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%.

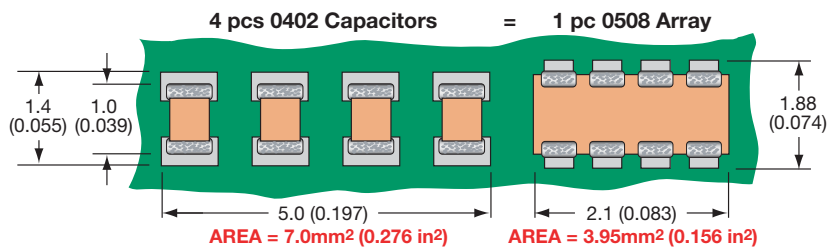A reduction of 40 placements increases throughput by 18%.

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.
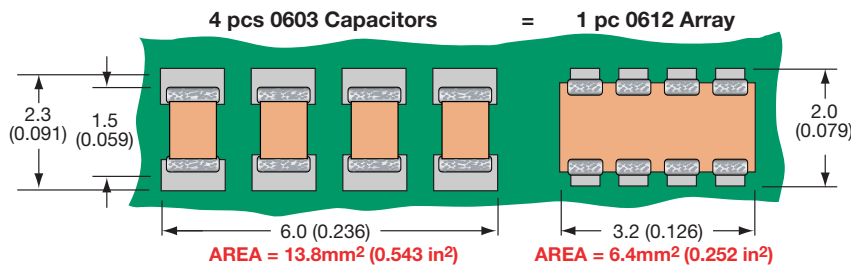
Smaller volume users can also benefit from replacing discrete components with arrays. The total number of placements is reduced thus creating spare capacity on placement machines. This in turn generates the opportunity to increase overall production output without further investment in new equipment.
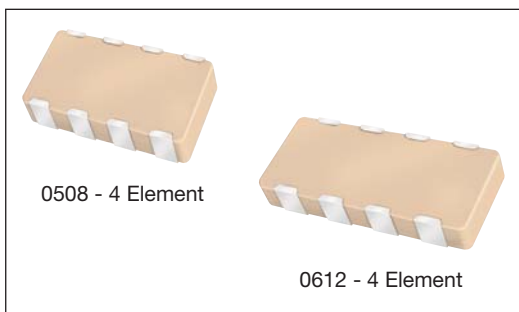
W2A (0508) Capacitor Arrays

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 = 7.0mm² (0.276 in²)   AREA = 3.95mm² (0.156 in²)

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 = 13.8mm² (0.543 in²)   AREA = 6.4mm² (0.252 in²)

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.

Automotive Capacitor Array (IPC)

0508 - 4 Element

0612 - 4 Element

As the market leader in the development and manufacture of capacitor arrays AVX is pleased to offer a range of AEC-Q200 qualified arrays to compliment our product offering to the Automotive industry. Both the AVX 0612 and 0508 4-element capacitor array styles are qualified to the AEC-Q200 automotive specifications.

AEC-Q200 is the Automotive Industry qualification standard and a detailed qualification package is available on request.

All AVX automotive capacitor array production facilities are certified to ISO/TS 16949:2002.

HOW TO ORDER

| W | 3 | A | 4 | Y | C | 104 | K | 4 | T | 2A |

Style
W = RoHS
L = SnPb

Case Size
2 = 0508
3 = 0612

Array

Number of Caps

Voltage
Z = 10V
Y = 16V
3 = 25V
5 = 50V
1 = 100V

Dielectric
A = NP0
C = X7R
F = X8R

Capacitance Code (In pF)
Significant Digits + Number of Zeros
e.g. 10µF=106

Capacitance Tolerance
*J = ±5%
*K = ±10%
M = ±20%

Failure Rate
4 = Automotive

Terminations
*T = Plated Ni and Sn
*Z = FLEXITERM®
B = 5% min lead
X = FLEXITERM®
    with 5% min lead

*RoHS compliant

Packaging & Quantity Code
2A = 7" Reel (4000)
4A = 13" Reel (10000)
2F = 7" Reel (1000)

*Contact factory for availability by part number for K = ±10% and J = ±5% tolerance.

NP0/C0G

SIZE		W2 = 0508				W3 = 0612			
No. of Elements		4				4			
WVDC		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								

= NPO/COG

X7R

SIZE		W2 = 0508				W2 = 0508				W3 = 0612				
No. of Elements		2				4				4				
WVDC		16	25	50	100	16	25	50	100	10	16	25	50	100
101 121 151	Cap (pF) 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													
103 123 153	Cap (µF) 0.010 0.012 0.015													
183 223 273	0.018 0.022 0.027													
333 393 473	0.033 0.039 0.047													
563 683 823	0.056 0.068 0.082													
104 124 154	0.10 0.12 0.15													
224	0.22													

= X7R

Not RoHS Compliant

LEAD-FREE
LEAD-FREE COMPATIBLE COMPONENT

RoHS COMPLIANT

For RoHS compliant products, please select correct termination style.

Capacitor Array

PART & PAD LAYOUT DIMENSIONS

0508 - 2 Element

0508 - 4 Element

0612 - 4 Element

PAD LAYOUT

PAD LAYOUT

PAD LAYOUT
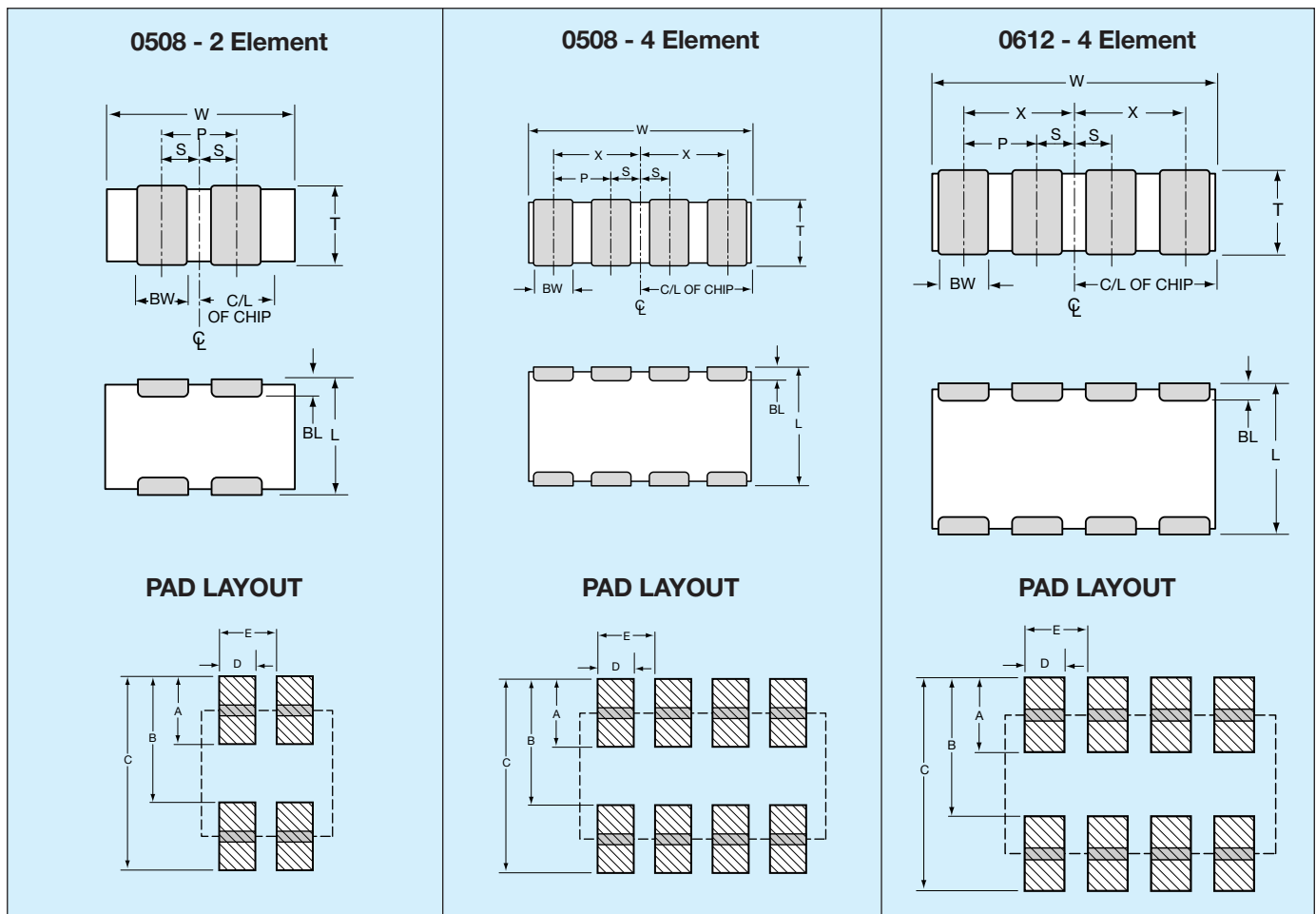
PART DIMENSIONS

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)