

# FrelTec GmbH

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## **Multilayer Chip Beads SMD**

## SMD

## Multilayer Chip Beads

### SPECIFICATION

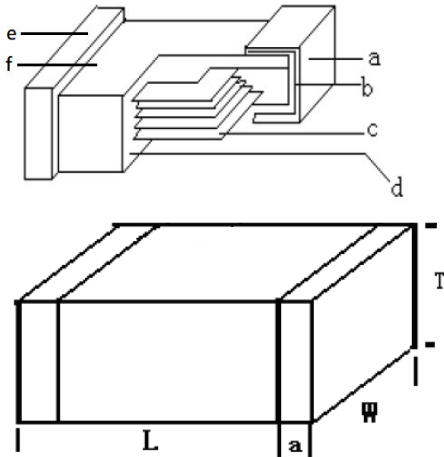
### Part Number

09B	05*	151*	Q*	T04	U	N*
Type	Size	Impedance	Tolerance	Packing	Material Code	Current
09B : SMD Multilayer Chip Beads	02: 0402	The value is given in Ohm. First two digits are significant The last digit is the multiplier	Q : $\pm 25\%$	T10: tape and reel, for 10kpcs, paper tape (7"reel), 0402 size	U: U material	N: General Current
	03: 0603	which denotes the number of zero following	X: special range, refer item details	T04: tape and reel, for 4kpcs, paper tape (7"reel), 0603, 0805 1204 size		L : Large Current
	05: 0805	Example: 060 : 6Ohm 470 : 47Ohm 151 : 150 Ohm		E05: tape and reel, for 5kpcs, embossed plastic tape (7"reel), 1808 size		U: Ultra High Current
	04: 1204			E03: tape and reel, for 3kpcs, embossed plastic tape (7"reel), 1210 and 1812 size		
	10: 1210					
	08: 1808					
	12: 1812					* not all combination is possible

All products according to RoHS (2015/863/EU)

### SMD

#### Dimensions:



a	Ni/Sn Plating	d	Body
b	Ag Layer	e	Terminal Electrode
c	Inner Electrode	f	Ferrite

Size	L	W	T	a
0402	1,0±0,15	0,5±0,15	0,5±0,15	0,25±0,10
0603	1,6±0,20	0,8±0,20	0,8±0,20	0,3±0,20
0805	2,0±0,20	1,2±0,20	0,9±0,20	0,5±0,30
1204	3,2±0,20	1,6±0,20	0,9±0,20	0,5±0,30
1210	3,2±0,20	2,5±0,20	1,3±0,20	0,5±0,30
1808	4,5±0,20	1,6±0,20	1,6±0,20	0,5±0,30
1812	4,5±0,20	3,2±0,20	1,5±0,20	0,5±0,30

in mm

## For Standard Electrical Specifications

Part No.	Impedance ( $\Omega$ )	Tolerance	Test Frequency (MHz)	Test Voltage (mV)	RDC ( $\Omega$ ) max.	Rated Current (mA) max.
09B02000XT10UN	0	0-15 $\Omega$	100	50	0,05	500
09B02050XT10UN	5	0-15 $\Omega$	100	50	0,05	500
09B02070XT10UN	7	0-11 $\Omega$	100	50	0,05	500
09B02090XT10UN	9	5-13 $\Omega$	100	50	0,05	500
09B02110XT10UN	11	7-15 $\Omega$	100	50	0,05	500
09B02150XT10UN	15	9-21 $\Omega$	100	50	0,05	500
09B02190XT10UN	19	12-25 $\Omega$	100	50	0,10	300
09B02260QT10UN	26	$\pm 25\%$	100	50	0,13	300
09B02310QT10UN	31	$\pm 25\%$	100	50	0,20	300
09B02600QT10UN	60	$\pm 25\%$	100	50	0,30	200
09B02800QT10UN	80	$\pm 25\%$	100	50	0,35	200
09B02101QT10UN	100	$\pm 25\%$	100	50	0,35	200
09B02121QT10UN	120	$\pm 25\%$	100	50	0,40	200
09B02151QT10UN	150	$\pm 25\%$	100	50	0,47	200
09B02201QT10UN	200	$\pm 25\%$	100	50	0,52	150
09B02221QT10UN	220	$\pm 25\%$	100	50	0,52	150
09B02301QT10UN	300	$\pm 25\%$	100	50	0,65	100
09B02501QT10UN	500	$\pm 25\%$	100	50	0,90	100
09B02601QT10UN	600	$\pm 25\%$	100	50	1,00	100
09B02801QT10UN	800	$\pm 25\%$	100	50	1,30	100
09B02102QT10UN	1000	$\pm 25\%$	100	50	1,40	100
09B03000XT04UN	0	0-15 $\Omega$	100	50	0,05	2000
09B03050XT04UN	5	0-15 $\Omega$	100	50	0,05	2000
09B03070XT04UN	7	0-11 $\Omega$	100	50	0,05	2000
09B03090XT04UN	9	5-13 $\Omega$	100	50	0,05	2000
09B03110XT04UN	11	7-15 $\Omega$	100	50	0,05	2000
09B03150XT04UN	15	9-21 $\Omega$	100	50	0,05	2000
09B03190XT04UN	19	12-25 $\Omega$	100	50	0,05	2000
09B03260QT04UN	26	$\pm 25\%$	100	50	0,05	2000
09B03310QT04UN	31	$\pm 25\%$	100	50	0,05	1000
09B03800QT04UN	80	$\pm 25\%$	100	50	0,15	400
09B03101QT04UN	100	$\pm 25\%$	100	50	0,20	300
09B03121QT04UN	120	$\pm 25\%$	100	50	0,20	300
09B03151QT04UN	150	$\pm 25\%$	100	50	0,20	300
09B03181QT04UN	180	$\pm 25\%$	100	50	0,30	300
09B03221QT04UN	220	$\pm 25\%$	100	50	0,30	300
09B03301QT04UN	300	$\pm 25\%$	100	50	0,35	200
09B03501QT04UN	500	$\pm 25\%$	100	50	0,45	200
09B03601QT04UN	600	$\pm 25\%$	100	50	0,45	200
09B03801QT04UN	800	$\pm 25\%$	100	50	0,60	200
09B03102QT04UN	1000	$\pm 25\%$	100	50	0,60	200
09B03122QT04UN	1200	$\pm 25\%$	100	50	0,70	200
09B03152QT04UN	1500	$\pm 25\%$	100	50	0,70	200
09B03182QT04UN	1800	$\pm 25\%$	100	50	0,90	150
09B03202QT04UN	2000	$\pm 25\%$	100	50	1,10	150
09B03222QT04UN	2200	$\pm 25\%$	100	50	1,20	100
09B03252QT04UN	2500	$\pm 25\%$	100	50	1,30	50
09B05000XT04UN	0	0-15 $\Omega$	100	50	0,04	2200
09B05050XT04UN	5	0-15 $\Omega$	100	50	0,04	2200
09B05070XT04UN	7	0-11 $\Omega$	100	50	0,04	2200
09B05090XT04UN	9	5-13 $\Omega$	100	50	0,04	2200
09B05110XT04UN	11	7-15 $\Omega$	100	50	0,04	2200

Part No.	Impedance (Ω)	Tolerance	Test Frequency (MHz)	Test Voltage (mV)	RDC (Ω) max.	Rated Current (mA) max.
09B05150XT04UN	15	9-21Ω	100	50	0,04	2200
09B05190XT04UN	19	12-25Ω	100	50	0,04	2200
09B05260QT04UN	26	±25%	100	50	0,05	1500
09B05310QT04UN	31	±25%	100	50	0,05	1500
09B05360QT04UN	36	±25%	100	50	0,05	1500
09B05600QT04UN	60	±25%	100	50	0,10	1000
09B05700QT04UN	70	±25%	100	50	0,10	1000
09B05800QT04UN	80	±25%	100	50	0,10	1000
09B05101QT04UN	100	±25%	100	50	0,15	800
09B05121QT04UN	120	±25%	100	50	0,15	800
09B05151QT04UN	150	±25%	100	50	0,18	700
09B05181QT04UN	180	±25%	100	50	0,18	700
09B05221QT04UN	220	±25%	100	50	0,20	600
09B05301QT04UN	300	±25%	100	50	0,20	600
09B05501QT04UN	500	±25%	100	50	0,30	550
09B05601QT04UN	600	±25%	100	50	0,30	550
09B05801QT04UN	800	±25%	100	50	0,35	500
09B05102QT04UN	1000	±25%	100	50	0,35	500
09B05122QT04UN	1200	±25%	100	50	0,40	500
09B05152QT04UN	1500	±25%	100	50	0,40	500
09B05202QT04UN	2000	±25%	100	50	0,45	500
09B05222QT04UN	2200	±25%	100	50	0,45	500
09B05252QT04UN	2500	±25%	50	50	0,50	400
09B05272QT04UN	2700	±25%	50	50	0,60	200
09B05302QT04UN	3000	±25%	50	50	0,60	200
09B04000XT04UN	0	0-15Ω	100	50	0,05	2200
09B04050XT04UN	5	0-15Ω	100	50	0,05	2200
09B04070XT04UN	7	0-11Ω	100	50	0,05	2200
09B04090XT04UN	9	5-13Ω	100	50	0,05	2000
09B04110XT04UN	11	7-15Ω	100	50	0,05	2000
09B04150XT04UN	15	9-21Ω	100	50	0,05	2000
09B04190XT04UN	19	12-25Ω	100	50	0,05	2000
09B04260QT04UN	26	±25%	100	50	0,05	2000
09B04310QT04UN	31	±25%	100	50	0,05	2000
09B04600QT04UN	60	±25%	100	50	0,10	1000
09B04700QT04UN	70	±25%	100	50	0,10	1000
09B04800QT04UN	80	±25%	100	50	0,10	1000
09B04101QT04UN	100	±25%	100	50	0,10	1000
09B04121QT04UN	120	±25%	100	50	0,10	1000
09B04151QT04UN	150	±25%	100	50	0,15	1000
09B04181QT04UN	180	±25%	100	50	0,15	1000
09B04221QT04UN	220	±25%	100	50	0,20	800
09B04301QT04UN	300	±25%	100	50	0,20	800
09B04501QT04UN	500	±25%	100	50	0,30	600
09B04601QT04UN	600	±25%	100	50	0,30	600
09B04801QT04UN	800	±25%	100	50	0,35	600
09B04102QT04UN	1000	±25%	100	50	0,35	600
09B04122QT04UN	1200	±25%	100	50	0,60	300
09B04152QT04UN	1500	±25%	50	50	0,60	300
09B04182QT04UN	1800	±25%	50	50	0,80	100
09B04202QT04UN	2000	±25%	50	50	1,00	100
09B04252QT04UN	2500	±25%	50	50	1,20	50
09B04302QT04UN	3000	±25%	50	50	1,50	50

## Large Current Electrical Specifications

Part No.	Impedance ( $\Omega$ )	Tolerance	Test Frequency (MHz)	Test Voltage (mV)	RDC ( $\Omega$ ) max.	Rated Current (mA) max.
09B02000XT10UL	0	0-15 $\Omega$	100	50	0,04	1800
09B02050XT10UL	5	0-15 $\Omega$	100	50	0,04	1800
09B02070XT10UL	7	0-11 $\Omega$	100	50	0,04	1800
09B02090XT10UL	9	5-13 $\Omega$	100	50	0,04	1800
09B02110XT10UL	11	7-15 $\Omega$	100	50	0,04	1800
09B02150XT10UL	15	9-21 $\Omega$	100	50	0,04	1800
09B02190XT10UL	19	12-25 $\Omega$	100	50	0,06	1800
09B02260QT10UL	26	$\pm$ 25%	100	50	0,06	1800
09B02310QT10UL	31	$\pm$ 25%	100	50	0,08	1800
09B02600QT10UL	60	$\pm$ 25%	100	50	0,13	1000
09B02800QT10UL	80	$\pm$ 25%	100	50	0,17	1000
09B02101QT10UL	100	$\pm$ 25%	100	50	0,20	900
09B02121QT10UL	120	$\pm$ 25%	100	50	0,25	700
09B02151QT10UL	150	$\pm$ 25%	100	50	0,25	700
09B02201QT10UL	200	$\pm$ 25%	100	50	0,30	700
09B02221QT10UL	220	$\pm$ 25%	100	50	0,30	700
09B02301QT10UL	300	$\pm$ 25%	100	50	0,40	400
09B02501QT10UL	500	$\pm$ 25%	100	50	0,60	300
09B02601QT10UL	600	$\pm$ 25%	100	50	0,60	300
09B02801QT10UL	800	$\pm$ 25%	100	50	0,80	250
09B02102QT10UL	1000	$\pm$ 25%	100	50	0,90	250
09B03000XT04UL	0	0-15 $\Omega$	100	50	0,02	3000
09B03050XT04UL	5	0-15 $\Omega$	100	50	0,02	3000
09B03070XT04UL	7	0-11 $\Omega$	100	50	0,02	3000
09B03090XT04UL	9	5-13 $\Omega$	100	50	0,02	3000
09B03110XT04UL	11	7-15 $\Omega$	100	50	0,02	3000
09B03150XT04UL	15	9-21 $\Omega$	100	50	0,03	3000
09B03190XT04UL	19	12-25 $\Omega$	100	50	0,03	3000
09B03260QT04UL	26	$\pm$ 25%	100	50	0,03	3000
09B03310QT04UL	31	$\pm$ 25%	100	50	0,03	3000
09B03800QT04UL	80	$\pm$ 25%	100	50	0,10	1500
09B03101QT04UL	100	$\pm$ 25%	100	50	0,12	1400
09B03121QT04UL	120	$\pm$ 25%	100	50	0,14	1300
09B03151QT04UL	150	$\pm$ 25%	100	50	0,15	1200
09B03181QT04UL	180	$\pm$ 25%	100	50	0,15	1200
09B03221QT04UL	220	$\pm$ 25%	100	50	0,18	1200
09B03301QT04UL	300	$\pm$ 25%	100	50	0,20	1200
09B03501QT04UL	500	$\pm$ 25%	100	50	0,30	1000
09B03601QT04UL	600	$\pm$ 25%	100	50	0,30	1000
09B03801QT04UL	800	$\pm$ 25%	100	50	0,35	500
09B03102QT04UL	1000	$\pm$ 25%	100	50	0,40	500
09B03122QT04UL	1200	$\pm$ 25%	100	50	0,45	500
09B03152QT04UL	1500	$\pm$ 25%	100	50	0,55	400
09B03182QT04UL	1800	$\pm$ 25%	100	50	0,55	400
09B03202QT04UL	2000	$\pm$ 25%	100	50	0,60	400
09B03252QT04UL	2500	$\pm$ 25%	100	50	0,65	400
09B05000XT04UL	0	0-15 $\Omega$	100	50	0,02	3000
09B05050XT04UL	5	0-15 $\Omega$	100	50	0,02	3000
09B05070XT04UL	7	0-11 $\Omega$	100	50	0,02	3000
09B05090XT04UL	9	5-13 $\Omega$	100	50	0,02	3000
09B05110XT04UL	11	7-15 $\Omega$	100	50	0,02	3000
09B05150XT04UL	15	9-21 $\Omega$	100	50	0,02	3000

Part No.	Impedance (Ω)	Tolerance	Test Frequency (MHz)	Test Voltage (mV)	RDC (Ω) max.	Rated Current (mA) max.
09B05190XT04UL	19	12-25Ω	100	50	0,02	3000
09B05300QT04UL	30	±25%	100	50	0,04	3000
09B05310QT04UL	31	±25%	100	50	0,04	3000
09B05360QT04UL	36	±25%	100	50	0,04	3000
09B05600QT04UL	60	±25%	100	50	0,05	3000
09B05800QT04UL	80	±25%	100	50	0,06	3000
09B05101QT04UL	100	±25%	100	50	0,08	2500
09B05121QT04UL	120	±25%	100	50	0,08	2500
09B05151QT04UL	150	±25%	100	50	0,10	2500
09B05181QT04UL	180	±25%	100	50	0,12	2000
09B05201QT04UL	200	±25%	100	50	0,12	2000
09B05221QT04UL	220	±25%	100	50	0,13	2000
09B05301QT04UL	300	±25%	100	50	0,13	2000
09B05331QT04UL	330	±25%	100	50	0,15	2000
09B05501QT04UL	500	±25%	100	50	0,22	1500
09B05601QT04UL	600	±25%	100	50	0,22	1500
09B05801QT04UL	800	±25%	100	50	0,25	1000
09B05102QT04UL	1000	±25%	100	50	0,25	1000
09B05122QT04UL	1200	±25%	100	50	0,28	800
09B05202QT04UL	2000	±25%	100	50	0,40	700
09B05222QT04UL	2200	±25%	100	50	0,40	700
09B05252QT04UL	2500	±25%	50	50	0,45	600
09B04000XT04UL	0	0-15Ω	100	50	0,04	4000
09B04050XT04UL	5	0-15Ω	100	50	0,04	4000
09B04070XT04UL	7	0-11Ω	100	50	0,04	4000
09B04090XT04UL	9	5-13Ω	100	50	0,04	4000
09B04110XT04UL	11	7-15Ω	100	50	0,04	4000
09B04150XT04UL	15	9-21Ω	100	50	0,04	3000
09B04190XT04UL	19	12-25Ω	100	50	0,04	3000
09B04260QT04UL	26	±25%	100	50	0,04	3000
09B04280QT04UL	28	±25%	100	50	0,04	3000
09B04300QT04UL	30	±25%	100	50	0,04	3000
09B04310QT04UL	31	±25%	100	50	0,04	3000
09B04500QT04UL	50	±25%	100	50	0,04	3000
09B04600QT04UL	60	±25%	100	50	0,04	3000
09B04700QT04UL	70	±25%	100	50	0,07	3000
09B04800QT04UL	80	±25%	100	50	0,07	3000
09B04101QT04UL	100	±25%	100	50	0,07	3000
09B04121QT04UL	120	±25%	100	50	0,07	3000
09B04151QT04UL	150	±25%	100	50	0,10	2500
09B04181QT04UL	180	±25%	100	50	0,10	2500
09B04221QT04UL	220	±25%	100	50	0,11	2500
09B04301QT04UL	300	±25%	100	50	0,15	2000
09B04501QT04UL	500	±25%	100	50	0,20	2000
09B04601QT04UL	600	±25%	100	50	0,20	2000
09B04801QT04UL	800	±25%	100	50	0,25	2000
09B04102QT04UL	1000	±25%	100	50	0,25	2000
09B04122QT04UL	1200	±25%	100	50	0,35	1500
09B04152QT04UL	1500	±25%	50	50	0,45	500
09B04182QT04UL	1800	±25%	50	50	0,60	500
09B04202QT04UL	2000	±25%	50	50	0,70	300
09B04252QT04UL	2500	±25%	50	50	0,90	200
09B04302QT04UL	3000	±25%	50	50	0,90	200
09B10110XE03UL	11	7-15Ω	100	50	0,03	5000



Part No.	Impedance (Ω)	Tolerance	Test Frequency (MHz)	Test Voltage (mV)	RDC (Ω) max.	Rated Current (mA) max.
09B10150XE03UL	15	9-21Ω	100	50	0,03	5000
09B10190XE03UL	19	12-25Ω	100	50	0,03	5000
09B10260QE03UL	26	±25%	100	50	0,03	5000
09B10310QE03UL	31	±25%	100	50	0,03	5000
09B10600QE03UL	60	±25%	100	50	0,03	5000
09B10700QE03UL	70	±25%	100	50	0,03	5000
09B10800QE03UL	80	±25%	100	50	0,03	5000
09B10900QE03UL	90	±25%	100	50	0,04	4000
09B10121QE03UL	120	±25%	100	50	0,06	4000
09B10151QE03UL	150	±25%	100	50	0,08	4000
09B10301QE03UL	300	±25%	100	50	0,08	3000
09B10501QE03UL	500	±25%	100	50	0,12	3000
09B10601QE03UL	600	±25%	100	50	0,18	2000
09B10801QE03UL	800	±25%	100	50	0,23	2000
09B10102QE03UL	1000	±25%	100	50	0,28	2000
09B08190XE05UL	19	12-25Ω	100	50	0,015	6000
09B08260QE05UL	26	±25%	100	50	0,02	6000
09B08310QE05UL	31	±25%	100	50	0,02	6000
09B08600QE05UL	60	±25%	100	50	0,025	6000
09B08750QE05UL	75	±25%	100	50	0,04	6000
09B08800QE05UL	80	±25%	100	50	0,05	3000
09B08900QE05UL	90	±25%	100	50	0,06	3000
09B08121QE05UL	120	±25%	100	50	0,06	3000
09B08151QE05UL	150	±25%	100	50	0,06	3000
09B08221QE05UL	220	±25%	100	50	0,08	2000
09B08301QE05UL	300	±25%	100	50	0,09	2000
09B08501QE05UL	500	±25%	100	50	0,20	1500
09B08601QE05UL	600	±25%	100	50	0,20	1500
09B12260QE03UL	26	±25%	100	50	0,02	5000
09B12280QE03UL	28	±25%	100	50	0,02	5000
09B12300QE03UL	30	±25%	100	50	0,02	5000
09B12310QE03UL	31	±25%	100	50	0,02	5000
09B12380QE03UL	38	±25%	100	50	0,02	5000
09B12400QE03UL	40	±25%	100	50	0,02	4000
09B12500QE03UL	50	±25%	100	50	0,02	4000
09B12600QE03UL	60	±25%	100	50	0,02	4000
09B12700QE03UL	70	±25%	100	50	0,02	4000
09B12800QE03UL	80	±25%	100	50	0,02	4000
09B12900QE03UL	90	±25%	100	50	0,02	4000
09B12101QE03UL	100	±25%	100	50	0,03	4000
09B12121QE03UL	120	±25%	100	50	0,03	4000
09B12151QE03UL	150	±25%	100	50	0,04	3500
09B12181QE03UL	180	±25%	100	50	0,06	3000
09B12201QE03UL	200	±25%	100	50	0,06	3000
09B12221QE03UL	220	±25%	100	50	0,06	2000
09B12301QE03UL	300	±25%	100	50	0,06	2000
09B12401QE03UL	400	±25%	100	50	0,08	1000
09B12501QE03UL	500	±25%	100	50	0,10	1000
09B12601QE03UL	600	±25%	100	50	0,10	1000



## Ultra High Current Electrical Specifications

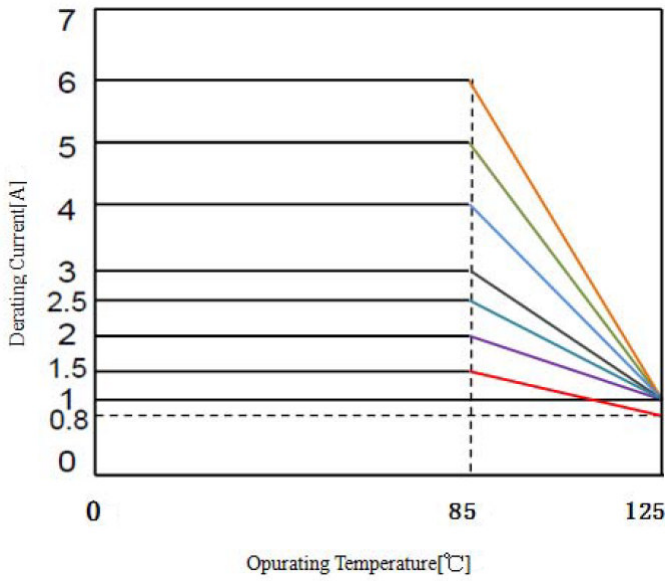
Part No.	Impedance ( $\Omega$ )	Tolerance	Test Frequency (MHz)	Test Voltage (mV)	RDC ( $\Omega$ ) max.	Rated Current (mA) max.
09B02000XT10UU	0	0-15 $\Omega$	100	50	0,02	2000
09B02050XT10UU	5	0-15 $\Omega$	100	50	0,02	2000
09B02070XT10UU	7	0-11 $\Omega$	100	50	0,02	2000
09B02090XT10UU	9	5-13 $\Omega$	100	50	0,02	2000
09B02110XT10UU	11	7-15 $\Omega$	100	50	0,02	2000
09B02150XT10UU	15	9-21 $\Omega$	100	50	0,02	2000
09B02190XT10UU	19	12-25 $\Omega$	100	50	0,035	1700
09B02260QT10UU	26	$\pm 25\%$	100	50	0,06	1500
09B02300QT10UU	30	$\pm 25\%$	100	50	0,06	1500
09B02600QT10UU	60	$\pm 25\%$	100	50	0,10	1300
09B02101QT10UU	100	$\pm 25\%$	100	50	0,15	1000
09B02121QT10UU	120	$\pm 25\%$	100	50	0,15	1000
09B02151QT10UU	150	$\pm 25\%$	100	50	0,20	700
09B02201QT10UU	200	$\pm 25\%$	100	50	0,25	700
09B02221QT10UU	220	$\pm 25\%$	100	50	0,28	700
09B02301QT10UU	300	$\pm 25\%$	100	50	0,30	600
09B02501QT10UU	500	$\pm 25\%$	100	50	0,40	500
09B02601QT10UU	600	$\pm 25\%$	100	50	0,50	500
09B02801QT10UU	800	$\pm 25\%$	100	50	0,65	300
09B02102QT10UU	1000	$\pm 25\%$	100	50	0,65	300
09B03000XT04UU	0	0-15 $\Omega$	100	50	0,01	6000
09B03050XT04UU	5	0-15 $\Omega$	100	50	0,01	6000
09B03070XT04UU	7	0-11 $\Omega$	100	50	0,01	6000
09B03090XT04UU	9	5-13 $\Omega$	100	50	0,01	6000
09B03110XT04UU	11	7-15 $\Omega$	100	50	0,01	6000
09B03150XT04UU	15	9-21 $\Omega$	100	50	0,01	6000
09B03190XT04UU	19	12-25 $\Omega$	100	50	0,01	6000
09B03260QT04UU	26	$\pm 25\%$	100	50	0,03	4000
09B03300QT04UU	30	$\pm 25\%$	100	50	0,03	4000
09B03600QT04UU	60	$\pm 25\%$	100	50	0,04	3000
09B03600QT04UUX	60	$\pm 25\%$	100	50	0,025	3500
09B03750QT04UU	75	$\pm 25\%$	100	50	0,06	2500
09B03800QT04UU	80	$\pm 25\%$	100	50	0,025	3500
09B03101QT04UU	100	$\pm 25\%$	100	50	0,06	2500
09B03101QT04UUX	100	$\pm 25\%$	100	50	0,04	3000
09B03121QT04UU	120	$\pm 25\%$	100	50	0,065	2000
09B03121QT04UUX	120	$\pm 25\%$	100	50	0,04	2000
09B03151QT04UU	150	$\pm 25\%$	100	50	0,07	1500
09B03181QT04UU	180	$\pm 25\%$	100	50	0,09	1500
09B03181QT04UUX	180	$\pm 25\%$	100	50	0,07	2000
09B03221QT04UU	220	$\pm 25\%$	100	50	0,12	1500
09B03221QT04UUX	220	$\pm 25\%$	100	50	0,09	2000
09B03301QT04UU	300	$\pm 25\%$	100	50	0,15	1500
09B03301QT04UUX	300	$\pm 25\%$	100	50	0,15	2000
09B03331QT04UU	330	$\pm 25\%$	100	50	0,18	1300
09B03501QT04UU	500	$\pm 25\%$	100	50	0,18	1300
09B03501QT04UUX	500	$\pm 25\%$	100	50	0,15	1500
09B03601QT04UU	600	$\pm 25\%$	100	50	0,18	1300
09B03601QT04UUX	600	$\pm 25\%$	100	50	0,15	1500
09B03801QT04UU	800	$\pm 25\%$	100	50	0,30	800
09B03801QT04UUX	800	$\pm 25\%$	100	50	0,20	1200

Part No.	Impedance ( $\Omega$ )	Tolerance	Test Frequency (MHz)	Test Voltage (mV)	RDC ( $\Omega$ ) max.	Rated Current (mA) max.
09B03102QT04UU	1000	$\pm 25\%$	100	50	0,35	700
09B03102QT04UUX	1000	$\pm 25\%$	100	50	0,30	1000
09B05000XT04UU	0	0-15 $\Omega$	100	50	0,01	6000
09B05050XT04UU	5	0-15 $\Omega$	100	50	0,01	6000
09B05070XT04UU	7	0-11 $\Omega$	100	50	0,01	6000
09B05090XT04UU	9	5-13 $\Omega$	100	50	0,01	6000
09B05110XT04UU	11	7-15 $\Omega$	100	50	0,01	6000
09B05150XT04UU	15	9-21 $\Omega$	100	50	0,01	6000
09B05190XT04UU	19	12-25 $\Omega$	100	50	0,01	6000
09B05300QT04UU	30	$\pm 25\%$	100	50	0,01	6000
09B05310QT04UU	31	$\pm 25\%$	100	50	0,01	6000
09B05500QT04UU	50	$\pm 25\%$	100	50	0,03	4000
09B05600QT04UU	60	$\pm 25\%$	100	50	0,03	4000
09B05800QT04UU	80	$\pm 25\%$	100	50	0,04	4000
09B05800QT04UUX	80	$\pm 25\%$	100	50	0,025	3500
09B05101QT04UU	100	$\pm 25\%$	100	50	0,025	3500
09B05121QT04UU	120	$\pm 25\%$	100	50	0,045	4000
09B05151QT04UU	150	$\pm 25\%$	100	50	0,05	3000
09B05181QT04UU	180	$\pm 25\%$	100	50	0,07	3000
09B05181QT04UUX	180	$\pm 25\%$	100	50	0,05	3000
09B05221QT04UU	220	$\pm 25\%$	100	50	0,07	3000
09B05221QT04UUX	220	$\pm 25\%$	100	50	0,05	3000
09B05301QT04UU	300	$\pm 25\%$	100	50	0,08	2500
09B05301QT04UUX	300	$\pm 25\%$	100	50	0,05	3000
09B05501QT04UU	500	$\pm 25\%$	100	50	0,09	2500
09B05501QT04UUX	500	$\pm 25\%$	100	50	0,09	2500
09B05601QT04UU	600	$\pm 25\%$	100	50	0,10	2000
09B05601QT04UUX	600	$\pm 25\%$	100	50	0,09	2500
09B05102QT04UU	1000	$\pm 25\%$	100	50	0,12	1500
09B05102QT04UUX	1000	$\pm 25\%$	100	50	0,11	2000
09B05122QT04UU	1200	$\pm 25\%$	100	50	0,18	1000
09B04000XT04UU	0	0-15 $\Omega$	100	50	0,01	6000
09B04050XT04UU	5	0-15 $\Omega$	100	50	0,01	6000
09B04070XT04UU	7	0-11 $\Omega$	100	50	0,01	6000
09B04090XT04UU	9	5-13 $\Omega$	100	50	0,01	6000
09B04110XT04UU	11	7-15 $\Omega$	100	50	0,01	6000
09B04150XT04UU	15	9-21 $\Omega$	100	50	0,015	6000
09B04190XT04UU	19	12-25 $\Omega$	100	50	0,015	6000
09B04260QT04UU	26	$\pm 25\%$	100	50	0,015	6000
09B04280QT04UU	28	$\pm 25\%$	100	50	0,015	6000
09B04300QT04UU	30	$\pm 25\%$	100	50	0,015	6000
09B04310QT04UU	31	$\pm 25\%$	100	50	0,02	5000
09B04500QT04UU	50	$\pm 25\%$	100	50	0,02	5000
09B04600QT04UU	60	$\pm 25\%$	100	50	0,025	5000
09B04700QT04UU	70	$\pm 25\%$	100	50	0,035	4000
09B04800QT04UU	80	$\pm 25\%$	100	50	0,035	4000
09B04121QT04UU	120	$\pm 25\%$	100	50	0,035	4000
09B04151QT04UU	150	$\pm 25\%$	100	50	0,045	3000
09B04221QT04UU	220	$\pm 25\%$	100	50	0,055	3000
09B04301QT04UU	300	$\pm 25\%$	100	50	0,065	2500
09B04501QT04UU	500	$\pm 25\%$	100	50	0,08	2500
09B04601QT04UU	600	$\pm 25\%$	100	50	0,085	2200
09B04801QT04UU	800	$\pm 25\%$	100	50	0,11	2100

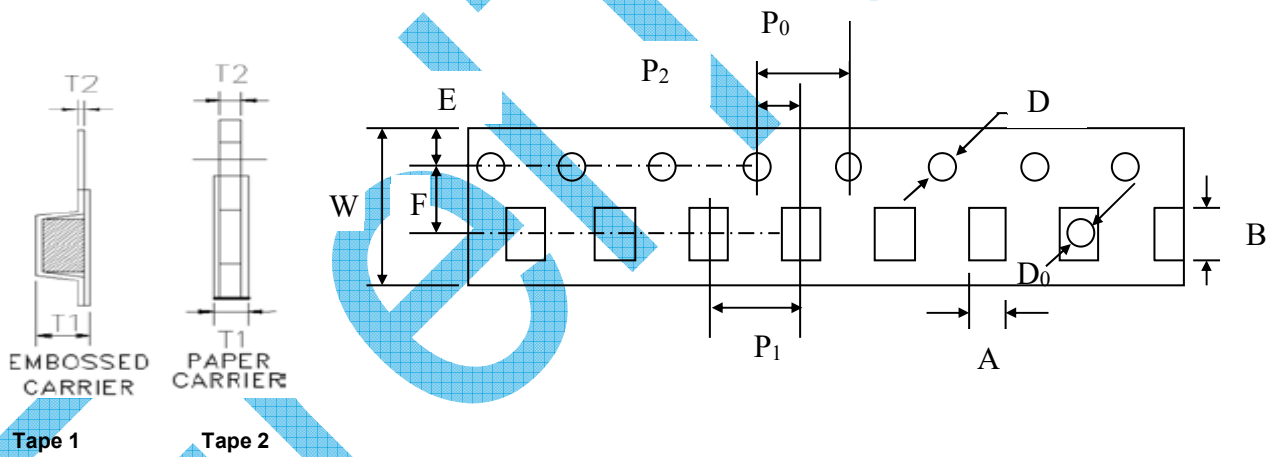
Part No.	Impedance ( $\Omega$ )	Tolerance	Test Frequency (MHz)	Test Voltage (mV)	RDC ( $\Omega$ ) max.	Rated Current (mA) max.
09B04102QT04UU	1000	$\pm 25\%$	100	50	0,12	2100
09B10110XE03UU	11	7-15 $\Omega$	100	50	0,02	6000
09B10150XE03UU	15	9-21 $\Omega$	100	50	0,02	6000
09B10190XE03UU	19	12-25 $\Omega$	100	50	0,02	6000
09B10260QE03UU	26	$\pm 25\%$	100	50	0,02	6000
09B10310QE03UU	31	$\pm 25\%$	100	50	0,02	6000
09B10600QE03UU	60	$\pm 25\%$	100	50	0,02	6000
09B10700QE03UU	70	$\pm 25\%$	100	50	0,02	6000
09B10800QE03UU	80	$\pm 25\%$	100	50	0,02	6000
09B10900QE03UU	90	$\pm 25\%$	100	50	0,03	5000
09B10121QE03UU	120	$\pm 25\%$	100	50	0,03	5000
09B10151QE03UU	150	$\pm 25\%$	100	50	0,03	5000
09B10301QE03UU	300	$\pm 25\%$	100	50	0,06	4000
09B10501QE03UU	500	$\pm 25\%$	100	50	0,10	4000
09B10601QE03UU	600	$\pm 25\%$	100	50	0,15	3000
09B10801QE03UU	800	$\pm 25\%$	100	50	0,20	2500
09B10102QE03UU	1000	$\pm 25\%$	100	50	0,23	2500
09B08190XE05UU	19	12-25 $\Omega$	100	50	0,009	6000
09B08260QE05UU	26	$\pm 25\%$	100	50	0,009	6000
09B08310QE05UU	31	$\pm 25\%$	100	50	0,009	6000
09B08600QE05UU	60	$\pm 25\%$	100	50	0,009	6000
09B08750QE05UU	75	$\pm 25\%$	100	50	0,02	6000
09B08800QE05UU	80	$\pm 25\%$	100	50	0,02	3500
09B12190XE03UU	19	12-25 $\Omega$	100	50	0,01	6000
09B12260QE03UU	26	$\pm 25\%$	100	50	0,01	6000
09B12280QE03UU	28	$\pm 25\%$	100	50	0,01	6000
09B12300QE03UU	30	$\pm 25\%$	100	50	0,01	6000
09B12310QE03UU	31	$\pm 25\%$	100	50	0,01	6000
09B12380QE03UU	38	$\pm 25\%$	100	50	0,01	6000
09B12400QE03UU	40	$\pm 25\%$	100	50	0,01	6000
09B12500QE03UU	50	$\pm 25\%$	100	50	0,01	6000
09B12600QE03UU	60	$\pm 25\%$	100	50	0,01	6000
09B12700QE03UU	70	$\pm 25\%$	100	50	0,01	6000
09B12101QE03UU	100	$\pm 25\%$	100	50	0,02	6000
09B12181QE03UU	180	$\pm 25\%$	100	50	0,02	6000
09B12221QE03UU	220	$\pm 25\%$	100	50	0,02	6000
09B12501QE03UU	500	$\pm 25\%$	100	50	0,08	4000
09B12601QE03UU	600	$\pm 25\%$	100	50	0,08	4000

### SMD

#### Derating:



#### Tape Dimensions

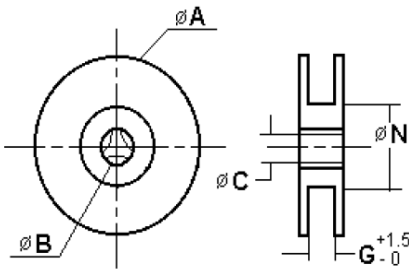


Type	A	B	W	F	E	P1	P2	P0	D	T1	D1	T2
0402	0,65±0,1	1,15±0,1	8,0±0,2	3,5±0,1	1,75±0,2	2,0±0,1	2,0±0,1	4,0±0,2	1,55±0,1	0,60±0,1		
0603	1,10±0,2	1,90±0,2	8,0±0,2	3,5±0,1	1,75±0,2	4,0±0,2	2,0±0,1	4,0±0,2	1,55±0,1	0,95±0,1		
0805	1,50±0,2	2,30±0,2	8,0±0,2	3,5±0,1	1,75±0,2	4,0±0,2	2,0±0,1	4,0±0,2	1,55±0,1	0,95±0,1		
1204	1,90±0,2	3,50±0,2	8,0±0,2	3,5±0,1	1,75±0,2	4,0±0,2	2,0±0,1	4,0±0,2	1,55±0,1	0,95±0,1		
1210	2,77±0,10	3,42±0,10	8,00±0,20	3,50±0,10	1,75±0,10	4,00±0,10	2,00±0,05	4,00±0,10	1,50±0,10	1,55±0,10	1,00±0,10	0,23±0,20
1808	1,93±0,10	4,95±0,10	12,00±0,20	5,50±0,10	1,75±0,10	4,00±0,10	2,00±0,10	4,00±0,10	1,50±0,10	1,93±0,10	1,50±0,10	0,24±0,20
1812	3,66±0,10	4,95±0,10	12,00±0,20	5,50±0,10	1,75±0,10	8,00±0,10	2,00±0,10	4,00±0,10	1,50±0,10	1,85±0,10	1,50±0,10	0,24±0,20

in mm

### SMD

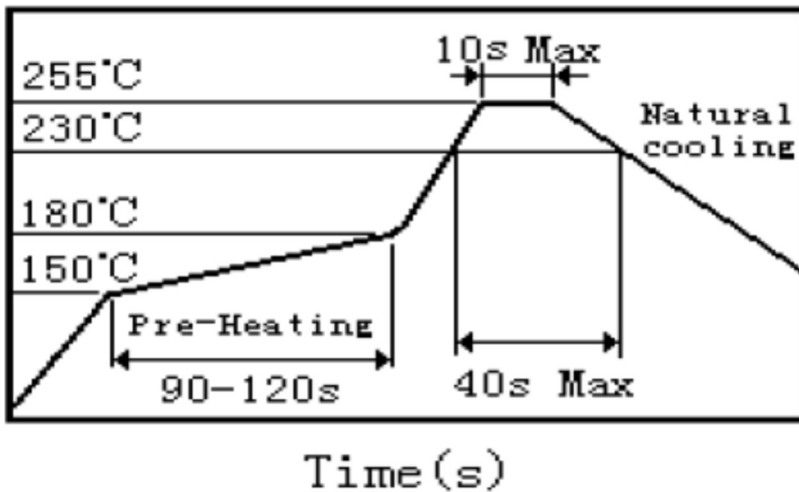
#### Reel Dimensions



A	B	C	N	G
178±2,0	22±2,0	12,5±1,5	57±2,0	8

in mm

#### Soldering Profile

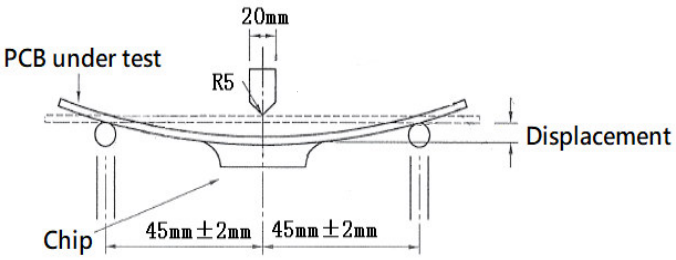
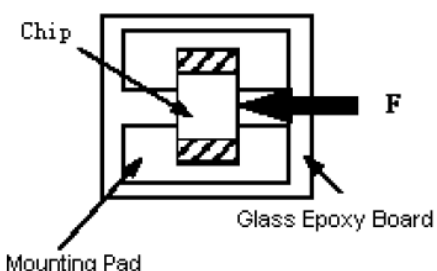


#### Stock period

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  $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$  and a relative humidity less than 70%RH

## SMD

### Environmental Characteristics

Item	Specification	Test Methods
Operating Temperature Range	-55°C ~ 125°C	Includes product surface temperature rise.
Bending Strength	No mechanical damage.	<p>Testing board : glass epoxy-resin substrate                      For 0,5mm/s compression speed,                      Curvature: 2mm, hold time 20±1s                      PCB thickness:1,6±0,2mm or 0,8±0,1mm</p> 
Vibration	No mechanical damage. Impedance change: within ±30%	<p>Amplitude modulation: 1,5 mm                      Test time: A period of 2h in each of 3 mutually perpendicular directions.                      Frequency range: 10Hz to 55Hz to 10Hz for 1min.</p>
Resistance to Soldering	At least 95% of terminal electrode should be covered with solder. No mechanical damage. Inductance: Impedance change: within ±30%	<p>Preheating temperature:120°C to 150°C                      Preheating time:60s                      Solder 96,5%Sn/3,0%Ag/0,5%Cu of the Sn solder                      Solder temperature:260±5°C                      Immersion tin depth:10mm                      Duration:10±1s                      Dip performance to a flux of about:3~5s</p>
Solderability	At least 95% of terminal electrode should be covered with solder.	<p>Preheating temperature:120°C to 150°C                      Preheating time:60s                      Solder 96,5%Sn/3,0%Ag/0,5%Cu of the Sn solder                      Solder temperature:245±5°C                      Immersion tin depth:10mm                      Duration:5±1s                      Dip performance to a flux of about:3~5s</p>
Adhesion of Electrode	The termination and body should be no damage.	<p>Applied force: 5N force for 0402 series; 7N force for 0603 series; 10N force for 0805, 1206 series; 15N force for 1210, 1808, 1812 series.                      Keep time: 10±1s.</p> 
Temperature Shock	No mechanical damage Impedance change: within ±30%	<p>Temperature: -55°C for 30±3min                      +125°C for 30±3min                      Number of cycles:100</p>

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## SMD

## Multilayer Chip Beads

		<p>A temperature profile diagram showing a cycle. It starts at 'Ambient' (indicated by a dashed horizontal line). The temperature drops to <math>-55\text{ }^{\circ}\text{C}</math> and is held for 30 min. It then returns to 'Ambient' within a maximum time of 3 min. The temperature then rises to <math>+125\text{ }^{\circ}\text{C}</math> and is held for 30 min. Finally, it returns to 'Ambient' within a maximum time of 3 min.</p>
Static Humidity		Temperature: $60\pm 2^{\circ}\text{C}$ Humidity: 90 ~ 95%RH Testing Time: 1000+24/-0hrs
High Temperature Resistance		Temperature: $125\pm 2^{\circ}\text{C}$ Testing Time: 1000+24/-0hrs
Low Temperature Resistance		Temperature: $-55\pm 2^{\circ}\text{C}$ Testing Time: 1000+24/-0hrs
High Temperature Load		Impose current: at room Testing Time: 1000+24/-0hrs Temperature: $85\pm 2^{\circ}\text{C}$

FrelTec



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