

CUSTOMER _____

CUSTOMER' S P/N _____

DESCRIPTION SMD Power Inductor

SGTE PART NO. GPSR0850-R47M

SAMPLE NO. S16080502 REVISION NO. A0 DATE 2016/8/5

SPECIFICATION FOR APPROVAL

| FULLY APPROVED | REVISE APPROVED |
|----------------|-----------------|
| | |

SGTE 感通科技

深圳感通科技有限公司（大陸工廠）

GANTONG TECHNOLOGY (SHENZHEN) CO., LTD.

深圳市平湖街道平湖村萬福路26號

No.26 Wan fu Road, Ping hu Village. Ping hu town, Shenzhen City.

Tel: 0755-28457600

Fax: 0755-28452952

感通科技有限公司（台灣辦事處）

臺北縣汐止市新台5路一段77號10樓之7

10F~7, NO.77, Sec.1, Hsin Tai 5 Road, Shi-chi City, Taipei.

Tel: 886-2-8698-2341

Fax:886-2-8698-2342

納美科技股份有限公司（香港辦事處）

LAPEE TECHNOLOGY LIMITED

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Room 1713 17/F, Rise Commercial Bldg5-11 Granville Cri cuit, Granville Rd, TSim Sha Tsui., Kln

Tel: 852-25301111

Fax: 852-25371111

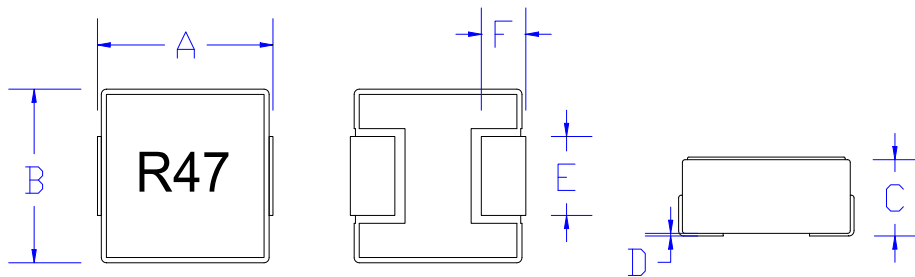
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SPECIFICATION

**RoHS
COMPLIANT**

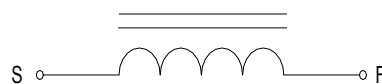
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| Gan Tong Part NO. | Sample NO. | Revision No. | A0 |
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MECHANICAL & DIMENSIONS



| (UNIT: mm) | |
|------------|---------------|
| A | 8.1 ± 0.5 |
| B | 7.2 ± 0.5 |
| C | 5.0 MAX |
| D | ≤ 0.15 |
| E | 3.0 ± 0.3 |
| F | 1.6 ± 0.3 |
| | |
| | |

CIRCUIT



ELECTRICAL REQUIREMENTS:

| PARAMETER | SPECIFICATION | CONDITION | TEST INSTRUMENTS |
|-----------|--------------------|----------------------------|-----------------------------------|
| L | $0.47 \pm 20\%$ uH | 100KHz/1V | ■ LCR Agilent4284A / Chroma 11300 |
| DCR | 4.0max mΩ | @ 25°C | ■ CH16502 IMPEDANCE METER |
| I-sat | 25 A mps | $\geq 65\%L0A$ | ■ A4284A+A42841A LCR METER |
| Irms | 10 A mps | $\Delta T \leq 40^\circ C$ | ■ Chroma /11300+3302+1320+1320S |
| | | | |

- I rms: Current that causes a 40°C temperature rise from 25°C ambient.
- I sat: DC current at which the inductance drops 35% from it' s value without current.
- All test Data is referenced to 25°C ambient.
- Operating Temperature Range: -25°C to +125°C.

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Electrical Characteristic :

| PARAMETER | L | DCR | I-sat | Irms | |
|---------------|-----------|--------|----------|-----------|--|
| UNIT | uH | mΩ | A mps | A mps | |
| SPECIFICATION | 0.47± 20% | 166 | 25.0 | 10.0 | |
| CONDITION | 100KHz/1V | @ 25°C | ≧ 65%LOA | ΔT ≦ 40°C | |
| 1 | 0.46 | 3.38 | 71.9% | 31°C | |
| 2 | 0.47 | 3.36 | | | |
| 3 | 0.45 | 3.31 | | | |
| 4 | 0.43 | 3.35 | | | |
| 5 | 0.46 | 3.37 | | | |
| 6 | 0.48 | 3.30 | | | |
| 7 | 0.47 | 3.33 | | | |
| 8 | 0.45 | 3.28 | | | |
| 9 | 0.45 | 3.39 | | | |
| 10 | 0.43 | 3.33 | | | |
| MEAN | 0.46 | 3.34 | | | |
| R | 0.05 | 0.11 | | | |

External Dimensions:

| NO | A | B | C | D | E | F | | |
|------|----------|----------|---------|-------|----------|----------|--|--|
| | 8.1± 0.5 | 7.2± 0.5 | 5.0 MAX | ≤0.15 | 3.0± 0.3 | 1.6± 0.3 | | |
| 1 | 7.99 | 7.25 | 4.81 | 0.08 | 2.97 | 1.63 | | |
| 2 | 7.92 | 7.24 | 4.77 | 0.09 | 2.99 | 1.62 | | |
| 3 | 7.98 | 7.25 | 4.86 | 0.03 | 2.99 | 1.60 | | |
| 4 | 7.90 | 7.26 | 4.89 | 0.08 | 3.00 | 1.61 | | |
| 5 | 7.95 | 7.25 | 4.85 | 0.08 | 3.01 | 1.58 | | |
| 6 | 7.95 | 7.26 | 4.82 | 0.09 | 2.98 | 1.61 | | |
| 7 | 7.88 | 7.26 | 4.77 | 0.11 | 3.01 | 1.59 | | |
| 8 | 7.86 | 7.24 | 4.80 | 0.09 | 2.99 | 1.59 | | |
| 9 | 7.82 | 7.26 | 4.76 | 0.10 | 2.97 | 1.60 | | |
| 10 | 7.93 | 7.25 | 4.79 | 0.09 | 3.02 | 1.59 | | |
| MEAN | 7.92 | 7.25 | 4.81 | 0.08 | 2.99 | 1.60 | | |
| R | 0.17 | 0.02 | 0.13 | 0.08 | 0.05 | 0.05 | | |

Inductance measured at 100KHz/1Vrms..

Electrical specifications at 25±5°C. Humidity 60±10%

SPECIFICATION

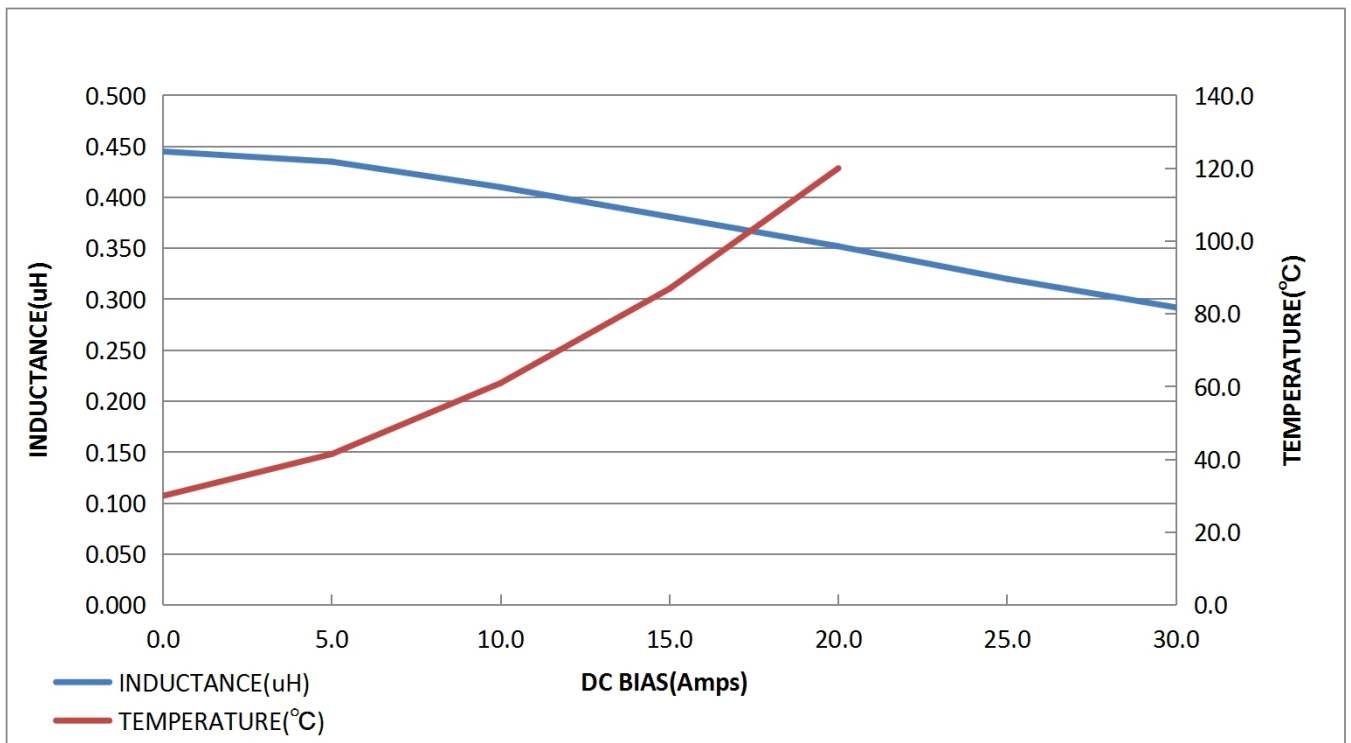
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INDUCTANCE (uH) / TEMPERATURE RISE(°C) VS DC BIAS (Amps)

| IDC | L(uH) | L/LoA (%) | T(°C) | ΔT(°C) | | |
|--------|-------|-----------|-------|--------|--|--|
| 0.0 A | 0.445 | 100.00% | 30.0 | 0.0 | | |
| 5.0 A | 0.435 | 97.75% | 41.5 | 11.5 | | |
| 10.0 A | 0.410 | 92.13% | 61.0 | 31.0 | | |
| 15.0 A | 0.381 | 85.62% | 86.9 | 56.9 | | |
| 20.0 A | 0.352 | 79.10% | 120.0 | 90.0 | | |
| 25.0 A | 0.320 | 71.91% | | | | |
| 30.0 A | 0.292 | 65.62% | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

CONDITION: 100KHz , 1.0Vrms

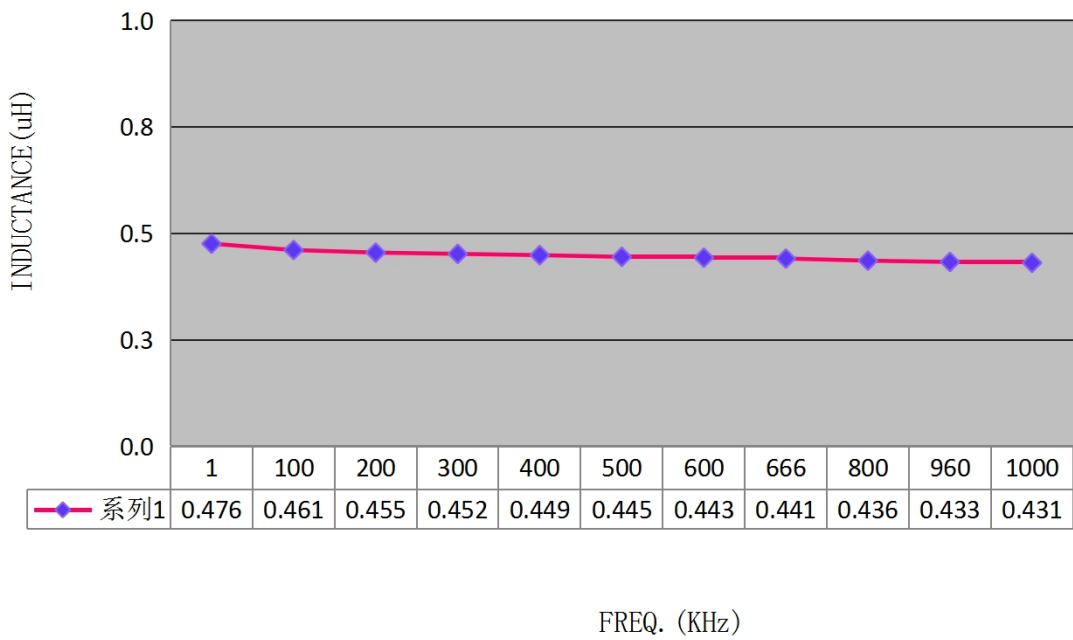


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| FREQ(KHz) | L(uH) | | | | | |
|-----------|-------|--|--|--|--|--|
| 1 | 0.476 | | | | | |
| 100 | 0.461 | | | | | |
| 200 | 0.455 | | | | | |
| 300 | 0.452 | | | | | |
| 400 | 0.449 | | | | | |
| 500 | 0.445 | | | | | |
| 600 | 0.443 | | | | | |
| 666 | 0.441 | | | | | |
| 800 | 0.436 | | | | | |
| 960 | 0.433 | | | | | |
| 1000 | 0.431 | | | | | |

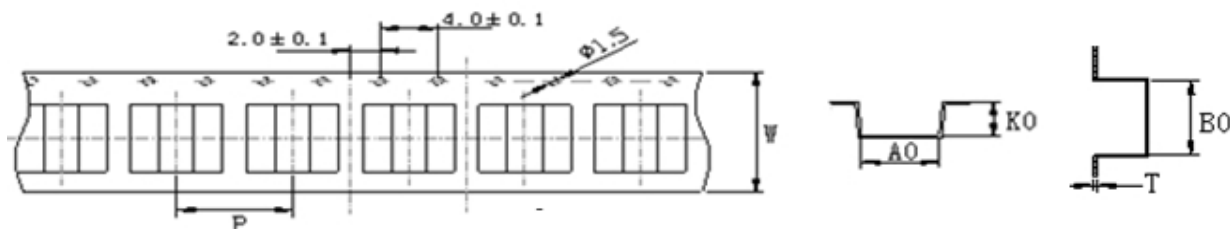


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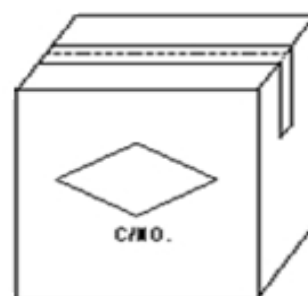
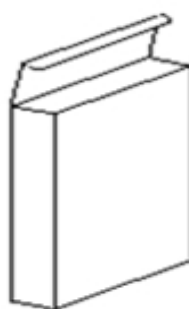
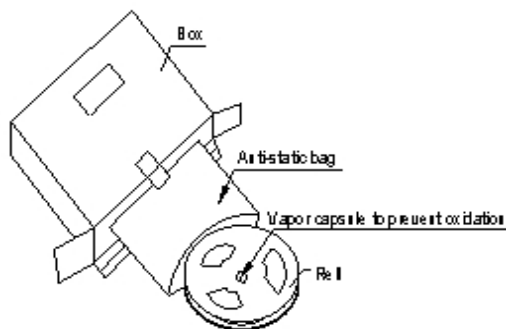
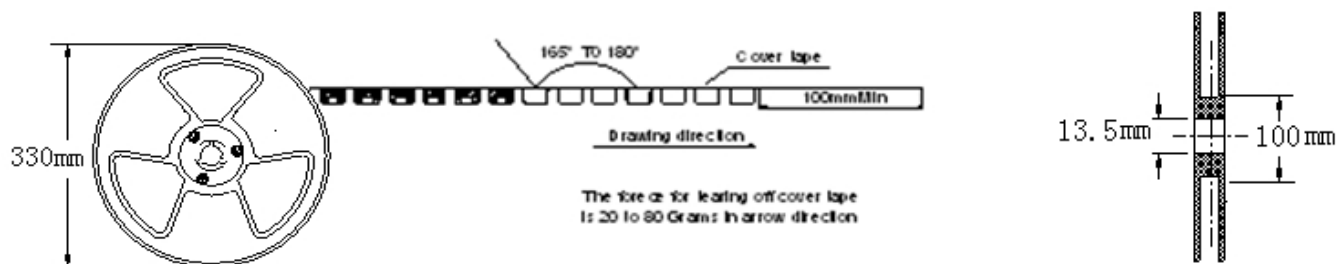
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PACKAGING



| A0 | B0 | K0 | T | P | W | Unit |
|-----------|-----------|-----------|------------|----------|----------|------|
| 7.7 ± 0.1 | 8.2 ± 0.1 | 5.1 ± 0.1 | 0.4 ± 0.05 | 12 ± 0.1 | 16 ± 0.3 | mm |



Packaging Quantity

| Unit: mm | | | | | |
|--------------|---------------|---------------------|----------|-------------|----------|
| Inner Carton | | Quarter Carton | | | |
| Reel size | Quantity/Reel | Inside the box size | Quantity | Carton size | Quantity |
| ∅ 330 | 1000pcs | 350*335*37 | 1000pcs | 365*345*290 | 6000pcs |

Storage

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.

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SOLDRING CONDITIONS

Figure 1. Re-flow Soldering

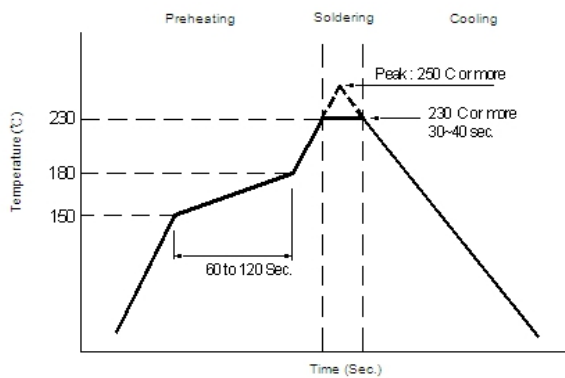
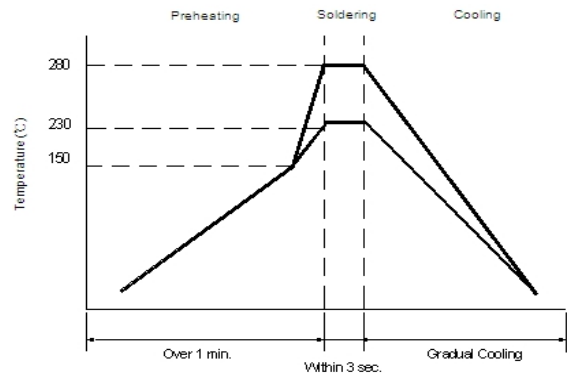


Figure 2. Hand Soldering



Reliability and Testing Conditions/Surface Mount Type Power Inductors

| Item | Specification | Conditions | | | | | | | | | | | | | | | |
|------------------------|---|--|------|-----------------------------|--------------|---|-------------|----|---|------------------|----------|---|-------------|----|---|------------------|----------|
| Solderability | More than 90% of the terminal electrode should be covered with solder. | | | | | | | | | | | | | | | | |
| Solder Heat Resistance | Inductance within $\pm 20\%$ of initial value and appearance shall not break. | | | | | | | | | | | | | | | | |
| Heat resistance | Inductance within $\pm 20\%$ of initial value. No disconnection or short circuit. Appearance shall not break. | After 500 \pm 12 hours in 145 \pm 5 $^{\circ}$ C and 2 hour drying under normal condition. | | | | | | | | | | | | | | | |
| Cold resistance | Inductance within $\pm 20\%$ of initial value. No disconnection or short circuit. Appearance shall not break. | After 500 \pm 12 hours in -40 \pm 2 $^{\circ}$ C and 2 hour drying under normal condition. | | | | | | | | | | | | | | | |
| Thermal shock | Inductance within $\pm 20\%$ of initial value. No disconnection or short circuit. Appearance shall not break. | After 10 cycles of following condition. <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th>Step</th> <th>Temperature ($^{\circ}$C)</th> <th>Times (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40\pm2</td> <td>30</td> </tr> <tr> <td>2</td> <td>Room Temperature</td> <td>Within 3</td> </tr> <tr> <td>3</td> <td>145\pm5</td> <td>30</td> </tr> <tr> <td>4</td> <td>Room Temperature</td> <td>Within 3</td> </tr> </tbody> </table> | Step | Temperature ($^{\circ}$ C) | Times (min.) | 1 | -40 \pm 2 | 30 | 2 | Room Temperature | Within 3 | 3 | 145 \pm 5 | 30 | 4 | Room Temperature | Within 3 |
| Step | Temperature ($^{\circ}$ C) | Times (min.) | | | | | | | | | | | | | | | |
| 1 | -40 \pm 2 | 30 | | | | | | | | | | | | | | | |
| 2 | Room Temperature | Within 3 | | | | | | | | | | | | | | | |
| 3 | 145 \pm 5 | 30 | | | | | | | | | | | | | | | |
| 4 | Room Temperature | Within 3 | | | | | | | | | | | | | | | |
| Humidity Resistance | Inductance within $\pm 20\%$ of initial value. No disconnection or short circuit. Appearance shall not break. | After 500 \pm 12 hours in 40 \pm 2 $^{\circ}$ C and 90 to 95% humidity, and 2 hour drying under normal condition. | | | | | | | | | | | | | | | |
| * Vibration Test | Inductance within $\pm 20\%$ of initial value and appearance shall not break. | After vibration for 1hour, In each of three orientations at sweep vibration (10~55~10Hz) with 1.52mm P-P Amplitudes. | | | | | | | | | | | | | | | |

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