



Features

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

Applications

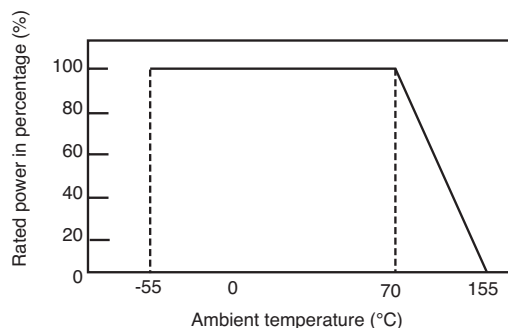
- Higher voltage applications
- Consumer electronics

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



Additional Information

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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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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 ±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 ±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 ±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 ±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 ±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 ±5 °C for 10 sec. ±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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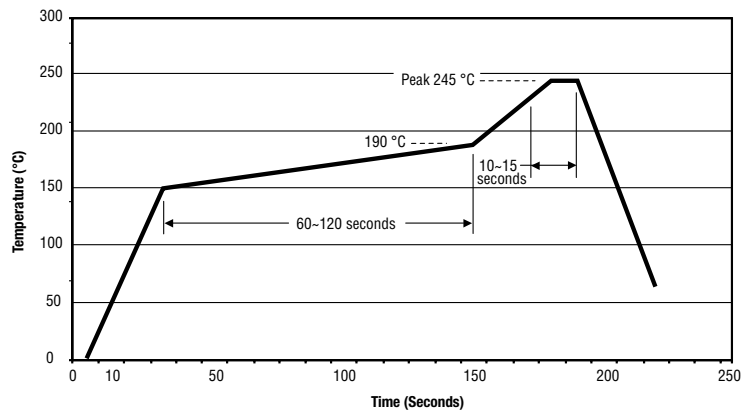
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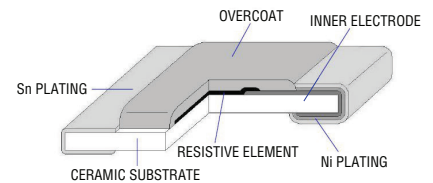
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Soldering Profile

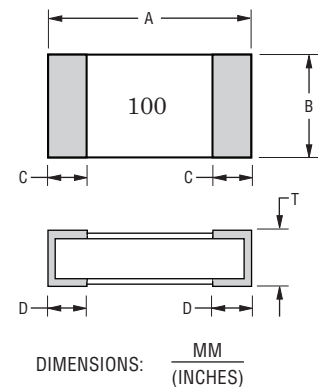


Construction



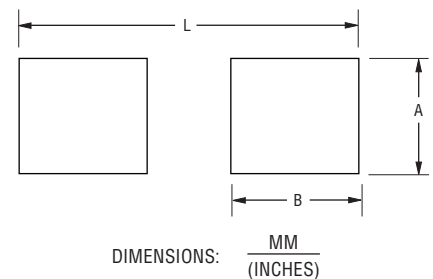
Product Dimensions

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



Recommended Land Pattern

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



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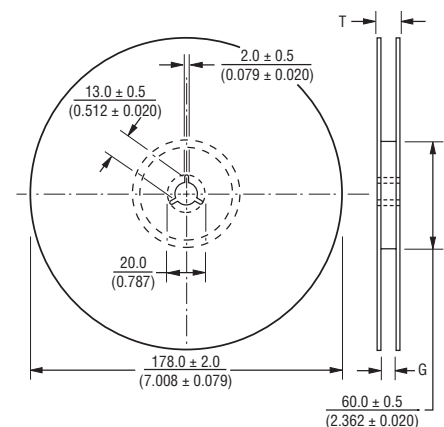
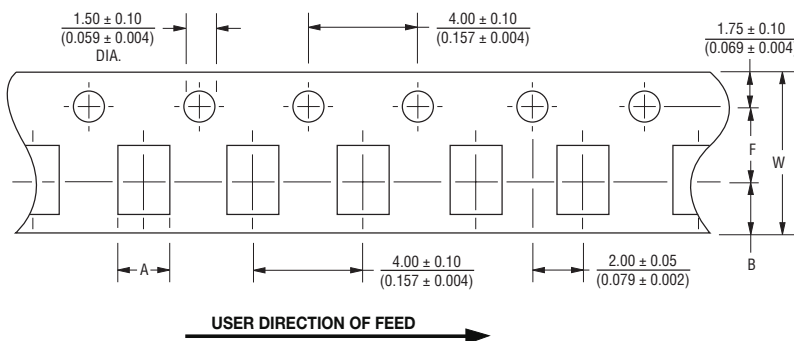
Resistor Markings

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 $\pm$ 0.008)	1.60 ± 0.20 (0.063 $\pm$ 0.008)	2.00 ± 0.20 (0.079 $\pm$ 0.008)	2.80 ± 0.20 (0.110 $\pm$ 0.008)	3.50 ± 0.20 (0.138 $\pm$ 0.008)
B	1.90 ± 0.30 (0.075 $\pm$ 0.012)	2.40 ± 0.30 (0.094 $\pm$ 0.012)	3.57 ± 0.30 (0.141 $\pm$ 0.012)	5.50 ± 0.30 (0.217 $\pm$ 0.012)	6.70 ± 0.30 (0.264 $\pm$ 0.012)
W	8.00 ± 0.05 (0.315 $\pm$ 0.002)	8.00 ± 0.05 (0.315 $\pm$ 0.002)	8.00 ± 0.05 (0.315 $\pm$ 0.002)	12.00 ± 0.05 (0.472 $\pm$ 0.002)	12.00 ± 0.05 (0.472 $\pm$ 0.002)
F	3.50 ± 0.05 (0.138 $\pm$ 0.002)	3.50 ± 0.05 (0.138 $\pm$ 0.002)	3.50 ± 0.05 (0.138 $\pm$ 0.002)	5.50 ± 0.05 (0.217 $\pm$ 0.002)	5.50 ± 0.05 (0.217 $\pm$ 0.002)
G	10.0 ± 1.5 (0.394 $\pm$ 0.059)	10.0 ± 1.5 (0.394 $\pm$ 0.059)	10.0 ± 1.5 (0.394 $\pm$ 0.059)	13.8 ± 1.5 (0.543 $\pm$ 0.059)	13.8 ± 1.5 (0.543 $\pm$ 0.059)
T	14.9 (0.587)	14.9 (0.587)	14.9 (0.587)	16.7 (0.657)	16.7 (0.657)

BOURNS®

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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