

# METAL CASE HERMETICALLY-SEALED METALIZED POLYESTER-FILM CAPACITORS



## FEATURES

- Small size
- Extensive standard ratings
- Wire leads or tab terminals
- Approved to MIL-PRF-39022

### MAJOR APPLICATIONS:

Military and Industrial Applications where light weight and small size are combined with maximum protection against severe environments.

## PHYSICAL CHARACTERISTICS

### CONSTRUCTION:

Non-inductive wound metalized polyester.

### CASE:

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

### LEAD MATERIAL:

Leads are solder coated solid wire.

### LEAD WIRE SIZES:

Case Dia.	Lead AWG
0.175 and 0.195	No. 24
0.235 and 0.312	No. 22
0.400 and over	No. 20

### LEAD STRENGTH:

Capable of withstanding a five pound pull force on lead axis.

### MARKING:

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

## ELECTRICAL SPECIFICATIONS

### OPERATING TEMPERATURE:

-55°C to +125°C

### CAPACITANCE RANGE:

0.001  $\mu$ F to 12.0  $\mu$ F

### VOLTAGE RANGE:

- 100 VDC to 400 VDC
- 63 VRMS to 200 VRMS

### CAPACITANCE TOLERANCE:

$\pm$ 20%,  $\pm$ 10%,  $\pm$ 5%

### VOLTAGE DERATING:

- No derating for DC operation
- For AC operation derate to 70% of the 85°C rating for operation up to 105°C

### DISSIPATION FACTOR:

- 0.8% maximum  $\leq$  1.0  $\mu$ F
- 1.0% maximum  $>$  1.0  $\mu$ F

### VOLTAGE TEST:

200% of rated voltage for 2 minutes

### INSULATION RESISTANCE:

- At +25°C, 50,000 Megaohm-Microfarads, need not exceed 100,000 Megaohms
- At +85°C, 3,000 Megaohm-Microfarads, need not exceed 6,000 Megaohms
- At +105°C, 250 Megaohm-Microfarads, need not exceed 500 Megaohms
- At +125°C, 10 Megaohm-Microfarads, need not exceed 100 Megaohms

## MAXIMUM PULSE RISE TIME

Capacitor Length (inch)	Rise Time $dv / dt$ (V / $\mu$ s)			
	100 VDC / 63 VAC	150 VDC / 95 VAC	200 VDC / 125 VAC	400 VDC / 200 VAC
0.750	57	78	135	225
0.875	36	48	51	185
1.125	18	27	31	75
1.375	13	20	24	-
1.625	10	15	19	48
1.875	9	14	15	30
2.125	-	10	-	25
2.375	6	9	12	-
2.625	-	7	10	21

# METAL CASE HERMETICALLY-SEALED METALIZED POLYESTER-FILM CAPACITORS

TYPE 218P

## STANDARD RATINGS

Capacitance		Voltage Code 100 100 VDC / 63 VAC*		Voltage Code 150 150 VDC / 95 VAC*		Voltage Code 200 200 VDC / 125 VAC*		Voltage Code 400 400 VDC / 200 VAC*	
µF	Code	D	L	D	L	D	L	D	L
0.0010	102	-	-	-	-	0.175	0.750	-	-
0.0015	152	-	-	-	-	0.175	0.750	-	-
0.0022	222	-	-	-	-	0.175	0.750	-	-
0.0033	332	-	-	-	-	0.175	0.750	-	-
0.0047	472	-	-	-	-	0.175	0.750	0.235	0.750
0.0068	682	-	-	-	-	0.175	0.750	0.235	0.750
0.010	103	0.175	0.750	0.175	0.750	0.175	0.750	0.235	0.750
0.015	153	0.175	0.750	0.175	0.750	0.175	0.750	0.312	0.875
0.022	223	0.175	0.750	0.195	0.750	0.195	0.750	0.312	0.875
0.033	333	0.175	0.750	0.195	0.750	0.235	0.750	0.312	0.875
0.047	473	0.195	0.750	0.235	0.750	0.235	0.750	0.400	0.875
0.068	683	0.235	0.750	0.235	0.750	0.312	0.875	0.400	1.125
0.10	104	0.235	0.750	0.312	0.875	0.312	0.875	0.400	1.125
0.15	154	0.312	0.875	0.312	0.875	0.312	0.875	0.500	1.125
0.22	224	0.312	0.875	0.312	0.875	0.400	0.875	0.562	1.125
0.33	334	0.312	0.875	0.312	1.125	0.400	1.125	0.562	1.625
0.47	474	0.312	1.125	0.400	1.125	0.400	1.375	0.562	1.875
0.68	684	0.400	1.125	0.400	1.125	0.500	1.125	0.670	1.875
1.00	105	0.400	1.125	0.500	1.125	0.562	1.375	0.750	2.125
1.50	155	0.500	1.125	0.562	1.125	0.562	1.625	0.750	2.625
2.00	205	0.562	1.125	0.562	1.375	0.562	1.875	1.000	2.125
2.50	255	0.562	1.375	0.562	1.625	0.670	1.625	1.000	2.625
3.00	305	0.562	1.375	0.670	1.375	0.670	1.875	-	-
4.00	405	0.562	1.625	0.670	1.625	0.750	1.875	-	-
5.00	505	0.562	1.875	0.670	1.875	0.750	2.375	-	-
6.00	605	0.670	1.625	0.750	1.875	0.750	2.625	-	-
7.00	705	0.670	1.875	0.750	2.125	1.000	1.875	-	-
10.00	106	0.750	1.875	0.750	2.625	1.000	2.375	-	-
12.00	126	0.750	2.375	1.000	1.875	1.000	2.625	-	-

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

The dimensions shown are for style O2. The dimensions for other styles are included in the general section.

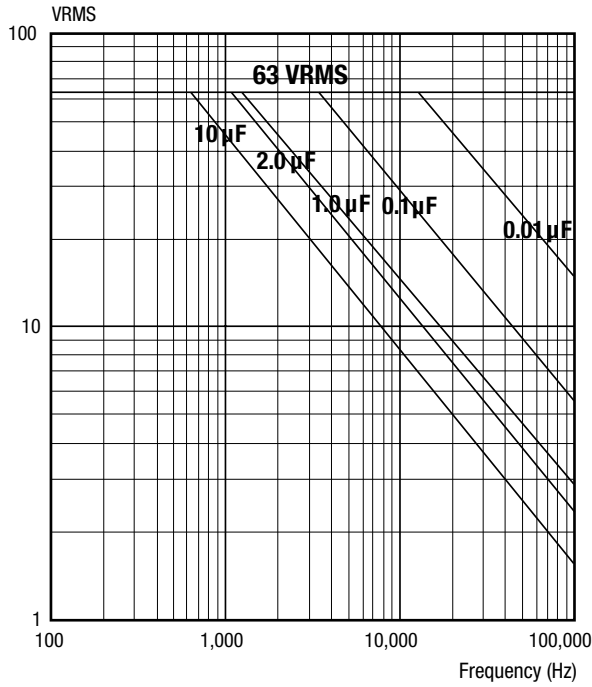
\* AC voltage rating is at 60Hz. 1.4 x VRMS + VDC should not exceed the rated VDC.

\* Graphs of AC voltage vs frequency follow.

# METAL CASE HERMETICALLY-SEALED METALIZED POLYESTER-FILM CAPACITORS

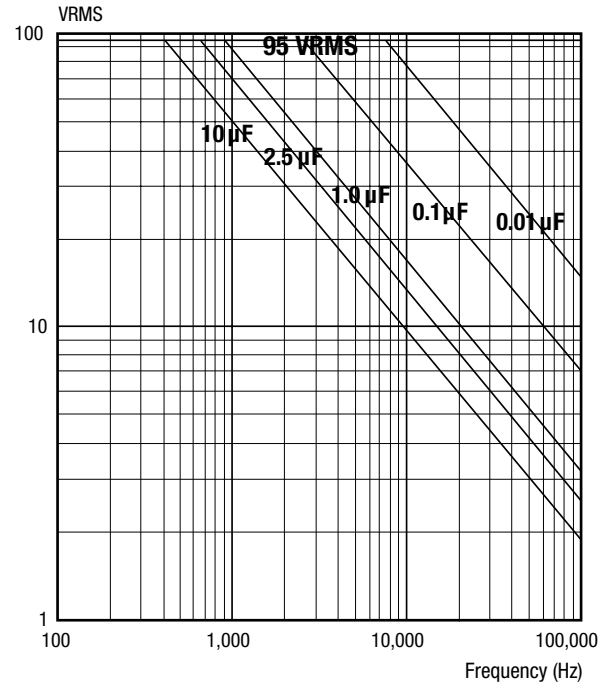
VOLTAGE VS. FREQUENCY TYPE 218P

100 VDC / 63 VAC



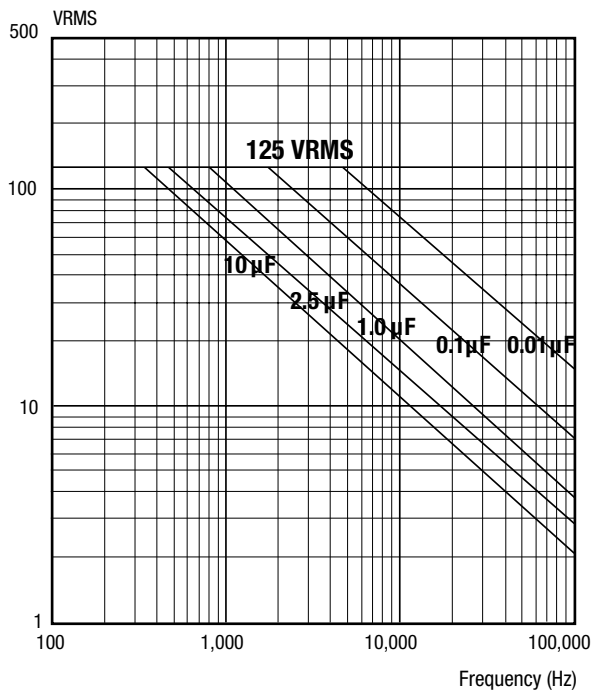
VOLTAGE VS. FREQUENCY TYPE 218P

150 VDC / 95 VAC



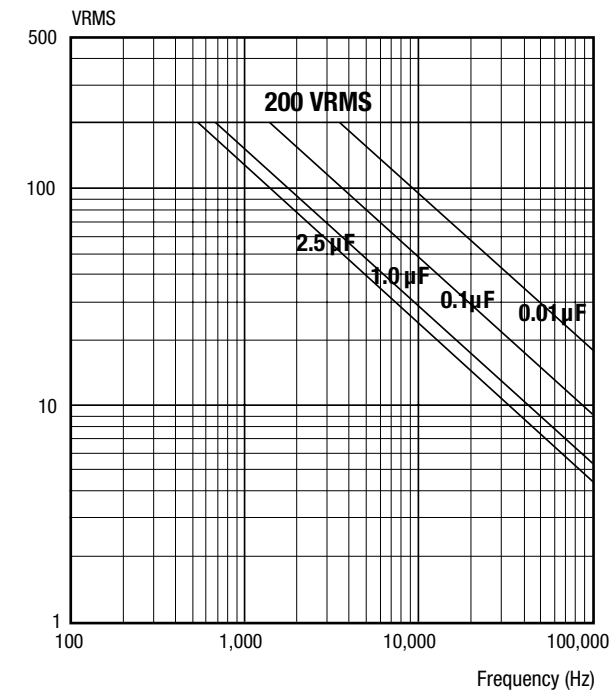
VOLTAGE VS. FREQUENCY TYPE 218P

200 VDC / 125 VAC



VOLTAGE VS. FREQUENCY TYPE 218P

400 VDC / 200 VAC



# GENERAL INFORMATION ON POLYESTER CAPACITORS

## GENERAL INFORMATION

One of the principle characteristics of these capacitors is their small size. This is due to the high dielectric constant and high dielectric strength of the film. They also have superior self-healing properties. They may be used in AC sine wave or non sine wave applications.

## 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
- Max.  $\Delta C$  of  $\pm 10\%$
- Min. IR = 50% of initial limit
- Max. DF = 2.0%

### HUMIDITY TEST:

The non-hermetically sealed units shall be tested.

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

- No visible damage
- Max.  $\Delta C$  of  $\pm 10\%$
- Min. IR = 20% of initial limit
- Max. DF = 2.0%

### DC LIFE:

125% of rated voltage at 85°C (125°C for Type 218P) for 250 hours except for Type 430P units rated at 1,000 VDC or greater which shall be tested at 100% of rated voltage at 40°C for 1,000 hours.

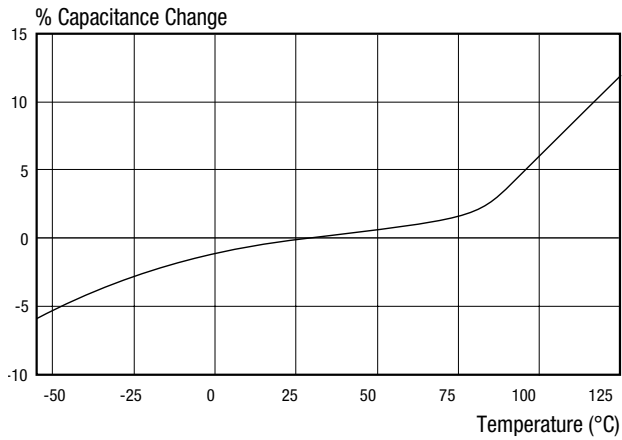
#### As a result of the test there shall be:

- No permanent open or short circuit
- No visible damage
- Max.  $\Delta C$  of  $\pm 10\%$
- Min. IR = 50% of initial limit
- Max. DF = 2.0%

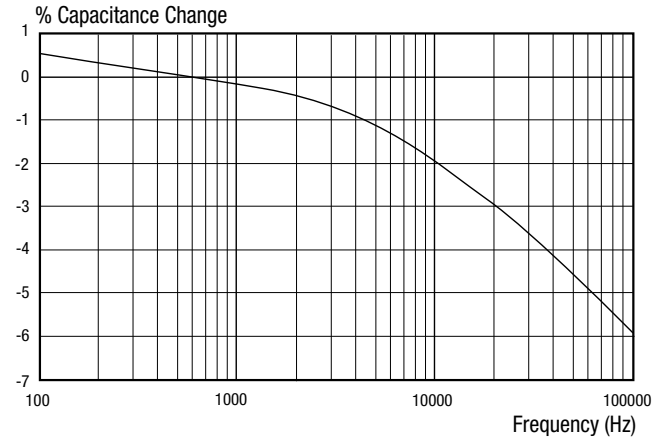
# GENERAL INFORMATION ON POLYESTER CAPACITORS

## CHARACTERISTICS

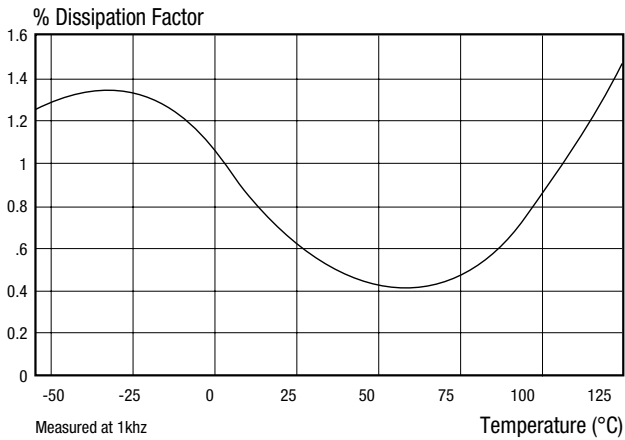
### CAPACITANCE CHANGE VS. TEMPERATURE - METALIZED POLYESTER



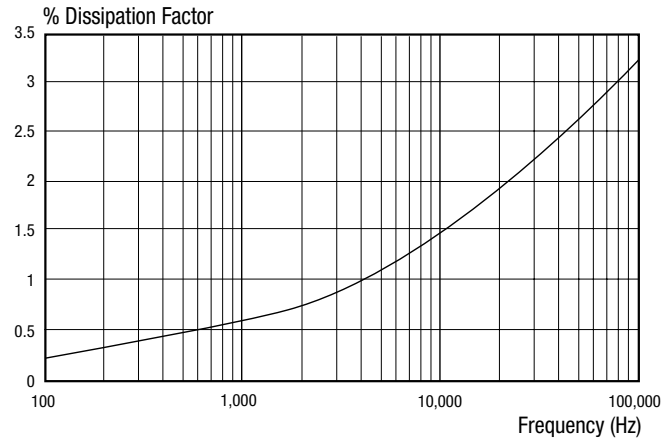
### CAPACITANCE CHANGE VS. FREQUENCY - METALIZED POLYESTER



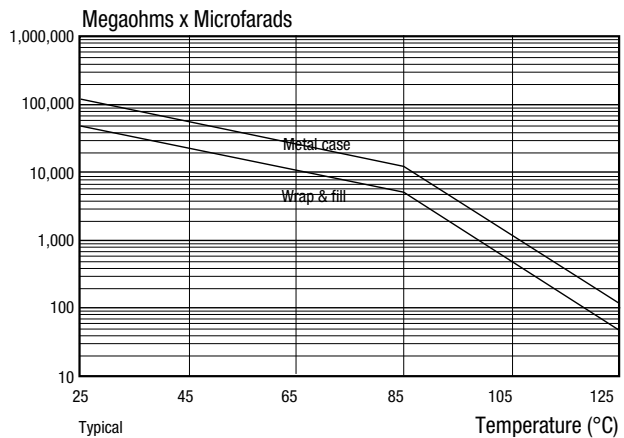
### DISSIPATION FACTOR VS. TEMPERATURE - METALIZED POLYESTER



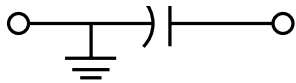
### DISSIPATION FACTOR VS. FREQUENCY - METALIZED POLYESTER



### INSULATION RESISTANCE VS. TEMPERATURE - METALIZED POLYESTER

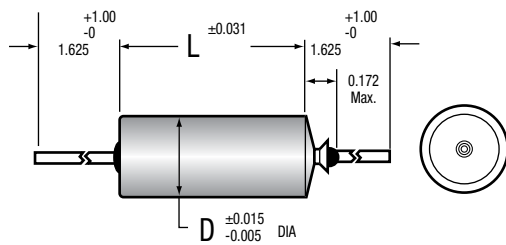


## SECTION GROUNDED TO CASE

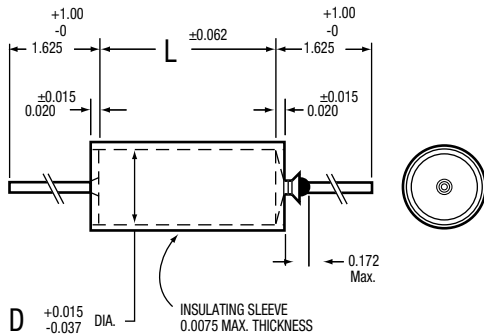


DIMENSIONS (in inches)

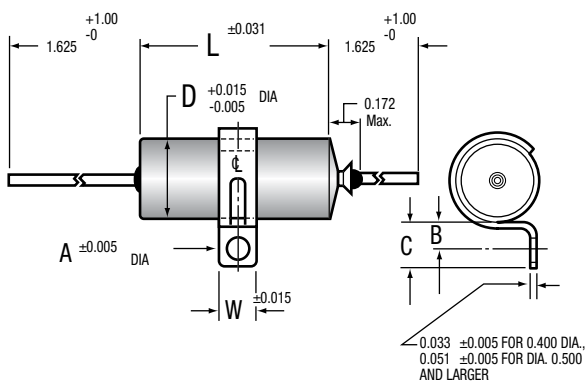
### CASE STYLE 01



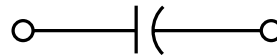
### CASE STYLE 03



### CASE STYLE 12

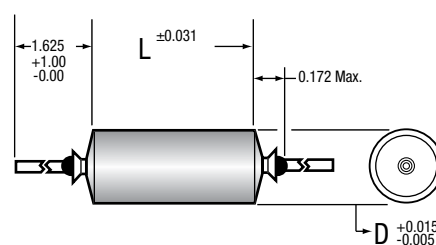


## SECTION INSULATED FROM CASE

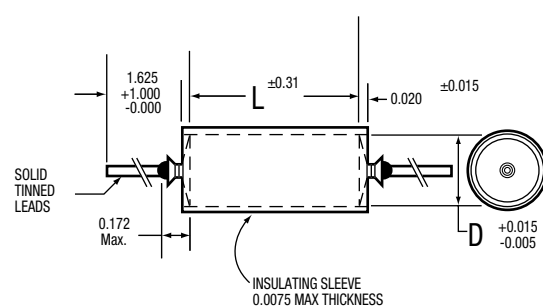


DIMENSIONS (in inches)

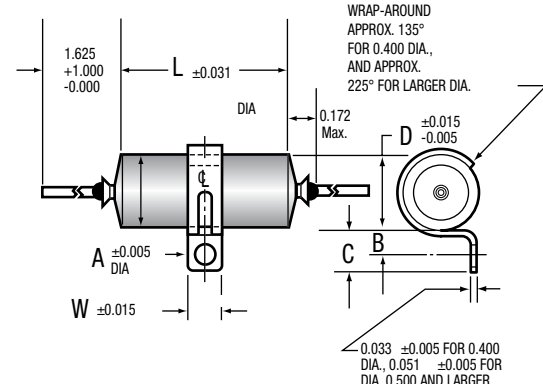
### CASE STYLE 02



### CASE STYLE 04



### CASE STYLE 13



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

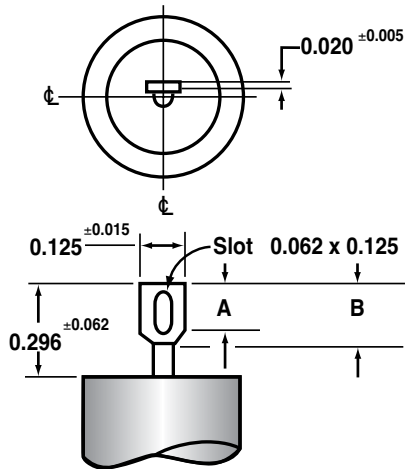
# GUIDE TO ORDERING

## 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 ± 0.015" (3.96 ± 0.38 mm)

B = 0.187 ± 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.

# ORDERING TABLES

## 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.