

RADIAL LEADS

Ceralam®



GENERAL INFORMATION

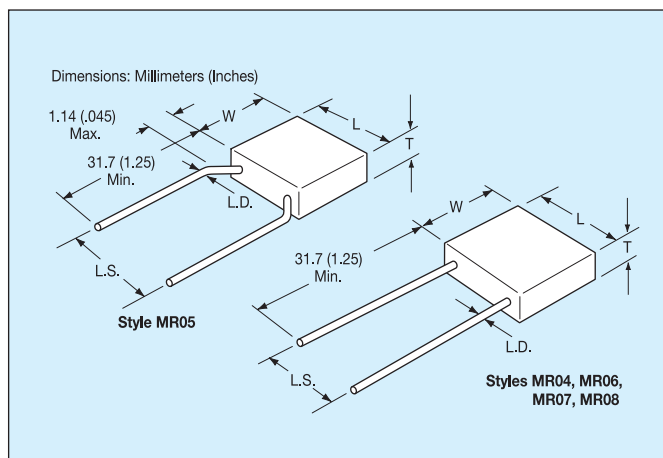
MR Series

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

A

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 = $\pm 0.5\text{pF}$
($>10\text{pF}$ only)
F = $\pm 1\%$
($>50\text{pF}$ only)
G = $\pm 2\%$
($>25\text{pF}$ only)
J = $\pm 5\%$
K = $\pm 10\%$
X7R:
J = $\pm 5\%$
K = $\pm 10\%$
M = $\pm 20\%$
Z5U:
M = $\pm 20\%$
Z = $+80\%$
-20%

Failure Rate

A = Not Applicable
T = CECC

Leads

A = Standard
Solderable (SnPb)
T' = Trimmed Leads
.230" $\pm$.030"

Not RoHS Compliant

¹ 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.).

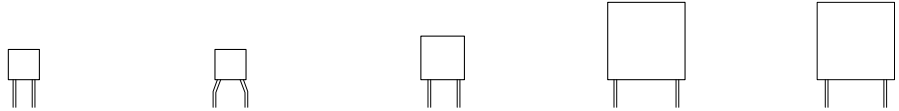
Tape and Reel: Available on MR04, MR05, and MR06 only (2500 pcs./reel).

RADIAL LEADS

Ceralam® - C0G (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 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

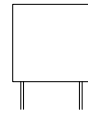
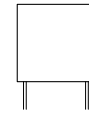
*Length, width and thickness dimensions are ± 0.254 mm (± 0.010 "). Lead diameter is ± 0.05 mm (± 0.002 "). Lead spacing is ± 0.381 mm (± 0.015 ").

RADIAL LEADS

Ceralam® - 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.	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															
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 ± 0.254 mm (± 0.010 "). Lead diameter is ± 0.05 mm (± 0.002 "). Lead spacing is ± 0.381 mm (± 0.015 ").



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

TDS-MLCCLD-0013 | Rev 4

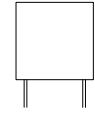
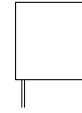
— MULTILAYER CERAMIC LEADED CAPACITORS —

RADIAL LEADS

Ceralam® - Z5U



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	
		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 ± 0.254 mm (± 0.010 "). Lead diameter is ± 0.05 mm (± 0.002 "). Lead spacing is ± 0.381 mm (± 0.015 ").

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.

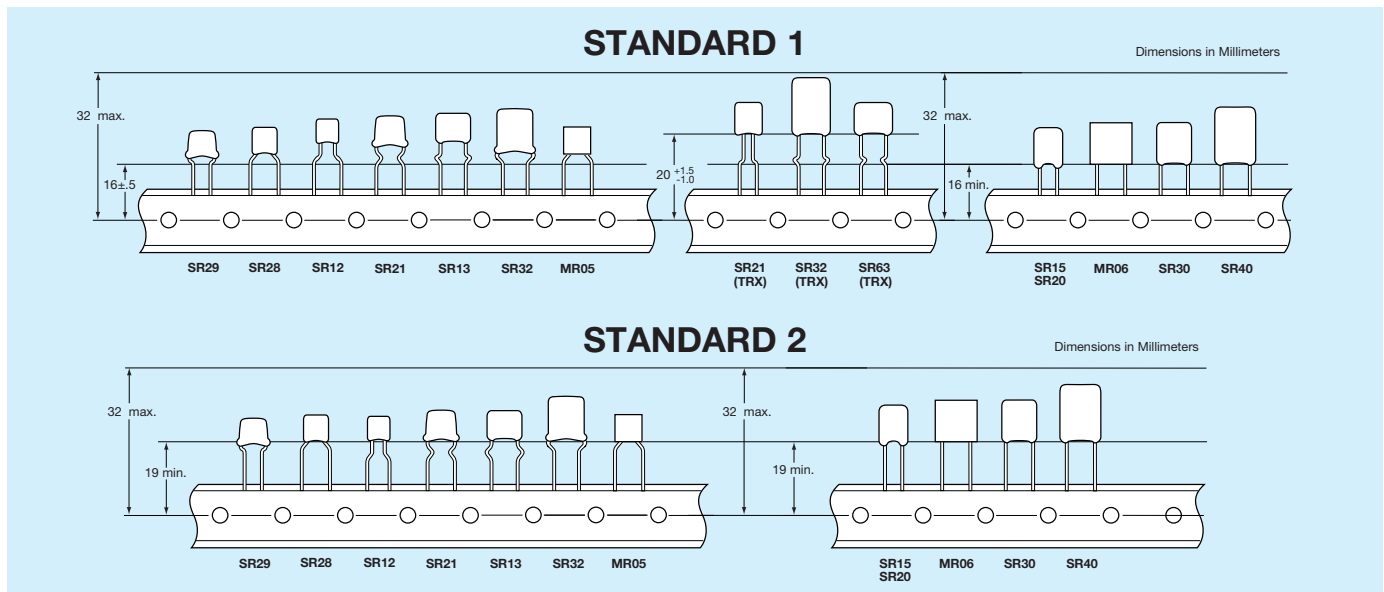
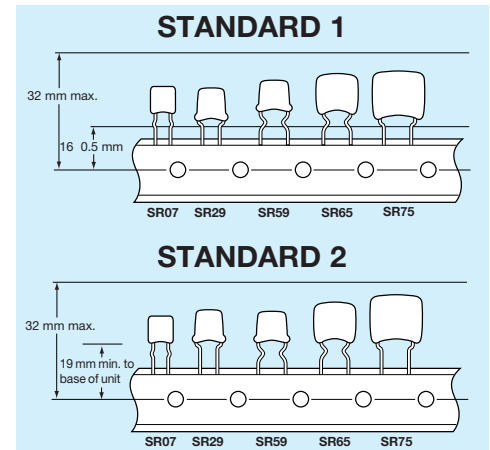
HOW TO ORDER

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

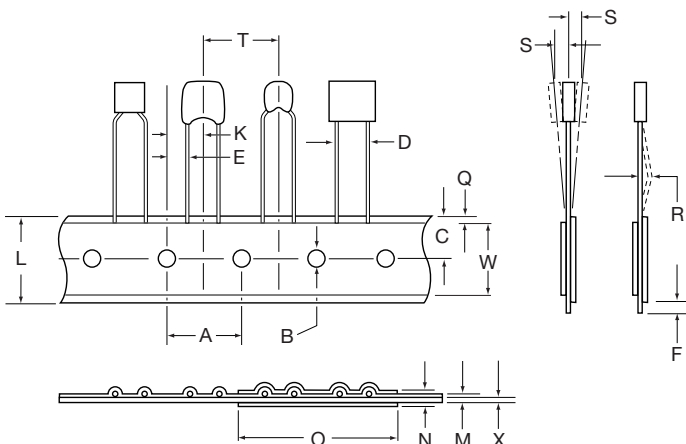
THE INSERTABLES



DESCRIPTION

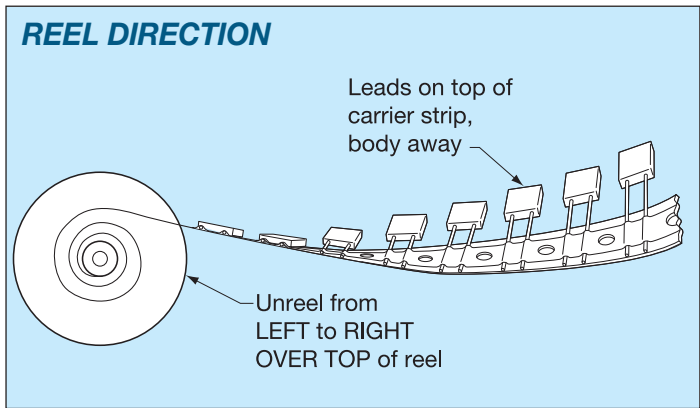
DIMENSIONS (MM)

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 ⁺⁷⁹ / _{±.20} or 2.54 ⁺⁷⁹ / _{±.20}
E. Component Lead Location	3.81 ± .51 or 5.00 ± .51 for 2.54 lead spacing
F. Component Lead Protrusion (The lead wire could end in the edge of carrier tape or before of it, inclusive under adhesive tape)	2.00 maximum
K. Component Body Location	6.35 ± .41
L. Carrier Tape Width	18.01 ^{+1.02} / _{±.51}
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



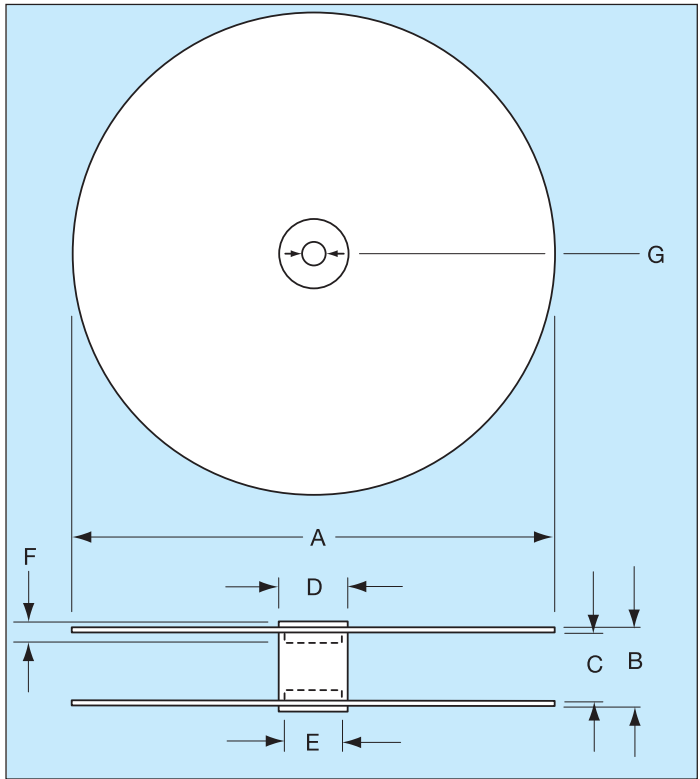
RADIAL LEADS

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