

# Type 716P, Orange Drop<sup>®</sup>, Polypropylene Film/Foil Capacitors

High Performance

## Features

- Copper leads.
- Extremely low dissipation factor.
- Superb high frequency response.
- Excellent stability, virtually linear temperature coefficient.
- Various lead spacings, crimp styles and lead lengths available.



## Specifications

**Capacitance Range:**  
220 pF to 1.0  $\mu$ F

**Capacitance Tolerance:**  
 $\pm 3\%$  to  $\pm 10\%$

**Voltage Ratings:**  
100 to 2000 Volts D-C  
70 to 500 Volts A-C

**Operating Temperature Range:**  
-55°C to +85°C  
(+105°C with proper voltage derating)

**Lead Wire:**  
Tinned copper.

**Dissipation Factor:**  
See tabulated data.

**Insulation Resistance:**

400,000 M $\Omega$  minimum at +25°C  
20,000 M $\Omega$  minimum at +85°C  
2,000 M $\Omega$  minimum at +105°C

**Pulse Rise Time, dV/dt:**

See tabulated data.

**Corona Start Voltage (typical):**

See tabulated data.

**Encapsulation:**

Conformal coating of flame retardant orange epoxy (meets UL94V-0 specifications)

**Dielectric:**

Polypropylene film.

**Construction:**

Non-inductively wound with extended foil. Additional details on general specifications page.

**Applications:**

Switching and high voltage power supplies, inverters, snubbers, resonant converters and electronic lighting ballasts.

# Type 716P, Orange Drop<sup>®</sup>, Polypropylene Film/Foil Capacitors

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## General Specifications

The 715P and 716P series are manufactured with polypropylene film and extended foil. Polypropylene has a very low dissipation factor, low dielectric absorption and exhibits excellent capacitance stability. These characteristics combined with the direct connection of the lead wire to the extended foil electrode makes the 715P and 716P series ideal for high current, high pulse applications.

The 715P series has a round profile and is available in tolerances as close as  $\pm 1\%$ . The 716P series has a pressed profile and, in addition, is designed with copper leads, thus adding to its performance in high frequency, high pulse current applications.

Other specifications are listed below and on the following pages.

### **Operating Temperature Range:**

The standard operating temperature range for polypropylene film is  $-55^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ . The 715P and 716P may be operated up to  $+105^{\circ}\text{C}$  provided the DC working voltage is reduced by 50%.

For specific derating of the AC voltage when operating above  $+85^{\circ}\text{C}$  please contact our design engineering department.

The maximum operating temperature for 715P and 716P polypropylene film capacitors is  $+105^{\circ}\text{C}$ .

### **Dielectric Withstanding Voltage:**

Units rated below 800 VDC shall withstand a DC potential of 250% of rated voltage applied between terminals for not more than 5 seconds; units rated 800 VDC and above shall withstand 200% of rated voltage.

### **Construction:**

Units rated 100 through 600 VDC are single section designs constructed of plain polypropylene film with extended foil. Units rated 800 VDC and above are series-section designs with extended foil and incorporate a floating common of metallized polypropylene. All units are non-inductively wound.

### **Temperature Coefficient:**

The typical temperature coefficient is  $-180 \text{ ppm}/^{\circ}\text{C}$  over the temperature range of  $-55^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ .

### **Humidity Testing:**

Units subjected to 95% relative humidity for 72 hours with no voltage applied at  $+75^{\circ}\text{C}$ . After 4 hours of drying minimum product of insulation resistance and capacitance shall be 50,000 megohm-microfarads.

### **DC Voltage Life Test:**

Minimum of 500 hours at  $+85^{\circ}\text{C}$  at 150% of rated voltage. After test, capacitance shall not have changed by more than 3%, insulation resistance shall not have decreased by more than 25% and dissipation factor shall not have changed by more than 0.03%. Measurements made at 1 KHz.

### **AC Voltage Life Test:**

Minimum of 500 hours at  $+85^{\circ}\text{C}$  at 60 Hz. AC test voltage applied at 110% of AC rating. After test, capacitance shall not have changed by more than 3%, insulation resistance shall not have decreased by more than 25%, and dissipation factor shall not have changed by more than 0.03%. Measurements made at 1 KHz.

### **Additional notes on Life Testing:**

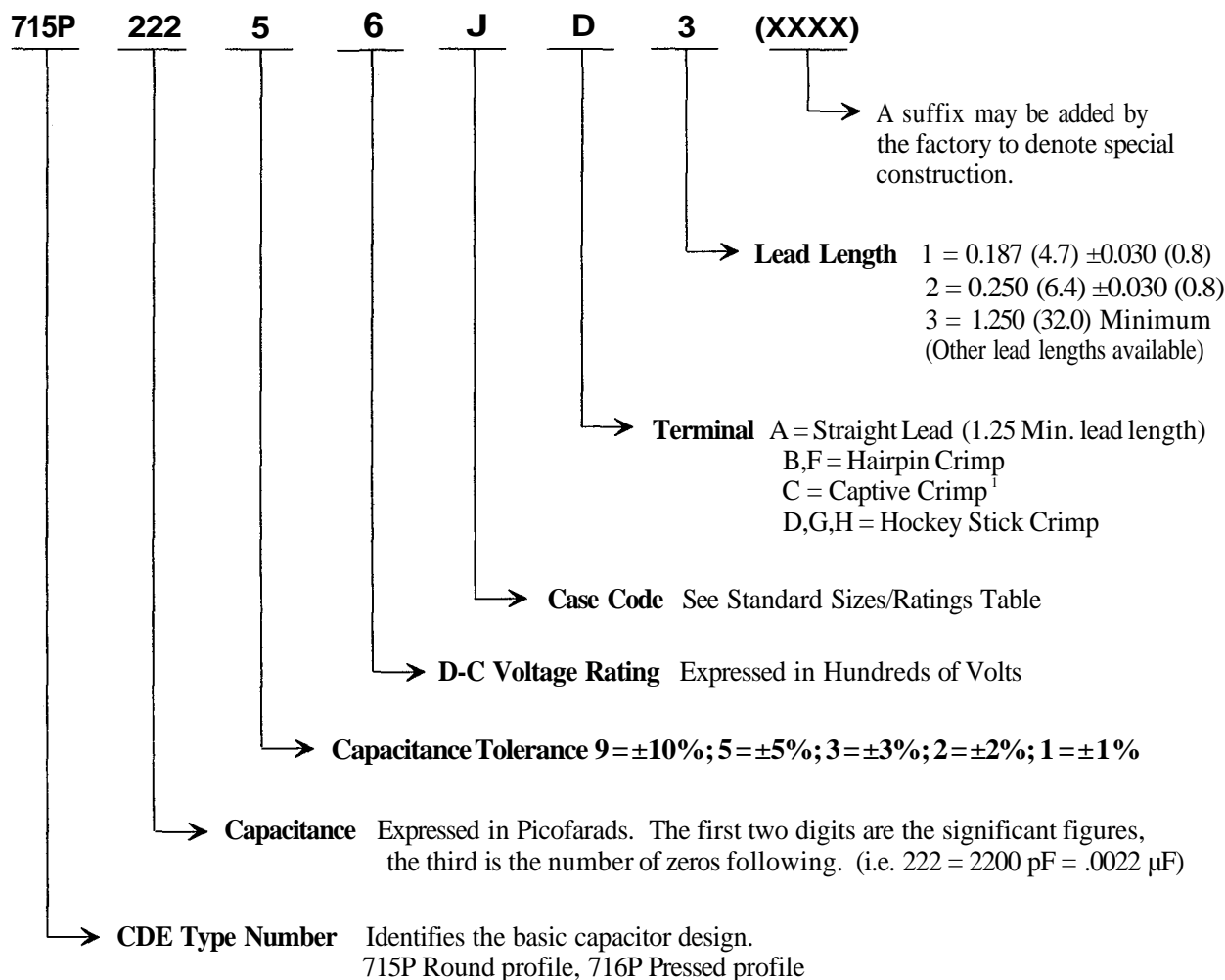
CDE performs standard 500 hour accelerated life tests, both DC and line frequency AC, to monitor process control over our wide range of products.

We also perform longer term life testing, typically 2000 hours, during development of most products. In addition we do accelerated life testing at 10-250 KHz for our High Performance AC products. For additional life test information please contact us.

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## Ordering/Part Number Information



<sup>1</sup> Terminal C has a fixed lead length of 0.156 (4.0) ±0.020 (0.5), therefore it is not necessary to indicate the lead length digit when ordering. Available for "L" case code parts only

### Please note:

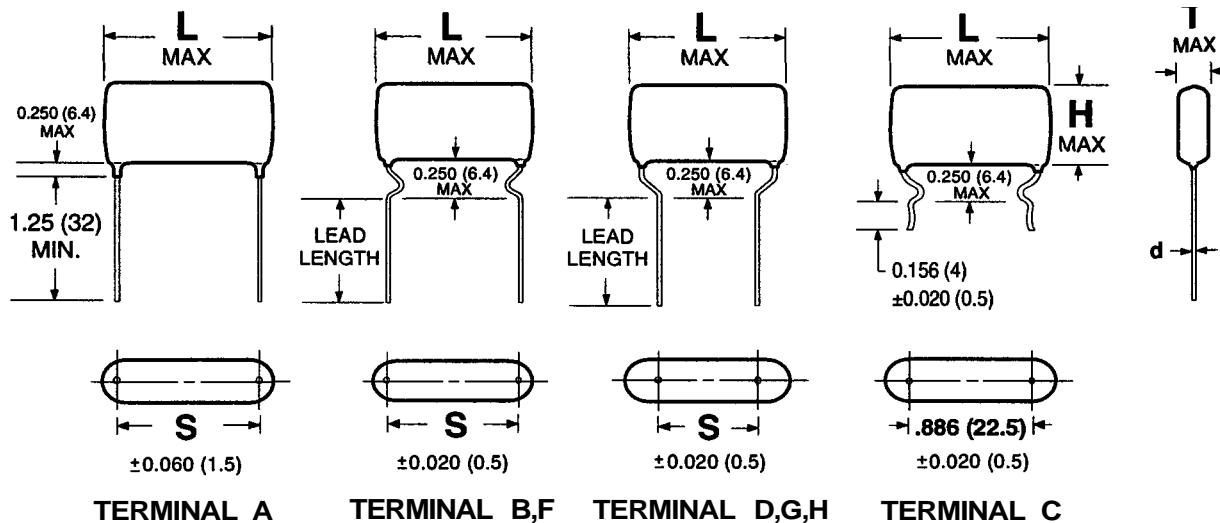
While it is not possible to list every capacitance value, tolerance, or design/size variation available, our flexibility in design and manufacturing gives us the ability to quickly, and cost effectively, provide you with the capacitor you require. Please contact us today with your specific needs!

Dimensions in inches, metric (mm) in parenthesis.

# Type 716P, Orange Drop; Polypropylene Film/Foil Capacitors

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## Standard Lead Styles



## Standard Lead Spacings

| CASE CODE | S, inches (metric, mm in parentheses) |              |              |              |              |              |             |
|-----------|---------------------------------------|--------------|--------------|--------------|--------------|--------------|-------------|
|           | Term. A                               | Term. B      | Term. D      | Term. C *    | Term. F      | Term. G      | Term. H     |
| N         | 0.394 (10)                            | 0.394 (10)   | ---          | ---          | 0.295 (7.5)  | 0.197 (5)    | ---         |
| J         | 0.500 (12.7)                          | 0.500 (12.7) | 0.375 (9.5)  | ---          | 0.394 (10)   | 0.295 (7.5)  | 0.197 (5)   |
| K         | 0.688 (17.5)                          | 0.688 (17.5) | 0.375 (9.5)  | ---          | 0.590 (15)   | 0.394 (10)   | 0.295 (7.5) |
| L         | 1.031 (26.2)                          | 0.969 (24.6) | 0.719 (18.3) | 0.886 (22.5) | 0.886 (22.5) | 0.590 (15)   | ---         |
| M         | 1.406 (35.7)                          | 1.344 (34.1) | 1.094 (27.8) | ---          | ---          | 1.083 (27.5) | ---         |

\* Terminal C is designed for printed circuit boards requiring a lead spacing of 0.886 (22.5) with board hole sizes of 0.044 (1.1) to 0.048 (1.2) in diameter. Available for "L" case code parts only. Please consult us if you have a specific requirement.

## Standard Marking Format

### Sample Marking on unit

CDE716P600V  
222J 9810

### Description

CDE CDE Electronics identification  
716P Type number  
600V D-C Voltage rating, Volts  
222J Capacitance and tolerance code  
9810 Weekly date code  
(i.e. 10th week of 1998)

### Tolerance codes per EIA Standards

H ±3%  
J ±5%  
K ±10%

# Type 716P, Orange Drop Polypropylene Film/Foil Capacitors

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## Type 716P Standard Sizes/Ratings<sup>2</sup>

| Value<br>µF               | Part<br>Number <sup>1</sup> | L max       | T max      | H max      | d          | Value<br>µF               | Part<br>Number <sup>1</sup> | L max       | T max      | H max       | d          |
|---------------------------|-----------------------------|-------------|------------|------------|------------|---------------------------|-----------------------------|-------------|------------|-------------|------------|
| <b>100 VDC / 70 VAC*</b>  |                             |             |            |            |            | <b>200 VDC / 155 VAC*</b> |                             |             |            |             |            |
| .0082                     | 716P82291N                  | .57 (14.5)  | .23 (5.8)  | .36 (9.1)  | .032 (0.8) | .18                       | 716P18492L                  | 1.25 (31.8) | .39 (9.9)  | .67 (17.0)  | .040 (1.0) |
| .009                      | 716P90291N                  | .57 (14.5)  | .24 (6.1)  | .37 (9.4)  | .032 (0.8) | .22                       | 716P22492L                  | 1.25 (31.8) | .43 (10.9) | .71 (18.0)  | .040 (1.0) |
| .01                       | 716P10391N                  | .57 (14.5)  | .24 (6.1)  | .38 (9.7)  | .032 (0.8) | .27                       | 716P27492L                  | 1.25 (31.8) | .47 (11.9) | .75 (19.1)  | .040 (1.0) |
| .012                      | 716P12391N                  | .57 (14.5)  | .23 (5.8)  | .37 (9.4)  | .032 (0.8) | .33                       | 716P33492L                  | 1.25 (31.8) | .47 (11.9) | .86 (21.8)  | .040 (1.0) |
| .015                      | 716P15391N                  | .57 (14.5)  | .25 (6.4)  | .39 (9.9)  | .032 (0.8) | .39                       | 716P39492L                  | 1.25 (31.8) | .51 (13.0) | .90 (22.9)  | .040 (1.0) |
| .018                      | 716P18391N                  | .57 (14.5)  | .26 (6.6)  | .42 (10.7) | .032 (0.8) | .47                       | 716P47492L                  | 1.25 (31.8) | .56 (14.2) | .95 (24.1)  | .040 (1.0) |
|                           |                             |             |            |            |            | .56                       | 716P56492L                  | 1.25 (31.8) | .61 (15.5) | 1.00 (25.4) | .040 (1.0) |
| .022                      | 716P22391N                  | .57 (14.5)  | .28 (7.1)  | .44 (11.2) | .032 (0.8) | .68                       | 716P68492M                  | 1.65 (41.9) | .56 (14.2) | .94 (23.9)  | .040 (1.0) |
| .025                      | 716P25391N                  | .57 (14.5)  | .29 (7.4)  | .45 (11.4) | .032 (0.8) | .82                       | 716P82492M                  | 1.65 (41.9) | .61 (15.5) | 1.00 (25.4) | .040 (1.0) |
| .027                      | 716P27391N                  | .57 (14.5)  | .27 (6.9)  | .50 (12.7) | .032 (0.8) | 1.0                       | 716P10592M                  | 1.65 (41.9) | .68 (17.3) | 1.07 (27.2) | .040 (1.0) |
| .033                      | 716P33391N                  | .57 (14.5)  | .29 (7.4)  | .53 (13.5) | .032 (0.8) | <b>400 VDC / 200 VAC*</b> |                             |             |            |             |            |
| .039                      | 716P39391N                  | .57 (14.5)  | .31 (7.9)  | .55 (14.0) | .032 (0.8) | .001                      | 716P10294J                  | .70 (17.8)  | .25 (6.4)  | .47 (11.9)  | .032 (0.8) |
| .047                      | 716P47391N                  | .57 (14.5)  | .34 (8.6)  | .58 (14.7) | .032 (0.8) | .0012                     | 716P12294J                  | .70 (17.8)  | .22 (5.6)  | .44 (11.2)  | .032 (0.8) |
| .05                       | 716P50391J                  | .70 (17.8)  | .28 (7.1)  | .52 (13.2) | .032 (0.8) | .0015                     | 716P15294J                  | .70 (17.8)  | .24 (6.1)  | .45 (11.4)  | .032 (0.8) |
| .056                      | 716P56391J                  | .70 (17.8)  | .29 (7.4)  | .53 (13.5) | .032 (0.8) | .0018                     | 716P18294J                  | .70 (17.8)  | .25 (6.4)  | .46 (11.7)  | .032 (0.8) |
| .062                      | 716P62391J                  | .70 (17.8)  | .31 (7.9)  | .54 (13.7) | .032 (0.8) | .0022                     | 716P22294J                  | .70 (17.8)  | .26 (6.6)  | .48 (12.2)  | .032 (0.8) |
| .068                      | 716P68391J                  | .70 (17.8)  | .32 (8.1)  | .56 (14.2) | .032 (0.8) | .0027                     | 716P27294J                  | .70 (17.8)  | .24 (6.1)  | .45 (11.4)  | .032 (0.8) |
| .075                      | 716P75391J                  | .70 (17.8)  | .33 (8.4)  | .57 (14.5) | .032 (0.8) | .0033                     | 716P33294J                  | .70 (17.8)  | .24 (6.1)  | .45 (11.4)  | .032 (0.8) |
| .082                      | 716P82391J                  | .70 (17.8)  | .35 (8.9)  | .59 (15.0) | .032 (0.8) | .0039                     | 716P39294J                  | .70 (17.8)  | .24 (6.1)  | .36 (9.1)   | .032 (0.8) |
| .09                       | 716P90391J                  | .70 (17.8)  | .36 (9.1)  | .60 (15.2) | .032 (0.8) | .0047                     | 716P47294J                  | .70 (17.8)  | .25 (6.4)  | .37 (9.4)   | .032 (0.8) |
| .1                        | 716P10491J                  | .70 (17.8)  | .38 (9.7)  | .62 (15.7) | .032 (0.8) | .0056                     | 716P56294J                  | .70 (17.8)  | .24 (6.1)  | .44 (11.2)  | .032 (0.8) |
| .12                       | 716P12491K                  | .90 (22.9)  | .33 (8.4)  | .57 (14.5) | .032 (0.8) | .0068                     | 716P68294J                  | .70 (17.8)  | .24 (6.1)  | .44 (11.2)  | .032 (0.8) |
| .15                       | 716P15491K                  | .90 (22.9)  | .37 (9.4)  | .61 (15.5) | .032 (0.8) | .0082                     | 716P82294J                  | .70 (17.8)  | .25 (6.4)  | .45 (11.4)  | .032 (0.8) |
| .18                       | 716P18491K                  | .90 (22.9)  | .40 (10.2) | .64 (16.3) | .032 (0.8) | .01                       | 716P10394J                  | .70 (17.8)  | .27 (6.9)  | .46 (11.7)  | .032 (0.8) |
| .20                       | 716P20491K                  | .90 (22.9)  | .42 (10.7) | .66 (16.8) | .032 (0.8) | .012                      | 716P12394J                  | .70 (17.8)  | .29 (7.4)  | .48 (12.2)  | .032 (0.8) |
| .22                       | 716P22491K                  | .90 (22.9)  | .44 (11.2) | .68 (17.3) | .032 (0.8) | .015                      | 716P15394J                  | .70 (17.8)  | .31 (7.9)  | .50 (12.7)  | .032 (0.8) |
| .25                       | 716P25491K                  | .90 (22.9)  | .47 (11.9) | .71 (18.0) | .032 (0.8) | .018                      | 716P18394K                  | .90 (22.9)  | .28 (7.1)  | .47 (11.9)  | .032 (0.8) |
| .27                       | 716P27491K                  | .90 (22.9)  | .49 (12.4) | .73 (18.5) | .032 (0.8) | .022                      | 716P22394K                  | .90 (22.9)  | .30 (7.6)  | .49 (12.4)  | .032 (0.8) |
| .30                       | 716P30491L                  | 1.25 (31.8) | .41 (10.4) | .65 (16.5) | .040 (1.0) | .027                      | 716P27394K                  | .90 (22.9)  | .31 (7.9)  | .55 (14.0)  | .032 (0.8) |
| .33                       | 716P33491L                  | 1.25 (31.8) | .42 (10.7) | .67 (17.0) | .040 (1.0) | .033                      | 716P33394K                  | .90 (22.9)  | .33 (8.4)  | .57 (14.5)  | .032 (0.8) |
| <b>200 VDC / 155 VAC*</b> |                             |             |            |            |            | .039                      | 716P39394K                  | .90 (22.9)  | .36 (9.1)  | .60 (15.2)  | .032 (0.8) |
| .01                       | 716P10392J                  | .70 (17.8)  | .25 (6.4)  | .37 (9.4)  | .032 (0.8) | .047                      | 716P47394K                  | .90 (22.9)  | .39 (9.9)  | .62 (15.7)  | .032 (0.8) |
| .012                      | 716P12392J                  | .70 (17.8)  | .27 (6.9)  | .39 (9.9)  | .032 (0.8) | .056                      | 716P56394K                  | .90 (22.9)  | .40 (10.2) | .68 (17.3)  | .032 (0.8) |
| .015                      | 716P15392J                  | .70 (17.8)  | .26 (6.6)  | .45 (11.4) | .032 (0.8) | .068                      | 716P68394K                  | .90 (22.9)  | .43 (10.9) | .72 (18.3)  | .032 (0.8) |
| .018                      | 716P18392J                  | .70 (17.8)  | .25 (6.4)  | .45 (11.4) | .032 (0.8) | .082                      | 716P82394L                  | 1.25 (31.8) | .38 (9.7)  | .67 (17.0)  | .040 (1.0) |
| .022                      | 716P22392J                  | .70 (17.8)  | .27 (6.9)  | .46 (11.7) | .032 (0.8) | .1                        | 716P10494L                  | 1.25 (31.8) | .42 (10.7) | .70 (17.8)  | .040 (1.0) |
| .027                      | 716P27392J                  | .70 (17.8)  | .29 (7.4)  | .48 (12.2) | .032 (0.8) | .12                       | 716P12494L                  | 1.25 (31.8) | .45 (11.4) | .73 (18.5)  | .040 (1.0) |
| .033                      | 716P33392J                  | .70 (17.8)  | .32 (8.1)  | .51 (13.0) | .032 (0.8) | .15                       | 716P15494L                  | 1.25 (31.8) | .46 (11.7) | .84 (21.3)  | .040 (1.0) |
| .039                      | 716P39392J                  | .70 (17.8)  | .32 (8.1)  | .56 (14.2) | .032 (0.8) | .18                       | 716P18494L                  | 1.25 (31.8) | .50 (12.7) | .89 (22.6)  | .040 (1.0) |
| .047                      | 716P47392J                  | .70 (17.8)  | .34 (8.6)  | .58 (14.7) | .032 (0.8) | .22                       | 716P22494L                  | 1.25 (31.8) | .57 (14.5) | .95 (24.1)  | .040 (1.0) |
| .056                      | 716P56392K                  | .90 (22.9)  | .30 (7.6)  | .55 (14.0) | .032 (0.8) | .27                       | 716P27494L                  | 1.25 (31.8) | .63 (16.0) | 1.01 (25.7) | .040 (1.0) |
| .068                      | 716P68392K                  | .90 (22.9)  | .33 (8.4)  | .57 (14.5) | .032 (0.8) | .33                       | 716P33494M                  | 1.65 (41.9) | .57 (14.5) | .96 (24.4)  | .040 (1.0) |
| .082                      | 716P82392K                  | .90 (22.9)  | .36 (9.1)  | .60 (15.2) | .032 (0.8) | .39                       | 716P39494M                  | 1.65 (41.9) | .62 (15.7) | 1.01 (25.7) | .040 (1.0) |
| .1                        | 716P10492K                  | .90 (22.9)  | .39 (9.9)  | .63 (16.0) | .032 (0.8) | .47                       | 716P47494M                  | 1.65 (41.9) | .68 (17.3) | 1.07 (27.2) | .040 (1.0) |
| .12                       | 716P12492K                  | .90 (22.9)  | .40 (10.2) | .69 (17.5) | .032 (0.8) |                           |                             |             |            |             |            |
| .15                       | 716P15492K                  | .90 (22.9)  | .45 (11.4) | .73 (18.5) | .032 (0.8) |                           |                             |             |            |             |            |

\* Please refer to performance curves for RMS Voltage vs. Frequency characteristics.

<sup>1</sup> To complete part number for proper tolerance, terminal style and lead length please refer to Ordering/Part Number Information page.

<sup>2</sup> Type 716P capacitors are available through the CDE Distribution Network on special order.

**Dimensions in inches, metric (mm) in parenthesis.**

# Type 716P, Orange Drop<sub>2</sub> Polypropylene Film/Foil Capacitors

High Performance

## Type 716P Standard Sizes/Ratings<sup>2</sup>

| Value<br>µF               | Part<br>Number <sup>1</sup> | L max       | T max      | H max       | d          | Value<br>µF                | Part<br>Number <sup>1</sup> | L max       | T max      | H max       | d          |
|---------------------------|-----------------------------|-------------|------------|-------------|------------|----------------------------|-----------------------------|-------------|------------|-------------|------------|
| <b>600 VDC / 200 VAC*</b> |                             |             |            |             |            | <b>1000 VDC / 450 VAC*</b> |                             |             |            |             |            |
| .001                      | 716P10296J                  | .70 (17.8)  | .27 (6.9)  | .46 (11.7)  | .032 (0.8) | .0056                      | 716P562910L                 | 1.25 (31.8) | .25 (6.4)  | .45 (11.4)  | .032 (0.8) |
| .0012                     | 716P12296J                  | .70 (17.8)  | .24 (6.1)  | .44 (11.2)  | .032 (0.8) | .0068                      | 716P682910L                 | 1.25 (31.8) | .27 (6.9)  | .46 (11.7)  | .032 (0.8) |
| .0015                     | 716P15296J                  | .70 (17.8)  | .26 (6.6)  | .45 (11.4)  | .032 (0.8) | .0082                      | 716P822910L                 | 1.25 (31.8) | .29 (7.4)  | .48 (12.2)  | .032 (0.8) |
| .0018                     | 716P18296J                  | .70 (17.8)  | .27 (6.9)  | .46 (11.7)  | .032 (0.8) | .01                        | 716P103910L                 | 1.25 (31.8) | .29 (7.4)  | .53 (13.5)  | .032 (0.8) |
| .0022                     | 716P22296J                  | .70 (17.8)  | .28 (7.1)  | .48 (12.2)  | .032 (0.8) | .012                       | 716P123910L                 | 1.25 (31.8) | .31 (7.9)  | .55 (14.0)  | .032 (0.8) |
| .0027                     | 716P27296J                  | .70 (17.8)  | .25 (6.4)  | .44 (11.2)  | .032 (0.8) | .015                       | 716P153910L                 | 1.25 (31.8) | .34 (8.6)  | .58 (14.7)  | .032 (0.8) |
| .0033                     | 716P33296J                  | .70 (17.8)  | .25 (6.4)  | .45 (11.4)  | .032 (0.8) | .018                       | 716P183910L                 | 1.25 (31.8) | .37 (9.4)  | .61 (15.5)  | .032 (0.8) |
| .0039                     | 716P39296J                  | .70 (17.8)  | .26 (6.6)  | .46 (11.7)  | .032 (0.8) | .022                       | 716P223910L                 | 1.25 (31.8) | .38 (9.7)  | .67 (17.0)  | .032 (0.8) |
| .0047                     | 716P47296J                  | .70 (17.8)  | .28 (7.1)  | .47 (11.9)  | .032 (0.8) | .027                       | 716P273910L                 | 1.25 (31.8) | .42 (10.7) | .70 (17.8)  | .032 (0.8) |
| .0056                     | 716P56296J                  | .70 (17.8)  | .30 (7.6)  | .49 (12.4)  | .032 (0.8) | .033                       | 716P333910L                 | 1.25 (31.8) | .46 (11.7) | .74 (18.8)  | .032 (0.8) |
| .0068                     | 716P68296J                  | .70 (17.8)  | .32 (8.1)  | .51 (13.0)  | .032 (0.8) | .039                       | 716P393910L                 | 1.25 (31.8) | .46 (11.7) | .84 (21.3)  | .032 (0.8) |
| .0082                     | 716P82296J                  | .70 (17.8)  | .32 (8.1)  | .56 (14.2)  | .032 (0.8) | .047                       | 716P473910L                 | 1.25 (31.8) | .50 (12.7) | .88 (22.4)  | .032 (0.8) |
| .01                       | 716P10396J                  | .70 (17.8)  | .34 (8.6)  | .58 (14.7)  | .032 (0.8) | .056                       | 716P563910L                 | 1.25 (31.8) | .54 (13.7) | .93 (23.6)  | .032 (0.8) |
| .012                      | 716P12396K                  | .90 (22.9)  | .31 (7.9)  | .55 (14.0)  | .032 (0.8) | .068                       | 716P683910L                 | 1.25 (31.8) | .59 (15.0) | .98 (24.9)  | .032 (0.8) |
| .015                      | 716P15396K                  | .90 (22.9)  | .34 (8.6)  | .58 (14.7)  | .032 (0.8) | .082                       | 716P823910M                 | 1.65 (41.9) | .52 (13.2) | .90 (22.9)  | .040 (1.0) |
| .018                      | 716P18396K                  | .90 (22.9)  | .36 (9.1)  | .60 (15.2)  | .032 (0.8) | .1                         | 716P104910M                 | 1.65 (41.9) | .57 (14.5) | .96 (24.4)  | .040 (1.0) |
| .022                      | 716P22396K                  | .90 (22.9)  | .39 (9.9)  | .63 (16.0)  | .032 (0.8) | .12                        | 716P124910M                 | 1.65 (41.9) | .62 (15.7) | 1.01 (25.7) | .040 (1.0) |
| .027                      | 716P27396K                  | .90 (22.9)  | .41 (10.4) | .69 (17.5)  | .032 (0.8) | .14                        | 716P144910M                 | 1.65 (41.9) | .67 (17.0) | 1.06 (27.0) | .040 (1.0) |
| .033                      | 716P33396K                  | .90 (22.9)  | .44 (11.2) | .73 (18.5)  | .032 (0.8) | <b>1200 VDC / 475 VAC*</b> |                             |             |            |             |            |
| .039                      | 716P39396K                  | .90 (22.9)  | .48 (12.2) | .76 (19.3)  | .032 (0.8) | .001                       | 716P102912L                 | 1.25 (31.8) | .23 (5.8)  | .45 (11.4)  | .032 (0.8) |
| .047                      | 716P47396L                  | 1.25 (31.8) | .42 (10.7) | .70 (17.8)  | .040 (1.0) | .0012                      | 716P122912L                 | 1.25 (31.8) | .24 (6.1)  | .46 (11.7)  | .032 (0.8) |
| .056                      | 716P56396L                  | 1.25 (31.8) | .45 (11.4) | .73 (18.5)  | .040 (1.0) | .0015                      | 716P152912L                 | 1.25 (31.8) | .25 (6.4)  | .47 (11.9)  | .032 (0.8) |
| .068                      | 716P68396L                  | 1.25 (31.8) | .45 (11.4) | .84 (21.3)  | .040 (1.0) | .0018                      | 716P182912L                 | 1.25 (31.8) | .27 (6.9)  | .49 (12.4)  | .032 (0.8) |
| .082                      | 716P82396L                  | 1.25 (31.8) | .49 (12.4) | .88 (22.4)  | .040 (1.0) | .0022                      | 716P222912L                 | 1.25 (31.8) | .29 (7.4)  | .51 (13.0)  | .032 (0.8) |
| .1                        | 716P10496L                  | 1.25 (31.8) | .54 (13.7) | .93 (23.6)  | .040 (1.0) | .0027                      | 716P272912L                 | 1.25 (31.8) | .28 (7.1)  | .48 (12.2)  | .032 (0.8) |
| .12                       | 716P12496L                  | 1.25 (31.8) | .59 (15.0) | .97 (24.6)  | .040 (1.0) | .0033                      | 716P332912L                 | 1.25 (31.8) | .30 (7.6)  | .49 (12.4)  | .032 (0.8) |
| .15                       | 716P15496M                  | 1.65 (41.9) | .55 (14.0) | .93 (23.6)  | .040 (1.0) | .0039                      | 716P392912L                 | 1.25 (31.8) | .30 (7.6)  | .54 (13.7)  | .032 (0.8) |
| .18                       | 716P18496M                  | 1.65 (41.9) | .59 (15.0) | .98 (24.9)  | .040 (1.0) | .0047                      | 716P472912L                 | 1.25 (31.8) | .32 (8.1)  | .56 (14.2)  | .032 (0.8) |
| .22                       | 716P22496M                  | 1.65 (41.9) | .65 (16.5) | 1.04 (25.7) | .040 (1.0) | .0056                      | 716P562912L                 | 1.25 (31.8) | .34 (8.6)  | .58 (14.7)  | .032 (0.8) |
| <b>800 VDC / 450 VAC*</b> |                             |             |            |             |            | .0068                      | 716P682912L                 | 1.25 (31.8) | .37 (9.4)  | .61 (15.5)  | .032 (0.8) |
| .0056                     | 716P56298L                  | 1.25 (31.8) | .25 (6.4)  | .45 (11.4)  | .032 (0.8) | .0082                      | 716P822912L                 | 1.25 (31.8) | .38 (9.7)  | .67 (17.0)  | .032 (0.8) |
| .0068                     | 716P68298L                  | 1.25 (31.8) | .27 (6.9)  | .46 (11.7)  | .032 (0.8) | .01                        | 716P103912L                 | 1.25 (31.8) | .42 (10.7) | .70 (17.8)  | .032 (0.8) |
| .0082                     | 716P82298L                  | 1.25 (31.8) | .29 (7.4)  | .48 (12.2)  | .032 (0.8) | .012                       | 716P123912L                 | 1.25 (31.8) | .45 (11.4) | .73 (18.5)  | .032 (0.8) |
| .01                       | 716P10398L                  | 1.25 (31.8) | .29 (7.4)  | .53 (13.5)  | .032 (0.8) | .015                       | 716P153912L                 | 1.25 (31.8) | .46 (11.7) | .84 (21.3)  | .032 (0.8) |
| .012                      | 716P12398L                  | 1.25 (31.8) | .31 (7.9)  | .55 (14.0)  | .032 (0.8) | .018                       | 716P183912L                 | 1.25 (31.8) | .50 (12.7) | .88 (22.4)  | .032 (0.8) |
| .015                      | 716P15398L                  | 1.25 (31.8) | .34 (8.6)  | .58 (14.7)  | .032 (0.8) | .022                       | 716P223912L                 | 1.25 (31.8) | .54 (13.7) | .93 (23.6)  | .032 (0.8) |
| .018                      | 716P18398L                  | 1.25 (31.8) | .37 (9.4)  | .61 (15.5)  | .032 (0.8) | .027                       | 716P273912L                 | 1.25 (31.8) | .60 (15.2) | .99 (25.1)  | .032 (0.8) |
| .022                      | 716P22398L                  | 1.25 (31.8) | .38 (9.7)  | .67 (17.0)  | .032 (0.8) | .033                       | 716P333912M                 | 1.65 (41.9) | .53 (13.5) | .91 (23.1)  | .040 (1.0) |
| .027                      | 716P27398L                  | 1.25 (31.8) | .42 (10.7) | .70 (17.8)  | .032 (0.8) | .039                       | 716P393912M                 | 1.65 (41.9) | .57 (14.5) | .96 (24.4)  | .040 (1.0) |
| .033                      | 716P33398L                  | 1.25 (31.8) | .46 (11.7) | .74 (18.8)  | .032 (0.8) | .047                       | 716P473912M                 | 1.65 (41.9) | .62 (15.7) | 1.01 (25.7) | .040 (1.0) |
| .039                      | 716P39398L                  | 1.25 (31.8) | .46 (11.7) | .84 (21.3)  | .032 (0.8) | .056                       | 716P563912M                 | 1.65 (41.9) | .68 (17.3) | 1.07 (27.2) | .040 (1.0) |
| .047                      | 716P47398L                  | 1.25 (31.8) | .50 (12.7) | .88 (22.4)  | .032 (0.8) | .082                       | 716P82398M                  | 1.65 (41.9) | .52 (13.2) | .90 (22.9)  | .040 (1.0) |
| .056                      | 716P56398L                  | 1.25 (31.8) | .54 (13.7) | .93 (23.6)  | .032 (0.8) | .1                         | 716P10498M                  | 1.65 (41.9) | .57 (14.5) | .96 (24.4)  | .040 (1.0) |
| .068                      | 716P68398L                  | 1.25 (31.8) | .59 (15.0) | .98 (24.9)  | .032 (0.8) | .12                        | 716P12498M                  | 1.65 (41.9) | .62 (15.7) | 1.01 (25.7) | .040 (1.0) |
| .082                      | 716P82398M                  | 1.65 (41.9) | .52 (13.2) | .90 (22.9)  | .040 (1.0) | .14                        | 716P14498M                  | 1.65 (41.9) | .67 (17.0) | 1.06 (27.0) | .040 (1.0) |
| .1                        | 716P10498M                  | 1.65 (41.9) | .57 (14.5) | .96 (24.4)  | .040 (1.0) |                            |                             |             |            |             |            |
| .12                       | 716P12498M                  | 1.65 (41.9) | .62 (15.7) | 1.01 (25.7) | .040 (1.0) |                            |                             |             |            |             |            |
| .14                       | 716P14498M                  | 1.65 (41.9) | .67 (17.0) | 1.06 (27.0) | .040 (1.0) |                            |                             |             |            |             |            |

\* Please refer to performance curves for RMS Voltage vs. Frequency characteristics.

<sup>1</sup> To complete part number for proper tolerance, terminal style and lead length please refer to Ordering/Part Number Information page.

<sup>2</sup> Type 716P capacitors are available through the CDE Distribution Network on special order.

Dimensions in inches, metric (mm) in parenthesis.

# Type 716P, Orange Drop; Polypropylene Film/Foil Capacitors

High Performance

## Type 716P Standard Sizes/Ratings<sup>2</sup>

| Value<br>µF                | Part<br>Number <sup>1</sup> | L max       | T max      | H max       | d          | Value<br>µF                | Part<br>Number <sup>1</sup> | L max       | T max      | H max       | d          |
|----------------------------|-----------------------------|-------------|------------|-------------|------------|----------------------------|-----------------------------|-------------|------------|-------------|------------|
| <b>1600 VDC / 500 VAC*</b> |                             |             |            |             |            | <b>2000 VDC / 500 VAC*</b> |                             |             |            |             |            |
| .001                       | 716P102916L                 | 1.25 (31.8) | .28 (7.1)  | .47 (11.2)  | .032 (0.8) | .001                       | 716P102920L                 | 1.25 (31.8) | .28 (7.1)  | .47 (11.9)  | .032 (0.8) |
| .0012                      | 716P122916L                 | 1.25 (31.8) | .29 (7.4)  | .48 (12.2)  | .032 (0.8) | .0012                      | 716P122920L                 | 1.25 (31.8) | .29 (7.4)  | .48 (12.2)  | .032 (0.8) |
| .0015                      | 716P152916L                 | 1.25 (31.8) | .30 (7.6)  | .50 (12.7)  | .032 (0.8) | .0015                      | 716P152920L                 | 1.25 (31.8) | .30 (7.6)  | .50 (12.7)  | .032 (0.8) |
| .0018                      | 716P182916L                 | 1.25 (31.8) | .31 (7.9)  | .55 (14.0)  | .032 (0.8) | .0018                      | 716P182920L                 | 1.25 (31.8) | .31 (7.9)  | .55 (14.0)  | .032 (0.8) |
| .0022                      | 716P222916L                 | 1.25 (31.8) | .32 (8.1)  | .56 (14.2)  | .032 (0.8) | .0022                      | 716P222920L                 | 1.25 (31.8) | .32 (8.1)  | .56 (14.2)  | .032 (0.8) |
| .0027                      | 716P272916L                 | 1.25 (31.8) | .35 (8.9)  | .59 (15.0)  | .032 (0.8) | .0027                      | 716P272920L                 | 1.25 (31.8) | .35 (8.9)  | .59 (15.0)  | .032 (0.8) |
| .0033                      | 716P332916L                 | 1.25 (31.8) | .37 (9.4)  | .61 (15.5)  | .032 (0.8) | .0033                      | 716P332920L                 | 1.25 (31.8) | .37 (9.4)  | .61 (15.5)  | .032 (0.8) |
| .0039                      | 716P392916L                 | 1.25 (31.8) | .38 (9.7)  | .67 (17.0)  | .032 (0.8) | .0039                      | 716P392920L                 | 1.25 (31.8) | .38 (9.7)  | .67 (17.0)  | .032 (0.8) |
| .0047                      | 716P472916L                 | 1.25 (31.8) | .41 (10.4) | .69 (17.5)  | .032 (0.8) | .0047                      | 716P472920L                 | 1.25 (31.8) | .41 (10.4) | .69 (17.5)  | .032 (0.8) |
| .0056                      | 716P562916L                 | 1.25 (31.8) | .43 (10.9) | .72 (18.3)  | .032 (0.8) | .0056                      | 716P562920L                 | 1.25 (31.8) | .43 (10.9) | .72 (18.3)  | .032 (0.8) |
| .0068                      | 716P682916L                 | 1.25 (31.8) | .47 (11.9) | .75 (19.1)  | .032 (0.8) | .0068                      | 716P682920L                 | 1.25 (31.8) | .47 (11.9) | .75 (19.1)  | .032 (0.8) |
| .0082                      | 716P822916L                 | 1.25 (31.8) | .47 (11.9) | .85 (21.6)  | .032 (0.8) | .0082                      | 716P822920L                 | 1.25 (31.8) | .47 (11.9) | .85 (21.6)  | .032 (0.8) |
| .01                        | 716P103916L                 | 1.25 (31.8) | .51 (13.0) | .90 (22.9)  | .032 (0.8) | .01                        | 716P103920L                 | 1.25 (31.8) | .51 (13.0) | .90 (22.9)  | .032 (0.8) |
| .012                       | 716P123916L                 | 1.25 (31.8) | .55 (14.0) | .94 (23.9)  | .032 (0.8) | .012                       | 716P123920L                 | 1.25 (31.8) | .55 (14.0) | .94 (23.9)  | .032 (0.8) |
| .015                       | 716P153916M                 | 1.65 (41.9) | .49 (12.4) | .87 (22.1)  | .040 (1.0) | .015                       | 716P153920M                 | 1.65 (41.9) | .49 (12.4) | .87 (22.1)  | .040 (1.0) |
| .018                       | 716P183916M                 | 1.65 (41.9) | .53 (13.5) | .91 (23.1)  | .040 (1.0) | .018                       | 716P183920M                 | 1.65 (41.9) | .53 (13.5) | .91 (23.1)  | .040 (1.0) |
| .022                       | 716P223916M                 | 1.65 (41.9) | .58 (14.7) | .96 (24.4)  | .040 (1.0) | .022                       | 716P223920M                 | 1.65 (41.9) | .58 (14.7) | .96 (24.4)  | .040 (1.0) |
| .027                       | 716P273916M                 | 1.65 (41.9) | .63 (16.0) | 1.02 (25.9) | .040 (1.0) | .027                       | 716P273920M                 | 1.65 (41.9) | .63 (16.0) | 1.02 (25.9) | .040 (1.0) |
| .033                       | 716P333916M                 | 1.65 (41.9) | .69 (17.5) | 1.08 (27.4) | .040 (1.0) | .033                       | 716P333920M                 | 1.65 (41.9) | .69 (17.5) | 1.08 (27.4) | .040 (1.0) |

\* Please refer to performance curves for RMS Voltage vs. Frequency characteristics.

<sup>1</sup> To complete part number for proper tolerance, terminal style and lead length please refer to Ordering/Part Number Information page.

<sup>2</sup> Type 716P capacitors are available through the CDE Distribution Network on special order.

### **Please note:**

It is not possible to list every capacitance value available for each rating, if you require a specific cap value not listed just give us a call. We will supply the details you need.

Dimensions in inches, metric (mm) in parenthesis.

# Type 716P, Orange Drop Polypropylene Film/Foil Capacitors

High Performance

## Corona, Dissipation Factor Specifications

**Corona Start Voltage**

| D-C Rating | Typical Corona Start Voltage, RMS |
|------------|-----------------------------------|
| 100        | 250                               |
| 200        | 300                               |
| 400, 600   | 325                               |
| 800, 1000  | 600                               |
| 1200       | 625                               |
| 1600, 2000 | 650                               |

**Maximum Dissipation Factor (D.F.) in %**

| Cap Range (µF) | 100V-600V |        | 800V/1000V |        | 1200V |        | 1600V/2000V |        |
|----------------|-----------|--------|------------|--------|-------|--------|-------------|--------|
|                | 20KHz     | 100KHz | 20KHz      | 100KHz | 20KHz | 100KHz | 20KHz       | 100KHz |
| .001 - .012    | .028      | .034   | .037       | .075   | .034  | .064   | .032        | .053   |
| .015 - .027    | .029      | .038   | .037       | .078   | .035  | .067   | .037        | .078   |
| .033 - .068    | .030      | .046   | .038       | .087   | .042  | .104   | .037        | .079   |
| .082 - .1      | .031      | .053   | .048       | .135   | --    | --     | --          | --     |
| .12 - .33      | .034      | .076   | .049       | .141   | --    | --     | --          | --     |
| .39 - .56      | .038      | .107   | --         | --     | --    | --     | --          | --     |
| .68 - 1.0      | .047      | .167   | --         | --     | --    | --     | --          | --     |

For additional information on Corona and Dissipation Factor please refer to the Technical Reference section of this catalog. For more specific data or assistance with a specific application just give us a call.



# Type 716P, Orange Drop<sup>®</sup>, Polypropylene Film/Foil Capacitors

High Performance

## dV/dt Specifications

Maximum Pulse Rise Time (dv/dt) in Volts/ $\mu$ sec

| Cap Value ( $\mu$ F) | 100V | 200V | 400V  | 600V  | 800V/<br>1000V | 1200V | 1600V/<br>2000V |
|----------------------|------|------|-------|-------|----------------|-------|-----------------|
| .001                 | -    | -    | 20700 | 20700 | -              | 43200 | 43200           |
| .0012                | -    | -    | 18900 | 18900 | -              | 39500 | 39500           |
| .0015                | -    | -    | 16900 | 16900 | -              | 35300 | 35300           |
| .0018                | -    | -    | 15400 | 15400 | -              | 32200 | 32200           |
| .0022                | -    | -    | 14000 | 14000 | -              | 29100 | 29100           |
| .0027                | -    | -    | 12600 | 12600 | -              | 25000 | 26300           |
| .0033                | -    | -    | 11400 | 11400 | -              | 22600 | 23800           |
| .0039                | -    | -    | 10500 | 10500 | -              | 20800 | 21900           |
| .0047                | -    | -    | 9500  | 9500  | -              | 18900 | 19900           |
| .0056                | -    | -    | 8700  | 8700  | 16400          | 17400 | 18300           |
| .0068                | -    | -    | 7900  | 7900  | 14900          | 15700 | 16600           |
| .0082                | 4100 | -    | 7200  | 7200  | 13600          | 14300 | 15100           |
| .01                  | 3700 | 4600 | 6500  | 6500  | 12300          | 13000 | 13700           |
| .012                 | 3400 | 4200 | 6000  | 5400  | 11200          | 11900 | 12500           |
| .015                 | 3000 | 3800 | 5300  | 4800  | 10000          | 10600 | 10300           |
| .018                 | 2800 | 3400 | 4400  | 4400  | 9200           | 9700  | 9400            |
| .022                 | 2500 | 3100 | 4000  | 4000  | 8300           | 8800  | 8500            |
| .027                 | 2200 | 2800 | 3600  | 3600  | 7500           | 7900  | 7700            |
| .033                 | 2000 | 2500 | 3200  | 3200  | 6800           | 6600  | 7000            |
| .039                 | 1700 | 2300 | 3000  | 3000  | 6200           | 6100  | -               |
| .047                 | 1500 | 2100 | 2700  | 2500  | 5700           | 5600  | -               |
| .056                 | 1400 | 1800 | 2500  | 2300  | 5200           | 5100  | -               |
| .068                 | 1300 | 1600 | 2300  | 2100  | 4700           | -     | -               |
| .082                 | 1100 | 1500 | 1900  | 1900  | 4000           | -     | -               |
| .1                   | 1000 | 1300 | 1700  | 1700  | 3600           | -     | -               |
| .12                  | 900  | 1200 | 1600  | 1600  | 3300           | -     | -               |
| .15                  | 800  | 1100 | 1400  | 1300  | -              | -     | -               |
| .18                  | 700  | 910  | 1300  | 1200  | -              | -     | -               |
| .22                  | 700  | 820  | 1200  | 1100  | -              | -     | -               |
| .27                  | 600  | 740  | 1100  | -     | -              | -     | -               |
| .33                  | 500  | 670  | 880   | -     | -              | -     | -               |
| .39                  | -    | 620  | 810   | -     | -              | -     | -               |
| .47                  | -    | 560  | 740   | -     | -              | -     | -               |
| .56                  | -    | 520  | -     | -     | -              | -     | -               |
| .68                  | -    | 430  | -     | -     | -              | -     | -               |
| .82                  | -    | 400  | -     | -     | -              | -     | -               |
| 1.0                  | -    | 360  | -     | -     | -              | -     | -               |

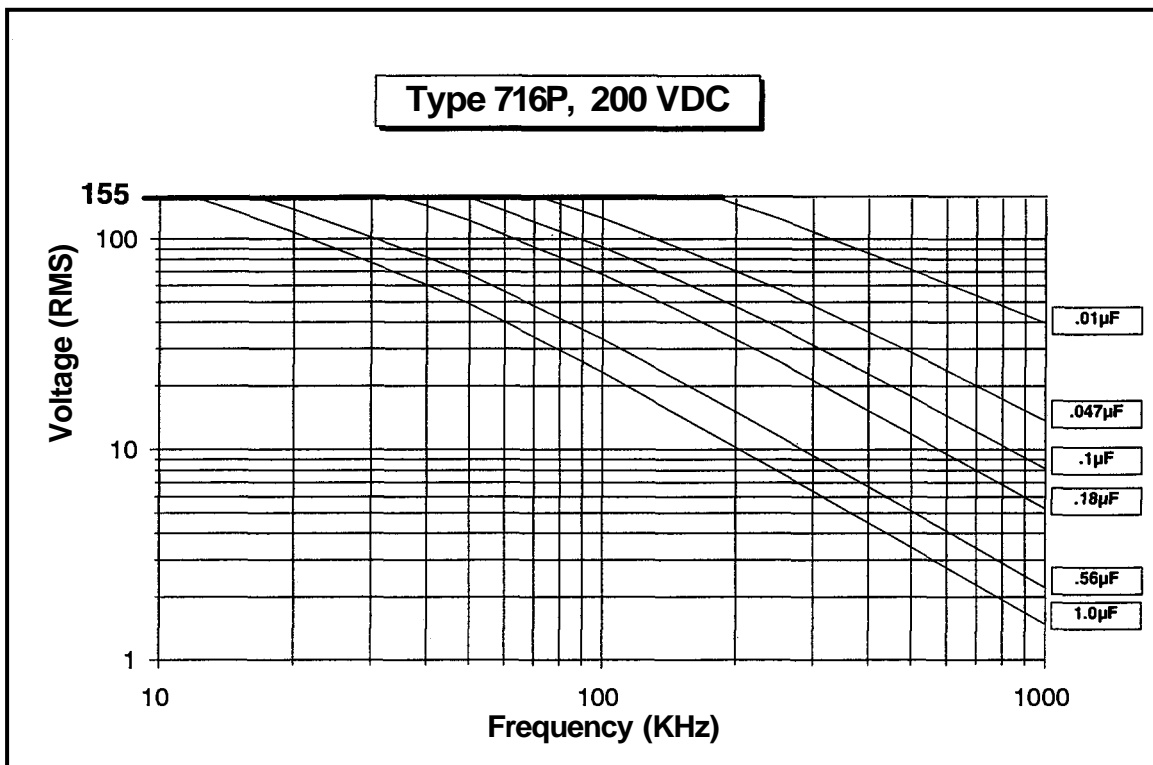
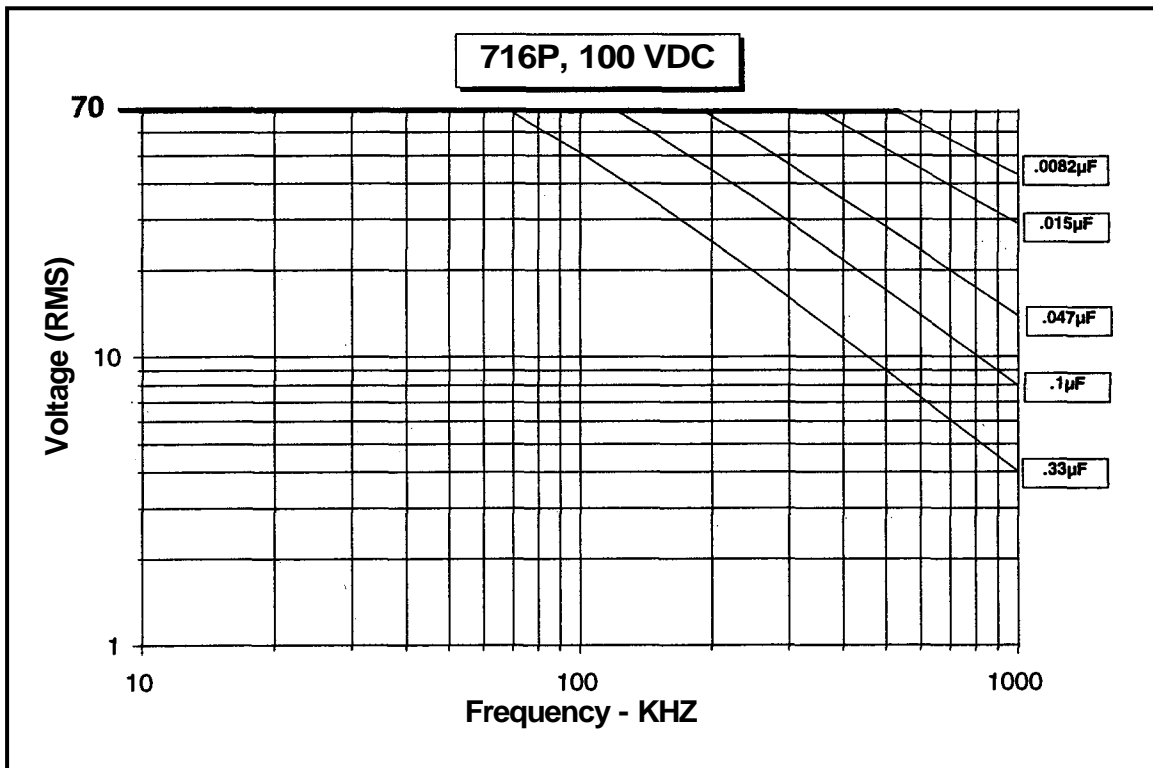
Note: dV/dt ratings based on measurements made at junction of the wire leads and capacitor body.

For additional information on Pulse Rise Time (dV/dt) please refer to the Technical Reference section of this catalog. For more specific data or assistance with a specific application just give us a call.

# Type 716P, Orange Drop<sup>®</sup>, Polypropylene Film/Foil Capacitors

High Performance

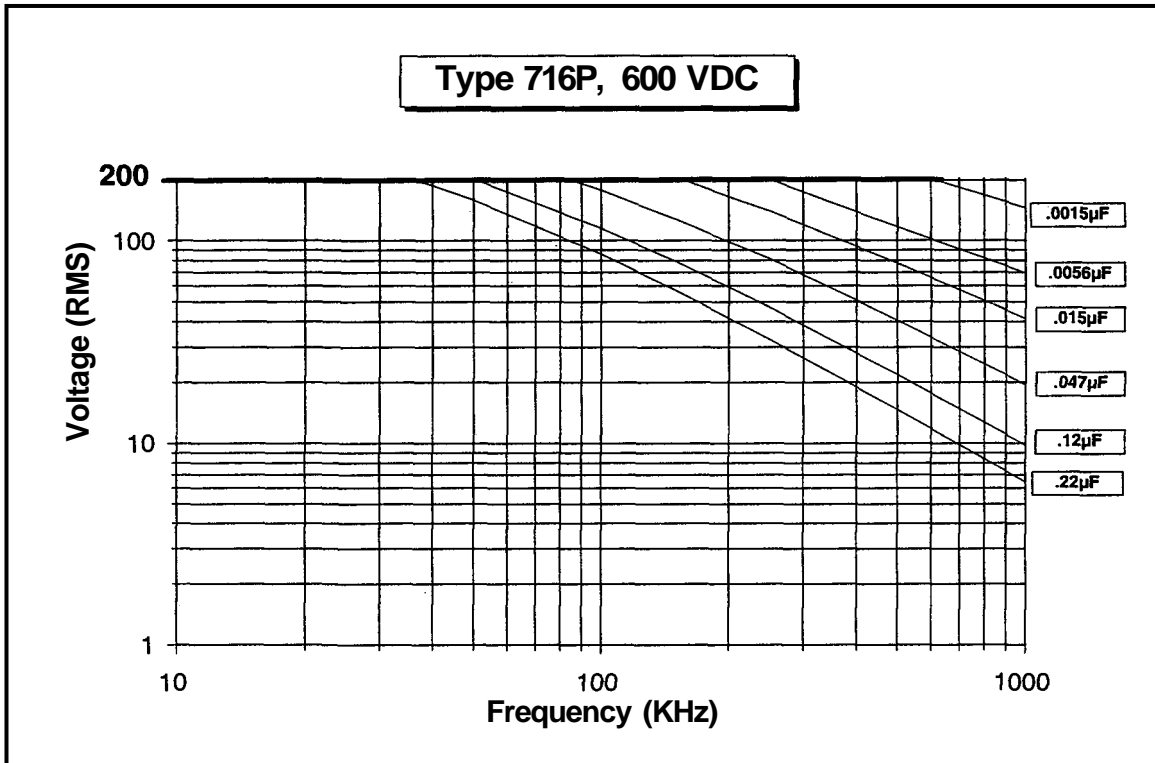
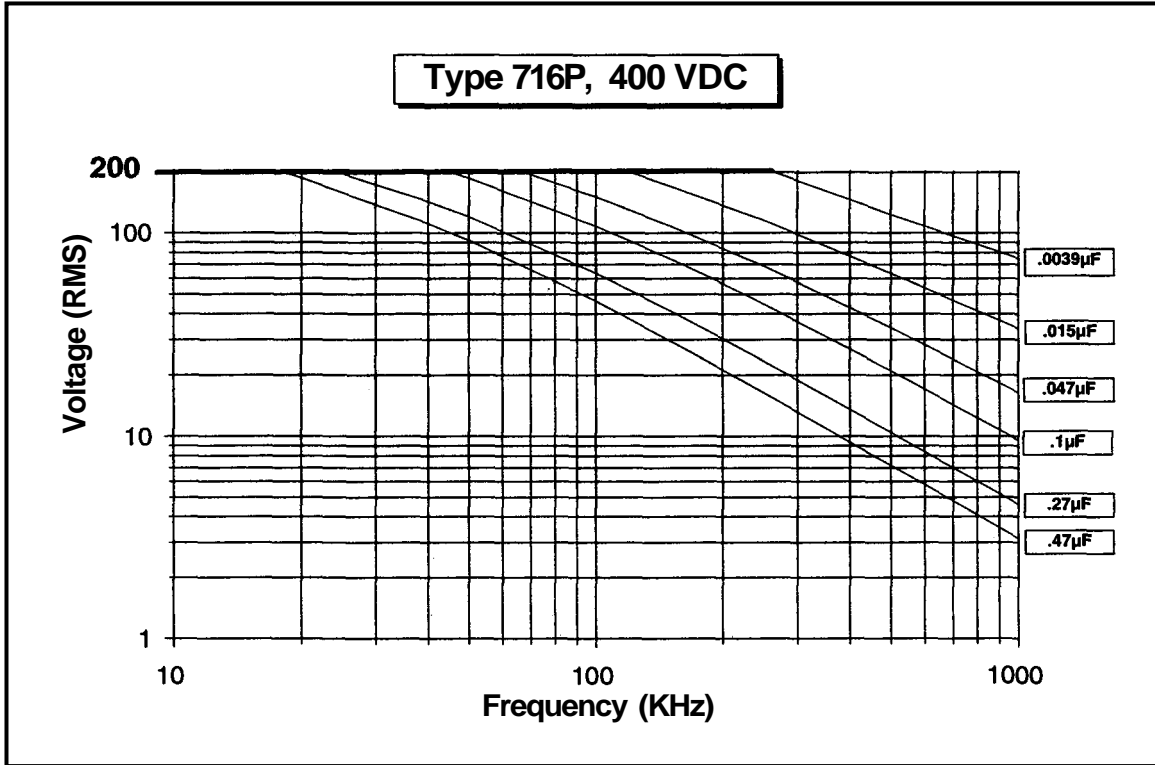
## RMS Voltage vs. Frequency @ +85°C



# Type 716P, Orange Drop<sup>®</sup>, Polypropylene Film/Foil Capacitors

High Performance

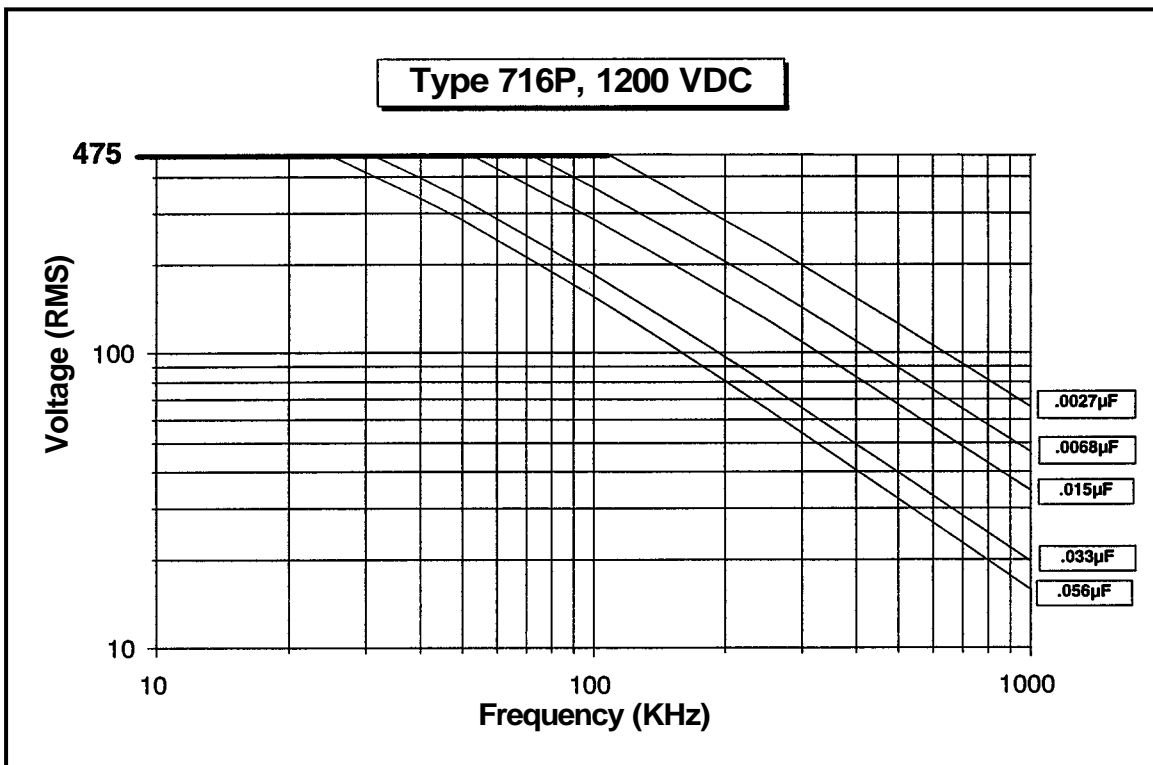
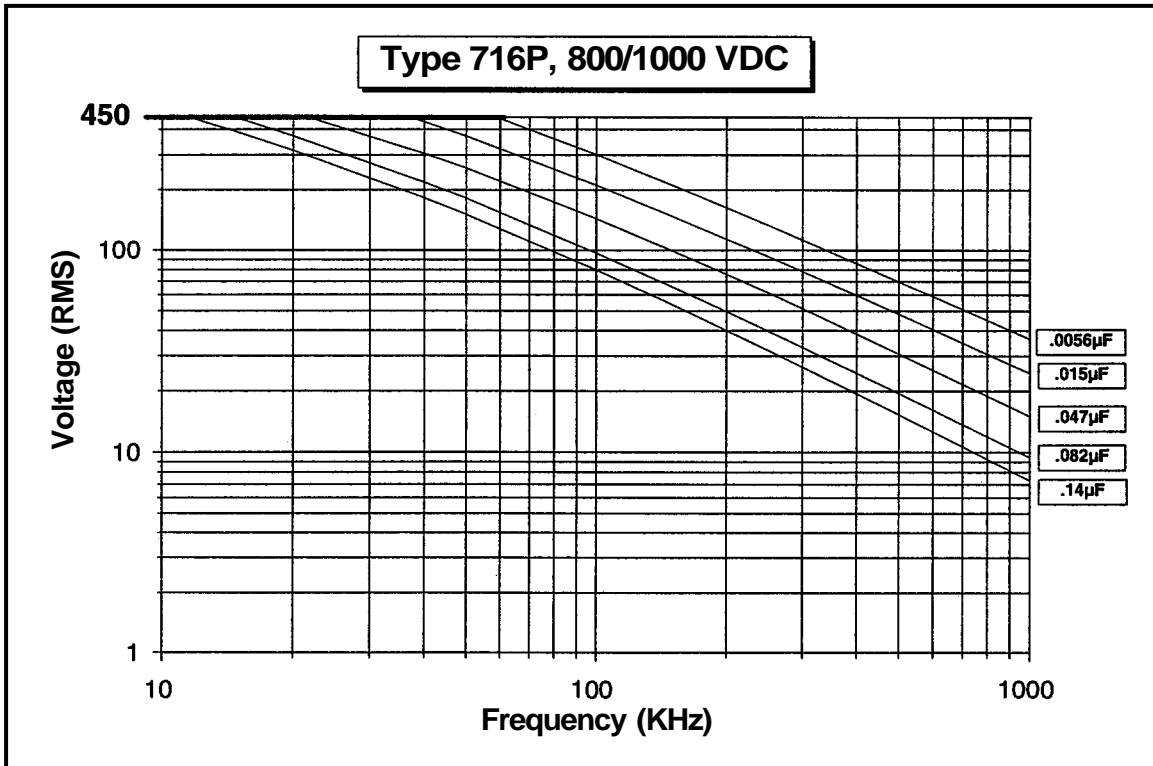
## RMS Voltage vs. Frequency @ +85°C



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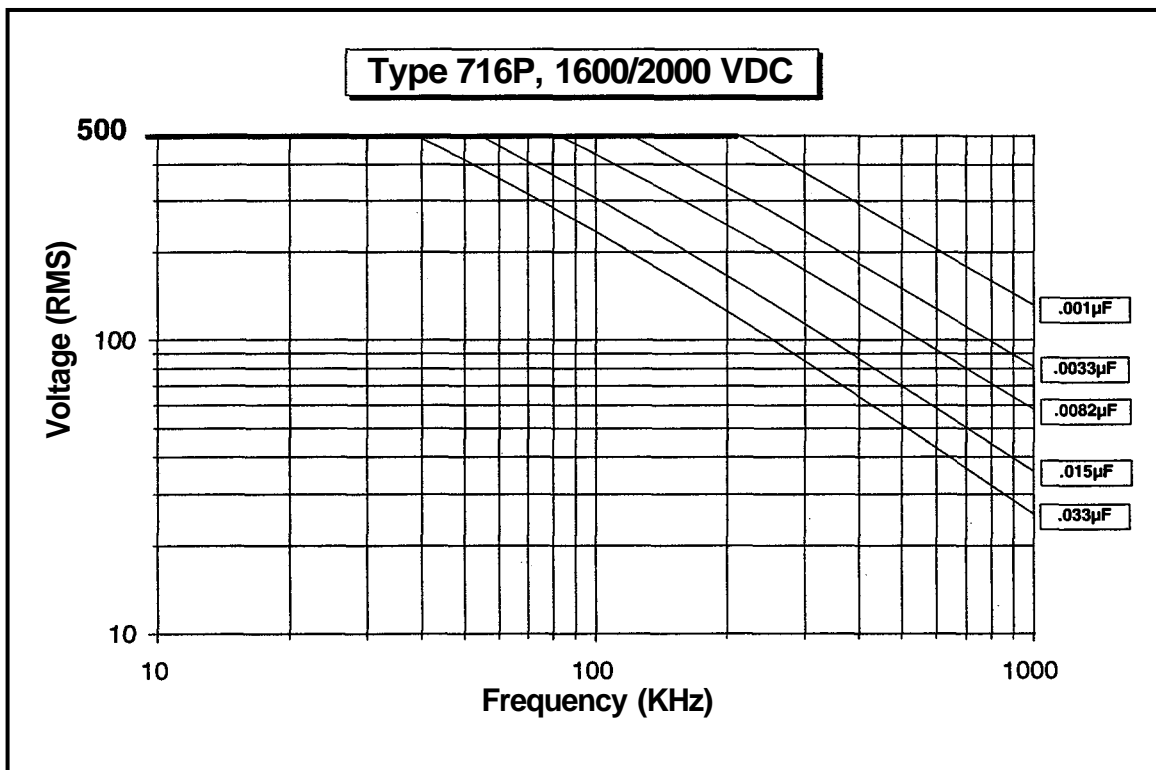
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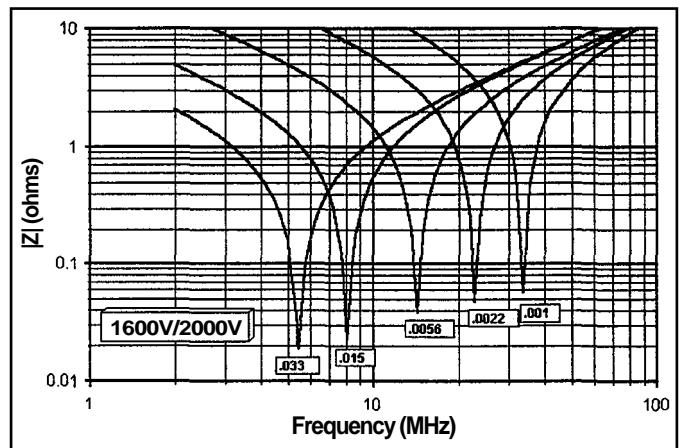
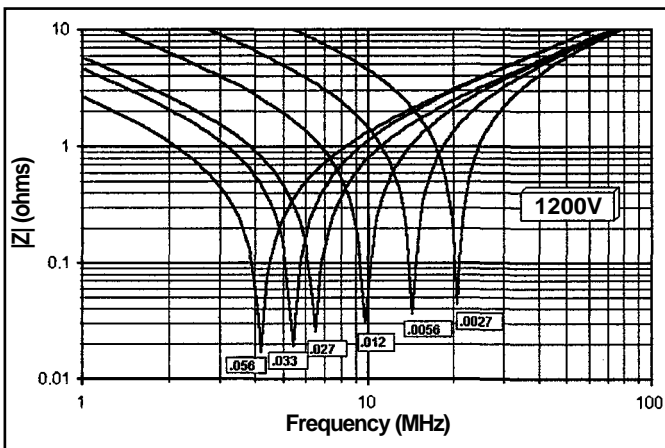
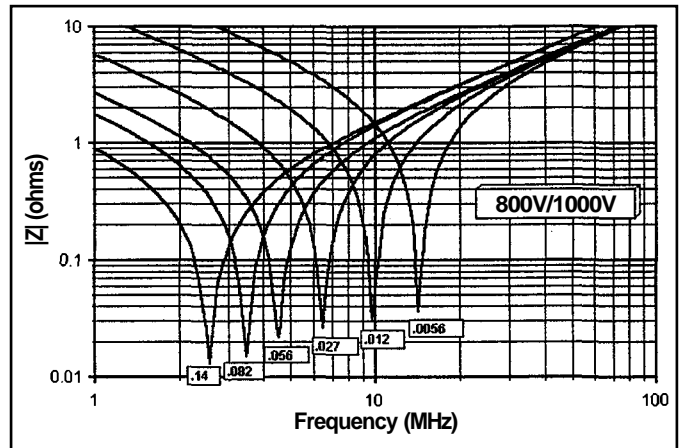
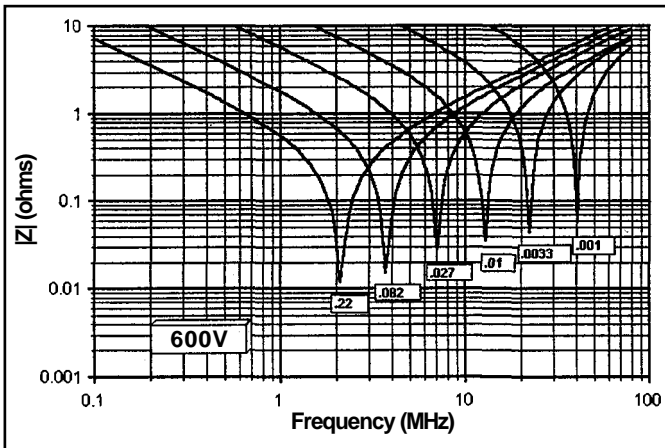
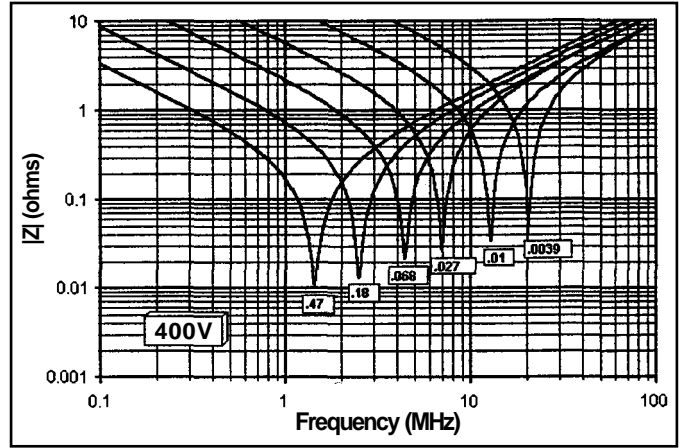
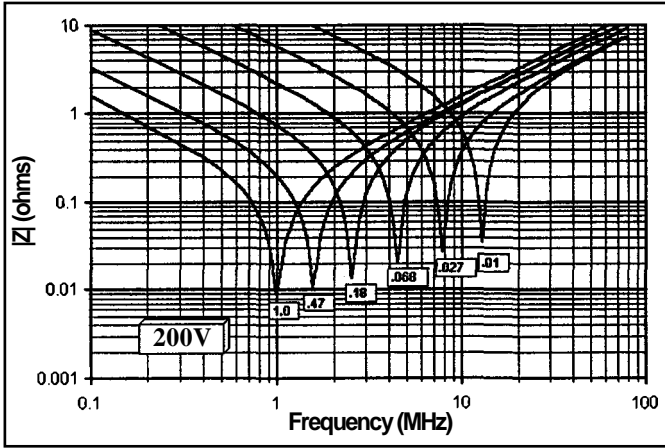
## RMS Voltage vs. Frequency @ +85°C



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## Typical Impedance vs. Frequency



Please note: Capacitance values above are in  $\mu\text{F}$ . The resonant frequency and impedance shown above apply to units with a 0.250" lead length and are typical values only. Please contact us for data on the 100VDC rated units.

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Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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