

# Radial Leads/SkyCap®/AR Series



## AUTOMOTIVE

### GENERAL INFORMATION

#### AVX AR Series

Conformally Coated Radial Ledged MLC

Temperature Coefficients: C0G (NP0), X7R, X8R

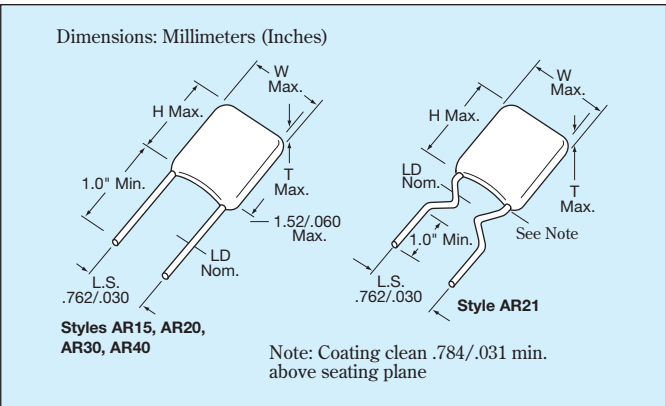
200, 100, 50 Volts

Case Material: Epoxy

Lead Material: RoHS Compliant, 100% Tin

Qualified: to AEC-Q200, PPAP Available

Temperature Range: up to 150°C

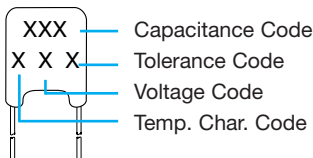


### HOW TO ORDER

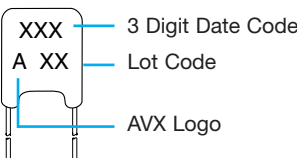
|             |                                 |                                     |                                                                                                                                                                                                                                        |                                                                                                                                                                                                        |              |          |
|-------------|---------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------|
| <b>AR21</b> | <b>5</b>                        | <b>F</b>                            | <b>104</b>                                                                                                                                                                                                                             | <b>M</b>                                                                                                                                                                                               | <b>4</b>     | <b>R</b> |
| AVX Style   | Voltage                         | Temperature Coefficient             | Capacitance                                                                                                                                                                                                                            | Capacitance Tolerance                                                                                                                                                                                  | Failure Rate | Leads    |
|             | 5 = 50V<br>1 = 100V<br>2 = 200V | A = C0G (NP0)<br>C = X7R<br>F = X8R | First two digits are the significant figures of capacitance. Third digit indicates the additional number of zeros. For example, order 100,000 pF as 104. (For values below 10pF use "R" in place of decimal point, e.g., 1R4 = 1.4pF.) | C0G (NP0):<br>C = $\pm 25\text{pF}$<br>D = $\pm 5\text{pF}$<br>F = $\pm 1\%$<br>( $>50\text{pF}$ only)<br>G = $\pm 2\%$<br>( $>25\text{pF}$ only)<br>J = $\pm 5\%$<br>K = $\pm 10\%$<br>M = $\pm 20\%$ | 4 = AEC-Q200 | R = RoHS |

### MARKING

#### FRONT



#### BACK



### PACKAGING REQUIREMENTS

|                  | Quantity per Bag |
|------------------|------------------|
| AR15, 20, 21, 30 | 1000 Pieces      |
| AR40             | 500 Pieces       |

Note: AR15, AR20, AR21, AR30, and AR40 available on tape and reel per EIA specifications RS-468. See pages 33 and 34.

# Radial Leads/AR Series

C0G (NP0) Dielectric



## SIZE AND CAPACITANCE SPECIFICATIONS

| EIA Characteristic   |                                   | Dimensions: Millimeters (Inches) |     |    |                 |     |    |                 |     |    |
|----------------------|-----------------------------------|----------------------------------|-----|----|-----------------|-----|----|-----------------|-----|----|
| AVX Style            |                                   | AR15                             |     |    | AR20            |     |    | AR21            |     |    |
| AVX "Insertable"     |                                   | AR07                             |     |    | AR29            |     |    | AR59            |     |    |
| Width (W)            |                                   | 3.81<br>(.150)                   |     |    | 5.08<br>(.200)  |     |    | 5.08<br>(.200)  |     |    |
| Height (H)           |                                   | 3.81<br>(.150)                   |     |    | 5.08<br>(.200)  |     |    | 5.08<br>(.200)  |     |    |
| Thickness (T)        |                                   | 2.54<br>(.100)                   |     |    | 3.175<br>(.125) |     |    | 3.175<br>(.125) |     |    |
| Lead Spacing (L.S.)  |                                   | 2.54<br>(.100)                   |     |    | 2.54<br>(.100)  |     |    | 5.08<br>(.200)  |     |    |
| Lead Diameter (L.D.) |                                   | .508<br>(.020)                   |     |    | .508<br>(.020)  |     |    | .508<br>(.020)  |     |    |
| Cap. (*)             | Industry Preferred Values in Blue | WVDC                             |     |    | WVDC            |     |    | WVDC            |     |    |
|                      |                                   | 200                              | 100 | 50 | 200             | 100 | 50 | 200             | 100 | 50 |
| 1R0                  | AR-----A1R0D4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 100                  | AR-----A100K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 150                  | AR-----A150K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 220                  | AR-----A220K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 330                  | AR-----A330K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 390                  | AR-----A390K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 470                  | AR-----A470K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 680                  | AR-----A680K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 101                  | AR-----A101K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 151                  | AR-----A151K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 221                  | AR-----A221K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 331                  | AR-----A331K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 391                  | AR-----A391K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 471                  | AR-----A471K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 681                  | AR-----A681K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 102                  | AR-----A102K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 152                  | AR-----A152K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 222                  | AR-----A222K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 392                  | AR-----A392K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 472                  | AR-----A472K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 682                  | AR-----A682K4R                    |                                  |     |    |                 |     |    |                 |     |    |
| 822                  | AR-----A822K4R                    |                                  |     |    |                 |     |    |                 |     |    |

(\*) First two digits are the significant figures of capacitance. Third digit indicates the additional number of zeros.

**Other series available:** AR12, AR14, AR62, AR89.



# Radial Leads/AR Series

## X7R Dielectric



### SIZE AND CAPACITANCE SPECIFICATIONS

| EIA Characteristic   |                                   | Dimensions: Millimeters (Inches) |  |                 |  |                 |  |                |  |                 |  |
|----------------------|-----------------------------------|----------------------------------|--|-----------------|--|-----------------|--|----------------|--|-----------------|--|
| AVX Style            |                                   | AR15                             |  | AR20            |  | AR21            |  | AR30           |  | AR40            |  |
| AVX "Insertable"     |                                   | AR07                             |  | AR29            |  | AR59            |  | AR65           |  | AR75            |  |
| Width (W)            |                                   | 3.81<br>(.150)                   |  | 5.08<br>(.200)  |  | 5.08<br>(.200)  |  | 7.62<br>(.300) |  | 10.16<br>(.400) |  |
| Height (H)           |                                   | 3.81<br>(.150)                   |  | 5.08<br>(.200)  |  | 5.08<br>(.200)  |  | 7.62<br>(.300) |  | 10.16<br>(.400) |  |
| Thickness (T)        |                                   | 2.54<br>(.100)                   |  | 3.175<br>(.125) |  | 3.175<br>(.125) |  | 3.81<br>(.150) |  | 3.81<br>(.150)  |  |
| Lead Spacing (L.S.)  |                                   | 2.54<br>(.100)                   |  | 2.54<br>(.100)  |  | 5.08<br>(.200)  |  | 5.08<br>(.200) |  | 5.08<br>(.200)  |  |
| Lead Diameter (L.D.) |                                   | .508<br>(.020)                   |  | .508<br>(.020)  |  | .508<br>(.020)  |  | .508<br>(.020) |  | .508<br>(.020)  |  |
| Cap. (*)             | Industry Preferred Values in Blue | WVDC<br>100 50                   |  | WVDC<br>100 50  |  | WVDC<br>100 50  |  | WVDC<br>100 50 |  | WVDC<br>100 50  |  |
| 471                  | AR____C471K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 681                  | AR____C681K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 102                  | AR____C102K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 152                  | AR____C152K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 222                  | AR____C222K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 392                  | AR____C392K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 472                  | AR____C472K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 682                  | AR____C682K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 822                  | AR____C822K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 103                  | AR____C103K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 153                  | AR____C153K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 223                  | AR____C223K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 333                  | AR____C333K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 393                  | AR____C393K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 473                  | AR____C473K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 683                  | AR____C683K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 104                  | AR____C104K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 224                  | AR____C224K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 334                  | AR____C334K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 474                  | AR____C474K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 684                  | AR____C684K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |
| 105                  | AR____C105K4R                     |                                  |  |                 |  |                 |  |                |  |                 |  |

(\*) First two digits are the significant figures of capacitance. Third digit indicates the additional number of zeros.

**Other series available:** AR12, AR14, AR62, AR89, AR32, AR38.

# Radial Leads/AR Series



## X8R Dielectric

### SIZE AND CAPACITANCE SPECIFICATIONS

| EIA Characteristic   |                                   | Dimensions: Millimeters (Inches) |     |    |                 |     |    |
|----------------------|-----------------------------------|----------------------------------|-----|----|-----------------|-----|----|
| AVX Style            |                                   | AR20                             |     |    | AR21            |     |    |
| AVX "Insertable"     |                                   | AR29                             |     |    | AR59            |     |    |
| Width (W)            |                                   | 5.08<br>(.200)                   |     |    | 5.08<br>(.200)  |     |    |
| Height (H)           |                                   | 5.08<br>(.200)                   |     |    | 5.08<br>(.200)  |     |    |
| Thickness (T)        |                                   | 3.175<br>(.125)                  |     |    | 3.175<br>(.125) |     |    |
| Lead Spacing (L.S.)  |                                   | 2.54<br>(.100)                   |     |    | 5.08<br>(.200)  |     |    |
| Lead Diameter (L.D.) |                                   | .508<br>(.020)                   |     |    | .508<br>(.020)  |     |    |
| Cap. (*)             | Industry Preferred Values in Blue | WVDC                             |     |    | WVDC            |     |    |
|                      |                                   | 200                              | 100 | 50 | 200             | 100 | 50 |
| 102                  | AR____F102K4R                     |                                  |     |    |                 |     |    |
| 103                  | AR____F103K4R                     |                                  |     |    |                 |     |    |
| 104                  | AR____F104K4R                     |                                  |     |    |                 |     |    |
| 334                  | AR____F334K4R                     |                                  |     |    |                 |     |    |

(\*) First two digits are the significant figures of capacitance. Third digit indicates the additional number of zeros.

Other series available: AR14, AR62, AR89.



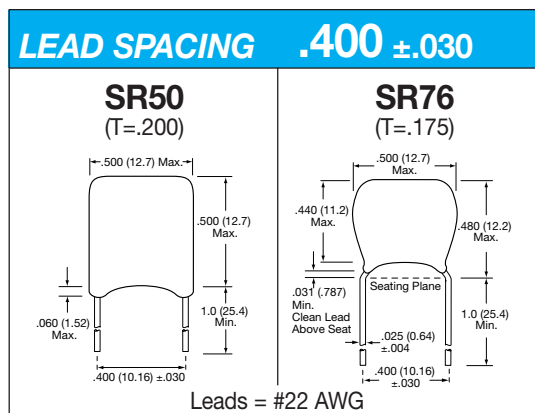
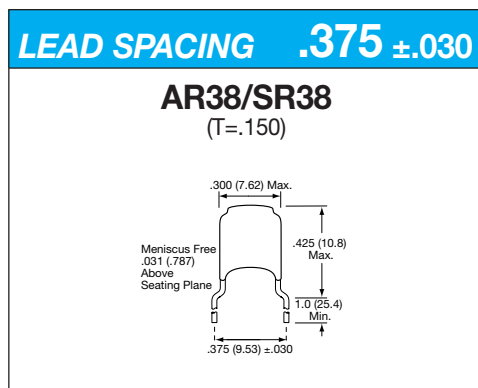
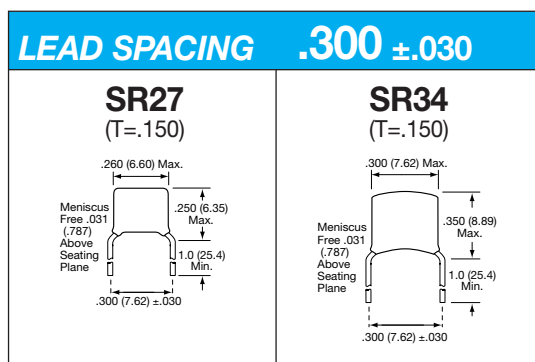
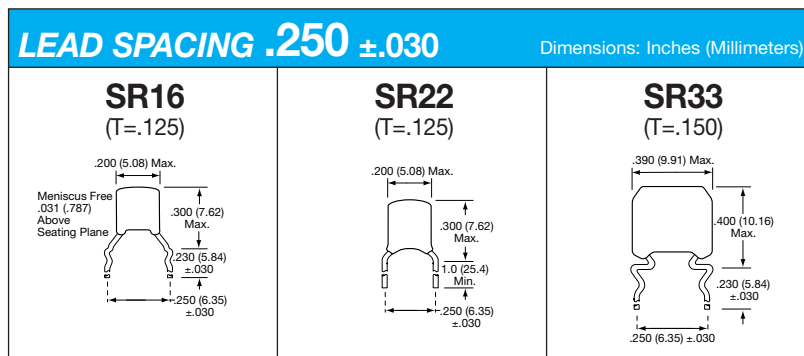
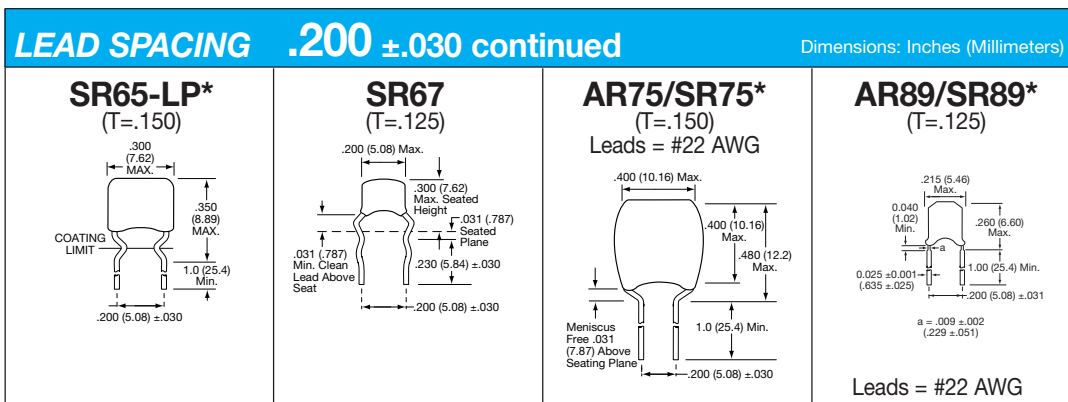
## Configurations by Lead Spacing

| LEAD SPACING $.100 \pm .030$      |                                   |                                   |                                   | Dimensions: Inches (Millimeters) |
|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------------------|
| <b>AR07/SR07*</b><br>(T=.100)<br> | <b>AR14/SR14</b><br>(T=.100)<br>  | <b>AR15/SR15*</b><br>(T=.100)<br> | <b>AR20/SR20*</b><br>(T=.125)<br> |                                  |
| <b>AR29/SR29*</b><br>(T=.125)<br> | <b>AR62/SR62*</b><br>(T=.125)<br> | <b>SR62-LP*</b><br>(T=.100)<br>   | <b>Leads = #22 AWG</b>            |                                  |

| LEAD SPACING $.200 \pm .030$      |                                 |                                   |                                   |                                   | Dimensions: Inches (Millimeters) |
|-----------------------------------|---------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------------------|
| <b>AR12/SR12*</b><br>(T=.100)<br> | <b>SR13*</b><br>(T=.125)<br>    | <b>AR21/SR21*</b><br>(T=.125)<br> | <b>SR21-85*</b><br>(T=.125)<br>   | <b>SR28*</b><br>(T=.125)<br>      |                                  |
| <b>AR30/SR30*</b><br>(T=.150)<br> | <b>SR30-LP*</b><br>(T=.150)<br> | <b>AR32/SR32*</b><br>(T=.150)<br> | <b>AR40/SR40*</b><br>(T=.150)<br> | <b>AR59/SR59*</b><br>(T=.125)<br> |                                  |
| <b>SR61</b><br>(T=.150)<br>       | <b>SR63*</b><br>(T=.150)<br>    | <b>SR64*</b><br>(T=.150)<br>      | <b>SR64-LP*</b><br>(T=.150)<br>   | <b>AR65/SR65*</b><br>(T=.150)<br> | <b>Leads = #22 AWG</b>           |

\*SL style available in all SR configurations.

## Configurations by Lead Spacing



- NOTES:**
1. All leads are #24 AWG unless otherwise noted.
  2. Available in tape and reel packaging(\*).
  3. Other styles are also available, contact factory.
  4. (T = XXX) under type designation is maximum thickness in inches.

\*SL style available in all SR configurations.

# Radial Leads/Packaging

## Tape and Reel



### GENERAL INFORMATION

1. Standard reel diameter is 355 millimeters (14 inches) maximum.
2. Reeling standard (#1 or #2) should be specified when ordering.

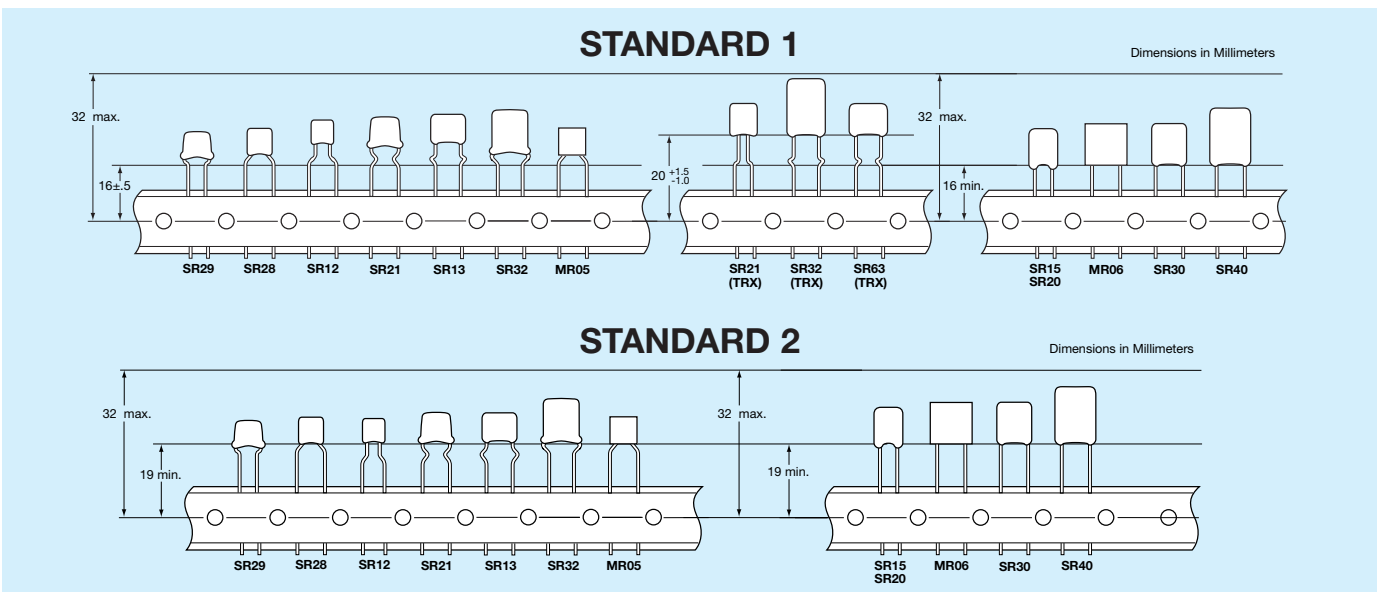
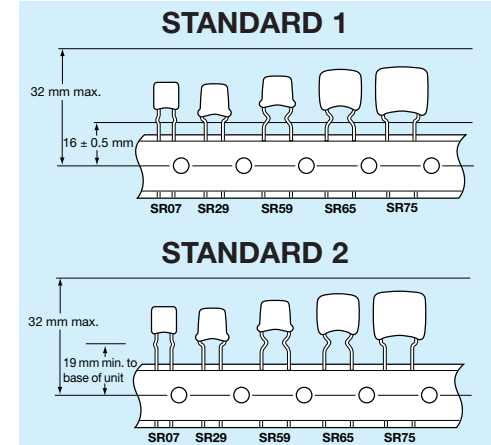
### HOW TO ORDER

To specify tape and reel packaging, add TR1, TR2 or TRX to the end of the AVX 12 digit part number.

Examples:

SR215C104KARTR1  
SR305E105MARTR2  
SR215C103JARTRX

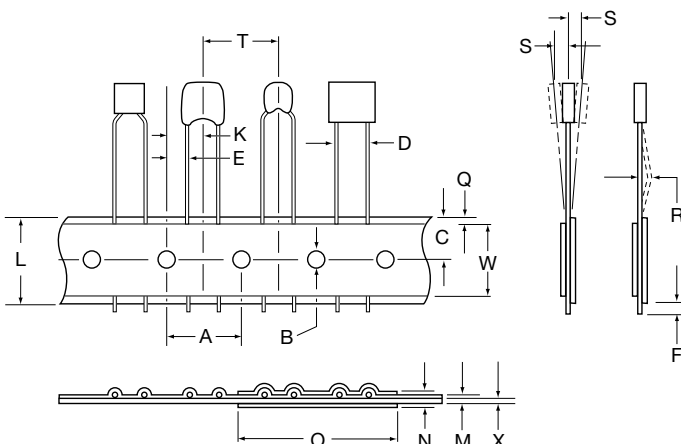
### THE INSERTABLES



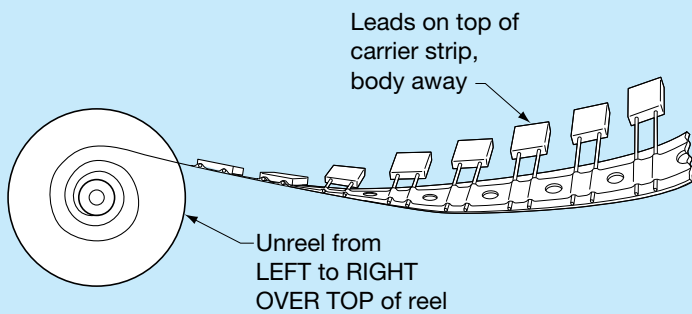
### DESCRIPTION

### DIMENSIONS (MM)

|                                                                      |                                                                              |
|----------------------------------------------------------------------|------------------------------------------------------------------------------|
| A. Feed Hole Pitch                                                   | 12.70 ± .20                                                                  |
| B. Feed Hole Diameter                                                | 3.99 ± .20                                                                   |
| C. Feed Hole Location                                                | 9.02 ± .51                                                                   |
| D. Component Lead Spacing                                            | 5.00 <sup>+.79</sup> <sub>-.20</sub> or 2.54 <sup>+.79</sup> <sub>-.20</sub> |
| E. Component Lead Location                                           | 3.81 ± .51 or 5.00 ± .51<br>for 2.54 lead spacing                            |
| F. Component Lead Protrusion<br>(edge of carrier to cut end of lead) | 2.00 maximum                                                                 |
| K. Component Body Location                                           | 6.35 ± .41                                                                   |
| L. Carrier Tape Width                                                | 18.01 <sup>+1.02</sup> <sub>-.51</sub>                                       |
| M. Carrier Tape Assembly Thickness                                   | .71 ± .20                                                                    |
| N. Carrier Tape Spliced Thickness                                    | 1.42 maximum                                                                 |
| O. Carrier Tape Spliced Length                                       | 50.80 - 88.90                                                                |
| Q. Adhesive Tape Border                                              | 3.00 maximum                                                                 |
| R. Component Bent Leads (either direction)                           | .79 maximum                                                                  |
| S. Component Misalignment                                            | .99 maximum                                                                  |
| T. Component Pitch                                                   | 12.70 ± .99                                                                  |
| W. Adhesive Tape Width                                               | 5.00 minimum                                                                 |
| X. Carrier Tape Thickness                                            | .51 ± .10                                                                    |
| Y. Cumulative Pitch over 20 Pitches                                  | 254 ± 2.00                                                                   |



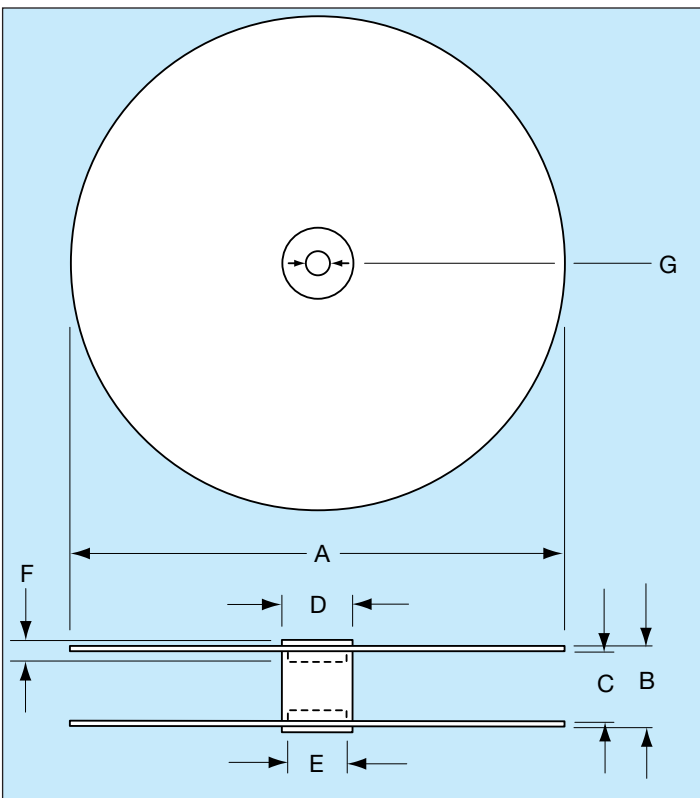
## REEL DIRECTION



## QUANTITY PER REEL SR/AR

| PART                                   | PCS  |
|----------------------------------------|------|
| SR15, 07, 12                           | 3500 |
| SR20, 21, 23, 28<br>13, 29, 59, 62, 89 | 3000 |
| SR30, 32, 40, 63, 64<br>65, 75         | 2000 |
| MR05, 06                               | 2500 |

\*SL style available in all SR configurations.



## DESCRIPTION

A – Reel Diameter  
B – Reel Outside Width  
C – Reel Inside Width  
D – Core Diameter (O.D.)  
E – Hub Recess Diameter  
F – Hub Recess Depth  
G – Arbor Hole Diameter

## DIMENSIONS (MM)

304.80 - 355  
50.80 maximum  
38.10 - 46.02  
102.01 maximum  
86.36 maximum  
9.50 minimum  
25.40 - 30.48

## CONVERSION TABLE

| MM   | IN   | MM   | IN   | MM   | IN   | MM    | IN    | MM     | IN     |
|------|------|------|------|------|------|-------|-------|--------|--------|
| .10  | .004 | 1.52 | .060 | 5.00 | .197 | 9.91  | .390  | 32.00  | 1.260  |
| .20  | .007 | 2.00 | .079 | 5.08 | .200 | 10.03 | .395  | 38.10  | 1.500  |
| .38  | .015 | 2.54 | .100 | 6.22 | .245 | 10.16 | .400  | 46.02  | 1.812  |
| .41  | .016 | 3.00 | .118 | 6.35 | .250 | 11.68 | .460  | 50.80  | 2.000  |
| .51  | .020 | 3.18 | .125 | 6.60 | .260 | 12.50 | .492  | 86.36  | 3.400  |
| .71  | .028 | 3.48 | .137 | 6.99 | .275 | 12.70 | .500  | 88.90  | 3.500  |
| .79  | .031 | 3.81 | .150 | 7.62 | .300 | 16.00 | .630  | 102.01 | 4.016  |
| .99  | .039 | 3.99 | .157 | 8.89 | .350 | 18.01 | .709  | 254.00 | 10.000 |
| 1.02 | .040 | 4.45 | .175 | 9.02 | .355 | 25.40 | 1.000 | 304.80 | 12.000 |
| 1.42 | .056 | 4.98 | .196 | 9.50 | .374 | 30.48 | 1.200 | 355.00 | 14.000 |