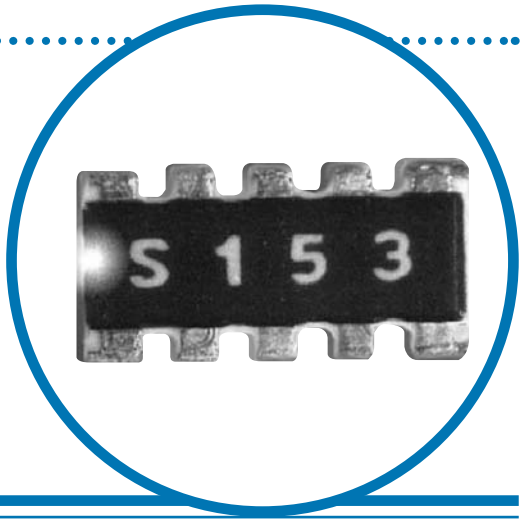
BCN Series

BCN



Features

- **Thick Film**
- **Chip Resistor Arrays**
- **RoHS Compliant**
- **Sulphur resistant version available (Tested to ASTM-B809)**
- **Range extended to include 0201 size resistors**

Model Styles

Model (Width)	# of Resistors	Circuit	Package Size	Chip Array	Edge Finish / Termination		
					Scalloped Convex	Square Convex	Square Concave
Model BCN 06 2 (0.6mm)	2 Resistors	Isolated	0302	0201		•	
Model BCN 06 4 (0.6mm)	4 Resistors	Isolated	0502	0201		•	
Model BCN 2D (1.6mm)	2 Resistors	Isolated	0606	0603	•		
Model BCN 10 (1.0mm)	4 Resistors	Isolated	0804	0402		•	
Model BCN 16 4ABI (1.6mm)	4 Resistors	Isolated	1206	0603			•
Model BCN 16 4A/AB (1.6mm)	4 Resistors	Isolated	1206	0603	•	•	
Model BCN 16 8RB/8SB (1.6mm)	8 Resistors	Bussed	1206	0603		•	
Model BCN 21 (2.1mm)	8 Resistors	Bussed	1608	0804			•
Model BCN 4D (3.1mm)	4 Resistors	Isolated	2112	1206	•		
Model BCN 4DBI (3.1mm)	4 Resistors	Isolated	2112	1206			•
Model BCN 31 8RB/8SB (3.1mm)	8 Resistors	Bussed	2512	1206		•	
Model BCN 31 8RBI/8SBI (3.1mm)	8 Resistors	Bussed	2512	1206			•
Jumper Chip Array	4/8 Resistors	Isolated/Bussed	All	All	•	•	•

Features

- **Reliable monolithic construction**
- **Nickel barrier terminations**
- **Top side marking for easy identification**
- **Concave or convex termination styles**
- **Square or scalloped edges available**

Benefits

- **Saves board space over equivalent rated chip resistors**
- **Eliminates up to seven pick & place operations**
- **Single component reliability**
- **Leadless chip, reduced inductance**
- **Mounts close to active devices**

Applications

- **Pull up / pull down resistors for digital IC's**
- **Series termination on high speed data busses**
- **Current limit for LED displays**
- **Available as an 8 bit R/2R Ladder Network**

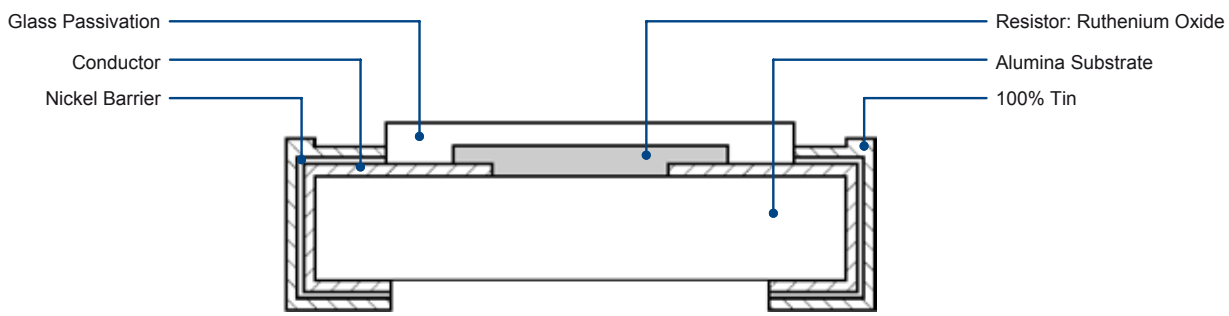
Electrical

Standard Resistance Range, Ohms	BCN06 2,BCN06 4, BCN2D, BCN4D, BCN10, BCN16 4: BCN 16 8R / 8S: BCN 31 8R / 8S: BCN 21:	10 to 1 Megohm 100 to 1 Megohm 22 to 1 Megohm 68 to 220K
Standard Resistance Tolerance		±5% (J Tol.) Optional: ±1% (F Tol.), BCN 4D, BCN 16 4, BCN31 8RB / 8SB Only ±2% (G Tol.), BCN 16 4, BCN31 8RB / 8SB Only
Operating Voltage, Maximum	BCN 4D: BCN 2D, BCN 16 4, BCN 31 8R / 8S: BCN 10, BCN 16 8R / 8S, BCN 21: BCN 06 2, BCN 06 4:	75Vdc or √pr 50Vdc or √pr 25Vdc or √pr 12.5Vdc or √pr
Power Rating, watts at 70°C	BCN 2D: BCN 4D: BCN 06 2: BCN 06 4: BCN 10, BCN 164: BCN 16 8R / 8S: BCN 21, BCN 31 8R / 8S:	63mW per Resistor / 125mW per Package 125mW per Resistor / 500mW per Package 31mW per Resistor / 63mW per Package 31mW per Resistor / 125mW per Package 63mW per Resistor / 250mW per Package 32mW per Resistor / 250mW per Package 63mW per Resistor / 500mW per Package

Environmental

Operating Temperature Range		-55°C to +125°C
Temperature Coefficient of Resistance	BCN 2D: BCN 06 2, BCN 06 4, BCN 4D, BCN 16 8R / 8S, BCN 21, BCN 31: BCN 10, BCN 16 4:	±300ppm/°C ±200ppm/°C ±200ppm/°C
Moisture Resistance		1,000 hours @ +40°C, 95% R.H. (3.0% +0.1Ω ΔR)
High Temperature Operation		1,000 hours @ 70°C (3.0% +0.1Ω ΔR)
Short Time Overload		2.5 X rated voltage, 5 seconds (2.0% +0.1Ω ΔR)
Temperature Cycling		-55°C to +125°C, 5 cycles (1.0% +0.1Ω ΔR)
Resistance to Solder Heat		260°C for 10 seconds (1.0% +0.1Ω ΔR)
Load Life		1,000 hours @ 70°C (3.0% +0.1Ω ΔR)

Construction



General Note

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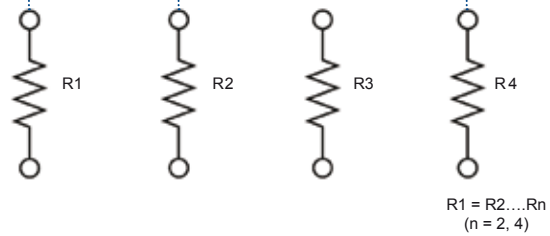
Electrical

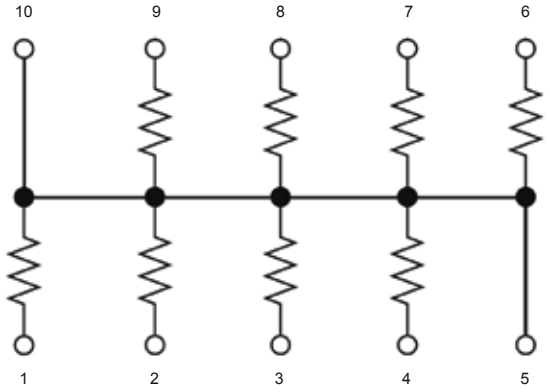
BCN 06 4, BCN 4D, BCN 10 & BCN 16 4

BCN062,

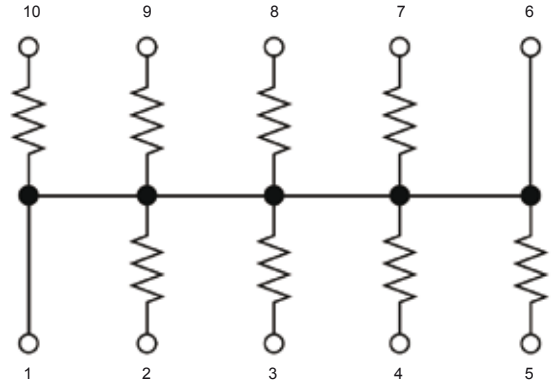


R1 = R2....Rn
(n = 2, 4)

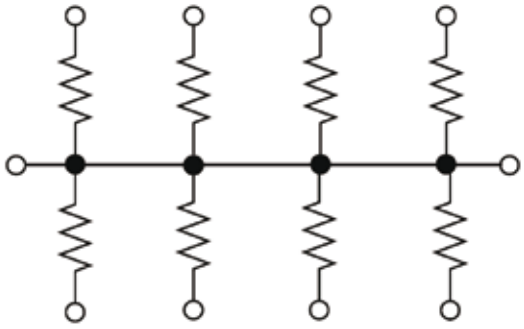
BCN 16 8R & BCN 31 8R



BCN 16 8S & BCN 31 8S



BCN 21



Standard Resistance Values, Ohms

Model BCN 06, BCN 2D, BCN 4D, BCN 10 & BCN 16 4					
10	100	1K	10K	100K	1 Meg
12	120	1.2K	12K	120K	Jumper
15	150	1.5K	15K	150K	
18	180	1.8K	18K	180K	
22	220	2.2K	22K	220K	
27	270	2.7K	27K	270K	
33	330	3.3K	33K	330K	
39	390	3.9K	39K	390K	
47	470	4.7K	47K	470K	
56	560	5.6K	56K	560K	
68	680	6.8K	68K	680K	
82	820	8.2K	82K	820K	

Model BCN 16 8R & BCN 16 8S			
220	1K	10K	100K
330	4.7K	47K	1 Meg

Model BCN 31 8R		Model BCN 31 8S	
220	2.2K	10K	100K
330	2.7K	22K	470K
1K	4.7K	47K	1 Meg

Model BCN 21			
68	330	4.7K	10K
220	1K	47K	100K

General Note

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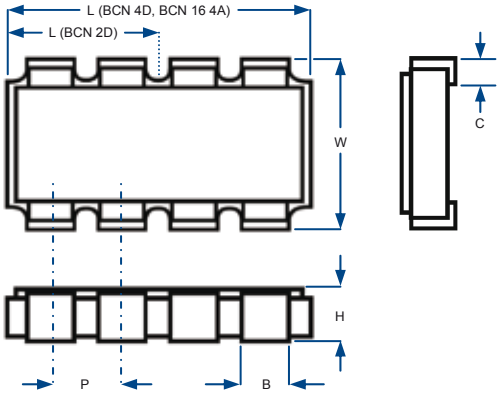
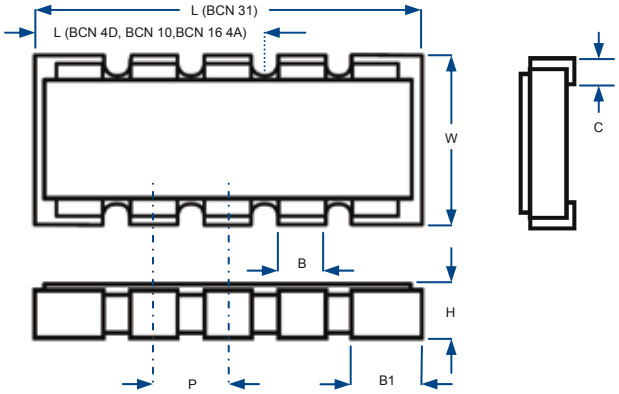
Outline Dimensions (Inch /mm)

Exterior Termination (Convex)

Scalloped Edge: Models BCN 2D, 4D, 16 4A



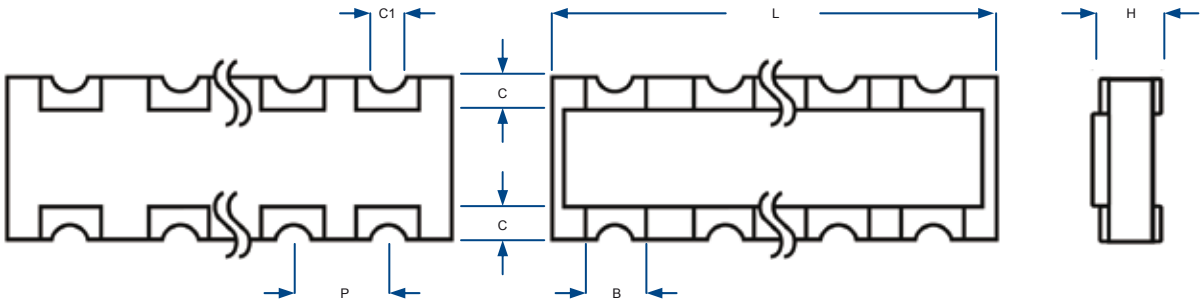
Square Edge: Models BCN 16 4AB, 31



	L	W	H	P	B	B1	C
BCN 2D	.063 ±.006	.063 ±.006	.020 ±.006	.031 ±.004	.020 ±.004	-	.010 ±.004
	1.60 ±0.15	1.60 ±0.15	0.50 ±0.15	0.80 ±0.10	0.50 ±0.10		0.25 ±0.10
BCN 4D	.210 ±.008	.122 ±.008	.022 ±.004	.050 ±.008	.030 ±.008	-	.012 ±.008
	5.34 ±0.20	3.10 ±0.20	0.55±0.10	1.27±0.20	0.80 ±0.20		0.30 ±0.20
BCN 10	.079 ±.008	.039 ±.006	.014 ±.004	.020 ±.004	.012 ±.006	.016±.006	.006±.002
	2.00 ±0.20	1.00 ±0.15	0.36 ±0.10	0.50 ±0.10	0.30 ±0.15	0.40 ±0.15	0.15 ±0.05
BCN 16 4A/ AB	.126 ±.004	.063 ±.004	.020 ±.004	.031 ±.002	.020 ±.004	-	.009 ±.005
	3.20 ±0.10	1.60 ±0.10	0.50 ±0.10	0.80 ±0.05	0.50 ±0.10		0.229 ±0.125
BCN 31	.252 ±.008	.122+.012,-.008	.022 ±.004	.050 ±.002	.032 ±.004	.041±.004	.012 ±.004
	6.40 ±0.20	3.1 +0.3, -0.2	0.55 ±0.10	1.27 ±0.051	0.80 ±0.10	1.05±0.10	0.30 ±0.10

Interior Termination (Concave)

Square Edge: Models BCN 4 DBI, 16 4ABI, 31



	L	W	H	P	B	C	C1
BCN 4 DBI	.210 ±.008	.122 ±.008	.022 ±.004	.050 ±.008	.030 ±.008	.012 ±.008	-
	5.34 ±0.20	3.10 ±0.20	0.55 ±0.10	1.27 ±0.20	0.80 ±0.20	0.30 ±0.20	
BCN 16 4ABI	.126 ±.008	.063 ±.006	.024 ±.004	.031 ±.004	.016 ±.006	.012 ±.008	.012 ±.008
	3.20 ±0.20	1.60 ±0.15	0.60 ±0.10	0.80 ±0.10	0.40 ±0.15	0.30 ±0.20	0.30 ±0.20
BCN 31	.252 ±.008	.122 ±.008	.024 ±.004	.050	.028 ±.008	.012	.012 +.008 -.004
	6.40 ±0.20	3.10 ±0.20	0.60 ±0.10	1.27	0.70 ±0.20	0.30	0.30 +.02 -.01

General Note

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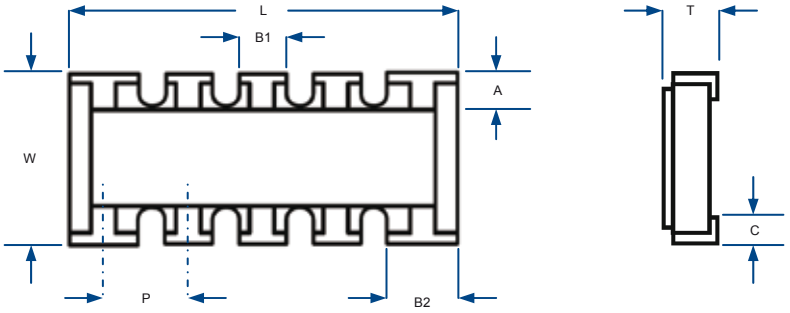
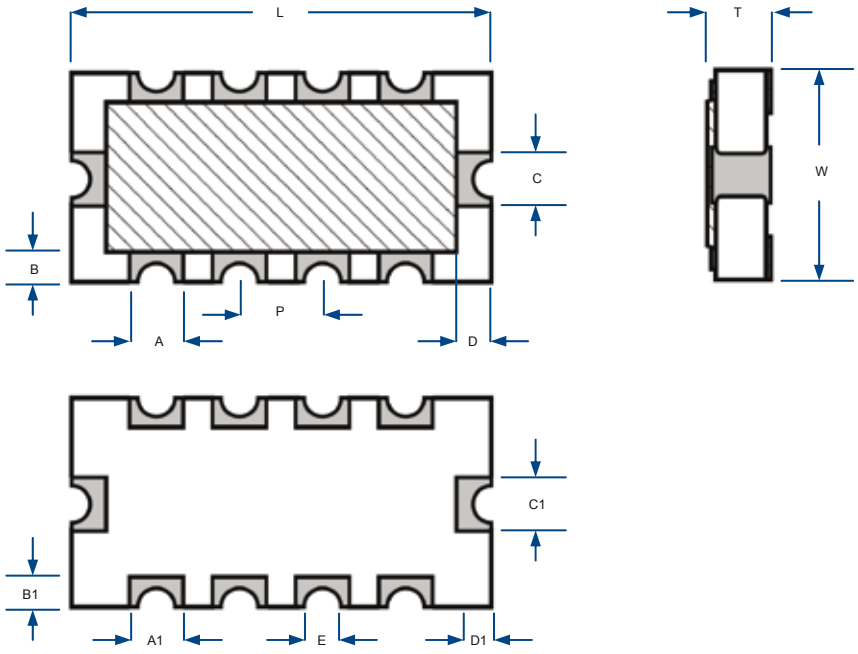
Outline Dimensions (Inch /mm)

Exterior Termination (Convex)
Square Edge: Models BCN 16 8R, 8S



L	W	T	A	B1	B2	C	P
.126 ±.008	.063 ±.008	.020 ±.004	.012 ±.006	.014 ±.006	.020 ±.006	.008	.025
3.20 ±0.20	1.60 ±0.20	0.50 ±0.10	0.30 ±0.15	0.36 ±0.15	0.50 ±0.15	0.20	0.64

Interior Termination (Concave)
Square Edge: Models BCN 21



L	W	T	A	B	C	D
.157 ±.008	.083 ±.008	.021 ±.004	.020 ±.008	.010 ±.008	.020 ±.008	.012 ±.008
4.00 ±0.20	2.10 ±0.20	0.55 ±0.10	0.50 ±0.20	0.25 ±0.20	0.50 ±0.20	0.30 ±0.20

A1	B1	C1	D1	E	P
.016 ±.008	.014 ±.008	.020 ±.008	.014 ±.008	.012 Typ.	.032 Typ.
0.40 ±0.20	0.40 ±0.20	0.50 ±0.20	0.35 ±0.20	0.30	0.80

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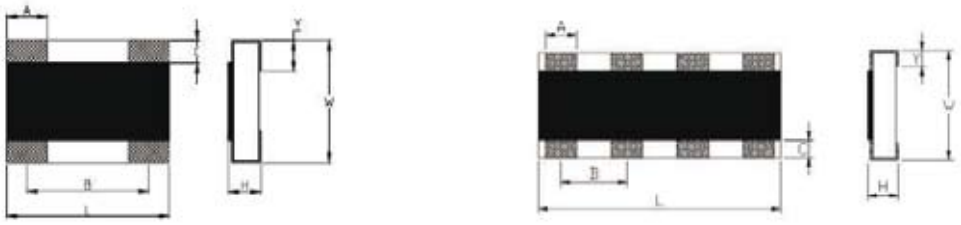
Outline Dimensions

Exterior Termination (Convex)
Square Edge: Models BCN 06 2, BCN 06 4

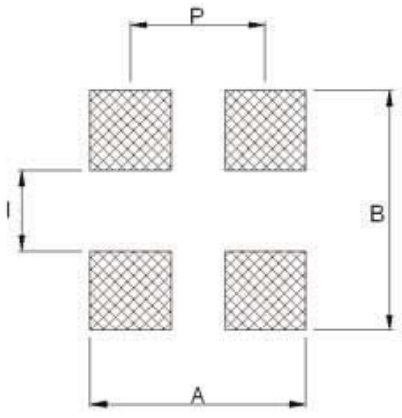


Unit : mm

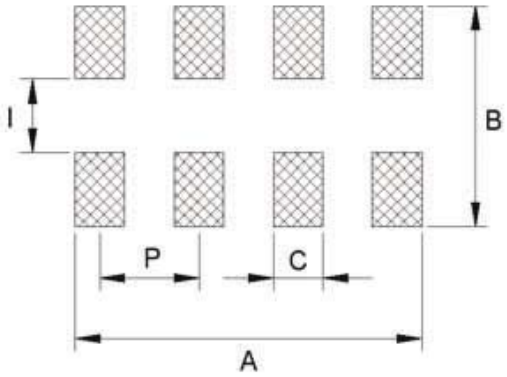
Type	Number of Resiostors	L	W	H	A	B	C	Y	Weight (g) (1000pcs)
BCN 06 2	2	0.80 ±.0.10	0.60 ±.0.10	0.35 ±.0.10	0.30 ±.0.10	0.50 ± 0.10	0.15 ±.0.10	0.15 ±.0.10	0.500
BCN 06 4	4	1.40 ± 0.10	0.60 ±.0.10	0.35 ±.0.10	0.20 ± 0.10	0.40 ± 0.10	0.10 ± 0.07	0.15 ±.0.05	0.833

Solder Pad Layout

Exterior Termination (Convex)
Square Edge: Models BCN 06 2, BCN 06 4



BCN 06 2



BCN 06 4

Unit : mm

Type	A	B	C	I	P
BCN 06 2	0.80	0.90	-	0.30	0.50
BCN 06 4	1.40	0.90	0.20	0.30	0.40

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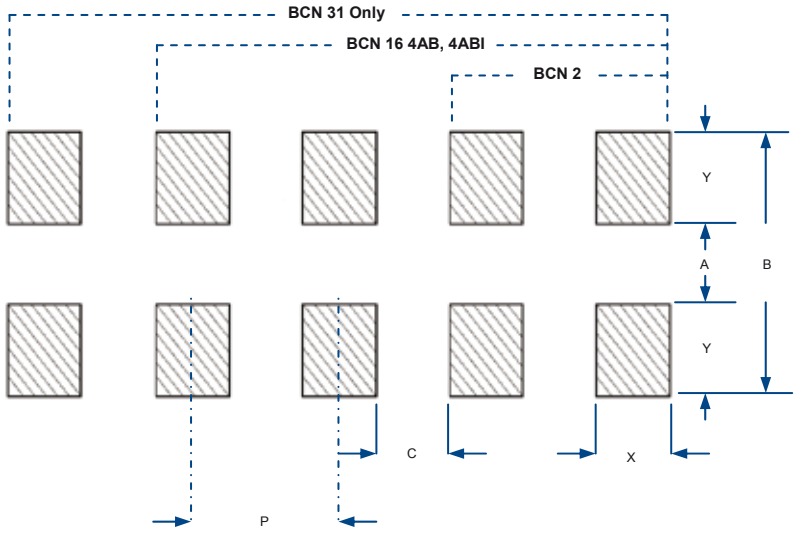
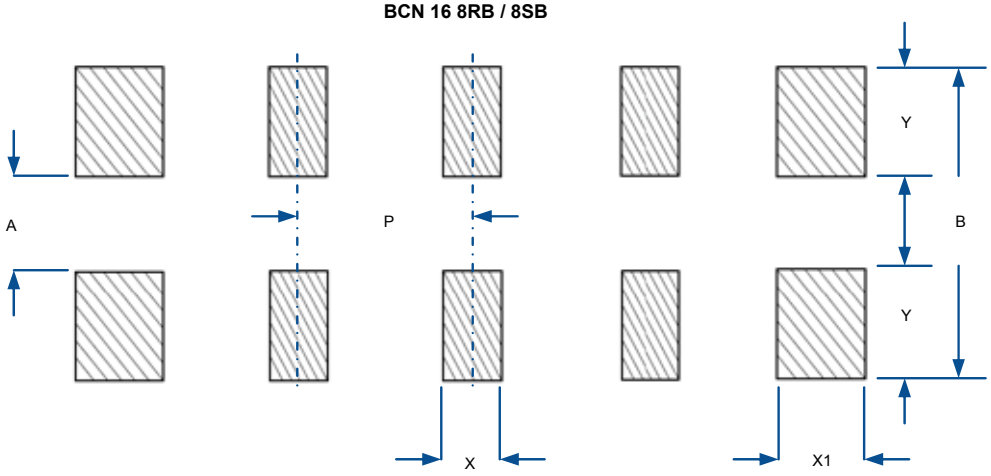
Solder pad layout (Inch / mm)



		Wave Solder Process					Re-flow Solder Process				
	P	A	B	C	X	Y	A	B	C	X	Y
BCN 2D	.032	.039	.102	.014	.018	.032	.039	.079	.014	.018	.020
BCN 4D/4DBI	0.80	1.00	2.60	0.35	0.45	0.80	1.00	2.00	0.35	0.45	0.50
BCN 16 4A, AB, ABI	.050	.087	.169	.022	.028	.041	.087	.154	.022	.028	.034
	1.27	2.20	4.30	0.57	0.70	1.05	2.20	3.90	0.57	0.70	0.85
BCN 31 8R, 8S	.032	.039	.118	.014	.018	.039	.039	.118	.014	.018	.039
	0.80	1.00	3.00	0.35	0.45	1.00	1.00	3.00	0.35	0.45	1.00
	.050	.084	.148	.014	.036	.032	.084	.148	.014	.036	.032
	1.27	2.10	3.70	0.35	0.90	0.80	2.10	3.70	0.35	0.90	0.80

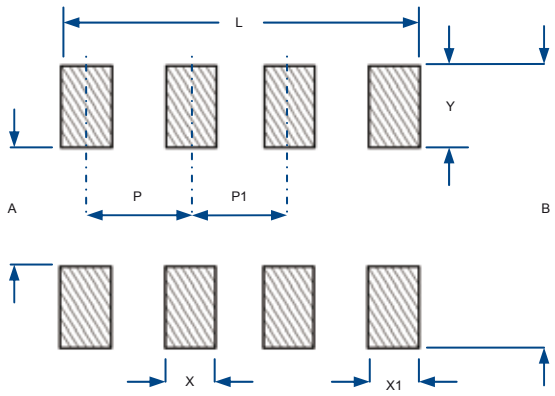
BCN 16 8RB / 8SB



		Wave Solder Process					Re-flow Solder Process				
	P	A	B	X	X1	Y	A	B	X	X1	Y
BCN 16 8RB / 8SB	.025	.048	.096	.012	.018	.024	.048	.096	.012	.018	.024
	0.64	1.20	2.40	0.30	0.45	0.60	1.20	2.40	0.30	0.45	0.60

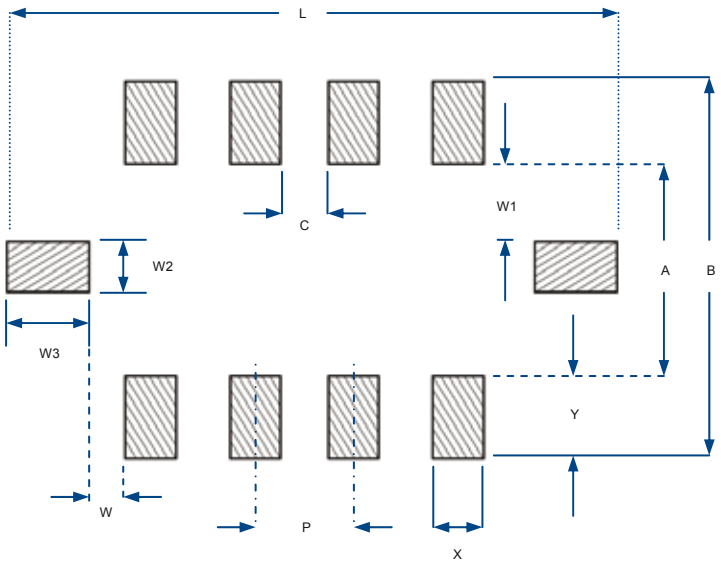
Solder pad layout (Inch / mm)

BCN 10



	P	P1	A	B	X	X1	Y	L
BCN 10	.024	.020	.020 ±.004	.060 ±.004	010 ±.004	.018 ±.004	.020 ±.004	.085 ±.004
	0.60	0.50	0.50 ±0.10	1.50 ±0.10	0.25 ±0.15	0.45 ±0.10	0.50 ±0.10	2.15 ±0.10

BCN 21



	P	A	B	C	X	Y	W	W1	W2	W3	L
BCN 21	.032	.060 ±.008	.120 ±.008	.016 ±.004	.016 ±.004	.030 ±.004	.012 ±.001	.015 ±.004	.030 ±.004	.030 ±.004	.196 ±.008
	0.80	1.20 ±0.20	3.00 ±0.20	0.40 ±0.10	0.40 ±0.10	0.75 ±0.10	0.31 ±0.02	0.38 ±0.10	0.75 ±0.10	0.75 ±0.10	4.98 ±0.20

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Ordering Information

BCN 4 D B I 102 J 7 S

Model Series

No. of Resistors:
BCN 2D = 2 Resistors
BCN 4D = 4 Resistors

Circuit Configuration:
D = Isolated

Edge Option (B = Square Edge):
BCN 2D: Scalloped Edge **Only** - No Code Used
BCN 4D: Scalloped Edge **Only** - No Code Used

Termination Code:
I = Interior (Concave) Termination
(Only available in BCN 4 DBI)

Resistance Code

Tolerance: ±5%

Packaging Option:
7" or 13"
(See Table A)

Construction Option:
No code = Standard product
S = Sulphur resistant - only
on BCN4DxxxJ7

BCN 16 4 A B I 102 J 7 S

Model Series

Width:
06 = 0.6mm
10 = 1.0mm
16 = 1.6mm
21 = 2.1mm
31 = 3.1mm

No. of Resistors:
BCN 06 2 = 2 Resistors
BCN 10 / 06 4 / 16 4 = 4 Resistors
BCN 16 8R / 16 8S = 8 Resistors
BCN 21 / 31 8R / 31 8S = 8 Resistors

Circuit Configuration:
A = Isolated (BCN 06 / 10 / 16 4A)
R = Bussed (Reversed) (BCN 16 8R / 31 8R)
S = Bussed (Standard) (BCN 21 / 16 8S / 31 8S)

Edge Option (B = Square Edge):
Scalloped Edge - No Code Used (Standard)
Square Edge **Only** - Use Code 'B'

Termination Code:
I = Interior (Concave) Termination
No code used for exterior termination (Standard)
All interior termination requires 'B' for square edge
(BCN 16 4ABI / 31 8RBI / 31 8SBI)

Resistance Code:
3 digits for E4,E12,E24 Series, all Tol.
4 digits for E96 Series, 1% Tol.

Tolerance:
F = ±1% (BCN 4D / 16 4 / 31 8RB / 31 8SB)
G = ±2% (BCN 16 4, 31 8RB / 8SB Only)
J = ±5% (Standard)
(Use JP for Jumper Chip Array - BCN 16 4 / 31)

Packaging Option:
7" or 13"
(See Table A)

Construction Option:
No code = Standard product
S = Sulphur resistant - only
on BCN 104/164/168RB

See 'Model Styles' for Available Options

Packaging (Table A)

	7" Reel Diameter		13" Reel Diameter	
	Paper	Embossed	Paper	Embossed
BCN 2D	5K		20K	
BCN 4D		4K		16K
BCN 06 2	10K			
BCN 06 4	10K			
BCN 10	10K		40K	
BCN 16 4	5K		20K	
BCN 16 8	5K		20K	
BCN 21		4K		16K
BCN 31		4K		16K

Note: Tape & Reel dimensions per EIA-481.

Sulphur Resistant Arrays

- **Special construction resists sulphide growth**
- **Withstands sulphur bearing fume environment**
- **Tested to ASTM-B809 ("Flowers-of-Sulphur")**
- **Suitable for industrial, automotive and roadside uses**
- **RoHS compliant matt Tin finish terminations**

Performance Data

Hydrogen Sulphide exposure:

- **1000 Hours, 3-5ppm H2S, 50°C, 92%RH**
- **0.5% Max ΔR and no visual defects**