

FrelTec GmbH

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Germany

Multilayer Chip Beads SMD

SPECIFICATION

Part Number

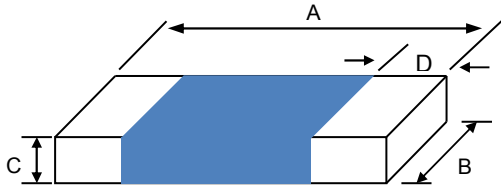
096	05*	151*	Q*	E02	A*	H*
Type	Size	Impedance	Tolerance	Packing	Material Code	Current
096 : SMD Multilayer Chip Beads	01: 0201	The value is given in Ohm. First two digits are significant The last digit is the multiplier	Q : $\pm 25\%$	T15: tape and reel, for 15kpcs, paper tape (7"reel), 0201 size	A: A material	H : High Current
	02: 0402					
	03: 0603	which denotes the number of zero following		T10: tape and reel, for 10kpcs, paper tape (7"reel), 0402 size	B: B material	N : General Current
	05: 0805	Example: 060 : 60Ohm 470 : 470Ohm 151 : 150 Ohm		T04: tape and reel, for 4kpcs, paper tape (7"reel), 0603 and 0805 size**	H: H material	G: Medium current
	04: 1204			E03: tape and reel, for 3kpcs, embossed plastic tape (7"reel), 1204 size	K: K material	F: High Frequency
	10: 1210			E02: tape and reel, for 2kpcs, embossed plastic tape (7"reel), 1210 and 1808 size	I: I material	C: High current & High Frequency
	18: 1808			E01: tape and reel, for 1kpcs, embossed plastic tape (7"reel), 1812 size		
	12: 1812			L002: tape and reel, for 2kpcs, embossed plastic tape (13"reel), 2220 size		
	23: 2220					* not all combination is possible

All products according to RoHS (2011/65/EU)

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Multilayer Chip Beads

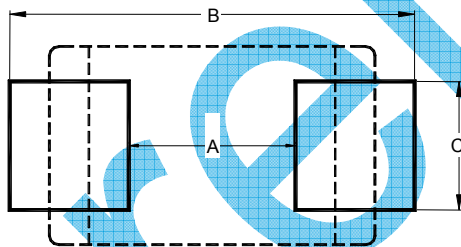
Dimensions:



Type	A	B	C	D
0201	0,6±0,03	0,30±0,03	0,30±0,03	0,1~0,2
0402	1,0±0,10	0,50±0,10	0,5±0,10	0,1~0,35
0603	1,6±0,20	0,80±0,15	0,8±0,15	0,1~0,6
0805	2,0±0,20	1,25±0,20	0,9±0,20	0,2~0,8
1204	3,2±0,20	1,60±0,20	1,1±0,20	0,2~1,0
1210	3,2±0,20	2,50±0,20	1,3±0,20	0,2~1,0
1808	4,5±0,25	1,60±0,20	1,6±0,20	0,2~1,0
1812	4,5±0,25	3,20±0,20	1,5±0,20	0,2~1,0
2220 (170Ω)	5,59±0,51	5,08±0,25	1,52±0,25	0,51~1,01
2220 (150Ω)	5,59±0,51	5,08±0,25	1,80±0,25	0,51~1,01
2220 (600Ω)	5,59±0,51	5,08±0,25	3,05±0,25	0,51~1,01

unit: mm

Recommended PCB pattern for reflow soldering:



Unit: mm

Type	A	B	C
0201	0,25	0,69	0,32
0402	0,50	2,10	0,55
0603	0,60	2,60	0,80
0805	0,66	3,23	1,47
1204	2,20	4,40	2,06
1210	2,13	4,06	2,74
1808	2,70	5,70	2,24
1812	2,57	5,90	4,22
2220	3,05	9,19	6,1

unit: mm

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We are able to design according to customer special requirement, pls. check with sales

For Standard Electrical Specifications

0201 General Signal Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Freq. (MHz)	DCR (Ω) max.	Rated Current (mA) max.
10	±25%	100	0,10	500
30	±25%	100	0,30	300
40	±25%	100	0,30	300
50	±25%	100	0,30	300
60	±25%	100	0,35	300
70	±25%	100	0,35	300
120	±25%	100	0,45	200
150	±25%	100	0,50	200
220	±25%	100	0,75	200
300	±25%	100	0,90	150

0402 General Signal Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Freq. (MHz)	DCR (Ω) max.	Rated Current (mA) max.
10	±25%	100	0,05	500
30	±25%	100	0,20	300
40	±25%	100	0,20	300
60	±25%	100	0,40	200
70	±25%	100	0,40	200
80	±25%	100	0,40	200
100	±25%	100	0,45	200
120	±25%	100	0,50	200
120	±25%	100	0,20	500
150	±25%	100	0,60	200
180	±25%	100	0,65	100
220	±25%	100	0,70	100
220	±25%	100	0,28	700
220	±25%	100	0,35	300
300	±25%	100	0,75	100
300	±25%	100	0,45	400
330	±25%	100	0,75	100
470	±25%	100	0,90	100
500	±25%	100	1,00	100
600	±25%	100	1,10	50
600	±25%	100	1,00	300
1000	±25%	100	1,50	50
1000	±25%	100	0,80	250
1000	±25%	100	0,58	300
1000	±25%	100	0,49	350
1500	±25%	100	0,80	250
1800	±25%	100	0,80	250

0603 General Signal Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
19	±25%	100	0,10	400
31	±25%	100	0,10	400
52	±25%	100	0,15	400
60	±25%	100	0,15	400
75	±25%	100	0,15	400
80	±25%	100	0,15	400
100	±25%	100	0,15	400
120	±25%	100	0,15	400
150	±25%	100	0,15	400
180	±25%	100	0,20	400
200	±25%	100	0,20	400
220	±25%	100	0,20	400
300	±25%	100	0,30	400
400	±25%	100	0,30	400
400	±25%	100	0,20	500
420	±25%	100	0,30	400
450	±25%	100	0,30	400
600	±25%	100	0,35	400
750	±25%	100	0,35	400
1000	±25%	100	0,55	300
1000	±25%	100	0,25	800
1500	±25%	100	0,60	200

0805 General Signal Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
17	±25%	100	0,10	300
26	±25%	100	0,10	300
30	±25%	100	0,10	300
31	±25%	100	0,10	300
52	±25%	100	0,15	300
60	±25%	100	0,15	300
80	±25%	100	0,15	300
100	±25%	100	0,20	300
120	±25%	100	0,20	300
150	±25%	100	0,20	300
220	±25%	100	0,25	300
300	±25%	100	0,25	300
400	±25%	100	0,30	300
530	±25%	100	0,35	300
600	±25%	100	0,35	300
1000	±25%	100	0,45	300
1500	±25%	100	0,70	300

1204 General Signal Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
19	±25%	100	0,10	800
26	±25%	100	0,10	800
31	±25%	100	0,10	800
52	±25%	100	0,15	800
60	±25%	100	0,15	500
70	±25%	100	0,15	500
100	±25%	100	0,20	450
120	±25%	100	0,20	450
150	±25%	100	0,20	450
220	±25%	100	0,20	350
300	±25%	100	0,20	350
400	±25%	100	0,25	350
600	±25%	100	0,25	350
600	±25%	100	0,25	500
750	±25%	100	0,30	350
800	±25%	100	0,30	350
1000	±25%	100	0,35	350
1500	±25%	100	0,40	350
1500	±25%	100	0,20	800

1210 General Signal Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
31	±25%	100	0,10	500
52	±25%	100	0,30	400
60	±25%	100	0,30	400

1808 General Signal Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
60	±25%	100	0,20	500
80	±25%	100	0,30	400
100	±25%	100	0,30	400
150	±25%	100	0,50	200
600	±25%	100	0,80	200

1812 General Signal Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
31	±25%	100	0,10	500
60	±25%	100	0,20	500
120	±25%	100	0,20	500
150	±25%	100	0,20	500

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For High Speed Signal Line Use

0402 High Speed Signal Line Use Type, B-Material

Impedance (Ω)	Tolerance	Test Freq. (MHz)	DCR (Ω) max.	Rated Current (mA) max.
30	±25%	100	0,20	300
60	±25%	100	0,40	200
100	±25%	100	0,50	200
120	±25%	100	0,50	200
220	±25%	100	0,80	100
300	±25%	100	0,85	100
470	±25%	100	1,00	100
600	±25%	100	1,50	50
1000	±25%	100	1,00	200

0603 High Speed Signal Line Use Type, B-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max	Rated Current (mA) max
5	±25%	100	0,08	700
30	±25%	100	0,20	500
47	±25%	100	0,20	500
60	±25%	100	0,25	450
100	±25%	100	0,30	450
120	±25%	100	0,30	450
150	±25%	100	0,35	450
220	±25%	100	0,35	450
300	±25%	100	0,35	450
470	±25%	100	0,35	450
600	±25%	100	0,40	450
1000	±25%	100	0,60	300

0805 High Speed Signal Line Use Type, B-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
5	±25%	100	0,07	500
30	±25%	100	0,15	300
60	±25%	100	0,15	300
75	±25%	100	0,20	300
100	±25%	100	0,20	300
120	±25%	100	0,20	300
220	±25%	100	0,25	200
300	±25%	100	0,25	200
400	±25%	100	0,20	300
600	±25%	100	0,25	200
750	±25%	100	0,30	200
1000	±25%	100	0,30	200
1500	±25%	100	0,35	200
1800	±25%	100	0,40	200
2000	±25%	100	0,40	200

2200	±25%	100	0,50	200
2500	±25%	100	0,60	200
2700	±25%	100	0,60	200

1204 High Speed Signal Line Use Type, B-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
19	±25%	100	0,10	500
31	±25%	100	0,15	500
60	±25%	100	0,20	500
100	±25%	100	0,25	300
120	±25%	100	0,25	300
200	±25%	100	0,25	300
300	±25%	100	0,30	300
600	±25%	100	0,35	300
750	±25%	100	0,35	300
1000	±25%	100	0,40	200
1500	±25%	100	0,45	200
2000	±25%	30	0,60	200

1210 High Speed Signal Line Use Type, B-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
31	±25%	100	0,10	500

1812 High Speed Signal Line Use Type, B-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
70	±25%	100	0,20	500

For General Signal Line Frequency Higher than A use

0402 General Signal Line Frequency Type, K-Material

Impedance (Ω)	Tolerance	Test Freq. (MHz)	DCR (Ω) max.	Rated Current (ma) max.
30	±25%	100	0,15	300
60	±25%	100	0,30	200
100	±25%	100	0,50	200
120	±25%	100	0,50	200
220	±25%	100	0,80	100
220	±25%	100	0,35	800
300	±25%	100	0,85	100
470	±25%	100	1,00	100
600	±25%	100	1,50	50

0603 General Signal Line Frequency Type, K-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
470	±25%	100	0,55	200
600	±25%	100	0,65	200
750	±25%	100	0,70	200
1000	±25%	100	0,85	100
1200	±25%	100	0,85	100
1500	±25%	100	0,90	100
1500	±25%	100	0,40	500
2000	±25%	100	1,00	100
2200	±25%	100	0,80	50
2500	±25%	100	1,00	50
2500	±25%	100	0,70	150
2500	±25%	100	0,80	200

0805 General Signal Line Frequency Type, K-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
80	±25%	100	0,30	300
600	±25%	100	0,35	200
750	±25%	100	0,35	200
1000	±25%	100	0,40	200
1200	±25%	100	0,40	200
1500	±25%	100	0,45	200
2000	±25%	100	0,60	200
2200	±25%	100	0,60	200
2500	±25%	100	0,70	200
5000	±25%	100	0,60	300

1204 General Signal Line Frequency Type, K-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
600	$\pm 25\%$	100	0,50	200
1000	$\pm 25\%$	100	0,70	200
1200	$\pm 25\%$	100	0,70	200
2000	$\pm 25\%$	100	0,40	500



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For Ultra High Speed Signal Line Use

0402 High Speed Signal Line Use Type, H-Material

Impedance (Ω)	Tolerance	Test Freq. (MHz)	DCR (Ω) max.	Rated Current (mA) max.
10	±25%	100	0,10	500
30	±25%	100	0,20	300
33	±25%	100	0,40	300
60	±25%	100	0,40	300
100	±25%	100	0,55	300
120	±25%	100	0,55	300
220	±25%	100	0,80	200
300	±25%	100	1,00	100
470	±25%	100	1,50	50
600	±25%	100	2,50	50

0603 High Speed Signal Line Use Type, H-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
7	±25%	100	0,10	900
10	±25%	100	0,10	900
20	±25%	100	0,20	600
47	±25%	100	0,30	500
68	±25%	100	0,10	700
120	±25%	100	0,30	300
300	±25%	100	0,35	300
600	±25%	100	0,65	300
1000	±25%	100	1,10	50

0805 High Speed Signal Line Use Type, H-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
5	±25%	100	0,07	500
7	±25%	100	0,07	500
10	±25%	100	0,07	500
120	±25%	100	0,35	300
600	±25%	100	0,65	200

1204 High Speed Signal Line Use Type, H-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
5	±25%	100	0,07	500
7	±25%	100	0,07	500
300	±25%	100	0,30	300
600	±25%	100	0,45	300

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Multilayer Chip Beads

For Medium Current Line Use

0402 Medium Current Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
10	±25%	100	0,03	2000
30	±25%	100	0,03	3000
30	±25%	100	0,035	2200
100	±25%	100	0,09	1200
120	±25%	100	0,09	1200
120	±25%	100	0,09	1300
220	±25%	100	0,20	1000

0603 Medium Current Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
30	±25%	100	0,04	3000
30	±25%	100	0,02	4000
30	±25%	100	0,03	3000
33	±25%	100	0,025	3000
60	±25%	100	0,04	3000
100	±25%	100	0,05	3000
120	±25%	100	0,05	2000
180	±25%	100	0,08	2000
220	±25%	100	0,08	2000
300	±25%	100	0,15	2000
300	±25%	100	0,08	1000
330	±25%	100	0,07	2000
470	±25%	100	0,15	1500
470	±25%	100	0,25	1000
600	±25%	100	0,30	1000
600	±25%	100	0,10	2000
750	±25%	100	0,30	1000
1000	±25%	100	0,25	1000

0805 Medium Current Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
11	±25%	100	0,03	3000
17	±25%	100	0,03	3000
30	±25%	100	0,05	3000
31	±25%	100	0,03	3000
39	±25%	100	0,03	3000
47	±25%	100	0,03	3000
50	±25%	100	0,03	3000
52	±25%	100	0,03	3000
60	±25%	100	0,04	3000
80	±25%	100	0,04	3000
100	±25%	100	0,04	3000

120	±25%	100	0,05	3000
180	±25%	100	0,05	3000
220	±25%	100	0,05	3000
300	±25%	100	0,05	3000
330	±25%	100	0,05	3000
470	±25%	100	0,10	2000
600	±25%	100	0,10	2000
600	±25%	100	0,30	1000
1000	±25%	100	0,12	1500
1500	±25%	100	0,30	1000

0805 Medium Current Line Use Type, H-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
10	±25%	100	0,03	3000

1204 Medium Current Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
19	±25%	100	0,03	3000
31	±25%	100	0,03	3000
52	±25%	100	0,03	3000
70	±25%	100	0,04	3000
80	±25%	100	0,04	3000
100	±25%	100	0,04	3000
120	±25%	100	0,05	3000
150	±25%	100	0,05	3000
180	±25%	100	0,05	3000
220	±25%	100	0,05	3000
300	±25%	100	0,06	3000
500	±25%	100	0,07	2500
600	±25%	100	0,08	2000
1000	±25%	100	0,30	1000

1210 Medium Current Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
52	±25%	100	0,03	3000
60	±25%	100	0,03	3000

1808 Medium Current Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
60	±25%	100	0,04	3000
80	±25%	100	0,04	3000
100	±25%	100	0,04	3000
180	±25%	100	0,04	3000
470	±25%	100	0,09	2000

850	±25%	100	0,10	1500
1000	±25%	100	0,09	1500

1812 Medium Current Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
120	±25%	100	0,04	3000
150	±25%	100	0,04	3000

0603 Medium Current Line Use Type, H-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
100	±25%	100	0,03	3000

1812 Medium Current Line Use Type, H-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
600	±25%	100	0,04	3000
780	±25%	100	0,04	3000

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Multilayer Chip Beads

For High Current Line Use

0805 High Current Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
17	$\pm 25\%$	100	0,008	6000
22	$\pm 25\%$	100	0,008	6000
30	$\pm 25\%$	100	0,008	6000
30	$\pm 25\%$	100	0,015	4000
39	$\pm 25\%$	100	0,008	6000
50	$\pm 25\%$	100	0,020	6000
60	$\pm 25\%$	100	0,020	6000
80	$\pm 25\%$	100	0,020	6000
80	$\pm 25\%$	100	0,015	5000
100	$\pm 25\%$	100	0,020	5000
120	$\pm 25\%$	100	0,020	4000
120	$\pm 25\%$	100	0,015	5000

1204 High Current Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
26	$\pm 25\%$	100	0,006	6000
31	$\pm 25\%$	100	0,006	6000
48	$\pm 25\%$	100	0,008	6000
50	$\pm 25\%$	100	0,008	6000
52	$\pm 25\%$	100	0,008	6000
60	$\pm 25\%$	100	0,020	4000
80	$\pm 25\%$	100	0,020	4000
120	$\pm 25\%$	100	0,020	4000

1210 High Current Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
52	$\pm 25\%$	100	0,008	6000
60	$\pm 25\%$	100	0,008	6000

1808 High Current Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
60	$\pm 25\%$	100	0,008	6000
75	$\pm 25\%$	100	0,008	6000
80	$\pm 25\%$	100	0,008	6000

1812 High Current Line Use Type, A-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
60	$\pm 25\%$	100	0,008	6000
80	$\pm 25\%$	100	0,008	6000
100	$\pm 25\%$	100	0,010	8000
120	$\pm 25\%$	100	0,020	6000
150	$\pm 25\%$	100	0,020	6000
190	$\pm 25\%$	100	0,020	4000

1812 High Current Line Use Type, K-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
880	$\pm 25\%$	100	0,030	4000

2220 High Current Line Use Type, I-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
170	$\pm 25\%$	100	0,030	4000
150	$\pm 25\%$	100	0,015	5000
600	$\pm 25\%$	100	0,025	4000

SMD

Multilayer Chip Beads

For High Frequency Line Use

0402 High Frequency Line Use Type, A-Material

Impedance(Ω) @100MHz	Tolerance	Impedance(Ω) @1GHz	Tolerance	DCR (Ω) max.	Rated current (mA) max.
300	$\pm 25\%$	560	$\pm 40\%$	0,800	200
470	$\pm 25\%$	1000	$\pm 40\%$	1,000	100
600	$\pm 25\%$	1100	$\pm 40\%$	1,200	100
1000	$\pm 25\%$	1700	$\pm 40\%$	1,600	100
1800	$\pm 25\%$	1500	$\pm 40\%$	2,200	200

0603 High Frequency Line Use Type, A-Material

Impedance(Ω) @100MHz	Tolerance	Impedance(Ω) @1GHz	Tolerance	DCR (Ω) max.	Rated current (mA) max.
600	$\pm 25\%$	600	$\pm 40\%$	0,900	100
1000	$\pm 25\%$	1200	$\pm 40\%$	1,500	50

0603 High Frequency Line Use Type, H-Material

Impedance(Ω) @100MHz	Tolerance	Impedance(Ω) @1GHz	Tolerance	DCR (Ω) max.	Rated current (mA) max.
120	$\pm 25\%$	500	$\pm 40\%$	0,500	200
220	$\pm 25\%$	1100	$\pm 40\%$	0,800	100
330	$\pm 25\%$	1300	$\pm 40\%$	1,200	50

For High Current /High Frequency Line Use

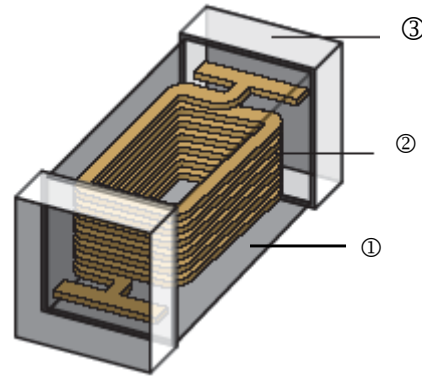
2220 High Current /High Frequency Line Use Type, I-Material

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
550	$\pm 25\%$	100	0,035	4000

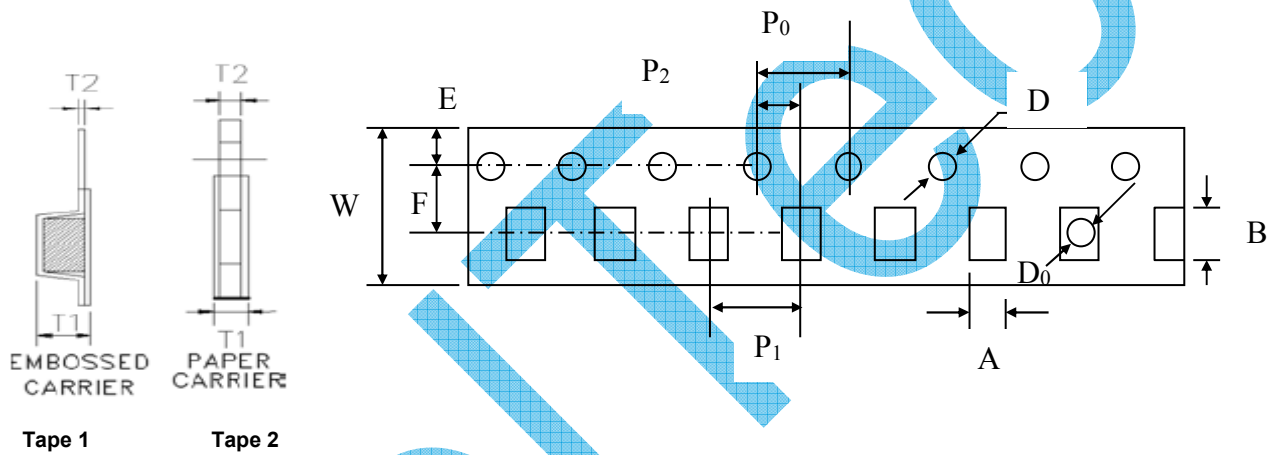
SMD Construction

Multilayer Chip Beads

①	Ferrite	②	Internal Electrode
		③	Electrode Plating



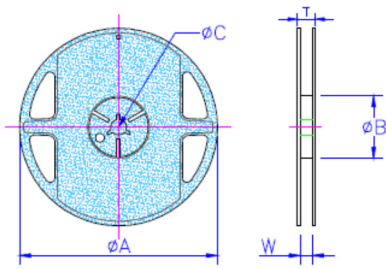
Tape Dimensions



Type	Tape Dimensions									
	A ±0,1	B ±0,1	T1 ±0,05	T2 ±0,05	P0 ±0,1	P1 ±0,1	P2 ±0,05	Tape Type	W ±0,2	F ±0,05
0201	0,38	0,68	1,10	-	4,0	2,0	2,0	2	8,0	3,5
0402	0,65	1,15	0,80	-	4,0	2,0	2,0	2	8,0	3,5
0603	1,10	1,90	1,10	-	4,0	4,0	2,0	2	8,0	3,5
0805	1,55	2,30	1,20	-	4,0	4,0	2,0	2	8,0	3,5
1204	1,90	3,50	1,40	0,2	4,0	4,0	2,0	1	8,0	3,5
1210	2,90	3,60	1,70	0,2	4,0	4,0	2,0	1	8,0	3,5
1808	2,90	4,90	1,40	0,3	4,0	4,0	2,0	1	12	5,5
1812	3,60	4,90	2,05	0,3	4,0	8,0	2,0	1	12	5,5
2220	5,40	5,95	3,42	0,33	4,0	8,0	2,0	1	12	5,5

SMD

Reel Dimensions



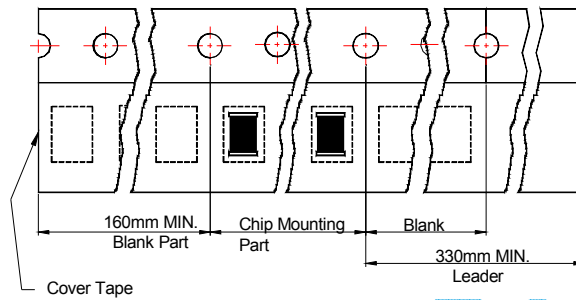
Type	ΦA	ΦB	T	W	C
0201	178±2	60±1	10±1	6±1	13±0,5
0402					
0603					
0805					
1204					
1206					
1210			14±1	10±1	
1808					
1812					
2220			330±2	100±1	

FrelTec

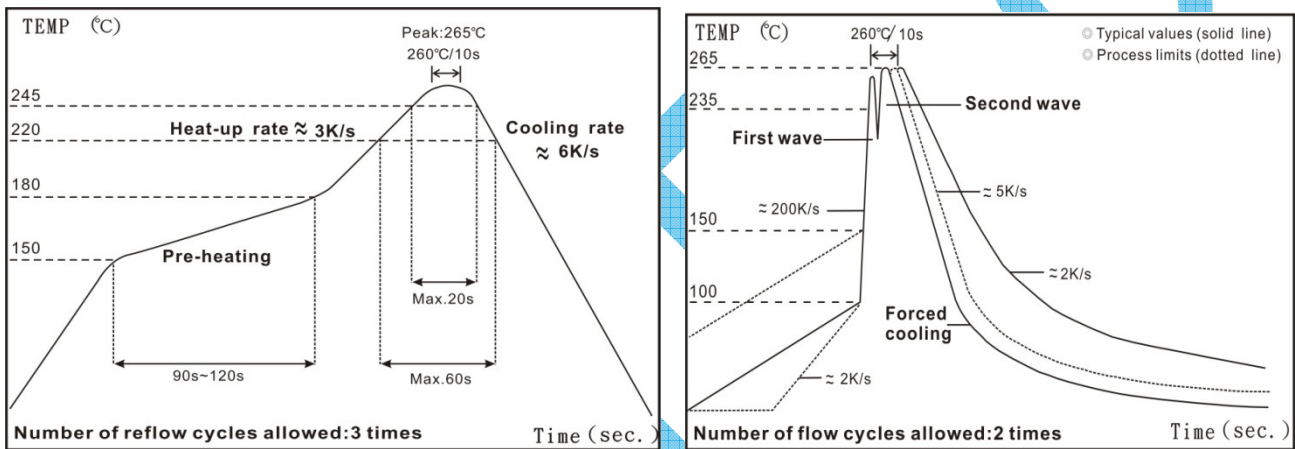
SMD

Multilayer Chip Beads

Lead Dimensions:



Lead Free Reflow Soldering Profile



IR Reflow Soldering

Time of IR reflow soldering at maximum temperature point 260°C: 10s
 Time of soldering iron at maximum temperature point 280°C: 3s

Wave Soldering (Flow Soldering)

Operating Temperature

Temperature range: -55°C ~ 125°C

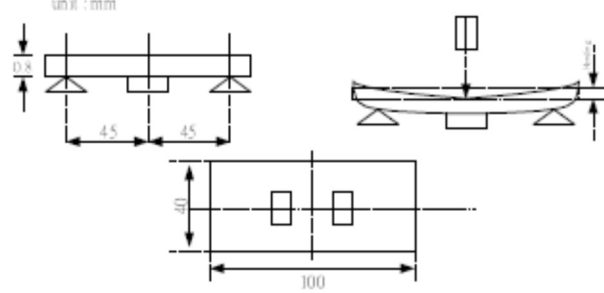
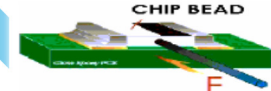
Stock period

The performance of these products, including the solderability, is guaranteed for 12 month, provided that they remain packed as they were when delivered and stored at a temperature of 25°C ± 3°C and a relative humidity less than 80%RH

SMD

Environmental Characteristics

Mechanical Performance Test

Item	Specification	Test Methods
Substrate Bending Test	Without deformation cases Impedance: within±30% of initial value DC Resistance shall be satisfied	Test device shall be soldered on the substrate Substrate Dimension:100x40x0,8mm Deflection: 3,0mm Keeping Time: 10s and then return 
Vibration	Appearance: No damage Impedance: within±30% of initial value DC Resistance shall be satisfied	Test device shall be soldered on the substrate Oscillation Frequency : 10 to 55 to 10Hz for 1min Amplitude : 1,5mm(peak-peak) Time : 2h for each axis (X,Y&Z), total 6h
Resistance to Soldering Heat	No visible damage Electrical characteristics and mechanical characteristics shall be satisfied	Solder temp: 265±5°C Immersion time: 6±1sec Preheating: 100°C to 150°C, 1 min Measured after exposure in the room condition for 24h Solder: Sn-3Ag-0,5Cu
Solderability	95% min. coverage of all metallized area	Solder Temperature: 240±5°C Immersion Time: 3±1sec Solder: Sn-3Ag-0,5Cu
Terminal Strength	Without deformation cases Impedance: within±30% of initial value DC Resistance shall be satisfied	Solder chip on PCB and applied 10N (1,02Kgf) for 10s 
Temperature Cycle		One cycle: One cycle/step1: -55±3°C for 30±3min step2: standard atmospheric conditions 5s or less step3:125±2°C for 30±3min step4: standard atmospheric conditions 5s or less Total: 100cycles Measured after exposure in the room condition for 24h
Humidity Resistance	Appearance: No damage Impedance: within±30% of initial value DC Resistance shall be satisfied	Temperature: 60±2°C Relative Humidity: 90 ~ 95% Applied Current: Rated Current(maximum value) Time: 1008±12h Measured after exposure in the room condition for 24h
High Temperature Resistance		Temperature: 125±2°C Applied Current: Rated Current(maximum value) Time: 1008±12h Measured after exposure in the room condition for 24h
Low Temperature Storage Life Test		Temperature: -55±2°C Time: 1008±12h Measured after exposure in the room condition for 24h
Thermal Shock		-55°C~125°C kept stabilized for 30 minutes each for 100 cycles Measured after exposure in the room condition for 24h

Electrical Performance Test

Item	Specification	Test Methods
Impedance	Refer to standard electrical spec.	HP4286A
DCR		HP 4338 digital mili-ohm meter

FrelTec

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