

# AXIAL LEADS

Ceramam®

## GENERAL INFORMATION

SA Series

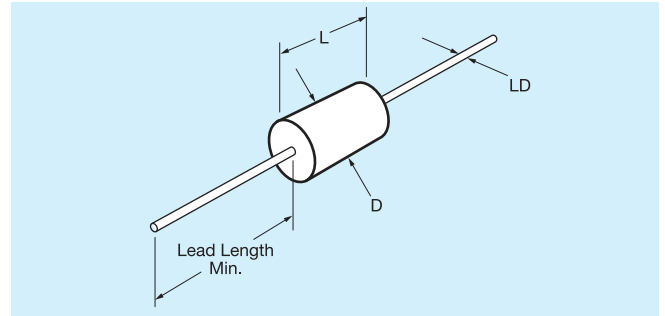
Molded Axial Leaded MLC

Temperature Coefficients: COG (NP0), X7R, Z5U

50V, 100V and 200V

Case Material: Molded Epoxy

Lead Material: Solderable



## HOW TO ORDER

<b>MA10</b>	<b>5</b>	<b>E</b>	<b>104</b>	<b>Z</b>	<b>A</b>	<b>R</b>
<b>Molded Axial Size</b>	<b>Voltage</b>	<b>Dielectric</b>	<b>Capacitance</b>	<b>Capacitance Tolerance</b>	<b>Failure Rate</b>	<b>Leads</b>
MA10 MA20 MA30 MA40 MA50 MA60	5 = 50V 1 = 100V 2 = 200V	A = COG (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)	COG (NP0): F = ±1% J = ±5% K = ±10% M = ±20% D = ±0.5pF <10pF only	X7R: J = ±5% K = ±10% M = ±20%	Z5U: M = ±20% Z = +80% -20%
					A = Not Applicable	A = Standard

**Not RoHS Compliant**

‡ C tolerance available COG (NP0) from 1.0 to 9.1 pF only. Minimum tolerance for values 10 pF - 100 pF is D or F whichever is greater.

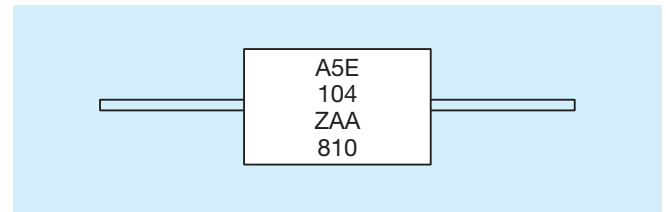
## MARKING (EXAMPLE)

Line 1, A (for KYOCERA AVX), 5 = 50 Volts (V is optional),  
E = TC Line 2, 104Z = Capacitance Code

Line 3, Tolerance, 2 digit Lot Code

Date Code: 8 = 2008  
10 = Week

Four Digit Date Code Optional



## MILITARY CROSS REFERENCE AND DIMENSIONS GUIDE

Style	Per MIL-Spec			Case Size		
	MIL-C-11015	MIL-PRF-39014	MIL-PRF-20	Length (L)	Diameter (D)	Lead Diameter (LD)
MA10	CK12	CKR11	CCR75/CC75	4.07 ± .25 (.160" ± .010")	2.29 ± .25 (.090" ± .010")	.48 ± .05 (.019" ± .002")
MA20	CK13	CKR12	CCR76/CC76	6.35 ± .25 (.250" ± .010")	2.29 ± .25 (.090" ± .010")	.48 ± .05 (.019" ± .002")
MA40	CK14	CKR14	CCR77/CC77	9.91 ± .25 (.390" ± .010")	3.56 ± .25 (.140" ± .010")	.63 ± .05 (.025" ± .002")
MA50	CK15	CKR15	CCR78/CC78	12.7 ± .51 (.500" ± .020")	6.35 ± .38 (.250" ± .015")	.63 ± .05 (.025" ± .002")
MA60	CK16	CKR16	CCR79/CC79	17.53 ± .51 (.690" ± .020")	8.89 ± .51 (.350" ± .015")	.63 ± .05 (.025" ± .002")

For Military/Established Reliability Molded/Axial Lead see MIL-C-11015, MIL-PRF-39014, MIL-PRF-20 Section.

Dimensions: Millimeters (Inches)

# AXIAL LEADS

## Cerlam® – COG (NP0) Dielectric

### SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: Millimeters (Inches)



Style		MA10			MA20			MA30			MA40			MA50			MA60		
		Length	Diameter	Lead Diameter	Length	Diameter	Lead Diameter	Length	Diameter	Lead Diameter	Length	Diameter	Lead Diameter	Length	Diameter	Lead Diameter	Length	Diameter	Lead Diameter
Cap. in. pF	Typical Part Nos.	WVDC			WVDC			WVDC			WVDC			WVDC			WVDC		
		200	100	50	200	100	50	200	100	50	200	100	50	200	100	50	200	100	50
1.0 to 9.1	MA...5A1R0DAA to MA...5A9R1DAA																		
10 to 15	MA...5A100KAA to MA...5A150KAA																		
18 to 27	MA...5A180KAA to MA...5A270KAA																		
33 to 47	MA...5A330KAA to MA...5A470KAA																		
56 to 82	MA...5A560KAA to MA...5A820KAA																		
100 to 150	MA...5A101KAA to MA...5A151KAA																		
180 to 270	MA...5A181KAA to MA...5A271KAA																		
330 to 470	MA...5A331KAA to MA...5A471KAA																		
560 to 820	MA...5A561KAA to MA...5A821KAA																		
1000 to 1500	MA...5A102KAA to MA...5A152KAA																		
1800 to 2700	MA...5A182KAA to MA...5A272KAA																		
3300 to 4700	MA...5A332KAA to MA...5A472KAA																		
5600 to 8200	MA...5A562KAA to MA...5A822KAA																		
10,000 to 15,000	MA...5A103KAA to MA...5A153KAA																		
18,000 to 27,000	MA...5A183KAA to MA...5A273KAA																		
33,000 to 47,000	MA...5A333KAA to MA...5A473KAA																		
56,000 to 82,000	MA...5A563KAA to MA...5A823KAA																		
100,000 to 150,000	MA...5A104KAA to MA...5A154KAA																		

For other tolerances see Part No. Codes  
 For other voltages see Part No. Codes  
 Style

# AXIAL LEADS

## Cerlam® - X7R Dielectric

### SIZE AND CAPACITANCE SPECIFICATIONS



Dimensions: Millimeters (Inches)

Style		MA10			MA20			MA30			MA40			MA50			MA60		
		Length	Diameter	Lead Diameter	Length	Diameter	Lead Diameter	Length	Diameter	Lead Diameter	Length	Diameter	Lead Diameter	Length	Diameter	Lead Diameter	Length	Diameter	Lead Diameter
Cap. in. pF	Typical Part Nos.	WVDC			WVDC			WVDC			WVDC			WVDC			WVDC		
		200	100	50	200	100	50	200	100	50	200	100	50	200	100	50	200	100	50
220	MA.....5C221KAA																		
270	MA.....5C271KAA																		
330	MA.....5C331KAA																		
390	MA.....5C391KAA																		
470	MA.....5C471KAA																		
560	MA.....5C561KAA																		
680	MA.....5C681KAA																		
820	MA.....5C821KAA																		
1000	MA.....5C102KAA																		
1200	MA.....5C122KAA																		
1500	MA.....5C152KAA																		
1800	MA.....5C182KAA																		
2200	MA.....5C222KAA																		
2700	MA.....5C272KAA																		
3300	MA.....5C332KAA																		
3900	MA.....5C392KAA																		
4700	MA.....5C472KAA																		
5600	MA.....5C562KAA																		
6800	MA.....5C682KAA																		
8200	MA.....5C822KAA																		
10,000	MA.....5C103KAA																		
12,000	MA.....5C123KAA																		
15,000	MA.....5C153KAA																		
18,000	MA.....5C183KAA																		
22,000	MA.....5C223KAA																		
27,000	MA.....5C273KAA																		
33,000	MA.....5C333KAA																		
39,000	MA.....5C393KAA																		
47,000	MA.....5C473KAA																		
56,000	MA.....5C563KAA																		
68,000	MA.....5C683KAA																		
82,000	MA.....5C823KAA																		
100,000	MA.....5C104KAA																		
120,000	MA.....5C124KAA																		
150,000	MA.....5C154KAA																		
180,000	MA.....5C184KAA																		
220,000	MA.....5C224KAA																		
270,000	MA.....5C274KAA																		
330,000	MA.....5C334KAA																		
390,000	MA.....5C394KAA																		
470,000	MA.....5C474KAA																		
560,000	MA.....5C564KAA																		
680,000	MA.....5C684KAA																		
820,000	MA.....5C824KAA																		
1.0 μF	MA.....5C105KAA																		
1.2 μF	MA.....5C125KAA																		
1.5 μF	MA.....5C155KAA																		
1.8 μF	MA.....5C185KAA																		
2.2 μF	MA.....5C225KAA																		
2.7 μF	MA.....5C275KAA																		
3.3 μF	MA.....5C335KAA																		
3.9 μF	MA.....5C395KAA																		

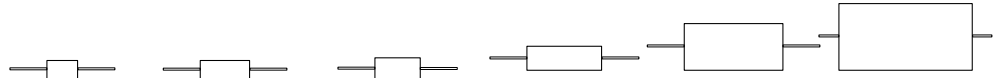
For other tolerances see Part No. Codes  
 For other voltages see Part No. Codes  
 Style

# AXIAL LEADS

Cerlam® - Z5U Dielectric

## SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: Millimeters (Inches)



Style	MA10			MA20			MA30			MA40			MA50			MA60										
	Length			Length			Length			Length			Length			Length										
Diameter	4.07 ± .25 (.160" ± .010")		6.35 ± .25 (.250" ± .010")		6.09 ± .25 (.240" ± .010")		9.91 ± .25 (.390" ± .010")		12.7 ± .51 (.500" ± .020")		17.53 ± .51 (.690" ± .020")		2.29 ± .25 (.090" ± .010")		2.29 ± .25 (.090" ± .010")		3.30 ± .25 (.130" ± .010")		3.56 ± .25 (.140" ± .010")		6.35 ± .38 (.250" ± .015")		8.89 ± .51 (.350" ± .015")			
Lead Diameter	.48 ± .05 (.019" ± .002")		.48 ± .05 (.019" ± .002")		.48 ± .05 (.019" ± .002")		.63 ± .05 (.025" ± .002")		.63 ± .05 (.025" ± .002")		.63 ± .05 (.025" ± .002")		.63 ± .05 (.025" ± .002")		.63 ± .05 (.025" ± .002")		.63 ± .05 (.025" ± .002")		.63 ± .05 (.025" ± .002")		.63 ± .05 (.025" ± .002")		.63 ± .05 (.025" ± .002")			
Lead Length	25.4 (1.00")		25.4 (1.00")		25.4 (1.00")		25.4 (1.00")		25.4 (1.00")		25.4 (1.00")		25.4 (1.00")		25.4 (1.00")		25.4 (1.00")		25.4 (1.00")		25.4 (1.00")		25.4 (1.00")			
Cap. in. pF	Typical Part Nos.	WVDC			WVDC			WVDC			WVDC			WVDC			WVDC									
		200	100	50	200	100	50	200	100	50	200	100	50	200	100	50	200	100	50	200	100	50	200	100	50	
1000	MA.....5E102ZAA																									
1200	MA.....5E122ZAA																									
1500	MA.....5E152ZAA																									
1800	MA.....5E182ZAA																									
2200	MA.....5E222ZAA																									
2700	MA.....5E272ZAA																									
3300	MA.....5E332ZAA																									
3900	MA.....5E392ZAA																									
4700	MA.....5E472ZAA																									
5600	MA.....5E562ZAA																									
6800	MA.....5E682ZAA																									
8200	MA.....5E822ZAA																									
10,000	MA.....5E103ZAA																									
12,000	MA.....5E123ZAA																									
15,000	MA.....5E153ZAA																									
18,000	MA.....5E183ZAA																									
22,000	MA.....5E223ZAA																									
27,000	MA.....5E273ZAA																									
33,000	MA.....5E333ZAA																									
39,000	MA.....5E393ZAA																									
47,000	MA.....5E473ZAA																									
56,000	MA.....5E563ZAA																									
68,000	MA.....5E683ZAA																									
82,000	MA.....5E823ZAA																									
100,000	MA.....5E104ZAA																									
120,000	MA.....5E124ZAA																									
150,000	MA.....5E154ZAA																									
180,000	MA.....5E184ZAA																									
220,000	MA.....5E224ZAA																									
270,000	MA.....5E274ZAA																									
330,000	MA.....5E334ZAA																									
390,000	MA.....5E394ZAA																									
470,000	MA.....5E474ZAA																									
560,000	MA.....5E564ZAA																									
680,000	MA.....5E684ZAA																									
820,000	MA.....5E824ZAA																									
1.0 µF	MA.....5E105ZAA																									
1.2 µF	MA.....5E125ZAA																									
1.5 µF	MA.....5E155ZAA																									
1.8 µF	MA.....5E185ZAA																									
2.2 µF	MA.....5E225ZAA																									
2.7 µF	MA.....5E275ZAA																									
3.3 µF	MA.....5E335ZAA																									
3.9 µF	MA.....5E395ZAA																									
4.7 µF	MA.....5E475ZAA																									
5.6 µF	MA.....5E565ZAA																									
6.8 µF	MA.....5E685ZAA																									
8.2 µF	MA.....5E825ZAA																									

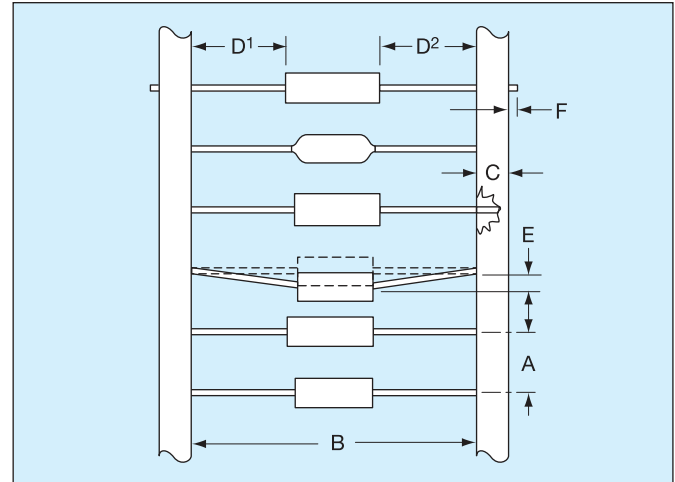
For other tolerances see Part No. Codes  
 For other voltages see Part No. Codes  
 Style

# AXIAL LEADS

## Packaging

### TAPE AND REEL

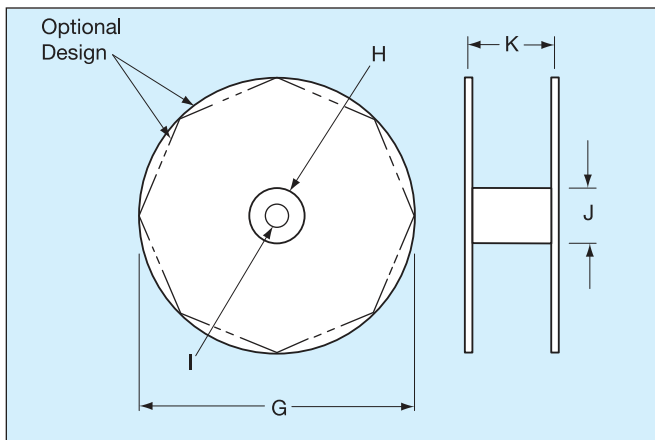
CLASS I / RS-296	
A.	5mm ± 0.5mm (.200" ± 0.020")
B*.	52.4mm ± 1.5mm (2.063" ± 0.059")
C.	6.35mm ± 0.4mm (0.250" ± 0.016")
D1-D2.	1.4mm (0.055" MAX.)
E.	1.2mm (0.047" MAX.)
F.	1.6mm (0.063" MAX.)
G.	356mm (14.00")
H.	76mm (3.000")
I.	25.4mm (1.000")
J.	84mm (3.300")
K.	70mm (2.750")



**Leader Tape:** 300mm min. (12")

**Splicing:** Tape Only

**Missing Parts:** 0.25% of component count max.-  
No consecutive missing parts



### REEL QUANTITIES (MAX.) ‡

SA05	7,500 pcs.	MA10	5,000 pcs.
SA10	7,500 pcs.	MA20	5,000 pcs.
SA11	5,000 pcs.	MA30	3,000 pcs.
SA20	5,000 pcs.	MA40	3,000 pcs.
SA30	5,000 pcs.	MA50	950 pcs.
SA40	5,000 pcs.	MA60	650 pcs.

‡ 1000 pc. reels available for distribution pack only in ±1% and ±2% tolerance.

\* Standard Tape Spacing Shown. Also available in 26.0mm + 1.5mm, - 0mm, (1.023 in. + .059 in. - 0 in.) for SpinGuards only. EIA Class I, II and III tape spacings are available for molded axials. Tape spacing for Class II is 63.5mm ± 1.5mm (2.50 in ± .059 in), and for Class III 73mm ± 1.5mm (2.87 in ± .059 in)

### ADDITIONAL PACKAGING AVAILABLE

#### AMMO PACK

Tape Spacing	SA05, SA10 SA20	SA11 SA30	SA40	BOX SIZES (Nominal)		
				L	W	H
52.4mm ± 1.5mm (2.062" ± .059")	4,000 pcs.	2000	2,000 pcs.	255mm (10.039")	73mm (2.874")	93mm (3.661")
26.0mm + 1.5mm - 0mm (1.023" + .059" - 0")	4,000 pcs.*	2000	2,000 pcs.*	255mm (10.039")	48mm (1.889")	113mm (4.448")

\*SpinGuard only

### BULK PACK (MOLDED AXIALS ONLY)

MA10 MA20 MA30 MA40	100 pcs. (bag)
MA50 MA60	50 pcs. (bag)