

Specification for Approval

Date: 2021/06/11

Customer : IBS

ChanDa P/N: HWF0603LS-15NJ

CUSTOMER P/N: LQW18CN15NJ00#

DESCRIPTION: _____

QUANTITY : 50 PCS

REMARK:

Customer Approval Feedback

■ **深圳市成达宝藏电子有限公司**

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Sales Dept

| APPROVED | CHECKED |
|----------|---------|
| Ricky | Alice |

R&D Center

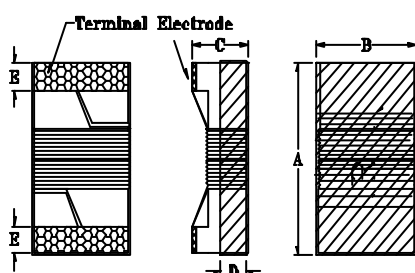
| APPROVED | CHECKED | DRAWING |
|----------|---------|---------|
| 程志华 | 程志华 | 黄小香 |

Winding Type Chip Inductor

1. Features

1. Ferrite core wire wound construction.
2. High Reliability due to wire wound type construction.
3. Small footprint as well as low profile.
4. Application for Signal se.

2. Dimensions



| Size | A | B | C | D | E |
|---------|---------|----------|-----------|-----------|----------|
| HWF0603 | 1.80max | 1.20 max | 1.02 max. | 0.38 ref. | 0.35± 0. |

nit:mm

3. Part Numbering

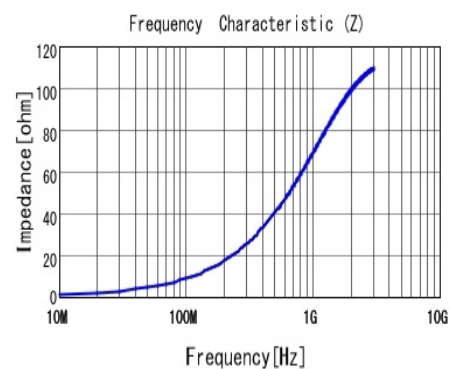
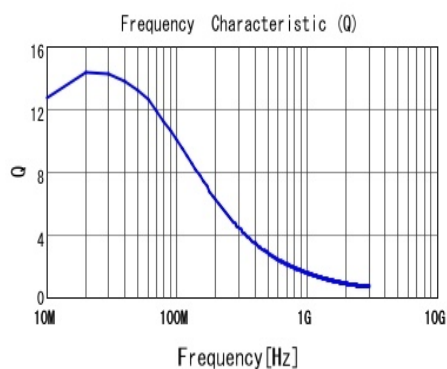
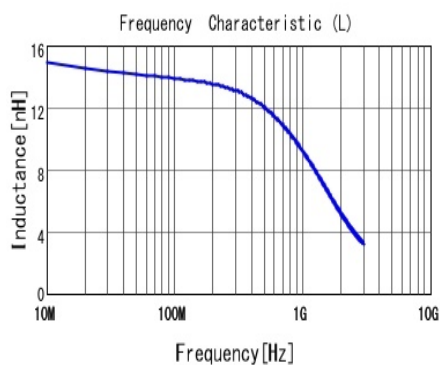
| | | | | | | | |
|------------|-------------|----------|----------|---|-----------|----------|----------|
| HWF | 0603 | L | S | - | 15 | N | J |
| A | B | C | D | | E | F | G |

A: Series
 B: imension
 C: Application
 : Lead free type
 E: Inductance
 F: Inductance Tolerance
 : ± 5%

L x W
 For Signal se
 15 15nH

4.Specification

| CHAN DA Part Number | Inductance (nH) | Tolerance | Test Frequency (Hz) | Q Min. | Test Frequency (MHz) | Rated Current (mA) max. | DCR () max. | SRF (MHz) min. |
|------------------------|--------------------|-----------|------------------------|-----------|-------------------------|----------------------------|-----------------|-------------------|
| HWF0603LS-15N | 15.0 | | 0.1 /10 | 15 | 10 | 2200 | 0.025 | 2000 |



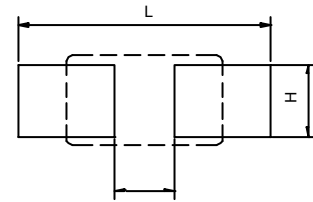
5. Reliability and Test Condition

| Item | Performance | Test Condition | | | | | | | | |
|------------------------------------|---|---|------|---------------------------------|-------------|---|-------------|------------|---|-------------|
| Electrical Performance Test | | | | | | | | | | |
| Inductance L | Refer to standard electrical characteristic list | HP42 1A HP4287A | | | | | | | | |
| Q | | | | | | | | | | |
| SRF | | HP42 1A | | | | | | | | |
| DC Resistance | | HP4338B Chroma 16502 | | | | | | | | |
| Rated Current | | Applied the current to coils the inductance change shall be less than 10% to initial value temperature rise shall not be more than 15°C. | | | | | | | | |
| Temperature Rise Test | 20°C A (t) | 1.Applied the allowed C current for 10 mins. 2.Temperature measure by digital surface thermometer. | | | | | | | | |
| Mechanical Performance Test | | | | | | | | | | |
| Resistance to Soldering Heat | 1. Inductors shall be no evidence of electrical and mechanical damage. 2. Inductance shall not change more than $\pm 10\%$. 3. shall not change more than $\pm 20\%$. | Temp.: 260 $\pm 5^\circ\text{C}$ Time: 10 ± 1.0 Sec | | | | | | | | |
| Solderability Test | The terminal shall be at least 0% covered with solder. | After fluxing inductor shall be dipped in a melted solder bath at 232 $\pm 5^\circ\text{C}$ for 5 Sec. | | | | | | | | |
| Reliability Test | | | | | | | | | | |
| Humidity Test | 1. Inductors shall be no evidence of electrical and mechanical damage. 2. Inductance shall not change more than $\pm 10\%$. 3. shall not change more than $\pm 20\%$ | 1. Temperature: 85 $\pm 2^\circ\text{C}$ 2. R.H.: 0- 5% 3. Time: 24 ± 2 Hours | | | | | | | | |
| Thermal Shock Test | | Conditions of 1 cycle <table border="1"> <thead> <tr> <th>Step</th><th>Temperature($^\circ\text{C}$)</th><th>Times(min.)</th></tr> </thead> <tbody> <tr> <td>1</td><td>-40± 5</td><td>30± 3</td></tr> <tr> <td>2</td><td>125± 5</td><td>30± 3</td></tr> </tbody> </table> Total: 10 cycles | Step | Temperature($^\circ\text{C}$) | Times(min.) | 1 | -40 ± 5 | 30 ± 3 | 2 | 125 ± 5 |
| Step | Temperature($^\circ\text{C}$) | Times(min.) | | | | | | | | |
| 1 | -40 ± 5 | 30 ± 3 | | | | | | | | |
| 2 | 125 ± 5 | 30 ± 3 | | | | | | | | |
| High Temperature Load Life Test | Inductors shall be no evidence of short or open circuit. | 1. Temp.: 85 $\pm 2^\circ\text{C}$ 2. Time: 500 ± 12 Hours 3. Load: Allowed C current | | | | | | | | |
| Humidity Load Life | | 1. Temp: 40 $\pm 2^\circ\text{C}$ 2. R.H.: 0- 5% 3. Time: 500 ± 12 Hours 4. Load: Allowed C current | | | | | | | | |
| Low temperature storage test | 1. Appearance : no damage 2. Inductance shall not change more than $\pm 10\%$. 3. : within $\pm 20\%$ of initial value | 1. Temperature: -40 $\pm 2^\circ\text{C}$ 2. Applied current : rated current 3. uration : 1000 ± 12 hrs 4. easured at room temperature after Placing for 2to 3hrs. | | | | | | | | |

6. Soldering and Mounting

6-1. Recommended PC Board Pattern

| Chip size | | | | | | | Land Patterns For Reflow Soldering | | |
|-----------|------|---------|---------|---------|----------|----------|------------------------------------|-------|-------|
| Series | Type | A(mm) | B(mm) | C(mm) | D(mm) | E(mm) | L(mm) | G(mm) | H(mm) |
| HWF | 0603 | 1.80max | 1.20max | 1.02max | 0.38ref. | 0.35±0.1 | 1.2 | 0.64 | 1.02 |



PC board should be designed so that products are not sufficient under mechanical stress as warping the board. Products shall be positioned in the sideways direction against the mechanical stress to prevent failure.

6-2. Soldering

Highly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder chip and substrate. CHAN A terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided the preferred technique is the utilization of hot air soldering tools.

6-2.1 Lead Free Solder re-flow:

Recommended temperature profiles for lead free re-flow soldering in Figure 1.

6-2.2 Solder Wave:

Wave soldering is perhaps the most rigorous of surface mount soldering processes due to the steep rise in temperature seen by the circuit when immersed in the molten solder wave typical at 240°C. Due to the risk of thermal damage to products wave soldering of large size products is discouraged. Recommended temperature profile for wave soldering is shown in Figure 2.

6-2.3 Soldering Iron(Figure 3):

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- Note
- Preheat circuit and products to 150°C
 - Never contact the ceramic with the iron tip
 - Use a 20 watt soldering iron with tip diameter of 1.0mm
 - 280°C tip temperature (max)
 - 1.0mm tip diameter (max)
 - Limit soldering time to 3 sec.

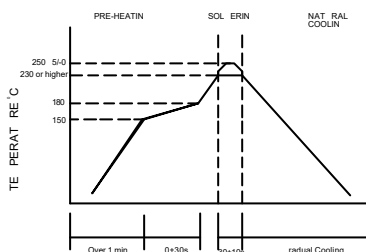


Figure 1. Re-flow Soldering (Lead Free)

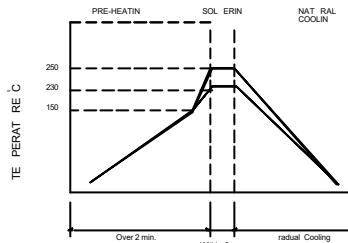


Figure 2. Wave Soldering

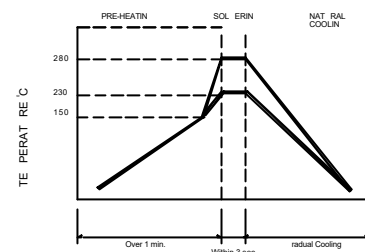
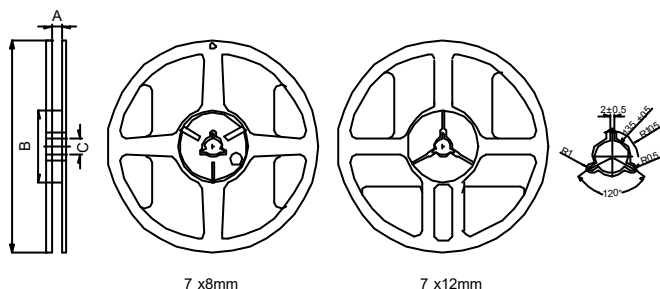


Figure 3. Hand Soldering

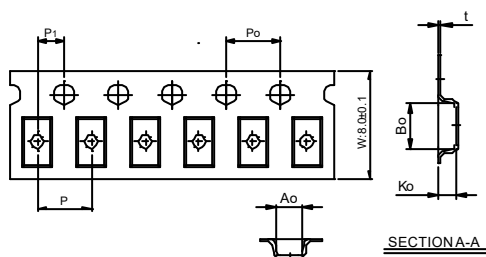
7. Packaging Information

7-1. Reel Dimension



| Type | A(mm) | B(mm) | C(mm) | D(mm) |
|----------|---------|-------|----------|-------|
| 7" x 8mm | 8.4±0.5 | 60±2 | 13.5±0.5 | 178±2 |

7-2. Tape Dimension / 8mm

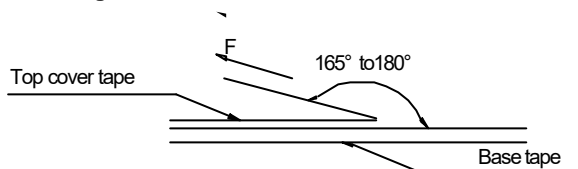


| Series | Size | P(mm) | Po(mm) | P1(mm) | Bo(mm) | Ao(mm) | Ko(mm) | t(mm) |
|--------|------|---------|---------|---------|----------|-----------|-----------|-----------|
| HWF | 0603 | 4.0±0.1 | 4.0±0.1 | 2.0±0.1 | 1.8±0.10 | 1.60±0.10 | 1.25±0.10 | 0.23±0.05 |

7-3. Packaging Quantity

| | |
|-------------|---------|
| HWF | 0603 |
| Chip / Reel | 4000 |
| Reel Size | 7"x 8mm |

7-4. Tearing Off Force



The force for tearing off cover tape is 15 to 60 grams in the arrow direction under the following conditions.

| Room Temp. (°C) | Room Humidity (%) | Room atm (hPa) | Tearing Speed mm/min |
|--------------------|----------------------|-------------------|-------------------------|
| 5~35 | 45~85 | 860~1060 | 300 |

Application Notice

• Storage Conditions

To maintain the solderability of terminal electrodes:

1. Temperature and humidity conditions: Less than 40°C and 70% RH.
2. Recommended products should be used within 6 months from the time of delivery.
3. The packaging material should be kept where no chlorine or sulfur exists in the air.

• Transportation

1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.