

Capacitor Array (IPC)

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 discrettes 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 discrettes 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 (COG) 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)

Not RoHS Compliant

****RoHS compliant**



For RoHS compliant products, please select correct termination style

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



Capacitor Array

Capacitance Range – NP0/COG



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	1.00 ± 0.15			1.30 ± 0.15				1.30 ± 0.15				1.60 ± 0.150			
	(in.)	(0.039 ± 0.006)			(0.051 ± 0.006)				(0.051 ± 0.006)				(0.063 ± 0.006)			
Width	mm	1.37 ± 0.15			2.10 ± 0.15				2.10 ± 0.15				3.20 ± 0.20			
	(in.)	(0.054 ± 0.006)			(0.083 ± 0.006)				(0.083 ± 0.006)				(0.126 ± 0.008)			
Max. Thickness	mm	0.66			0.94				0.94				1.35			
	(in.)	(0.026)			(0.037)				(0.037)				(0.053)			
WVDC		16	25	50	16	25	50	100	16	25	50	100	16	25	50	100
1R0	1.0															
1R2	1.2															
1R5	1.5															
1R8	1.8															
2R2	2.2															
2R7	2.7															
3R3	3.3															
3R9	3.9															
4R7	4.7															
5R6	5.6															
6R8	6.8															
8R2	8.2															
100	10															
120	12															
150	15															
180	18															
220	22															
270	27															
330	33															
390	39															
470	47															
560	56															
680	68															
820	82															
101	100															
121	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															



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	X5R				X7R					X7R						X7R						X7R					
121 (pF) 120	X5R				X7R					X7R						X7R						X7R					
151 150	X5R				X7R					X7R						X7R						X7R					
181 180	X5R				X7R					X7R						X7R						X7R					
221 220	X5R				X7R					X7R						X7R						X7R					
271 270	X5R				X7R					X7R						X7R						X7R					
331 330	X5R				X7R					X7R						X7R						X7R					
391 390	X5R				X7R					X7R						X7R						X7R					
471 470	X5R				X7R					X7R						X7R						X7R					
561 560	X5R				X7R					X7R						X7R						X7R					
681 680	X5R				X7R					X7R						X7R						X7R					
821 820	X5R				X7R					X7R						X7R						X7R					
102 1000	X5R				X7R					X7R						X7R						X7R					
122 1200	X5R				X7R					X7R						X7R						X7R					
152 1500	X5R				X7R					X7R						X7R						X7R					
182 1800	X5R				X7R					X7R						X7R						X7R					
222 2200	X5R				X7R					X7R						X7R						X7R					
272 2700	X5R				X7R					X7R						X7R						X7R					
332 3300	X5R				X7R					X7R						X7R						X7R					
392 3900	X5R				X7R					X7R						X7R						X7R					
472 4700	X5R				X7R					X7R						X7R						X7R					
562 5600	X5R				X7R					X7R						X7R						X7R					
682 6800	X5R				X7R					X7R						X7R						X7R					
822 8200	X5R				X7R					X7R						X7R						X7R					
103 Cap 0.010	X5R				X7R					X7R						X7R						X7R					
123 (µF) 0.012	X5R				X7R					X7R						X7R						X7R					
153 0.015	X5R				X7R					X7R						X7R						X7R					
183 0.018	X5R				X7R					X7R						X7R						X7R					
223 0.022	X5R				X7R					X7R						X7R						X7R					
273 0.027	X5R				X7R					X7R						X7R						X7R					
333 0.033	X5R				X7R					X7R						X7R						X7R					
393 0.039	X5R				X7R					X7R						X7R						X7R					
473 0.047	X5R				X7R					X7R						X7R						X7R					
563 0.056	X5R				X7R					X7R						X7R						X7R					
683 0.068	X5R				X7R					X7R						X7R						X7R					
823 0.082	X5R				X7R					X7R						X7R						X7R					
104 0.10	X5R				X7R					X7R						X7R						X7R					
124 0.12	X5R				X7R					X7R						X7R						X7R					
154 0.15	X5R				X7R					X7R						X7R						X7R					
184 0.18	X5R				X7R					X7R						X7R						X7R					
224 0.22	X5R				X7R					X7R						X7R						X7R					
274 0.27	X5R				X7R					X7R						X7R						X7R					
334 0.33	X5R				X7R					X7R						X7R						X7R					
474 0.47	X5R				X7R					X7R						X7R						X7R					
564 0.56	X5R				X7R					X7R						X7R						X7R					
684 0.68	X5R				X7R					X7R						X7R						X7R					
824 0.82	X5R				X7R					X7R						X7R						X7R					
105 1.0	X5R				X7R					X7R						X7R						X7R					
125 1.2	X5R				X7R					X7R						X7R						X7R					
155 1.5	X5R				X7R					X7R						X7R						X7R					
185 1.8	X5R				X7R					X7R						X7R						X7R					
225 2.2	X5R				X7R					X7R						X7R						X7R					
335 3.3	X5R				X7R					X7R						X7R						X7R					
475 4.7	X5R				X7R					X7R						X7R						X7R					
106 10	X5R				X7R					X7R						X7R						X7R					
226 22	X5R				X7R					X7R						X7R						X7R					
476 47	X5R				X7R					X7R						X7R						X7R					
107 100	X5R				X7R					X7R						X7R						X7R					

- = Currently available X7R
- = Currently available X5R
- = Under development X7R, contact factory for advance samples
- = Under development X5R, contact factory for advance samples

PART & PAD LAYOUT DIMENSIONS

millimeters (inches)



PART DIMENSIONS

0405 - 2 Element

L	W	T	BW	BL	P	S
1.00 ± 0.15 (0.039 ± 0.006)	1.37 ± 0.15 (0.054 ± 0.006)	0.66 MAX (0.026 MAX)	0.36 ± 0.10 (0.014 ± 0.004)	0.20 ± 0.10 (0.008 ± 0.004)	0.64 REF (0.025 REF)	0.32 ± 0.10 (0.013 ± 0.004)

0508 - 2 Element

L	W	T	BW	BL	P	S
1.30 ± 0.15 (0.051 ± 0.006)	2.10 ± 0.15 (0.083 ± 0.006)	0.94 MAX (0.037 MAX)	0.43 ± 0.10 (0.017 ± 0.004)	0.33 ± 0.08 (0.013 ± 0.003)	1.00 REF (0.039 REF)	0.50 ± 0.10 (0.020 ± 0.004)

0508 - 4 Element

L	W	T	BW	BL	P	X	S
1.30 ± 0.15 (0.051 ± 0.006)	2.10 ± 0.15 (0.083 ± 0.006)	0.94 MAX (0.037 MAX)	0.25 ± 0.06 (0.010 ± 0.003)	0.20 ± 0.08 (0.008 ± 0.003)	0.50 REF (0.020 REF)	0.75 ± 0.10 (0.030 ± 0.004)	0.25 ± 0.10 (0.010 ± 0.004)

0612 - 4 Element

L	W	T	BW	BL	P	X	S
1.60 ± 0.20 (0.063 ± 0.008)	3.20 ± 0.20 (0.126 ± 0.008)	1.35 MAX (0.053 MAX)	0.41 ± 0.10 (0.016 ± 0.004)	0.18 ^{+0.25} _{-0.08} (0.007 ^{+0.010} _{-0.003})	0.76 REF (0.030 REF)	1.14 ± 0.10 (0.045 ± 0.004)	0.38 ± 0.10 (0.015 ± 0.004)

PAD LAYOUT DIMENSIONS

0405 - 2 Element

A	B	C	D	E
0.46 (0.018)	0.74 (0.029)	1.20 (0.047)	0.30 (0.012)	0.64 (0.025)

0508 - 2 Element

A	B	C	D	E
0.68 (0.027)	1.32 (0.052)	2.00 (0.079)	0.46 (0.018)	1.00 (0.039)

0508 - 4 Element

A	B	C	D	E
0.56 (0.022)	1.32 (0.052)	1.88 (0.074)	0.30 (0.012)	0.50 (0.020)

0612 - 4 Element

A	B	C	D	E
0.89 (0.035)	1.65 (0.065)	2.54 (0.100)	0.46 (0.018)	0.76 (0.030)

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