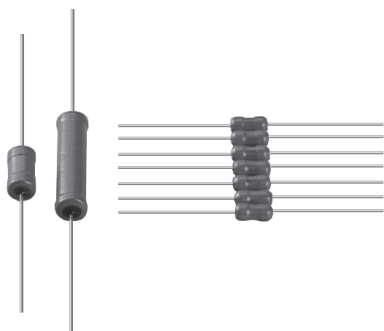


## Polyester Film/Foil Capacitors Sleeved, Miniature, Axial Lead



### PERFORMANCE CHARACTERISTICS

**Operating Temperature:** - 55°C to + 85°C.

**Capacitance Range:** 0.0001 $\mu$ F to 0.39 $\mu$ F.

**Capacitance Tolerance:**  $\pm$  20%,  $\pm$  10%,  $\pm$  5%.  
Other tolerances available upon request.

**DC Voltage Rating:** 80 WVDC to 600 WVDC.

**Voltage Derating:** At + 105°C: 70% of + 85°C rating.  
At + 125°C: 50% of + 85°C rating.

**Dissipation Factor:** 1.0% maximum.

**Voltage Test:** 200% of rated voltage for 1 minute.

**Insulation Resistance:**

At + 25°C: 100,000 Megohm minimum.

At + 85°C: 15,000 Megohm minimum.

At + 105°C: 2000 Megohm minimum.

At + 125°C: 200 Megohm minimum.

### FEATURES

- Axial lead, designed for automatic insertion
- Non-inductively wound, extended foil construction
- Lead wire has metal end cap for connection to extended foil
- Moisture resistant
- Encased in an orange heat shrinkable polyolefin sleeve
- Available tape and reeled to EIA specifications for automatic insertion

### PHYSICAL CHARACTERISTICS

**Lead Pull:** 5 pounds (2.3 kilograms) for 1 minute.  
No physical damage.

**Lead Bend:** After three complete consecutive bends,  
no damage.

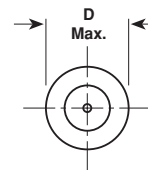
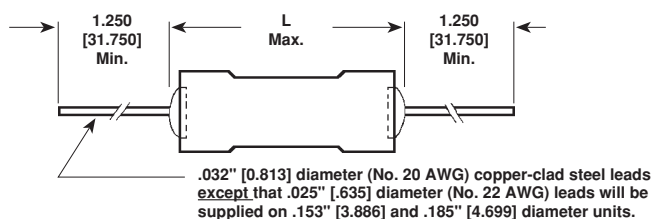
**Marking:** Sprague<sup>®</sup> trademark, Type 192P, voltage,  
capacitance, tolerance and date code.

### ENVIRONMENTAL CHARACTERISTICS

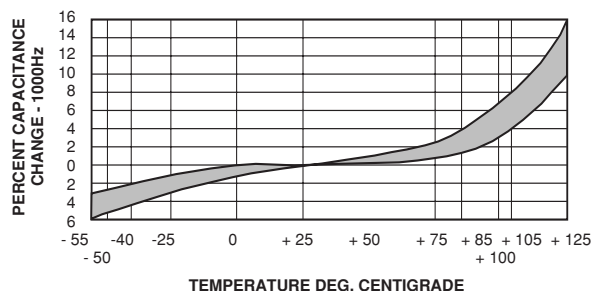
**DC Life Test:** 150% of rated voltage for 250 hours @ + 85°C.  
No open or short circuits. No visible damage.  
Maximum  $\Delta$  CAP  $\pm$  10%, maximum.  
Minimum  $\Delta$  IR 50% of initial limit, minimum.  
Maximum  $\Delta$  DF 1.0%.

**Humidity Test:** 95% relative humidity @ + 40°C for 500  
hours. No visible damage.  
Minimum IR = 50% of initial limit.

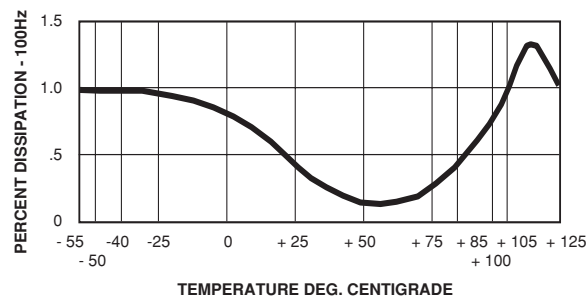
### DIMENSIONS in inches [millimeters]



### CAPACITANCE CHANGE



### DISSIPATION





| STANDARD RATINGS in inches [millimeters] |               |               |                |  |
|------------------------------------------|---------------|---------------|----------------|--|
| CAPACITANCE<br>( $\mu$ F)                | PART NUMBER   | SIZE          |                |  |
|                                          |               | D             | L              |  |
| 80 VDC/55 VAC**                          |               |               |                |  |
| 0.0022                                   | 192P222X9080  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.0027                                   | 192P272X9080  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.0033                                   | 192P332X9080  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.0039                                   | 192P392X9080  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.0047                                   | 192P472X9080  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.0056                                   | 192P562X9080  | 0.185 [4.699] | 0.500 [12.700] |  |
| 0.0068                                   | 192P682X9080  | 0.185 [4.699] | 0.500 [12.700] |  |
| 0.0082                                   | 192P822X9080  | 0.185 [4.699] | 0.500 [12.700] |  |
| 0.01                                     | 192P103X9080* | 0.185 [4.699] | 0.500 [12.700] |  |
| 0.012                                    | 192P123X9080  | 0.185 [4.699] | 0.562 [14.275] |  |
| 0.015                                    | 192P153X9080  | 0.185 [4.699] | 0.562 [14.275] |  |
| 0.018                                    | 192P183X9080  | 0.185 [4.699] | 0.625 [15.875] |  |
| 0.022                                    | 192P223X9080* | 0.185 [4.699] | 0.625 [15.875] |  |
| 0.027                                    | 192P273X9080  | 0.229 [5.817] | 0.562 [14.275] |  |
| 0.033                                    | 192P333X9080  | 0.229 [5.817] | 0.562 [14.275] |  |
| 0.039                                    | 192P393X9080  | 0.229 [5.817] | 0.687 [17.450] |  |
| 0.047                                    | 192P473X9080* | 0.229 [5.817] | 0.687 [17.450] |  |
| 0.056                                    | 192P563X9080  | 0.250 [6.350] | 0.687 [17.450] |  |
| 0.068                                    | 192P683X9080  | 0.250 [6.350] | 0.687 [17.450] |  |
| 0.082                                    | 192P823X9080  | 0.315 [8.00]  | 0.645 [16.383] |  |
| 0.10                                     | 192P104X9080* | 0.315 [8.00]  | 0.645 [16.383] |  |
| 0.12                                     | 192P124X9080  | 0.315 [8.00]  | 0.770 [19.558] |  |
| 0.15                                     | 192P154X9080  | 0.315 [8.00]  | 0.770 [19.558] |  |
| 0.18                                     | 192P184X9080  | 0.343 [8.712] | 0.770 [19.558] |  |
| 0.22                                     | 192P224X9080  | 0.343 [8.712] | 0.770 [19.558] |  |
| 0.27                                     | 192P274X9080  | 0.343 [8.712] | 1.020 [25.908] |  |
| 0.33                                     | 192P334X9080  | 0.343 [8.712] | 1.332 [33.833] |  |
| 0.39                                     | 192P394X9080  | 0.343 [8.712] | 1.332 [33.833] |  |
| 200 VDC/140 VAC**                        |               |               |                |  |
| 0.00010                                  | 192P101X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.00012                                  | 192P121X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.00015                                  | 192P151X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.00018                                  | 192P181X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.00022                                  | 192P221X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.00027                                  | 192P271X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.00033                                  | 192P331X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.00039                                  | 192P391X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.00047                                  | 192P471X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.00056                                  | 192P561X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.00068                                  | 192P681X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.00082                                  | 192P821X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.001                                    | 192P102X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.0012                                   | 192P122X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.0015                                   | 192P152X9200  | 0.153 [3.886] | 0.437 [11.100] |  |
| 0.0018                                   | 192P182X9200  | 0.185 [4.699] | 0.437 [11.100] |  |
| 0.0022                                   | 192P222X9200  | 0.185 [4.699] | 0.437 [11.100] |  |
| 0.0027                                   | 192P272X9200  | 0.185 [4.699] | 0.437 [11.100] |  |
| 0.0033                                   | 192P332X9200  | 0.185 [4.699] | 0.437 [11.100] |  |
| 0.0039                                   | 192P392X9200  | 0.185 [4.699] | 0.562 [14.275] |  |
| 0.0047                                   | 192P472X9200  | 0.185 [4.699] | 0.562 [14.275] |  |
| 0.0056                                   | 192P562X9200  | 0.185 [4.699] | 0.562 [14.275] |  |
| 0.0068                                   | 192P682X9200  | 0.185 [4.699] | 0.562 [14.275] |  |
| 0.0082                                   | 192P822X9200  | 0.185 [4.699] | 0.625 [15.875] |  |
| 0.01                                     | 192P103X9200  | 0.185 [4.699] | 0.625 [15.875] |  |

**Note:** Shaded Part Numbers shown above are standard stock items available through the Vishay/Sprague® Distribution Network. Packaging for these items is bulk, however tape and reel packaging is readily available on special order. Also, any non-standard Part Number may always be ordered as a special. In addition, the four Part Numbers indicated by a \* when ordered with a  $\pm 5\%$  capacitance tolerance (i.e. Part Number 192P103X5080) are also standard stock items.

\*\*60Hz rms.

Pacer® is a registered trademark of Sprague®.

| STANDARD RATINGS in inches [millimeters] |              |               |                |
|------------------------------------------|--------------|---------------|----------------|
| CAPACITANCE<br>(μF)                      | PART NUMBER  | SIZE          |                |
|                                          |              | D             | L              |
| 200 VDC/140 VAC**                        |              |               |                |
| 0.012                                    | 192P123X9200 | 0.229 [5.817] | 0.562 [14.275] |
| 0.015                                    | 192P153X9200 | 0.229 [5.817] | 0.562 [14.275] |
| 0.018                                    | 192P183X9200 | 0.229 [5.817] | 0.687 [17.450] |
| 0.022                                    | 192P223X9200 | 0.229 [5.817] | 0.687 [17.450] |
| 0.027                                    | 192P273X9200 | 0.250 [6.350] | 0.687 [17.450] |
| 0.033                                    | 192P333X9200 | 0.250 [6.350] | 0.687 [17.450] |
| 0.039                                    | 192P393X9200 | 0.315 [8.00]  | 0.645 [16.383] |
| 0.047                                    | 192P473X9200 | 0.315 [8.00]  | 0.645 [16.383] |
| 0.056                                    | 192P563X9200 | 0.315 [8.00]  | 0.770 [19.558] |
| 0.068                                    | 192P683X9200 | 0.315 [8.00]  | 0.770 [19.558] |
| 0.082                                    | 192P823X9200 | 0.343 [8.712] | 0.770 [19.558] |
| 0.10                                     | 192P104X9200 | 0.343 [8.712] | 0.770 [19.558] |
| 0.12                                     | 192P124X9200 | 0.343 [8.712] | 1.020 [25.908] |
| 0.15                                     | 192P154X9200 | 0.343 [8.712] | 1.020 [25.908] |
| 0.18                                     | 192P184X9200 | 0.343 [8.712] | 1.332 [33.833] |
| 0.22                                     | 192P224X9200 |               | 1.332 [33.833] |
| 400 VDC/200 VAC**                        |              |               |                |
| 0.00047                                  | 192P471X9400 | 0.185 [4.699] | 0.500 [12.700] |
| 0.00056                                  | 192P561X9400 | 0.185 [4.699] | 0.500 [12.700] |
| 0.00068                                  | 192P681X9400 | 0.185 [4.699] | 0.500 [12.700] |
| 0.00082                                  | 192P821X9400 | 0.185 [4.699] | 0.500 [12.700] |
| 0.001                                    | 192P102X9400 | 0.185 [4.699] | 0.500 [12.700] |
| 0.0012                                   | 192P122X9400 | 0.185 [4.699] | 0.500 [12.700] |
| 0.0015                                   | 192P152X9400 | 0.185 [4.699] | 0.500 [12.700] |
| 0.0018                                   | 192P182X9400 | 0.185 [4.699] | 0.562 [14.275] |
| 0.0022                                   | 192P222X9400 | 0.185 [4.699] | 0.562 [14.275] |
| 0.0027                                   | 192P272X9400 | 0.229 [5.817] | 0.562 [14.275] |
| 0.0033                                   | 192P332X9400 | 0.229 [5.817] | 0.562 [14.275] |
| 0.0039                                   | 192P392X9400 | 0.229 [5.817] | 0.562 [14.275] |
| 0.0047                                   | 192P472X9400 | 0.229 [5.817] | 0.562 [14.275] |
| 0.0056                                   | 192P562X9400 | 0.250 [6.350] | 0.687 [17.450] |
| 0.0068                                   | 192P682X9400 | 0.250 [6.350] | 0.687 [17.450] |
| 0.0082                                   | 192P822X9400 | 0.250 [6.350] | 0.687 [17.450] |
| 0.01                                     | 192P103X9400 | 0.250 [6.350] | 0.687 [17.450] |
| 0.012                                    | 192P123X9400 | 0.315 [8.00]  | 0.645 [16.383] |
| 0.015                                    | 192P153X9400 | 0.315 [8.00]  | 0.645 [16.383] |
| 0.018                                    | 192P183X9400 | 0.315 [8.00]  | 0.770 [19.558] |
| 0.022                                    | 192P223X9400 | 0.315 [8.00]  | 0.770 [19.558] |
| 0.027                                    | 192P273X9400 | 0.343 [8.712] | 0.770 [19.558] |
| 0.033                                    | 192P333X9400 | 0.343 [8.712] | 0.770 [19.558] |
| 0.039                                    | 192P393X9400 | 0.343 [8.712] | 1.020 [25.908] |
| 0.047                                    | 192P473X9400 | 0.343 [8.712] | 1.020 [25.908] |
| 0.056                                    | 192P563X9400 | 0.343 [8.712] | 1.332 [33.833] |
| 0.068                                    | 192P683X9400 | 0.343 [8.712] | 1.332 [33.833] |
| 600 VDC/200 VAC*                         |              |               |                |
| 0.00047                                  | 192P471X9600 | 0.185 [4.699] | 0.562 [14.275] |
| 0.00056                                  | 192P561X9600 | 0.185 [4.699] | 0.562 [14.275] |
| 0.00068                                  | 192P681X9600 | 0.185 [4.699] | 0.562 [14.275] |
| 0.00082                                  | 192P821X9600 | 0.185 [4.699] | 0.625 [15.875] |
| 0.001                                    | 192P102X9600 | 0.185 [4.699] | 0.625 [15.875] |
| 0.0012                                   | 192P122X9600 | 0.229 [5.817] | 0.562 [14.275] |
| 0.0015                                   | 192P152X9600 | 0.229 [5.817] | 0.562 [14.275] |
| 0.0018                                   | 192P182X9600 | 0.229 [5.817] | 0.687 [17.450] |
| 0.0022                                   | 192P222X9600 | 0.229 [5.817] | 0.687 [17.450] |

**Note:** Shaded Part Numbers shown above are standard stock items available through the Vishay/Sprague® Distribution Network. Packaging for these items is bulk, however tape and reel packaging is readily available on special order. Also, any non-standard Part Number may always be ordered as a special.

\*\*60Hz rms.



| STANDARD RATINGS in inches [millimeters] |              |               |  |                |
|------------------------------------------|--------------|---------------|--|----------------|
| CAPACITANCE<br>(μF)                      | PART NUMBER  | SIZE          |  |                |
|                                          |              | D             |  | L              |
| 600 VDC/200 VAC*                         |              |               |  |                |
| 0.0027                                   | 192P272X9600 | 0.250 [6.350] |  | 0.687 [17.450] |
| 0.0033                                   | 192P332X9600 | 0.250 [6.350] |  | 0.687 [17.450] |
| 0.0039                                   | 192P392X9600 | 0.315 [8.00]  |  | 0.770 [19.558] |
| 0.0047                                   | 192P472X9600 | 0.315 [8.00]  |  | 0.770 [19.558] |
| 0.0056                                   | 192P562X9600 | 0.315 [8.00]  |  | 0.770 [19.558] |
| 0.0068                                   | 192P682X9600 | 0.315 [8.00]  |  | 0.770 [19.558] |
| 0.0082                                   | 192P822X9600 | 0.343 [8.712] |  | 0.770 [19.558] |
| 0.01                                     | 192P103X9600 | 0.343 [8.712] |  | 0.770 [19.558] |
| 0.012                                    | 192P123X9600 | 0.343 [8.712] |  | 1.020 [25.908] |
| 0.015                                    | 192P153X9600 | 0.343 [8.712] |  | 1.020 [25.908] |
| 0.018                                    | 192P183X9600 | 0.343 [8.712] |  | 1.020 [25.908] |
| 0.022                                    | 192P223X9600 | 0.343 [8.712] |  | 1.020 [25.908] |
| 0.027                                    | 192P273X9600 | 0.343 [8.712] |  | 1.332 [33.833] |
| 0.033                                    | 192P333X9600 | 0.343 [8.712] |  | 1.332 [33.833] |

\* 60Hz rms.

| STANDARD MARKING FORMAT            |                                                                                                                                                                                                    |                                                                                              |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| SAMPLE MARKING                     | DESCRIPTION                                                                                                                                                                                        | TOLERANCE CODES<br>PER EIA STANDARDS                                                         |
| <div>②192P200 V<br/>222K9325</div> | <div>② Sprague® identification<br/>192P Type<br/>200 V DC Voltage rating, Volts<br/>222K Capacitance (See How to Order) and<br/>9325 Tolerance<br/>Weekly date code (i.e. 25th week of 1993)</div> | <div>J = <math>\pm</math> 5%<br/>K = <math>\pm</math> 10%<br/>M = <math>\pm</math> 20%</div> |

| ORDERING INFORMATION |                                                                                                                                                                                                                                   |                                                                                                 |                                        |                                                                                                                                 |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 192P<br>TYPE         | 222<br>CAPACITANCE                                                                                                                                                                                                                | X9<br>CAPACITANCE<br>TOLERANCE                                                                  | 200<br>DC VOLTAGE RATING               | T*<br>XXXX                                                                                                                      |
|                      | <div>This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow (Ex. 222 = 2200pF = .0022<math>\mu</math>F; 473 = 47000pF = .047<math>\mu</math>F, etc.)</div> | <div>X0 = <math>\pm</math> 20%<br/>X9 = <math>\pm</math> 10%<br/>X5 = <math>\pm</math> 5%</div> | <div>This is expressed in volts.</div> | <div>A suffix may be added by the factory to denote special construction, packaging, marking, etc.<br/>* Tape &amp; Reel.</div> |

| PACKAGING in inches [millimeters]       |                         |                               |
|-----------------------------------------|-------------------------|-------------------------------|
| IF THE "D" DIMENSION IS:                | THEN ADD THE "P" SUFFIX | STANDARD QUANTITY PER REEL ** |
| CLASS I, LEVEL 1, .200" [5.080] PITCH   |                         |                               |
| 0.153 [3.886]                           | P303                    | 3000                          |
| 0.185 [4.699]                           | P304                    | 3000                          |
| CLASS II, LEVEL 1, .400" [10.160] PITCH |                         |                               |
| 0.229 [5.817]                           | P305                    | 1250                          |
| 0.250 [6.350]                           | P384                    | 1000                          |
| 0.315 [8.00]                            | P347                    | 1000                          |
| 0.343 [8.712]                           | P347                    | 750                           |

\*\* Specific quantities can be tape and reeled per EIA Standard RS-296-D. The 192P Pacer® is available in bulk pack or tape and reeled per EIA Standard RS-296-D. A suffix is not required for bulk packaging.



### Notice

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