

SMPS Capacitors Chip Assemblies



CH/CV - Radial, Dual-in-Line, 4 Terminal/SMT 'J' & 'L' Ranges



The CH/CV range exhibits low ESR/ESL making them well suited for high frequency applications. With its' PME technology, the range exhibits high current handling capabilities where as other technologies may not, making them the ideal choice for filtering, smoothing and decoupling circuit applications.

The CH/CV range uses a number of different lead frames types which reduces the thermo-mechanical stresses which makes them the designer's choice for high reliability applications. In combination with this the range uses a stacked capacitor design which saves on PCB space.

FEATURES

- BS9100 approved
- Voltage range 50-500 V DC
- Dielectrics 2C1/X7R
- Customised ceramic capacitor packages and lead frames available.

Note: AVX does not recommend or advise the use of adhesives to secure the CH/CV components to the PCB

ELECTRICAL SPECIFICATIONS

Temperature Coefficient CECC 30 000, (4.24.1)
2C1/X7R: C Temperature Characteristic - $\pm 15\%$, -55° to +125°C

Capacitance Test 25°C
2C1/X7R: Measured at 1 VRMS max at 1KHz

Dissipation Factor 25°C
2C1/X7R: 2.5% max at 1KHz, 1 VRMS max

Insulation Resistance 25°C
2C1/X7R: 100K megohms or 1000 megohms- μ F, whichever is less

Dielectric Withstanding Voltage 25°C (Flash Test)
2C1/X7R: 250% rated voltage for 5 seconds with 50 mA max charging current. (500 Volt units @ 150% rated voltage)

Life Test (1000 hrs) CECC 30 000 (4.23)
2C1/X7R: 200% rated voltage at +125°C.
(500 Volt units @ 120% rated voltage)

Damp Heat IEC 68-2-3, 56 days.

Thermal Shock IEC 68-2-14
-55°C to +125°C, 5 cycles

Resistance to Solder Heat IEC 68-2-20

Vibration IEC 68-2-6
10Hz - 2000Hz, 0.75mm or 98m/sec², 6 hrs.

Bump IEC 68-2-29
390m/sec², 4000 bumps

MARKING

CH and CV 4x, 5x, 81-84	
A5C 225K xxxxxx	Top line A (AVX). Voltage code, dielectric code. Middle line capacitance code, tolerance code. Bottom line 6 digit batch code.
Other CH, CV Styles	
AVX 5C 156M xxxxxx	Top line AVX. Second line voltage code, dielectric code. Third line capacitance code, tolerance code. Bottom line, 6 digit batch code.

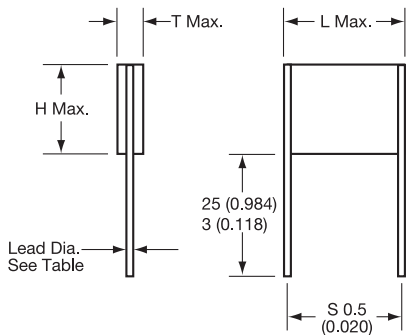
Performance of SMPS capacitors can be simulated by downloading SpiCalci software program -
<http://www.avx.com/download/software/SpiCalci-AVX.zip>
Custom values, ratings and configurations are also available.

SMPS Capacitors (CV Style)
Chip Assemblies



VERTICALLY MOUNTED RADIAL PRODUCT

Part Number format (CVxxxxxxxxxxA2)
Typical Part Number CV525C106MA30A2



DIMENSIONS millimeters (inches)

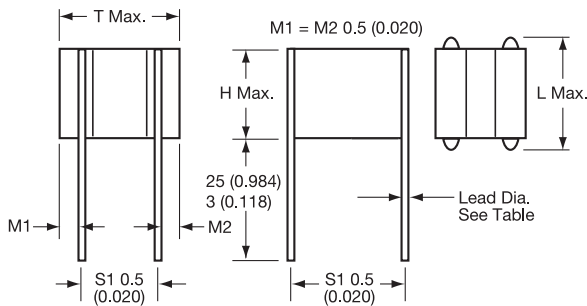
Style	L (max)	H (max)	S (nom)	Lead Dia (nom)
CV41-44	10.6 (0.417)	8.7 (0.342)	8.2 (0.322)	0.7 (0.028)
CV51-54	11.9 (0.468)	10.7 (0.421)	10.2 (0.400)	0.9 (0.035)
CV61-64	16.5 (0.649)	13.6 (0.535)	15.2 (0.600)	0.9 (0.035)
CV71-74	17.8 (0.700)	21.6 (0.850)	15.2 (0.600)	0.9 (0.035)
CV76-79	22.7 (0.893)	16.6 (0.653)	21.2* (0.834)	0.9 (0.035)

*Tolerance ± 0.8

Style	T max
CV41/51/61/71/76	3.80 (0.150)
CV42/52/62/72/77	7.40 (0.291)
CV43/53/63/73/78	11.1 (0.437)
CV44/54/64/74/79	14.8 (0.583)

VERTICALLY MOUNTED 4 TERMINAL RADIAL PRODUCT

Part Number format (CVxxxxxxxx3xx4)
Typical Part Number CV435C106MA30A4



DIMENSIONS millimeters (inches)

Style	L (max)	H (max)	S (nom)	Lead Dia (nom)
CV43-44	10.6 (0.417)	8.7 (0.342)	8.2 (0.322)	0.7 (0.028)
CV53-54	11.9 (0.468)	10.7 (0.421)	10.2 (0.400)	0.9 (0.035)
CV63-64	16.5 (0.649)	13.6 (0.535)	15.2 (0.600)	0.9 (0.035)
CV73-74	17.8 (0.700)	21.6 (0.850)	15.2 (0.600)	0.9 (0.035)
CV78-79	22.7 (0.893)	16.6 (0.653)	21.2* (0.834)	0.9 (0.035)

*Tolerance ± 0.8 (0.031)

Style	T max	S1
CV43/53/63/73/78	11.1 (0.437)	5.08 (0.200)
CV44/54/64/74/79	14.8 (0.583)	7.62 (0.300)

Note 1. This style is only available in 3 & 4 chip assemblies

HOW TO ORDER

CV

Style Code
(see product section)

52

Size Code

5

Voltage Code
5 = 50V
1 = 100V
2 = 200V
7 = 500V

C

Dielectric Code
C = X7R

106

Capacitance Code
(2 significant digits + no. of zeros)
eg. 105 = 1 pF
106 = 10 pF
107 = 100 pF

M

Capacitance Tolerance
X7R: K = $\pm 10\%$
M = $\pm 20\%$
P = +100, -0%

A

Specification Code
A = Non-customized

3

Finish Code
3 = Uncoated
8 = Coated (classified as uninsulated)

0

Lead Dia. Code
0 = Standard

A

Lead Space Code
A = Standard

2

Lead Style Code
2 = 2 Terminal
4 = 4 Terminal
See Note 1 above

Not RoHS Compliant

Note: See page 139 for How to Order BS9100 parts

SMPS Capacitors (CH Style)

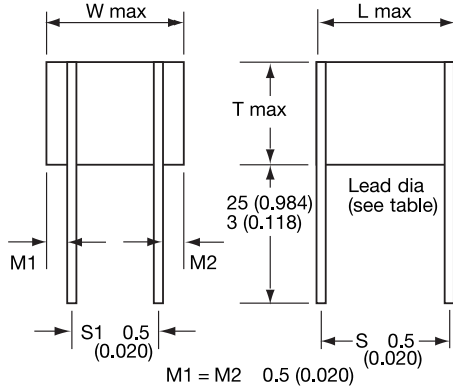
Chip Assemblies



HORIZONTALLY MOUNTED 4 TERMINAL RADIAL PRODUCT

Part Number format (CHxxxxxxxxxx3xx4)

Typical Part Number CH782C106MA30A4



DIMENSIONS

millimeters (inches)

Style	L (max)	H (max)	S (nom)	S Lead Dia (nom)	S1 (nom)
CH42-44	10.6 (0.417)	8.7 (0.342)	8.2 (0.322)	0.7 (0.028)	5.08 (0.200)
CH52-54	11.9 (0.468)	10.7 (0.421)	10.2 (0.400)	0.9 (0.035)	7.62 (0.300)
CH62-64	16.5 (0.649)	13.6 (0.535)	15.2 (0.600)	0.9 (0.035)	7.62 (0.300)
CH72-74	17.8 (0.700)	21.6 (0.850)	15.2 (0.600)	0.9 (0.035)	15.2 (0.600)
CH77-79	22.7 (0.893)	16.6 (0.653)	21.2* (0.834)	0.9 (0.035)	10.2 (0.400)
CH82-84	14.1 (0.555)	38.2 (1.503)	10.2 (0.400)	0.9 (0.035)	27.9 (1.100)
CH87-89	17.8 (0.700)	38.2 (1.503)	15.2 (0.600)	1.0 (0.039)	27.9 (1.100)
CH92-94	24.0 (0.944)	40.6 (1.598)	21.2* (0.834)	1.2 (0.047)	30.5 (1.200)

*Tolerance ± 0.8

NOTE: This style is only available in 2, 3 & 4 chip assemblies only

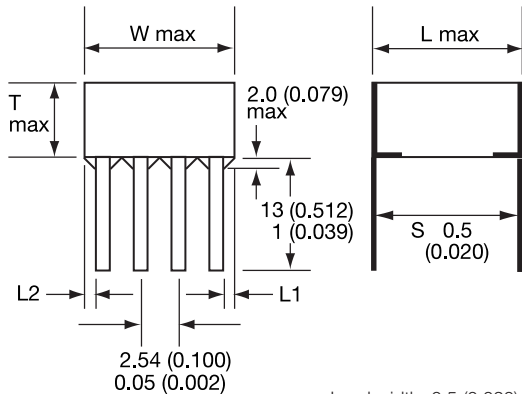
millimeters (inches)

Style	T max
CH42/52/62/72/77/87/92	7.4 (0.291)
CH43/53/63/73/78/88/93	11.1 (0.437)
CH44/54/64/74/79/89/94	14.8 (0.583)

HORIZONTALLY MOUNTED DUAL-IN-LINE PRODUCT

Part Number format (CHxxxxxxxxxx0A0)

Typical Part Number CH615C106MA30A0



Lead width 0.5 (0.020)
Lead thickness 0.254 (0.010)
L1 = L2 ± 0.5 (0.020)

DIMENSIONS

millimeters (inches)

Style	L (max)	W (max)	S (nom)	No. of Leads per side
CH41-44	9.2 (0.362)	8.7 (0.342)	8.2 (0.322)	3
CH51-54	10.7 (0.421)	10.7 (0.421)	10.2 (0.400)	4
CH61-64	14.9 (0.586)	13.6 (0.535)	14.0 (0.551)	5
CH71-74	16.8 (0.661)	21.6 (0.850)	15.2 (0.600)	7
CH76-79	21.6 (0.850)	16.6 (0.653)	20.3* (0.800)	6
CH81-84	12.0 (0.472)	38.2 (1.503)	10.2 (0.400)	14
CH86-89	18.9 (0.744)	38.2 (1.503)	15.2 (0.600)	14
CH91-94	24.0 (0.944)	40.6 (1.598)	20.3* (0.800)	14

*Tolerance ± 0.8 (0.031)

millimeters (inches)

Style	T max
CH41/51/61/71/76/81/86/91	3.8 (0.150)
CH42/52/62/72/77/82/87/92	7.4 (0.291)
CH43/53/63/73/78/83/88/93	11.1 (0.437)
CH44/54/64/74/79/84/89/94	14.8 (0.583)

HOW TO ORDER

CH	52	5	C	106	M	A	3	0	A	0
Style Code (see product section)	Size Code	Voltage Code 5 = 50V 1 = 100V 2 = 200V 7 = 500V	Dielectric Code C = X7R	Capacitance Code (2 significant digits + no. of zeros) eg. 105 = 1 pF 106 = 10 pF 107 = 100 pF	Capacitance Tolerance X7R: K = $\pm 10\%$ M = $\pm 20\%$ P = $\pm 100, -0\%$	Specification Code A = Non-customized	Finish Code 3 = Uncoated 8 = Coated (classified as uninsulated)	Lead Dia. Code 0 = Standard	Lead Space Code A = Standard	Lead Style Code 0 = Straight dual in line 4 = 4 Terminal

Not RoHS Compliant

Note: See page 139 for How to Order BS9100 parts

SMPS Capacitors (CH Style)

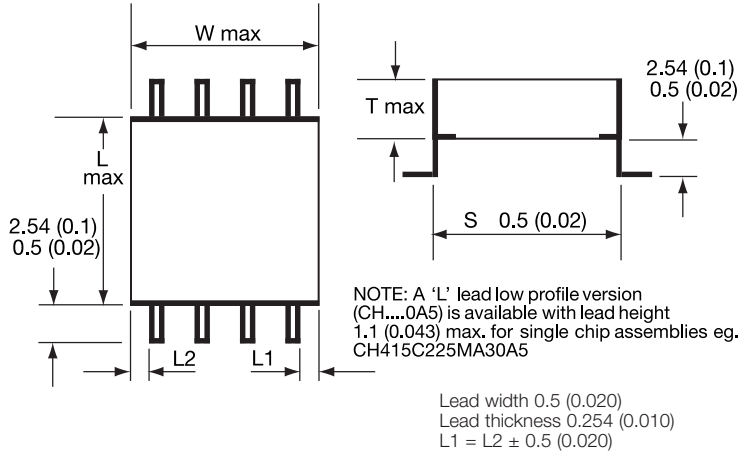
Chip Assemblies



HORIZONTALLY MOUNTED 'L' LEAD SMT PRODUCT

Part Number format (CHxxxxxxxxx0A7)

Typical Part Number CH411C275KA30A7



DIMENSIONS

millimeters (inches)

Style	L (max)	H (max)	S (nom)	No. of Leads per side
CH41-44	9.2 (0.362)	8.7 (0.342)	8.2 (0.322)	3
CH51-54	10.7 (0.421)	10.7 (0.421)	10.2 (0.400)	4
CH61-64	14.9 (0.586)	13.6 (0.535)	14.0 (0.551)	5
CH71-74	16.8 (0.661)	21.6 (0.850)	15.2 (0.600)	7
CH76-79	21.6 (0.850)	16.6 (0.653)	20.3* (0.800)	6
CH81-84	12.0 (0.472)	38.2 (1.503)	10.2 (0.400)	14
CH86-89	18.9 (0.744)	38.2 (1.503)	15.2 (0.600)	14
CH91-94	24.0 (0.944)	40.6 (1.598)	20.3* (0.800)	14

*Tolerance $\pm 0.8 (0.031)$

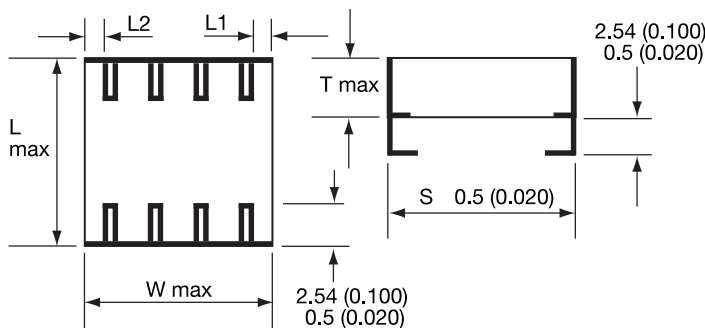
millimeters (inches)

Style	T max
CH41/51/61/71/76/81/86/91	3.8 (0.150)
CH42/52/62/72/77/82/87/92	7.4 (0.291)
CH43/53/63/73/78/83/88/93	11.1 (0.437)
CH44/54/64/74/79/84/89/94	14.8 (0.583)

HORIZONTALLY MOUNTED 'J' LEAD SMT PRODUCT

Part Number format (CHxxxxxxxxx0A8)

Typical Part Number CH411C275KA30A8



DIMENSIONS

millimeters (inches)

Style	L (max)	H (max)	S (nom)	No. of Leads per side
CH41-44	9.2 (0.362)	8.7 (0.342)	8.2 (0.322)	3
CH51-54	10.7 (0.421)	10.7 (0.421)	10.2 (0.400)	4
CH61-64	14.9 (0.586)	13.6 (0.535)	14.0 (0.551)	5
CH71-74	16.8 (0.661)	21.6 (0.850)	15.2 (0.600)	7
CH76-79	21.6 (0.850)	16.6 (0.653)	20.3* (0.800)	6
CH81-84	12.0 (0.472)	38.2 (1.503)	10.2 (0.400)	14
CH86-89	18.9 (0.744)	38.2 (1.503)	15.2 (0.600)	14
CH91-94	24.0 (0.944)	40.6 (1.598)	20.3* (0.800)	14

*Tolerance $\pm 0.8 (0.031)$

millimeters (inches)

Style	T max
CH41/51/61/71/76/81/86/91	3.8 (0.150)
CH42/52/62/72/77/82/87/92	7.4 (0.291)
CH43/53/63/73/78/83/88/93	11.1 (0.437)
CH44/54/64/74/79/84/89/94	14.8 (0.583)

HOW TO ORDER

CH	52	5	C	106	M	A	3	0	A	7
Style Code (see product section)	Size Code	Voltage Code 5 = 50V 1 = 100V 2 = 200V 7 = 500V	Dielectric Code C = X7R	Capacitance Code (2 significant digits + no. of zeros) eg. 105 = 1 pF 106 = 10 pF 107 = 100 pF	Capacitance Tolerance X7R: K = $\pm 10\%$ M = $\pm 20\%$ P = $+100, -0\%$	Specification Code A = Non-customized	Finish Code 3 = Uncoated 8 = Coated (classified as uninsulated)	Lead Dia. Code 0 = Standard	Lead Space Code A = Standard	Lead Style Code 3 = Low profile 'J' (single chip) 5 = Low profile 'L' (single chip) 7 = 'L' Dual in line 8 = 'J' Dual in line

Note: See page 139 for How to Order BS9100 parts

Not RoHS Compliant



SMPS Capacitors (CH/CV Style)
Chip Assemblies



X7R DIELECTRIC STABLE CERAMIC

	CH/CV41-44 Styles				CH/CV51-54 Styles				CH/CV61-64 Styles				CH/CV71-74 Styles				CH/CV76-79 Styles				CH81-84 Styles				CH86-89 Styles				CH91-94 Styles				
Voltage DC																																	
Cap μ F	50	100	200	500	50	100	200	500	50	100	200	500	50	100	200	500	50	100	200	500	50	100	200	500	50	100	200	500	50	100	200	500	
0.12				41																													
0.15				41																													
0.18				41																													
0.22				41																													
0.27				42				51																									
0.33			41	42				51																									
0.39			41	42				51																									
0.47			41	42				51				61																					
0.56			41	43				52				61																					
0.68			42	43			51	52				61																					
0.82			42	44			51	52				61			71				76				81										
1		41	42	44			51	53			61	62			71				76				81										
1.2		41	42				52	53			61	62			71				76				81										
1.5		41	43				52	54			61	62			71				76				81					86					
1.8	41	41	43				52				61	62			72				77				82				86						
2.2	41	41	44			51	52				61	63			71	72			76	77			81	82				86					
2.7	41	41				51	53				62	63			71	72			76	77			81	82				87				91	
3.3	41	42				51	53				62	64			71	72			76	77			81	82				87				91	
3.9	42	42			51	51	54				62				72	73			77	78			81	83			86	87				91	
4.7	42	42			51	52				61	62				72	73			77	78			82	83			86	87				91	
5.6	42	42			51	52				61	63				72	74			77	79			82	84			86	88				92	
6.8	42	43			52	52			61	61	63				72				77				82				86	88				92	
8.2	43	43			52	52			61	61	64			71	73			76	78				82				87	89			91	92	
10	43	44			52	53			61	62	64			71	73			76	78				83				87				91	92	
12	44				53	53			62	62			71	71	74		76	76	79			81	83				87				92	93	
15					53	54			62	62			71	71			76	76			81	81	84			86	87				92	93	
18					54				62	63			71	72			76	77			81	81				86	88				92	94	
22					54				62	63			72	72			77	77			81	82			86	86	88				92		
27									63	64			72	72			77	77			82	82			86	86	89				93		
33									63	64			72	73			77	78			82	82			86	87				91	93		
39									64				72	73			77	78			82	82			87	87			91	91	94		
47													73	74			78	79			82	83			87	87			91	92			
56													73				78				83	83			87	87			92	92			
68													74				79				83	84			87	88			92	92			
82																				84				88	88			92	92				
100																								88	89			92	93				
120																								89				93	93				
150																												93	94				
180																												94					

NB Figures in cells refer to size within ordering information