

# RADIAL LEADS

Ceramam®

## GENERAL INFORMATION

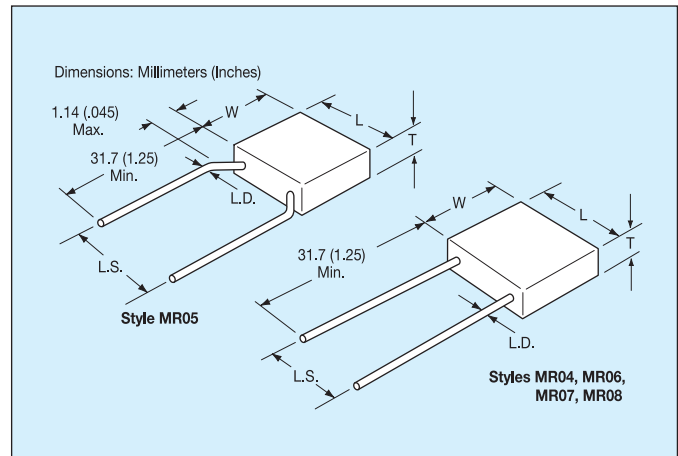
### MR Series

#### Molded Radial Leaded MLC

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

**Case Material:** Molded Epoxy

**Lead Material:** Solderable



## HOW TO ORDER

**MR05**

**1**

**A**

**561**

**J**

**A**

**R**

### Style

MR04  
MR05  
MR06  
MR07  
MR08

### Voltage

5 = 50V  
1 = 100V  
2 = 200V

### Dielectric

A = COG (NP0)  
C = X7R  
E = Z5U

### Capacitance

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.)

### Capacitance Tolerance

COG (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%

### Failure Rate

A = Not Applicable  
T = CECC

### Leads

A = Standard Solderable (SnPb)  
T<sup>1</sup> = 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.)

- KYOCERA 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.).

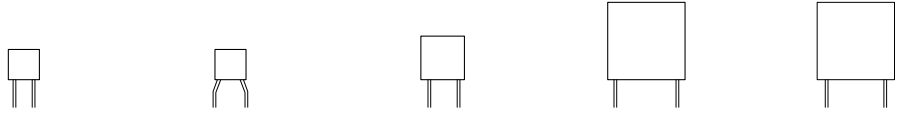
**Tape and Reel:** Available on MR04, MR05, and MR06 only (2500 pcs./reel).

# RADIAL LEADS

Cerlam® - COG (NP0)



## SIZE AND CAPACITANCE SPECIFICATIONS



Dimensions: Millimeters (Inches)

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 Part Nos.	WVDC			WVDC			WVDC			WVDC			WVDC		
		200	100	50	200	100	50	200	100	50	200	100	50	200	100	50
1.0	MR.....5A1R0DAA															
to																
9.1	MR.....5A9R1DAA															
10	MR.....5A100KAA															
12	MR.....5A120KAA															
15	MR.....5A150KAA															
18	MR.....5A180KAA															
22	MR.....5A220KAA															
27	MR.....5A270KAA															
33	MR.....5A330KAA															
39	MR.....5A390KAA															
47	MR.....5A470KAA															
56	MR.....5A560KAA															
68	MR.....5A680KAA															
82	MR.....5A820KAA															
100	MR.....5A101KAA															
120	MR.....5A121KAA															
150	MR.....5A151KAA															
180	MR.....5A181KAA															
220	MR.....5A221KAA															
270	MR.....5A271KAA															
330	MR.....5A331KAA															
390	MR.....5A391KAA															
470	MR.....5A471KAA															
560	MR.....5A561KAA															
680	MR.....5A681KAA															
820	MR.....5A821KAA															
<b>1000</b>	<b>MR.....5A102KAA</b>															
1200	MR.....5A122KAA															
1500	MR.....5A152KAA															
1800	MR.....5A182KAA															
2200	MR.....5A222KAA															
2700	MR.....5A272KAA															
3300	MR.....5A332KAA															
3900	MR.....5A392KAA															
4700	MR.....5A472KAA															
5600	MR.....5A562KAA															
6800	MR.....5A682KAA															
8200	MR.....5A822KAA															
<b>10,000</b>	<b>MR.....5A103KAA</b>															
12,000	MR.....5A123KAA															
15,000	MR.....5A153KAA															
18,000	MR.....5A183KAA															
22,000	MR.....5A223KAA															
27,000	MR.....5A273KAA															
33,000	MR.....5A333KAA															
39,000	MR.....5A393KAA															
47,000	MR.....5A473KAA															
56,000	MR.....5A563KAA															
68,000	MR.....5A683KAA															
82,000	MR.....5A823KAA															
<b>100,000</b>	<b>MR.....5A104KAA</b>															
120,000	MR.....5A124KAA															
150,000	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

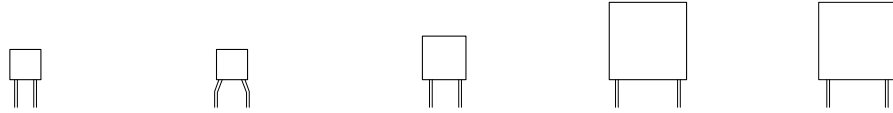
\*Length, width and thickness dimensions are ±.254 mm (±.010"). Lead diameter is ±.05 mm (±.002"). Lead spacing is ±.381 mm (±.015").

# RADIAL LEADS

Ceramam® - X7R



## SIZE AND CAPACITANCE SPECIFICATIONS



Dimensions: Millimeters (Inches)

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 Part Nos.	VVDC			VVDC			VVDC			VVDC			VVDC		
		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															
1000	MR....5C102KAA															
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															
10,000	MR....5C103KAA															
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															
100,000	MR....5C104KAA															
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															
1.0 µF	MR....5C105KAA															
1.2 pF	MR....5C125KAA															
1.5 pF	MR....5C155KAA															
1.8 pF	MR....5C185KAA															
2.0 pF	MR....5C205KAA															
2.2 pF	MR....5C225KAA															
2.7 pF	MR....5C275KAA															
3.3 pF	MR....5C335KAA															
3.9 pF	MR....5C395KAA															
4.7 µF	MR....5C475KAA															

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").



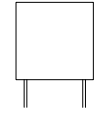
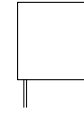
The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at [www.kyocera-avx.com/disclaimer/](http://www.kyocera-avx.com/disclaimer/) by reference and should be reviewed in full before placing any order.

# RADIAL LEADS

Ceramam® - Z5U



## SIZE AND CAPACITANCE SPECIFICATIONS



Dimensions: Millimeters (Inches)

Style	MR04	MR05	MR06	MR07	MR08						
<b>Length*</b>	4.83 (.190")	4.83 (.190")	7.36 (.290")	12.44 (.490")	12.44 (.490")						
<b>Width*</b>	4.83 (.190")	4.83 (.190")	7.36 (.290")	12.44 (.490")	12.44 (.490")						
<b>Thickness*</b>	2.28 (.090")	2.28 (.090")	2.28 (.090")	3.55 (.140")	6.09 (.240")						
<b>Lead* Spacing</b>	2.54 (.100")	5.08 (.200")	5.08 (.200")	10.16 (.400")	10.16 (.400")						
<b>Lead* Diameter</b>	.635 (.025")	.635 (.025")	.635 (.025")	.635 (.025")	.635 (.025")						
Cap. in. pF	Typical Part Nos.	WVDC		WVDC		WVDC		WVDC		WVDC	
		100	50	100	50	100	50	100	50	100	50
10,000	MR-----5E103ZAA										
12,000	MR-----5F1237AA										
15,000	MR-----5F1537AA										
18,000	MR-----5F1837AA										
22,000	MR-----5F2237AA										
27,000	MR-----5F2737AA										
33,000	MR-----5F3337AA										
39,000	MR-----5F3937AA										
47,000	MR-----5F4737AA										
56,000	MR-----5F5637AA										
68,000	MR-----5F6837AA										
82,000	MR-----5F8237AA										
100,000	MR-----5E104ZAA										
120,000	MR-----5F1247AA										
150,000	MR-----5F1547AA										
180,000	MR-----5F1847AA										
220,000	MR-----5F2247AA										
270,000	MR-----5F2747AA										
330,000	MR-----5F3347AA										
390,000	MR-----5F3947AA										
470,000	MR-----5E474ZAA										
560,000	MR-----5F5647AA										
680,000	MR-----5F6847AA										
820,000	MR-----5F8247AA										
1.0 µF	MR-----5E105ZAA										
1.2 µF	MR-----5F1257AA										
1.5 µF	MR-----5F1557AA										
1.8 µF	MR-----5F1857AA										
2.2 µF	MR-----5F2257AA										
2.7 µF	MR-----5F2757AA										
3.3 µF	MR-----5F3357AA										
3.9 µF	MR-----5F3957AA										
4.7 µF	MR-----5E475ZAA										
5.6 µF	MR-----5F5657AA										
6.8 µF	MR-----5F6857AA										
8.2 µF	MR-----5F8257AA										
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).

# 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.

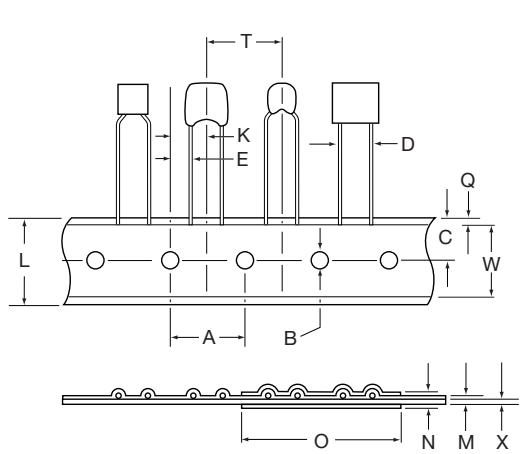
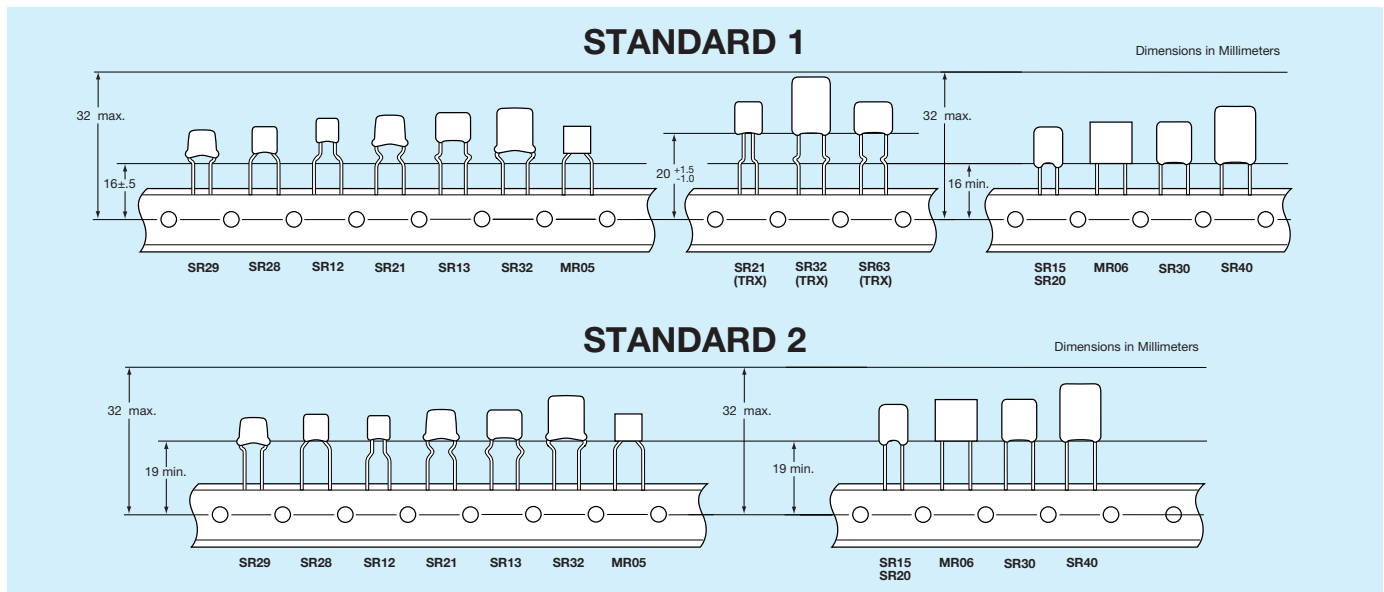
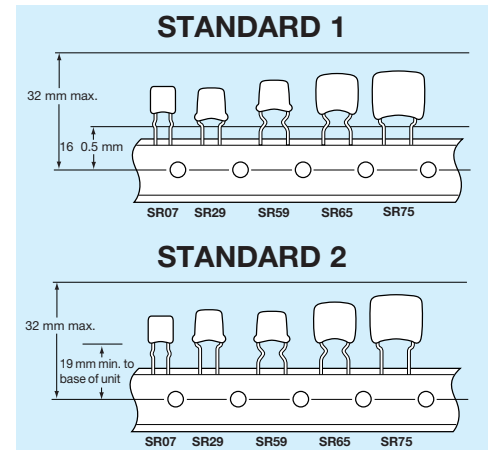
### HOW TO ORDER

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

Examples:

SR215C104KARTR1  
SR305E105MARTR2  
SR215C103JARTRX

### THE INSERTABLES



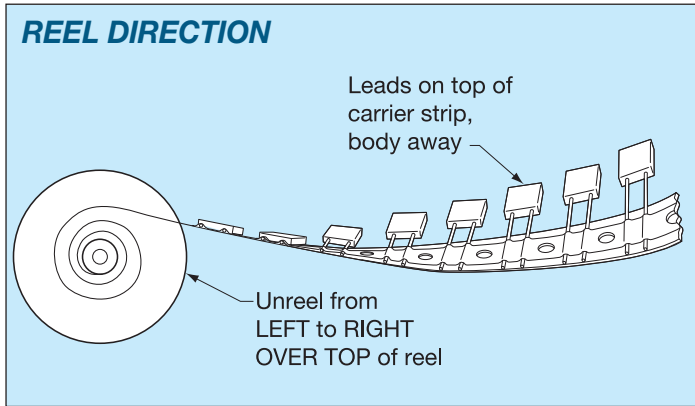
### DESCRIPTION

### 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	
F. Component Lead Protrusion (The lead wire could end in the edge of carrier tape or before of it, inclusive under adhesive tape)	3.81 ± .51 or 5.00 ± .51 for 2.54 lead spacing 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 .99 maximum
S. Component Misalignment	12.70 ± .99
T. Component Pitch	5.00 minimum
W. Adhesive Tape Width	.51 ± .10
X. Carrier Tape Thickness	254 ± 2.00
Y. Cumulative Pitch over 20 Pitches	

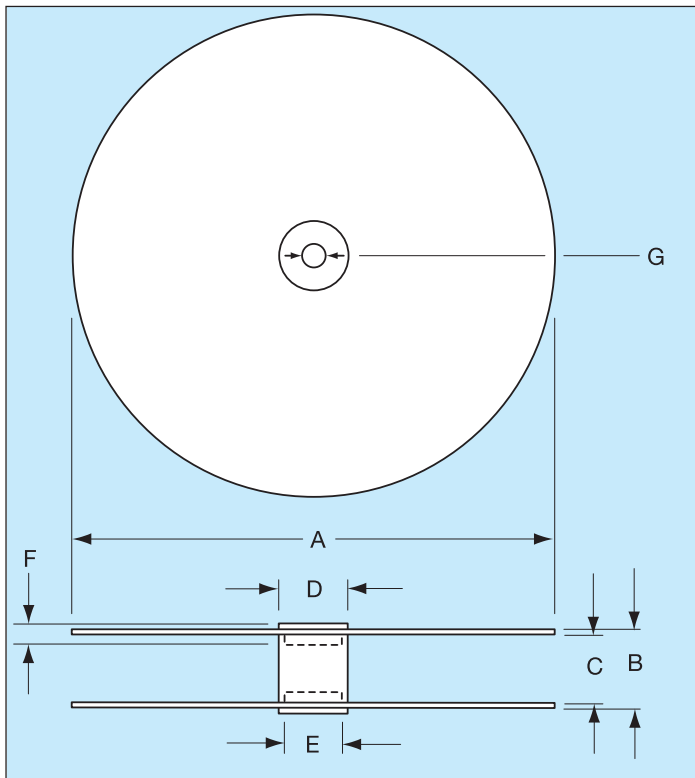
# RADIAL LEADS

## Packaging



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