

CUSTOMER \_\_\_\_\_

CUSTOMER' S P/N \_\_\_\_\_

DESCRIPTION SMD Power Inductor

SGTE PART NO. GPSR-AP1365-150MS

SAMPLE NO. S18060601 REVISION NO. A1 DATE 2020/10/14

## SPECIFICATION FOR APPROVAL

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

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# SPECIFICATION

RoHS  
COMPLIANT

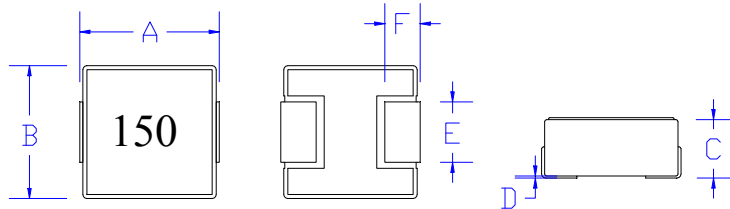
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|-----------------------|------------------|--------------------|------------------|--------------|----|
| Customers Part Number |                  | Item Name          |                  | Date         |    |
|                       |                  | SMD Power Inductor |                  | 2020/10/14   |    |
| Gan Tong Part NO.     |                  | Sample NO.         |                  | Revision No. | A1 |
| GPSR-AP1365-150MS     |                  | S18060601          |                  | Pages        | 6  |
|                       |                  |                    |                  |              |    |
| Version               | Change history   | Before the change  | After the change | Release date |    |
| A0                    | NEW              | —                  | —                | 2018/7/13    |    |
| A1                    | 修改产品E尺寸. 取消印周期字料 | 原E尺寸5.8 mm         | 修改为4.0 mm        | 2020/10/14   |    |
|                       |                  |                    |                  |              |    |
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| DRAWN BY              |                  | CHECKED BY         |                  | APPROVED BY  |    |
|                       |                  |                    |                  |              |    |

# SPECIFICATION

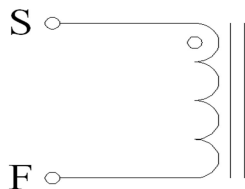
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## MECHANICAL & DIMENSIONS



|   |                 |
|---|-----------------|
| A | $13.45 \pm 0.5$ |
| B | $12.6 \pm 0.3$  |
| C | 6.5 Max         |
| D | $\leq 0.2$      |
| E | $4.0 \pm 0.5$   |
| F | $2.3 \pm 0.5$   |
| G | 14.5 REF        |
| H | 8.0 REF         |
| I | 5.0 REF         |



Recommended Land Pattern

## ELECTRICAL REQUIREMENTS:

| PARAMETER        | SPECIFICATION    | CONDITION                  | TEST INSTRUMENTS                  |
|------------------|------------------|----------------------------|-----------------------------------|
| L                | $15 \pm 20\%$ uH | 100KHz/1V                  | ■ LCR Agilent4284A / Chroma 11300 |
| DCR              | 33 max mΩ        | @ 25°C                     | ■ CH16502 IMPEDANCE METER         |
| I-sat            | 12.0 A mps       | $\geq 65\% L0A$            | ■ A4284A+A42841A LCR METER        |
| I <sub>rms</sub> | 7.0 A mps        | $\Delta T \leq 40^\circ C$ | ■ Chroma /11300+3302+1320+1320S   |

- I<sub>rms</sub>: Current that causes a 40°C temperature rise from 25°C ambient.
- I<sub>sat</sub>: 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 | 15± 20%   | 33 max | 12.0    | 7.0     |  |
| CONDITION     | 100KHz/1V | @ 25℃  | ≥65%L0A | ΔT ≤40℃ |  |
| 1             | 14.30     | 24.80  | 74.8%   | 33.5℃   |  |
| 2             | 13.60     | 24.70  |         |         |  |
| 3             | 14.10     | 24.20  |         |         |  |
| 4             | 13.70     | 25.40  |         |         |  |
| 5             | 14.30     | 25.00  |         |         |  |
| 6             |           |        |         |         |  |
| 7             |           |        |         |         |  |
| 8             |           |        |         |         |  |
| 9             |           |        |         |         |  |
| 10            |           |        |         |         |  |
| MEAN          | 14.00     | 24.8   |         |         |  |
| R             | 0.70      | 1.20   |         |         |  |

## External Dimensions:

| NO   | A         | B        | C       | D    | E       | F       |  |  |
|------|-----------|----------|---------|------|---------|---------|--|--|
|      | 13.45±0.5 | 12.6±0.3 | 6.5 Max | ≤0.2 | 4.0±0.5 | 2.3±0.5 |  |  |
| 1    | 13.70     | 12.55    | 6.34    | 0.08 | 4.03    | 2.30    |  |  |
| 2    | 13.70     | 12.55    | 6.32    | 0.09 | 0.02    | 2.30    |  |  |
| 3    | 13.62     | 12.52    | 6.40    | 0.09 | 4.03    | 2.32    |  |  |
| 4    | 13.74     | 12.60    | 6.39    | 0.09 | 4.03    | 2.31    |  |  |
| 5    | 13.72     | 12.52    | 6.33    | 0.10 | 4.04    | 2.30    |  |  |
| 6    |           |          |         |      |         |         |  |  |
| MEAN | 13.70     | 12.55    | 6.36    | 0.09 | 3.23    | 2.31    |  |  |
| R    | 0.12      | 0.08     | 0.08    | 0.02 | 4.02    | 0.02    |  |  |

Inductance measured at 100KHz/1Vrms..

Electrical specifications at 25±5℃. Humidity 60±10%

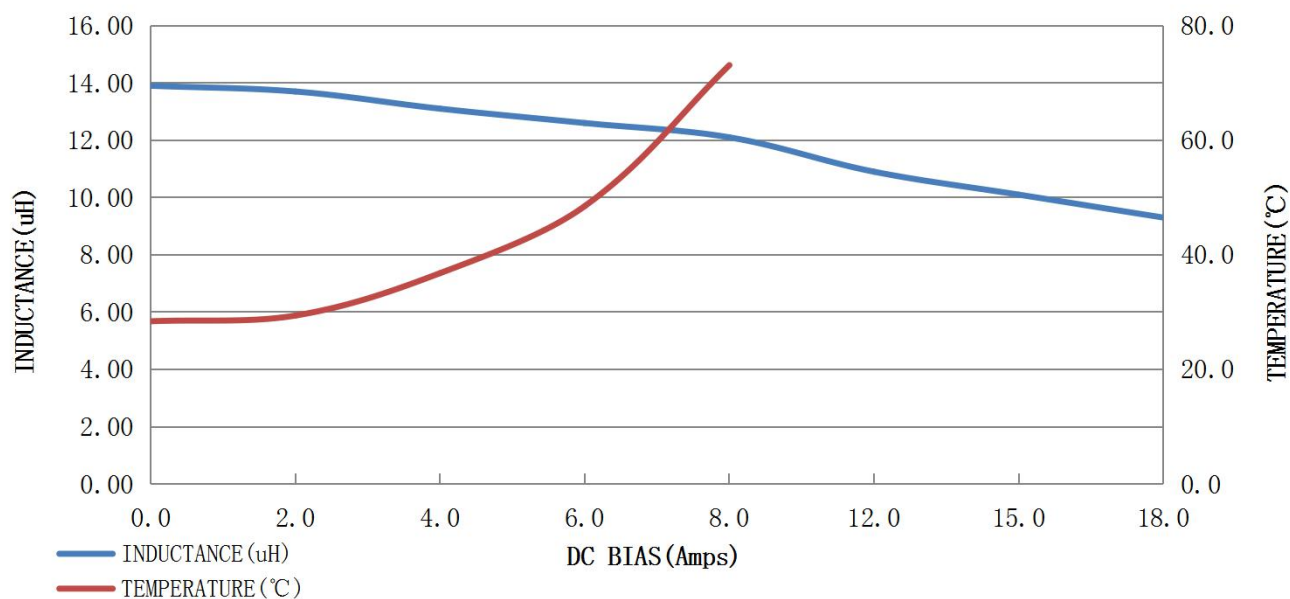
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## INDUCTANCE (uH) / TEMPERATURE RISE(°C) VS DC BIAS (Amps)

| IDC    | L(uH) | L/LoA (%) | T(°C) | ΔT(°C) |  |  |
|--------|-------|-----------|-------|--------|--|--|
| 0.0 A  | 13.90 | 100.00%   | 28.4  | 0.0    |  |  |
| 2.0 A  | 13.70 | 98.56%    | 29.4  | 1.0    |  |  |
| 4.0 A  | 13.10 | 94.24%    | 36.8  | 8.4    |  |  |
| 6.0 A  | 12.60 | 90.65%    | 48.5  | 20.1   |  |  |
| 8.0 A  | 12.10 | 87.05%    | 73.1  | 44.7   |  |  |
| 12.0 A | 10.90 | 78.42%    |       |        |  |  |
| 15.0 A | 10.10 | 72.66%    |       |        |  |  |
| 18.0 A | 9.30  | 66.91%    |       |        |  |  |
|        |       |           |       |        |  |  |



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## PACKAGING



## Storage

- ## 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

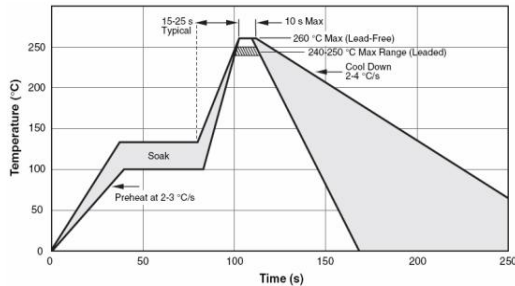
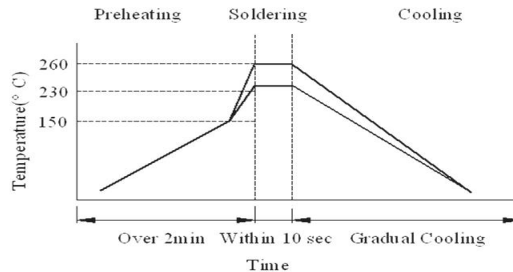


Figure 2. Wave Soldering



Soldering Iron: temperature  $350^{\circ}\text{C} \pm 10^{\circ}\text{C}$ , dwell time shall be less than 3 sec.

## 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 $145 \pm 5^{\circ}\text{C}$ 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 $-40 \pm 2^{\circ}\text{C}$ 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"> <thead> <tr> <th>Step</th><th>Temperature (<math>^{\circ}\text{C}</math>)</th><th>Times (min.)</th></tr> </thead> <tbody> <tr> <td>1</td><td><math>-40 \pm 2</math></td><td>30</td></tr> <tr> <td>2</td><td>Room Temperature</td><td>Within 3</td></tr> <tr> <td>3</td><td><math>145 \pm 5</math></td><td>30</td></tr> <tr> <td>4</td><td>Room Temperature</td><td>Within 3</td></tr> </tbody> </table> | Step | Temperature ( $^{\circ}\text{C}$ ) | Times (min.) | 1 | $-40 \pm 2$ | 30 | 2 | Room Temperature | Within 3 | 3 | $145 \pm 5$ | 30 | 4 | Room Temperature | Within 3 |
| Step                   | Temperature ( $^{\circ}\text{C}$ )                                                                            | 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 $40 \pm 2^{\circ}\text{C}$ 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 1 hour, In each of three orientations at sweep vibration ( $10 \sim 55 \sim 10\text{Hz}$ ) with 1.52mm P-P Amplitudes.                                                                                                                                                                                                                                                                                                                         |      |                                    |              |   |             |    |   |                  |          |   |             |    |   |                  |          |