



Features

- Thick film
- High working voltage
- Wide resistance range
- RoHS compliant*
- UL/IEC 60950 & 60065 compatible
- UL 1676 recognized
- AEC-Q200 compliant

Applications

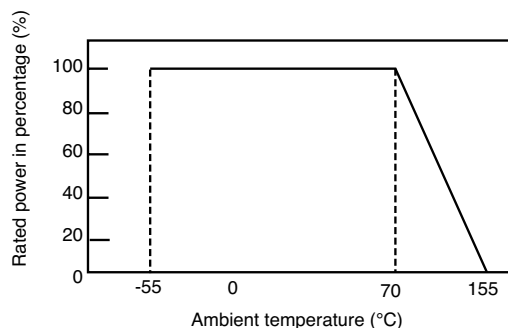
- Higher voltage applications
- Consumer electronics

CHV-A Series – Thick Film High Voltage Chip Resistors

Electrical Characteristics

Specification		Model				
		CHV-0603A	CHV-0805A	CHV-1206A	CHV-2010A	CHV-2512A
Power Rating @ 70 °C		0.1 W	0.125 W	0.25 W	0.5 W	1.0 W
Operating Temperature Range		-55 °C to +155 °C				
Maximum Working Voltage		200 V	400 V	800 V	2000 V	3000 V
Maximum Overload Voltage		400 V	800 V	1600 V	3000 V	4000 V
Resistance Range	1 % E-96 + E-24	100 kΩ ~ 10 MΩ				
	5 % E-24	100 kΩ ~ 22 MΩ		100 kΩ ~ 100 MΩ		
Temperature Coefficient	1 %	±100 PPM/°C				
	5 %	±200 PPM/°C				

Derating Curve



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Agency Recognition

Description	
UL1676	File Number: E466353

How to Order

CHV 2512 A - F X - 1000 E LF

Model _____
(CHV = Thick Film
High Voltage
Chip Resistor)

Size _____
• 0603 • 2010
• 0805 • 2512
• 1206

Feature _____
A = AEC-Q200
compliant

Resistance Tolerance _____
F = ±1 % (Use with "X"
TCR Code)
J = ±5 % (Use with "W"
TCR Code)

TCR _____
X = ±100 PPM/°C
W = ±200 PPM/°C

Resistance Value _____
1 % Tolerance: First three digits are
significant, fourth digit represents
the number of zeroes to follow
5 % Tolerance: First two digits are
significant, third digit represents
the number of zeroes to follow

Packaging _____
E = Paper tape:
• 5,000 pcs. on 7" plastic reel
(CHV0603A, CHV0805A, CHV1206A)
• 4,000 pcs. on 7" plastic reel
(CHV2010A, CHV2512A)

Termination _____
LF = Tin-plated (RoHS compliant)



WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

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Users should verify actual device performance in their specific applications.

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Environmental Characteristics

Test	Specification	Test Method (AEC-Q200, IEC 60115)
High Temperature Exposure (Storage)	J: $\Delta R \leq \pm (3 \% + 0.1 \Omega)$ F: $\Delta R \leq \pm (1 \% + 0.05 \Omega)$	AEC-Q200 TABLE 7.3 1000 hrs. @ T=125 °C. Unpowered. Measurement at 24 \pm 2 hours after test conclusion.
Temperature Cycling*	$\Delta R \leq \pm (1 \% + 0.1 \Omega)$ No mechanical damage	AEC-Q200 TABLE 7.4 1000 Cycles (-55 °C to +125 °C). Measurement at 24 \pm 2 hours after test conclusion.
Moisture Resistance	$\Delta R \leq \pm (1 \% + 0.1 \Omega)$	AEC-Q200 TABLE 7.6 Test 65 °C / 80~100 % RH / 10 cycles. Measurement at 24 \pm 2 hours after test conclusion. (t=24 hrs/cycle)
Biased Humidity	J: $\Delta R \leq \pm (5 \% + 0.1 \Omega)$ F: $\Delta R \leq \pm (3 \% + 0.05 \Omega)$ VCR within the spec.	AEC-Q200 TABLE 7.7 1000 hours 85 °C / 85 % RH. 10% of operating power. Measurement at 24 \pm 2 hours after test conclusion.
Operational Life	J: $\Delta R \leq \pm (5 \% + 0.1 \Omega)$ F: $\Delta R \leq \pm (3 \% + 0.05 \Omega)$ VCR within the spec.	AEC-Q200 TABLE 7.8 Test 1000 hrs. @ T _A =125 °C at specified rated power. Measurement at 24 \pm 2 hours after test conclusion.
Mechanical Shock	Within product specification tolerance and no visible damage.	AEC-Q200 TABLE 7.13 Test Peak value: 100 g's, Wave: Half-sine, Duration: 6 ms, Velocity: 12.3 ft/sec.
Vibration	No mechanical damage.	AEC-Q200 TABLE 7.14 5 g's for 20 min., 12 cycles each of 3 orientations. Test from 10-2000 Hz.
Resistance to Solder Heat*	$\Delta R \leq \pm (1 \% + 0.1 \Omega)$ No mechanical damage.	AEC-Q200 TABLE 7.15 Solder dipping @ 270 °C \pm 5 °C for 10 sec. \pm 1 sec.
Thermal Shock	J: $\Delta R \leq \pm (1 \% + 0.1 \Omega)$ F: $\Delta R \leq \pm (0.5 \% + 0.05 \Omega)$ No mechanical damage.	AEC-Q200 TABLE 7.16 -55 to 155 °C/ dwell time 15 min max. Transfer time 20 sec. / 300 cycles.
ESD	$\Delta R \leq \pm (1 \% + 0.1 \Omega)$ No mechanical damage.	AEC-Q200-002 Test contact min. 1 kV
Solderability*	Over 95 % of termination must be covered with solder.	AEC-Q200 TABLE 7.18 a) Baking 155 °C 4 hours, dipping 235 °C 5 sec. b) Steam 1 hour, dipping 215 °C 5 sec. c) Steam 1 hour, dipping 260 °C 7 sec.
Flammability	Refer to UL-94.	AEC-Q200 TABLE 7.20 UL-94 V-0 or V-1 are acceptable
Board Flex*	J: $\Delta R \leq \pm (1 \% + 0.1 \Omega)$ F: $\Delta R \leq \pm (0.5 \% + 0.05 \Omega)$ No mechanical damage.	AEC-Q200 TABLE 7.21 Bending 2 mm (CHV2512A, 2010A, 1210A, 1206A) 3 mm (CHV0805A, 0603A)
Terminal Strength	No mechanical damage.	AEC-Q200 TABLE 7.22 Force 1 Kg for 60 seconds.

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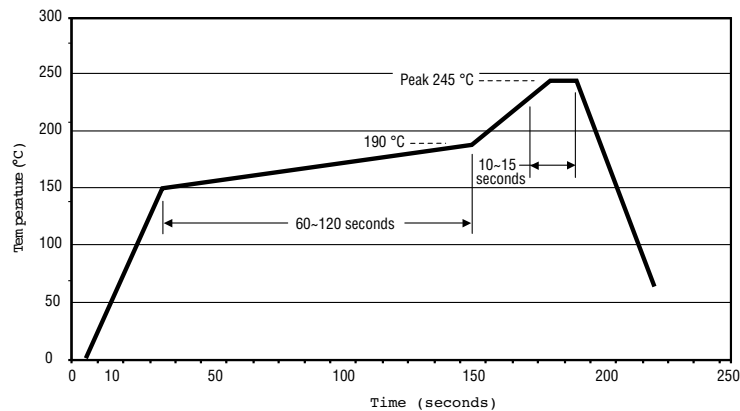
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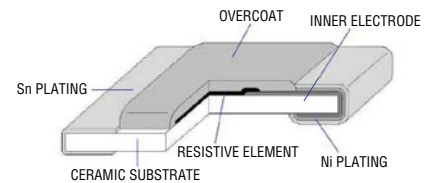
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Soldering Profile

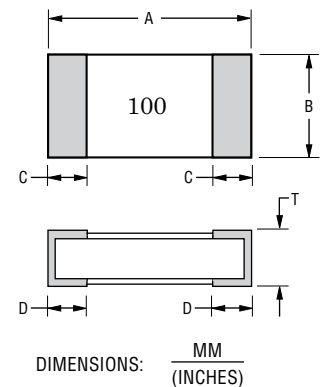


Construction



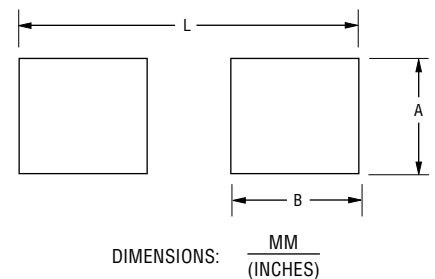
Product Dimensions

Dim.	Model				
	CHV0603A	CHV0805A	CHV1206A	CHV2010A	CHV2512A
A	$\frac{1.60 \pm 0.10}{(0.063 \pm 0.004)}$	$\frac{2.00 \pm 0.10}{(0.079 \pm 0.004)}$	$\frac{3.10 \pm 0.10}{(0.122 \pm 0.004)}$	$\frac{5.00 \pm 0.20}{(0.197 \pm 0.008)}$	$\frac{6.40 \pm 0.20}{(0.252 \pm 0.008)}$
B	$\frac{0.80 \pm 0.10}{(0.031 \pm 0.004)}$	$\frac{1.25 \pm 0.10}{(0.049 \pm 0.004)}$	$\frac{1.60 \pm 0.10}{(0.063 \pm 0.004)}$	$\frac{2.50 \pm 0.20}{(0.098 \pm 0.008)}$	$\frac{3.20 \pm 0.20}{(0.126 \pm 0.008)}$
C	$\frac{0.30 \pm 0.20}{(0.012 \pm 0.008)}$	$\frac{0.40 \pm 0.20}{(0.016 \pm 0.008)}$	$\frac{0.50 \pm 0.20}{(0.020 \pm 0.008)}$	$\frac{0.65 \pm 0.25}{(0.026 \pm 0.010)}$	$\frac{0.65 \pm 0.25}{(0.026 \pm 0.010)}$
D	$\frac{0.30 \pm 0.20}{(0.012 \pm 0.008)}$	$\frac{0.40 \pm 0.20}{(0.016 \pm 0.008)}$	$\frac{0.50 \pm 0.20}{(0.020 \pm 0.008)}$	$\frac{0.60 \pm 0.25}{(0.024 \pm 0.010)}$	$\frac{0.90 \pm 0.25}{(0.035 \pm 0.010)}$
T	$\frac{0.45 \pm 0.10}{(0.018 \pm 0.004)}$	$\frac{0.50 \pm 0.10}{(0.020 \pm 0.004)}$	$\frac{0.55 \pm 0.10}{(0.022 \pm 0.004)}$	$\frac{0.60 \pm 0.10}{(0.024 \pm 0.004)}$	$\frac{0.60 \pm 0.15}{(0.024 \pm 0.006)}$



Recommended Land Pattern

Dim.	Model				
	CHV0603A	CHV0805A	CHV1206A	CHV2010A	CHV2512A
A	$\frac{0.90}{(0.035)}$	$\frac{1.30}{(0.051)}$	$\frac{1.80}{(0.071)}$	$\frac{3.00}{(0.118)}$	$\frac{3.70}{(0.146)}$
B	$\frac{1.00}{(0.039)}$	$\frac{1.15}{(0.045)}$	$\frac{1.30}{(0.051)}$	$\frac{1.50}{(0.059)}$	$\frac{1.60}{(0.063)}$
L	$\frac{3.00}{(0.118)}$	$\frac{3.50}{(0.138)}$	$\frac{4.70}{(0.185)}$	$\frac{6.80}{(0.268)}$	$\frac{7.60}{(0.299)}$



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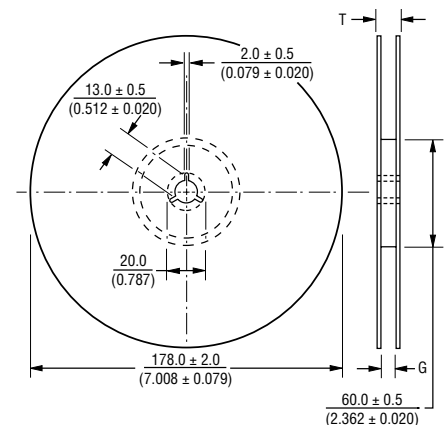
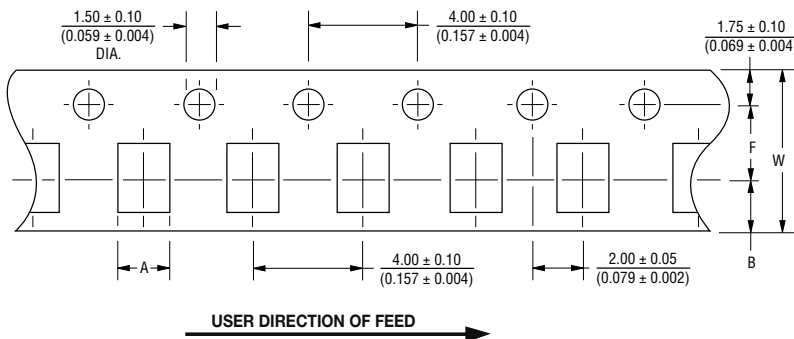
Resistor Markings

CHV0603A CHV0805A CHV1206A CHV2010A CHV2512A	CHV0805A CHV1206A CHV2010A CHV2512A	CHV0603A	CHV0603A
3-Digit E-24 $\pm 5\%$ Marking	4-Digit E-96/E-24 Marking	3-Digit E-24 $\pm 1\%$ Marking	3-Digit E-96 $\pm 1\%$ Marking
30×10^1 Value = 300 ohms	154×10^2 Value = 15.4K ohms	222×10^2 Value = 2.2K ohms	10×10^0 Value = 10 ohms

Marking Explanation

- The chip color is red to identify high voltage product.
- 1 % Tolerance: 4 digits, first three digits are significant, fourth digit represents the number of zeros to follow.
- 5 % Tolerance: 3 digits, first two digits are significant, third digit represents the number of zeros to follow.

Packaging Dimensions - Tape



DIMENSIONS: $\frac{\text{MM}}{(\text{INCHES})}$

Dim.	Model				
	CHV0603A	CHV0805A	CHV1206A	CHV2010A	CHV2512A
A	1.10 ± 0.20 (0.043 ± 0.008)	1.60 ± 0.20 (0.063 ± 0.008)	2.00 ± 0.20 (0.079 ± 0.008)	2.80 ± 0.20 (0.110 ± 0.008)	3.50 ± 0.20 (0.138 ± 0.008)
B	1.90 ± 0.30 (0.075 ± 0.012)	2.40 ± 0.30 (0.094 ± 0.012)	3.57 ± 0.30 (0.141 ± 0.012)	5.50 ± 0.30 (0.217 ± 0.012)	6.70 ± 0.30 (0.264 ± 0.012)
W	8.00 ± 0.05 (0.315 ± 0.002)	8.00 ± 0.05 (0.315 ± 0.002)	8.00 ± 0.05 (0.315 ± 0.002)	12.00 ± 0.05 (0.472 ± 0.002)	12.00 ± 0.05 (0.472 ± 0.002)
F	3.50 ± 0.05 (0.138 ± 0.002)	3.50 ± 0.05 (0.138 ± 0.002)	3.50 ± 0.05 (0.138 ± 0.002)	5.50 ± 0.05 (0.217 ± 0.002)	5.50 ± 0.05 (0.217 ± 0.002)
G	10.0 ± 1.5 (0.394 ± 0.059)	10.0 ± 1.5 (0.394 ± 0.059)	10.0 ± 1.5 (0.394 ± 0.059)	13.8 ± 1.5 (0.543 ± 0.059)	13.8 ± 1.5 (0.543 ± 0.059)
T	14.9 (0.587)	14.9 (0.587)	14.9 (0.587)	16.7 (0.657)	16.7 (0.657)

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Asia-Pacific: Tel: +886-2 2562-4117
Email: asiacus@bourns.com

EMEA: Tel: +36 88 885 877
Email: eurocus@bourns.com

The Americas: Tel: +1-951 781-5500
Email: americus@bourns.com

www.bourns.com

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