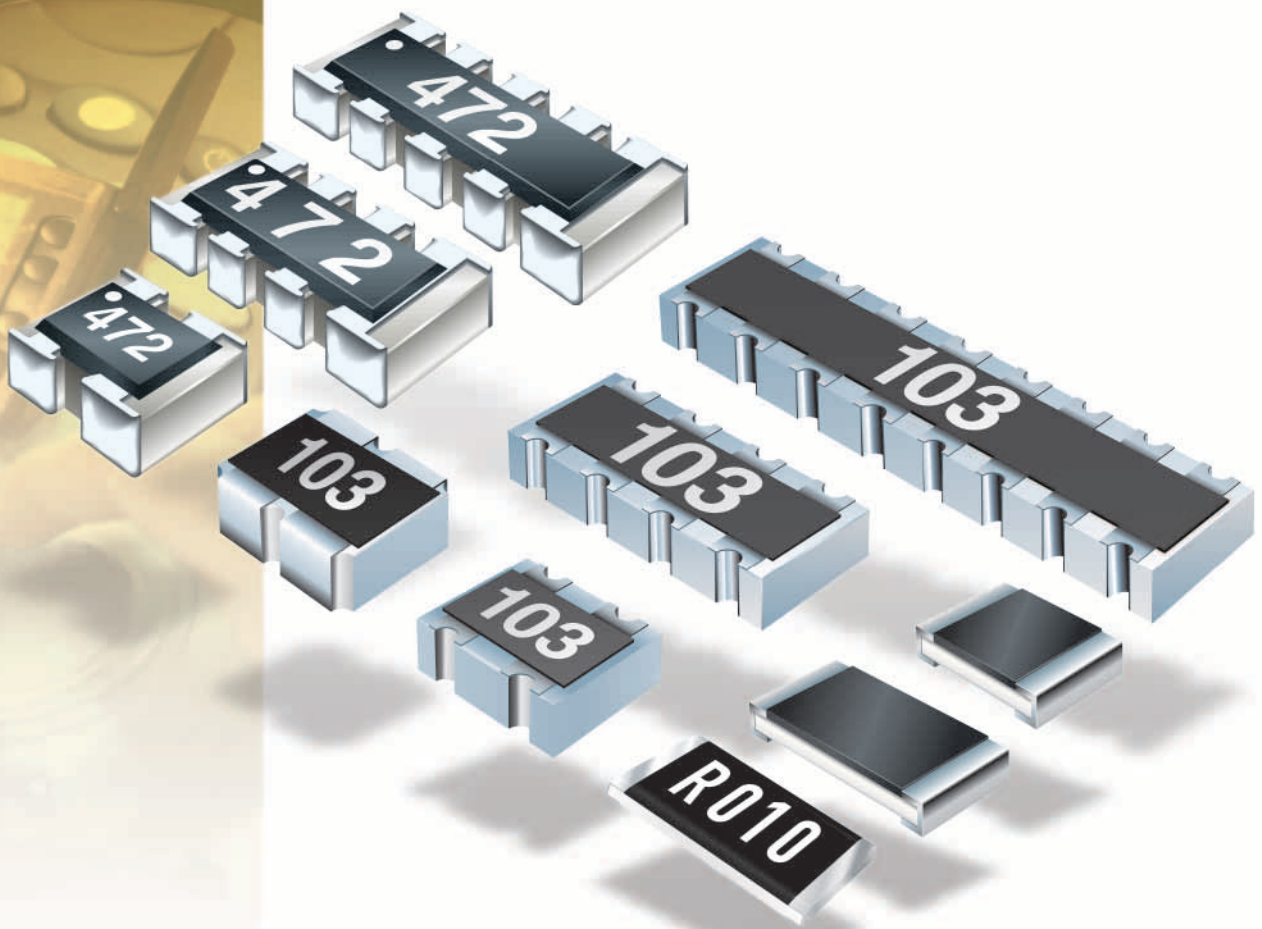


# Bourns® Chip Resistors & Arrays

## *Short Form Catalog*



# Chip Resistors

There are four series of Chip Resistors:

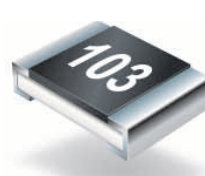
- CR Model offers 1 % and 5 % tolerance for values from 1 ohm to 10M ohms
- CRH Model offers 1 % tolerance for values from 1.02M ohms to 10M ohms
- CRL Model offers 1 % and 5 % tolerance for values from .010 ohms to 9.1 ohms
- CRP Model offers 0.1 % tolerance for values from 100 ohms to 360K ohms



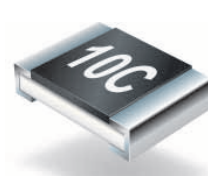
CRL2512



CRH1206



CR0805



CR0603

## CR

Bourns, Inc. offers a broad range of chip resistor packages at competitive prices:

- CR0201 J and F
- CR0402 J and F
- CR0603 J and F
- CR0805 J and F
- CR1206 J and F
- CR2010 J and F
- CR2512 J and F

Standard packaging is 5K/reel (0603-1206 sizes), but 10K/reel is available as an option with 'G' suffix. Available in RoHS compliant versions.

## CRL: Low Value (5 % or 1 %, < 1 W)

- CRL0603 J & F
- CRL0805 J & F
- CRL1206 J & F
- CRL2010 J & F
- CRL2512 J & F

## CRH: High Value (1 %, < 1 W)

- CRH0603 F
- CRH0805 F
- CRH1206 F

## CRP: Precision Value (0.1 %, < 0.25 W)

- CRP0603 B
- CRP0805 B
- CRP1206 B

# Chip Resistors Summary

## Available Types:

- *Thick-Film Chip Resistors CR*
- *CRL (Low value)*
- *CRH (High value)*
- *CRP (Precision value)*

## Available Ranges:

- *5 % in E24 series*
- *1 % in E96 + E24 series*

## Chip Resistors:

$\pm 1\%$ , $\pm 100$ PPM/ $^{\circ}\text{C}$	$\pm 5\%$ , $\pm 200$ PPM/ $^{\circ}\text{C}$
CR0201-FX	CR0201-JW
CR0402-FX	CR0402-JW
CR0603-FX	CR0603-JW
CR0805-FX	CR0805-JW
CR1206-FX	CR1206-JW
CR2010-FX	CR2010-JW
CR2512-FX	CR2512-JW

*Chip Resistor Lab Kits are available.*

## Packaging:

Tape and reel

## Applications:

Bourns offers seven sizes of Chip Resistors for most market requirements.

# How to Order

	CR	0201	-	F	W	-	8252	E	LF
<b>Chip Resistor</b>	_____↑								
<b>Size</b>	_____↑								
<ul style="list-style-type: none"> <li>• 0201 / 0402 / 0603 / 0805 / 1206 / 2010 / 2512</li> <li>• H0603 / H0805 / H1206 (H = High value)</li> <li>• L0603 / L0805 / L1206 / L2010 / L2512 (L = Low value)</li> <li>• P0603 / P0805 / P1206 (P = Precision value)</li> </ul>									
<b>Resistance Tolerance</b>	_____↑								
<ul style="list-style-type: none"> <li>• B = ±0.1 % (for Precision series)</li> <li>• J = ±5 %</li> <li>• G = ±2 % (for Ultra-low series)</li> <li>• F = ±1 %</li> </ul>									
<b>TCR (PPM/°C)</b>	_____↑								
<ul style="list-style-type: none"> <li>• X = ±100 with F tolerance only 10 to 1M ohms</li> <li>• I = -250 to +500 with zero-ohm Jumpers <i>only</i></li> <li>• W = ±250 with F and J</li> <li>• W = ±200 (0.05 to 9.1 ohms) for CRL</li> <li>• V = ±400 (0.03 to 0.04 ohm) for CRL</li> <li>• U = ±600 (0.01 to 0.02 ohm) for CRL</li> <li>• Z = ±50 (for Precision series)</li> </ul>									
<b>Resistance Value</b>	_____↑								
<ul style="list-style-type: none"> <li>• F = ±1 %</li> </ul> <p>Three significant digits; 4th digit is number of zeroes following.</p> <p>&lt; 100 ohms, 24R3 = 24.3 ohms</p> <p>&gt; 100 ohms, 8252 = 82.5K ohms <li>• J = ±5 %</li> <p>Two significant digits; 3rd digit is number of zeroes following.</p> <p>&lt; 100 Ohms, 24R3 = 24.3 ohms</p> <p>&gt; 100 Ohms, 474 = 470K ohms</p> </p>									
<b>Packaging</b>	_____↑								
<ul style="list-style-type: none"> <li>• E = Paper Tape (5,000 Pieces) on 7 " Plastic Reels</li> <li>• E = Embossed Plastic Tape (4,000 Pieces) on 7 " Plastic Reels for 2010 and 2512</li> </ul>									
<b>Terminations</b>	_____↑								
<ul style="list-style-type: none"> <li>• LF = Tin-Plated (Lead Free)</li> </ul>									



CRL2512

# Chip Arrays Summary

## Available Types:

- Thick-Film Chip Resistor Arrays

## Available Ranges:

- 5 % in E24 series
- 1 % in E96 + E24 series

## Chip Arrays:

CAT10, CAT16, CAT25	CAY10, CAY16, CAY17
5 % and 1 %	5 % and 1 %

Chip Arrays Lab Kits for CAT16 and CAY16 are available.

## Chip Arrays

- CAY Termination (Convex)
  - CAY10, CAY16, CAY17



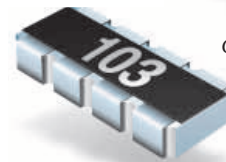
CAY10-J2



CAT10-J4



CAY10



CAY16



CAT25



CAY17

## Packaging:

Tape and reel

## Applications:

Bourns offers seven sizes of Chip Resistor Arrays for most market requirements with bussed and isolated circuits.

# Chip Arrays Convex Terminals



CAY10-J2  
(0404)



CAY16-J2  
(0606)



CAY17  
(1206)



CAY10-J4  
(0804)



CAY16-J4, F4, J8  
(1206/1506)

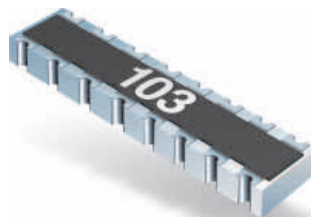
# Chip Arrays Concave Terminals



CAT10-J2  
(0404)



CAT16-J2, F2  
(0606)



CAT17  
(1206)



CAT10-J4  
(0804)



CAT16-J4, F4, J8  
(1206/1506)

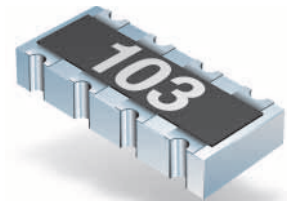
# Chip Arrays Summary

Bourns Model	Density	Package Size (EIA)	Package Size (Metric - mm)
CAT10-J4	0402 x 4	0804	2.0 x 1.0
CAT16-J2	0603 x 2	0606	1.6 x 1.6
CAT16-J4	0603 x 4	1206	3.2 x 1.6
CAT16-J8	0603 x 8	2506	6.4 x 1.6
CAT25	0804 x 4	1608	4.0 x 2.1
CAY10-J2	0402 x 2	0404	1.0 x 1.0
CAY10-J4	0402 x 4	0804	2.0 x 1.0
CAY16-J2	0603 x 2	0606	1.6 x 1.6
CAY16-J4	0603 x 4	1206	3.2 x 1.6
CAY16-J8	0602 x 8	1506	3.8 x 1.6
CAY17	0603 x 5	1206	3.2 x 1.6

## How to Order

	CA	T	10	-	103	J	4	LF
<b>Chip Arrays</b>	_____							
<b>Type</b>	_____							
• T = Concave								
• Y = Convex (CAY10/16/17)								
<b>Model</b>	_____							
• 10 = 0804 Package Size								
• 16 = xx06								
• 17 = 1206								
• 25 = 1608								
<b>Resistance Code</b>	_____							
• 103 = 10K ohms (Two significant digits; 3rd digit is number of zeroes following.)								
• 000 = Zero-ohm Jumper								
<b>Resistance Tolerance</b>	_____							
• J = $\pm 5\%$								
• F = $\pm 1\%$								
<b>Resistors Quantity</b>	_____							
• 4 = 4 Resistors								
• 2 = 2 Resistors (For CAY10 models)								
• 8 = 8 Resistors (For CAY16/CAT16 models)								
• A = 8 Resistors (For CAT25)								
• A = Common from Terminal 5 to 10 (CAY17)								
• B = Common from Terminal 1 to 6 (CAY17)								
<b>Terminations</b>	_____							
• LF = Tin-Plated (Lead Free)								

*Note: CAT16 available as J2, F4, J4, F8, J8; CAY16 available as J2, F4, J4, J8.*



CAT10-103-J4

# Chip Array vs DIP Package

## Chip Array

- *Ceramic has protective coating on top*
- *Terminate to metallization on ceramic*
- *Low power*

## DIP Package

- *Ceramic covered with molding*
- *Terminate to pins connected to ceramic*
- *Higher power rating than chip array*

# Chip Resistor and Chip Array Applications

- *Test equipment*
- *Consumer electronics*
- *Appliances*
- *Telecommunications*
- *Hand-held electronics*
- *Office equipment*
- *Industrial equipment*
- *Small signal instrumentation*
- *DC/DC converters in power modules*



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