

## GENERAL DESCRIPTION

**AVX MA Series**

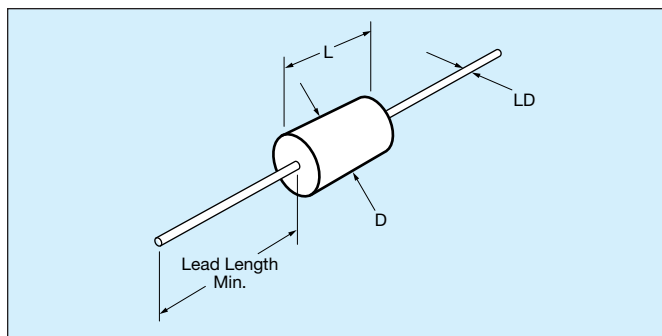
**Molded Axial Leaded MLC**

**Temperature Coefficient:** C0G (NP0), X7R, Z5U

50V, 100V and 200V

**Case Material:** Molded Epoxy

**Lead Material:** Solderable



## HOW TO ORDER

**MA10**

**Molded Axial Size**

MA10  
MA20  
MA30  
MA40  
MA50  
MA60

**5**

**Voltage**

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

**E**

**Dielectric**

A = C0G (NP0)  
C = X7R  
E = Z5U

**104**

**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.)

**Z**

**Capacitance Tolerance**

C0G (NP0):  
F =  $\pm 1\%$   
J =  $\pm 5\%$   
K =  $\pm 10\%$   
M =  $\pm 20\%$   
D =  $\pm 5\text{pF}$   
<10pF only

X7R:  
J =  $\pm 5\%$   
K =  $\pm 10\%$   
M =  $\pm 20\%$

Z5U:  
M =  $\pm 20\%$   
Z =  $+80\%$   
-20%

**A**

**Failure Rate**  
A = Not Applicable

**A**

**Leads**  
A = Standard

‡ C tolerance available C0G (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)

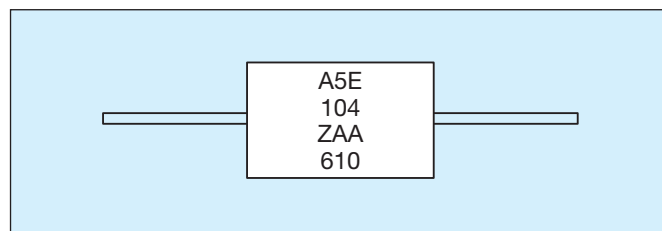
Line 1, A (for AVX), 5 = 50 Volts (V is optional),  
E = TC Line 2, 104Z = Capacitance Code

Line 3, Tolerance, 2 digit Lot Code

Date Code: 6 = 2006

10 = Week

Four Digit Date Code Optional



## MILITARY CROSS REFERENCE AND DIMENSIONS GUIDE

AVX 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 $\pm$ .25 (.160" $\pm$ .010")	2.29 $\pm$ .25 (.090" $\pm$ .010")	.48 $\pm$ .05 (.019" $\pm$ .002")
MA20	CK13	CKR12	CCR76/CC76	6.35 $\pm$ .25 (.250" $\pm$ .010")	2.29 $\pm$ .25 (.090" $\pm$ .010")	.48 $\pm$ .05 (.019" $\pm$ .002")
MA40	CK14	CKR14	CCR77/CC77	9.91 $\pm$ .25 (.390" $\pm$ .010")	3.56 $\pm$ .25 (.140" $\pm$ .010")	.63 $\pm$ .05 (.025" $\pm$ .002")
MA50	CK15	CKR15	CCR78/CC78	12.7 $\pm$ .51 (.500" $\pm$ .020")	6.35 $\pm$ .38 (.250" $\pm$ .015")	.63 $\pm$ .05 (.025" $\pm$ .002")
MA60	CK16	CKR16	CCR79/CC79	17.53 $\pm$ .51 (.690" $\pm$ .020")	8.89 $\pm$ .51 (.350" $\pm$ .015")	.63 $\pm$ .05 (.025" $\pm$ .002")

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

Dimensions: Millimeters (Inches)

### SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: Millimeters (Inches)



AVX Style		MA10			MA20			MA30			MA40			MA50			MA60		
Length		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")		
Diameter		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")		
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")		
Cap. in pF	Typical AVX 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 MA____5A9R1DAA																		
10 to 15	MA____5A100KAA MA____5A120KAA MA____5A150KAA																		
18 to 27	MA____5A180KAA MA____5A220KAA MA____5A270KAA																		
33 to 47	MA____5A330KAA MA____5A390KAA MA____5A470KAA																		
56 to 82	MA____5A560KAA MA____5A680KAA MA____5A820KAA																		
100 to 150	MA____5A101KAA MA____5A121KAA MA____5A151KAA																		
180 to 270	MA____5A181KAA MA____5A221KAA MA____5A271KAA																		
330 to 470	MA____5A331KAA MA____5A391KAA MA____5A471KAA																		
560 to 820	MA____5A561KAA MA____5A681KAA MA____5A821KAA																		
1000 to 1500	MA____5A102KAA MA____5A122KAA MA____5A152KAA																		
1800 to 2700	MA____5A182KAA MA____5A222KAA MA____5A272KAA																		
3300 to 4700	MA____5A332KAA MA____5A392KAA MA____5A472KAA																		
5600 to 8200	MA____5A562KAA MA____5A682KAA MA____5A822KAA																		
10,000 to 15,000	MA____5A103KAA MA____5A123KAA MA____5A153KAA																		
18,000 to 27,000	MA____5A183KAA MA____5A223KAA MA____5A273KAA																		
33,000 to 47,000	MA____5A333KAA MA____5A393KAA MA____5A473KAA																		
56,000 to 82,000	MA____5A563KAA MA____5A683KAA MA____5A823KAA																		
100,000 to 150,000	MA____5A104KAA MA____5A124KAA MA____5A154KAA																		

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

AVX Style

### SIZE AND CAPACITANCE SPECIFICATIONS









Dimensions: Millimeters (Inches)

AVX Style		MA10			MA20			MA30			MA40			MA50			MA60		
Length		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")		
Diameter		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")		
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Cap. in pF	Typical AVX 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																		
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8200	MA____5C822KAA																		
10,000	MA____5C103KAA																		
12,000	MA____5C123KAA																		
15,000	MA____5C153KAA																		
18,000	MA____5C183KAA																		
22,000	MA____5C223KAA																		
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33,000	MA____5C333KAA																		
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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 uF	MA ____5C395KAA																		

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For other voltages see Part No. Codes.  
AVX Style

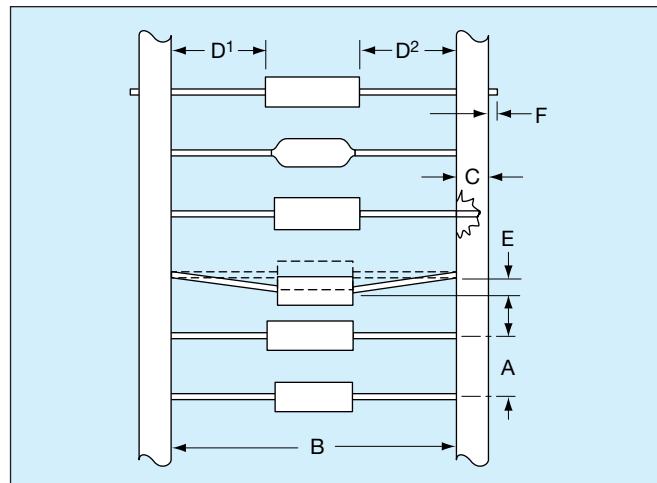
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Cap. in pF	Typical AVX Part Nos.	WVDC			WVDC			WVDC			WVDC			WVDC			WVDC		
		200	100	50	200	100	50	200	100	50	200	100	50	200	100	50	200	100	50
1000	MA____5E102ZAA																		
1200	MA____5E122ZAA																		
1500	MA____5E152ZAA																		
1800	MA____5E182ZAA																		
2200	MA____5E222ZAA																		
2700	MA____5E272ZAA																		
3300	MA____5E332ZAA																		
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100,000	MA____5E104ZAA																		
120,000	MA____5E124ZAA																		
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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.  
 AVX Style

## TAPE AND REEL

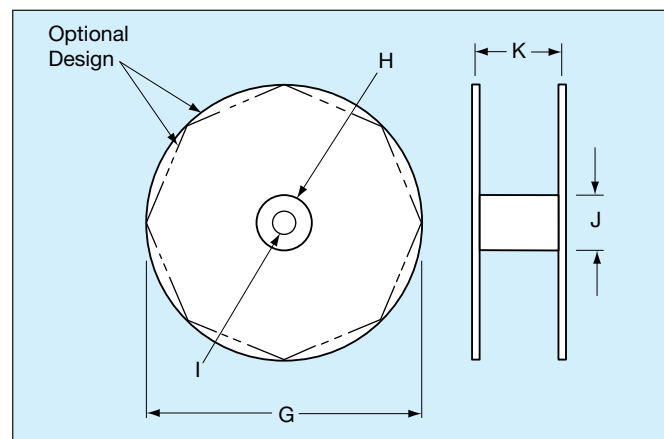
CLASS I / RS-296	
A.	5mm ± 0.5mm (.200" ± 0.020")
B*.	52.4mm ± 1.5mm (2.063" ± 0.059")
C.	6.35mm ± 0.4mm (0.250" ± 0.016")
D <sup>1</sup> -D <sup>2</sup> .	1.4mm (0.055" MAX.)
E.	1.2mm (0.047" MAX.)
F.	1.6mm (0.063" MAX.)
G.	356mm (14.00")
H.	76mm (3.000")
I.	25.4mm (1.000")
J.	84mm (3.300")
K.	70mm (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	MA10, SA05, SA10 MA20, SA20	SA11 SA30	MA30 MA40, 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)