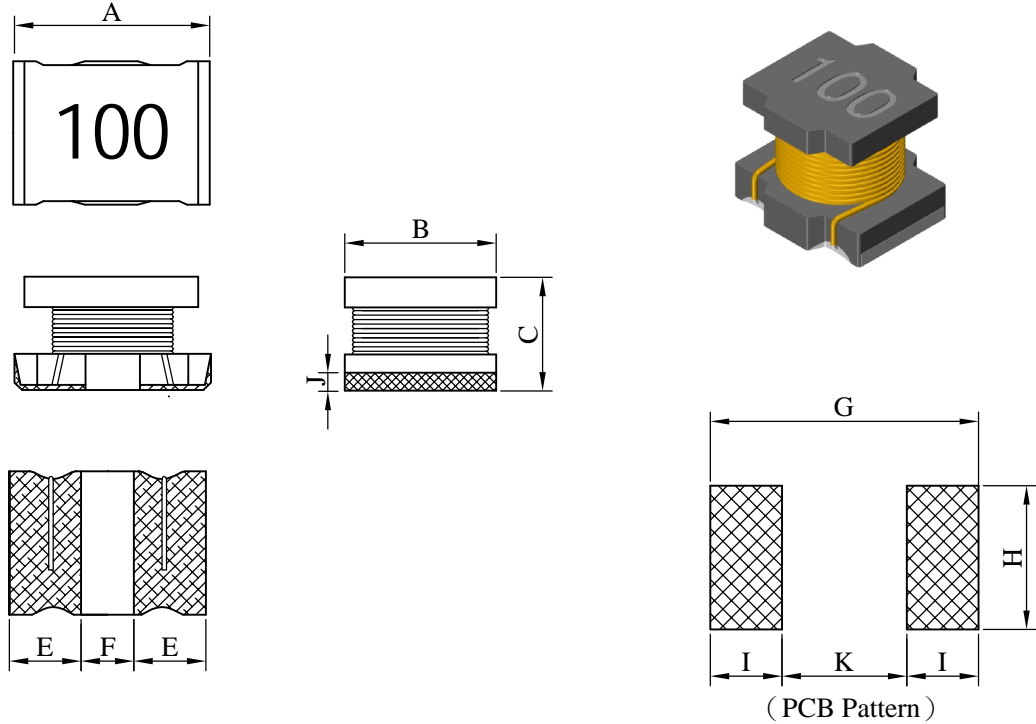


# SPECIFICATION FOR APPROVAL

REF. :

|            |                    |               |                  |      |   |
|------------|--------------------|---------------|------------------|------|---|
| PROD. NAME | SMD Power Inductor | ABC'S DWG NO. | SQ5650□□□□L□-□□□ |      |   |
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## I . Configuration and dimensions :



Unit : mm

| A         | B         | C         | E         | F         | G         | H         | I         | J         | K         |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 5.70 ±0.3 | 5.00 ±0.3 | 4.70 ±0.5 | 2.00 typ. | 1.70 typ. | 6.40 ref. | 5.40 ref. | 2.30 ref. | 0.65 ref. | 2.20 ref. |

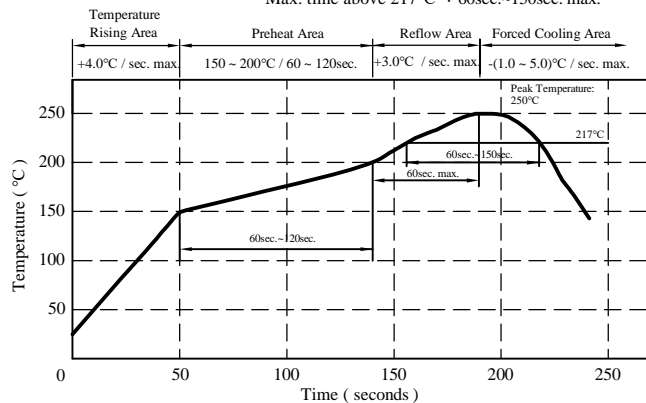
## II . Description :

- a . Ferrite drum core construction.
- b . Enamelled copper wire : H class
- c . Product weight : 0.50g ( ref. )
- d . Moisture sensitivity Level 1
- e . Products comply with RoHS' requirements
- f . Halogen free

## III . General specification :

- a . Storage temp. : -40°C ---- +125°C
- b . Operating temp. : -40°C ---- +125°C  
(Temp. rise included)
- c . Resistance to solder heat : 260°C.10 sec.

Peak temp. : 250°C max.  
Max. peak temp. - 5°C : 30sec. max.  
Max. time above 217°C : 60sec.~150sec. max.



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## IV . Electrical characteristics :

| DWG. No.         | Inductance<br>( $\mu$ H) | Test Freq.<br>( Hz )<br>L | RDC<br>( $\Omega$ )<br>max. | IDC<br>( A )<br>max. |
|------------------|--------------------------|---------------------------|-----------------------------|----------------------|
| SQ5650R47ML□-□□□ | 0.47 $\pm$ 20%           | 100k                      | 0.018                       | 4.800                |
| SQ56501R0ML□-□□□ | 1.00 $\pm$ 20%           | 100k                      | 0.027                       | 4.000                |
| SQ56501R5ML□-□□□ | 1.50 $\pm$ 20%           | 100k                      | 0.031                       | 3.700                |
| SQ56502R2ML□-□□□ | 2.20 $\pm$ 20%           | 100k                      | 0.041                       | 3.200                |
| SQ56503R3ML□-□□□ | 3.30 $\pm$ 20%           | 100k                      | 0.050                       | 2.900                |
| SQ56504R7ML□-□□□ | 4.70 $\pm$ 20%           | 100k                      | 0.057                       | 2.700                |
| SQ56506R8ML□-□□□ | 6.80 $\pm$ 20%           | 100k                      | 0.100                       | 2.000                |
| SQ5650100ML□-□□□ | 10.00 $\pm$ 20%          | 1k                        | 0.130                       | 1.700                |
| SQ5650120KL□-□□□ | 12.00 $\pm$ 10%          | 1k                        | 0.200                       | 1.500                |
| SQ5650150KL□-□□□ | 15.00 $\pm$ 10%          | 1k                        | 0.210                       | 1.400                |
| SQ5650220KL□-□□□ | 22.00 $\pm$ 10%          | 1k                        | 0.270                       | 1.200                |
| SQ5650240KL□-□□□ | 24.00 $\pm$ 10%          | 1k                        | 0.290                       | 1.100                |
| SQ5650270KL□-□□□ | 27.00 $\pm$ 10%          | 1k                        | 0.300                       | 1.000                |
| SQ5650330KL□-□□□ | 33.00 $\pm$ 10%          | 1k                        | 0.450                       | 0.900                |
| SQ5650470KL□-□□□ | 47.00 $\pm$ 10%          | 1k                        | 0.560                       | 0.800                |
| SQ5650680KL□-□□□ | 68.00 $\pm$ 10%          | 1k                        | 0.940                       | 0.640                |
| SQ5650900KL□-□□□ | 90.00 $\pm$ 10%          | 1k                        | 1.190                       | 0.580                |
| SQ5650101KL□-□□□ | 100.00 $\pm$ 10%         | 1k                        | 1.200                       | 0.560                |
| SQ5650121KL□-□□□ | 120.00 $\pm$ 10%         | 1k                        | 1.850                       | 0.490                |
| SQ5650151KL□-□□□ | 150.00 $\pm$ 10%         | 1k                        | 2.660                       | 0.420                |
| SQ5650221KL□-□□□ | 220.00 $\pm$ 10%         | 1k                        | 3.360                       | 0.320                |
| SQ5650331KL□-□□□ | 330.00 $\pm$ 10%         | 1k                        | 6.160                       | 0.270                |
| SQ5650471KL□-□□□ | 470.00 $\pm$ 10%         | 1k                        | 7.560                       | 0.240                |
| SQ5650681KL□-□□□ | 680.00 $\pm$ 10%         | 1k                        | 11.300                      | 0.190                |
| SQ5650102KL□-□□□ | 1000.00 $\pm$ 10%        | 1k                        | 14.400                      | 0.150                |
| SQ5650122KL□-□□□ | 1200.00 $\pm$ 10%        | 1k                        | 18.000                      | 0.120                |
| SQ5650152KL□-□□□ | 1500.00 $\pm$ 10%        | 1k                        | 30.100                      | 0.100                |
| SQ5650222KL□-□□□ | 2200.00 $\pm$ 10%        | 1k                        | 45.000                      | 0.090                |
| SQ5650242KL□-□□□ | 2400.00 $\pm$ 10%        | 1k                        | 47.000                      | 0.085                |
| SQ5650332KL□-□□□ | 3300.00 $\pm$ 10%        | 1k                        | 50.000                      | 0.080                |
| SQ5650472KL□-□□□ | 4700.00 $\pm$ 10%        | 1k                        | 61.000                      | 0.070                |
| SQ5650682KL□-□□□ | 6800.00 $\pm$ 10%        | 1k                        | 100.000                     | 0.060                |
| SQ5650822KL□-□□□ | 8200.00 $\pm$ 10%        | 1k                        | 125.000                     | 0.050                |
| SQ5650103KL□-□□□ | 10000.00 $\pm$ 10%       | 1k                        | 140.000                     | 0.050                |

- 1). Electrical specifications at 25°C
- 2). IDC base on  $\Delta L/L0A=10\%$  max. & Temp. rise 40°C max.

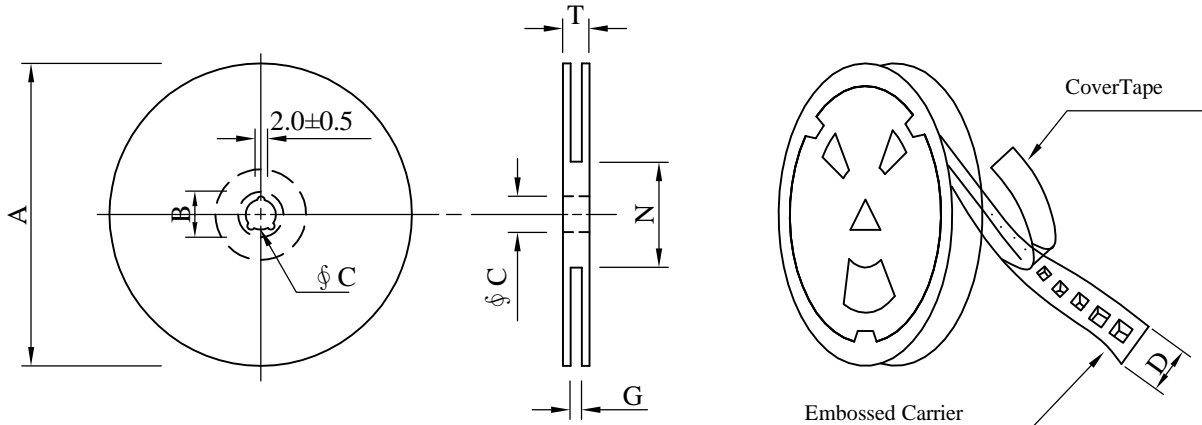
# SPECIFICATION FOR APPROVAL

REF. :

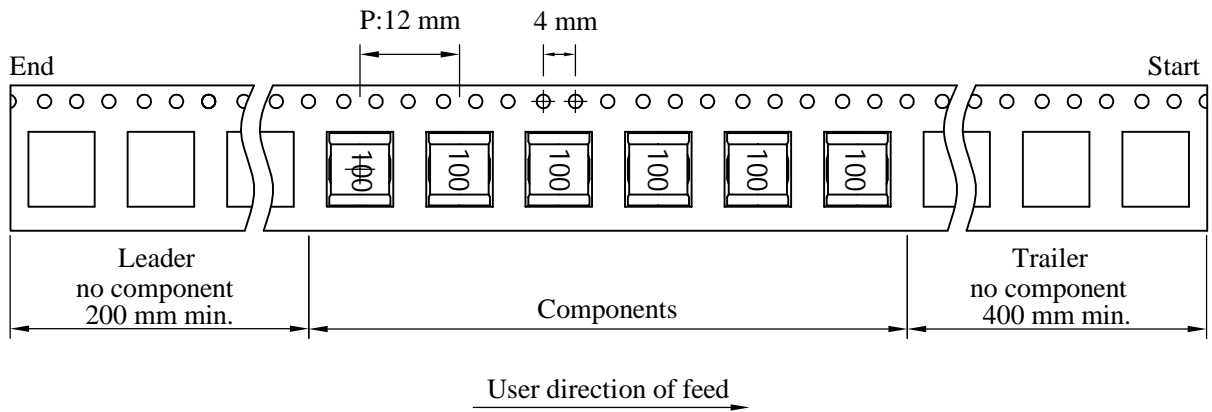
|            |                    |               |                  |      |   |
|------------|--------------------|---------------|------------------|------|---|
| PROD. NAME | SMD Power Inductor | ABC'S DWG NO. | SQ5650□□□□L□-□□□ |      |   |
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V . Packaging information :

(1) Configuration



※Carrier Tape Width : D



(2) Dimensions

Unit:mm

| Style   | A   | B      | C      | D  | G                | N                | T    |
|---------|-----|--------|--------|----|------------------|------------------|------|
| 13 - 16 | 330 | 21±0.8 | 13±0.5 | 16 | 18 <sup>+0</sup> | 50 <sup>-0</sup> | 22.4 |

(3) Q'TY & G.W. Per package

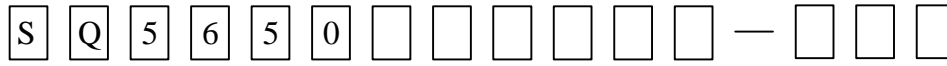
| Code | Inner : Reel |          |         | Outer : Carton |           |              |
|------|--------------|----------|---------|----------------|-----------|--------------|
|      | Q'TY (pcs)   | G.W. (g) | Style   | Q'TY (pcs)     | G.W. (kg) | SIZE (cm)    |
| B    | 1,000        | 900      | 13 - 16 | 6,000          | 6.7       | 38 x 37 x 22 |

# SPECIFICATION FOR APPROVAL

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VII . Drawing number expression :



- Reference code
- Appendix code 2 : Package
- Appendix code 1 : Classification
- Tolerance code
- Electrical code
- Dimension code
- Type code

Appendix code 1 : Product Classification

Appendix code 2 : Package Information

| Code | Inner package       | Cover tape | Carrier tape | Bag        | Package Q'TY | Remark |
|------|---------------------|------------|--------------|------------|--------------|--------|
| B    | T /R (Reel package) | UCT        | Antistatic   | Antistatic | 1,000 pcs    |        |

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## VI . Reliability test :

| Item                                | Reference documents                    | Test Condition  | Test Specification  |
|-------------------------------------|--|---|---|
| 1.High Temperature Exposure         | MIL-STD-202 Method 108                 | 1.Temperature: 125±2°C<br>2.Time:96±2 hours.  | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 2.Temperature Cycling               | JESD22-A 104                           | 1.Temperature: -40°C ~ +125°C<br>2.Number of cycle:100 cycles.<br>3.Dwell time:30 minutes   | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 3.Biased Humidity Test              | MIL-STD-202 Method 103                 | 1.Temperature : 85±2 °C<br>2.Humidity: 85% RH.<br>3.Time:96±2 Hours   | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 4.Operational Life                  | JESD22-A 108                           | 1.Temperature: 125°C(Temp. rise included)<br>2.Time:96±2 hours.<br>3.Rated current  | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 5.External Visual                   | JESD22-B 101 & MIL-STD-883 Method 2009 | Inspect product constructions, marking and workmanship.   | 1.No pollution on the surface of products.<br>2.Clear marking.<br>3.No crack.                             |
| 6.Physical Dimensions               | JESD22-B 100                           | Verify physical dimensions to the applicable product detail specification.  | Per product specification standard  |
| 7.Resistance to solvents            | MIL-STD-202 Method 215                 | Immerse into solvent for 3±0.5 minutes & brush 10 times for 3 cycles.   | 1.No body change in appearance.<br>2.No marking blurred.<br>3.Inductance shall not change more than ±10%. |
| 8.Vibration Test                    | MIL-STD-202 Method 204                 | 1.Frequency and Amplitued :<br>10-2000-10 Hz, 1.5 mm.<br>2.Direction:X, Y, Z<br>3.Test duration:2 hours for each direction,<br>6 hours in total.                  | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 9.Resistance To Soldering Heat Test | MIL-STD-202 Method 210 & J-STD020D.1   | 1.Highest temperature : 250±5°C.<br>2.Time ( temp.≥ 217°C ) : 60~150 Seconds.<br>3.IR reflow times : 3 times.   | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 10.Saturation Current               | JIS C 6436 & User SPEC.                | 1.Applied rated current for 5 seconds.<br>2.Saturation current  | Inductance shall not drop more than 10% max.  |
| 11.Over load                        | JIS C 6436 & User SPEC.                | 1.Applied one and half rated current for a period of 5 minutes.<br>2.Rated current  | No electrical or mechanical damage  |
| 12.Temperature Rise Current         | JIS C 6436 & User SPEC.                | 1.Applied rated current for 10 minutes.<br>2.Temperature measure by digital surface thermometer.<br>3.Irms current  | Surface temperature rise is less than 40°C max.   |
| 13.Solderability Test               | J-STD-002 & JESD22-B 102               | 1.Baking in pre-testing :<br>150±5°C / 16Hours±30 min.<br>2.Peak temperature : 240±5°C<br>3.Time ( temp.≥217°C ) : 60~150 seconds.<br>4.IR reflow times : 1 time. | More than 95% soldering coverage min on terminations.   |
| 14.Electrical Characteriazation     | MIL-STD-202 Method 304 & User SPEC.    | 1.Operating temperature : -40°C~125°C<br>2.Room temperature : 25°C.   | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 15.Drop                             | CNS-C6354 & GB/T 2423.8                | 1.Products shall be mounted on SPEC. pcb and dropped down from a heigh of 1m<br>2.Drop total time : 6 time<br>(Every side ofsample drop 2 times)                  | 1. Adhesion on PCB shall be enough.<br>2. Product appearance shall not break.<br>3. No electrical damage. |
| 16.Terminal Strength Test           | IEC 60068-2-21                         | 1.Apply push force to samples mounted on PCB.<br>2.Force of 1.8 kg for 60±1 seconds.  | After test, inductors shall be no mechanical damage.  |

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IX . Change history :

| DATE/REV.  | DISCRIPTION   | DRAWN     | CHECKED   | APPROVED   |
|------------|---|-----------|-----------|------------|
| 20080702-A | 1. Modify the specification form<br>2. Modify the operateure temperature :<br>From -40°C~+105°C change to<br>-40°C~+125°C (Temp. rise inculded) | Miz Hsieh | Nick Chen | Nick Chen  |
| 20150511-B | Modify the Reliability test and the Package weight  |           |           |            |
| 20160728-C | Add Change history and Drawing number expression  | Miz Hsieh | Nick Chen | Nick Chen  |
| 20191106-D | 1. Modify the Unit : m/m → mm<br>2. Resistance to solder heat : 250°C.10 secs. →260°C.10 secs.  | Miz Hsieh | Nick Chen | Ken hsiao  |
| 20210420-E | Modify the 3D picture   | Bochun Li | Jian Li   | Weini Wang |
|            |   |           |           |            |

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