       |
| 50.0                               | *           | SFC24S50K303B       | C         | 3.03       |
| 60.0                               | *           | SFC24S60K388B       | C         | 3.88       |
| 70.0                               | *           | SFC24S70K388B       | C         | 3.88       |

## Ratings - Oval Case Style

| Cap. (μF)                      | Stock Items | Catalog Part Number | Case Code | H Inches |
|--------------------------------|-------------|---------------------|-----------|----------|
| 370 Vac 70 °C Case Temperature |             |                     |           |          |
| 2.0                            | S           | SFA37S2K219B        | A         | 2.19     |
| 2.0                            | *           | SFA37S2K156B        | A         | 1.56     |
| 3.0                            | S           | SFA37S3K219B        | A         | 2.19     |
| 3.0                            | *           | SFA37S3K156B        | A         | 1.56     |
| 4.0                            | S           | SFA37S4K219B        | A         | 2.19     |
| 4.0                            | *           | SFA37S4K156B        | A         | 1.56     |
| 5.0                            | S           | SFA37S5K219B        | A         | 2.19     |
| 5.0                            | *           | SFA37S5K156B        | A         | 1.56     |
| 6.0                            | S           | SFA37S6K219B        | A         | 2.19     |
| 6.0                            | *           | SFA37S6K156B        | A         | 1.56     |
| 7.5                            | S           | SFA37S7.5K219B      | A         | 2.19     |
| 7.5                            | *           | SFA37S7.5K156B      | A         | 1.56     |
| 10.0                           | S           | SFA37S10K288B       | A         | 2.88     |
| 12.5                           | S           | SFA37S12.5K288B     | A         | 2.88     |
| 15.0                           | S           | SFA37S15K288B       | A         | 2.88     |
| 17.5                           | S           | SFC37S17.5K291B     | C         | 2.91     |
| 20.0                           | S           | SFC37S20K291B       | C         | 2.91     |
| 20.0                           | *           | SFA37S20K375B       | A         | 3.75     |
| 25.0                           | S           | SFC37S25K291B       | C         | 2.91     |
| 30.0                           | S           | SFC37S30K291B       | C         | 2.91     |
| 35.0                           | S           | SFC37S35K291B       | C         | 2.91     |
| 40.0                           | S           | SFC37S40K391B       | C         | 3.91     |
| 45.0                           | S           | SFC37S45K391B       | C         | 3.91     |
| 50.0                           | S           | SFC37S50K391B       | C         | 3.91     |
| 50.0                           | S           | SFD37S50K391B       | D         | 3.91     |
| 440 Vac 70 °C Case Temperature |             |                     |           |          |
| 2.0                            | S           | SFA44S2K203B        | A         | 2.03     |
| 2.0                            | *           | SFA44S2K156B        | A         | 1.56     |
| 3.0                            | S           | SFA44S3K209B        | A         | 2.09     |
| 3.0                            | *           | SFA44S3K156B        | A         | 1.56     |
| 4.0                            | S           | SFA44S4K209B        | A         | 2.09     |
| 4.0                            | *           | SFA44S4K156B        | A         | 1.56     |
| 5.0                            | S           | SFA44S5K219B        | A         | 2.19     |
| 6.0                            | S           | SFA44S6K288B        | A         | 2.88     |
| 7.5                            | S           | SFA44S7.5K288B      | A         | 2.88     |
| 10.0                           | S           | SFA44S10K375B       | A         | 3.75     |
| 12.5                           | *           | SFA44S12.5K375B     | A         | 3.75     |
| 12.5                           | *           | SFC44S12.5K291B     | C         | 2.91     |
| 15.0                           | S           | SFA44S15K375B       | A         | 3.75     |
| 15.0                           | *           | SFC44S15K291B       | C         | 2.91     |
| 17.5                           | *           | SFC44S17.5K291B     | C         | 2.91     |
| 20.0                           | S           | SFC44S20K391B       | C         | 3.91     |
| 25.0                           | S           | SFC44S25K391B       | C         | 3.91     |
| 30.0                           | S           | SFC44S30K391B       | C         | 3.91     |
| 35.0                           | S           | SFD44S35K391B       | D         | 3.91     |
| 40.0                           | S           | SFD44S40K391B       | D         | 3.91     |
| 45.0                           | S           | SFD44S45K391B       | D         | 3.91     |
| 50.0                           | S           | SFD44S50K391B       | D         | 3.91     |
| 55.0                           | S           | SFD44S55K391B       | D         | 3.91     |
| 60.0                           | S           | SFD44S60K391B       | D         | 3.91     |

## Ratings - Oval Case Style

| Cap.<br>( $\mu$ F)                    | Stock<br>Items | Catalog<br>Part Number | Case<br>Code | H<br>Inches |
|---------------------------------------|----------------|------------------------|--------------|-------------|
| <b>660 Vac 70 °C Case Temperature</b> |                |                        |              |             |
| 1.0                                   | S              | SFA66S1K156B           | A            | 1.56        |
| 1.0                                   | *              | SFA66S1K219B           | A            | 2.19        |
| 2.0                                   | S              | SFA66S2K156B           | A            | 1.56        |
| 2.0                                   | *              | SFA66S2K219B           | A            | 2.19        |
| 3.0                                   | S              | SFA66S3K288B           | A            | 2.88        |
| 4.0                                   | S              | SFA66S4K288B           | A            | 2.88        |
| 5.0                                   | S              | SFA66S5K375B           | A            | 3.75        |
| 6.0                                   | S              | SFA66S6K375B           | A            | 3.75        |
| 8.0                                   | S              | SFA66S8K475B           | A            | 4.75        |
| 8.0                                   | *              | SFC66S8K291B           | C            | 2.91        |
| 10.0                                  | S              | SFA66S10K475B          | A            | 4.75        |
| 10.0                                  | S              | SFC66S10K291B          | C            | 2.91        |
| 12.0                                  | S              | SFC66S12K391B          | C            | 3.91        |
| 15.0                                  | S              | SFC66S15K391B          | C            | 3.91        |
| 18.0                                  | S              | SFC66S18K391B          | C            | 3.91        |
| 20.0                                  | S              | SFD66S20K391B          | D            | 3.91        |
| 25.0                                  | S              | SFD66S25K391B          | D            | 3.91        |
| 30.0                                  | S              | SFD66S30K391B          | D            | 3.91        |
| 35.0                                  | S              | SFD66S35K491B          | D            | 4.91        |
| 40.0                                  | S              | SFD66S40K491B          | D            | 4.91        |

## Options

- ♦ Tinplated steel cans are standard. Aluminum cases are available upon request.
- ♦ Tighter capacitance tolerances such as  $\pm 3\%$  or  $\pm 6\%$  are available.
- ♦ +90 °C ratings are available for HID lighting and power supply applications.
- ♦ Discharge resistors are available.
- ♦ Special terminal lugs such as 2 tines plus 1 fork lugs are available.
- ♦ Dual capacitance values are available for 370 Vac and 440 Vac applications.

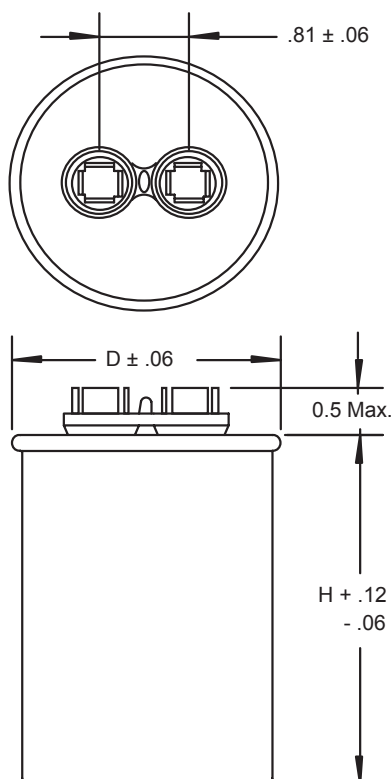
**Hardware and Brackets:** See Capacitor Hardware, page 5.000

## Part Numbering System

| SF<br>Series | C<br>Case        | 37<br>AC Volt | S<br>Case Material | 35<br>Cap         | K<br>Tol. $\pm\%$ | 291<br>Can Height | B<br>VAR             |
|--------------|------------------|---------------|--------------------|-------------------|-------------------|-------------------|----------------------|
| SF           | A = 1 1/4" Oval  | 24 = 240 Vac  | S = Steel          | 7 = 7.0 $\mu$ F   | L = $\pm 3\%$     | 238 = 2.38"       | A = 2 way 70 °C      |
|              | B = 1 1/2" Oval  | 37 = 370 Vac  | T = Aluminum with  | 35 = 35.0 $\mu$ F | H = $\pm 6\%$     | 291 = 2.91"       | B = 4 way 70 °C      |
|              | C = 1 3/4" Oval  | 44 = 440 Vac  | steel cover        |                   | K = $\pm 10\%$    | 388 = 3.88"       | C = 2 way 90 °C      |
|              | D = 2.0" Oval    | 66 = 660 Vac  | A = All Aluminum   |                   |                   | 475 = 4.75"       | D = 4 way 90 °C      |
|              | P = 1 3/4" Round | X = Other     |                    |                   |                   | 488 = 4.88"       | E = Dual 2,3,4 70 °C |
|              | S = 2.0" Round   |               |                    |                   |                   |                   | F = Forks 70 °C      |
|              | T = 2 1/2" Round |               |                    |                   |                   |                   | G = Forks 90 °C      |
|              |                  |               |                    |                   |                   |                   | H = Forks 100 °C     |
|              |                  |               |                    |                   |                   |                   | J = Forks, 70° Res.  |
|              |                  |               |                    |                   |                   |                   | K = Forks, 90° Res.  |
|              |                  |               |                    |                   |                   |                   | L = Forks, 100° Res. |
|              |                  |               |                    |                   |                   |                   | Z = Other            |

# Type SF Motor-Run and Power Supply Capacitors

## Type SF - Round Case Style



### Case Code

| Case Code | D(Inches) | H         |
|-----------|-----------|-----------|
| P         | 1.87      | see table |
| S         | 2.12      | see table |
| T         | 2.62      | see table |

**Hardware and Brackets:**  
See page 5.000 for details

| Cap (μF)                              | Stock Items | Catalog Part Number | Case Code | H (Inches) |
|---------------------------------------|-------------|---------------------|-----------|------------|
| <b>370 Vac 70°C Case Temperature</b>  |             |                     |           |            |
| 2.0                                   | *           | SFP37S2K238B        | P         | 2.38       |
| 3.0                                   | *           | SFP37S3K238B        | P         | 2.38       |
| 4.0                                   | S           | SFP37S4K238B        | P         | 2.38       |
| 5.0                                   | *           | SFP37S5K238B        | P         | 2.38       |
| 6.0                                   | *           | SFP37S6K238B        | P         | 2.38       |
| 7.5                                   | *           | SFP37S7.5K238B      | P         | 2.38       |
| 10.0                                  | S           | SFP37S10K238B       | P         | 2.38       |
| 12.5                                  | S           | SFP37S12.5K238B     | P         | 2.38       |
| 15.0                                  | S           | SFP37S15K238B       | P         | 2.38       |
| 17.5                                  | *           | SFP37S17.5K238B     | P         | 2.38       |
| 20.0                                  | S           | SFP37S20K238B       | P         | 2.38       |
| 25.0                                  | S           | SFP37S25K288B       | P         | 2.88       |
| 30.0                                  | S           | SFP37S30K288B       | P         | 2.88       |
| 35.0                                  | S           | SFS37S35K288B       | S         | 2.88       |
| 40.0                                  | S           | SFS37S40K288B       | S         | 2.88       |
| 45.0                                  | S           | SFS37S45K375B       | S         | 3.75       |
| 50.0                                  | S           | SFS37S50K375B       | S         | 3.75       |
| 55.0                                  | S           | SFS37S55K375B       | S         | 3.75       |
| 60.0                                  | S           | SFT37S60K303B       | T         | 3.03       |
| 65.0                                  | *           | SFT37S65K303B       | T         | 3.03       |
| 70.0                                  | *           | SFT37S70K303B       | T         | 3.03       |
| 75.0                                  | *           | SFT37S75K391B       | T         | 3.91       |
| 80.0                                  | S           | SFT37S80K391B       | T         | 3.91       |
| 90.0                                  | *           | SFT37S90K391B       | T         | 3.91       |
| 100.0                                 | *           | SFT37S100K391B      | T         | 3.91       |
| Cap (μF)                              | Stock Items | Catalog Part Number | Case Code | H (Inches) |
| <b>440 Vac 70 °C Case Temperature</b> |             |                     |           |            |
| 2.0                                   | *           | SFP44S2K238B        | P         | 2.38       |
| 3.0                                   | *           | SFP44S3K238B        | P         | 2.38       |
| 4.0                                   | *           | SFP44S4K238B        | P         | 2.38       |
| 5.0                                   | *           | SFP44S5K238B        | P         | 2.38       |
| 6.0                                   | *           | SFP44S6K238B        | P         | 2.38       |
| 7.5                                   | *           | SFP44S7.5K238B      | P         | 2.38       |
| 10.0                                  | S           | SFP44S10K238B       | P         | 2.38       |
| 12.5                                  | *           | SFP44S12.5K238B     | P         | 2.38       |
| 15.0                                  | S           | SFP44S15K288B       | P         | 2.88       |
| 17.5                                  | *           | SFP44S17.5K288B     | P         | 2.88       |
| 20.0                                  | S           | SFP44S20K288B       | P         | 2.88       |
| 25.0                                  | *           | SFS44S25K288B       | S         | 2.88       |
| 30.0                                  | S           | SFS44S30K288B       | S         | 2.88       |
| 35.0                                  | *           | SFT44S35K303B       | T         | 3.03       |
| 40.0                                  | S           | SFT44S40K391B       | T         | 3.91       |
| 45.0                                  | *           | SFT44S45K391B       | T         | 3.91       |
| 50.0                                  | S           | SFT44S50K391B       | T         | 3.91       |
| 55.0                                  | *           | SFT44S55K391B       | T         | 3.91       |
| 60.0                                  | S           | SFT44S60K475B       | T         | 4.75       |

## Ratings - Round Case Style

| Cap<br>( $\mu$ F)                    | Stock<br>Items | Catalog<br>Part Number | Case<br>Code | H<br>(Inches) |
|--------------------------------------|----------------|------------------------|--------------|---------------|
| <b>660 Vac 70°C Case Temperature</b> |                |                        |              |               |
| 2.0                                  | *              | SFP66S2K238B           | P            | 2.38          |
| 3.0                                  | *              | SFP66S3K238B           | P            | 2.38          |
| 5.0                                  | *              | SFP66S5K238B           | P            | 2.38          |
| 7.5                                  | *              | SFP66S7.5K288B         | P            | 2.88          |
| 10.0                                 | *              | SFP66S10K288B          | P            | 2.88          |
| 12.5                                 | *              | SFS66S12.5K288B        | S            | 2.88          |
| 15.0                                 | *              | SFS66S15K375B          | S            | 3.75          |
| 17.5                                 | *              | SFT66S17.5K388B        | T            | 3.88          |
| 20.0                                 | *              | SFT66S20K388B          | T            | 3.88          |
| 25.0                                 | *              | SFT366S25K488B         | T            | 4.88          |
| 30.0                                 | *              | SFT66S30K488B          | T            | 4.88          |
| 35.0                                 | *              | SFT66S35K488B          | T            | 4.88          |
| 40.0                                 | *              | SFT66S40K488B          | T            | 4.88          |

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- ♦ Discharge resistors are available.
- ♦ Special terminal lugs such as 2 tines plus 1 fork lug are available.
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| SF<br>Series | C<br>Case        | 37<br>AC Volt | S<br>Case Material | 35<br>Cap         | K<br>Tol. $\pm\%$ | 291<br>Can Height | B<br>VAR             |
|--------------|------------------|---------------|--------------------|-------------------|-------------------|-------------------|----------------------|
| SF           | A = 1 1/4" Oval  | 24 = 240 Vac  | S = Steel          | 7 = 7.0 $\mu$ F   | L = $\pm 3\%$     | 238 = 2.38"       | A = 2 way 70 °C      |
|              | B = 1 1/2" Oval  | 37 = 370 Vac  | T = Aluminum with  | 35 = 35.0 $\mu$ F | H = $\pm 6\%$     | 291 = 2.91"       | B = 4 way 70 °C      |
|              | C = 1 3/4" Oval  | 44 = 440 Vac  | steel cover        |                   | K = $\pm 10\%$    | 388 = 3.88"       | C = 2 way 90 °C      |
|              | D = 2.0" Oval    | 66 = 660 Vac  | A = All Aluminum   |                   | Z = Special       | 475 = 4.75"       | D = 4 way 90 °C      |
|              |                  | X = Other     |                    |                   |                   | 488 = 4.88"       | E = Dual 2,3,4 70 °C |
|              | P = 1 3/4" Round |               |                    |                   |                   |                   | F = Forks 70 °C      |
|              | S = 2.0" Round   |               |                    |                   |                   |                   | G = Forks 100 °C     |
|              | T = 2 1/2" Round |               |                    |                   |                   |                   | H = Forks 100 °C     |
|              |                  |               |                    |                   |                   |                   | J = Forks, 70° Res.  |
|              |                  |               |                    |                   |                   |                   | K = Forks, 90° Res.  |
|              |                  |               |                    |                   |                   |                   | L = Forks, 100° Res. |