

GENERAL DESCRIPTION

AVX MA Series

Molded Axial Leaded MLC

Temperature Coefficient: C0G (NP0), X7R, Z5U
50V, 100V and 200V

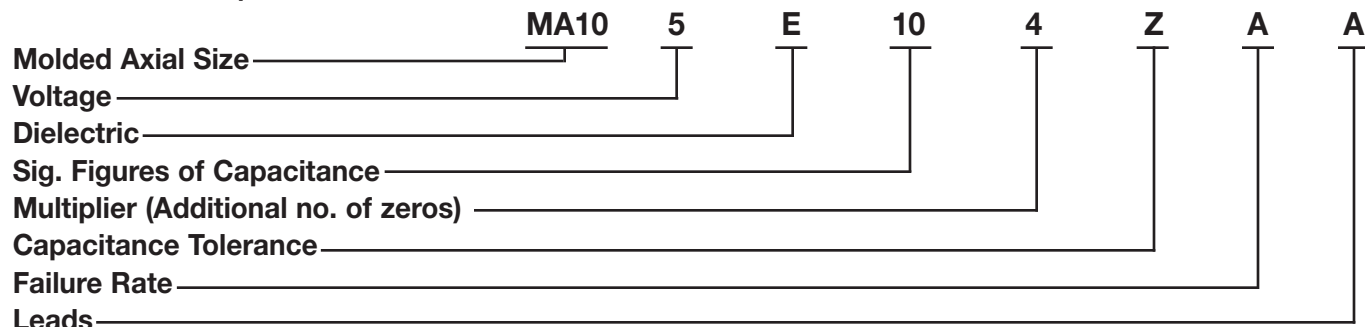
Case Material: Molded Epoxy

Lead Material: Solderable

HOW TO ORDER

AVX Styles: MA10, MA20, MA30, MA40, MA50, MA60

Part Number Example



Part Number Codes

Voltages: 50V = 5, 100V = 1, 200V = 2

Dielectric: C0G (NP0) = A, X7R = C, Z5U = E

Sig. Figures of Capacitance and Multiplier: 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 10 pF, use "R" in place of decimal point, e.g., 1R4 = 1.4 pF).

Capacitance Tolerances:

C0G (NP0): F = $\pm 1.0\%$, J = $\pm 5\%$, K = $\pm 10\%$,
M = $\pm 20\%$, D = $\pm 5\text{pF}$ <10 pF only

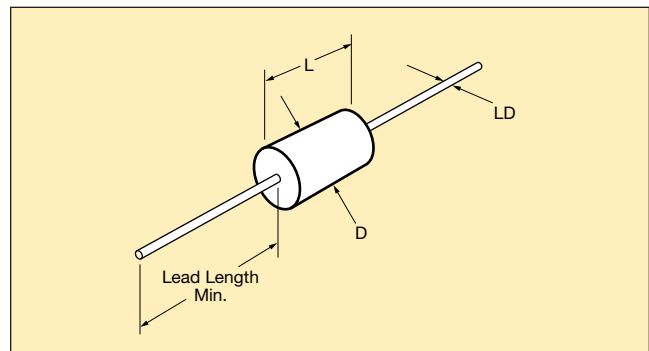
X7R: J = $\pm 5\%$, K = $\pm 10\%$, M = $\pm 20\%$

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

Failure Rate: Not Applicable

Leads: 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

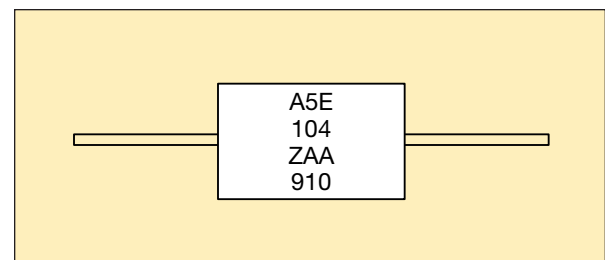
Line 2, 104Z = Capacitance Code

Line 3, Tolerance, 2 digit Lot Code

Date Code: 9 = 1999

10 = Week

Four Digit Date Code Optional



MILITARY CROSS REFERENCE AND DIMENSIONS GUIDE

Per MIL-Spec				Case Size		
AVX Style	MIL-C-11015	MIL-C-39014	MIL-C-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-C-39014, MIL-C-20 Section.

Dimensions: Millimeters (Inches)

C0G (NP0) Dielectric 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

X7R Dielectric

SIZE AND CAPACITANCE SPECIFICATIONS



Dimensions: Millimeters (Inches)

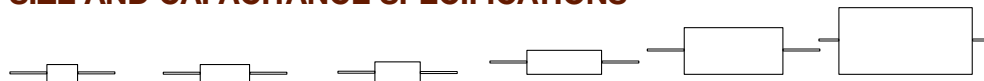
AVX Style		MA10			MA20			MA30			MA40			MA50			MA60		
Length		4.07 ± .25 (.160" ± .010")			6.35 ± .25 (.250" ± .010")			6.09 ± .25 (.240" ± .010")			9.91 ± .25 (.390" ± .010")			12.7 ± .51 (.500" ± .020")			17.53 ± .51 (.690" ± .020")		
Diameter		2.29 ± .25 (.090" ± .010")			2.29 ± .25 (.090" ± .010")			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
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.
 AVX Style

Z5U Dielectric

SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: Millimeters (Inches)

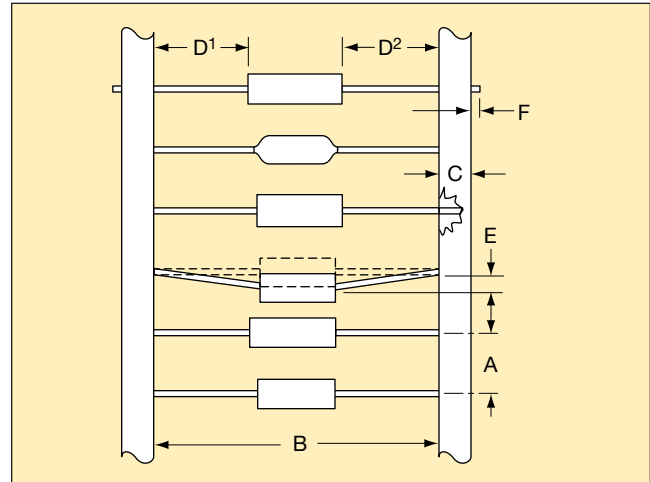


AVX Style		MA10			MA20			MA30			MA40			MA50			MA60		
Length		4.07 ± .25 (.160" ± .010")			6.35 ± .25 (.250" ± .010")			6.09 ± .25 (.240" ± .010")			9.91 ± .25 (.390" ± .010")			12.7 ± .51 (.500" ± .020")			17.53 ± .51 (.690" ± .020")		
Diameter		2.29 ± .25 (.090" ± .010")			2.29 ± .25 (.090" ± .010")			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
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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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																		
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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.
AVX Style

TAPE AND REEL

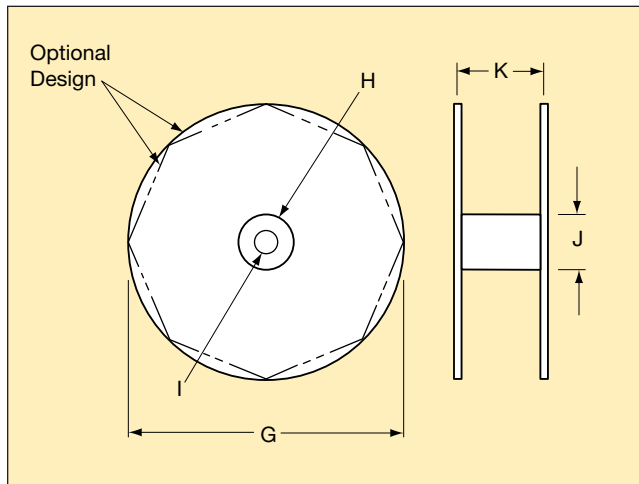
CLASS I / RS-296	
A.	5mm ± 0.5mm (.200" ± 0.020")
B*.	52.4mm ± 1.5mm (2.063" ± 0.059")
C.	6.35mm ± 0.4mm (0.250" ± 0.016")
D'-D².	1.4mm (0.055" MAX.)
E.	1.2mm (0.047" MAX.)
F.	1.6mm (0.063" MAX.)
G.	356mm (14.00")
H.	76mm (3.000")
I.	25.4mm (1.000")
J.	84mm (3.300")
K.	70mm (2.750")



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	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)