Capacitor Array

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%.

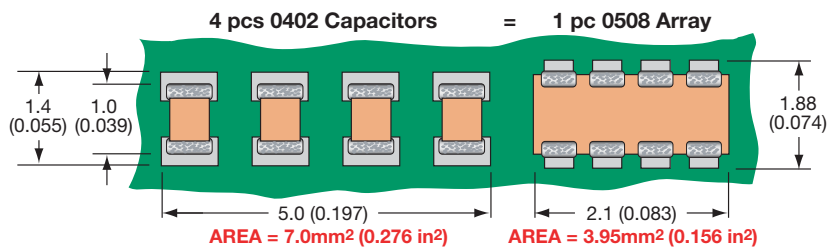A reduction of 40 placements increases throughput by 18%.

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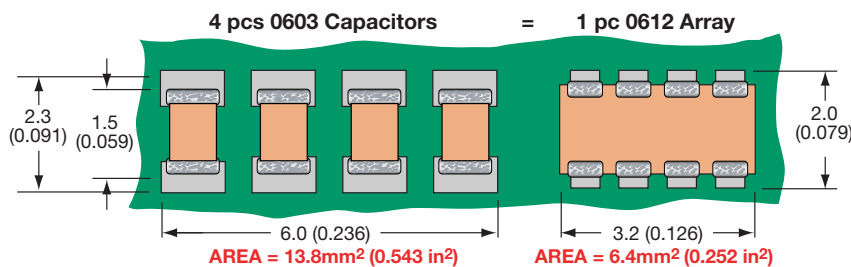
Smaller volume users can also benefit from replacing discrete components with arrays. The total number of placements is reduced thus creating spare capacity on placement machines. This in turn generates the opportunity to increase overall production output without further investment in new equipment.

W2A (0508) Capacitor Arrays

4 pcs 0402 Capacitors = 1 pc 0508 Array

1.4 (0.055) 1.0 (0.039) 1.88 (0.074)

5.0 (0.197) 2.1 (0.083)

AREA = 7.0mm^2 (0.276 in^2) AREA = 3.95mm^2 (0.156 in^2)

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

4 pcs 0603 Capacitors = 1 pc 0612 Array

2.3 (0.091) 1.5 (0.059) 2.0 (0.079)

6.0 (0.236) 3.2 (0.126)

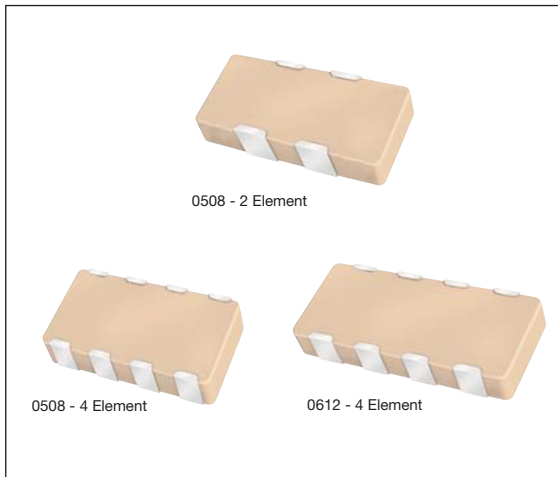AREA = 13.8mm^2 (0.543 in^2) AREA = 6.4mm^2 (0.252 in^2)

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)

0508 - 2 Element

0508 - 4 Element

0612 - 4 Element

GENERAL DESCRIPTION

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

*RoHS Compliant

*Not RoHS Compliant

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

RoHS COMPLIANT

Capacitor Array

Capacitance Range – NP0/C0G

SIZE		W2 = 0508			W3 = 0612		
# Elements		**4**			**4**		
Soldering		Reflow/Wave			Reflow/Wave		
Packaging		Paper/Embossed			Paper/Embossed		
Length mm (in.)		1.30 ± 0.15 (0.051 ± 0.006)			1.60 ± 0.150 (0.063 ± 0.006)		
Width mm (in.)		2.10 ± 0.15 (0.083 ± 0.006)			3.20 ± 0.20 (0.126 ± 0.008)		
Max. Thickness mm (in.)		0.94 (0.037)			1.35 (0.053)		
WVDC		16	25	50	16	25	50
1R0 Cap (pF) 1R2 1R5	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						

■ = Supported Values

Capacitor Array

Capacitance Range – X7R

SIZE		W2 = 0508						W2 = 0508						W3 = 0612					
# Elements		**2**						**4**						**4**					
Soldering		Reflow/Wave						Reflow/Wave						Reflow/Wave					
Packaging		All Paper						Paper/Embossed						Paper/Embossed					
Length	mm (in.)	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.)	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.)	0.94 (0.037)						0.94 (0.037)						1.35 (0.053)					
WVDC		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																			

Capacitor Array

PART & PAD LAYOUT DIMENSIONS

millimeters (inches)

0508 - 2 Element

0508 - 4 Element

0612 - 4 Element

PAD LAYOUT

PAD LAYOUT

PAD LAYOUT
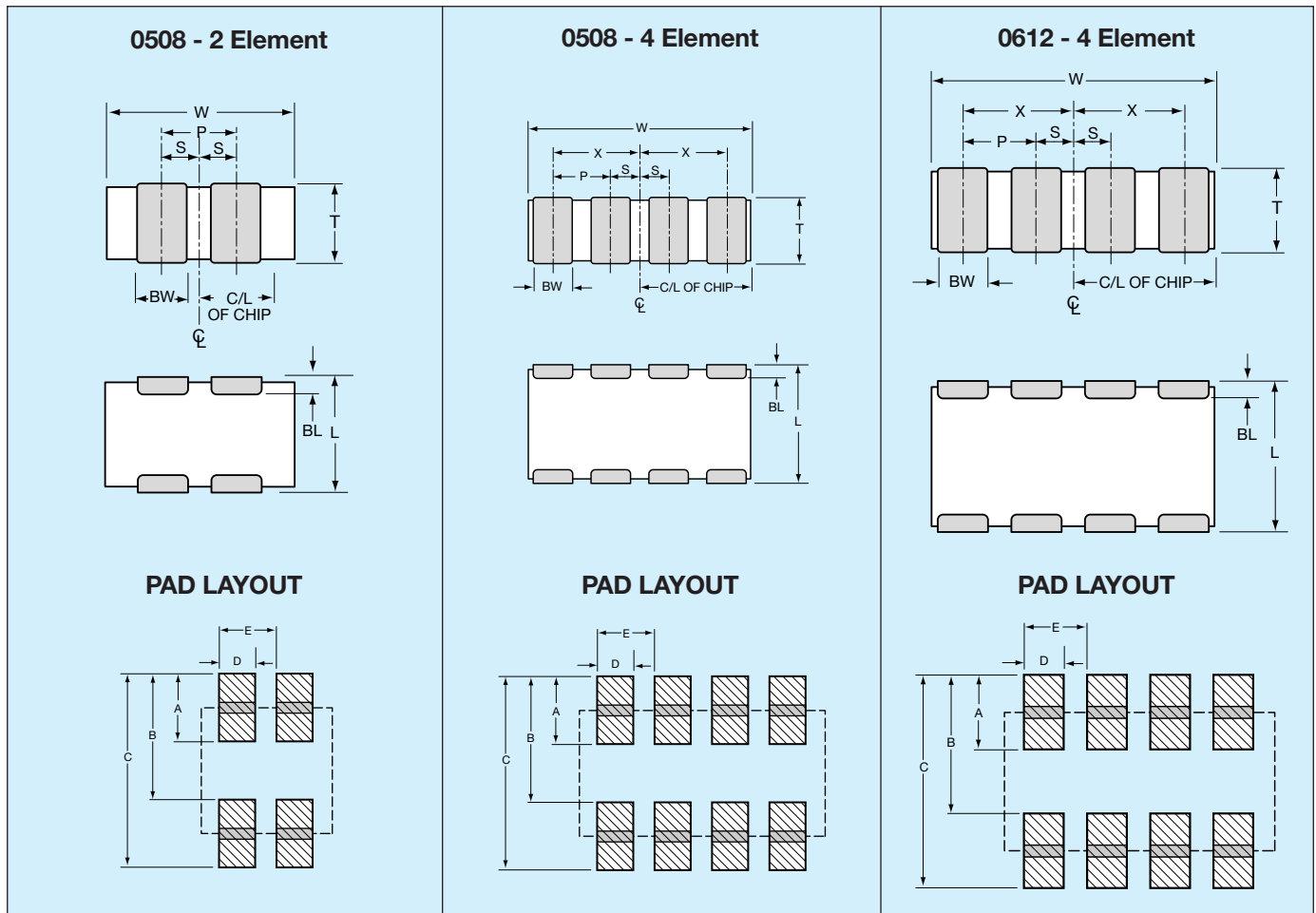
PART DIMENSIONS

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

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)