BENEFITS OF USING CAPACITOR ARRAYS

AVX capacitor arrays offer designers the opportunity to lower placement costs, increase assembly line output through lower component count per board and to reduce real estate requirements.

Reduced Costs

Placement costs are greatly reduced by effectively placing one device instead of four or two. This results in increased throughput and translates into savings on machine time. Inventory levels are lowered and further savings are made on solder materials, etc.

Space Saving

Space savings can be quite dramatic when compared to the use of discrete chip capacitors. As an example, the 0508 4-element array offers a space reduction of >40% vs. 4 x 0402 discrete capacitors and of >70% vs. 4 x 0603 discrete capacitors. (This calculation is dependent on the spacing of the discrete components.)

Increased Throughput

Assuming that there are 220 passive components placed in a mobile phone:

A reduction in the passive count to 200 (by replacing discrete components with arrays) results in an increase in throughput of approximately 9%.

A reduction of 40 placements increases throughput by 18%.

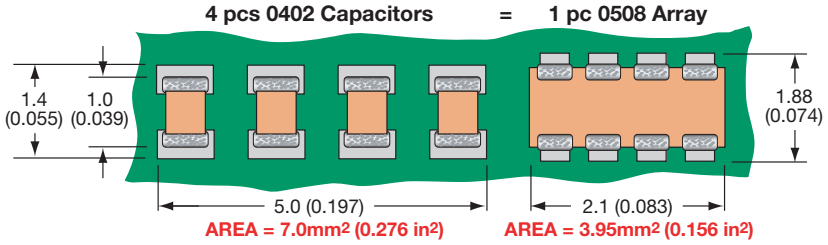
For high volume users of cap arrays using the very latest placement equipment capable of placing 10 components per second, the increase in throughput can be very significant and can have the overall effect of reducing the number of placement machines required to mount components:

If 120 million 2-element arrays or 40 million 4-element arrays were placed in a year, the requirement for placement equipment would be reduced by one machine.

During a 20Hr operational day a machine places 720K components. Over a working year of 167 days the machine can place approximately 120 million. If 2-element arrays are mounted instead of discrete components, then the number of placements is reduced by a factor of two and in the scenario where 120 million 2-element arrays are placed there is a saving of one pick and place machine.

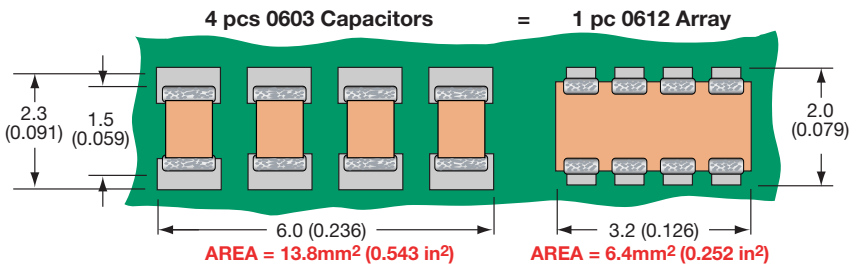
Smaller volume users can also benefit from replacing discrete components with arrays. The total number of placements is reduced thus creating spare capacity on placement machines. This in turn generates the opportunity to increase overall production output without further investment in new equipment.

W2A (0508) Capacitor Arrays



The 0508 4-element capacitor array gives a PCB space saving of over 40% vs four 0402 discretes and over 70% vs four 0603 discrete capacitors.

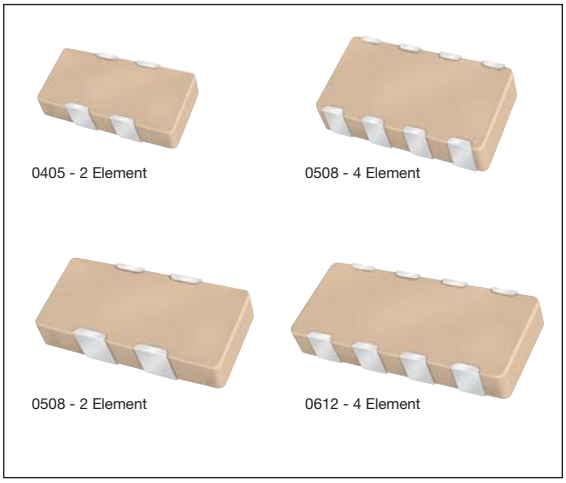
W3A (0612) Capacitor Arrays



The 0612 4-element capacitor array gives a PCB space saving of over 50% vs four 0603 discretes and over 70% vs four 0805 discrete capacitors.

Capacitor Array

Capacitor Array (IPC)



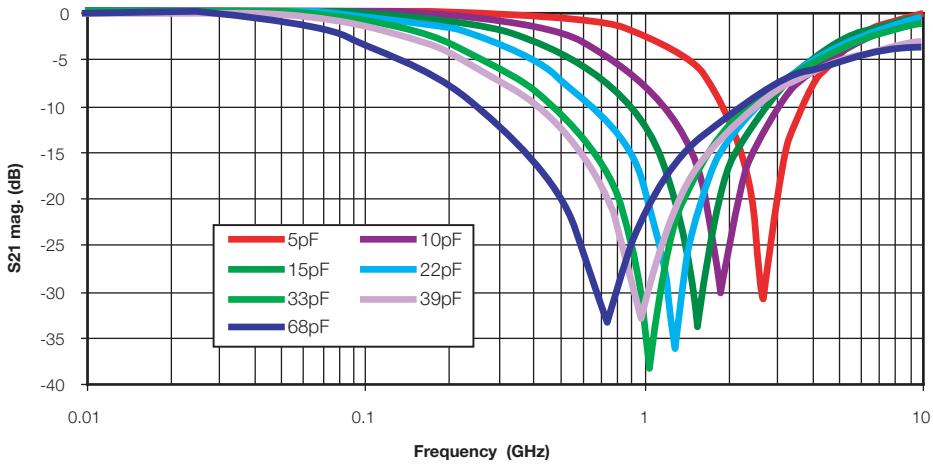
GENERAL DESCRIPTION

AVX is the market leader in the development and manufacture of capacitor arrays. The smallest array option available from AVX, the 0405 2-element device, has been an enormous success in the Telecommunications market. The array family of products also includes the 0612 4-element device as well as 0508 2-element and 4-element series, all of which have received widespread acceptance in the marketplace.

AVX capacitor arrays are available in X5R, X7R and NP0 (C0G) ceramic dielectrics to cover a broad range of capacitance values. Voltage ratings from 6.3 Volts up to 100 Volts are offered. AVX also now offers a range of automotive capacitor arrays qualified to AEC-Q200 (see separate table).

Key markets for capacitor arrays are Mobile and Cordless Phones, Digital Set Top Boxes, Computer Motherboards and Peripherals as well as Automotive applications, RF Modems, Networking Products, etc.

AVX Capacitor Array - W2A41A*K**
S21 Magnitude



HOW TO ORDER

W	2	A	4	3	C	103	M	A	T	2A
Style W = RoHS L = SnPb	**Case Size** 1 = 0405 2 = 0508 3 = 0612 5 = 0306	**Array**	**Number of Caps**	**Voltage** 6 = 6V Z = 10V Y = 16V 3 = 25V 5 = 50V 1 = 100V	**Dielectric** A = NP0 C = X7R D = X5R	**Capacitance Code** 2 Sig Digits + Number of Zeros	**Capacitance Tolerance** J = ±5% K = ±10% M = ±20%	**Failure Rate** A = Commercial 4 = Automotive	**Termination Code** T = Plated Ni and Sn** Z = FLEXITERM®** B = 5% min lead X = FLEXITERM® with 5% min lead	**Packaging & Quantity Code** 2A = 7" Reel (4000) 4A = 13" Reel (10000) 2F = 7" Reel (1000)

**RoHS compliant

NOTE: Contact factory for availability of Termination and Tolerance Options for Specific Part Numbers.

Capacitor Array

Capacitance Range – NP0/C0G

SIZE		0405			0508				0508				0612			
# Elements		2			2				4				4			
Soldering		Reflow Only			Reflow/Wave				Reflow/Wave				Reflow/Wave			
Packaging		All Paper			All Paper				Paper/Embossed				Paper/Embossed			
Length	mm (in.)	1.00 ± 0.15 (0.039 ± 0.006)			1.30 ± 0.15 (0.051 ± 0.006)				1.30 ± 0.15 (0.051 ± 0.006)				1.60 ± 0.150 (0.063 ± 0.006)			
Width	mm (in.)	1.37 ± 0.15 (0.054 ± 0.006)			2.10 ± 0.15 (0.083 ± 0.006)				2.10 ± 0.15 (0.083 ± 0.006)				3.20 ± 0.20 (0.126 ± 0.008)			
Max. Thickness	mm (in.)	0.66 (0.026)			0.94 (0.037)				0.94 (0.037)				1.35 (0.053)			
WVDC		16	25	50	16	25	50	100	16	25	50	100	16	25	50	100
1R0 1R2 1R5	Cap (pF) 1.0 1.2 1.5															
1R8 2R2 2R7	1.8 2.2 2.7															
3R3 3R9 4R7	3.3 3.9 4.7															
5R6 6R8 8R2	5.6 6.8 8.2															
100 120 150	10 12 15															
180 220 270	18 22 27															
330 390 470	33 39 47															
560 680 820	56 68 82															
101 121 151	100 120 150															
181 221 271	180 220 270															
331 391 471	330 390 470															
561 681 821	560 680 820															
102 122 152	1000 1200 1500															
182 222 272	1800 2200 2700															
332 392 472	3300 3900 4700															
562 682 822	5600 6800 8200															

Capacitor Array

Capacitance Range – X7R/X5R

SIZE		0306	0405	0508	0508	0612																					
# Elements		4			2					2						4						4					
Soldering		Reflow Only			Reflow Only					Reflow/Wave						Reflow/Wave						Reflow/Wave					
Packaging		All Paper			All Paper					All Paper						Paper/Embossed						Paper/Embossed					
Length	mm	1.60 ± 0.15			1.00 ± 0.15					1.30 ± 0.15						1.30 ± 0.15						1.60 ± 0.150					
	(in.)	(0.063 ± 0.006)			(0.039 ± 0.006)					(0.051 ± 0.006)						(0.051 ± 0.006)						(0.063 ± 0.006)					
Width	mm	0.81 ± 0.15			1.37 ± 0.15					2.10 ± 0.15						2.10 ± 0.15						3.20 ± 0.20					
	(in.)	(0.032 ± 0.006)			(0.054 ± 0.006)					(0.083 ± 0.006)						(0.083 ± 0.006)						(0.126 ± 0.008)					
Max. Thickness	mm	0.50			0.66					0.94						0.94						1.35					
	(in.)	(0.020)			(0.026)					(0.037)						(0.037)						(0.053)					
WVDC		6	10	16	25	6	10	16	25	50	6	10	16	25	50	100	6	10	16	25	50	100	6	10	16	25	50	100
101	Cap	100																										
121	(pF)	120																										
151		150																										
181		180																										
221		220																										
271		270																										
331		330																										
391		390																										
471		470																										
561		560																										
681		680																										
821		820																										
102		1000																										
122		1200																										
152		1500																										
182		1800																										
222		2200																										
272		2700																										
332		3300																										
392		3900																										
472		4700																										
562		5600																										
682		6800																										
822		8200																										
103	Cap	0.010																										
123	(µF)	0.012																										
153		0.015																										
183		0.018																										
223		0.022																										
273		0.027																										
333		0.033																										
393		0.039																										
473		0.047																										
563		0.056																										
683		0.068																										
823		0.082																										
104		0.10																										
124		0.12																										
154		0.15																										
184		0.18																										
224		0.22																										
274		0.27																										
334		0.33																										
474		0.47																										
564		0.56																										
684		0.68																										
824		0.82																										
105		1.0																										
125		1.2																										
155		1.5																										
185		1.8																										
225		2.2																										
335		3.3																										
475		4.7																										
106		10																										
226		22																										
476		47																										
107		100																										

= Currently available X7R

= Currently available X5R

= Under development X7R, contact factory for advance samples

= Under development X5R, contact factory for advance samples