

GENERAL DESCRIPTION

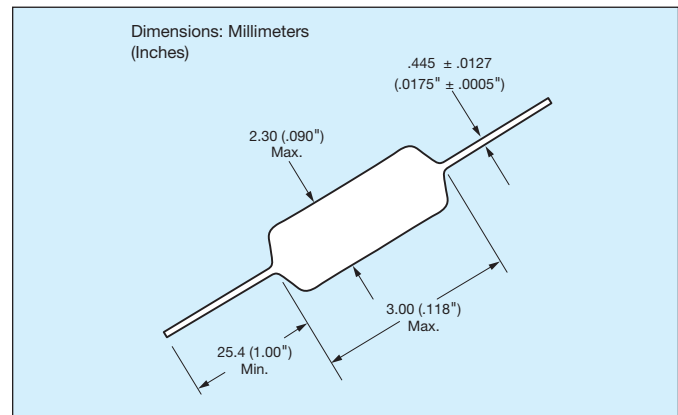
AVX SA Series

Conformally Coated Axial Leaded MLC

Temperature Coefficients: C0G (NP0), X7R, X5R, Z5U
10, 50, 100, 200 Volts

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

Lead Material: Solderable

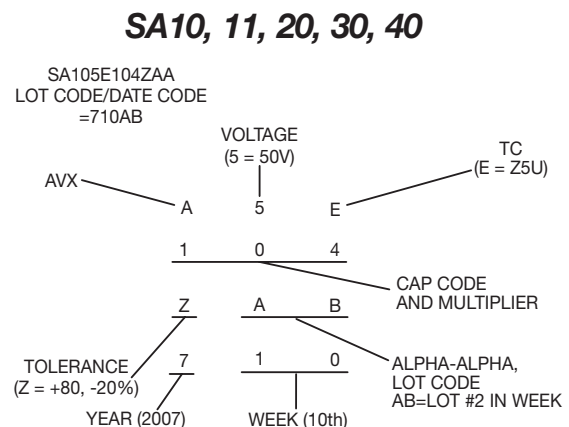
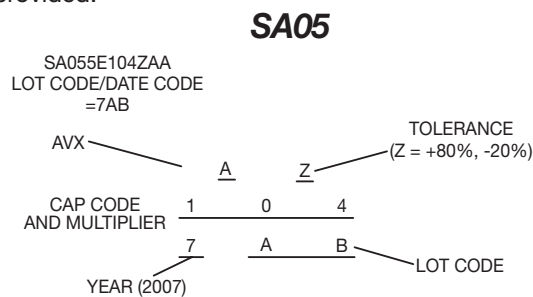


HOW TO ORDER

SA10	5	E	104	Z	A	R
Conformal Axial Size	Voltage	Dielectric	Capacitance	Capacitance Tolerance	Failure Rate	Leads
SA05 SA10 SA11 SA20 SA30 SA40	Z = 10V 5 = 50V 1 = 100V 2 = 200V	A = C0G (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.)	C0G (NP0): C = ±.25pF D = ±.5pF F = ±1% G = ±2% J = ±5% K = ±10% X7R: J = ±5% K = ±10% M = ±20% X5R: K = ±10% M = ±20% Z5U: M = ±20% Z = +80% -20%	A = Not Applicable	Standard (Solderable) R = RoHS Compliant A = Sn/Pb

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 45)
- B = 1000 piece reels (distributors only, tight tolerance only)
- C = Ammo Pack (see Page 45)
- D thru J = See Special Lead Configurations (Page 38)
- L = Twin Coat Leads (95/5 Flash Tin/Lead)
- M = 26mm tape and reel
- N = 26mm ammo pack
- R = RoHS, Standard reels (See page 45)

SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: Millimeters (Inches)

AVX Style		SA05		SA10			SA11		SA20		SA30		SA40	
Length (L)		3.00 (.118")		4.32 (.170")			4.32 (.170")		6.60 (.260")		7.37 (.290")		10.16 (.400")	
Diameter (D)		2.30 (.090")		2.54 (.100")			3.05 (.120")		2.54 (.100")		3.81 (.150")		3.81 (.150")	
Lead Diameter		.445 (.0175")		.445 (.0175")			.445 (.0175")		.445 (.0175")		.445 (.0175")		.445 (.0175")	
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	200	100	50	100	50	100	50	100	50	100	50
1.0* ↓ 9.1*	SA102A1R0DAA ↓ SA102A9R1DAA													
10 12 15	SA102A100JAA SA102A120JAA SA102A150JAA													
18 22 27	SA102A180JAA SA102A220JAA SA102A270JAA													
33 39 47	SA102A330JAA SA102A390JAA SA102A470JAA													
56 68 82	SA102A560JAA SA102A680JAA SA102A820JAA													
100 120 150	SA102A101JAA SA102A121JAA SA101A151JAA													
180 220 270	SA101A181JAA SA101A221JAA SA101A271JAA													
330 390 470	SA101A331JAA SA101A391JAA SA101A471JAA													
560 680 820	SA101A561JAA SA101A681JAA SA101A821JAA													
1000 1200 1500	SA105A102JAA SA201A122JAA SA201A152JAA													
1800 2200 2700	SA205A182JAA SA301A222JAA SA301A272JAA													
3300 3900 4700	SA301A332JAA SA301A392JAA SA305A472JAA													
5600 6800 8200	SA401A562JAA SA401A682JAA SA405A822JAA													
10,000 12,000	SA405A103JAA SA405A123JAA													

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

= Industry preferred values

*"C&D" Tolerance Only

SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: Millimeters (Inches)

AVX Style		SA05			SA10			SA11		SA20		SA30		SA40	
Length (L)		3.00 (.118")			4.32 (.170")			4.32 (.170")		6.60 (.260")		7.37 (.290")		10.16 (.400")	
Diameter (D)		2.30 (.090")			2.54 (.100")			3.05 (.120")		2.54 (.100")		3.81 (.150")		3.81 (.150")	
Lead Diameter		.445 (.0175")			.445 (.0175")			.445 (.0175")		.445 (.0175")		.445 (.0175")		.445 (.0175")	
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	100	50	100	50	100	50	100	50
220	SA102C221KAA														
270	SA102C271KAA														
330	SA102C331KAA														
390	SA102C391KAA														
470	SA102C471KAA														
560	SA101C561KAA														
680	SA101C681KAA														
820	SA101C821KAA														
1000	SA101C102KAA														
1200	SA101C122KAA														
1500	SA101C152KAA														
1800	SA101C182KAA														
2200	SA101C222KAA														
2700	SA101C272KAA														
3300	SA101C332KAA														
3900	SA101C392KAA														
4700	SA101C472KAA														
5600	SA101C562KAA														
6800	SA101C682KAA														
8200	SA105C822KAA														
10,000	SA105C103KAA														
12,000	SA105C123KAA														
15,000	SA105C153KAA														
18,000	SA105C183KAA														
22,000	SA105C223KAA														
27,000	SA105C273KAA														
33,000	SA105C333KAA														
39,000	SA105C393KAA														
47,000	SA105C473KAA														
56,000	SA115C563KAA														
68,000	SA115C683KAA														
82,000	SA115C823KAA														
100,000	SA115C104KAA														
120,000	SA305C124KAA														
150,000	SA305C154KAA														
180,000	SA305C184KAA														
220,000	SA305C224KAA														
270,000	SA305C274KAA														
330,000	SA305C334KAA														
470,000	SA405C474KAA														

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

 = Industry preferred values

SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: Millimeters (Inches)

AVX Style	SA05	SA10	SA11	SA20	SA30	SA40
Length (L)	3.00 (.118")	4.32 (.170")	4.32 (.170")	6.60 (.260")	7.37 (.290")	10.16 (.400")
Diameter (D)	2.30 (.090")	2.54 (.100")	3.05 (.120")	2.54 (.100")	3.81 (.150")	3.81 (.150")
Lead Diameter	.445 (.0175")	.445 (.0175")	.445 (.0175")	.445 (.0175")	.445 (.0175")	.445 (.0175")
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 50	WVDC 100 50	WVDC 100 50	WVDC 100 50	WVDC 100 50
10,000 15,000 22,000	SA105E103ZAA SA105E153ZAA SA105E223ZAA					
33,000 47,000 68,000	SA105E333ZAA SA105E473ZAA SA105E683ZAA					
*100,000 150,000 220,000	SA105E104ZAA SA105E154ZAA SA105E224ZAA					
330,000 470,000 680,000	SA115E334ZAA SA305E474ZAA SA305E684ZAA					
820,000 1,000,000	SA305E824ZAA SA305E105ZAA					

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®



X5R 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 μ 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

Extended Range SpinGuards

GENERAL SPECIFICATIONS

Capacitance Range

220,000 pF, 330,000 pF, 1,000,000 pF

Capacitance Tolerances

±20%, [+80 -20]%

Operating Temperature Range

Z5U = +10°C to +85°C

Temperature Characteristics

E = Z5U

Voltage Ratings

50 Vdc

Dissipation Factor 25°C

Z5U = 4.0% max. at 1 KHz, .3 VRMS

Insulation Resistance 25°C (MIL-STD-202-Method 302)

Z5U = 10 K megohms or 100 megohms - µF minimum, whichever is less

Dielectric Strength

Z5U = 200% of rated voltage

Moisture Resistance (MIL-STD-202-Method 106)

Immersion Cycling (MIL-STD-202-Method 104, condition B)

For current reliability information, consult factory.

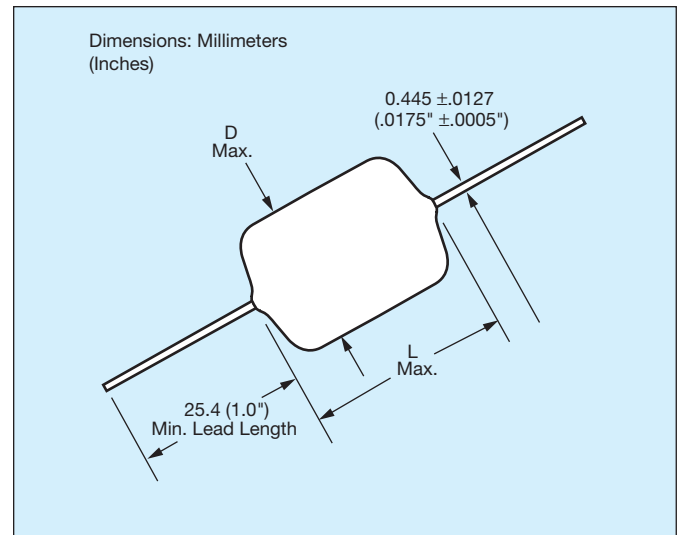
SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: Millimeters (Inches)

AVX Style	SA11*	SA30
Length (L)	4.32 (.170")	7.37 (.290")
Diameter (D)	3.05 (.120")	3.81 (.150")
0.22 µF SA115E224ZAA		
0.33 µF **SA115E334ZAA		
1.0 µF SA305E105ZAA		

* Automatically insertable on 0.300" centers (see page 45 for reel packing details)

** RAMGuard: the 0.33 µF value capacitance is recommended for decoupling 256K and 1 Meg Dynamic RAMs.

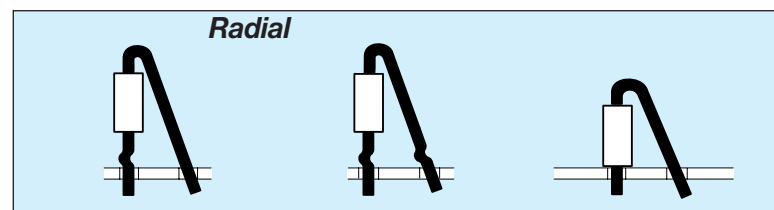


ELECTRICAL PERFORMANCE CHARACTERISTICS AT TYPICAL 256K DRAM OPERATING CONDITIONS

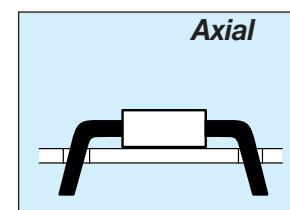
Parameter	Test Conditions	Mi.	Typ.	Max.	Unit
V_L	di/dt = 200 ma/10 ns	—	80	90	mv
Inductance, L		—	4.0	4.5	nh
dv/dt	20 ns after pulse				
	di/dt = 200 ma/10 ns	—	0.53	—	mv/ns
Capacitance, C		.24	.33	—	µF
ESR	Resonance Freq., 4-5 MHz	—	.03	.08	Ω
Impedance (Total)	100 MHz (HP- 4192A)	—	4.4	5.0	Ω
Recovery Time, t_R		—	20	—	ns

SPECIAL LEAD CONFIGURATIONS

Dimensions — Body dimensions Per Standard SpinGuard Configurations.
Formed dimensions as shown for types D, E, F, G, H, I, & J configurations.



D Single Crimp
E Dual Crimp
F No Crimp



G = .300" L.S. I = .500" L.S.
H = .400" L.S. J = .600" L.S.

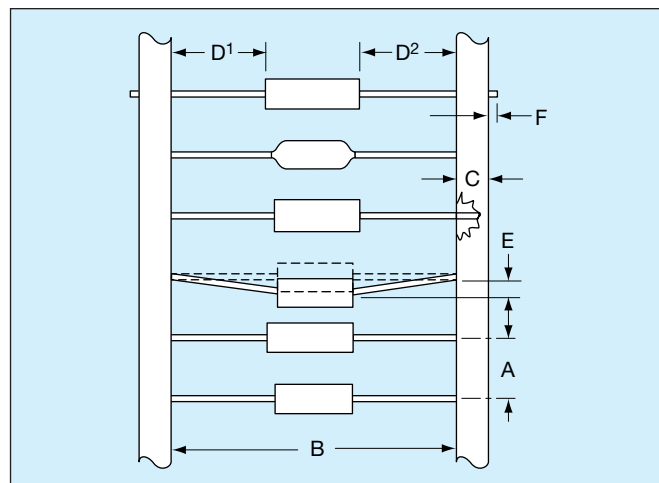
Formed Dimensions:

	LEAD SPACING*	SEATED HEIGHT (Max.)		
	Nom.	D & E	F	G, H, I & J
SA10	.2"	.525"	.300"	.100"
SA20	.2"	.570"	.375"	.100"
SA30	.2"	.580"	.425"	.150"
SA40	.2"	.650"	.460"	.150"

*Lead spacing can be varied by user to cover .1"- .3" spacing requirements for F, D, and E styles.

TAPE AND REEL

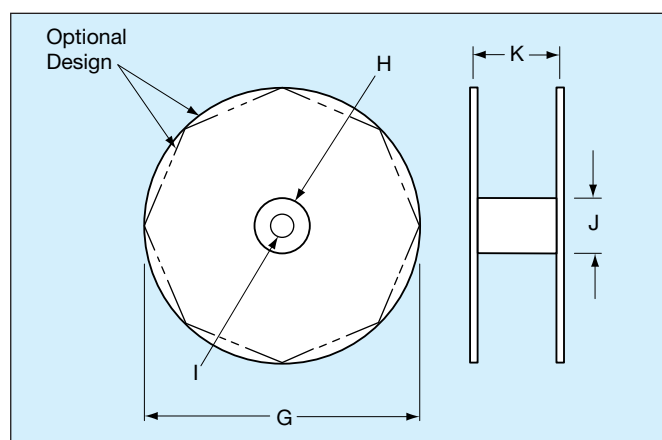
CLASS I / RS-296	
A.	5mm ± 0.5mm (.200" ± 0.020")
B*.	52.4mm ± 1.5mm (2.063" ± 0.059")
C.	6.35mm ± 0.4mm (0.250" ± 0.016")
D ¹ -D ² .	1.4mm (0.055" MAX.)
E.	1.2mm (0.047" MAX.)
F.	1.6mm (0.063" MAX.)
G.	356mm (14.00")
H.	76mm (3.000")
I.	25.4mm (1.000")
J.	84mm (3.300")
K.	70mm (2.750")



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)