

# Disc Ceramic Capacitors



## Professional Ceramic Capacitors - Class I, II and III

### MIL-STD-202F

The professional ceramic disc capacitors were specially developed for applications in severe environmental conditions, high humidity, temperature, gas, vapor and solvents.

The capacitors are flame retardant epoxy coated, meeting UL 94-V0 flammability specifications. The capacitors are 100% screened on following electrical parameters:

Capacitance, loss factor, test voltage. After the 100% test, the capacitors are audited on its electrical and mechanical parameters with following AQL:

Electrical parameters: 0.065% level II

Mechanical parameters: 0.65% level II

The capacitors withstand the following reliability essays:

Terminal strength: method 211 – condition A

Resistance to solvents: method 215

Resistance to soldering heat: method 210 – condition B

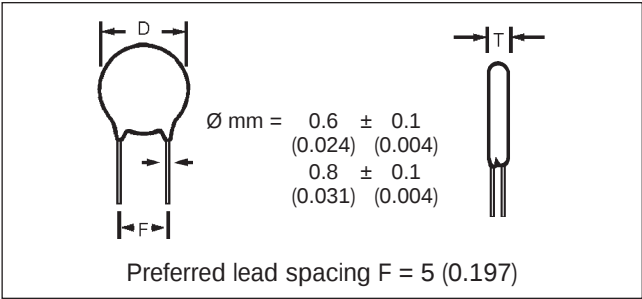
Solderability: method 208

Thermal shock: method 107 – condition A

Humidity (steady state): method 103 – condition D

Life (at elevated ambient temperature): method 108 – condition D

Operating temperature and storage: -55... +125° C



### millimeters (inches)

| Lead Spacing | Digit 8 |   |
|--------------|---------|---|
| F            |         |   |
| 2.5 (0.100)  | D       | — |
| 5 (0.200)    | A       | O |
| 6 (0.250)    | E       | X |
| 7.5 (0.300)  | B       | R |
| 10 (0.400)   | C       | W |

### DIMENSIONS

### millimeters (inches)

| Digit 9 (ø)                                   | D ± 2 (0.079) | T max.      | Available Lead Spacing |
|-----------------------------------------------|---------------|-------------|------------------------|
| A <sup>NPO</sup> <sub>1pF... 2.7 pF</sub>     | 4.0 (0.157)   | 3.0 (0.118) | A,B,D,E,O,R            |
| A <sup>N1500</sup> <sub>5.6pF... 8.2 pF</sub> | 4.0 (0.157)   | 3.0 (0.118) | A,B,D,E,O,R            |
| A Others                                      | 4.0 (0.157)   | 3.0 (0.118) | A,B,D,E,O,R            |
| B                                             | 5.0 (0.197)   | 3.0 (0.118) | A,B,D,E,O,R,X          |
| C                                             | 6.0 (0.236)   | 3.0 (0.118) | A,B,C,D,E,O,R,X        |
| D                                             | 7.0 (0.276)   | 3.0 (0.118) | A,B,C,D,E,O,R,X        |
| E                                             | 8.0 (0.315)   | 3.0 (0.118) | A,B,C,D,E,O,R,X        |
| F                                             | 9.0 (0.354)   | 3.0 (0.118) | A,B,C,E,O,R,X          |
| G                                             | 10.0 (0.394)  | 3.0 (0.118) | A,B,C,E,O,R,X          |
| H                                             | 11.0 (0.433)  | 3.0 (0.118) | A,B,C,E,O,R,W          |
| J                                             | 13.0 (0.512)  | 3.5 (0.138) | B,C,R,W                |
| K                                             | 15.0 (0.591)  | 3.5 (0.138) | B,C,R,W                |
| M                                             | 19.0 (0.748)  | 4.0 (0.157) | B,C                    |

(E), (X), (W): upon request

# Disc Ceramic Capacitors

## General Specifications - Class III Professional

### DIELECTRIC - CLASS III

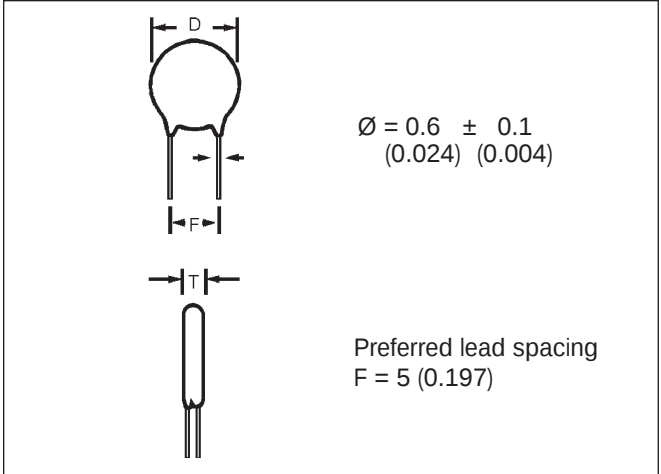
A thin dielectric layer is grown on a disc of conductive ceramic. Very large capacitances can be obtained due to reduced thickness of this barrier layer and its inherently high dielectric constant. Due its small dimensions, they are a less expensive replacement of multilayer ceramic or polyester capacitors.

### DIMENSIONS

millimeters (inches)

| Digit 9 of P.N. (ø) | D ± 2 (0.079) | T max.      | Available Lead Spacing |
|---------------------|---------------|-------------|------------------------|
| A                   | 4.0 (0.157)   | 3.0 (0.118) | A,B,D,E,O,R            |
| B                   | 5.0 (0.197)   | 3.0 (0.118) | A,B,D,E,O,R,X          |
| C                   | 6.0 (0.236)   | 3.0 (0.118) | A,B,C,D,E,O,R,X        |
| D                   | 7.0 (0.276)   | 3.0 (0.118) | A,B,C,D,E,O,R,X        |
| E                   | 8.0 (0.315)   | 3.0 (0.118) | A,B,C,D,E,O,R,X        |
| F                   | 9.0 (0.354)   | 3.0 (0.118) | A,B,C,E,O,R,X          |
| G                   | 10.0 (0.394)  | 3.0 (0.118) | A,B,C,E,O,R,X          |
| H                   | 11.0 (0.433)  | 3.0 (0.118) | A,B,C,E,O,R,W          |
| J                   | 13.0 (0.512)  | 3.5 (0.138) | B,C,R,W                |
| K                   | 15.0 (0.591)  | 4.0 (0.157) | B,C,R,W                |

(E), (X), (W): upon request



millimeters (inches)

| Lead Spacing | Digit 8 of P.N. |   |
|--------------|-----------------|---|
| F            |                 |   |
| 2.5 (0.100)  | D               | — |
| 5 (0.200)    | A               | O |
| 6 (0.250)    | E               | X |
| 7.5 (0.300)  | B               | R |
| 10 (0.400)   | C               | W |

### PERFORMANCE CHARACTERISTICS CLASS III

|                                                                |                                                                                                                            |                                                                                                                                  |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Measured at                                                    | 1.0 kHz / 0.1 Vrms / 25°C                                                                                                  |                                                                                                                                  |
| Dissipation Factor                                             | $C_R \leq 22 \text{ nF} \rightarrow Y5V, Y5U \leq 7.5\%$<br>$C_R > 22 \text{ nF} \rightarrow Y5V, Y5P \leq 5.0\%$          |                                                                                                                                  |
| Capacitance Tolerance                                          | $Y5P \rightarrow \pm 20\% / -20 +50\%$<br>$Y5U \rightarrow \pm 20\% / -20 +80\%$<br>$Y5V \rightarrow \pm 20\% / -20 +80\%$ |                                                                                                                                  |
| Climatic Category                                              | 55 / 085 / 56                                                                                                              |                                                                                                                                  |
| Insulation Resistance @ $V_R$                                  | Y5P                                                                                                                        | $\geq 12 \text{ M}\Omega$                                                                                                        |
|                                                                | Y5U                                                                                                                        | $4.7 \text{ nF} \dots 100 \text{ nF} \rightarrow \geq 10 \text{ M}\Omega$<br>$200 \text{ nF} \rightarrow \geq 1 \text{ M}\Omega$ |
|                                                                | Y5V                                                                                                                        | $\geq 100 \text{ M}\Omega$                                                                                                       |
| Dielectric Strength<br>NOTE: Charging current limited to 50 mA | Between leads                                                                                                              | $V_t = 1.25 V_R$                                                                                                                 |
|                                                                | Body insulation                                                                                                            | $V_R = 25V \quad V_t = 100V \text{ (DC)}$<br>$V_R = 50V \quad V_t = 150V \text{ (DC)}$                                           |
| Operating Temperature Range (°C)                               | -55... +125 Epoxy Coated                                                                                                   |                                                                                                                                  |

Note: Damp Heat Steady State: 90... 95% R.H. 40°C / 21 days. No voltage to be applied.

# Disc Ceramic Capacitors

## Dimension Table

### Barrier Layer Capacitors - Class III Professional



#### EPOXY COATED – CAPACITANCE VS. DISC DIAMETER

millimeters (inches)

| Class III                          | $\Delta$ C/C (max.)<br>±12%<br>Range<br>-30... +85°C |              | $\Delta$ C/C (max.)<br>+30 -65%<br>Range<br>-30... +85°C |             | $\Delta$ C/C (max.)<br>+22 -85%<br>Range<br>-30... +85°C |  |
|------------------------------------|------------------------------------------------------|--------------|----------------------------------------------------------|-------------|----------------------------------------------------------|--|
| Temp.<br>Coefficient               | Y5P                                                  |              | Y5U                                                      |             | Y5V                                                      |  |
| Digits 1,2,3<br>of P.N.            | 6WF                                                  | 6WH          | 6YF                                                      | 6YH         | 6ZH                                                      |  |
| Rated<br>Voltage (V <sub>R</sub> ) | 25                                                   | 50           | 25                                                       | 50          | 50                                                       |  |
| C <sub>R</sub> (pF)                |                                                      |              |                                                          |             |                                                          |  |
| 4,700                              | 4.0 (0.157)                                          | 4.0 (0.157)  | 4.0 (0.157)                                              | 4.0 (0.157) | 4.0 (0.157)                                              |  |
| 10,000                             | 6.0 (0.236)                                          | 6.0 (0.236)  |                                                          |             |                                                          |  |
| 22,000                             | 7.0 (0.276)                                          | 8.0 (0.315)  | 5.0 (0.197)                                              | 6.0 (0.236) |                                                          |  |
| 33,000                             | 8.0 (0.315)                                          | 9.0 (0.354)  | 6.0 (0.236)                                              | 7.0 (0.276) |                                                          |  |
| 47,000                             | 10.0 (0.394)                                         | 11.0 (0.433) | 7.0 (0.276)                                              | 8.0 (0.315) | 5.0 (0.197)                                              |  |
| 50,000                             |                                                      | —            |                                                          |             |                                                          |  |
| 68,000                             | 11.0 (0.433)                                         | 13.0 (0.512) |                                                          |             |                                                          |  |
| 100,000                            | 13.0 (0.512)                                         | 15.0 (0.591) |                                                          |             | 7.0 (0.276)                                              |  |
| 200,000                            | —                                                    | —            | 13.0 (0.512)                                             | —           |                                                          |  |

Y5U, Y5V - Preferences

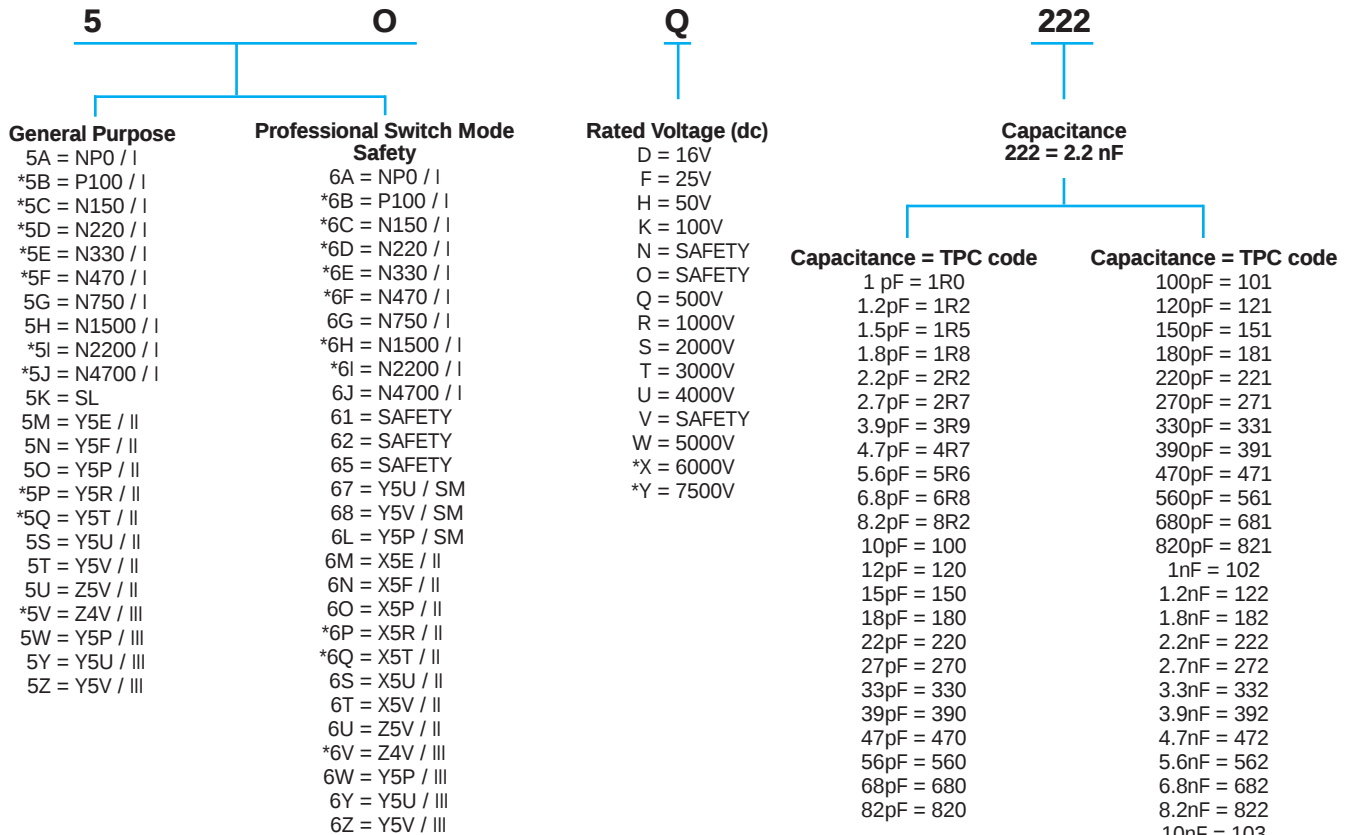
Diameter ( $\phi$ ) = 9th Part Number Digit

# Disc Ceramic Capacitors



## Ordering Code

### HOW TO ORDER



\*Upon Request

# Disc Ceramic Capacitors

## Ordering Code



**M**

### Tolerance

C =  $\pm 0.25$  pF  
D =  $\pm 0.50$  pF  
J =  $\pm 5\%$   
K =  $\pm 10\%$   
M =  $\pm 20\%$   
S = -20+50%  
Z = -20+80%  
P = 0+100%

**A**

### Capacitor Diameter $\pm 2$ (0.079)

A = 4 (0.157)  
B = 5 (0.197)  
C = 6 (0.236)  
D = 7 (0.276)  
E = 8 (0.315)  
F = 9 (0.354)  
G = 10 (0.394)  
H = 11 (0.433)  
J = 13 (0.512)  
K = 15 (0.591)  
M\* = 19 (0.748)

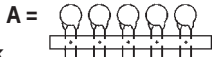
\*Wire 0.8 (0.031) recommended

**A**

**A**

### Packaging

#### Cardboard Strips



#### Bulk

E = 5 (0.197)  $\pm 1$  (0.039) free wire length  
C = 10 (0.394)  $\pm 1$  (0.039) free wire length  
D = 25 (0.984)  $\pm 1$  (0.039) free wire length

#### Taping



#### Reel

| Avisert |   |   | Panaset |   |   |
|---------|---|---|---------|---|---|
|         |   |   |         |   |   |
| H       | L | L | J       | L | L |



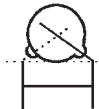
#### Ammo Pack

| Avisert |   |   | Panaset |   |   |
|---------|---|---|---------|---|---|
|         |   |   |         |   |   |
| I       | M | M | K       | M | M |

| Lead Forming                                            |                |   |   |   |
|---------------------------------------------------------|----------------|---|---|---|
| mm                                                      | inches         |   |   |   |
| 2.5 $\pm 0.5$                                           | .1 $\pm .025$  | D | — | — |
| 5 $\begin{smallmatrix} +0.6 \\ -0.2 \end{smallmatrix}$  | .2 $\pm .025$  | A | O | N |
| 6 $\begin{smallmatrix} +0.6 \\ -0.2 \end{smallmatrix}$  | .25 $\pm .025$ | E | X | — |
| 7.5 $\begin{smallmatrix} +1 \\ -0.5 \end{smallmatrix}$  | .3 $\pm .05$   | B | R | Q |
| 10 $\begin{smallmatrix} +0.5 \\ -1.0 \end{smallmatrix}$ | .4 $\pm .05$   | C | W | — |
| 12.5 $\begin{smallmatrix} +1 \\ -0.5 \end{smallmatrix}$ | .5 $\pm .05$   | P | — | — |

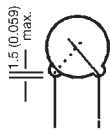
### Finishing

Diam  $\leq 9$  (0.354) and  
F = 5.00 (0.197)



Coating does not  
surpass the bend

For every other:



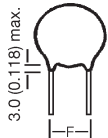
### Low Voltage

A = Phenolic (General Purpose) Q = Waxed phenolic

S = Epoxy (Professional) cap. diameter  
 $\leq 8$  (0.315)

D = Epoxy (Professional) cap. diameter  
 $> 8$  (0.315)

### High Voltage



F = Measured  
from the  
center of  
leads

C = Epoxy wire diameter  $\begin{smallmatrix} 0.6 \\ (0.024) \end{smallmatrix} \pm \begin{smallmatrix} 0.1 \\ (0.004) \end{smallmatrix}$

I = Epoxy wire diameter  $\begin{smallmatrix} 0.8 \\ (0.031) \end{smallmatrix} \pm \begin{smallmatrix} 0.1 \\ (0.004) \end{smallmatrix}$

L = Phenolic wire diameter  $\begin{smallmatrix} 0.6 \\ (0.024) \end{smallmatrix} \pm \begin{smallmatrix} 0.1 \\ (0.004) \end{smallmatrix}$

Please note that not all code combinations  
are either possible or available.

# Disc Ceramic Capacitors



## Marking

| DIG. 2          |               | Logo: Only in diam. ≥ 6mm | Capacitance |             | EIA |
|-----------------|---------------|---------------------------|-------------|-------------|-----|
| O               |               |                           |             |             |     |
| TC / Class      |               |                           |             |             |     |
| General Purpose | Professional  |                           | 1pF = 109   | 100pF = 101 |     |
| A = NP0 / I     | A = NP0 / I   |                           | 1.2pF = 129 | 120pF = 121 |     |
| *B = P100 / I   | B = P100 / I  |                           | 1.5pF = 159 | 150pF = 151 |     |
| *C = N150 / I   | C = N150 / I  |                           | 1.8pF = 189 | 180pF = 181 |     |
| *D = N220 / I   | D = N220 / I  |                           | 2.2pF = 229 | 220pF = 221 |     |
| *E = N330 / I   | E = N330 / I  |                           | 2.7pF = 279 | 270pF = 271 |     |
| *F = N470 / I   | F = N470 / I  |                           | 3.9pF = 399 | 390pF = 391 |     |
| G = N750 / I    | G = N750 / I  |                           | 4.7pF = 479 | 470pF = 471 |     |
| H = N1500 / I   | H = N1500 / I |                           | 5.6pF = 569 | 560pF = 561 |     |
| *I = N2200 / I  | I = N2200 / I |                           | 6.8pF = 689 | 680pF = 681 |     |
| *J = N4700 / I  | J = N4700 / I |                           | 8.2pF = 829 | 820pF = 821 |     |
| K = SL          | 7 = Y5U / SM  |                           | 10pF = 100  | 1nF = 102   |     |
| M = Y5E / II    | 8 = Y5V / SM  |                           | 12pF = 120  | 1.2nF = 122 |     |
| N = Y5F / II    | L = Y5P / SM  |                           | 15pF = 150  | 1.8nF = 182 |     |
| O = Y5P / II    | M = X5E / II  |                           | 18pF = 180  | 2.2nF = 222 |     |
| P = Y5R / II    | N = X5F / II  |                           | 22pF = 220  | 2.7nF = 272 |     |
| Q = Y5T / II    | O = X5P / II  |                           | 27pF = 270  | 3.9nF = 392 |     |
| S = Y5U / II    | P = X5R / II  |                           | 39pF = 390  | 4.7nF = 472 |     |
| T = Y5V / II    | Q = X5T / II  |                           | 47pF = 470  | 5.6nF = 562 |     |
| U = Z5V / II    | S = X5U / II  |                           | 56pF = 560  | 6.8nF = 682 |     |
| V = Z4V / III   | T = X5V / II  |                           | 68pF = 680  | 8.2nF = 822 |     |
| *W = Y5P / II   | U = Z5V / II  |                           | 82pF = 820  | 10nF = 103  |     |
| *X = Y5R / II   | V = Z4V / III |                           | 15nF = 153  |             |     |
| Y = Y5U / II    | W = Y5P / III |                           | 22nF = 223  |             |     |
| Z = Y5V / II    | X = Y5R / III |                           | 33nF = 333  |             |     |
|                 | Y = Y5U / III |                           | 47nF = 473  |             |     |
|                 | Z = Y5V / III |                           | 100nF = 104 |             |     |
|                 |               |                           | 200nF = 204 |             |     |
|                 |               |                           |             |             |     |
|                 |               |                           |             |             |     |
|                 |               |                           |             |             |     |
|                 |               |                           |             |             |     |
|                 |               |                           |             |             |     |

| DIG. 3        | DIG. 7       |
|---------------|--------------|
| Q             | M            |
| Rated Voltage | Tolerance    |
| D = 16V       | C = ±0.25pF  |
| F = 25V       | D = ±0.5pF   |
| H = 50V       | J = ±5%      |
| K = 100V      | K = ±10%     |
| Q = 500V      | M = ±20%     |
| R = 1000V     | S = -20 +50% |
| S = 2000V     | Z = -20 +80% |
| T = 3000V     | P = 0 +100%  |

|             |             |
|-------------|-------------|
| 1pF = 109   | 100pF = 101 |
| 1.2pF = 129 | 120pF = 121 |
| 1.5pF = 159 | 150pF = 151 |
| 1.8pF = 189 | 180pF = 181 |
| 2.2pF = 229 | 220pF = 221 |
| 2.7pF = 279 | 270pF = 271 |
| 3.9pF = 399 | 390pF = 391 |
| 4.7pF = 479 | 470pF = 471 |
| 5.6pF = 569 | 560pF = 561 |
| 6.8pF = 689 | 680pF = 681 |
| 8.2pF = 829 | 820pF = 821 |
| 10pF = 100  | 1nF = 102   |
| 12pF = 120  | 1.2nF = 122 |
| 15pF = 150  | 1.8nF = 182 |
| 18pF = 180  | 2.2nF = 222 |
| 22pF = 220  | 2.7nF = 272 |
| 27pF = 270  | 3.9nF = 392 |
| 39pF = 390  | 4.7nF = 472 |
| 47pF = 470  | 5.6nF = 562 |
| 56pF = 560  | 6.8nF = 682 |
| 68pF = 680  | 8.2nF = 822 |
| 82pF = 820  | 10nF = 103  |
|             | 15nF = 153  |
|             | 22nF = 223  |
|             | 33nF = 333  |
|             | 47nF = 473  |
|             | 100nF = 104 |
|             | 200nF = 204 |

\*Upon Request

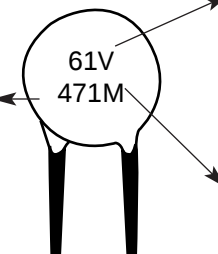
\*Upon Request

TC – Temperature coefficient.

DIG – for better understanding, check pages 3 and 4.

### Safety Front

| Capacitance |
|-------------|
| As above    |



| Type |
|------|
| 61V  |
| 620  |
| 65N  |

| Tolerance |
|-----------|
| As above  |

### Back: (Approval marks)

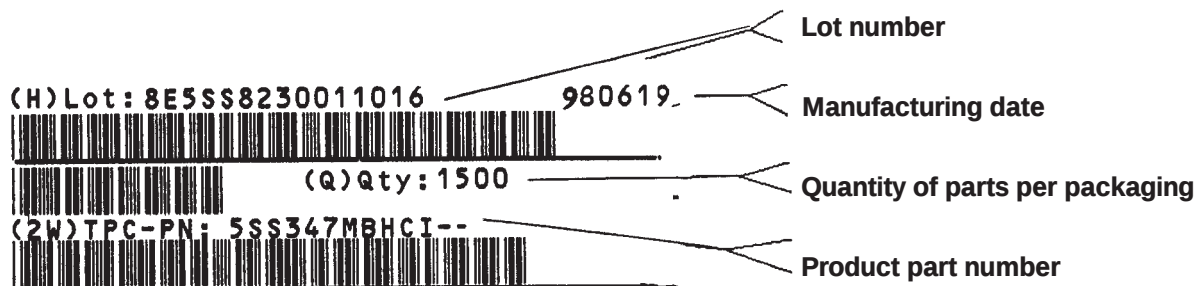
# Disc Ceramic Capacitors



## Packaging

### IDENTIFICATION AND TRACEABILITY

On all TPC ceramic capacitors packages, you will find a bar code label with the following information:



### TAPED PARTS QUANTITY TABLE

millimeters (inches)

| Rated Voltage   | Diameter           | Quantities |      |
|-----------------|--------------------|------------|------|
| (Vr)            | D                  | Ammopack   | Reel |
| Vr ≤ 500V       | D ≤ 7 (0.276)      | 2000       | 2500 |
|                 | 7 < D ≤ 11 (0.433) | 2000       | 2000 |
| 500V < Vr ≤ 2KV | D ≤ 11 (0.433)     | 1500       | 2000 |
| 2KV < Vr ≤ 5KV  | D ≤ 11 (0.433)     | 1000       | 1500 |

### CARDBOARD STRIPS QUANTITY TABLE

millimeters (inches)

| Rated Voltage   | Diameter                    | Lead Space  |             |
|-----------------|-----------------------------|-------------|-------------|
| (Vr)            | D                           | ≤ 5 (0.197) | > 5 (0.197) |
| Vr ≤ 500V       | D ≤ 8 (0.315)               | 2500        | 1500        |
|                 | 8 (0.315) ≤ D ≤ 11 (0.433)  | 1500        | -           |
|                 | 8 (0.315) ≤ D ≤ 13 (0.512)  | -           | 1000        |
|                 | 11 (0.433) ≤ D ≤ 15 (0.591) | 1000        | -           |
|                 | 13 (0.512) ≤ D ≤ 19 (0.748) | -           | 500         |
|                 | D ≤ 19 (0.748)              | 500         | -           |
| 500V < Vr ≤ 2KV | D ≤ 9 (0.354)               | 1500        | 1000        |
|                 | 9 (0.354) ≤ D ≤ 11 (0.433)  | -           | 1000        |
|                 | 9 (0.354) ≤ D ≤ 13 (0.512)  | 1000        | -           |
|                 | 11 (0.433) ≤ D ≤ 19 (0.748) | -           | 500         |
|                 | 13 (0.512) ≤ D ≤ 19 (0.748) | 500         | -           |
| 2KV < Vr ≤ 5KV  | D ≤ 9 (0.354)               | 1500        | -           |
| Safety 65N 62O  | D ≤ 11 (0.433)              | -           | 1000        |
|                 | D ≤ 13 (0.512)              | 500         | 500         |
| Safety          | D ≤ 6 (0.236)               | 1500        | 1500        |
| 61V             | 7 (0.275) ≤ D ≤ 9 (0.354)   | 1000        | 1000        |
|                 | 9 (0.354) ≤ D               | 500         | 500         |

Quantities for other package alternative, upon request.

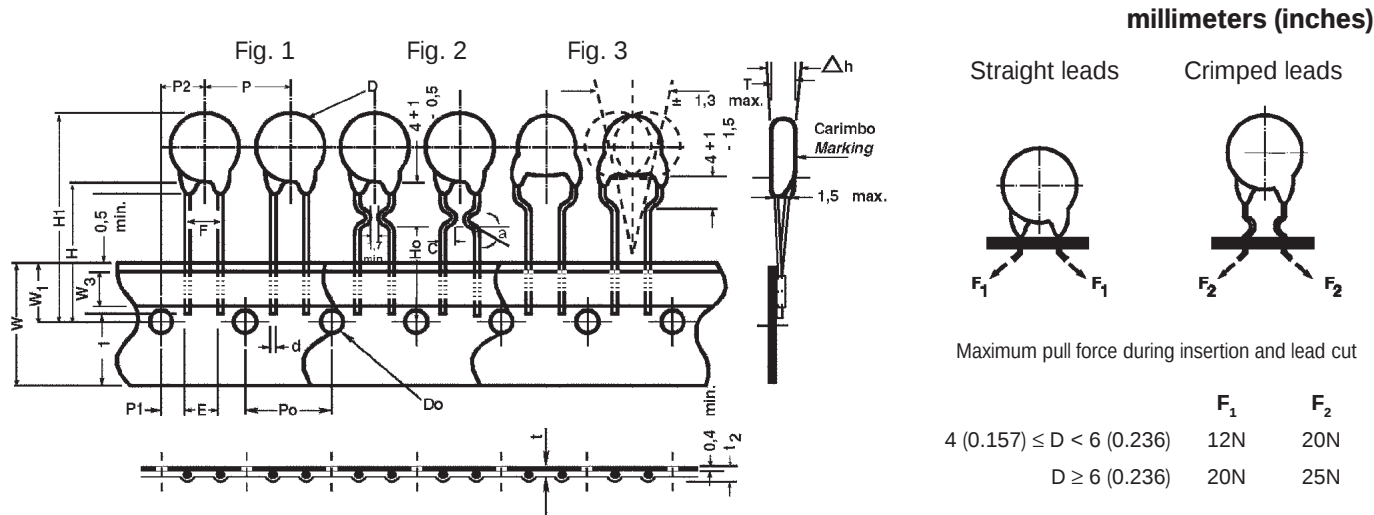
# Disc Ceramic Capacitors



## Tape and Reel Specifications

There are two types of taped disc ceramic capacitors:  
Straight or crimped leads.

Both types can be shipped on reels or ammpack.  
The standard packaging quantities are shown below:



| Digit 11 | Available Tapings |                                  | Digit 9 |
|----------|-------------------|----------------------------------|---------|
| L        | →                 | Sizes 4 (0.157) ≤ D ≤ 11 (0.433) | A... H  |
| M        |                   |                                  |         |
| J H      | →                 | Sizes 6 (0.236) ≤ D ≤ 11 (0.433) | C... H  |
| K I      |                   |                                  |         |

### TPC Code Digit 11

| Packaging  | Avisert                                             | Panasert                                            |
|------------|-----------------------------------------------------|-----------------------------------------------------|
| Reel<br>   | <br>H<br>FIGURE 1<br>L<br>FIGURE 2<br>L<br>FIGURE 3 | <br>J<br>FIGURE 1<br>L<br>FIGURE 2<br>L<br>FIGURE 3 |
| Ampack<br> | <br>I<br>FIGURE 1<br>M<br>FIGURE 2<br>M<br>FIGURE 3 | <br>K<br>FIGURE 1<br>M<br>FIGURE 2<br>M<br>FIGURE 3 |

Figure 2: Inside Crimp 100V... 1000V

Figure 3: Outside Crimp 1000V

# Disc Ceramic Capacitors

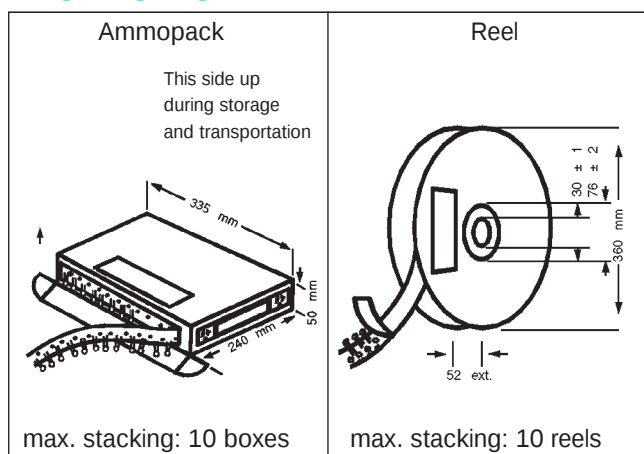


## Tape and Reel Specifications

millimeters (inches)

| Description of Symbols                       |                | Straight Leads       |                 | Crimped           |
|----------------------------------------------|----------------|----------------------|-----------------|-------------------|
|                                              |                | Figure 1             |                 | Figure 2 & 3      |
|                                              |                | A (Avisert)          | P (Panaset)     | Avisert & Panaset |
| Crimp angle                                  | $\infty$       | —                    | —               | 20°...45°         |
| Crimp length                                 | C              | —                    | —               | 1.7 min.          |
| Lead diameter                                | d              | 0.60 ± 0.1           |                 |                   |
| Disc diameter                                | D              | 11 max.              |                 |                   |
| Lead hole diameter                           | Do             | 4.0 ± 0.2            |                 |                   |
| Disc thickness                               | T              | See Catalog          |                 |                   |
| Lead spacing                                 | F              | 5.0 $^{+0.6}_{-0.2}$ |                 |                   |
| Component alignment, front-rear              | $\Delta h$     | 0 ± 1                |                 |                   |
| Height of component from tape center         | H              | 19.5 ± 0.5           | 16.5 ± 0.5 - 0  | —                 |
| Height from tape center to crimp             | Ho             | —                    | —               | 16 + 0.5 - 0      |
| Component height                             | H1             | 32.25 max.           | >23.5<br><32.25 | 32.25 max.        |
| Distance from component leads to tape bottom | $\ell_1$       | 12 max.              |                 |                   |
| Tape width                                   | W              | 18 $^{+1}_{-0.5}$    |                 |                   |
| Bonding tape width                           | W <sub>3</sub> | 5.5 min.             |                 |                   |
| Feed hole position                           | W <sub>1</sub> | 9.0 ± 0.5            |                 |                   |
| Pitch between discs                          | P              | 12.7 ± 1             |                 |                   |
| Feed hole pitch                              | Po             | 12.7 ± 0.3           |                 |                   |
| Hole center to lead                          | P1             | 3.85 ± 0.7           |                 |                   |
| Feed hole center to component center         | P2             | 6.35 ± 1             |                 |                   |
| Tape + bonding tape thickness                | t              | 0.7 ± 0.2            |                 |                   |
| Total tape thickness. including lead         | t <sub>2</sub> | 1.5 max.             |                 |                   |

## PACKAGING



## SHIPPING CONTAINER

