

# Multilayer Chip Bead



MCB Series

MERITEK

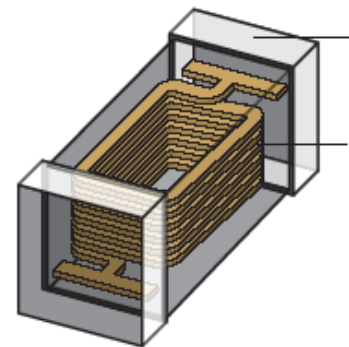
## Feature and Applications

- Effective EMI protection
- Low DC resistance
- High soldering heat resistance
- Multiple size availability
- Computers and Peripheral Equipment
- VCRS, Television, Pagers
- Cellular Phones
- Digital Communication Equipment
- Various Electronics Equipment
- Circuit Where a Stable Ground is Unavailable



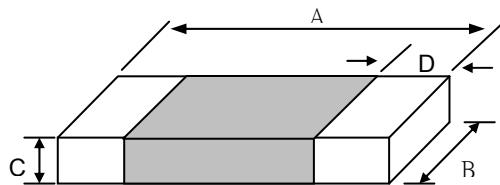
## PART NUMBERING SYSTEM

Mutilayer Chip Bead		MCB	03	Y	I	Y	N	651
SIZE								
Code	02	03	05	04	06	10	08	12
Size	0402	0603	0805	1204	1206	1210	1808	1812
Impedance Tolerance								
Code	Y							
Value	25%							
Packaging Code								
T	Tape & Reel							
Design Code								
Y	ui: 200							
Q	Ui: 75 (High Speed Signal)							
Current								
H	High Current							
N	General Current							
Impedance Tolerance								
090	110				451			
9Ω	11Ω				450Ω			



① Ferrite Substance (NiO-CuO-ZnO-Ferrite)	② Silver Electrode	③ Electrode (Ag/Cu/Ni/Sn)
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## Construction



Type	Size (Inch)	A	B	C	D	Weight (g) (1000pcs)
MCB02	0402	1.0±0.10	0.50±0.10	0.5±0.10	0.1~0.35	2.6
MCB03	0603	1.6±0.20	0.80±0.15	0.8±0.15	0.1~0.6	6.2
MCB05	0805	2.0±0.20	1.25±0.20	0.9±0.20	0.2~0.8	10
MCB04	1204	3.2±0.20	1.60±0.20	1.1±0.20	0.2~1.0	30
MCB06	1206	3.2±0.20	1.60±0.20	1.6±0.20	0.2~1.0	42
MCB10	1210	3.2±0.20	2.50±0.20	1.3±0.20	0.2~1.0	54
MCB08	1808	4.5±0.25	1.60±0.20	1.6±0.20	0.2~1.0	60
MCB12	1812	4.5±0.25	3.20±0.20	1.5±0.20	0.2~1.0	62



### Standard Electrical Specifications

#### MCB02 Standard Type

Impedance (Ω)	Tolerance	Test Freq. (MHz)	DCR (Ω) max.	Rated Current (mA) max.
6	±25%	100	0.05	500
10	±25%	100	0.05	500
30	±25%	100	0.30	300
33	±25%	100	0.30	300
40	±25%	100	0.30	300
47	±25%	100	0.40	300
60	±25%	100	0.40	300
70	±25%	100	0.40	300
75	±25%	100	0.40	300
80	±25%	100	0.40	300
90	±25%	100	0.50	300
100	±25%	100	0.50	300
120	±25%	100	0.50	300
150	±25%	100	0.50	300
220	±25%	100	0.50	300
240	±25%	100	0.50	300
300	±25%	100	0.80	300
330	±25%	100	0.80	300
480	±25%	100	0.80	300
600	±25%	100	1.00	300
1000	±25%	100	1.50	100
1500	±25%	100	2.00	60

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## MCB03 Standard Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
6	±25%	100	0.05	500
7	±25%	100	0.05	500
10	±25%	100	0.05	500
11	±25%	100	0.05	500
15	±25%	100	0.08	500
17	±25%	100	0.08	500
19	±25%	100	0.08	500
20	±25%	100	0.10	400
22	±25%	100	0.10	400
25	±25%	100	0.10	400
26	±25%	100	0.10	400
30	±25%	100	0.10	400
31	±25%	100	0.10	400
32	±25%	100	0.10	400
33	±25%	100	0.10	400
40	±25%	100	0.10	400
47	±25%	100	0.10	400
50	±25%	100	0.10	400
52	±25%	100	0.10	400
55	±25%	100	0.10	400
56	±25%	100	0.10	400
60	±25%	100	0.10	400
68	±25%	100	0.15	400
70	±25%	100	0.15	400
75	±25%	100	0.15	400
80	±25%	100	0.15	400
90	±25%	100	0.20	400
100	±25%	100	0.20	400
120	±25%	100	0.25	400
140	±25%	100	0.25	300
150	±25%	100	0.30	200
180	±25%	100	0.30	200
200	±25%	100	0.30	200
220	±25%	100	0.30	200
240	±25%	100	0.40	200
300	±25%	100	0.40	200
330	±25%	100	0.50	200
400	±25%	100	0.50	200
420	±25%	100	0.50	200
450	±25%	100	0.50	200
470	±25%	100	0.50	200
500	±25%	100	0.50	200
600	±25%	100	0.50	200
750	±25%	100	0.70	200
800	±25%	100	0.70	200
1000	±25%	100	0.70	200
1200	±25%	100	1.00	50
1500	±25%	100	1.00	50
1700	±25%	100	1.20	50
2000	±25%	100	1.20	50
2200	±25%	100	1.20	50
2500	±25%	100	1.30	50
2700	±25%	100	1.30	50

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## MCB05 Standard Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
5	±25%	100	0.10	600
7	±25%	100	0.10	600
9	±25%	100	0.10	600
10	±25%	100	0.10	600
11	±25%	100	0.10	600
12	±25%	100	0.10	600
15	±25%	100	0.10	600
17	±25%	100	0.10	600
19	±25%	100	0.10	600
22	±25%	100	0.10	600
26	±25%	100	0.10	600
28	±25%	100	0.10	600
30	±25%	100	0.10	600
31	±25%	100	0.10	600
32	±25%	100	0.10	600
33	±25%	100	0.10	500
39	±25%	100	0.10	500
40	±25%	100	0.10	500
42	±25%	100	0.10	500
47	±25%	100	0.10	500
50	±25%	100	0.10	500
52	±25%	100	0.15	500
56	±25%	100	0.15	500
60	±25%	100	0.15	500
70	±25%	100	0.15	500
75	±25%	100	0.15	500
80	±25%	100	0.15	500
90	±25%	100	0.15	500
95	±25%	100	0.15	500
100	±25%	100	0.25	300
120	±25%	100	0.25	300
150	±25%	100	0.25	300
180	±25%	100	0.30	300
200	±25%	100	0.30	300
220	±25%	100	0.3	300
240	±25%	100	0.3	300
300	±25%	100	0.3	300
330	±25%	100	0.3	300
400	±25%	100	0.3	300
420	±25%	100	0.3	300
430	±25%	100	0.4	300
450	±25%	100	0.4	300
470	±25%	100	0.4	300
500	±25%	100	0.4	300
600	±25%	100	0.4	300
680	±25%	100	0.4	300
750	±25%	100	0.5	200
1000	±25%	100	0.5	200
1200	±25%	100	0.6	200
1500	±25%	100	0.6	200
2000	±25%	100	0.7	200
2200	±25%	100	0.7	200
2500	±25%	100	0.7	200
2700	±25%	100	0.7	200

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## MCB04 Standard Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
8	±25%	100	0.05	600
9	±25%	100	0.05	600
11	±25%	100	0.05	600
17	±25%	100	0.05	600
19	±25%	100	0.05	600
22	±25%	100	0.05	600
24	±25%	100	0.05	600
26	±25%	100	0.05	600
30	±25%	100	0.05	600
31	±25%	100	0.05	600
32	±25%	100	0.05	600
33	±25%	100	0.05	600
35	±25%	100	0.10	500
47	±25%	100	0.10	500
50	±25%	100	0.10	500
52	±25%	100	0.10	500
60	±25%	100	0.10	500
70	±25%	100	0.10	500
75	±25%	100	0.15	500
80	±25%	100	0.15	500
90	±25%	100	0.15	500
100	±25%	100	0.15	500
120	±25%	100	0.15	500
150	±25%	100	0.15	500
180	±25%	100	0.20	400
200	±25%	100	0.20	400
220	±25%	100	0.20	400
240	±25%	100	0.20	400
300	±25%	100	0.20	400
400	±25%	100	0.20	400
470	±25%	100	0.20	400
500	±25%	100	0.20	400
600	±25%	100	0.30	400
700	±25%	100	0.40	200
1000	±25%	50	0.40	200
1200	±25%	50	0.40	200
1500	±25%	50	0.45	200
2000	±25%	30	0.60	200
2700	±25%	30	0.60	200

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## MCB06 Standard Type

Impedance ( $\Omega$ )	Tolerance	Test Frequency (MHz)	DCR ( $\Omega$ ) max.	Rated Current (mA) max.
25	$\pm 25\%$	100	0.10	500
60	$\pm 25\%$	100	0.20	500
70	$\pm 25\%$	100	0.20	500

## MCB10 Standard Type

Impedance ( $\Omega$ )	Tolerance	Test Frequency (MHz)	DCR ( $\Omega$ ) max.	Rated Current (mA) max.
32	$\pm 25\%$	100	0.20	500
60	$\pm 25\%$	100	0.20	500
90	$\pm 25\%$	100	0.20	500
120	$\pm 25\%$	100	0.20	500

## MCB08 Standard Type

Impedance ( $\Omega$ )	Tolerance	Test Frequency (MHz)	DCR ( $\Omega$ ) max.	Rated Current (mA) max.
33	$\pm 25\%$	100	0.20	600
50	$\pm 25\%$	100	0.20	600
60	$\pm 25\%$	100	0.20	600
80	$\pm 25\%$	100	0.20	600
90	$\pm 25\%$	100	0.30	500
100	$\pm 25\%$	100	0.30	500
150	$\pm 25\%$	100	0.30	500
170	$\pm 25\%$	100	0.30	500

## MCB12 Standard Type

Impedance ( $\Omega$ )	Tolerance	Test Frequency (MHz)	DCR ( $\Omega$ ) max.	Rated Current (mA) max.
70	$\pm 25\%$	100	0.30	500
120	$\pm 25\%$	100	0.30	500

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## Standard Electrical Specifications (For High Current Use)

### MCB02 High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
10	±25%	100	0.030	1000

### MCB03 High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
10	±25%	100	0.020	4000
11	±25%	100	0.020	4000
15	±25%	100	0.030	3000
17	±25%	100	0.030	3000
19	±25%	100	0.030	3000
20	±25%	100	0.030	3000
22	±25%	100	0.030	3000
25	±25%	100	0.030	3000
30	±25%	100	0.030	3000
31	±25%	100	0.030	3000
32	±25%	100	0.035	3000
33	±25%	100	0.035	3000
40	±25%	100	0.035	3000
47	±25%	100	0.040	3000
50	±25%	100	0.040	3000
56	±25%	100	0.040	3000
60	±25%	100	0.040	3000
68	±25%	100	0.050	2500
70	±25%	100	0.050	2500
75	±25%	100	0.050	2500
80	±25%	100	0.050	2500
90	±25%	100	0.050	2500
100	±25%	100	0.050	2500
120	±25%	100	0.080	2500
150	±25%	100	0.085	2000
180	±25%	100	0.090	2000
200	±25%	100	0.095	2000
220	±25%	100	0.100	2000
240	±25%	100	0.120	1500
300	±25%	100	0.120	1500
330	±25%	100	0.120	1500
400	±25%	100	0.120	1500
450	±25%	100	0.150	1500
470	±25%	100	0.150	1500
500	±25%	100	0.150	1500
600	±25%	100	0.200	1000
700	±25%	100	0.250	800
750	±25%	100	0.250	800
800	±25%	100	0.250	800
1000	±25%	100	0.250	800
1500	±25%	100	0.400	500

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## MCB05 High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
11	±25%	100	0.010	6000
13	±25%	100	0.020	5000
15	±25%	100	0.020	5000
17	±25%	100	0.020	5000
19	±25%	100	0.020	4000
22	±25%	100	0.020	4000
26	±25%	100	0.020	4000
28	±25%	100	0.020	4000
30	±25%	100	0.020	4000
31	±25%	100	0.020	4000
32	±25%	100	0.020	4000
39	±25%	100	0.020	3000
40	±25%	100	0.020	3000
42	±25%	100	0.025	3000
50	±25%	100	0.025	3000
60	±25%	100	0.030	3000
70	±25%	100	0.040	3000
75	±25%	100	0.040	3000
80	±25%	100	0.040	3000
90	±25%	100	0.040	3000
100	±25%	100	0.040	3000
120	±25%	100	0.040	3000
130	±25%	100	0.050	2500
150	±25%	100	0.050	2500
180	±25%	100	0.050	2500
200	±25%	100	0.050	2500
220	±25%	100	0.080	2000
240	±25%	100	0.080	2000
250	±25%	100	0.080	2000
300	±25%	100	0.080	2000
330	±25%	100	0.080	2000
390	±25%	100	0.100	2000
400	±25%	100	0.100	2000
450	±25%	100	0.100	2000
470	±25%	100	0.100	2000
500	±25%	100	0.100	2000
600	±25%	100	0.100	2000
750	±25%	100	0.120	1500
1000	±25%	100	0.120	1500
1500	±25%	100	0.300	1000



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## MCB04 High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
7	±25%	100	0.015	6000
8	±25%	100	0.015	6000
11	±25%	100	0.015	6000
19	±25%	100	0.015	6000
26	±25%	100	0.015	6000
30	±25%	100	0.015	4000
31	±25%	100	0.015	4000
32	±25%	100	0.015	4000
35	±25%	100	0.015	4000
40	±25%	100	0.015	4000
42	±25%	100	0.015	4000
48	±25%	100	0.020	4000
50	±25%	100	0.020	4000
52	±25%	100	0.020	4000
60	±25%	100	0.020	4000
68	±25%	100	0.020	4000
70	±25%	100	0.020	4000
75	±25%	100	0.025	3000
80	±25%	100	0.025	3000
90	±25%	100	0.030	3000
100	±25%	100	0.030	2500
120	±25%	100	0.030	2500
150	±25%	100	0.040	2000
200	±25%	100	0.050	2000
220	±25%	100	0.050	2000
300	±25%	100	0.060	2000
330	±25%	100	0.060	2000
390	±25%	100	0.060	2000
400	±25%	100	0.100	2000
500	±25%	100	0.100	2000
600	±25%	100	0.100	2000
1000	±25%	50	0.150	1200
1200	±25%	50	0.180	1000
1500	±25%	50	0.200	800

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## MCB10 High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
19	±25%	100	0.025	4000
32	±25%	100	0.025	4000
60	±25%	100	0.025	4000
90	±25%	100	0.025	3000

## MCB08 High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
19	±25%	100	0.020	6000
40	±25%	100	0.020	6000
50	±25%	100	0.020	6000
60	±25%	100	0.020	5000
70	±25%	100	0.025	5000
75	±25%	100	0.025	5000
80	±25%	100	0.025	4000
90	±25%	100	0.100	2000
100	±25%	100	0.100	2000
150	±25%	100	0.100	2000
190	±25%	100	0.100	2000
300	±25%	100	0.100	2000
470	±25%	100	0.100	2000
600	±25%	100	0.100	2000
850	±25%	100	0.100	2000
1000	±25%	100	0.100	2000
1300	±25%	100	0.100	2000

## MCB12 High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
19	±25%	100	0.030	6000
30	±25%	100	0.030	6000
47	±25%	100	0.030	6000
50	±25%	100	0.030	6000
60	±25%	100	0.030	6000
70	±25%	100	0.030	6000
80	±25%	100	0.030	4000
90	±25%	100	0.030	4000
120	±25%	100	0.030	4000
125	±25%	100	0.030	4000
150	±25%	100	0.030	4000
190	±25%	100	0.030	4000

# Multilayer Chip Bead



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## Standard Electrical Specifications (For High Speed Signals Use)

### MCB02 High Speed Signals Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
6	±25%	100	0.08	300
10	±25%	100	0.10	300
22	±25%	100	0.25	300
26	±25%	100	0.25	300
30	±25%	100	0.25	300
40	±25%	100	0.25	350
75	±25%	100	0.30	300
80	±25%	100	0.30	300
100	±25%	100	0.40	300
120	±25%	100	0.40	300
220	±25%	100	0.60	200

### MCB03 High Speed Signals Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
6	±25%	100	0.05	500
7	±25%	100	0.05	400
10	±25%	100	0.07	400
19	±25%	100	0.20	300
20	±25%	100	0.20	300
22	±25%	100	0.20	300
30	±25%	100	0.20	300
40	±25%	100	0.20	300
47	±25%	100	0.20	300
50	±25%	100	0.25	300
60	±25%	100	0.25	300
68	±25%	100	0.25	300
70	±25%	100	0.25	300
75	±25%	100	0.25	300
80	±25%	100	0.25	300
100	±25%	100	0.30	300
120	±25%	100	0.30	300
130	±25%	100	0.30	300
140	±25%	100	0.30	300
150	±25%	100	0.30	200
160	±25%	100	0.30	200
180	±25%	100	0.35	200
200	±25%	100	0.35	200
220	±25%	100	0.35	200
240	±25%	100	0.35	200
300	±25%	100	0.40	200
400	±25%	100	0.50	200
420	±25%	100	0.50	200
470	±25%	100	0.50	200
480	±25%	100	0.50	200
600	±25%	100	0.50	200
1000	±25%	100	0.60	100
1200	±25%	100	0.60	100
1500	±25%	100	0.70	100
1800	±25%	100	0.80	100
2200	±25%	100	1.00	50
2500	±25%	100	1.50	50

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## MCB05 High Speed Signals Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DC Resistance (Ω) max.	Rated current (mA) max.
5	±25%	100	0.07	800
6	±25%	100	0.07	800
7	±25%	100	0.10	700
11	±25%	100	0.10	700
26	±25%	100	0.15	600
30	±25%	100	0.15	600
32	±25%	100	0.15	600
40	±25%	100	0.15	500
60	±25%	100	0.15	500
70	±25%	100	0.15	500
75	±25%	100	0.15	500
90	±25%	100	0.15	500
100	±25%	100	0.20	400
120	±25%	100	0.20	400
150	±25%	100	0.20	400
170	±25%	100	0.30	400
200	±25%	100	0.30	300
220	±25%	100	0.30	300
240	±25%	100	0.30	300
300	±25%	100	0.30	300
400	±25%	100	0.30	300
420	±25%	100	0.30	300
470	±25%	100	0.35	200
500	±25%	100	0.35	200
600	±25%	100	0.35	200
750	±25%	100	0.40	200
1000	±25%	100	0.40	200
1200	±25%	100	0.45	200
1500	±25%	100	0.45	200
2000	±25%	100	0.50	200
2200	±25%	100	0.50	200
2500	±25%	100	0.60	200
2700	±25%	100	0.60	200

# Multilayer Chip Bead



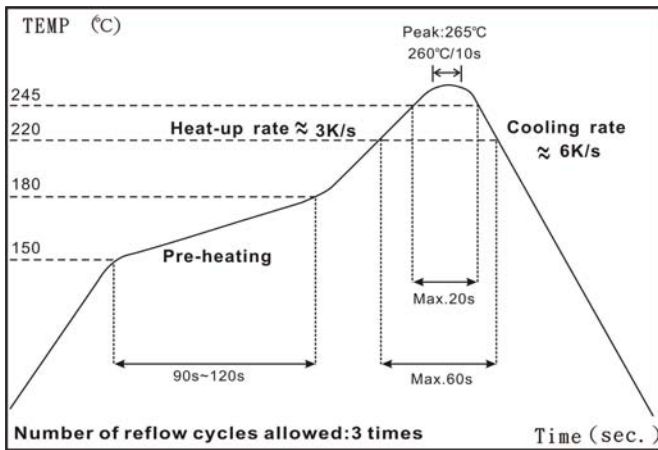
MCB Series

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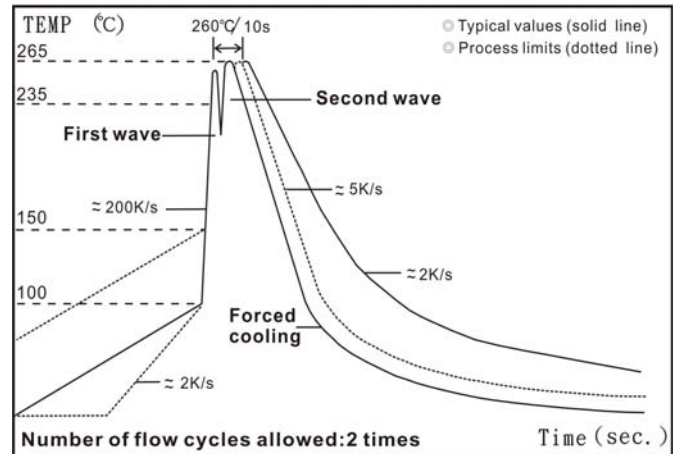
## MCB04 High Speed Signals Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
15	±25%	100	0.15	600
17	±25%	100	0.15	600
19	±25%	100	0.15	600
30	±25%	100	0.15	600
32	±25%	100	0.15	600
50	±25%	100	0.15	500
60	±25%	100	0.15	500
80	±25%	100	0.15	500
90	±25%	100	0.15	500
120	±25%	100	0.20	400
150	±25%	100	0.20	400
200	±25%	100	0.25	300
220	±25%	100	0.30	300
300	±25%	100	0.30	300
350	±25%	100	0.30	300
400	±25%	100	0.30	300
600	±25%	100	0.35	300
1000	±25%	100	0.40	200
1200	±25%	100	0.40	200
1500	±25%	100	0.45	200

## Soldering Condition



IR Reflow Soldering



Wave Soldering (Flow Soldering)

- (1) Time of IR reflow soldering at maximum temperature point 260°C : 10s
- (2) Time of wave soldering at maximum temperature point 260°C : 10s
- (3) Time of soldering iron at maximum temperature point 410°C : 5s

# Multilayer Chip Bead



MCB Series

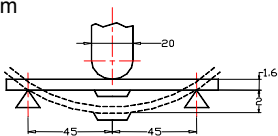

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## Environmental Characteristics

### Electrical Performance Test

Item	Specification	Test Methods
Impedance	Refer to standard electrical spec.	HP4291B
DCR		Agilent 34401A

### Mechanical Performance Test

Item	Specification	Test Methods
Flexure Strength	The forces applied on the right conditions must not damage the terminal electrode and the ferrite	Test device shall be soldered on the substrate Substrate Dimension: 100x40x1.6mm Deflection: 2.0mm Keeping Time: 30sec 
Vibration		Test device shall be soldered on the substrate Oscillation Frequency : 10 to 55 to 10Hz for 1min Amplitude : 1.5mm Time : 2hrs for each axis (X,Y&Z), total 6hrs
Resistance to Soldering Heat	Appearance: No damage More than 75% of the terminal electrode should be covered with solder Impedance: within $\pm 30\%$ of initial value	Pre-heating: 150°C, 1min Solder Temperature: 260 $\pm$ 5°C Immersion Time: 10 $\pm$ 1sec
Solderability	The electrodes shall be at least 90% covered with new solder coating	Pre-heating: 150°C, 1min Solder Temperature: 245 $\pm$ 5°C Immersion Time: 4 $\pm$ 1sec
Terminal Strength Test	0402 series : $\geq 0.2$ kg 0603series : $\geq 0.5$ kg 0805 series : $\geq 1.0$ kg other series : $\geq 2.0$ kg	Test device shall be soldered on the substrate 
Temperature Cycle	Appearance: No damage Impedance: within $\pm 30\%$ of initial value	One cycle: One cycle/step1: -55 $\pm$ 3°C for 30min step2: 25 $\pm$ 2°C for 3.0min step3: 125 $\pm$ 3°C for 30min step4: 25 $\pm$ 2°C for 3.0min Total: 100cycles Measured after exposure in the room condition for 24hrs
Humidity Resistance		Temperature: 40 $\pm$ 2°C Relative Humidity: 90 ~ 95% time: 1000hrs Measured after exposure in the room condition for 24hrs
High Temperature Resistance		Temperature: 125 $\pm$ 3°C Relative Humidity : 0% Applied Current: Rated Current time: 1000hrs Measured after exposure in the room condition for 24hrs
Low Temperature Resistance		Temperature: -55 $\pm$ 3°C TR elative Humidity : 0% time: 1000hrs Measured after exposure in the room condition for 24hrs

Operating Temperature: -55°C ~ 125°C

Storage Temperature: 25 $\pm$ 3°C; Humidity < 80%RH

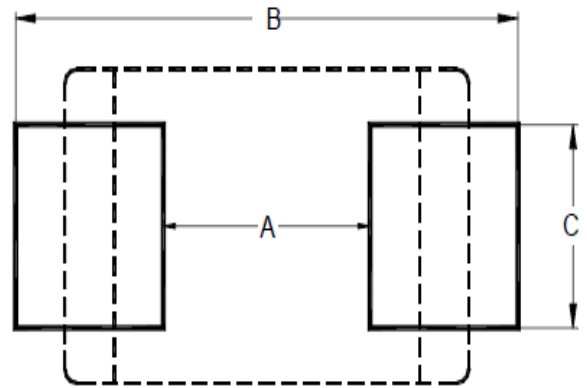
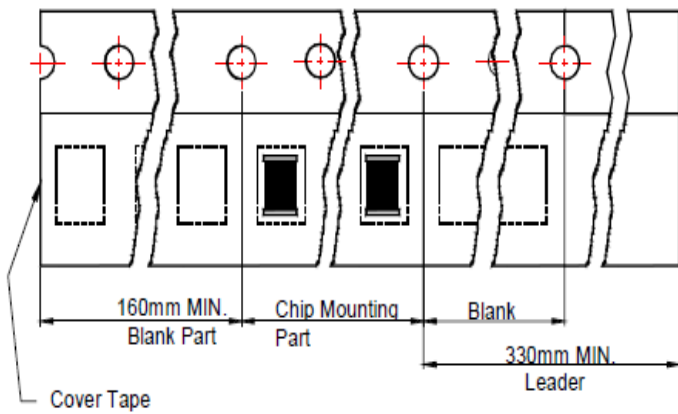
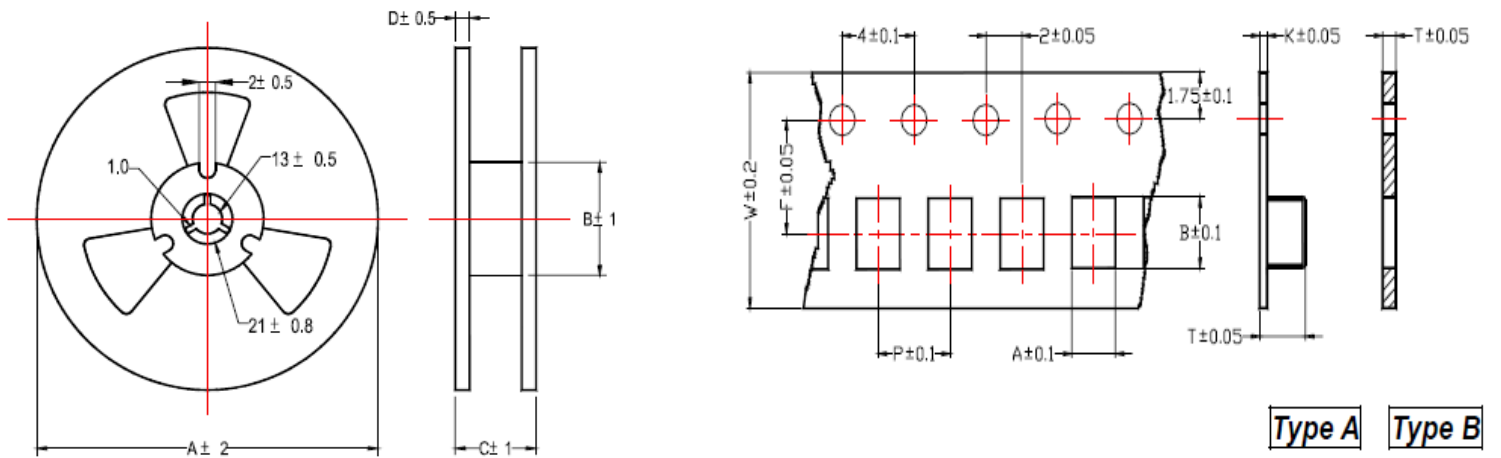
# Multilayer Chip Bead



MCB Series

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## Packaging



Type	Tape Dimensions								Reel Dimensions				Recommended Pattern			Quantity (EA)
	A	B	T	W	P	F	K	Tape Type	A	B	C	D	A	B	C	
MCB02	0.65	1.15	0.7	8.0	2.0	3.5	-	B	178	60	10	2	0.4	1.2 ~ 1.4	0.4	10000
MCB03	1.10	1.85	0.95	8.0	4.0	3.5	-	B	178	60	10	2	0.8	2.4 ~ 3.4	0.6	4000
MCB05	1.58	2.42	0.95	8.0	4.0	3.5	-	B	178	60	10	2	1.2	3.0 ~ 4.0	1.0	4000
MCB03	1.05	1.95	1.05	8.0	4.0	3.5	0.23	A	178	60	10	2	0.8	2.4 ~ 3.4	0.6	4000
MCB05	1.42	2.25	1.04	8.0	4.0	3.5	0.22	A	178	60	10	2	1.2	3.0 ~ 4.0	1.0	4000
MCB04	1.88	3.50	1.27	8.0	4.0	3.5	0.2	A	178	60	10	2	2.0	4.2 ~ 5.2	1.2	3000
MCB06	1.88	3.64	1.90	8.0	4.0	3.5	0.2	A	178	60	10	2	2.0	4.2 ~ 5.2	1.2	2000
MCB10	2.77	3.42	1.65	8.0	4.0	3.5	0.2	A	178	60	10	2	2.0	5.5 ~ 6.5	1.8	2000
MCB08	1.88	4.95	1.90	12	4.0	5.5	0.3	A	178	60	14	2	3.0	5.5 ~ 6.5	1.2	2000
MCB12	3.66	4.95	1.85	12	8.0	5.5	0.3	A	178	60	14	2	3.0	5.5 ~ 6.5	2.4	1000