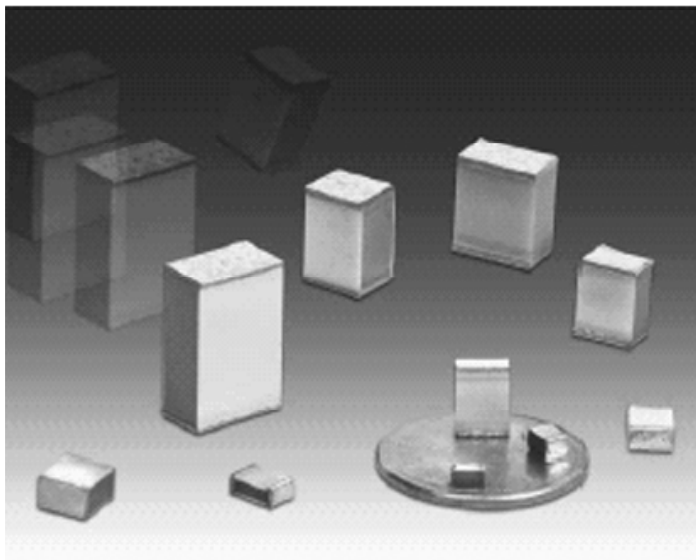


# Type FCN Surface Mount Film Capacitors

## Stable Stacked Metallized Film (PEN) Chips for Reflow Soldering



Type FCN SMT capacitors are the general purpose line of CDE's surface mount product offerings. They range in capacitance from .001  $\mu\text{F}$  to 1.0  $\mu\text{F}$ , and they are available in voltage ratings up to 400 Vdc.

Type FCN capacitors are designed for applications requiring a general purpose SMT capacitor with stable temperature and frequency characteristics similar to polyester film capacitors. They are ideal for applications such as EMI noise filtering, power supply input/output filters, audio or signal coupling, and IC power bus bypassing or decoupling. FCN SMT capacitors have a non-inductive stacked metallized PEN film construction which results in a low ESR and excellent high frequency performance.

### Highlights

- Designed for reflow soldering
- Withstands 150% of rated voltage for 60 seconds
- Stacked metallized polyethylene naphthalate (PEN) film
- Performs like polyester capacitors
- Nonmagnetic and lead-free

### Specifications

|  |   |
|--|---|
| <b>Capacitance Range:</b>  | 1000 pF to 1.0 $\mu\text{F}$ (1 kHz at 5 Vrms)  |
| <b>Capacitance Tolerance:</b>                                      | $\pm 5\%$ (J), $\pm 10\%$ (K) (See Ratings)   |
| <b>Voltages:</b>   | 16, 50, 100, 250 & 400 Vdc  |
| <b>Operating Temperature Range:</b>                                | 16, 50, 100Vdc (<0.012 $\mu\text{F}$ );<br>-55 $^{\circ}\text{C}$ to +105 $^{\circ}\text{C}$<br>100 Vdc ( $\geq 0.012 \mu\text{F}$ ), 250, 400 Vdc;<br>-40 $^{\circ}\text{C}$ to +85 $^{\circ}\text{C}$   |
| <b>IR (at 20 <math>^{\circ}\text{C}</math>, after 60 seconds):</b> | C >0.33 $\mu\text{F}$ : IR = 1000 $\text{M}\Omega \cdot \mu\text{F}$ Min.<br>C $\leq 0.33 \mu\text{F}$ : IR $\geq 3000 \text{M}\Omega$  |
| <b>Dissipation Factor (Tan<math>\delta</math>):</b>                | 1.0% Max. (1 kHz at 5 Vrms)   |
| <b>Life Test:</b>  | 1000 h at rated temp. & 125% rated voltage<br>$\Delta$ Capacitance: +1%, -6% max<br>Dissipation Factor: 1.1% max<br>IR: 1000 $\text{M}\Omega\text{min}$ (C>0.33 $\mu\text{F}$ , 300 $\text{M}\Omega \cdot \mu\text{F}$ min)<br>No significant visual damage   |
| <b>Moisture Resistance:</b>  | 1000 h at 40 $^{\circ}\text{C}$ and 90 - 95% RH & rated voltage<br>$\Delta$ Capacitance: +8/-5%<br>Dissipation Factor: 1.5% max<br>IR: 100 $\text{M}\Omega$ min (C >0.33 $\mu\text{F}$ , 30 $\text{M}\Omega \cdot \mu\text{F}$ min)<br>Voltage withstanding: 1.3 times rated voltage, 1 min.<br>No significant damage |



Complies with the EU Directive 2002/95/EC requirement restricting the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr(VI)), PolyBrominated Biphenyls (PBB) and PolyBrominated Diphenyl Ethers (PBDE).

# Type FCN Surface Mount Film Capacitors

## Specifications

### Moisture Resistance:

500 h at 85 °C and 85% RH  
 $\Delta$  Capacitance:  $\pm 10\%$  max  
 Dissipation Factor: 2% max  
 IR: 10 M $\Omega$  min (C > 0.33  $\mu$ F, 3 M $\Omega \cdot \mu$ F min)  
 Voltage withstanding: 1.3 times rated voltage, 1 min.  
 No significant damage

### Resistance to Soldering Heat:

5 s at max capacitor surface temperature  
 $\Delta$  Capacitance:  $\pm 5\%$  max  
 Dissipation Factor: 1.1% max  
 IR: 1000 M $\Omega$  min (C > 0.33  $\mu$ F, 300 M $\Omega \cdot \mu$ F min)  
 Voltage withstanding: 1.5 times rated voltage, 1 min.  
 No significant visual damage.

### Withstand Voltage:

16 V & 50 V, 100 V  $\leq$  0.01  $\mu$ F: 175% rated voltage, 5 s  
 100 V  $\geq$  0.012  $\mu$ F, 250 V and 400 V: 150% rated voltage, 5 s

### Surface Temperature:

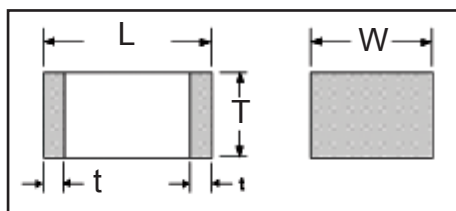
16 V & 50 V & 100 V  $\leq$  0.01  $\mu$ F: 240 °C max  
 100 V  $\geq$  0.012  $\mu$ F, 250 V & 400 V: 230 °C max

## Part Numbering System

| FCN  | 1206      | A           | 102                 | J              | H2         | Tape Width (mm) | Tape Diameter [in.(mm)] | Reel Quantity |
|------|-----------|-------------|---------------------|----------------|------------|-----------------|-------------------------|---------------|
| Type | Case Size | Voltage     | Capacitance         | Tolerance      | Code       |                 |                         |               |
| FCN  | 1206      | C = 16 Vdc  | 102 = 0.001 $\mu$ F | J = $\pm 5\%$  | K1         | = 8             | 7 (178)                 | 4000          |
|      | 1913      | H = 50 Vdc  | 223 = 0.022 $\mu$ F | K = $\pm 10\%$ | J1, J2     | = 8             | 7 (178)                 | 3000          |
|      | 2416      | A = 100 Vdc | 474 = 0.47 $\mu$ F  |                | H1, H2     | = 8             | 7 (178)                 | 3000          |
|      | 2420      | E = 250 Vdc |                     |                | H3         | = 8             | 7 (178)                 | 2000          |
|      | 2820      | G = 400 Vdc |                     |                | G1, G2, G3 | = 8             | 7 (178)                 | 2000          |
|      | 3022      |             |                     |                | E1, E2     | = 12            | 13 (330)                | 3000          |
|      | 3925      |             |                     |                | E3, E4     | = 12            | 13 (330)                | 2000          |
|      | 3931      |             |                     |                | D1, D2     | = 12            | 13 (330)                | 3000          |
|      | 6031      |             |                     |                | D3, D4, D5 | = 12            | 13 (330)                | 2000          |
|      | 6040      |             |                     |                | B, Z       | = 12            | 13 (330)                | 1500          |
|      |           |             |                     |                | U, V, X, Y | = 16            | 13 (330)                | 1000          |
|      |           |             |                     |                | S, T       | = 24            | 13 (330)                | 750           |

# Type FCN Surface Mount Film Capacitors

## Outline Drawing



$t = 0.014 \pm 0.008$  in. ( $0.35 \pm 0.2$  mm)

For  $0.001 \mu\text{F} - 0.01 \mu\text{F}$ , 100 V,  $t = 0.026 \pm 0.012$  in. ( $0.62 \pm 0.3$  mm)

## Ratings

| Cap<br>( $\mu\text{F}$ ) | Catalog<br>Part Number | L<br>in (mm)          | W<br>in (mm)          | T<br>in (mm)          |
|--------------------------|------------------------|-----------------------|-----------------------|-----------------------|
| <b>16 Vdc</b>            |                        |                       |                       |                       |
| .12                      | FCN1913C124J-E1        | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .15                      | FCN1913C154J-E2        | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.079±0.008 (2.0±0.2) |
| .18                      | FCN1913C184J-E2        | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.079±0.008 (2.0±0.2) |
| .22                      | FCN1913C224J-E4        | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.094±0.008 (2.4±0.2) |
| .27                      | FCN2416C274J-D1        | 0.236±0.008 (6.0±0.2) | 0.161±0.012 (4.1±0.3) | 0.071±0.008 (1.8±0.2) |
| .33                      | FCN2416C334J-D2        | 0.236±0.008 (6.0±0.2) | 0.161±0.012 (4.1±0.3) | 0.079±0.008 (2.0±0.2) |
| .39                      | FCN2416C394J-D3        | 0.236±0.008 (6.0±0.2) | 0.161±0.012 (4.1±0.3) | 0.094±0.008 (2.4±0.2) |
| .47                      | FCN2416C474J-D4        | 0.236±0.008 (6.0±0.2) | 0.161±0.012 (4.1±0.3) | 0.110±0.008 (2.8±0.2) |
| <b>50 Vdc</b>            |                        |                       |                       |                       |
| .056                     | FCN1913H563J-E2        | 0.189±0.008 (4.8±0.3) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .068                     | FCN1913H683J-E2        | 0.189±0.008 (4.8±0.3) | 0.130±0.012 (3.3±0.3) | 0.079±0.008 (2.0±0.2) |
| .082                     | FCN1913H823J-E4        | 0.189±0.008 (4.8±0.3) | 0.130±0.012 (3.3±0.3) | 0.079±0.008 (2.0±0.2) |
| .10                      | FCN1913H104J-E3        | 0.189±0.008 (4.8±0.3) | 0.130±0.012 (3.3±0.3) | 0.094±0.008 (2.4±0.2) |
| .12                      | FCN2416H124J-D1        | 0.236±0.008 (6.0±0.2) | 0.161±0.012 (4.1±0.3) | 0.071±0.008 (1.8±0.2) |
| .15                      | FCN2416H154J-D2        | 0.236±0.008 (6.0±0.2) | 0.161±0.012 (4.1±0.3) | 0.079±0.008 (2.0±0.2) |
| .18                      | FCN2416H184J-D3        | 0.236±0.008 (6.0±0.2) | 0.161±0.012 (4.1±0.3) | 0.094±0.008 (2.4±0.2) |
| .22                      | FCN2416H224J-D4        | 0.236±0.008 (6.0±0.2) | 0.161±0.012 (4.1±0.3) | 0.110±0.008 (2.8±0.2) |
| <b>100 Vdc</b>           |                        |                       |                       |                       |
| .0010                    | FCN1206A102J-H2        | 0.126±0.008 (3.2±0.2) | 0.063±0.012 (1.6±0.3) | 0.043±0.008 (1.1±0.2) |
| .0012                    | FCN1206A122J-H2        | 0.126±0.008 (3.2±0.2) | 0.063±0.012 (1.6±0.3) | 0.043±0.008 (1.1±0.2) |
| .0015                    | FCN1206A152J-H2        | 0.126±0.008 (3.2±0.2) | 0.063±0.012 (1.6±0.3) | 0.043±0.008 (1.1±0.2) |
| .0018                    | FCN1206A182J-H2        | 0.126±0.008 (3.2±0.2) | 0.063±0.012 (1.6±0.3) | 0.043±0.008 (1.1±0.2) |
| .0022                    | FCN1206A222J-H2        | 0.126±0.008 (3.2±0.2) | 0.063±0.012 (1.6±0.3) | 0.043±0.008 (1.1±0.2) |
| .0027                    | FCN1206A272J-H2        | 0.126±0.008 (3.2±0.2) | 0.063±0.012 (1.6±0.3) | 0.043±0.008 (1.1±0.2) |
| .0033                    | FCN1206A332J-H3        | 0.126±0.008 (3.2±0.2) | 0.063±0.012 (1.6±0.3) | 0.059±0.008 (1.5±0.2) |
| .0039                    | FCN1206A392J-H3        | 0.126±0.008 (3.2±0.2) | 0.063±0.012 (1.6±0.3) | 0.059±0.008 (1.5±0.2) |
| .0047                    | FCN1206A472J-H3        | 0.126±0.008 (3.2±0.2) | 0.063±0.012 (1.6±0.3) | 0.059±0.008 (1.5±0.2) |
| .0056                    | FCN1210A562J-G2        | 0.126±0.008 (3.2±0.2) | 0.063±0.012 (1.6±0.3) | 0.059±0.008 (1.5±0.2) |
| .0068                    | FCN1210A682J-G2        | 0.126±0.008 (3.2±0.2) | 0.063±0.012 (1.6±0.3) | 0.059±0.008 (1.5±0.2) |
| .0082                    | FCN1210A822J-G3        | 0.126±0.008 (3.2±0.2) | 0.063±0.012 (1.6±0.3) | 0.083±0.008 (2.1±0.2) |
| .010                     | FCN1210A103J-G3        | 0.126±0.008 (3.2±0.2) | 0.063±0.012 (1.6±0.3) | 0.083±0.008 (2.1±0.2) |
| .012                     | FCN1913A123K-E1        | 0.189±0.008 (4.8±0.2) | 0.189±0.008 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .015                     | FCN1913A153K-E1        | 0.189±0.008 (4.8±0.2) | 0.189±0.008 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .018                     | FCN1913A183K-E1        | 0.189±0.008 (4.8±0.2) | 0.189±0.008 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .022                     | FCN1913A223K-E1        | 0.189±0.008 (4.8±0.2) | 0.189±0.008 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .027                     | FCN1913A273K-E1        | 0.189±0.008 (4.8±0.2) | 0.189±0.008 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .033                     | FCN1913A333K-E1        | 0.189±0.008 (4.8±0.2) | 0.189±0.008 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .039                     | FCN1913A393K-E1        | 0.189±0.008 (4.8±0.2) | 0.189±0.008 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |

# Type FCN Surface Mount Film Capacitors

| Cap<br>( $\mu$ F) | Catalog<br>Part Number | L<br>in (mm)          | W<br>in (mm)          | T<br>in (mm)          |
|-------------------|------------------------|-----------------------|-----------------------|-----------------------|
| <b>100 Vdc</b>    |                        |                       |                       |                       |
| .047              | FCN1913A473K-E2        | 0.189±0.008 (4.8±0.2) | 0.189±0.008 (3.3±0.3) | 0.079±0.008 (2.0±0.2) |
| .056              | FCN1913A563K-E2        | 0.189±0.008 (4.8±0.2) | 0.189±0.008 (3.3±0.3) | 0.079±0.008 (2.0±0.2) |
| .068              | FCN1913A683K-E4        | 0.189±0.008 (4.8±0.2) | 0.189±0.008 (3.3±0.3) | 0.094±0.008 (2.4±0.2) |
| .082              | FCN1913A823K-E3        | 0.189±0.008 (4.8±0.2) | 0.189±0.008 (3.3±0.3) | 0.110±0.012 (2.8±0.3) |
| .10               | FCN2416A104K-D1        | 0.189±0.008 (4.8±0.2) | 0.236±0.008 (6.0±0.2) | 0.071±0.012 (1.8±0.3) |
| .12               | FCN2416A124K-D3*       | 0.189±0.008 (4.8±0.2) | 0.236±0.008 (6.0±0.2) | 0.099±0.012 (2.4±0.3) |
| .15               | FCN2416A154K-D4*       | 0.189±0.008 (4.8±0.2) | 0.236±0.008 (6.0±0.2) | 0.110±0.012 (2.8±0.3) |
| .18               | FCN2820A184K-Z         | 0.280±0.016 (7.1±0.4) | 0.197±0.016 (5.0±0.4) | 0.079±0.012 (2.0±0.3) |
| .22               | FCN2820A224K-Z         | 0.280±0.016 (7.1±0.4) | 0.197±0.016 (5.0±0.4) | 0.094±0.012 (2.4±0.3) |
| .27               | FCN2820A274K-Z         | 0.280±0.016 (7.1±0.4) | 0.197±0.016 (5.0±0.4) | 0.114±0.012 (2.9±0.3) |
| .33               | FCN2820A334K-Z         | 0.280±0.016 (7.1±0.4) | 0.197±0.016 (5.0±0.4) | 0.138±0.012 (3.5±0.3) |
| .39               | FCN3022A394K-X         | 0.303±0.016 (7.7±0.4) | 0.217±0.016 (5.5±0.4) | 0.134±0.012 (3.4±0.3) |
| .47               | FCN3022A474K-X         | 0.303±0.016 (7.7±0.4) | 0.217±0.016 (5.5±0.4) | 0.157±0.012 (4.0±0.3) |
| .56               | FCN3925A564K-V         | 0.386±0.016 (9.8±0.4) | 0.248±0.016 (6.3±0.4) | 0.118±0.012 (3.0±0.3) |
| .68               | FCN3925A684K-V         | 0.386±0.016 (9.8±0.4) | 0.248±0.016 (6.3±0.4) | 0.142±0.012 (3.6±0.3) |
| .82               | FCN3925A824K-V         | 0.386±0.016 (9.8±0.4) | 0.248±0.016 (6.3±0.4) | 0.169±0.012 (4.3±0.3) |
| 1.0               | FCN3925A105K-V         | 0.386±0.016 (9.8±0.4) | 0.248±0.016 (6.3±0.4) | 0.201±0.012 (5.1±0.3) |
| <b>250 Vdc</b>    |                        |                       |                       |                       |
| .0010             | FCN1913E102K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .0012             | FCN1913E122K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .0015             | FCN1913E152K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .0018             | FCN1913E182K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .0022             | FCN1913E222K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .0027             | FCN1913E272K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .0033             | FCN1913E332K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .0039             | FCN1913E392K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .0047             | FCN1913E472K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .0056             | FCN1913E562K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .0068             | FCN1913E682K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .0082             | FCN1913E822K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .010              | FCN1913E103K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .012              | FCN1913E123K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .015              | FCN1913E153K-E1*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.055±0.008 (1.4±0.2) |
| .018              | FCN1913E183K-E2*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.079±0.008 (2.0±0.2) |
| .022              | FCN1913E223K-E2*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.094±0.008 (2.4±0.2) |
| .027              | FCN1913E273K-E4*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.110±0.008 (2.8±0.2) |
| .033              | FCN1913E333K-E3*       | 0.189±0.008 (4.8±0.2) | 0.130±0.012 (3.3±0.3) | 0.126±0.008 (3.2±0.2) |
| .039              | FCN2416E393K-D2*       | 0.236±0.008 (6.0±0.2) | 0.161±0.012 (4.1±0.3) | 0.079±0.008 (2.0±0.2) |
| .047              | FCN2416E473K-D3*       | 0.236±0.008 (6.0±0.2) | 0.161±0.012 (4.1±0.3) | 0.079±0.008 (2.0±0.2) |
| .056              | FCN2416E563K-D4*       | 0.236±0.008 (6.0±0.2) | 0.161±0.012 (4.1±0.3) | 0.094±0.008 (2.4±0.2) |
| .068              | FCN2416E683K-D5*       | 0.236±0.008 (6.0±0.2) | 0.161±0.012 (4.1±0.3) | 0.110±0.008 (2.8±0.2) |
| .082              | FCN2420E823K-B*        | 0.236±0.008 (6.0±0.2) | 0.197±0.016 (5.0±0.4) | 0.126±0.012 (3.2±0.3) |
| .10               | FCN2420E104K-B*        | 0.236±0.008 (6.0±0.2) | 0.197±0.016 (5.0±0.4) | 0.150±0.012 (3.8±0.3) |
| .12               | FCN2420E124K-B*        | 0.236±0.008 (6.0±0.2) | 0.197±0.016 (5.0±0.4) | 0.177±0.012 (4.5±0.3) |
| .15               | FCN2825E154K-Y         | 0.280±0.016 (7.1±0.4) | 0.248±0.016 (6.3±0.4) | 0.138±0.012 (3.5±0.3) |
| .18               | FCN2825E184K-Y         | 0.280±0.016 (7.1±0.4) | 0.248±0.016 (6.3±0.4) | 0.161±0.012 (4.1±0.3) |
| .22               | FCN2825E224K-Y         | 0.280±0.016 (7.1±0.4) | 0.248±0.016 (6.3±0.4) | 0.201±0.012 (5.1±0.3) |
| .27               | FCN3925E274K-V         | 0.386±0.020 (9.8±0.5) | 0.248±0.016 (6.3±0.4) | 0.154±0.012 (3.9±0.3) |

\* also available in 5% (J) tolerance

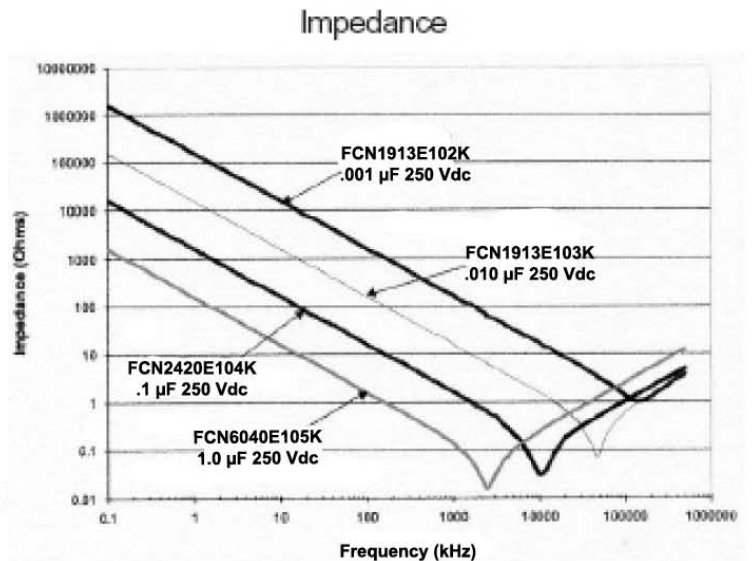
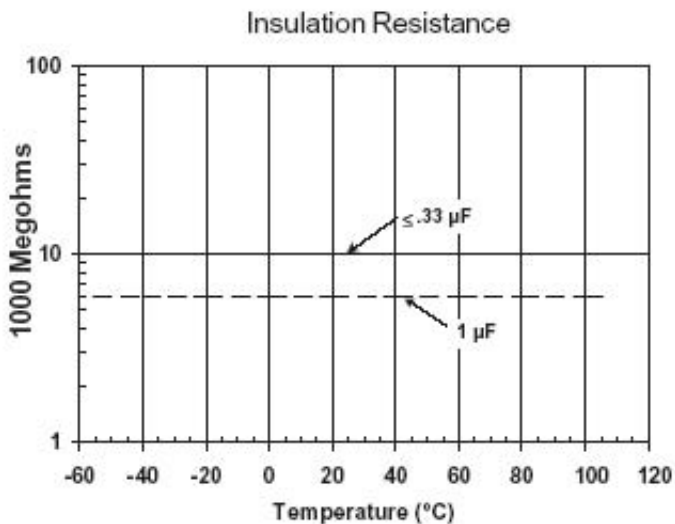
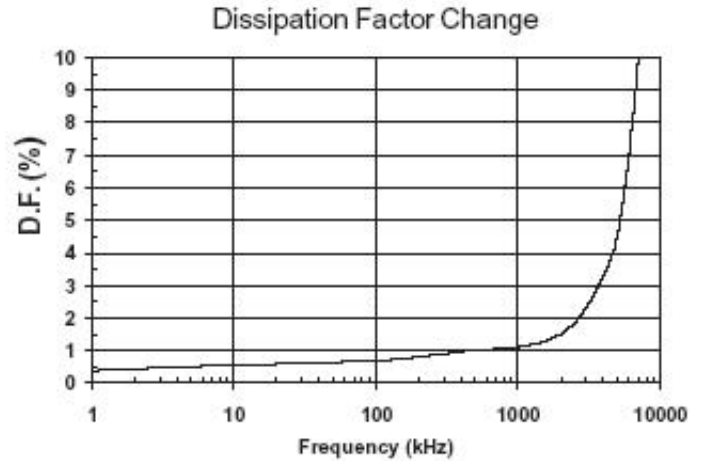
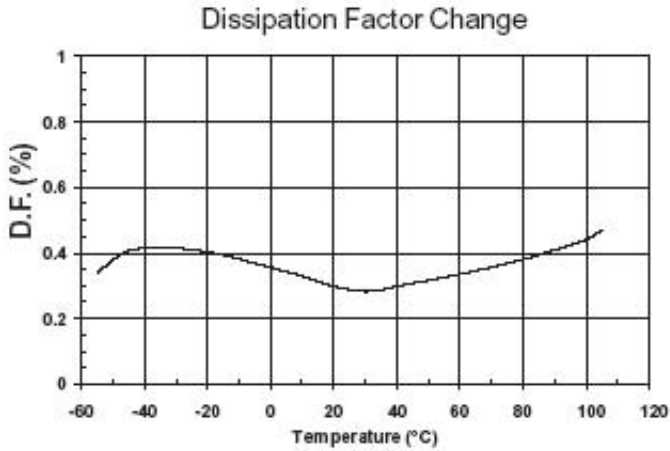
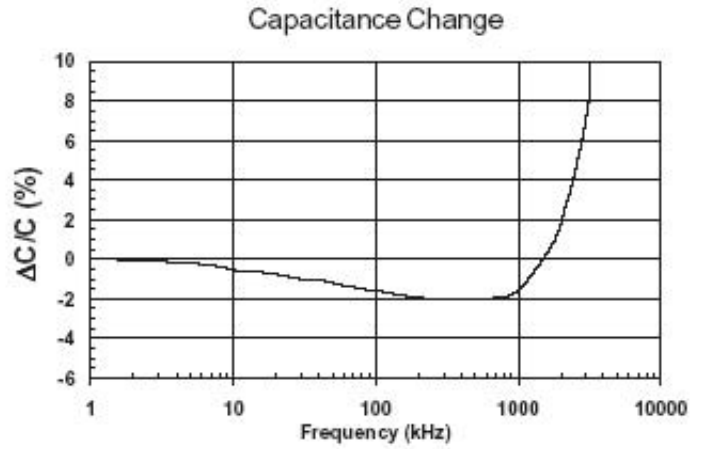
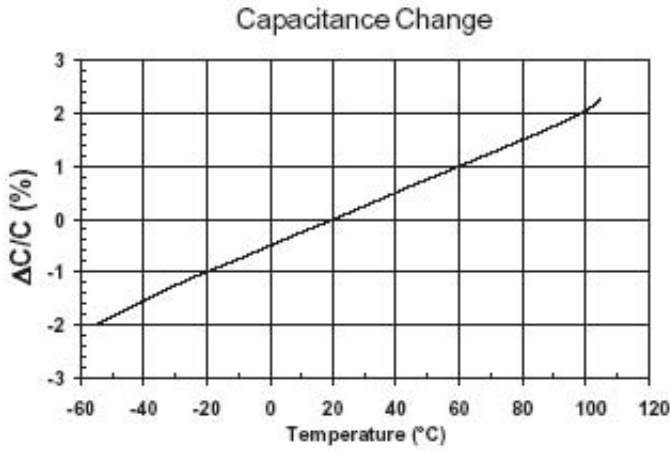
# Type FCN Surface Mount Film Capacitors

| Cap<br>( $\mu$ F) | Catalog<br>Part Number | L<br>in (mm)                       | W<br>in (mm)                       | T<br>in (mm)                      |
|-------------------|------------------------|------------------------------------|------------------------------------|-----------------------------------|
| <b>250 Vdc</b>    |                        |                                    |                                    |                                   |
| .33               | FCN3925E334K-V         | 0.386 $\pm$ 0.020 (9.8 $\pm$ 0.5)  | 0.248 $\pm$ 0.016 (6.3 $\pm$ 0.4)  | 0.189 $\pm$ 0.012 (4.8 $\pm$ 0.3) |
| .39               | FCN3931E394K-U         | 0.386 $\pm$ 0.020 (9.8 $\pm$ 0.5)  | 0.315 $\pm$ 0.016 (8.0 $\pm$ 0.4)  | 0.173 $\pm$ 0.012 (4.4 $\pm$ 0.3) |
| .47               | FCN3931E474K-U         | 0.386 $\pm$ 0.020 (9.8 $\pm$ 0.5)  | 0.315 $\pm$ 0.016 (8.0 $\pm$ 0.4)  | 0.209 $\pm$ 0.012 (5.3 $\pm$ 0.3) |
| .56               | FCN6031E564K-T         | 0.598 $\pm$ 0.020 (15.2 $\pm$ 0.5) | 0.315 $\pm$ 0.016 (8.0 $\pm$ 0.4)  | 0.146 $\pm$ 0.012 (3.7 $\pm$ 0.3) |
| .68               | FCN6031E684K-T         | 0.598 $\pm$ 0.020 (15.2 $\pm$ 0.5) | 0.315 $\pm$ 0.016 (8.0 $\pm$ 0.4)  | 0.173 $\pm$ 0.012 (4.4 $\pm$ 0.3) |
| .82               | FCN6040E824K-S         | 0.598 $\pm$ 0.020 (15.2 $\pm$ 0.5) | 0.394 $\pm$ 0.016 (10.0 $\pm$ 0.4) | 0.165 $\pm$ 0.012 (4.2 $\pm$ 0.3) |
| 1.0               | FCN6040E105K-S         | 0.598 $\pm$ 0.020 (15.2 $\pm$ 0.5) | 0.394 $\pm$ 0.016 (10.0 $\pm$ 0.4) | 0.201 $\pm$ 0.012 (5.1 $\pm$ 0.3) |
| <b>400 Vdc</b>    |                        |                                    |                                    |                                   |
| .0010             | FCN1913G102J-E1        | 0.189 $\pm$ 0.008 (4.8 $\pm$ 0.2)  | 0.130 $\pm$ 0.012 (3.3 $\pm$ 0.3)  | 0.055 $\pm$ 0.008 (1.4 $\pm$ 0.2) |
| .0012             | FCN1913G122J-E1        | 0.189 $\pm$ 0.008 (4.8 $\pm$ 0.2)  | 0.130 $\pm$ 0.012 (3.3 $\pm$ 0.3)  | 0.055 $\pm$ 0.008 (1.4 $\pm$ 0.2) |
| .0015             | FCN1913G152J-E1        | 0.189 $\pm$ 0.008 (4.8 $\pm$ 0.2)  | 0.130 $\pm$ 0.012 (3.3 $\pm$ 0.3)  | 0.055 $\pm$ 0.008 (1.4 $\pm$ 0.2) |
| .0018             | FCN1913G182J-E1        | 0.189 $\pm$ 0.008 (4.8 $\pm$ 0.2)  | 0.130 $\pm$ 0.012 (3.3 $\pm$ 0.3)  | 0.055 $\pm$ 0.008 (1.4 $\pm$ 0.2) |
| .0022             | FCN1913G222J-E1        | 0.189 $\pm$ 0.008 (4.8 $\pm$ 0.2)  | 0.130 $\pm$ 0.012 (3.3 $\pm$ 0.3)  | 0.055 $\pm$ 0.008 (1.4 $\pm$ 0.2) |
| .0027             | FCN1913G272J-E1        | 0.189 $\pm$ 0.008 (4.8 $\pm$ 0.2)  | 0.130 $\pm$ 0.012 (3.3 $\pm$ 0.3)  | 0.055 $\pm$ 0.008 (1.4 $\pm$ 0.2) |
| .0033             | FCN1913G332J-E1        | 0.189 $\pm$ 0.008 (4.8 $\pm$ 0.2)  | 0.130 $\pm$ 0.012 (3.3 $\pm$ 0.3)  | 0.055 $\pm$ 0.008 (1.4 $\pm$ 0.2) |
| .0039             | FCN1913G392J-E1        | 0.189 $\pm$ 0.008 (4.8 $\pm$ 0.2)  | 0.130 $\pm$ 0.012 (3.3 $\pm$ 0.3)  | 0.055 $\pm$ 0.008 (1.4 $\pm$ 0.2) |
| .0047             | FCN1913G472J-E1        | 0.189 $\pm$ 0.008 (4.8 $\pm$ 0.2)  | 0.130 $\pm$ 0.012 (3.3 $\pm$ 0.3)  | 0.055 $\pm$ 0.008 (1.4 $\pm$ 0.2) |
| .0056             | FCN1913G562J-E2        | 0.189 $\pm$ 0.008 (4.8 $\pm$ 0.2)  | 0.130 $\pm$ 0.012 (3.3 $\pm$ 0.3)  | 0.079 $\pm$ 0.008 (2.0 $\pm$ 0.2) |
| .0068             | FCN1913G682J-E2        | 0.189 $\pm$ 0.008 (4.8 $\pm$ 0.2)  | 0.130 $\pm$ 0.012 (3.3 $\pm$ 0.3)  | 0.079 $\pm$ 0.008 (2.0 $\pm$ 0.2) |
| .0082             | FCN1913G822J-E4        | 0.189 $\pm$ 0.008 (4.8 $\pm$ 0.2)  | 0.130 $\pm$ 0.012 (3.3 $\pm$ 0.3)  | 0.094 $\pm$ 0.008 (2.4 $\pm$ 0.2) |
| .010              | FCN1913G103J-E3        | 0.189 $\pm$ 0.008 (4.8 $\pm$ 0.2)  | 0.130 $\pm$ 0.012 (3.3 $\pm$ 0.3)  | 0.110 $\pm$ 0.008 (2.8 $\pm$ 0.2) |
| .012              | FCN2416G123J-D2        | 0.236 $\pm$ 0.008 (6.0 $\pm$ 0.2)  | 0.161 $\pm$ 0.012 (4.1 $\pm$ 0.3)  | 0.079 $\pm$ 0.008 (2.0 $\pm$ 0.2) |
| .015              | FCN2416G153J-D3        | 0.236 $\pm$ 0.008 (6.0 $\pm$ 0.2)  | 0.161 $\pm$ 0.012 (4.1 $\pm$ 0.3)  | 0.079 $\pm$ 0.008 (2.0 $\pm$ 0.2) |
| .018              | FCN2416G183J-D4        | 0.236 $\pm$ 0.008 (6.0 $\pm$ 0.2)  | 0.161 $\pm$ 0.012 (4.1 $\pm$ 0.3)  | 0.110 $\pm$ 0.008 (2.8 $\pm$ 0.2) |
| .022              | FCN2416G223J-D5        | 0.236 $\pm$ 0.008 (6.0 $\pm$ 0.2)  | 0.161 $\pm$ 0.012 (4.1 $\pm$ 0.3)  | 0.126 $\pm$ 0.012 (3.2 $\pm$ 0.3) |
| .027              | FCN2420G273J-B         | 0.236 $\pm$ 0.008 (6.0 $\pm$ 0.2)  | 0.197 $\pm$ 0.016 (5.0 $\pm$ 0.4)  | 0.118 $\pm$ 0.012 (3.0 $\pm$ 0.3) |
| .033              | FCN2420G333J-B         | 0.236 $\pm$ 0.008 (6.0 $\pm$ 0.2)  | 0.197 $\pm$ 0.016 (5.0 $\pm$ 0.4)  | 0.142 $\pm$ 0.012 (3.6 $\pm$ 0.3) |
| .039              | FCN2820G393J-Z         | 0.280 $\pm$ 0.016 (7.1 $\pm$ 0.4)  | 0.197 $\pm$ 0.016 (5.0 $\pm$ 0.4)  | 0.126 $\pm$ 0.012 (3.2 $\pm$ 0.3) |
| .047              | FCN2820G473J-Z         | 0.280 $\pm$ 0.016 (7.1 $\pm$ 0.4)  | 0.197 $\pm$ 0.016 (5.0 $\pm$ 0.4)  | 0.150 $\pm$ 0.012 (3.8 $\pm$ 0.3) |
| .056              | FCN2825G563J-Y         | 0.280 $\pm$ 0.016 (7.1 $\pm$ 0.4)  | 0.248 $\pm$ 0.016 (6.3 $\pm$ 0.4)  | 0.142 $\pm$ 0.012 (3.6 $\pm$ 0.3) |
| .068              | FCN2825G683J-Y         | 0.280 $\pm$ 0.016 (7.1 $\pm$ 0.4)  | 0.248 $\pm$ 0.016 (6.3 $\pm$ 0.4)  | 0.173 $\pm$ 0.012 (4.4 $\pm$ 0.3) |
| .082              | FCN3925G823J-V         | 0.386 $\pm$ 0.016 (9.8 $\pm$ 0.4)  | 0.248 $\pm$ 0.016 (6.3 $\pm$ 0.4)  | 0.134 $\pm$ 0.012 (3.4 $\pm$ 0.3) |
| .10               | FCN3925G104J-V         | 0.386 $\pm$ 0.016 (9.8 $\pm$ 0.4)  | 0.248 $\pm$ 0.016 (6.3 $\pm$ 0.4)  | 0.157 $\pm$ 0.012 (4.0 $\pm$ 0.3) |
| .12               | FCN3931G124J-U         | 0.386 $\pm$ 0.016 (9.8 $\pm$ 0.4)  | 0.315 $\pm$ 0.016 (8.0 $\pm$ 0.4)  | 0.150 $\pm$ 0.012 (3.8 $\pm$ 0.3) |
| .15               | FCN3931G154J-U         | 0.386 $\pm$ 0.016 (9.8 $\pm$ 0.4)  | 0.315 $\pm$ 0.016 (8.0 $\pm$ 0.4)  | 0.181 $\pm$ 0.012 (4.6 $\pm$ 0.3) |

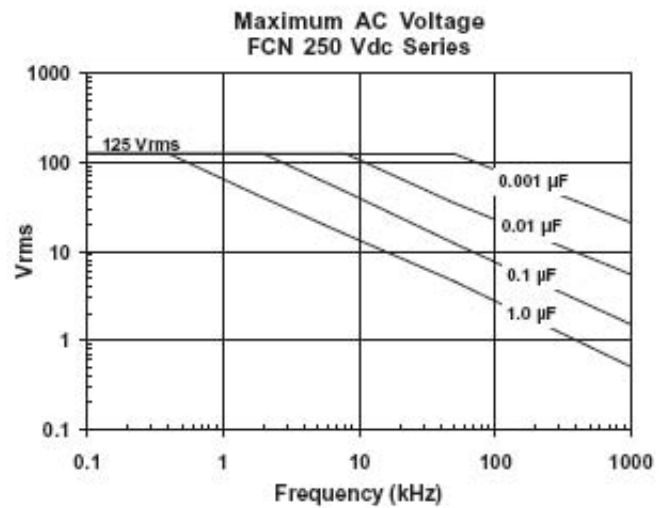
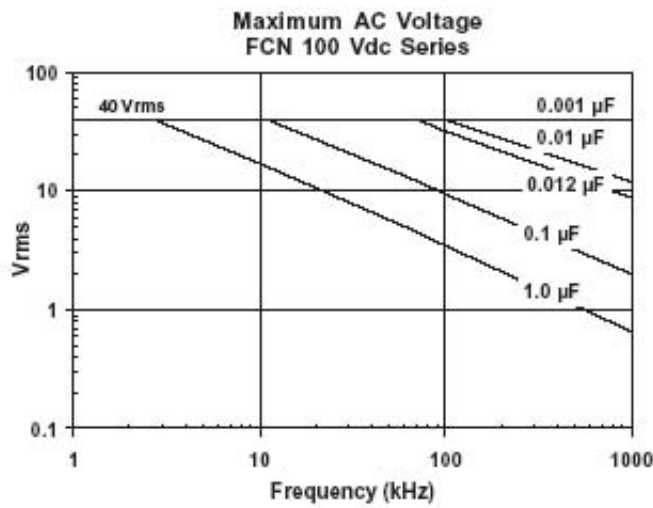
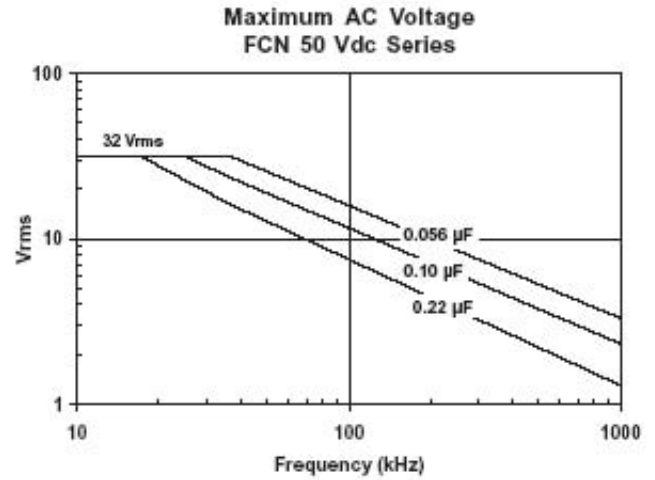
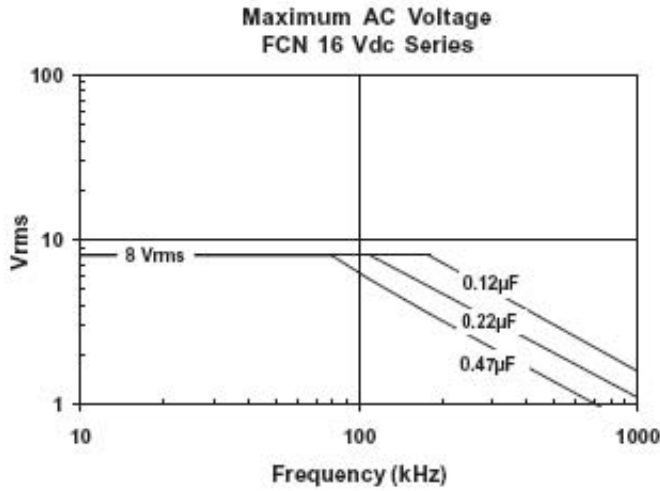
# Type FCN Surface Mount Film Capacitors

## Typical Temperature Characteristics

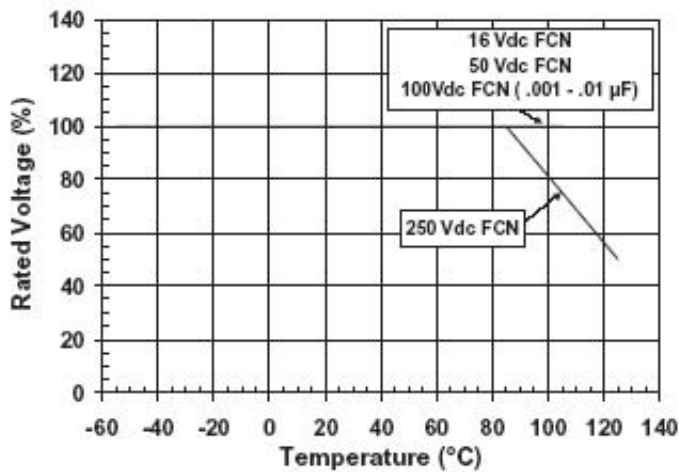
## Typical Frequency Characteristics



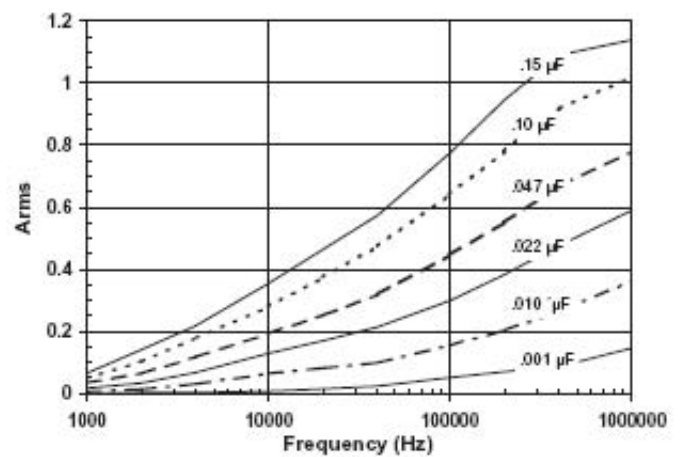
## Vrms vs. Frequency Characteristics



### Voltage Derating vs Temperature



### Maximum RMS Current vs Frequency 400 Vdc FCN



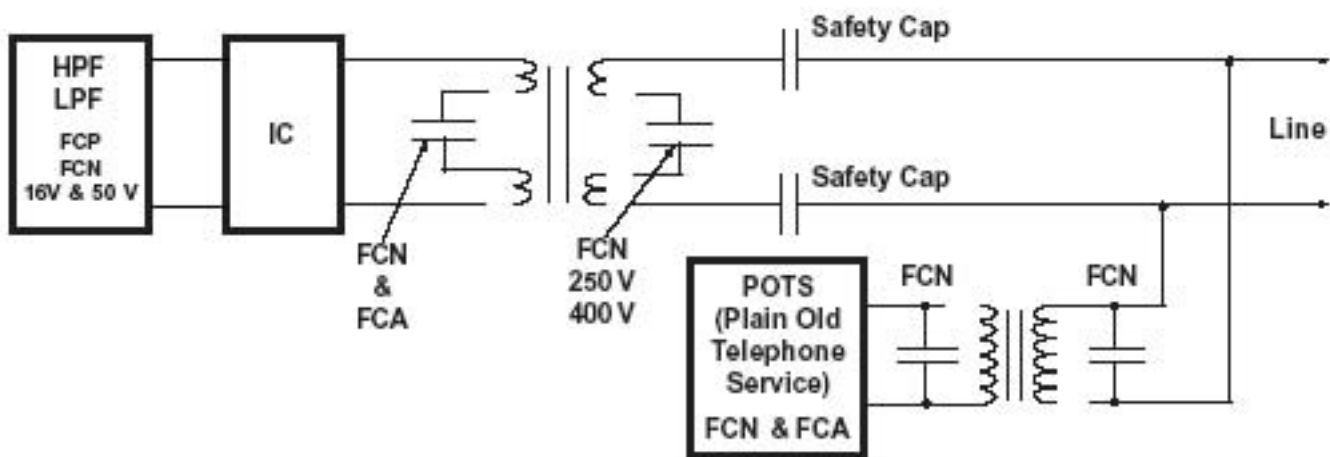
# Type FCN Surface Mount Film Capacitors

## Pulse Handling Capability

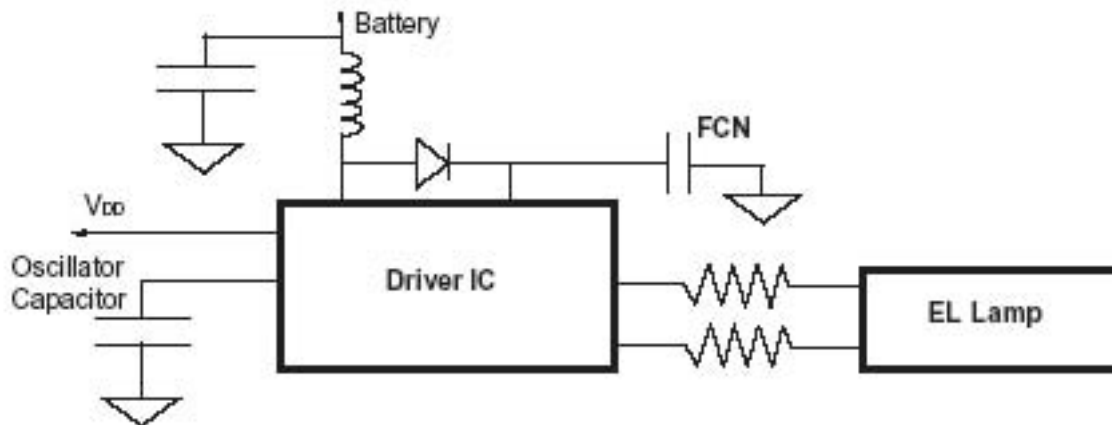
| Capacitance<br>( $\mu\text{F}$ ) | Voltage<br>(Vdc) | dV/dt<br>(volts/ $\mu\text{sec}$ ) | Capacitance<br>( $\mu\text{F}$ ) | Voltage<br>(Vdc) | dV/dt<br>(volts/ $\mu\text{sec}$ ) | Capacitance<br>( $\mu\text{F}$ ) | Voltage<br>(Vdc) | dV/dt<br>(volts/ $\mu\text{sec}$ ) |
|----------------------------------|------------------|------------------------------------|----------------------------------|------------------|------------------------------------|----------------------------------|------------------|------------------------------------|
| .12 - .22                        | 16               | 60                                 | .0039                            | 100              | 530                                | .001 - .0039                     | 250              | 615                                |
| .27 - .47                        | 16               | 40                                 | .0047                            | 100              | 480                                | .0047 - .033                     | 250              | 360                                |
| .056 - .10                       | 50               | 190                                | .0056                            | 100              | 450                                | .039 - .12                       | 250              | 240                                |
| .12 - .22                        | 50               | 130                                | .0068                            | 100              | 410                                | .15 - .22                        | 250              | 190                                |
| .001                             | 100              | 1000                               | .0082                            | 100              | 370                                | .27 - .47                        | 250              | 115                                |
| .0012                            | 100              | 920                                | .01                              | 100              | 340                                | .56 - 1.0                        | 250              | 65                                 |
| .0015                            | 100              | 830                                | .012 - .082                      | 100              | 320                                | .001 - .0039                     | 400              | 615                                |
| .0018                            | 100              | 760                                | .10 - .15                        | 100              | 210                                | .0047 - .01                      | 400              | 360                                |
| .0022                            | 100              | 690                                | .18 - .33                        | 100              | 120                                | .012 - .033                      | 400              | 240                                |
| .0027                            | 100              | 630                                | .39 - .47                        | 100              | 100                                | .039 - .068                      | 400              | 190                                |
| .0033                            | 100              | 570                                | .056 - 1.0                       | 100              | 70                                 | .082 - .15                       | 400              | 115                                |

## Typical Applications

### DC Blocking for xDSL



### Integration for Electroluminescent (EL) Driver



With no piezoelectric effects to deal with, the SMT film capacitor will not create electrical noise in signal circuits or buzzing in power circuits.