

# METALIZED POLYPHENYLENE SULFIDE METAL-CASE TUBULAR METALIZED PPS FILM CAPACITORS

TYPE 820P



## FEATURES

- Superior performance, polycarbonate replacement
- High current
- High Q, low TCC
- High reliability
- Rugged construction
- Small size
- Hermetically sealed
- Meets the requirements of MIL-PRF-39022 / 13

### MAJOR APPLICATIONS:

Storage, filtering, timing, integrating, and applications where severe environments require hermetically sealed cases.

## PHYSICAL CHARACTERISTICS

### CONSTRUCTION:

Non-inductive wound metalized polyphenylene sulfide.

### CASE:

Hermetically sealed metal enclosure. Styles and dimensions are in Guide to Ordering section in the front of the catalog.

### LEAD MATERIAL:

Solder coated solid wire.

### LEAD WIRE SIZES:

Case Dia.	Lead AWG	Case Dia.	Lead AWG
0.175 and 0.195	No. 24	0.235 and 0.312	No. 22
0.400 thru 0.750	No. 20	1.000	No. 18

**LEAD PULL:** 5 lbs (2.3 kg) for one minute. No physical damage.

**LEAD BEND:** After three complete consecutive bends. No damage.

### MARKING:

Dearborn trademark, type or catalog number, capacitance, tolerance and voltage.

## ELECTRICAL SPECIFICATIONS

### CAPACITANCE RANGE:

0.01  $\mu$ F to 15.0  $\mu$ F

### DC VOLTAGE RANGE:

50 VDC to 400 VDC

### AC VOLTAGE RANGE:

32 to 240 VRMS

### CAPACITANCE TOLERANCE:

$\pm$ 10%,  $\pm$ 5%,  $\pm$ 2%,  $\pm$ 1%

### OPERATING TEMPERATURE:

- -55°C to +125°C
- AC operation limited to +105°C

### VOLTAGE DERATING:

- At +105°C, 70% of the rating
- At +125°C, 50% of the rating

### DISSIPATION FACTOR:

0.15% maximum when measured @ 1kHz @ 25°C

### VOLTAGE TEST:

200% of rated voltage for 2 minutes

### INSULATION RESISTANCE:

Measured at rated VDC after a 2 minute charge.

- At +25°C, 100,000 Megaohm-Microfarads, need not exceed 200,000 Megaohms
- At +85°C, 6,000 Megaohm-Microfarads, need not exceed 25,000 Megaohms
- At +125°C, 1,000 Megaohm-Microfarads, need not exceed 15,000 Megaohms

## MAXIMUM PULSE RISE TIME

Capacitor Length (inch)	Rise Time dv / dt (V / $\mu$ s)			
	50 V	100 V	200 V	400 V
0.531	24	-	-	-
0.625	13	27	55	-
0.688	-	20	36	80
0.812	-	17	27	60
0.843	8	-	-	-
0.938	-	13	22	44
1.125	4	10	13	-
1.312	3	7	12	24
1.562	-	5	9	19
1.625	-	-	-	-
1.812	-	4	7	13
1.875	-	-	-	-
2.062	-	-	6	10

# METALIZED POLYPHENYLENE SULFIDE METAL-CASE TUBULAR METALIZED PPS FILM CAPACITORS

## STANDARD RATINGS

Capacitance		Voltage Code 050 50 VDC / 32 VAC*		Voltage Code 100 100 VDC / 63 VAC*		Voltage Code 200 200 VDC / 126 VAC*		Voltage Code 400 400 VDC / 240 VAC*	
μF	Code	D	L	D	L	D	L	D	L
0.010	103	-	-	0.174	0.625	0.174	0.625	0.235	0.688
0.015	153	-	-	0.174	0.625	0.174	0.625	0.235	0.812
0.022	223	-	-	0.174	0.625	0.193	0.625	0.312	0.688
0.033	333	-	-	0.174	0.625	0.235	0.625	0.312	0.812
0.047	473	0.174	0.531	0.193	0.625	0.235	0.688	0.400	0.812
0.068	683	0.174	0.625	0.235	0.625	0.312	0.625	0.400	0.938
0.10	104	0.174	0.625	0.235	0.688	0.312	0.688	0.400	1.125
0.15	154	0.193	0.625	0.312	0.625	0.312	0.812	0.400	1.312
0.22	224	0.235	0.625	0.312	0.688	0.400	0.812	0.562	1.125
0.33	334	0.312	0.625	0.312	0.812	0.400	0.938	0.562	1.562
0.47	474	0.312	0.625	0.400	0.688	0.400	1.125	0.562	1.812
0.68	684	0.312	0.843	0.400	0.812	0.500	1.125	0.670	1.812
1.00	105	0.312	0.843	0.400	0.938	0.562	1.125	0.750	2.062
1.50	155	0.400	0.843	0.500	0.938	0.562	1.312	1.000	1.812
2.00	205	0.400	0.843	0.500	1.125	0.562	1.812	1.000	2.062
2.70	275	0.400	1.125	0.562	1.312	0.670	1.562	-	-
3.00	305	0.400	1.125	0.562	1.312	0.750	1.562	-	-
4.00	405	0.500	1.125	0.562	1.562	0.750	1.812	-	-
5.00	505	0.500	1.125	0.670	1.312	0.750	2.062	-	-
6.80	685	0.562	1.125	0.670	1.562	-	-	-	-
8.20	825	0.562	1.312	0.670	1.812	-	-	-	-
10.00	106	0.670	1.312	0.750	1.812	-	-	-	-
12.00	126	0.670	1.312	-	-	-	-	-	-
15.00	156	0.750	1.375	-	-	-	-	-	-

Additional capacitance values, voltages, and tolerances are available upon request.

\* AC voltage rating is at 400Hz.  $1.4 \times V_{RMS} + VDC$  should not exceed the rated VDC.

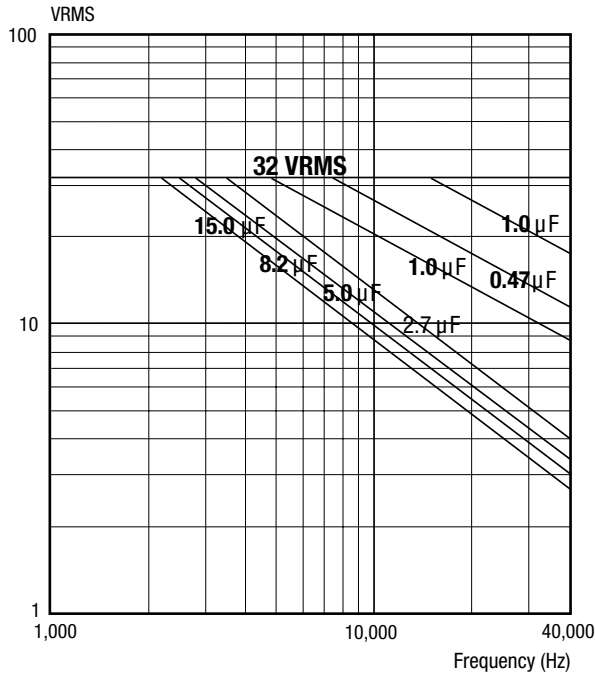
\* Graphs of AC voltage vs. frequency follow.

The dimensions shown above are for styles 02, 04 and 13. The dimensions for other styles are included in the general section in the front of the catalog.

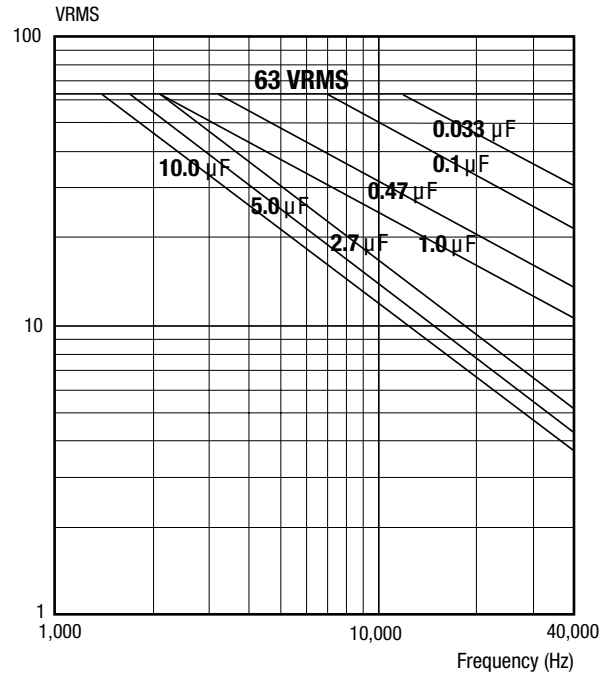
# METALIZED POLYPHENYLENE SULFIDE METAL-CASE TUBULAR METALIZED PPS FILM CAPACITORS

TYPE 820P

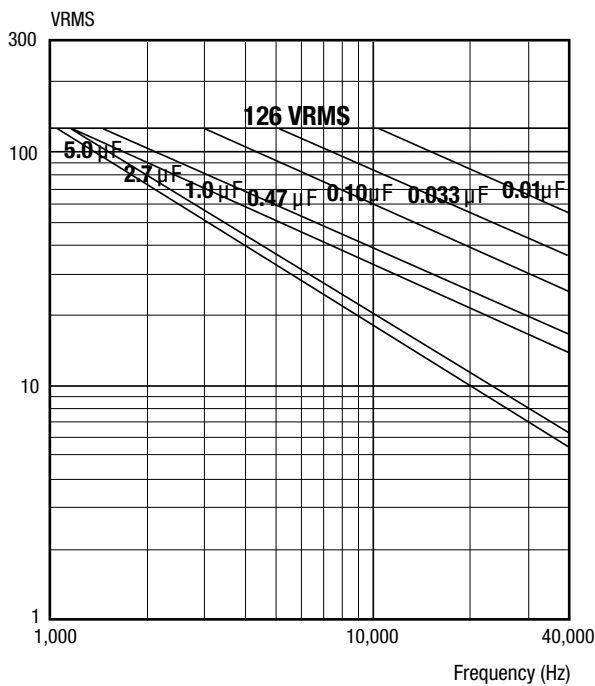
VOLTAGE VS. FREQUENCY TYPE 820P  
50 VDC / 32 VAC



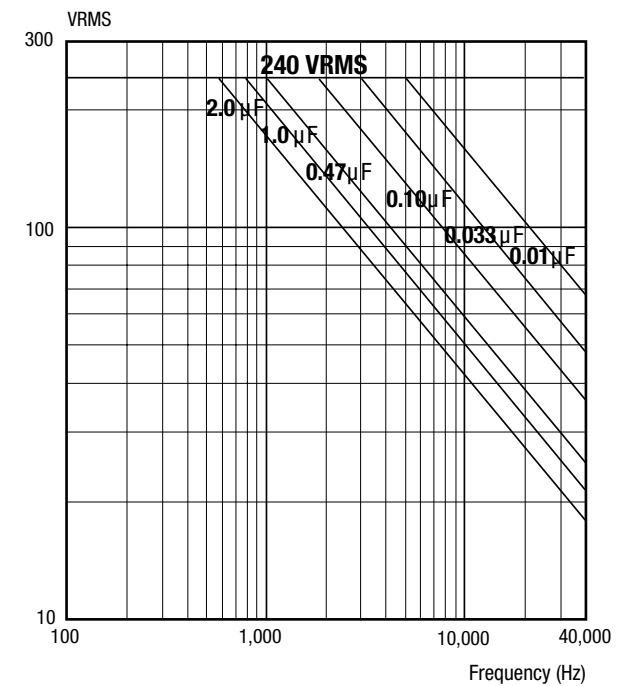
VOLTAGE VS. FREQUENCY TYPE 820P  
100 VDC / 63 VAC



VOLTAGE VS. FREQUENCY TYPE 820P  
200 VDC / 126 VAC



VOLTAGE VS. FREQUENCY TYPE 820P  
400 VDC / 240 VAC



# GENERAL INFORMATION ON POLYPHENYLENE SULFIDE CAPACITORS

## GENERAL ELECTRICAL, PHYSICAL, AND ENVIRONMENTAL CHARACTERISTICS

### ELECTRICAL CHARACTERISTICS:

Capacitance, dissipation factor, insulation resistance, and dielectric strength shall be measured as specified.

### PHYSICAL CHARACTERISTICS:

The lead strength shall be measured as specified.

### ENVIRONMENTAL CHARACTERISTICS:

#### Vibration Test:

Units shall be tested as required. As a result of the test no mechanical damage, short, open or intermittent circuit.

### MOISTURE RESISTANCE:

The hermetically sealed units shall be tested.

#### As a result of the test there shall be:

- No visible damage
- Min. IR = 50% of initial limit
- Max.  $\Delta C$  of  $\pm 5\%$
- Max. DF = 0.5%

### HUMIDITY TEST:

The non-hermetically sealed units shall be tested.

#### As a result of the test there shall be:

- No visible damage
- Min. IR = 50% of initial limit
- Max.  $\Delta C$  of  $\pm 5\%$
- Max. DF = 0.5%

### DC LIFE:

820P, 842P, 859P are tested in accordance with the applicable Mil Spec.  
810P, 832P, 860P & 882P: 140% of rated voltage at 125°C for 250 hours  
880P: 125% of rated voltage for 250 hours at 150°C.

#### As a result of the test there shall be:

- No permanent open or short circuit
- Max.  $\Delta C$  of  $\pm 5\%$
- Max. DF = 0.3%
- No visible damage
- Min. IR = 50% of initial limit






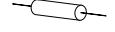
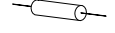
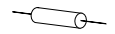

### AC LIFE:

The Type 859P shall be tested at 110% of the rated rms voltage at 400Hz for 250 hours at 85°C.

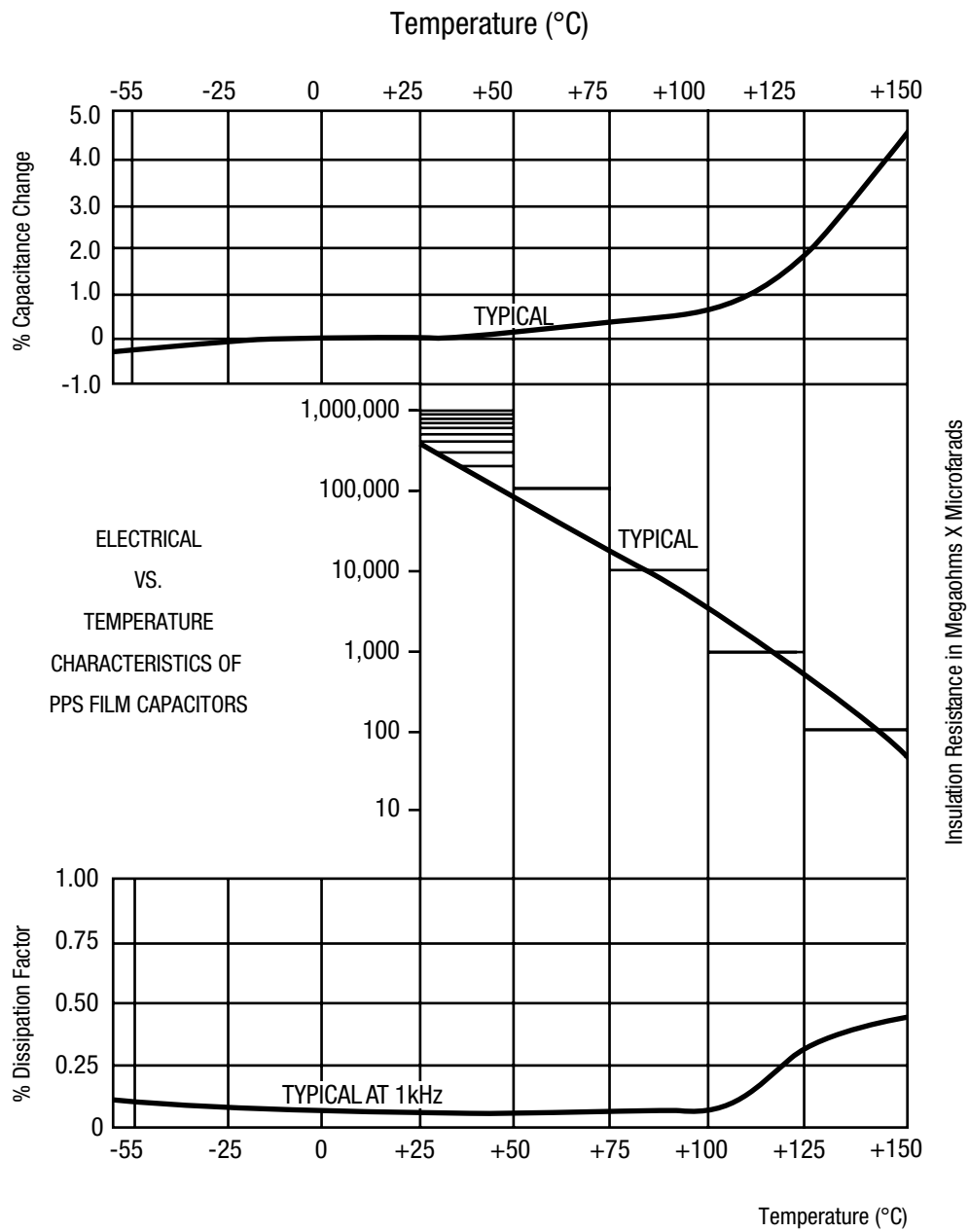
#### As a result of the test there shall be:

- No permanent open or short circuit
- Max.  $\Delta C$  of  $\pm 5\%$
- Max. DF = 0.5%
- No visible damage
- Min. IR = 50% of initial limit

## METALIZED POLYCARBONATE / POLYPHENYLENE SULFIDE

POLYPHENYLENE SULFIDE (Replacement for Polycarbonate)			POLYCARBONATE		POLYCARBONATE / POLYPHENYLENE SULFIDE			
Part Number	Mil Spec Number	Catalog Page	Part Number	Mil Spec Number	Outline Drawing	Description	Cap Range $\mu\text{F}$	DC Voltage Range
859P	39022 / 12	40	259P	39022 / 7		AC Rated -55°C to +105°C	0.01 - 10.0	80 - 440 VAC
860P	-	42	260P	-		Various Configurations 55°C to +105°C	0.01 - 10.0	200 - 600
820P	39022 / 13	37	620P	39022 / 10		Small Size -55°C to +125°C	0.01 - 15.0	50 - 400
-	95008	-	629P	83439 / 4 / 6 95008		Feed Thru -55°C to +125°C	0.01 - 15.0	50 - 400
832P	-	137	632P	-		Wrap & Fill -55°C to +125°C	0.001 - 10.0	63 - 400
842P	55514 / 13	140	642P	55514 / 7		Miniature Wrap & Fill -55°C to +125°C	0.01 - 15.0	50 - 200
880P	-	143	-	-		High Temp, PPS -55°C to +150°C	0.0047 - 10.0	50 - 400
FILM / FOIL POLYCARBONATE / POLYPHENYLENE SULFIDE								
810P	-	147	610P	-		Pulse Capacitor -55°C to +125°C	0.001 - 1.0	50 - 400
882P	-	149	-	-		Zero TCC PPS -55°C to +125°C	0.001 - 0.22	200

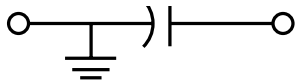
# GENERAL INFORMATION ON POLYPHENYLENE SULFIDE CAPACITORS



Dwg. No. A-14,582

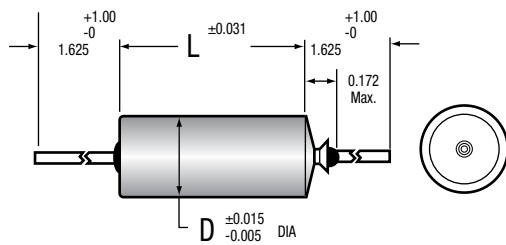
# GUIDE TO ORDERING

## SECTION GROUNDED TO CASE

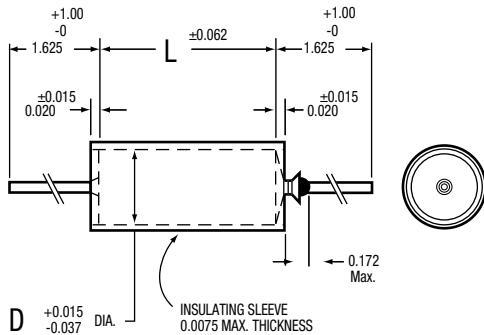


DIMENSIONS (in inches)

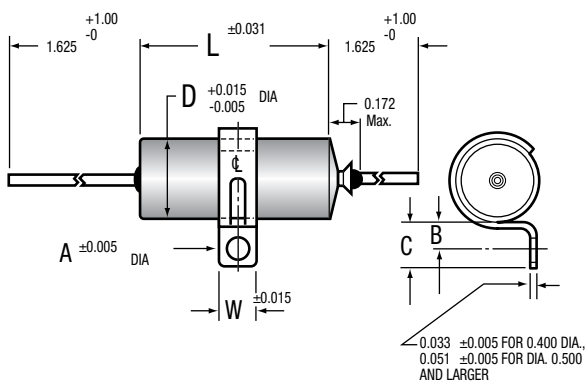
### CASE STYLE 01



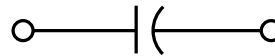
### CASE STYLE 03



### CASE STYLE 12

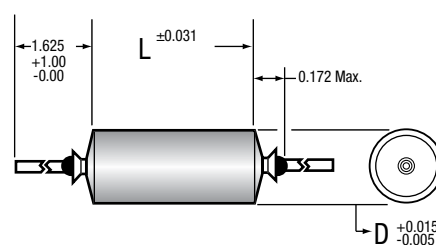


## SECTION INSULATED FROM CASE

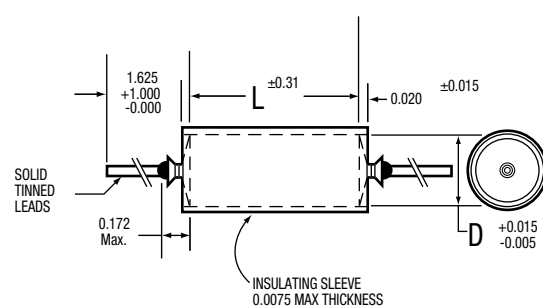


DIMENSIONS (in inches)

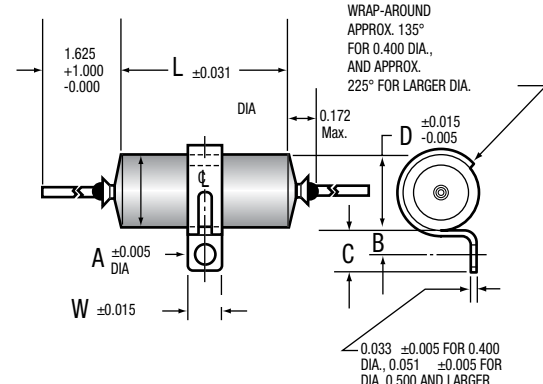
### CASE STYLE 02



### CASE STYLE 04



### CASE STYLE 13



The length of grounded styles is 0.062" shorter than the length shown in tabulations in the catalog.

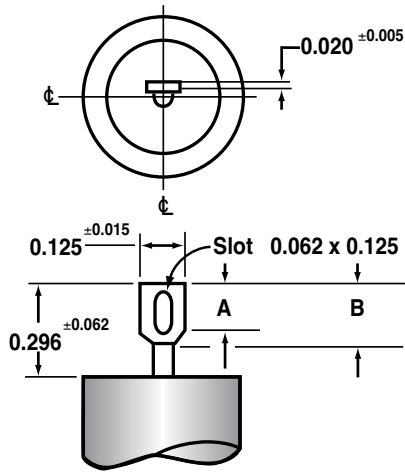
# GUIDE TO ORDERING

## BRACKET DIMENSIONS (Style 12 & 13 / in inches)

D	W	A	B	C
0.400	0.250	0.144	0.187±0.015	0.312±0.031
0.500	0.500	0.156	0.250±0.031	0.437±0.062
0.562	0.500	0.156	0.250±0.031	0.437±0.062
0.670	0.500	0.156	0.250±0.031	0.437±0.062
0.750	0.500	0.156	0.250±0.031	0.437±0.062
1.000	0.500	0.156	0.250±0.031	0.437±0.062

\*Based on 1 in. = 25.4 mm

## TYPICAL TAB TERMINAL DIMENSIONS



Dwg. No A-9525

A =  $0.156 \pm 0.015$ " (3.96 ± 0.38 mm)

B =  $0.187 \pm 0.015$ " (4.75 ± 0.38 mm)

Tab Terminal available only on case diameters equal to or greater than 0.400 inches.

T1 & T3 styles are supplied with one tab terminal on the insulated end and a ground lead on the opposite end.

## METAL CASE

EXAMPLE:

**218P**

**223**

**X9**

**100**

**S**

**02**

### CATALOG NUMBERING SYSTEM

**Case style**

**Terminal:** S = Wire leads T = Soldering tab\*.

**DC Voltage rating:** Expressed in volts.  
See standard ratings charts for voltage code.

**Capacitance Tolerance:** X0 =  $\pm 20\%$   
X9 =  $\pm 10\%$   
X5 =  $\pm 5\%$   
X2 =  $\pm 2\%$

**Capacitance:** Expressed in picofarads, the first two digits are significant figures; the third is the number of zeros following. See standard ratings tables for capacitance code.

**Dearborn type number:** Identifies the basic capacitor.

\* Soldering tabs are available only on case diameters equal to or greater than 0.400 inches.

## WRAP AND FILL

EXAMPLE:

**430P**

**183**

**X9**

**100**

**X**

**F**

### CATALOG NUMBERING SYSTEM

**"F"** applies only to "ROHS" compliant parts.

**Terminal:** No suffix required unless specified on applicable specification sheet (Terminal style).

**DC Voltage rating:** Expressed in volts.  
See standard ratings charts for voltage code.

**Capacitance Tolerance:** X0 =  $\pm 20\%$   
X9 =  $\pm 10\%$   
X5 =  $\pm 5\%$   
X2 =  $\pm 2\%$

**Capacitance:** Expressed in picofarads, the first two digits are significant figures; the third is the number of zeros following. See standard ratings tables for capacitance code.

**Dearborn type number:** Identifies the basic capacitor.