

## GENERAL INFORMATION

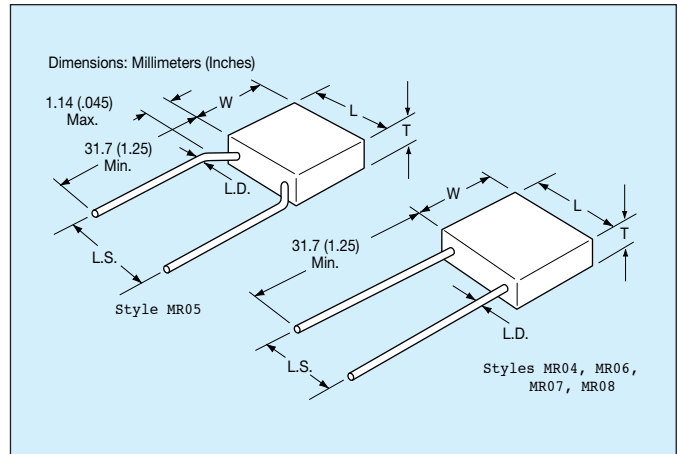
### AVX MR Series

#### Molded Radial Leaded MLC

**Temperature Coefficients:** C0G (NP0), X7R, Z5U  
50, 100, 200 Volts

**Case Material:** Molded Epoxy

**Lead Material:** Solderable



## HOW TO ORDER

<b>MR05</b>	<b>1</b>	<b>A</b>	<b>561</b>	<b>J</b>	<b>A</b>	<b>A</b>
<b>AVX Style</b>	<b>Voltage</b>	<b>Dielectric</b>	<b>Capacitance</b>	<b>Capacitance Tolerance</b>	<b>Failure Rate</b>	<b>Leads</b>
MR04 MR05 MR06 MR07 MR08	5 = 50V 1 = 100V 2 = 200V	A = C0G (NP0) C = X7R E = Z5U	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): D = ±5pF (>10pF only) F = ±1% (>50pF only) G = ±2% (>25pF only) J = ±5% K = ±10%	X7R: J = ±5% K = ±10% M = ±20%	Z5U: M = ±20% Z = +80% -20%
					A = Not Applicable T = CECC	A = Standard Solderable (SnPb) T* = Trimmed Leads .230" ± .030"

**Not RoHS Compliant**

<sup>1</sup> Trimmed lead length for the MR05 style will be measured from the bend in the lead (seating plane).

## MARKING

Marking is as size permits.  
(For code identification, see HOW TO ORDER section.)

- AVX
- Capacitance Tolerance
- Voltage Rating
- Temperature Coefficient
- Date Code
- Lot Code

## PACKAGING REQUIREMENTS

**Bulk Packaging:** 1000 pcs. per sealed package except MR07/MR08 (300 pcs.).

**Tape and Reel:** Available on MR04, MR05, and MR06 only (2500 pcs./reel).

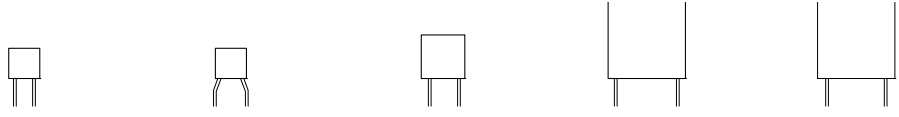
**Ammo Packaging:** Available on special request.

# Radial Leads/Ceralam®



## COG (NP0)

### SIZE AND CAPACITANCE SPECIFICATIONS



Dimensions: Millimeters (Inches)

AVX Style		MR04			MR05			MR06			MR07			MR08		
Length*		4.83 (.190")			4.83 (.190")			7.36 (.290")			12.44 (.490")			12.44 (.490")		
Width*		4.83 (.190")			4.83 (.190")			7.36 (.290")			12.44 (.490")			12.44 (.490")		
Thickness*		2.28 (.090")			2.28 (.090")			2.28 (.090")			3.55 (.140")			6.09 (.240")		
Lead Spacing*		2.54 (.100")			5.08 (.200")			5.08 (.200")			10.16 (.400")			10.16 (.400")		
Lead Diameter*		.635 (.025")			.635 (.025")			.635 (.025")			.635 (.025")			.635 (.025")		
Cap. in pF	Typical AVX Part Nos.	WVDC			WVDC			WVDC			WVDC			WVDC		
		200	100	50	200	100	50	200	100	50	200	100	50	200	100	50
1.0 to 9.1	MR.....5A1R0DAA MR.....5A9R1DAA															
10 to 15	MR.....5A100KAA MR.....5A120KAA MR.....5A150KAA															
18 to 27	MR.....5A180KAA MR.....5A220KAA MR.....5A270KAA															
33 to 47	MR.....5A330KAA MR.....5A390KAA MR.....5A470KAA															
56 to 82	MR.....5A560KAA MR.....5A680KAA MR.....5A820KAA															
100 to 150	MR.....5A101KAA MR.....5A121KAA MR.....5A151KAA															
180 to 270	MR.....5A181KAA MR.....5A221KAA MR.....5A271KAA															
330 to 470	MR.....5A331KAA MR.....5A391KAA MR.....5A471KAA															
560 to 820	MR.....5A561KAA MR.....5A681KAA MR.....5A821KAA															
1000 to 1500	MR.....5A102KAA MR.....5A122KAA MR.....5A152KAA															
1800 to 2700	MR.....5A182KAA MR.....5A222KAA MR.....5A272KAA															
3300 to 4700	MR.....5A332KAA MR.....5A392KAA MR.....5A472KAA															
5600 to 8200	MR.....5A562KAA MR.....5A682KAA MR.....5A822KAA															
10,000 to 15,000	MR.....5A103KAA MR.....5A123KAA MR.....5A153KAA															
18,000 to 27,000	MR.....5A183KAA MR.....5A223KAA MR.....5A273KAA															
33,000 to 47,000	MR.....5A333KAA MR.....5A393KAA MR.....5A473KAA															
56,000 to 82,000	MR.....5A563KAA MR.....5A683KAA MR.....5A823KAA															
100,000 to 150,000	MR.....5A104KAA MR.....5A124KAA MR.....5A154KAA															

For trimmed leads see "How To Order".  
For other tolerances see "How To Order".  
For other voltages see "How To Order".

= Industry preferred values

\*Length, width and thickness dimensions are ±.254 mm (±.010"). Lead diameter is ±.05 mm (±.002"). Lead spacing is ±.381 mm (±.015").



# Radial Leads/Ceralam®



X7R

## SIZE AND CAPACITANCE SPECIFICATIONS



Dimensions: Millimeters (Inches)

AVX Style		MR04	MR05	MR06	MR07	MR08										
Length*	4.83 (.190")	4.83 (.190")	7.36 (.290")	12.44 (.490")	12.44 (.490")											
Width*	4.83 (.190")	4.83 (.190")	7.36 (.290")	12.44 (.490")	12.44 (.490")											
Thickness*	2.28 (.090")	2.28 (.090")	2.28 (.090")	3.55 (.140")	6.09 (.240")											
Lead Spacing*	2.54 (.100")	5.08 (.200")	5.08 (.200")	10.16 (.400")	10.16 (.400")											
Lead Diameter*	.635 (.025")	.635 (.025")	.635 (.025")	.635 (.025")	.635 (.025")											
Cap. in pF	Typical AVX Part Nos.	WVDC			WVDC			WVDC			WVDC			WVDC		
		200	100	50	200	100	50	200	100	50	200	100	50	200	100	50
100	MR.....5C101KAA															
120	MR.....5C121KAA															
150	MR.....5C151KAA															
180	MR.....5C181KAA															
220	MR.....5C221KAA															
270	MR.....5C271KAA															
330	MR.....5C331KAA															
390	MR.....5C391KAA															
470	MR.....5C471KAA															
560	MR.....5C561KAA															
680	MR.....5C681KAA															
820	MR.....5C821KAA															
<b>1000</b>	<b>MR.....5C102KAA</b>															
1200	MR.....5C122KAA															
1500	MR.....5C152KAA															
1800	MR.....5C182KAA															
2200	MR.....5C222KAA															
2700	MR.....5C272KAA															
3300	MR.....5C332KAA															
3900	MR.....5C392KAA															
4700	MR.....5C472KAA															
5600	MR.....5C562KAA															
6800	MR.....5C682KAA															
8200	MR.....5C822KAA															
<b>10,000</b>	<b>MR.....5C103KAA</b>															
12,000	MR.....5C123KAA															
15,000	MR.....5C153KAA															
18,000	MR.....5C183KAA															
22,000	MR.....5C223KAA															
27,000	MR.....5C273KAA															
33,000	MR.....5C333KAA															
39,000	MR.....5C393KAA															
47,000	MR.....5C473KAA															
56,000	MR.....5C563KAA															
68,000	MR.....5C683KAA															
82,000	MR.....5C823KAA															
<b>100,000</b>	<b>MR.....5C104KAA</b>															
120,000	MR.....5C124KAA															
150,000	MR.....5C154KAA															
180,000	MR.....5C184KAA															
220,000	MR.....5C224KAA															
270,000	MR.....5C274KAA															
330,000	MR.....5C334KAA															
390,000	MR.....5C394KAA															
470,000	MR.....5C474KAA															
560,000	MR.....5C564KAA															
680,000	MR.....5C684KAA															
820,000	MR.....5C824KAA															
<b>1.0 µF</b>	<b>MR.....5C105KAA</b>															
1.2 µF	MR.....5C125KAA															
1.5 µF	MR.....5C155KAA															
1.8 µF	MR.....5C185KAA															
2.0 µF	MR.....5C205KAA															
2.2 µF	MR.....5C225KAA															
2.7 µF	MR.....5C275KAA															
3.3 µF	MR.....5C335KAA															
3.9 µF	MR.....5C395KAA															
<b>4.7 µF</b>	<b>MR.....5C475KAA</b>															

For trimmed leads see "How To Order".  
 For other tolerances see "How To Order".  
 For other voltages see "How To Order".

= Industry preferred values

\*Length, width and thickness dimensions are ±.254 mm (±.010"). Lead diameter is ±.05 mm (±.002"). Lead spacing is ±.381 mm (±.015").

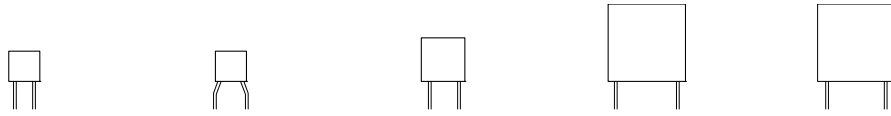


# Radial Leads/Ceralam®



## Z5U

### SIZE AND CAPACITANCE SPECIFICATIONS



Dimensions: Millimeters (Inches)

AVX Style		MR04		MR05		MR06		MR07		MR08	
Length*		4.83 (.190")		4.83 (.190")		7.36 (.290")		12.44 (.490")		12.44 (.490")	
Width*		4.83 (.190")		4.83 (.190")		7.36 (.290")		12.44 (.490")		12.44 (.490")	
Thickness*		2.28 (.090")		2.28 (.090")		2.28 (.090")		3.55 (.140")		6.09 (.240")	
Lead* Spacing		2.54 (.100")		5.08 (.200")		5.08 (.200")		10.16 (.400")		10.16 (.400")	
Lead* Diameter		.635 (.025")		.635 (.025")		.635 (.025")		.635 (.025")		.635 (.025")	
Cap. in pF	Typical AVX Part Nos.	WVDC		WVDC		WVDC		WVDC		WVDC	
		100	50	100	50	100	50	100	50	100	50
10,000	MR.....5E103ZAA										
12,000	MR.....5E123ZAA										
15,000	MR.....5E153ZAA										
18,000	MR.....5E183ZAA										
22,000	MR.....5E223ZAA										
27,000	MR.....5E273ZAA										
33,000	MR.....5E333ZAA										
39,000	MR.....5E393ZAA										
47,000	MR.....5E473ZAA										
56,000	MR.....5E563ZAA										
68,000	MR.....5E683ZAA										
82,000	MR.....5E823ZAA										
100,000	MR.....5E104ZAA										
120,000	MR.....5E124ZAA										
150,000	MR.....5E154ZAA										
180,000	MR.....5E184ZAA										
220,000	MR.....5E224ZAA										
270,000	MR.....5E274ZAA										
330,000	MR.....5E334ZAA										
390,000	MR.....5E394ZAA										
470,000	MR.....5E474ZAA										
560,000	MR.....5E564ZAA										
680,000	MR.....5E684ZAA										
820,000	MR.....5E824ZAA										
1.0 µF	MR.....5E105ZAA										
1.2 µF	MR.....5E125ZAA										
1.5 µF	MR.....5E155ZAA										
1.8 µF	MR.....5E185ZAA										
2.2 µF	MR.....5E225ZAA										
2.7 µF	MR.....5E275ZAA										
3.3 µF	MR.....5E335ZAA										
3.9 µF	MR.....5E395ZAA										
4.7 µF	MR.....5E475ZAA										
5.6 µF	MR.....5E565ZAA										
6.8 µF	MR.....5E685ZAA										
8.2 µF	MR.....5E825ZAA										
10.0 µF	MR.....5E106ZAA										

For trimmed leads see "How To Order".  
 For other tolerances see "How To Order".  
 For other voltages see "How To Order".

= Industry preferred values

\*Length, width and thickness dimensions are ±.254 mm (±.010"). Lead diameter is ±.05 mm (±.002"). Lead spacing is ±.381 mm (±.015).



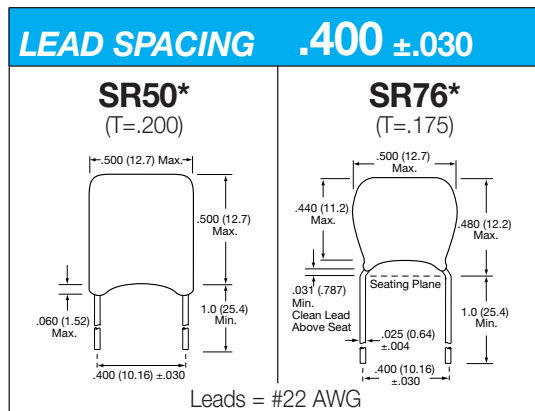
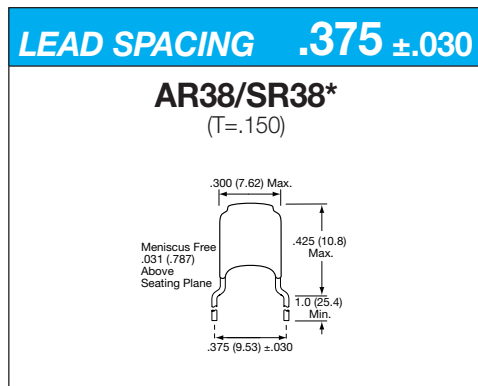
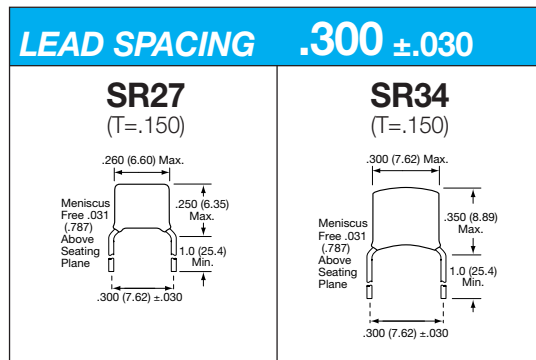
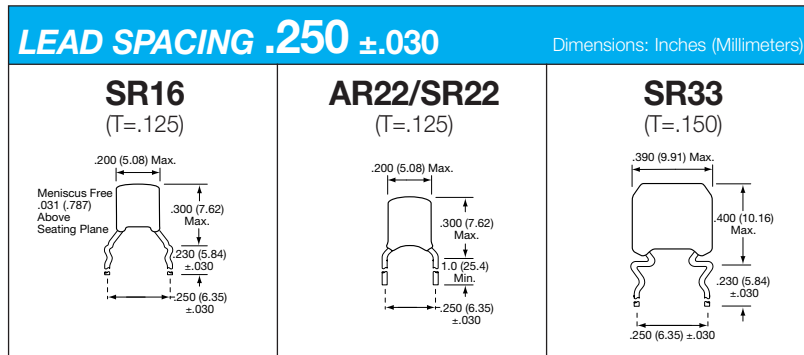
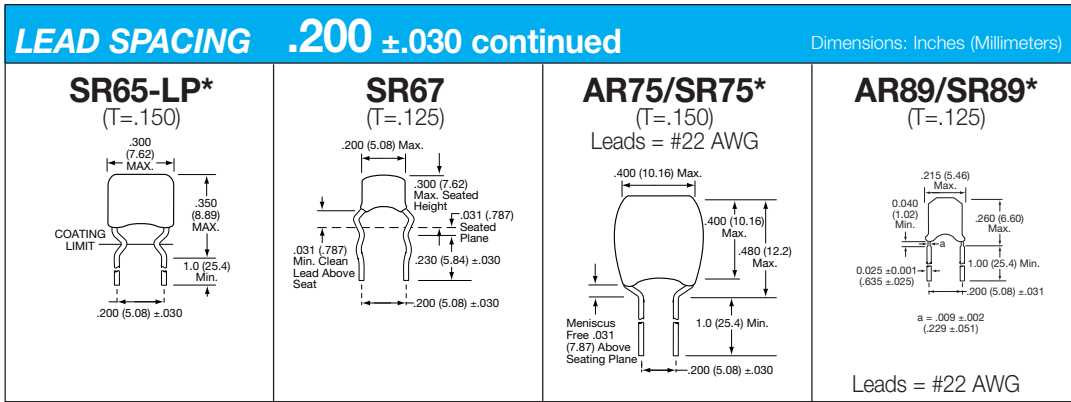
## Configurations by Lead Spacing

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

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

\*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.

Drawings are for illustrative purposes only. Actual lead form shape could vary within stated tolerances based on body size.

# 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.

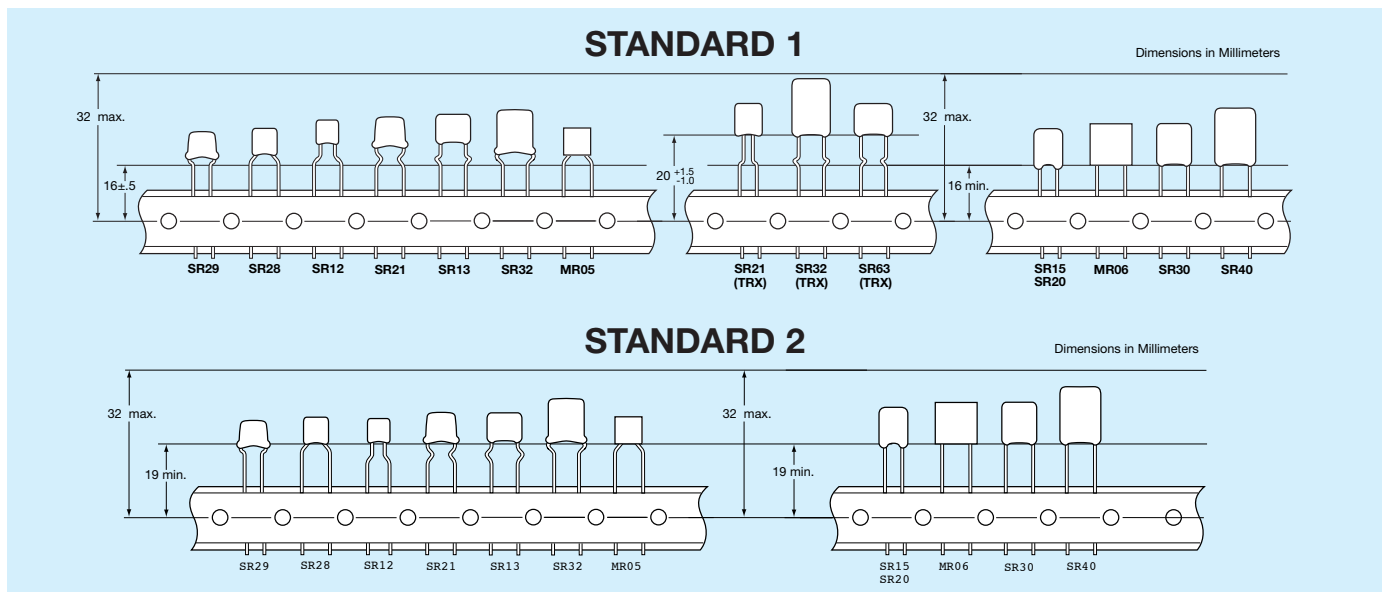
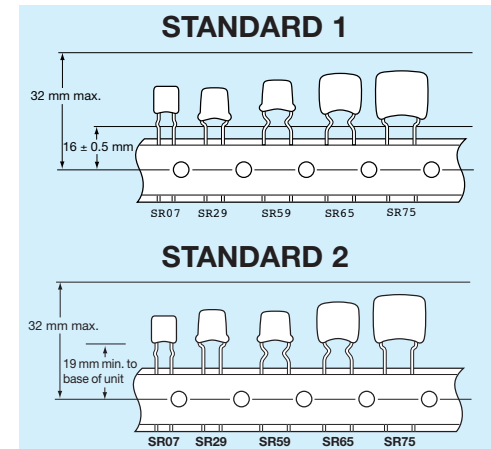
### HOW TO ORDER

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

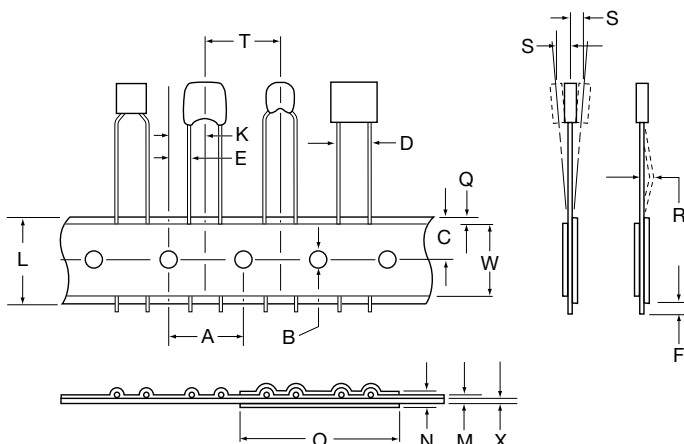
### THE INSERTABLES

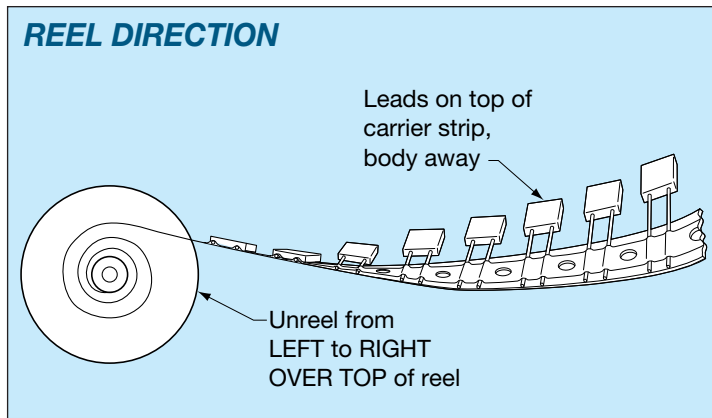


### DESCRIPTION

### DIMENSIONS (MM)

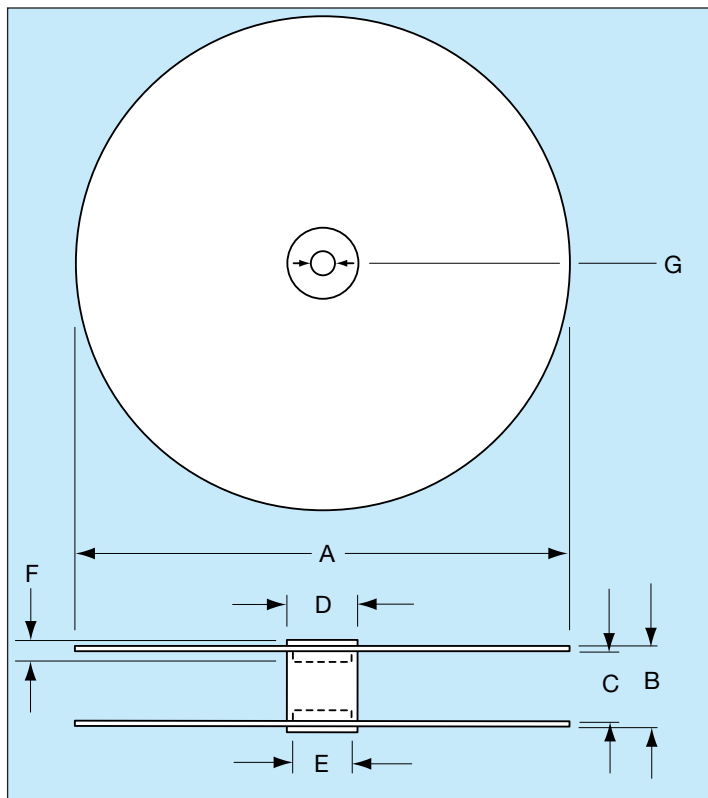
A. Feed Hole Pitch	12.70 ± .20
B. Feed Hole Diameter	3.99 ± .20
C. Feed Hole Location	9.02 ± .51
D. Component Lead Spacing	5.00 <sup>+0.79</sup> <sub>-.20</sub> or 2.54 <sup>+0.79</sup> <sub>-.20</sub>
E. Component Lead Location	3.81 ± .51 or 5.00 ± .51 for 2.54 lead spacing
F. Component Lead Protrusion (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





QUANTITY PER REEL SR/AR	
PART	PCS
SR15, 07, 12	3500
SR20, 21, 23, 28 13, 29, 59, 62, 89	3000
SR30, 32, 40, 63, 64 65, 75	2000
MR05, 06	2500

\*SL style available in all SR configurations.



DESCRIPTION	DIMENSIONS (MM)
A – Reel Diameter	304.80 - 355
B – Reel Outside Width	50.80 maximum
C – Reel Inside Width	38.10 - 46.02
D – Core Diameter (O.D.)	102.01 maximum
E – Hub Recess Diameter	86.36 maximum
F – Hub Recess Depth	9.50 minimum
G – Arbor Hole Diameter	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