FrelTec GmbH

Mathildenstr. 10A
82319 Starnberg
Germany

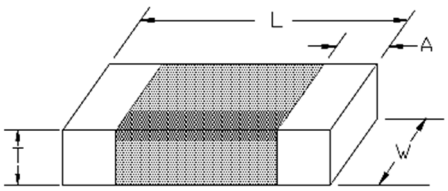
SMD Inductors
Beads for Power Lines

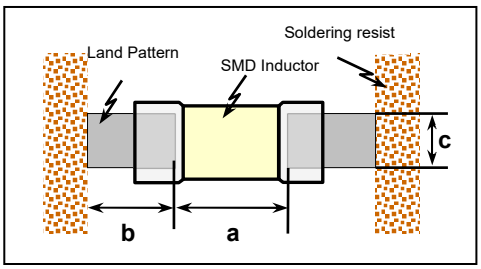
Part Number

15P	02*	151*	S	M	T10*	5
Type	Size	Impedance	Specificat-ion	Tolerance	Packing	Thick-ness
15P : SMD Inductor Bead for Power Lines	02 : 0402 1,0x0,5mm	The value is given in Ohm. First two digits are significant The last digit is the multiplier which denotes the number of zero following	S: Standard Type	Q: ±25%	E03: Embossed plastic type and reel. For 3k pc available for 1206 (7”reel)	5: 0,5 mm
	03 : 0603 1,6x0,8mm		R: Low DRC		T04: Tape paper and reel. For 4k pc available for 0603, 0805 (7”reel)	8: 0,8 mm
	05 : 0805 2,0x1,2mm	Example: 670 : 67Ohm 371 : 370Ohm 222 : 2200 Ohm	G: for GHz Band			9: 0,9 mm
	06 : 1206 3,2x1,6mm				T10: Tape paper and reel. For 10k pc available for 0402 (7”reel)	B: 1,1 mm

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

Dimensions and land pattern:





Series	L	W	A (Min/Max)	Recommended Pad Dimensions			
				L x W	a	b	c
0402	1,00 ± 0,10	0,50 ± 0,10	0,25 ± 0,15	1,0 x 0,5	0,3 to 0,5	0,35 to 0,45	0,4 to 0,5
0603	1,60 ± 0,20	0,80 ± 0,20	0,30 ± 0,20	1,6 x 0,8	0,7 to 1,0	0,6 to 0,8	0,7 to 0,8
0805	2,00 ± 0,20	1,20 ± 0,20	0,50 ± 0,30	2,0 x 1,2	1,0 to 1,3	0,7 to 0,9	1,0 to 1,2
1206	3,20 ± 0,20	1,60 ± 0,20	0,50 ± 0,30	3,2 x 1,6	2,1 to 2,5	1,0 to 1,2	1,3 to 1,6

in mm

SMD Beads for Power Lines

Characteristic

Size	Thickness(mm)		Impedance(Ω)		Impedance Tolerance %	DC Resistance mΩ(Max)	Rated Current mA(Max)	Measuring
	Max.	Tol.	Value	3-Digital				
0402	0,50	±0,03	10	100	±25%	30,0	2,000	100MHz/0.5V
			30	300		35,0	2,200	
			60	600		60,0	1,700	
			70	700		90,0	1,200	
			80	800		70,0	1,500	
			100	101		90,0	1,200	
			180	181		90,0	1,200	
0402	0,50	±0,03	120	121		55,0	2,000	
0603	0,80	±0,20	19	190		40,0	3,000	
			22	220		40,0	3,000	
			30	300		30,0	3,000	
			31	310		40,0	3,000	
			33	330		25,0	3,000	
			50	500		40,0	3,000	
			60	600		40,0	3,000	
			70	700		40,0	3,000	
			80	800		40,0	3,000	
			100	101		40,0	3,000	
			120	121		40,0	3,000	
			150	151		40,0	3,000	
			180	181		90,0	1,500	
			220	221		50,0	3,000	
			300	301		90,0	2,000	
			330	331		80	1,700	
			600	601		200,0	1,000	
			1000	102		200,0	1,000	
0603	0,08	±0,15	7	070		25,0	4,000	
			22	220		8,0	6,000	
			26	260		7,0	6,000	
			30	300		10,0	5,000	
			33	330		8,0	6,000	
			60	600		20,0	3,500	
			100	101		10,0	6,000	
0805	0,90	±0,20	7	070		8,0	6,000	
			11	110		8,0	6,000	
			22	220		8,0	6,000	
			30	300		8,0	6,000	
			50	500		20,0	4,000	
			60	600		15,0	5,000	
			80	800		10,0	5,000	
			100	800		40,0	3,000	
			120	121		20,0	4,000	
			180	181		50,0	3,000	
			220	221		50,0	3,000	
			300	301		40,0	3,000	
			330	331		50,0	3,000	
			470	471		100,0	2,000	
			600	601		100,0	2,000	

SMD Beads for Power Lines

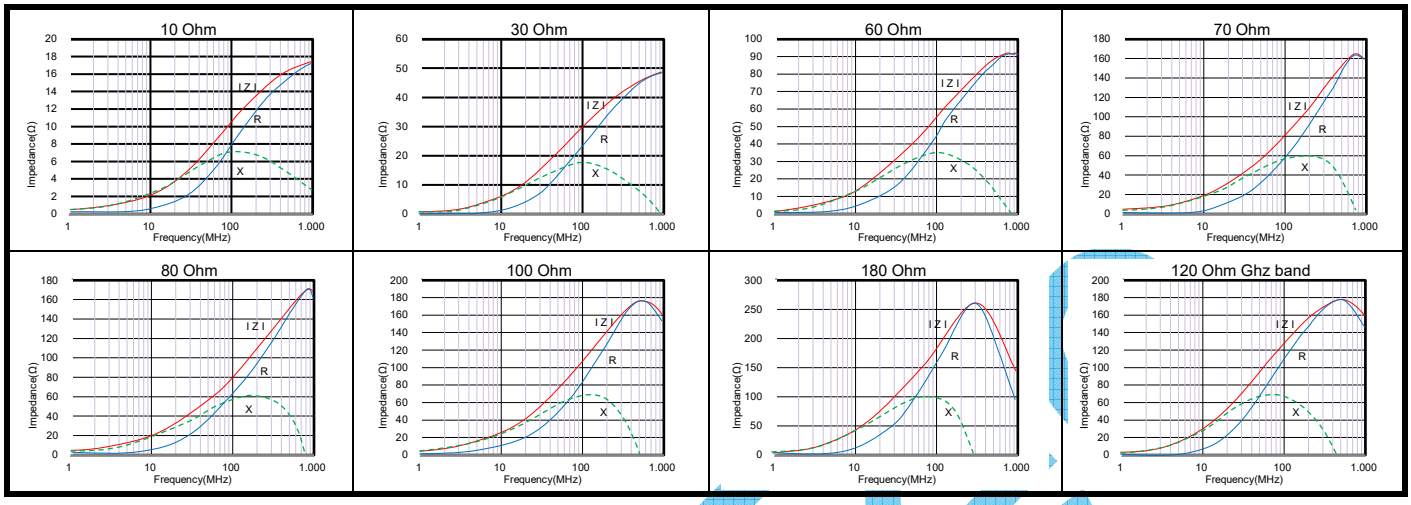
Size	Thickness(mm)		Impedance(Ω)		Impedance Tolerance %	DC Resistance mΩ(Max)	Rated Current mA(Max)	Measuring
	Max.	Tol.	Value	3-Digital				
			750	751		300,0	1,000	
			1000	102		300,0	1,000	
			1200	122		300,0	1,000	
			1500	152		300,0	1,000	
1206	1,10	±0,20	19	190		6,0	6,000	
			26	260		6,0	6,000	
			30	300		6,0	6,000	
			31	310		6,0	6,000	
			33	330		6,0	6,000	
			52	520		8,0	6,000	
			60	600		10,0	6,000	
			80	800		20,0	4,000	
			120	121		25,0	6,000	
			150	151		120,0	3,000	
			180	181		50,0	3,000	
			200	201		50,0	3,000	
			220	221		50,0	3,000	
			300	301		60,0	3,000	
			500	501		60,0	3,000	
			600	601		60,0	3,000	
			1000	102		30,0	1,000	

OPERATING TEMPERATURE RANGE: -55°C TO +125°C

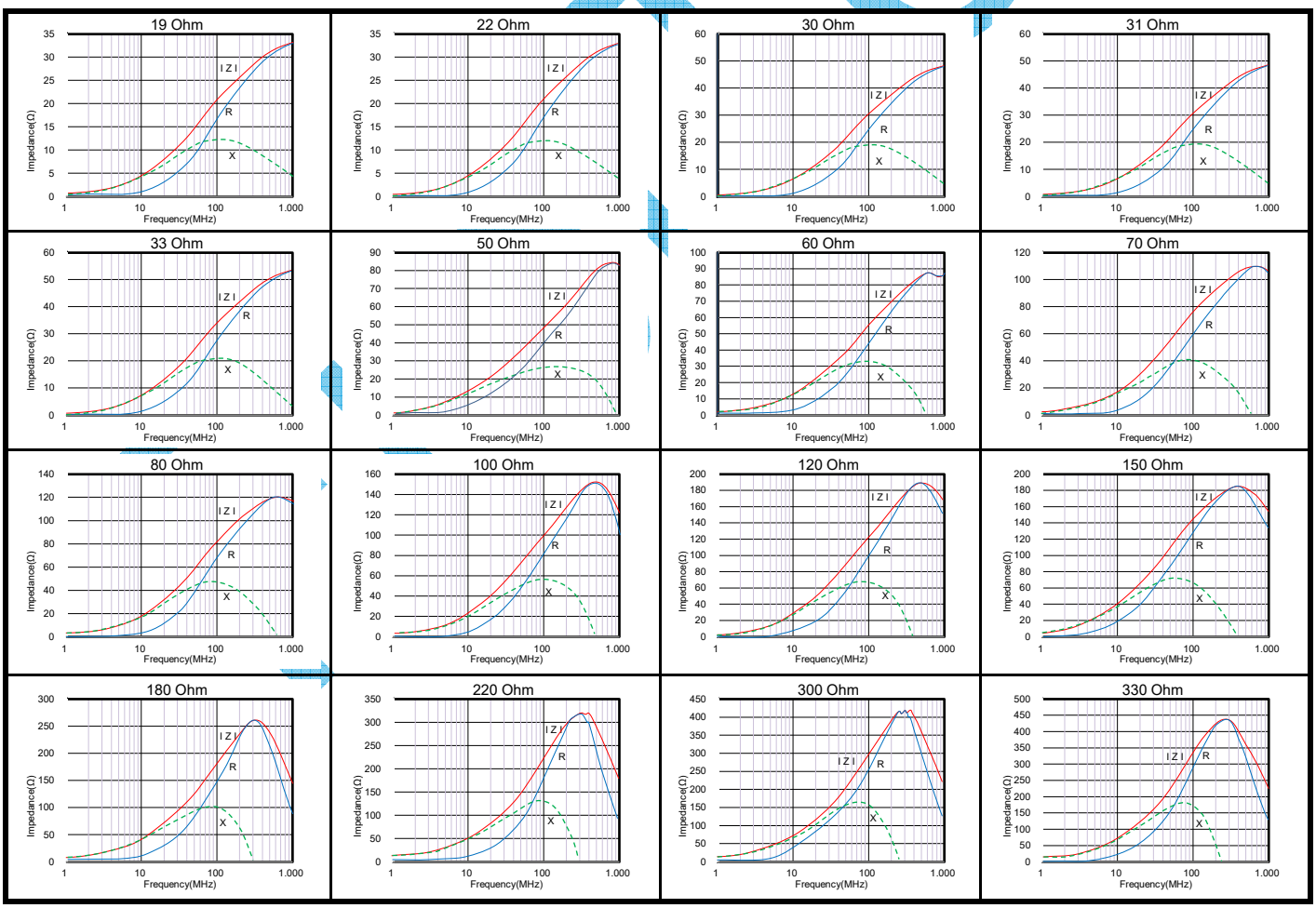
SMD Beads for Power Lines

Typical Electrical Characteristics (Impedance Vs Frequency)

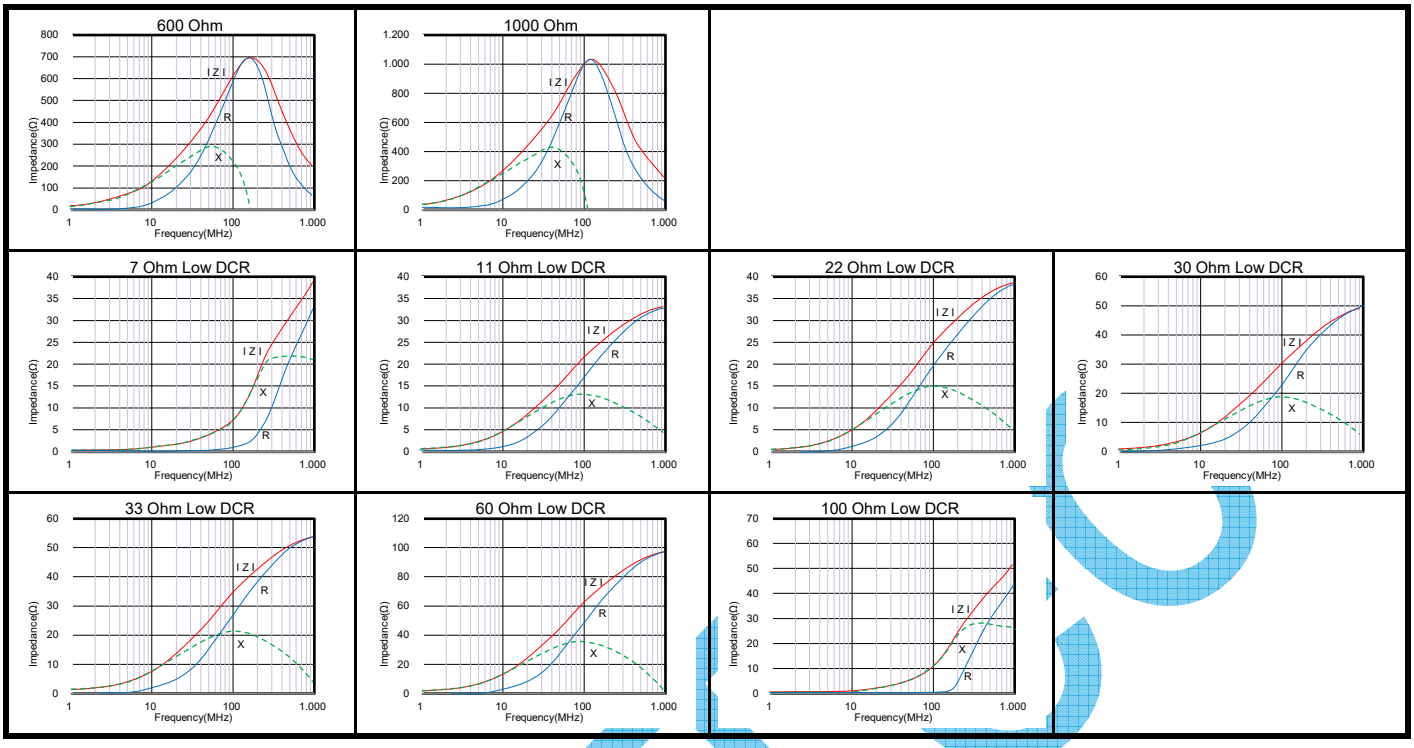
0402



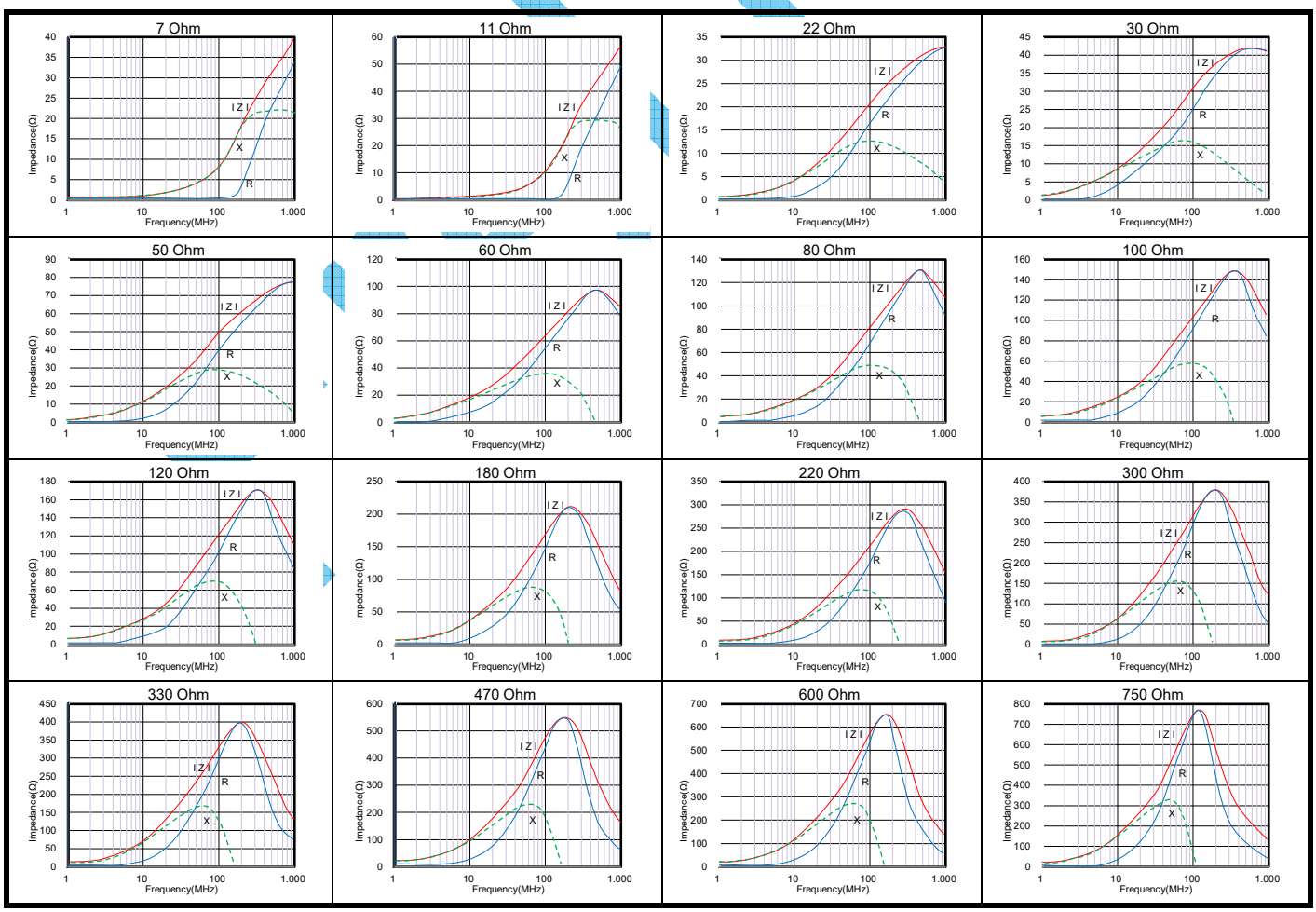
0603



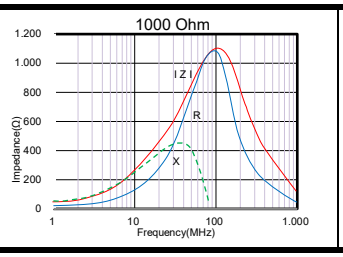
SMD Beads for Power Lines

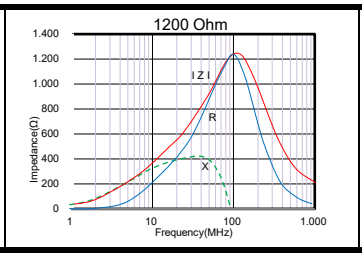


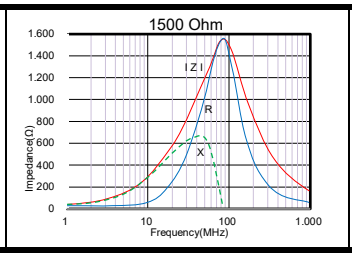
0805



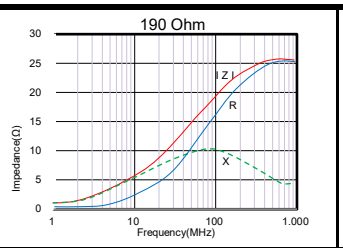
SMD Beads for Power Lines

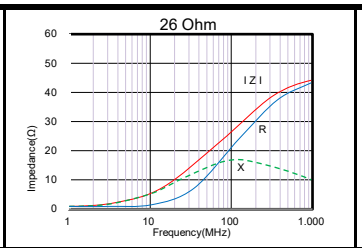


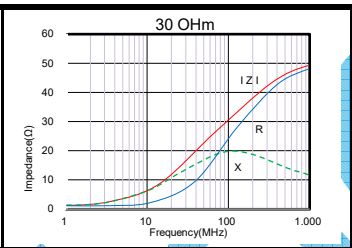


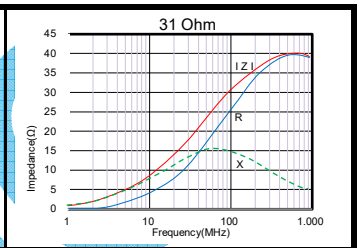


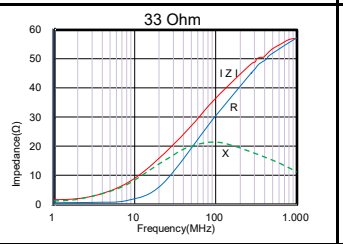
1206

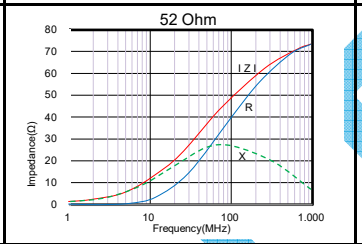


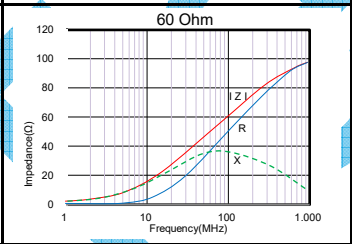


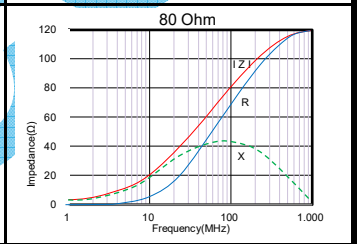


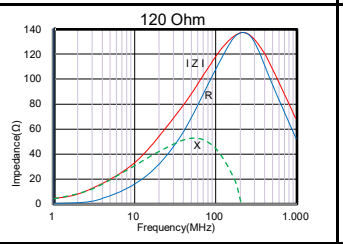


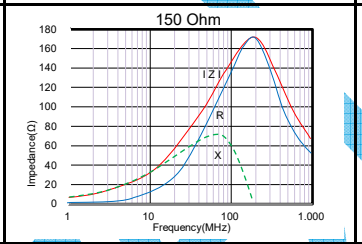


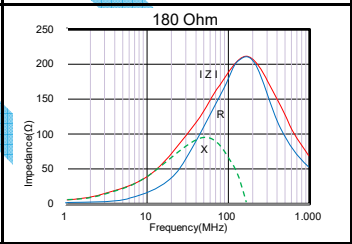


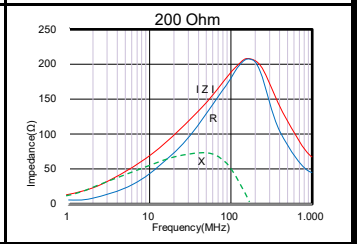


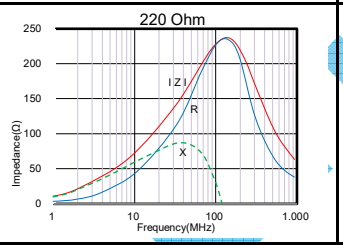


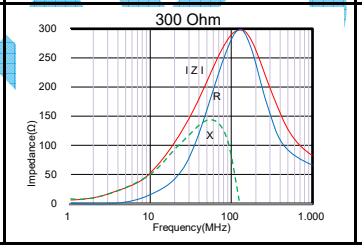


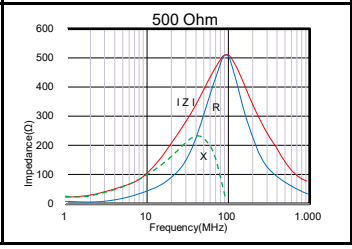


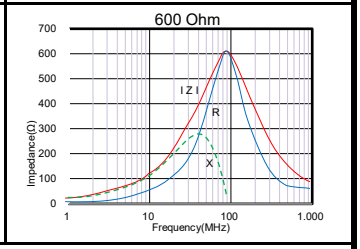


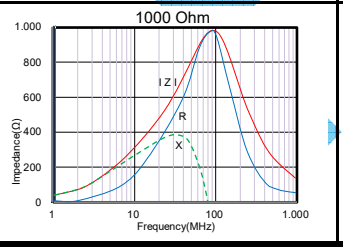






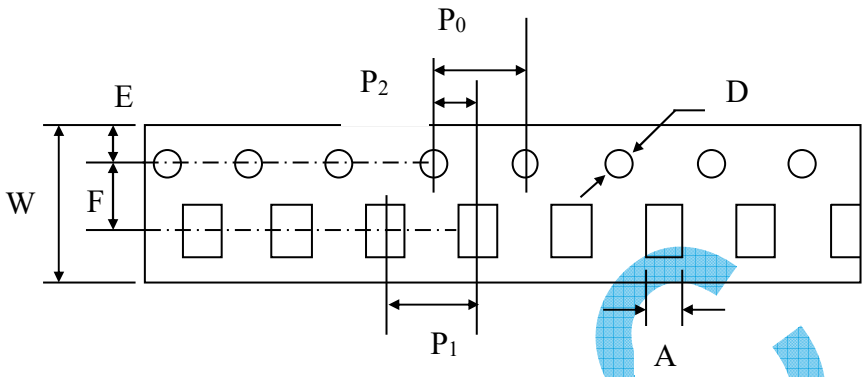




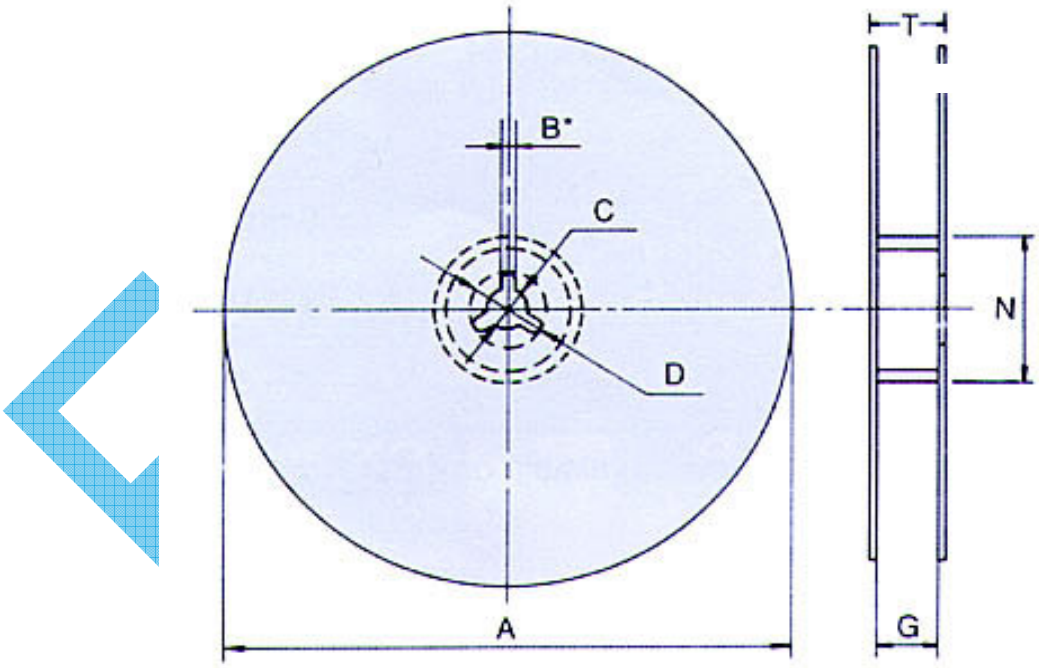


SPECIFICATION

Tape And Reel Package



Size	W	P_1	F	A	E	P_2	P_0	D
0402	8,00 ± 0,10	4,00 ± 0,10	3,50 ± 0,05	0,62 ± 0,03	1,12 ±0,03	2,00 ± 0,05	2,00 ± 0,05	1,55 ± 0,05
0603	8,00 ± 0,10	4,00 ± 0,10	3,50 ± 0,10	1,05 ± 0,05	1,85 ± 0,05	2,00 ± 0,10	4,00 ± 0,10	1,56 ± 0,10
0805	8,00 ± 0,10	4,00 ± 0,10	3,50 ± 0,10	1,50 ± 0,05	2,30 ± 0,05	2,00 ± 0,10	4,00 ± 0,10	1,56 ± 0,10
1206	7,90~8,30	4,00 ± 0,10	3,50 ± 0,10	1,85 ± 0,10	3,43 ± 0,10	2,00 ± 0,05	4,00 ± 0,10	1,55 ± 0,05



Symbol		A	N	C	D	G	T
Dimension	Paper Tape	178±2	75	13,0±0,8	21,0±0,8	5,0	8
	Embossed Tape					10,0	12,5

in mm

Stock period

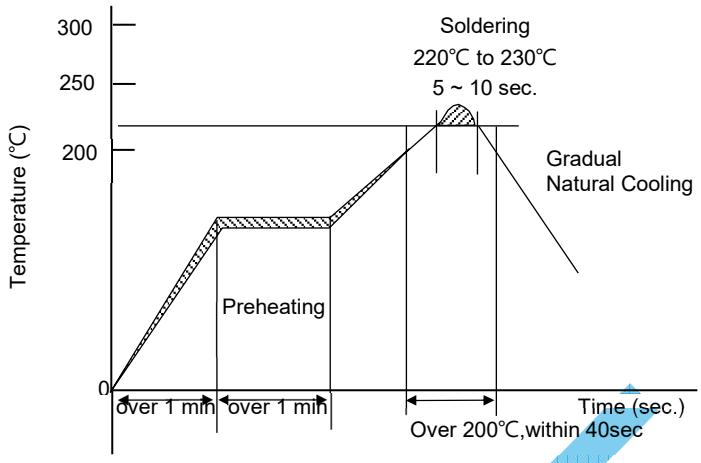
The performance of these products, including the solderability, is guaranteed for 12 months after production date code, provided that they remain packed as they were when delivered and stored at a temperature of 5°C to 35°C and a relative humidity less than 45 to 70%RH

Handling:

Keep the products away from all magnets and magnetic objects.
Be careful not to subject the products to excessive mechanical shocks.
Please avoid applying impact to the products after mounted on pc board.
Avoid ultrasonic cleaning
The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to dust or harmful gas (hydrogen chloride,sulfurous acid gas or hydrogen sulfide).
Packaging material may be deformed if packages are stored where they are exposed to heat or direct sun－light.

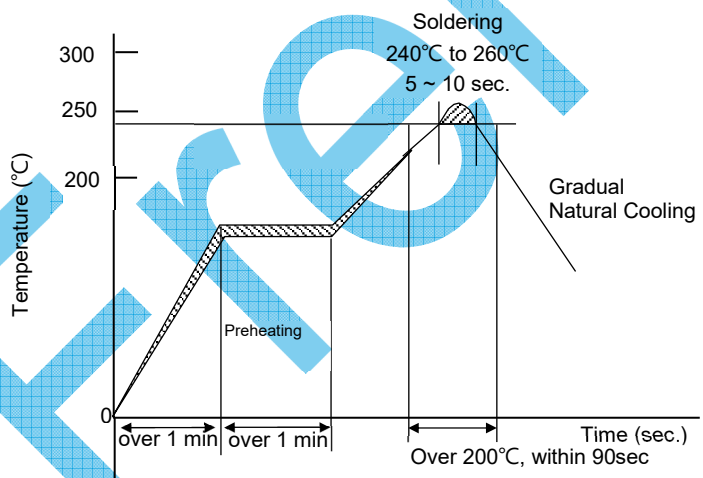
Soldering profile for SMT process with SNPB solder paste

The rate of preheat should not exceed 4°C/sec and a target of 2°C/sec is preferred. Ceramic chip components should be preheated to within 100 to 130°C of the soldering.

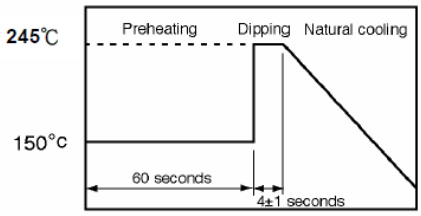
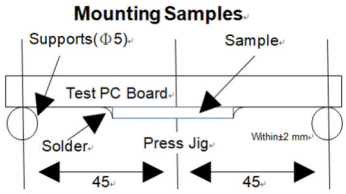
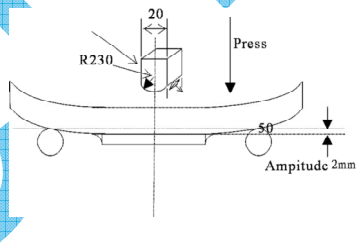
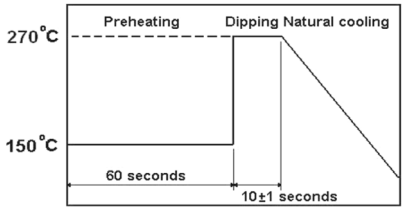
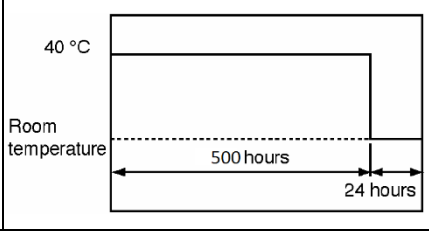


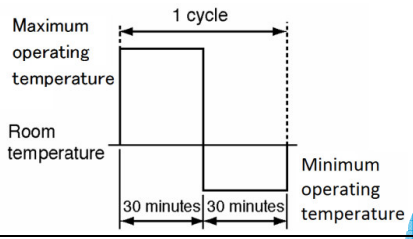
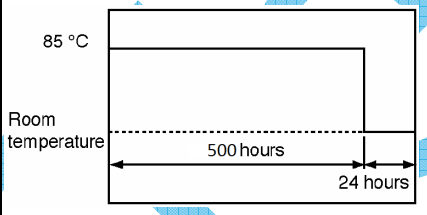
Soldering profile for SMT process with lead free solder paste.

The rate of preheat should not exceed 4°C/sec and a target of 2°C/sec is preferred. Ceramic chip components should be preheated to within 100 to 130°C of the soldering.



Test Conditions and Requirements

Item	Test Condition	Requirements
Appearance	Ferrite Beads shall be visually inspected for visible evidence of defect.	In accordance with specification.
Impedance	Measuring frequency : 100 ± 1MHz Applied Voltage : 500 mV Measuring equipment and fixture : 1005 : HP4291B + 16193A 1608 : HP4291B + 16192A 2012 : HP4291A + 16092A 3216 : HP4291A + 16092A	Within specified tolerance.
DC Resistance	a. Temperature: 25±3°C b. Relative Humidity: 45~75%RH c. Measuring equipment: HP 4338	In accordance with electrical specification.
Dimension	Dimension shall be measured with caliper or micrometer	In accordance with dimension specification.
Solder-ability	Preheat: 150°C,60 seconds Solder temperature:245±5°C Flux: Rosin Dip time: 4 ± 1 seconds 	More than 75% of the terminal electrode part shall be covered with new solder.
Bending Strength	Solder the chip to test jig then apply a force in the direction shown in below. The soldering shall be done with the reflow method and shall be conducted with care so that the soldering is uniform and free of defects such as heat shock.  	No mechanical damage shall be observed.
Resistance to Soldering Heat	Preheat: 150°C, 60 seconds Solder temperature: 270±5°C Flux: Rosin Dip time: 10 ± 1 seconds 	The chip shall not be cracks. More than 75% of terminal electrode shall be covered with solder.
High Humidity Load Life Test	Humidity: 90 to 95% RH. Temperature: 40±2°C Testing time: 500 ± 12 hours 	No visible damage. Impedance: Within ± 30% of the initial value.

Item	Test Condition		Requirements
	Recovery: 2 to 3 hrs of recovery under the standard condition after the removal from test chamber. Measurement: After placing for 24 ± 2 hours min.		
Thermal Shock	Temperature: Maximum and Minimum , kept stabilized for 30±3 minutes each Cycle: 5 cycles		No visible damage Impedance: Within ± 30% of the initial value.
	Measurement：After placing for 24 ± 2 hours min.		
High Temperature Load	Temperature: 85±3°C 0603 125±3°C Testing time: 500±12 hours		No visible damage. Impedance: Within ± 30% of the initial value.
	Recovey: 2 to 3 hrs of recovery under the standard condition after the removal from test chamber. Measurement：After placing for 24 ± 2 hours min.		

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