



**THE DATASHEET OF  
SA302C223KAA**



## GENERAL INFORMATION

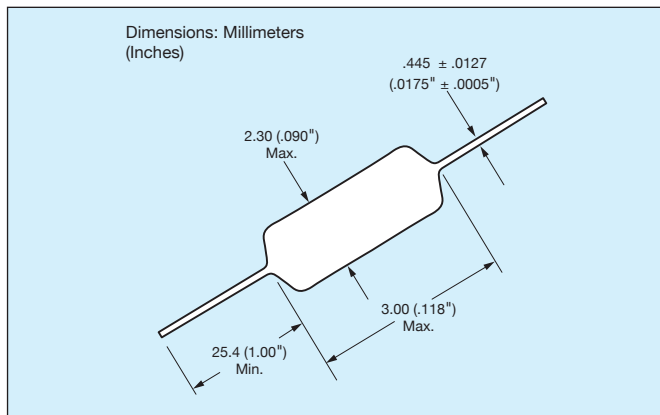
### AVX SA Series

#### Conformally Coated Axial Leaded MLC

**Temperature Coefficients:** COG (NP0), X7R, X5R, Z5U  
10, 50, 100, 200 Volts

**Case Material:** Epoxy (Flame Retardant to UL Bulletin 492, Par. 280)

**Lead Material:** Solderable



## HOW TO ORDER

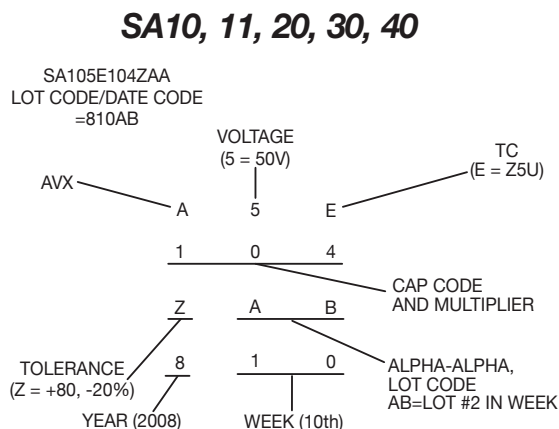
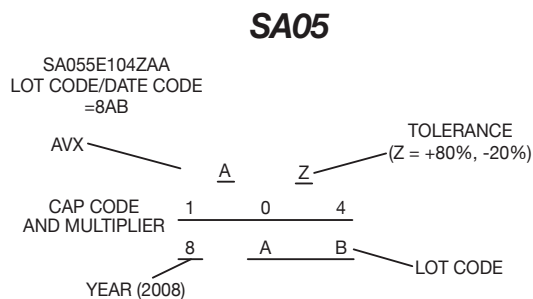
<b>SA10</b>	<b>5</b>	<b>E</b>	<b>104</b>	<b>Z</b>	<b>A</b>	<b>R</b>
<b>Conformal Axial Size</b>	<b>Voltage</b>	<b>Dielectric</b>	<b>Capacitance</b>	<b>Capacitance Tolerance</b>	<b>Failure Rate</b>	<b>Leads</b>
SA05 SA10 SA11 SA20 SA30 SA40	Z = 10V 5 = 50V 1 = 100V 2 = 200V	A = COG (NP0) C = X7R D = X5R 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): C = $\pm .25\text{pF}$ D = $\pm .5\text{pF}$ F = $\pm 1\%$ G = $\pm 2\%$ J = $\pm 5\%$ K = $\pm 10\%$	X7R: J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$  X5R: K = $\pm 10\%$ M = $\pm 20\%$  Z5U: M = $\pm 20\%$ Z = $+80\%$ -20%	A = Not Applicable Standard (Solderable) R = RoHS Compliant



Please select correct termination style.

## MARKING (EXAMPLE)

SpinGuard marking includes full date code/lot code identification. A first in the industry, this format provides complete traceability to all manufacturing processes involving the basic chip and final assembly. Total Shipment traceability is also provided.



## PACKAGING REQUIREMENTS

- A = Standard Reels (see Page 49)
- B = 1000 piece reels (distributors only, tight tolerance only)
- C = Ammo Pack (see Page 49)
- D thru J = See Special Lead Configurations (Page 41)
- M = 26mm tape and reel
- N = 26mm ammo pack
- R = RoHS, Standard reels (See page 49)

# Axial Leads/SpinGuard®






## C0G (NP0) Dielectric

### SIZE AND CAPACITANCE SPECIFICATIONS



Dimensions: Millimeters (Inches)

AVX Style	SA05	SA10		SA11		SA20		SA30		SA40					
		Length (L)	Diameter (D)	Lead Diameter	Lead Length	Cap. in. pF	Typical AVX Part Nos.	WVDC 100	WVDC 50	WVDC 100	WVDC 50	WVDC 100	WVDC 50	WVDC 100	WVDC 50
1.0* Ⓜ	SA102A1R0DAR														
9.1* Ⓜ	SA102A9R1DAR														
10	SA102A100JAR														
12	SA102A120JAR														
15	SA102A150JAR														
18	SA102A180JAR														
22	SA102A220JAR														
27	SA102A270JAR														
33	SA102A330JAR														
39	SA102A390JAR														
47	SA102A470JAR														
56	SA102A560JAR														
68	SA102A680JAR														
82	SA102A820JAR														
<b>100</b>	<b>SA102A101JAR</b>														
120	SA102A121JAR														
150	SA101A151JAR														
180	SA101A181JAR														
220	SA101A221JAR														
270	SA101A271JAR														
330	SA101A331JAR														
390	SA101A391JAR														
470	SA101A471JAR														
560	SA101A561JAR														
680	SA101A681JAR														
820	SA101A821JAR														
<b>1000</b>	<b>SA105A102JAR</b>														
1200	SA201A122JAR														
1500	SA201A152JAR														
1800	SA205A182JAR														
<b>2200</b>	<b>SA301A222JAR</b>														
2700	SA301A272JAR														
3300	SA301A332JAR														
3900	SA301A392JAR														
<b>4700</b>	<b>SA305A472JAR</b>														
5600	SA401A562JAR														
6800	SA401A682JAR														
<b>8200</b>	<b>SA405A822JAR</b>														
<b>10,000</b>	<b>SA405A103JAR</b>														
12,000	SA405A123JAR														

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

 = Industry preferred values

\*\*C&D" Tolerance Only

## X7R Dielectric

### SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: Millimeters (Inches)



AVX Style	SA05	SA10	SA11	SA20	SA30	SA40									
<b>Length (L)</b>	3.00 (.118")	4.32 (.170")	4.32 (.170")	6.60 (.260")	7.37 (.290")	10.16 (.400")									
<b>Diameter (D)</b>	2.30 (.090")	2.54 (.100")	3.05 (.120")	2.54 (.100")	3.81 (.150")	3.81 (.150")									
<b>Lead Diameter</b>	.445 (.0175")	.445 (.0175")	.445 (.0175")	.445 (.0175")	.445 (.0175")	.445 (.0175")									
<b>Lead Length</b>	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	100	50	100	50	100	50	100	50
220	SA102C221KAR														
270	SA102C271KAR														
330	SA102C331KAR														
390	SA102C391KAR														
470	SA102C471KAR														
560	SA101C561KAR														
680	SA101C681KAR														
820	SA101C821KAR														
1000	SA101C102KAR														
1200	SA101C122KAR														
1500	SA101C152KAR														
1800	SA101C182KAR														
2200	SA101C222KAR														
2700	SA101C272KAR														
3300	SA101C332KAR														
3900	SA101C392KAR														
4700	SA101C472KAR														
5600	SA101C562KAR														
6800	SA101C682KAR														
8200	SA105C822KAR														
<b>10,000</b>	<b>SA105C103KAR</b>														
12,000	SA105C123KAR														
15,000	SA105C153KAR														
18,000	SA105C183KAR														
22,000	SA105C223KAR														
27,000	SA105C273KAR														
33,000	SA105C333KAR														
39,000	SA105C393KAR														
<b>47,000</b>	<b>SA105C473KAR</b>														
56,000	SA115C563KAR														
68,000	SA115C683KAR														
82,000	SA115C823KAR														
<b>100,000</b>	<b>SA115C104KAR</b>														
120,000	SA305C124KAR														
150,000	SA305C154KAR														
180,000	SA305C184KAR														
<b>220,000</b>	<b>SA305C224KAR</b>														
270,000	SA305C274KAR														
330,000	SA305C334KAR														
470,000	SA405C474KAR														
1,000,000	SA305C105KAR														

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

= Industry preferred values

## Z5U Dielectric

### SIZE AND CAPACITANCE SPECIFICATIONS



Dimensions: Millimeters (Inches)

AVX Style	SA05	SA10	SA11	SA20	SA30	SA40	
<b>Length (L)</b>	3.00 (.118")	4.32 (.170")	4.32 (.170")	6.60 (.260")	7.37 (.290")	10.16 (.400")	
<b>Diameter (D)</b>	2.30 (.090")	2.54 (.100")	3.05 (.120")	2.54 (.100")	3.81 (.150")	3.81 (.150")	
<b>Lead Diameter</b>	.445 (.0175")	.445 (.0175")	.445 (.0175")	.445 (.0175")	.445 (.0175")	.445 (.0175")	
<b>Lead Length</b>	25.4 (1.00")	25.4 (1.00")	25.4 (1.00")	25.4 (1.00")	25.4 (1.00")	25.4 (1.00")	
<b>Cap. in. pF</b>	<b>Typical AVX Part Nos.</b>	<b>WVDC</b>		<b>WVDC</b>		<b>WVDC</b>	
		50	100 50	100 50	100 50	100 50	100 50
10,000	SA105E103ZAR						
15,000	SA105E153ZAR						
22,000	SA105E223ZAR						
33,000	SA105E333ZAR						
47,000	SA105E473ZAR						
68,000	SA105E683ZAR						
<b>*100,000</b>	<b>SA105E104ZAR</b>						
150,000	SA105E154ZAR						
<b>220,000</b>	<b>SA105E224ZAR</b>						
<b>330,000</b>	<b>SA115E334ZAR</b>						
<b>470,000</b>	<b>SA305E474ZAR</b>						
680,000	SA305E684ZAR						
820,000	SA305E824ZAR						
<b>1,000,000</b>	<b>SA305E105ZAR</b>						

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

= Industry preferred values

\*Preferred Industry Decoupling Capacitor — Insertable on .300" centers.

SA105E104ZAA

# Axial Leads/SpinGuard®



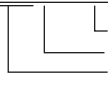
## X7R Dielectric

### SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: Millimeters (Inches)



AVX Style		SA10
Length (L)		4.32 (.170")
Diameter (D)		2.54 (.100")
Lead Diameter		.445 (.0175")
Lead Length		25.4 (1.00")
Cap. in. $\mu$ F	Typical AVX Part Nos.	WVDC 10
1.8	SA10ZD185KAR	
2.7	SA10ZD275KAR	
3.3	SA10ZD335KAR	
4.7	SA10ZD475KAR	


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

= Industry preferred values

# Axial Leads/SpinGuard®/AA Series



## Automotive

### GENERAL INFORMATION

#### AVX AA Series

#### Electrical Characteristics: AA101C103K4R

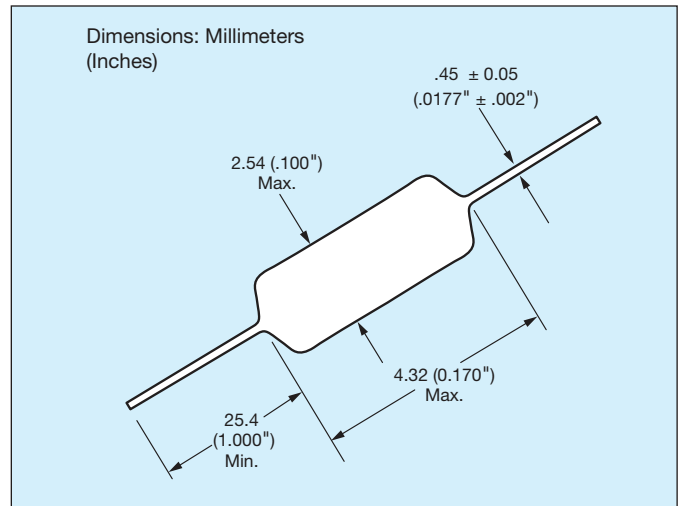
Capacitance @ 25°C, 1kHz, 1Vrms	0.0100µF
Capacitance Tolerance	±10 %
Dissipation Factor @ 25°C	2.5% Max
Rated Voltage	100Vdc
Dielectric Withstand Voltage	250Vdc
Insulation Resistance @ 25°C @ Rated Voltage	100000 Mohms

#### Temperature Characteristics:

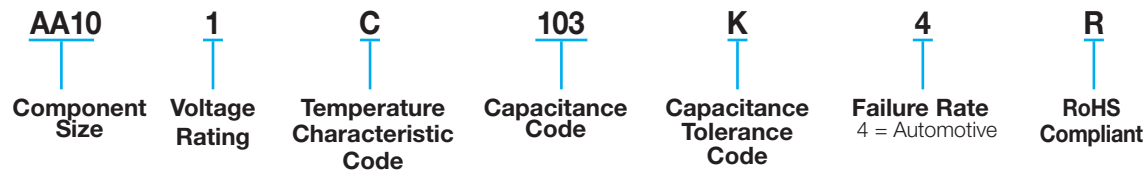
X7R (-55 to + 125°C ± 15% @ 0Vdc)

#### Lead Material:

RoHS Compliant 100% Tin

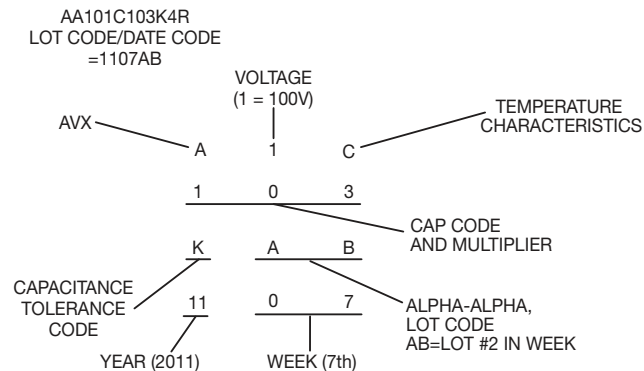


### HOW TO ORDER



### MARKING (EXAMPLE)

SpinGuard marking includes full date code/lot code identification. A first in the industry, this format provides complete traceability to all manufacturing processes involving the basic chip and final assembly. Total Shipment traceability is also provided.



### PACKAGING REQUIREMENTS

Tape and Reel Ø 14": 7500 pieces

# Axial Leads/SpinGuard®/AA Series



Automotive – C0G (NP0) Dielectric

## SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: Millimeters (Inches)



AVX Style		AA10			AA30	
Length (L)		4.32 (.170")			7.37 (.290")	
Diameter (D)		2.54 (.100")			3.81 (.150")	
Lead Diameter		.445 (.0175")			.445 (.0175")	
Lead Length		25.4 (1.00")			25.4 (1.00")	
Cap. in. pF	Typical AVX Part Nos.	WVDC			WVDC	
		200	100	50	100	50
100	AA.....A101K4R					
120	AA.....A121K4R					
150	AA.....A151K4R					
180	AA.....A181K4R					
220	AA.....A221K4R					
270	AA.....A271K4R					
330	AA.....A331K4R					
390	AA.....A391K4R					
470	AA.....A471K4R					
560	AA.....A561K4R					
680	AA.....A681K4R					
820	AA.....A821K4R					
1,000	AA.....A102K4R					
1,200	AA.....A122K4R					
1,500	AA.....A152K4R					
1,800	AA.....A182K4R					
2,200	AA.....A222K4R					
2,700	AA.....A272K4R					
3,300	AA.....A332K4R					
3,900	AA.....A392K4R					
4,700	AA.....A472K4R					
5,600	AA.....A562K4R					
6,800	AA.....A682K4R					
8,200	AA.....A822K4R					
10,000	AA.....A103K4R					

For other voltage and tolerances contact factory.

\*Other capacitance values available upon special request.

# Axial Leads/SpinGuard®/AA Series



## Automotive – X7R Dielectric

### SIZE AND CAPACITANCE SPECIFICATIONS



Dimensions: Millimeters (Inches)

AVX Style		AA10		AA30	
Length (L)		4.32 (.170")		7.37 (.290")	
Diameter (D)		2.54 (.100")		3.81 (.150")	
Lead Diameter		.445 (.0175")		.445 (.0175")	
Lead Length		25.4 (1.00")		25.4 (1.00")	
Cap. in. pF	Typical AVX Part Nos.	WVDC		WVDC	
		100	50	100	50
220	AA__C221KAR				
270	AA__C271KAR				
330	AA__C331KAR				
390	AA__C391KAR				
470	AA__C471KAR				
560	AA__C561KAR				
680	AA__C681KAR				
820	AA__C821KAR				
1,000	AA__C102KAR				
1,200	AA__C122KAR				
1,500	AA__C152KAR				
1,800	AA__C182KAR				
2,200	AA__C222KAR				
2,700	AA__C272KAR				
3,300	AA__C332KAR				
3,900	AA__C392KAR				
,700	AA__C472KAR				
5,600	AA__C562KAR				
6,800	AA__C682KAR				
8,200	AA__C822KAR				
10,000	AA__C103KAR				
12,000	AA__C123KAR				
15,000	AA__C153KAR				
18,000	AA__C183KAR				
22,000	AA__C223KAR				
27,000	AA__C273KAR				
33,000	AA__C333KAR				
39,000	AA__C393KAR				
47,000	AA__C473KAR				
56,000	AA__C563KAR				
68,000	AA__C683KAR				
82,000	AA__C823KAR				
100,000	AA__C104KAR				

For other voltage and tolerances contact factory.

\*Other capacitance values available upon special request.

## GENERAL INFORMATION

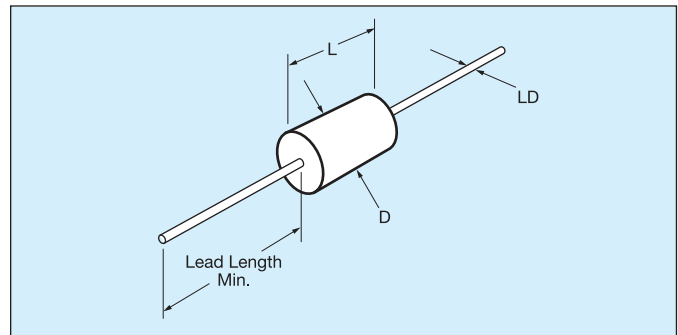
### AVX SA Series

#### Molded Axial Leaded MLC

**Temperature Coefficients:** 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

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**

### Failure Rate

A = Not Applicable

**R**

### Leads

A = Standard

**Not RoHS Compliant**

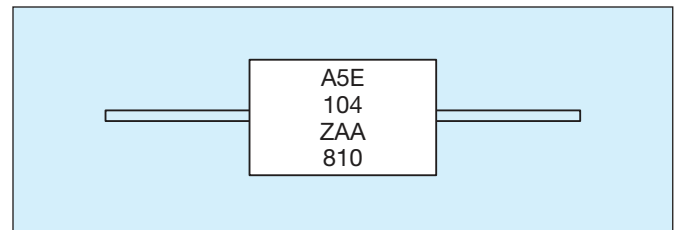
‡ C tolerance available C0G (NP0) from 1.0 to 9.1 pF only. Minimum tolerance for values 10 pF - 100 pF is D or F whichever is greater.

## 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: 8 = 2008  
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 ± .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/Ceralam®



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

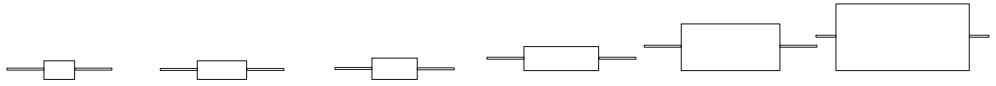
AVX Style		MA10	MA20	MA30	MA40	MA50	MA60									
Length		4.07 ± .25 (.160" ± .010")	6.35 ± .25 (.250" ± .010")	6.09 ± .25 (.240" ± .010")	9.91 ± .25 (.390" ± .010")	12.7 ± .51 (.500" ± .020")	17.53 ± .51 (.690" ± .020")									
Diameter		2.29 ± .25 (.090" ± .010")	2.29 ± .25 (.090" ± .010")	3.30 ± .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		
		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)

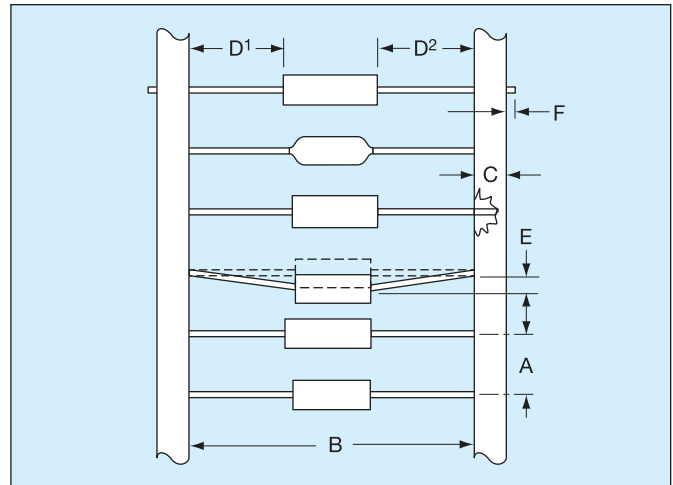


AVX Style		MA10			MA20			MA30			MA40			MA50			MA60		
Length		4.07 ± .25 (.160" ± .010")			6.35 ± .25 (.250" ± .010")			6.09 ± .25 (.240" ± .010")			9.91 ± .25 (.390" ± .010")			12.7 ± .51 (.500" ± .020")			17.53 ± .51 (.690" ± .020")		
Diameter		2.29 ± .25 (.090" ± .010")			2.29 ± .25 (.090" ± .010")			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.	VVDC			VVDC			VVDC			VVDC			VVDC			VVDC		
		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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15,000	MA.....5E153ZAA																		
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33,000	MA.....5E333ZAA																		
39,000	MA.....5E393ZAA																		
47,000	MA.....5E473ZAA																		
56,000	MA.....5E563ZAA																		
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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

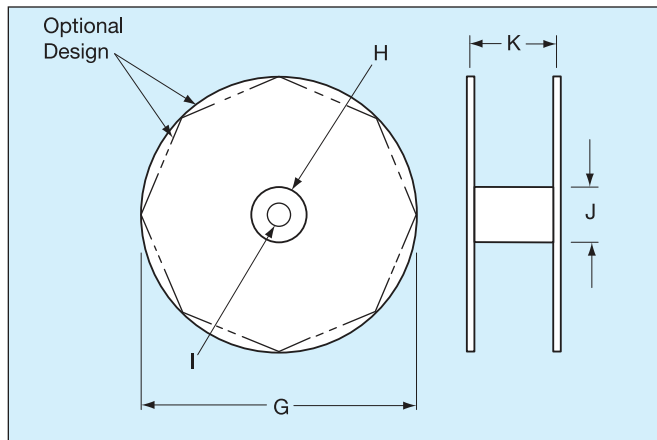
CLASS I / RS-296	
A.	5mm ± 0.5mm (.200" ± 0.020")
B*	52.4mm ± 1.5mm (2.063" ± 0.059")
C.	6.35mm ± 0.4mm (0.250" ± 0.016")
D1-D2.	1.4mm (0.055" MAX.)
E.	1.2mm (0.047" MAX.)
F.	1.6mm (0.063" MAX.)
G.	356mm (14.00")
H.	76mm (3.000")
I.	25.4mm (1.000")
J.	84mm (3.300")
K.	70mm (2.750")



**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)

## Looking for pricing, stock, or lifecycle information?

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