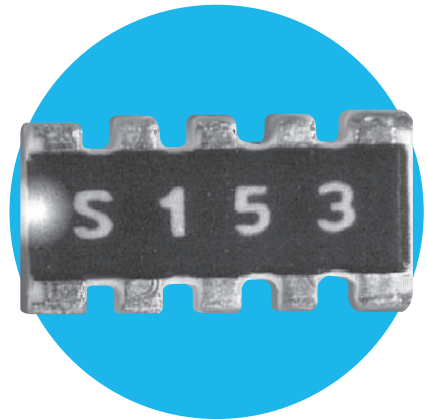


Thick Film Chip Arrays

BCN Series

- Sulphur resistant version available (Tested to ASTM-B809)
- AEC-Q200 (BCN10, BCN164AB and BCN4D)
- Concave and convex versions
- Isolated and bussed versions



 All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

Summary of Types

Type	Part Number Start	Width (mm)	Resistor Elements	Circuit	Package Size	Scalloped Convex	Square Convex	Square Concave
BCN10	BCN104AB	1.0	0402 x 4	Isolated	0804			
BCN164	BCN164A	1.6	0603 x 4		1206			
	BCN164AB							
	BCN164ABI							
BCN168	BCN168SB		0603 x 8	Bussed				
	BCN168RB							
BCN21	BCN218SBI	2.1	0804 x 8		1608			
BCN4D	BCN4D	3.1	1206 x 4	Isolated	2112			
	BCN4DBI							
BCN31	BCN318SB		1206 x 8	Bussed ¹	2512			
	BCN318RB							
	BCN318SBI							
	BCN318RBI							

Note 1 – For R/2R ladder circuit see separate BCN31L datasheet

Electrical Data

		BCN10	BCN164A BCN164AB	BCN164ABI	BCN168	BCN21	BCN4D	BCN31
Resistor power rating @70°C	mW	63			32	63	125	63
Package power rating @70°C	mW	250				500		
Limiting element voltage	V	25	50		25		75	50
Maximum overload voltage	V	63	125		63		188	125
Resistance range	ohms	10R – 1M0			100R – 1M0	68R – 220K	10R – 1M0	22R – 1M0
Resistance tolerance	%	1, 5	1, 2, 5		5		1, 5	1, 2, 5
TCR	ppm/°C	±200	±100, ±200	±200				
Standard values		E24 preferred, E96 available						
Ambient temperature range	°C	-55 to +155						

General Note

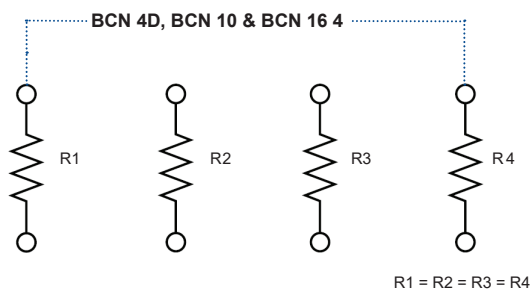
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BI Technologies IRC Welwyn

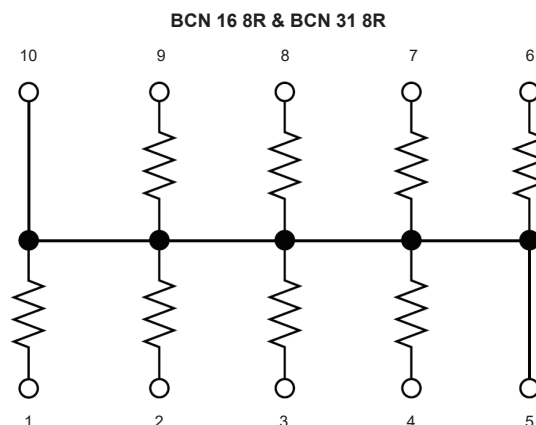
www.ttelectronics.com/resistors

Circuits

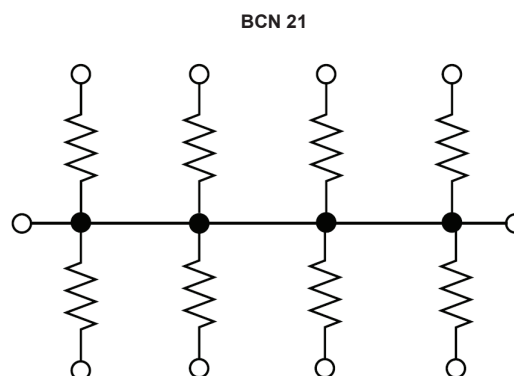
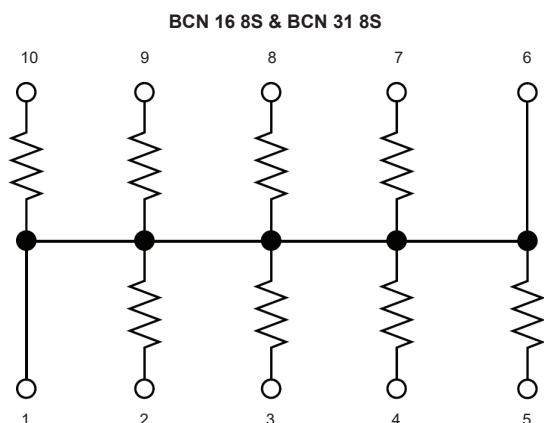
Isolated



Reverse Bussed



Standard Bussed



Environmental Data

Test	Condition	$\Delta R\%$ (+0.1 Ω)	
		$\pm 200\text{ppm}/^\circ\text{C}$ TCR	$\pm 100\text{ppm}/^\circ\text{C}$ TCR
Load life	1000 hrs cyclic load @ 70°C	3	1
Short term overload	2.5 x rated voltage for 5s	2	0.25
High temperature operation	1000 hrs @ 155°C	3	1
Temperature cycling	5 cycles, -55 to +155°C	1	1
Moisture resistance	1000 hrs @ 40°C, 95% RH	3	1
Resistance to solder heat	260°C for 10s	1	0.25
Sulphur resistance ¹	1000 hrs @ 50°C, 92% RH, 3-5ppm H ₂ S	0.5	0.5

Note 1 – Anti-sulphur construction only

General Note

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Physical Data (Inch /mm)

Scalloped Edge: Models BCN 4D, 16 4A Exterior Termination (Convex) Square Edge: Models BCN 16 4AB, 31							
	L	W	H	P	B	B1	C
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 ±.004	.039 ±.004	.018 ±.004	.020 ±.002	.012 ±.002	.016±.002	.012±.006
	2.00 ±0.10	1.00 ±0.10	0.45 ±0.10	0.50 ±0.05	0.30 ±0.05	0.40 ±0.05	0.3 ±0.15
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

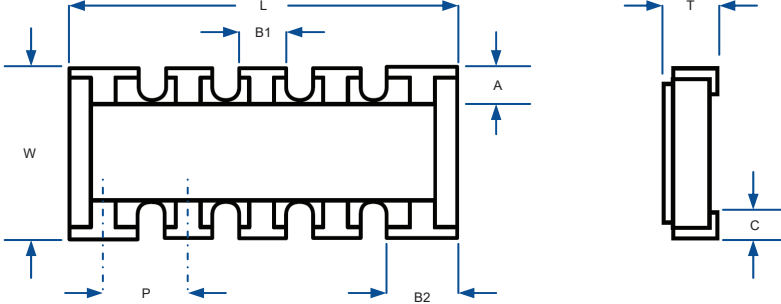
Interior Termination (Concave) Square Edge: Models BCN 4 DBI, 16 4ABI, 31							
	L	W	H	P	B	C	C1
BCN 4 DBI	.210 ±.008	.122 ±.008	.022 ±.004	.050 ±.008	.030 ±.008	.012 ±.008	-
	5.34 ±0.20	3.10 ±0.20	0.55 ±0.10	1.27 ±0.20	0.80 ±0.20	0.30 ±0.20	-
BCN 16 4ABI	.126 ±.008	.063 ±.006	.024 ±.004	.031 ±.004	.016 ±.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}

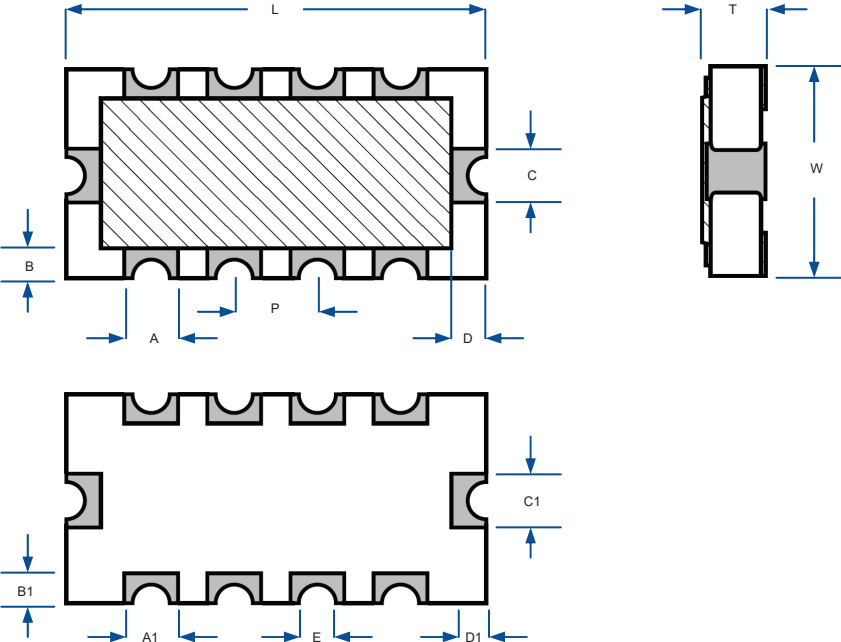
General Note

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Physical Data (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.	
0.40 ±0.20	0.40 ±0.20	0.50 ±0.20	0.35 ±0.20	0.30	Typ.	

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BCN Series

Solder pad layout (Inch / mm)

BCN 31 Only BCN 16 4AB, 4ABI											
BCN 4D/4DBI	Wave Solder Process						Re-flow Solder Process				
	P	A	B	C	X	Y	A	B	C	X	Y
	.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 16 4A, AB, ABI										
	.032	.039	.118	.014	.018	.039	.039	.118	.014	.018	.039
BCN 31 8R, 8S											
	.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

Solder pad layout (Inch / mm)

BCN 10

The diagram illustrates the BCN 10 layout, which consists of two rows of four rectangular pads each. The top row is labeled 'A' on the left and 'B' on the right. The bottom row is labeled 'X' and 'X1' below the pads. The overall length is 'L'. The pitch between pads in the top row is 'P', and the pitch between pads in the bottom row is 'P1'. The height of the pads in the top row is 'A', and the height of the pads in the bottom row is 'B'. The width of the pads in the top row is 'X', and the width of the pads in the bottom row is 'X1'. The distance between the two rows is 'Y'.

BCN 10

P	P1	A	B	X	X1	Y	L
.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

The diagram illustrates the BCN 21 layout, which consists of two rows of four rectangular pads each. The top row is labeled 'A' on the right and 'B' on the right. The bottom row is labeled 'C' on the right and 'X' on the right. The overall length is 'L'. The pitch between pads in the top row is 'P', and the pitch between pads in the bottom row is 'P1'. The height of the pads in the top row is 'A', and the height of the pads in the bottom row is 'B'. The width of the pads in the top row is 'X', and the width of the pads in the bottom row is 'X1'. The distance between the two rows is 'Y'. The width of the pads in the top row is 'W', and the width of the pads in the bottom row is 'W1'. The distance between the two rows is 'W2'. The distance between the two rows is 'W3'.

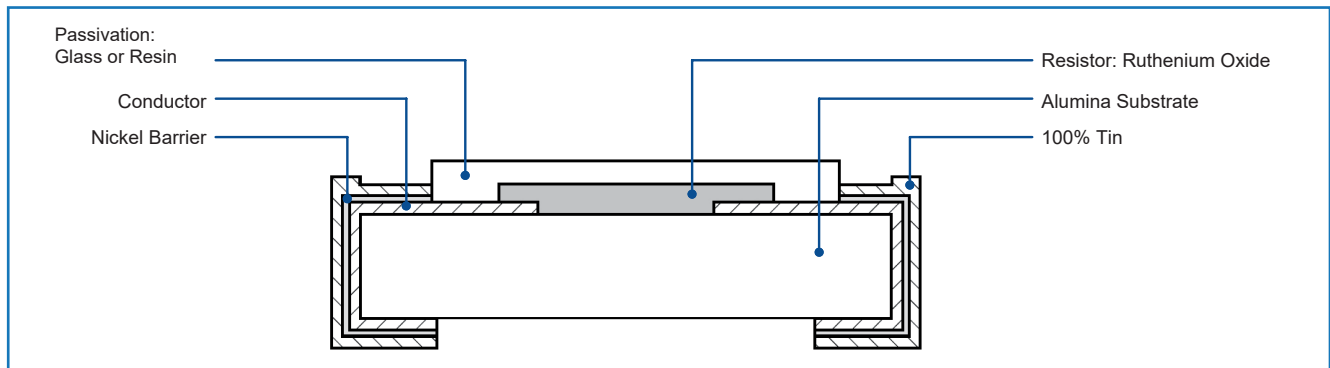
BCN 21

P	A	B	C	X	Y	W	W1	W2	W3	L
.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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Construction



Ordering Procedure

Example: BCN164ABZ102J7S (BCN 1.6mm wide, 4 resistors, isolated circuit, square edge, convex terminations with TCR $\pm 100\text{ppm}/^\circ\text{C}$ at 1 kilohm $\pm 5\%$, on a 7" reel, anti-sulphur construction, Pb-free).

B	C	N	1	6	4	A	B	Z	1	0	2	J	7	S
1	2	3	4	5	6	7	8	9	10	11				

1	2	3	4	5	6	7	8	9	10	11
Series	Width	Number of Resistors	Circuit	Edge	Termination	TCR (ppm/ $^\circ\text{C}$)	Value	Tolerance	Packaging	Construction
BCN	Blank=3.1mm	4	A=Isolated	Blank=Scalloped	Blank=External (convex)	Blank= ± 200	3 digits for E24 at 2% or 5%	F= $\pm 1\%$ G= $\pm 2\%$	7=7" reel 13=13" reel	Blank=Standard
	10=1.0mm	8	S=Standard bussed	B=Square	I=Internal (concave)	Z= ± 100	4 digits for uniquely E96 and for all values at 1%	J= $\pm 5\%$ (Blank for jumper)		S=Anti-sulphur
	16=1.6mm		R=Reverse bussed							
	21=2.1mm									
	31=3.1mm									
							JP=Jumper			

Valid Combinations (1 – 6)	Valid Options (7, 8 & 11)	Packaging Quantity & Tape (10)
B C N 1 0 4 A B	JP=Jumper, S=Anti-sulphur	7=10,000/reel, 13=40,000/reel, Paper tape
B C N 1 6 4 A	Z= $\pm 100\text{ppm}/^\circ\text{C}$, JP=Jumper, S=Anti-sulphur	7=5000/reel, 13=20,000/reel, Paper tape
B C N 1 6 4 A B	Z= $\pm 100\text{ppm}/^\circ\text{C}$, JP=Jumper, S=Anti-sulphur	
B C N 1 6 4 A B I	JP=Jumper	
B C N 1 6 8 S B		
B C N 1 6 8 R B	S=Anti-sulphur	
B C N 2 1 8 S B I		7=4000/reel, 13=16,000/reel, Plastic tape
B C N 4 D	JP=Jumper, S=Anti-sulphur	
B C N 4 D B I	JP=Jumper	
B C N 3 1 8 S B		
B C N 3 1 8 R B		
B C N 3 1 8 S B I		
B C N 3 1 8 R B I		

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