

FrelTec GmbH

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SMD Inductors Beads for High Speed Signal Lines

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SMD Beads for High Speed Signal Lines

SPECIFICATION

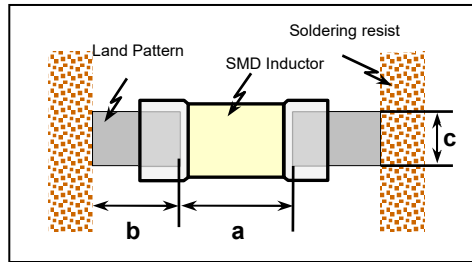
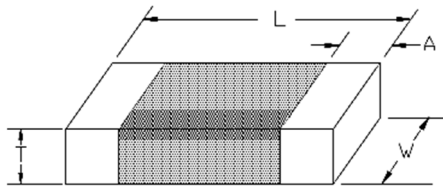
Part Number

| 15H | 02* | 151* | S | M | T10* | 5 |
|---|------------------------|---|---------------------|-----------|--|------------|
| Type | Size | Impedance | Specificat- ion | Tolerance | Packing | Thick-ness |
| 15H : SMD Inductor Bead for High Speed Signal 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% | T04: Tape paper and reel. For 4k pc available for 0603 (7"reel) | 5: 0,5 mm |
| | 03 : 0603 1,6x0,8mm | | | | | 8: 0,8 mm |
| | 05 : 0805 2,0x1,2mm | Example: 670 : 670Ohm 371 : 370Ohm 222 : 2200 Ohm | | | T10: Tape paper and reel. For 10k pc available for 0402 (7"reel) | |
| | 06 : 1206 3,2x1,6mm | | | | | |

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

SMD

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 |

in mm

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Beads for High Speed Signal Lines

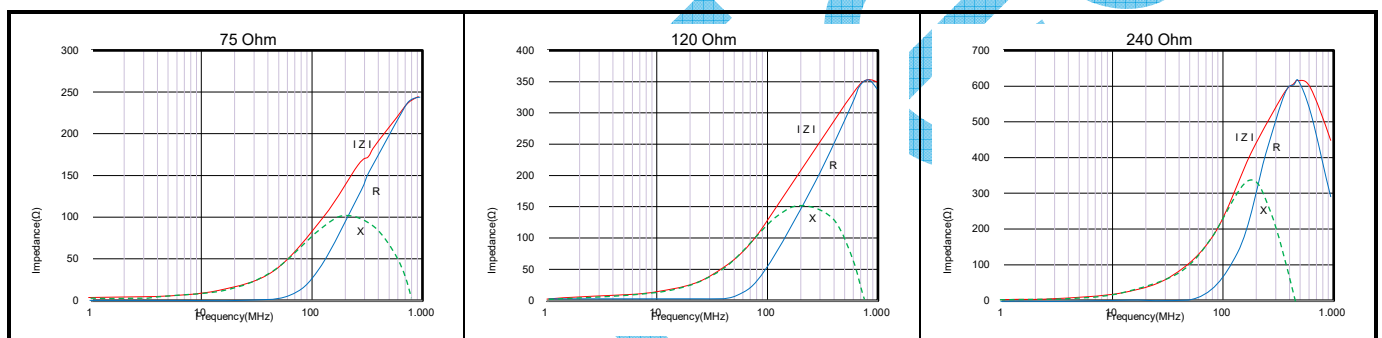
SMD Characteristic

| Size | Thickness(mm) | | Impedance(Ω) | | Impedance Tolerance % | DC Resistance $m\Omega$ (Max) | Rated Current mA (Max) | Measuring |
|------|---------------|------------|-----------------------|-----------|-----------------------|-------------------------------|------------------------|-------------|
| | Max. | Tol. | Value | 3-Digital | | | | |
| 0402 | 0,50 | $\pm 0,10$ | 75 | 750 | $\pm 25\%$ | 180.0 | 350 | 100MHz/0,5V |
| | | | 120 | 121 | | 180.0 | 300 | |
| | | | 240 | 241 | | 300.0 | 400 | |
| 0603 | 0,80 | $\pm 0,15$ | 120 | 121 | | 300.0 | 500 | |
| | | | 470 | 471 | | 550.0 | 200 | |
| | | | 2200 | 222 | | 1500.0 | 50 | |

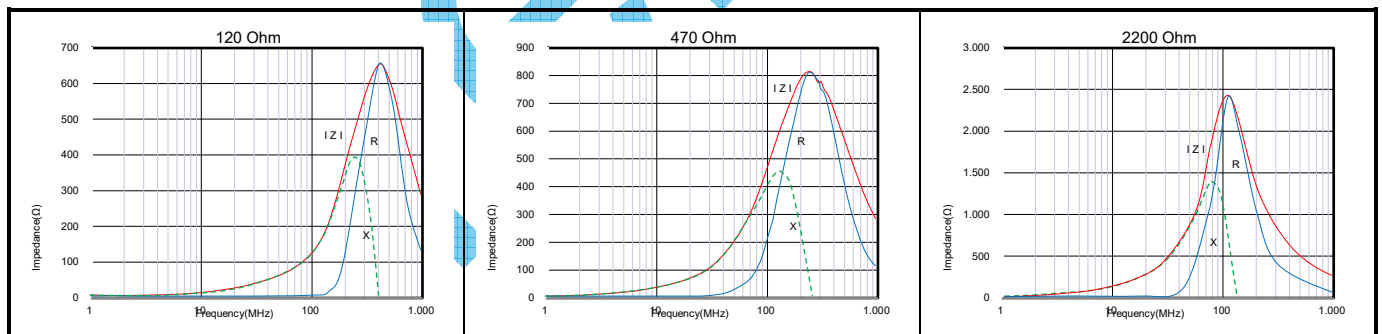
OPERATING TEMPERATURE RANGE: -55°C TO $+125^{\circ}\text{C}$

Typical Electrical Characteristics (Impedance Vs Frequency)

0402



0603

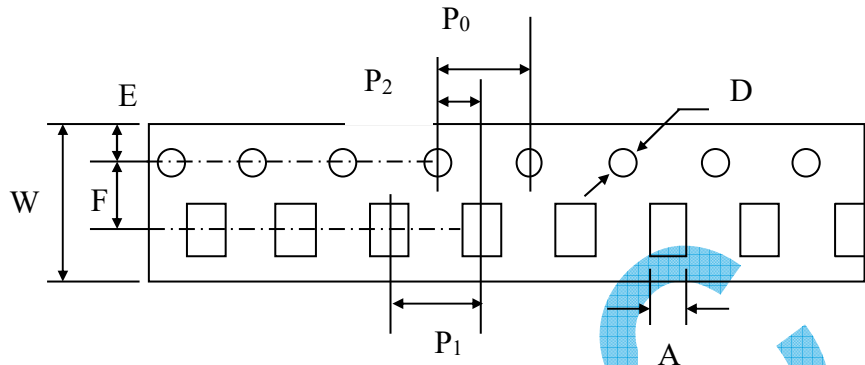


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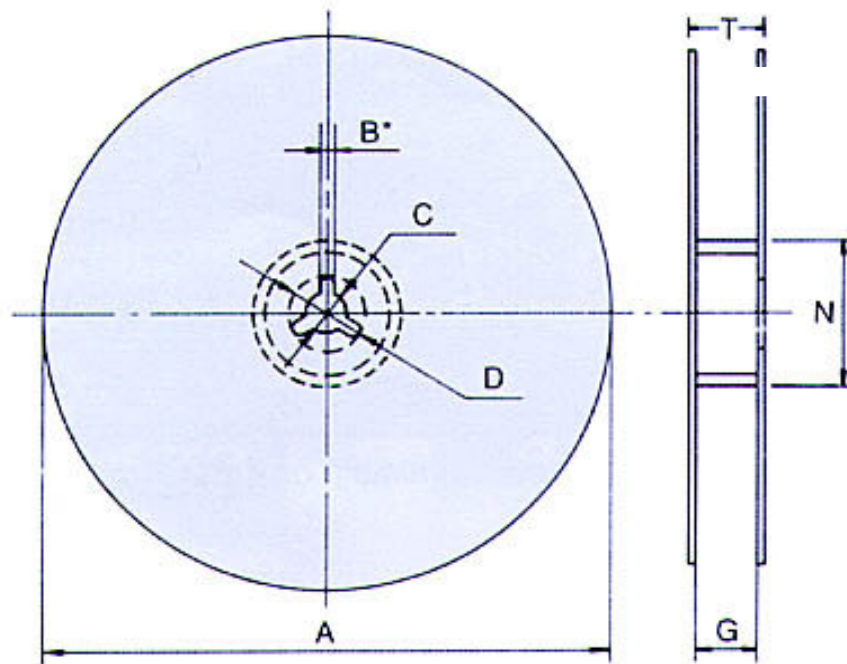
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SPECIFICATION

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 |



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

in mm

10/18/2023

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Please read cautions and warnings and important notes at the end of this document.

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Beads for High Speed Signal Lines

SMD

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

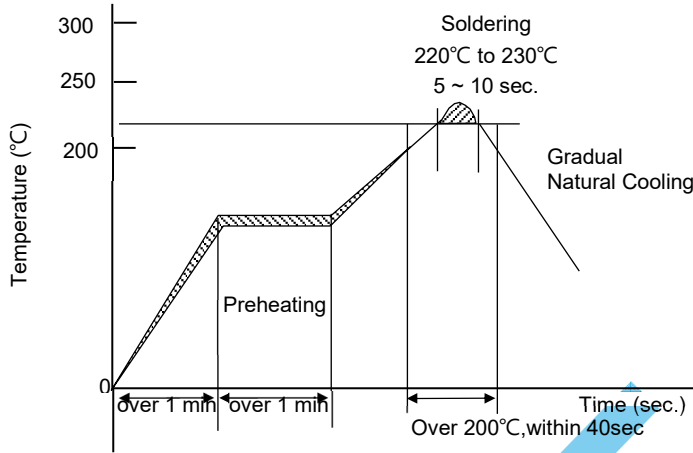
The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to dust or harmful gas (hydrogen chloride, sulfurous acid gas or hydrogen sulfide).

Packaging material may be deformed if packages are stored where they are exposed to heat or direct sun—light.

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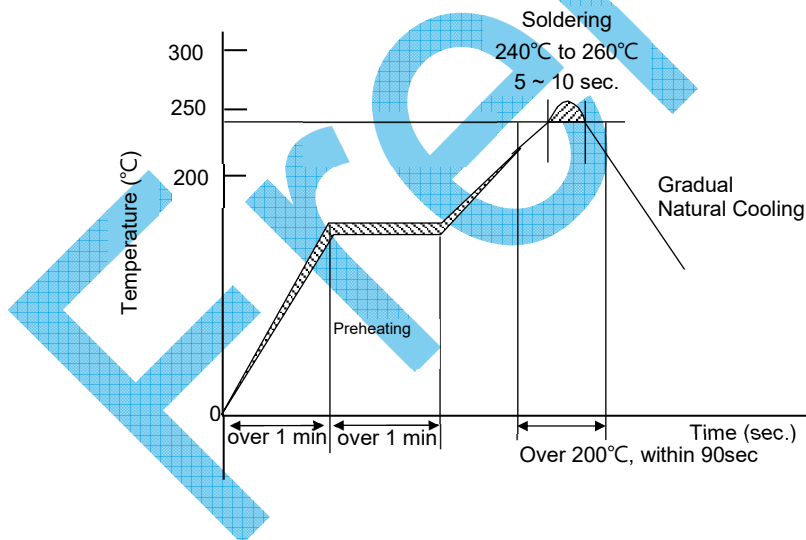
Soldering profile for SMT process with SNPB solder paste

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.



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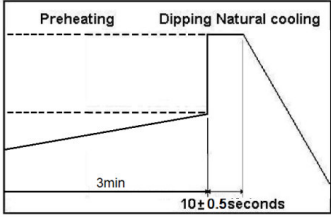
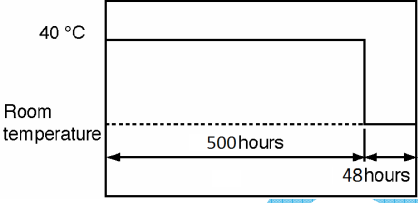
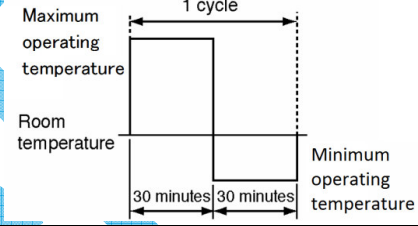
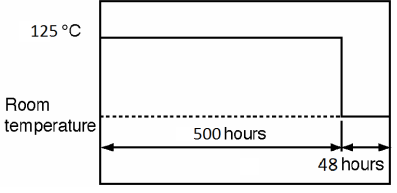
SMD Beads for High Speed Signal Lines

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 | | 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 | Preheating temperature: 150 to 180°C Preheating time: 3 min. Preheat: 150°C,60 seconds Solder temperature: 260±5°C Flux: Rosin Dip time: 10±0,5 seconds | | The chip shall not be cracks. More than 75% of terminal electrode shall be covered with solder. |

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SMD Beads for High Speed Signal Lines

| Item | Test Condition | | Requirements |
|---------------------------------|---|--|---|
| | Preheating temperature : 150 to 180°C Preheating time: 3 min. Preheat : 150°C, 60 seconds Solder temperature : 260±5°C Flux : Rosin Dip time: 10 ± 0,5 seconds |  | |
| High Humidity Load Life Test | Humidity: 90 to 95% RH. Temperature: 40±2°C Recovery: 2 to 3 hrs of recovery under the standard condition after the removal from test chamber. Measurement: After placing for 48 ± 2 hours min. |  | No visible damage. Impedance: Within ± 30% of the initial value. |
| Thermal Shock | Temperature: Maximum and Minimum , kept stabilized for 30±3 minutes each Cycle: 5 cycles Measurement : After placing for 48 ± 2 hours min. |  | No visible damage Impedance: Within ± 30% of the initial value. |
| High Temperature Load | Temperature: 125±3°C Testing time: 500+24-0 hours Recovery: 2 to 3 hrs of recovery under the standard condition after the removal from test chamber. Measurement : After placing for 48 ± 2 hours min. |  | No visible damage. Impedance: Within ± 30% of the initial value. |

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