



THE DATASHEET OF
225P22391WD3



Type 225P, Orange Drop[®], Polyester Film/Foil Capacitors

Features

- Radial-lead. Pressed profile.
- Non-inductively wound, extended foil construction.
- Over 35 years of proven dependability.
- Wide availability through CDE Distribution.

Specifications

Capacitance Range:

.00 to 1.0 μ F

Capacitance Tolerance:

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

Voltage Ratings:

100 to 600 Volts DC

Operating Temperature Range:

-55°C to +85°C (at full voltage)

Voltage Derating:

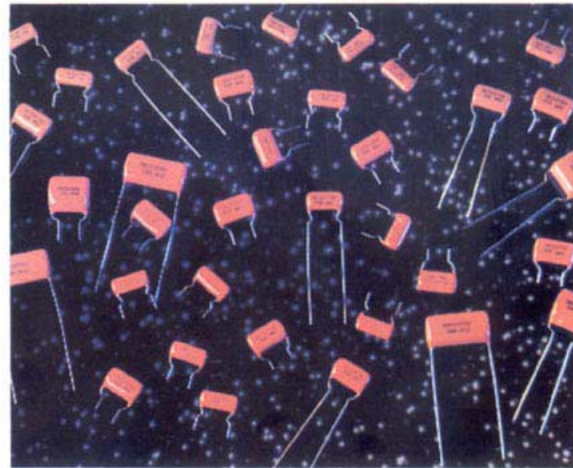
At +105°C, 70% of +85°C rating.

At +125°C, 50% of +85°C rating.

Lead Wire:

Tinned copper-clad steel,

.032 (0.8) diameter, #20 AWG



Insulation Resistance:

At +25°C: 100,000 M Ω for \leq .25 μ F
25,000 M Ω - μ F for C > .25 μ F

At +85°C: 10,000 M Ω for C \leq .15 μ F
1,500 M Ω - μ F for C > .15 μ F

At +105°C: 1,500 M Ω for C \leq .17 μ F
250 M Ω - μ F for C > .17 μ F

At +125°C: 200 M Ω for C \leq .13 μ F
25 M Ω - μ F for C > .13 μ F

Dissipation Factor:

0.75% Maximum @ 1 KHz, +25°C

Encapsulation:

Conformal coating of orange, flame retardant epoxy. Meets UL94V-0 specifications.

Dielectric/Construction:

Polyester film, single section design.

Non-inductively wound with extended aluminum foil.

[Regulatory Information](#)

Dimensions in inches, metric (mm) in parenthesis.

Type 225P, Orange Drop[®], Polyester Film/Foil Capacitors

General Specifications

The Type 225P Orange Drop[®] is designed and manufactured for operation in a wide range of demanding environments and applications. Type 225P capacitors are wound from the most reliable polyester film and aluminum foil available and are protected by a rugged conformal coating of orange epoxy. They may be operated up to +125°C with proper derating.

The combination of proven dependability and extensive availability through CDE distribution make the 225P an ideal choice for many commercial and industrial electronic applications, from power supplies and instrumentation to audio amplifiers and test equipment.

Operating Temperature Range:

The standard operating temperature range for polyester film is -55°C to +85°C. The 225P may be operated at full voltage within this temperature range.

The 225P may be operated up to +105°C provided the DC working voltage is reduced to 70% of the +85°C rating (full rating), and up to +125°C with a 50% reduction from the +85°C rating (full rating).

For more specific details regarding operation above +85°C please contact our design engineering department.

The maximum operating temperature for the 225P polyester film capacitors is +125°C.

Dielectric Withstanding Voltage:

Units shall withstand a DC potential of 250% of rated voltage applied between terminals for not more than 5 seconds.

Lead Bend Test:

After 3 consecutive 180° bends. No damage.

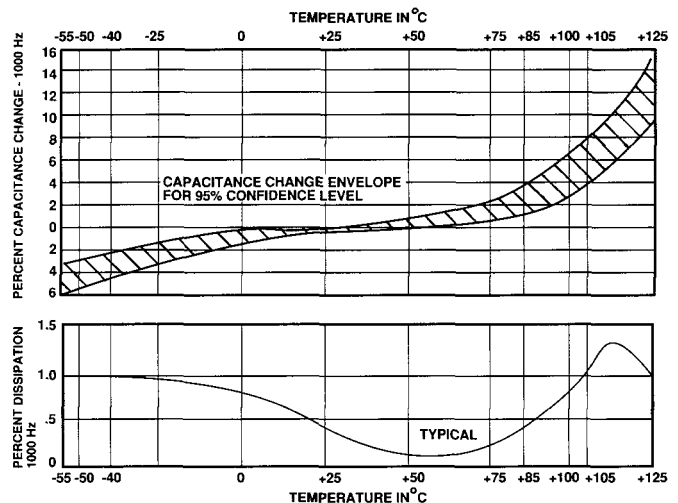
Humidity Testing:

Units subjected to 95% relative humidity for 72 hours with no voltage applied at +75°C. After 4 hours of drying minimum product of insulation resistance and capacitance shall be 5,000 MΩ-μF.

DC Voltage Life Test:

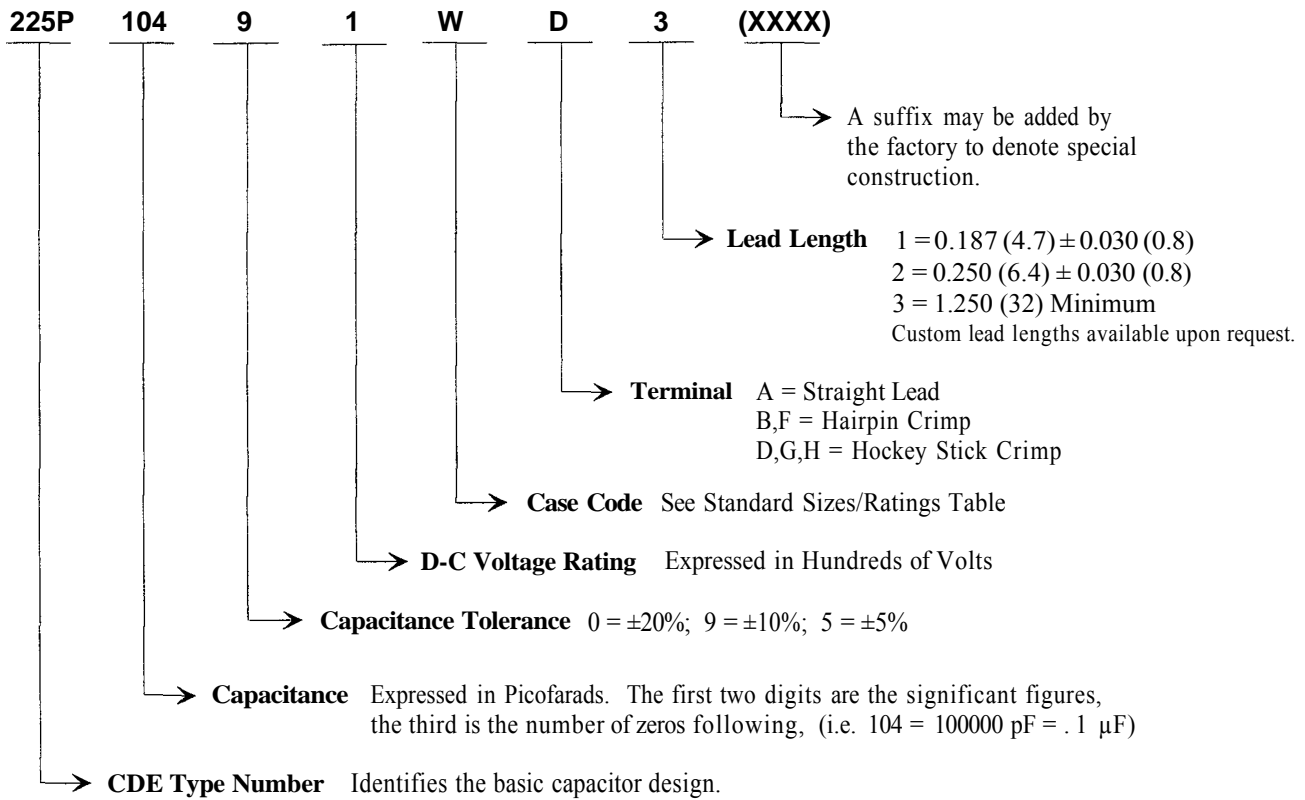
500 hours at +85°C at 150% of rated voltage. After test; capacitance shall not have changed by more than ±5% of initial value, insulation resistance shall not have decreased by more than 50% of initial value and dissipation factor shall not have increased to more than 1.0%. In addition, there should be no open or short circuits, and no sign of visible damage.

Typical Temperature Characteristics:



Type 225P, Orange Drop[®], Polyester Film/Foil Capacitors

Ordering/Part Number information



Standard Marking Format

Sample Marking on unit

CDE225P100V
104K 9810

Description

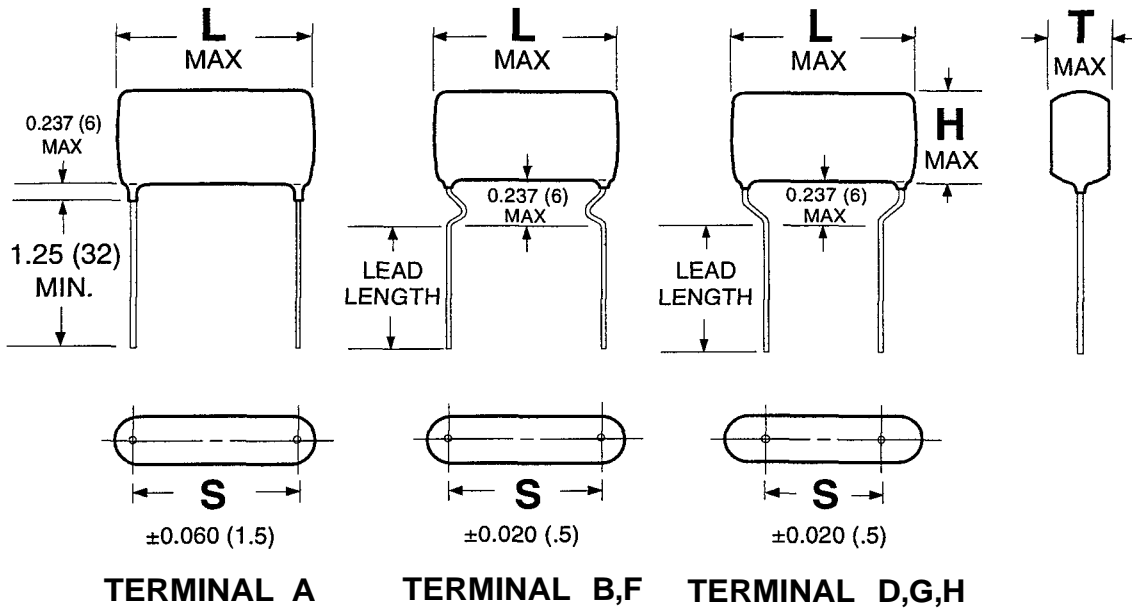
CDE - CDE Electronics identification
225P - Type number
100V - D-C Voltage rating, Volts
104K - Capacitance and tolerance code
9810 - Weekly date code
(i.e. 10th week of 1998)

Tolerance codes per EIA Standards

J $\pm 5\%$
K $\pm 10\%$
M $\pm 20\%$

Type 225P, Orange Drop[®], Polyester Film/Foil Capacitors

Standard Lead Styles



Standard Lead Spacings

| CASE CODE | S | | | | | |
|-----------|--------------|--------------|--------------|--------------|-------------|-------------|
| | Term. A | Term. B | Term. D | Term. F | Term. G | Term. H |
| W | 0.562 (14.3) | 0.562 (14.3) | 0.375 (9.5) | 0.394 (10) | 0.295 (7.5) | 0.197 (5) |
| X | 0.613 (15.6) | 0.613 (15.6) | 0.375 (9.5) | 0.590 (15) | 0.394 (10) | 0.295 (7.5) |
| Y | 0.969 (24.6) | 0.969 (24.6) | 0.719 (18.3) | 0.886 (22.5) | 0.590 (15) | --- |

Dimensions in inches, metric (mm) in parenthesis.

Type 225P, Orange Drop[®], Polyester Film/Foil Capacitors

Type 225P Standard Sizes/Ratings²

| Value, μ F | Part Number ¹ | LMAX | TMAX | HMAX | Value, μ F | Part Number ¹ | L MAX | T MAX | H MAX |
|----------------|--------------------------|-------------|------------|------------|----------------|--------------------------|-------------|------------|-------------|
| 100 VDC | | | | | 200 VDC | | | | |
| .001 | 225P10291 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .001 | 225P10292 X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0012 | 225P12291 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .0012 | 225P12292 X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0015 | 225P15291 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .0015 | 225P15292 X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0018 | 225P18291 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .0018 | 225P18292 X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0022 | 225P22291 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .0022 | 225P22292 X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0027 | 225P27291 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .0027 | 225P27292 X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0033 | 225P33291 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .0033 | 225P33292 X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0039 | 225P39291 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .0039 | 225P39292 X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0047 | 225P47291 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .0047 | 225P47292 X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0056 | 225P56291 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .0056 | 225P56292 X | .80 (20.3) | .25 (6.4) | .58 (14.7) |
| .0068 | 225P68291 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .0068 | 225P68292 X | .80 (20.3) | .25 (6.4) | .58 (14.7) |
| .0082 | 225P82291 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .0082 | 225P82292 X | .80 (20.3) | .25 (6.4) | .58 (14.7) |
| .01 | 225P10391 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .01 | 225P10392 X | .80 (20.3) | .25 (6.4) | .58 (14.7) |
| .012 | 225P12391 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .012 | 225P12392 X | .80 (20.3) | .25 (6.4) | .58 (14.7) |
| .015 | 225P15391 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .015 | 225P15392 X | .80 (20.3) | .25 (6.4) | .58 (14.7) |
| .018 | 225P18391 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .018 | 225P18392 X | .80 (20.3) | .25 (6.4) | .58 (14.7) |
| .022 | 225P22391 W | .70 (17.8) | .25 (6.4) | .35 (8.9) | .022 | 225P22392 X | .80 (20.3) | .25 (6.4) | .58 (14.7) |
| .027 | 22SP27391 W | .70 (17.8) | .27 (6.9) | .37 (9.4) | .027 | 225P27392 X | .80 (20.3) | .28 (7.1) | .61 (15.5) |
| .033 | 225P33391 W | .70 (17.8) | .27 (6.9) | .37 (9.4) | .033 | 225P33392 X | .80 (20.3) | .28 (7.1) | .61 (15.5) |
| .039 | 225P39391 W | .70 (17.8) | .30 (7.6) | .42 (10.7) | .039 | 225P39392 X | .80 (20.3) | .28 (7.1) | .61 (15.5) |
| .047 | 225P47391 W | .70 (17.8) | .30 (7.6) | .42 (10.7) | .047 | 225P47392 X | .80 (20.3) | .28 (7.1) | .61 (15.5) |
| .056 | 225P56391 W | .70 (17.8) | .34 (8.6) | .49 (12.4) | .056 | 225P56392 X | .80 (20.3) | .31 (7.9) | .64 (16.3) |
| .068 | 225P68391 W | .70 (17.8) | .34 (8.6) | .49 (12.4) | .068 | 225P68392 X | .80 (20.3) | .31 (7.9) | .64 (16.3) |
| .082 | 225P82391 W | .70 (17.8) | .40 (10.2) | .55 (14.0) | .082 | 225P82392 X | .80 (20.3) | .34 (8.6) | .67 (17.0) |
| .1 | 225P10491 W | .70 (17.8) | .40 (10.2) | .55 (14.0) | .1 | 225P10492 X | .80 (20.3) | .37 (9.4) | .71 (18.0) |
| .12 | 225P12491 X | .80 (20.3) | .37 (9.4) | .57 (14.5) | .12 | 225P12492 X | .80 (20.3) | .39 (9.9) | .72 (18.3) |
| .15 | 225P15491 X | .80 (20.3) | .40 (10.2) | .62 (15.7) | .15 | 225P15492 X | .80 (20.3) | .41 (10.4) | .74 (18.8) |
| .18 | 225P18491 X | .80 (20.3) | .43 (10.9) | .66 (16.8) | .18 | 225P18492 X | .80 (20.3) | .46 (11.7) | .75 (19.1) |
| .22 | 225P22491 X | .80 (20.3) | .46 (11.7) | .70 (17.8) | .22 | 225P22492 X | .80 (20.3) | .48 (12.2) | .77 (19.6) |
| .27 | 225P27491 X | .80 (20.3) | .49 (12.4) | .74 (18.8) | .27 | 225P27492 Y | 1.25 (31.8) | .39 (9.9) | .71 (18.0) |
| .33 | 225P33491 X | .80 (20.3) | .52 (13.2) | .77 (19.6) | .33 | 225P33492 Y | 1.25 (31.8) | .41 (10.4) | .71 (18.0) |
| .39 | 225P39491 X | .80 (20.3) | .55 (14.0) | .81 (20.6) | .39 | 225P39492 Y | 1.25 (31.8) | .45 (11.4) | .77 (19.6) |
| .47 | 225P47491 X | .80 (20.3) | .60 (15.2) | .86 (21.8) | .47 | 225P47492 Y | 1.25 (31.8) | .50 (12.7) | .83 (21.1) |
| .56 | 225P56491 Y | 1.25 (31.8) | .55 (14.0) | .88 (22.4) | .56 | 225P56492 Y | 1.25 (31.8) | .67 (17.0) | .99 (25.1) |
| .68 | 225P68491 Y | 1.25 (31.8) | .58 (14.7) | .90 (22.9) | .68 | 225P68492 Y | 1.25 (31.8) | .84 (21.3) | 1.14 (29.0) |
| .82 | 225P82491 Y | 1.25 (31.8) | .65 (16.5) | .94 (23.9) | | | | | |
| 1.0 | 225P10591 Y | 1.25 (31.8) | .72 (18.3) | .98 (24.9) | | | | | |

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

² Shaded part numbers, when ordered as $\pm 10\%$ tolerance with the D3 terminal style and lead length, are Standard Stock items available through the CDE Distribution Network. For complete part number please add the D3 suffix to the above part numbers in accordance with the Ordering Information (i.e. 225P10491WD3). Other part numbers are available on special order.

Dimensions in inches, metric (mm) in parenthesis.

Type 225P, Orange Drop[®], Polyester Film/Foil Capacitors

Type 225P Standard Sizes/Ratings²

| Value, μ F | Part Number ¹ | L MAX | T MAX | H MAX | Value, μ F | Part Number ¹ | L MAX | T MAX | H MAX |
|----------------|--------------------------|------------|------------|------------|----------------|--------------------------|------------|------------|-------------|
| 400 VDC | | | | | 600 VDC | | | | |
| .001 | 225P10294X | .80 (20.3) | .25 (6.4) | .55(14.0) | .001 | 225P10296X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0012 | 225P12294X | .80 (20.3) | .25 (6.4) | .55(14.0) | .0012 | 225P12296X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0015 | 225P15294X | .80 (20.3) | .25 (6.4) | .55(14.0) | .0015 | 225P15296X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0018 | 225P18294X | .80 (20.3) | .25 (6.4) | .55(14.0) | .0018 | 225P18296X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0022 | 225P22294X | .80 (20.3) | .25 (6.4) | .55(14.0) | .0022 | 225P22296X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0027 | 225P27294X | .80 (20.3) | .25 (6.4) | .55(14.0) | .0027 | 225P27296X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0033 | 225P33294X | .80 (20.3) | .25 (6.4) | .55(14.0) | .0033 | 225P33296X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0039 | 225P39294X | .80 (20.3) | .25 (6.4) | .55(14.0) | .0039 | 225P39296X | .80 (20.3) | .25 (6.4) | .55 (14.0) |
| .0047 | 225P47294X | .80 (20.3) | .25(6.4) | .55 (14.0) | .0047 | 225P47296X | .80 (20.3) | .25 (6.4) | .58 (14.7) |
| .0056 | 225P56294X | .80 (20.3) | .25 (6.4) | .58(14.7) | .0056 | 225P56296X | .80 (20.3) | .25 (6.4) | .58 (14.7) |
| .0068 | 225P68294X | .80 (20.3) | .25 (6.4) | .58(14.7) | .0068 | 225P68296X | .80 (20.3) | .25 (6.4) | .58 (14.7) |
| .0082 | 225P82294X | .80 (20.3) | .25 (6.4) | .58(14.7) | .0082 | 225P82296X | .80 (20.3) | .31 (7.9) | .64 (16.3) |
| .01 | 225P10394X | .80 (20.3) | .25 (6.4) | .58 (14.7) | .01 | 225P10396X | .80 (20.3) | .31 (7.9) | .64 (16.3) |
| .012 | 225P12394X | .80 (20.3) | .25 (6.4) | .58 (14.7) | .012 | 225P12396X | .80 (20.3) | .34 (8.6) | .67 (17.0) |
| .015 | 225P15394X | .80 (20.3) | .28 (7.1) | .58(14.7) | .015 | 225P15396X | .80 (20.3) | .34 (8.6) | .67 (17.0) |
| .018 | 225P18394X | .80 (20.3) | .31 (7.9) | .58 (14.7) | .018 | 225P18396X | .80 (20.3) | .37 (9.4) | .74 (18.8) |
| .022 | 225P22394X | .80 (20.3) | .31 (7.9) | .58(14.7) | .022 | 225P22396X | .80 (20.3) | .37 (9.4) | .74 (18.8) |
| .027 | 225P27394X | .80 (20.3) | .34 (8.6) | .65(16.5) | .027 | 225P27396X | .80 (20.3) | .44 (11.2) | .77 (19.6) |
| .033 | 225P33394X | .80 (20.3) | .34 (8.6) | .65(16.5) | .033 | 225P33396X | .80 (20.3) | .44 (11.2) | .77 (19.6) |
| .039 | 225P39394X | .80 (20.3) | .41 (10.4) | .65(16.5) | .039 | 225P39396X | .80 (20.3) | .50 (12.7) | .83 (21.1) |
| .047 | 225P47394X | .80 (20.3) | .41 (10.4) | .65(16.5) | .047 | 225P47396X | .80 (20.3) | .50 (12.7) | .83 (21.1) |
| .056 | 225P56394X | .80 (20.3) | .47(11.9) | .80 (20.3) | .056 | 225P56396Y | 1.25(31.8) | .47 (11.9) | .82 (20.8) |
| .068 | 225P68394X | .80 (20.3) | .47(11.9) | .80 (20.3) | .068 | 225P68396Y | 1.25(31.8) | .47 (11.9) | .82 (20.8) |
| .082 | 225P82394X | .80 (20.3) | .50 (12.7) | .82 (20.8) | .082 | 225P82396Y | 1.25(31.8) | .53 (13.5) | .88 (22.4) |
| .1 | 225P10494X | .80 (20.3) | .52(13.2) | .84(21.3) | .1 | 225P10496Y | 1.25(31.8) | .56 (14.2) | .91 (23.1) |
| .12 | 225P12494Y | 1.25(31.8) | .44(11.2) | .77(19.6) | .12 | 225P12496Y | 1.25(31.8) | .60 (15.2) | .92 (23.4) |
| .15 | 225P15494Y | 1.25(31.8) | .47(11.9) | .80 (20.3) | .15 | 225P15496Y | 1.25(31.8) | .62 (15.7) | .94 (23.9) |
| .18 | 225P18494Y | 1.25(31.8) | .52(13.2) | .84(21.3) | .18 | 225P18496Y | 1.25(31.8) | .70 (17.8) | 1.02 (25.9) |
| .22 | 225P22494Y | 1.25(31.8) | .56(14.2) | .89 (22.6) | .22 | 225P22496Y | 1.25(31.8) | .76 (19.3) | 1.10 (27.9) |
| .27 | 225P27494Y | 1.25(31.8) | .69 (17.5) | .91 (23.1) | | | | | |
| .33 | 225P33494Y | 1.25(31.8) | .72 (18.3) | .99 (25.1) | | | | | |
| .39 | 225P39494Y | 1.25(31.8) | .75(19.1) | 1.10(27.9) | | | | | |
| .47 | 225P47494Y | 1.25(31.8) | .84(21.3) | 1.14(29.0) | | | | | |

To complete part number for specific tolerance, terminal style and lead length please refer to Ordering/Part Number Information page.

² Shaded part numbers, when ordered as $\pm 10\%$ tolerance with the D3 terminal style and lead length, are Standard Stock items available through the CDE Distribution Network. For complete part number please add the D3 suffix to the above part numbers in accordance with the Ordering Information (i.e. 225P10491WD3). Other part numbers are available on special order.

Dimensions in inches, metric (mm) in parenthesis.

dV/dt Specifications

Maximum Pulse Rise Time (dV/dt) in Volts/ μ sec

| Cap Value (μ F) | 100V | 200V | 400V | 600V |
|----------------------|-------|-------|-------|-------|
| .001 | 12200 | 14800 | 21000 | 23300 |
| .0012 | 11100 | 13500 | 19100 | 21300 |
| .0015 | 9900 | 12100 | 17100 | 19000 |
| .0018 | 9100 | 11100 | 15600 | 17400 |
| .0022 | 8200 | 10000 | 14100 | 15700 |
| .0027 | 7400 | 9000 | 12800 | 14200 |
| .0033 | 6700 | 8200 | 11500 | 12800 |
| .0039 | 6200 | 7500 | 10600 | 11800 |
| .0047 | 5600 | 6800 | 9700 | 10700 |
| .0056 | 5100 | 6300 | 8900 | 9800 |
| .0068 | 4700 | 5700 | 8000 | 8900 |
| .0082 | 4200 | 5200 | 7300 | 8100 |
| .01 | 3800 | 4700 | 6600 | 7400 |
| .012 | 3500 | 4300 | 6100 | 6700 |
| .015 | 3100 | 3800 | 5400 | 6000 |
| .018 | 2900 | 3500 | 4900 | 5500 |
| .022 | 2600 | 3200 | 4500 | 5000 |
| .027 | 2300 | 2900 | 4000 | 4500 |
| .033 | 2100 | 2600 | 3700 | 4100 |
| .039 | 1900 | 2400 | 3400 | 3700 |
| .047 | 1800 | 2200 | 3100 | 3400 |
| .056 | 1600 | 2000 | 2800 | 3100 |
| .068 | 1500 | 1800 | 2500 | 2800 |
| .082 | 1300 | 1600 | 2300 | 2300 |
| .1 | 1200 | 1500 | 2100 | 2100 |
| .12 | 1000 | 1400 | 1900 | 1900 |
| .15 | 900 | 1200 | 1500 | 1700 |
| .18 | 800 | | 1400 | 1600 |
| .22 | 700 | 1000 | 1300 | 1400 |
| .27 | 700 | 800 | 1200 | |
| .33 | 600 | 700 | 1000 | |
| .39 | 600 | 700 | 1000 | |
| .47 | 500 | 600 | 900 | |
| .56 | 400 | 600 | | |
| .68 | 400 | 500 | | |
| .82 | 400 | | | |
| 1.0 | 300 | | | |

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

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