



## SPECIFICATION FOR APPROVAL

**CUSTOMER**

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**CUSTOMER'S P/N**

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**DATE** 28/Jun/2021 **REVISION NO.** A

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**PART NO.** AMPI107804GDR17LT

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**DRAWN NO.**

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**Signature**

| Approved by | Checked by | Drawn by |
|-------------|------------|----------|
|             |            |          |

**ARLITECH ELECTRONIC CORP.**

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RoHS+HF

## SPECIFICATION FOR APPROVAL

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## CUSTOMER

CUSTOMER'S P/N

ARLITECH P/N AMPI107804GDR17LT

DRAWN NO.

PAGE

1/10

REVISION

A

DATE

2021/06/28

## PRODUCT IDENTIFICATION

|                |                    |            |              |          |          |
|----------------|--------------------|------------|--------------|----------|----------|
| <u>A M P I</u> | <u>1 0 7 8 0 4</u> | <u>G D</u> | <u>R 1 7</u> | <u>L</u> | <u>T</u> |
| ①              | ②                  | ③          | ④            | ⑤        | ⑥        |

① Product Series:AMPI=Arlitech Molding Power Inductors

② Dimension:Length\*Width\*High

③ Type:Type Code

④ Inductance(uH):R17=0.17

⑤ Tolerance:L=±15%

⑥ Pakage: T=Taping

# SPECIFICATION FOR APPROVAL

CUSTOMER

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ARLITECH P/N AMPI107804GDR17LT

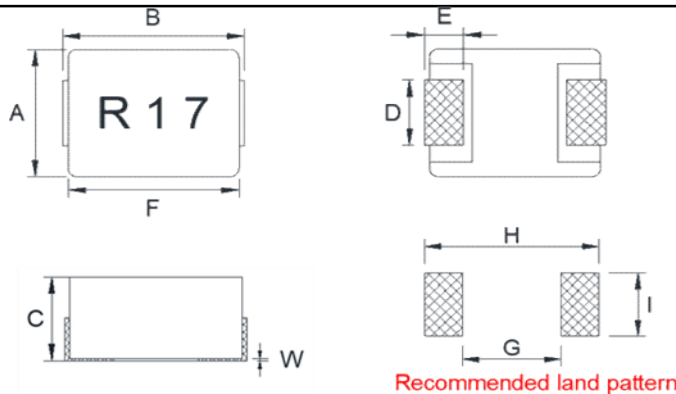
DRAWN NO.

PAGE 2/10

REVISION A

DATE 2021/06/28

## SHAPE & DIMENSION (UNIT: mm)



|   |          |
|---|----------|
| A | 7.9±0.2  |
| B | 11.2±0.5 |
| C | 3.8±0.2  |
| D | 3.0±0.5  |
| E | 2.0±0.5  |
| F | 10.2±0.2 |
| W | 0.15±0   |
| G | 5.7      |
| H | 12.5     |
| I | 3.5      |

## ELECTRICAL SPECIFICATION

| MEAS. ITEM | SPEC. |                  |             | TEST FREQ. | CONDITIONS                                         |
|------------|-------|------------------|-------------|------------|----------------------------------------------------|
| $L_0$      | 0.17  | $\mu\text{H}$    | $\pm 15\%$  | 100KHz/1V  | $T_a=20\sim 25^\circ\text{C}$ , $I_{dc}=0\text{A}$ |
| DCR        | 1.06  | $\text{m}\Omega$ | $\pm 4.5\%$ |            | $T_a=20^\circ\text{C}$                             |
| $I_{sat}$  | 130   | A                | Typ.        | 100KHz/1V  | $\Delta L/L \div 30\%$                             |
| $I_{rms}$  | 33    | A                | Typ.        | 100KHz/1V  | $\Delta T \div 40^\circ\text{C}$                   |

## GENERAL SPECIFICATION

Electrical specifications : at 20~25°C

Operation Temperature : -40~+125°C (Including self-temperature rise)

Storage Temperature : -40~85°C(after PCBA);-5~35°C(before PCBA)

Storage R.H. : 40~70%(before PCBA)

Resistance to solder heat: 260°C/10 seconds

Coating: Gray

## NOTE:

※Test Instrument : LCR METER(Chroma3250,Test1790), BIAS CURRENT SOURCE(Chroma1320,Chroma1320S)

※ $I_{sat}$  : For Inductance drop approximately 30% from its value without bias current.

※ $I_{rms}$  : Typical Heat Rating D.C current would cause an approximately  $\Delta T$  of 40°C ( $T_a=20\sim 25^\circ\text{C}$ )

# SPECIFICATION FOR APPROVAL

CUSTOMER

CUSTOMER'S P/N

ARLITECH P/N AMPI107804GDR17LT

DRAWN NO.

PAGE

3/10

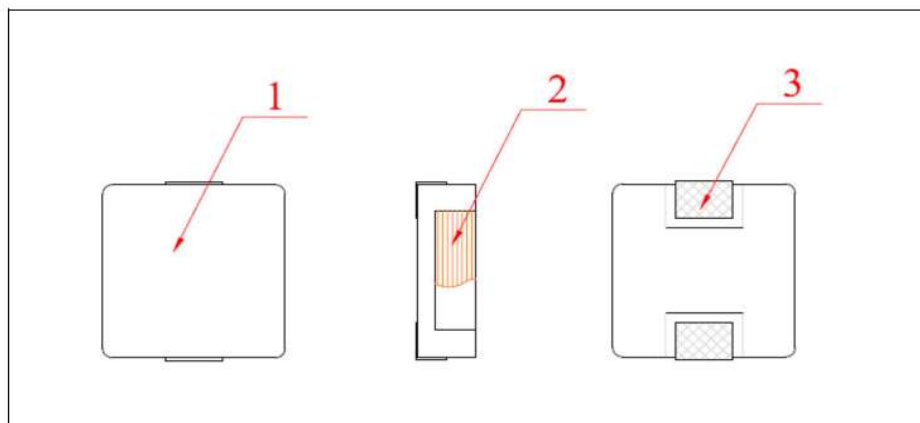
REVISION

A

DATE

2021/06/28

## MATERIAL LIST



| NO. | ITEM      | MATERIAL    | VENDER                                                | Remark |
|-----|-----------|-------------|-------------------------------------------------------|--------|
| 1   | Core      | Powder      | ARLITECH<br>OR EQUIVALENT                             |        |
| 2   | Wire      | Copper Wire | JUNG SHING<br>PACIFIC<br>ELEKTRISOLA<br>OR EQUIVALENT |        |
| 3   | Electrode | Sn-Ag-Cu    | YANKANGDA<br>OR EQUIVALENT                            |        |
|     |           |             |                                                       |        |
|     |           |             |                                                       |        |
|     |           |             |                                                       |        |
|     |           |             |                                                       |        |
|     |           |             |                                                       |        |

# SPECIFICATION FOR APPROVAL

CUSTOMER

CUSTOMER'S P/N

ARLITECH P/N AMPI107804GDR17LT

DRAWN NO.

PAGE

4/10

REVISION

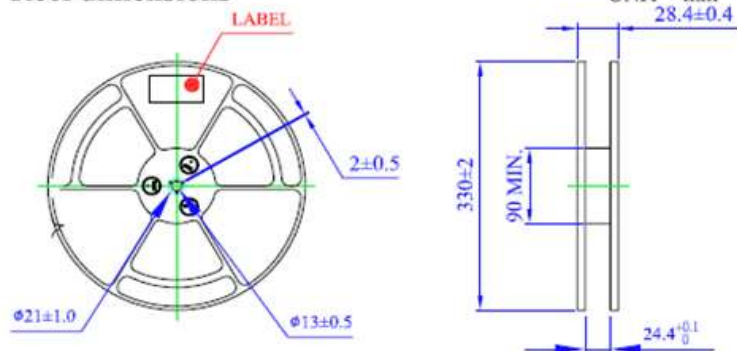
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DATE

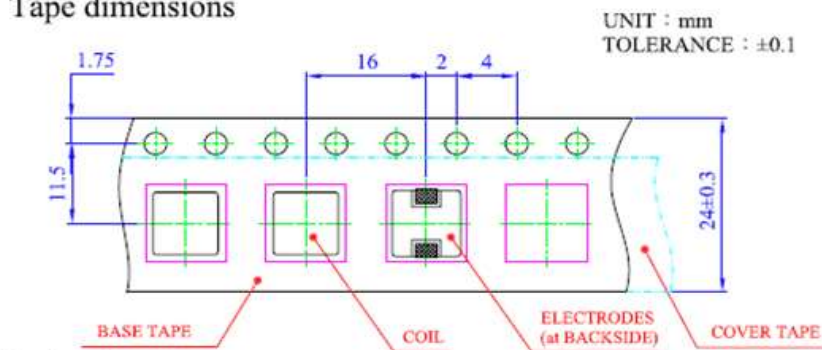
2021/06/28

## PACKAGING

Reel dimensions



Tape dimensions



Packaging

Quantity : 500 pcs/reel

# SPECIFICATION FOR APPROVAL

CUSTOMER

CUSTOMER'S P/N

ARLITECH P/N AMPI107804GDR17LT

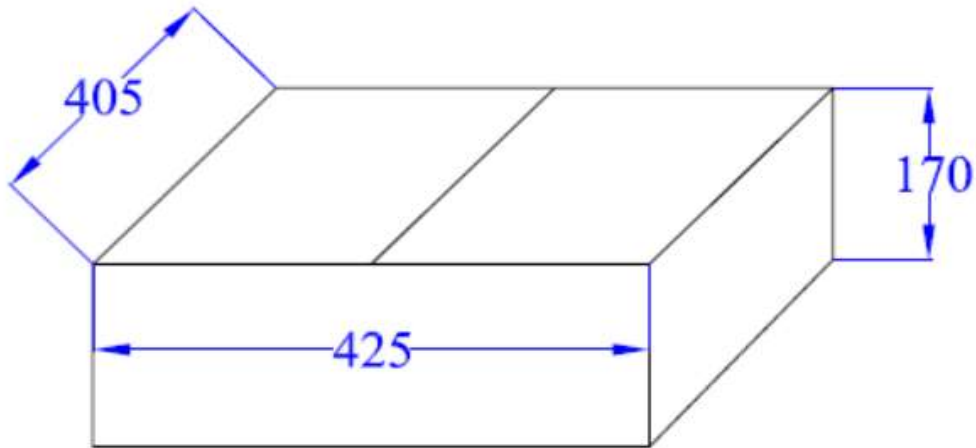
DRAWN NO.

PAGE 5/10

REVISION A

DATE 2021/06/28

## CARTON



500 pcs/reel

4 reel/carton

2000pcs/carton

Carton:425x405x170mm

# SPECIFICATION FOR APPROVAL

## CUSTOMER

CUSTOMER'S P/N

ARLITECH P/N AMPI107804GDR17LT

DRAWN NO.

PAGE

6/10

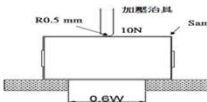
REVISION

A

DATE

2021/06/28

## RELIABILITY TEST

| MECHANICAL RELIABILITY                  |                                                                                                                                                                                                                                                                                  |                                                                                |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Test Items                              | Test Conditions                                                                                                                                                                                                                                                                  | Criteria                                                                       |
| Adhesion strength                       | <p>A static load using a R0.5 pressing tool with 10N shall be applied to the body of the specimen in the direction of the arrow and shall be hold for 10s,measure after removing pressure.</p>  | change from an initial value<br>L:within±10%                                   |
| Terminal strength                       | <p>Add static load 10N to inductor through hole of test board for 5±2 sec.</p>                                                                                                                  | no detachment of terminal pin and no breakage of wire.                         |
| Vibration test                          | <p>Frequency: 10 ~ 55 ~ 10Hz<br/>Amplitude: 1.5mm<br/>Sweep time: 2 cycle<br/>Test Directions: X,Y,Z<br/>Test Time: 2 hours each direction</p>                                                                                                                                   | change from an initial value<br>L:within±10%                                   |
| Drop test                               | Drop specimen three times on concrete floor from a height of 1 meter which mounted on test board.                                                                                                                                                                                | change from an initial value<br>L:within±10%                                   |
| ENDURANCE RELIABILITY                   |                                                                                                                                                                                                                                                                                  |                                                                                |
| Test Items                              | Test Conditions                                                                                                                                                                                                                                                                  | Criteria                                                                       |
| Withstanding voltage                    | Ac voltage of 50V and Ac current of 1mA applied between inductor's terminal and core for 3 secs.                                                                                                                                                                                 | Inductors shall have no evidence of electrical and mechanical damage           |
| Low temperature storage                 | Placed at -40°C for 1000 hours, then measured at room ambient temperature after placing 24 hours.                                                                                                                                                                                | change from an initial value<br>L:within±10%                                   |
| High temperature storage                | Placed at +125°C for 1000 hours, then measured at room ambient temperature after placing 24 hours.                                                                                                                                                                               | change from an initial value<br>L:within±10%                                   |
| Thermal shock                           | Condition for 1 cycle:<br>-40°C, 30min. ~ +125°C, 30min.<br>Number of cycles: 100                                                                                                                                                                                                | change from an initial value<br>L:within±10%                                   |
| Humidity resistance                     | Placed at 90 to 95%RH, +60±2°C for 500 hours, then measured at room ambient temperature after placing 24 hours.                                                                                                                                                                  | change from an initial value<br>L:within±10%                                   |
| High temperature dynamic operation test | Placed at +85°C for 500 hours, then measured at room ambient temperature with current test after placing 24 hours.                                                                                                                                                               | Inductance shall be within ±10% of the initial value.<br>Appearance: No damage |
| Solderability test                      | Terminals shall be immersed for 5 to 10 seconds in flux at room temperature. Dip sample into solder bath containing molten soldr at 245±3°C for 3±0.5 seconds                                                                                                                    | New solder shall cover 90% minimum of the surface immersed.                    |

# SPECIFICATION FOR APPROVAL

## CUSTOMER

### CUSTOMER'S P/N

ARLITECH P/N AMPI107804GDR17LT

### DRAWN NO.

## PAGE

7/10

## REVISION

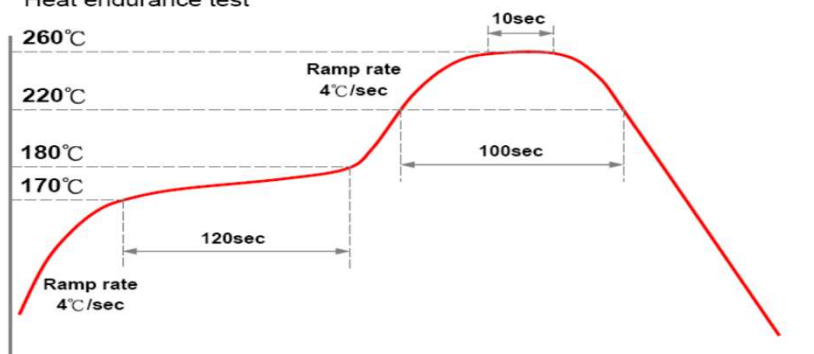
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## DATE

2021/06/28

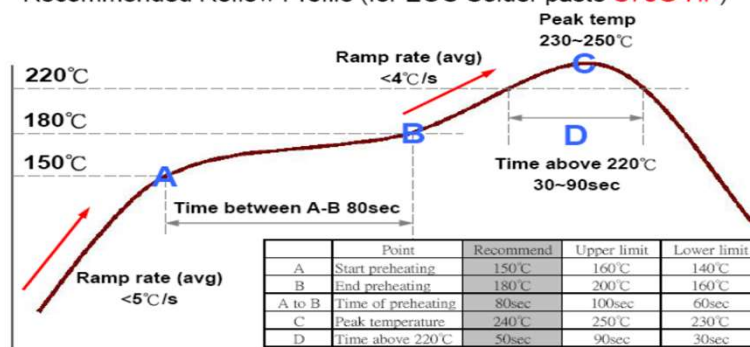
## REFLOW-PROFILE

### Heat endurance test



- ◎ The test should be made under the conditions according to the chart, after the test it is kept for 2 hours under the normal temperature and humidity.
- ◎ The reflow test can be done twice, but the interval should be more than one hour under the normal conditions.
- ◎ The reflow test conditions are based on the testing instruments available in Arlitech.

### Recommended Reflow Profile (for EOC Solder paste S70G-HF)



- ◎ The reflow condition recommended above is according to the machine used by our company. Big differences will arise as a result of the type of machine, reflow conditions, method, etc used. Hence, before setting up your reflow conditions, please confirm with the above.

# SPECIFICATION FOR APPROVAL

CUSTOMER

CUSTOMER'S P/N

ARLITECH P/N AMPI107804GDR17LT

DRAWN NO.

PAGE 8/10

REVISION A

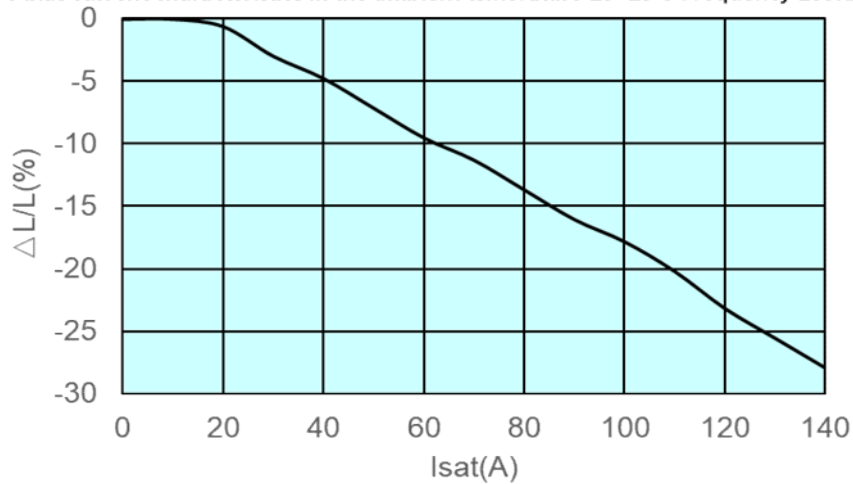
DATE 2021/06/28

## Isat(Saturation Current):Transient current

### AMPI107804GDR17LT

| TIME(s) | Isat(A) | L(uH) | $\Delta L/L(\%)$ |
|---------|---------|-------|------------------|
| 1.00    | 0       | 0.168 | 0.00%            |
| 1.00    | 10      | 0.168 | 0.00%            |
| 1.00    | 20      | 0.167 | -0.60%           |
| 1.00    | 30      | 0.163 | -2.98%           |
| 1.00    | 40      | 0.160 | -4.76%           |
| 1.00    | 50      | 0.156 | -7.14%           |
| 1.00    | 60      | 0.152 | -9.52%           |
| 1.00    | 70      | 0.149 | -11.31%          |
| 1.00    | 80      | 0.145 | -13.69%          |
| 1.00    | 90      | 0.141 | -16.07%          |
| 1.00    | 100     | 0.138 | -17.86%          |
| 1.00    | 110     | 0.134 | -20.24%          |
| 1.00    | 120     | 0.129 | -23.21%          |
| 1.00    | 130     | 0.125 | -25.60%          |
| 1.00    | 140     | 0.121 | -27.98%          |

※ DC bias current characteristics in the ambient temperature 20~25°C Frequency 100KHz/1V



# SPECIFICATION FOR APPROVAL

CUSTOMER

CUSTOMER'S P/N

ARLITECH P/N AMPI107804GDR17LT

DRAWN NO.

PAGE 9/10

REVISION A

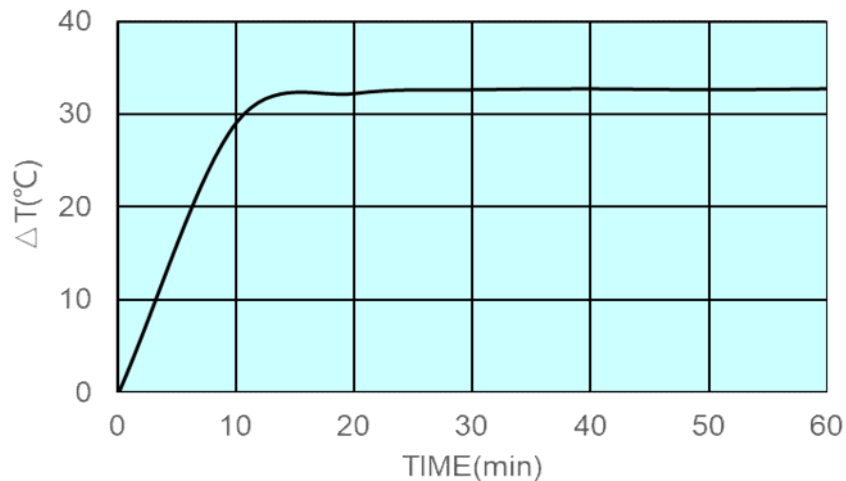
DATE 2021/06/28

**I<sub>rms</sub>(RMS current):The inductor can work continuously for a long time**

## AMPI107804GDR17LT

| TIME(min) | I <sub>rms</sub> (A) | L(uH) | ΔL/L(%) | TEMP(°C) | ΔT(°C) |
|-----------|----------------------|-------|---------|----------|--------|
| 0         | 0                    | 0.169 | 0       | 22.3     | 0      |
| 10        | 33                   | 0.163 | 3.55    | 51.5     | 29.2   |
| 20        | 33                   | 0.163 | 3.55    | 54.6     | 32.3   |
| 30        | 33                   | 0.163 | 3.55    | 55.0     | 32.7   |
| 40        | 33                   | 0.163 | 3.55    | 55.1     | 32.8   |
| 50        | 33                   | 0.163 | 3.55    | 55.0     | 32.7   |
| 60        | 33                   | 0.163 | 3.55    | 55.1     | 32.8   |

\* DC bias current characteristics in the ambient temperature 20~25°C Frequency 100KHz/1V



# SPECIFICATION FOR APPROVAL

CUSTOMER

CUSTOMER'S P/N

ARLITECH P/N AMPI107804GDR17LT

DRAWN NO.

PAGE 10/10

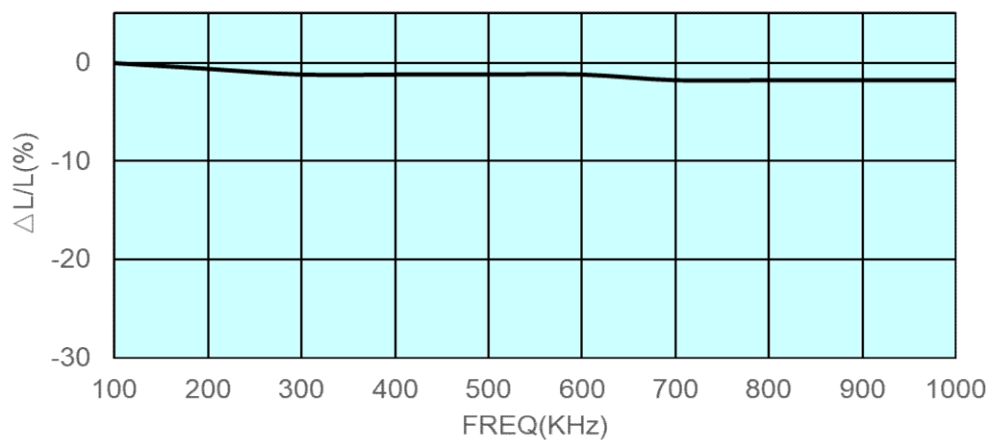
REVISION A

DATE 2021/06/28

## L-F CURVE

### AMPI107804GDR17LT

| FREQ(KHz) | L(uH) | $\Delta L/L(\%)$ |
|-----------|-------|------------------|
| 100       | 0.168 | 0.00%            |
| 200       | 0.167 | -0.60%           |
| 300       | 0.166 | -1.19%           |
| 400       | 0.166 | -1.19%           |
| 500       | 0.166 | -1.19%           |
| 600       | 0.166 | -1.19%           |
| 700       | 0.165 | -1.79%           |
| 800       | 0.165 | -1.79%           |
| 900       | 0.165 | -1.79%           |
| 1000      | 0.165 | -1.79%           |



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**DRAWN NO.**
**TEST R.H.**      40~85%

**TEST TEMP.**      20~25°C

**DATE**      2021/6/28

**TEST DATA FOR PREPRODUCTION SAMPLE**

| TEST RESOLUTION |                  |                   |                         |                       |  |  |  | DIMENSION (Unit : mm) |          |         |         |         |
|-----------------|------------------|-------------------|-------------------------|-----------------------|--|--|--|-----------------------|----------|---------|---------|---------|
| MEAS.<br>ITEM   | L0<br>μH         | DCR<br>mΩ         | Isat<br>A               | Irms<br>A             |  |  |  | A                     | B        | C       | D       | E       |
| SPEC.           | 0.17<br>±<br>15% | 1.06<br>±<br>4.5% | 130<br>Typ.<br>ΔL/L≒30% | 33<br>Typ.<br>ΔT≒40°C |  |  |  | 7.9±0.2               | 11.2±0.5 | 3.8±0.2 | 3.0±0.5 | 2.0±0.5 |
| TEST<br>FREQ.   | 100KHz/1V        |                   | 100KHz/1V               | 100KHz/1V             |  |  |  |                       |          |         |         |         |
| 1               | 0.169            | 1.053             | 0.122                   | 33.1                  |  |  |  | 7.94                  | 10.91    | 3.85    | 2.97    | 2.19    |
| 2               | 0.167            | 1.046             | 0.120                   | 33.5                  |  |  |  | 7.95                  | 10.89    | 3.90    | 2.89    | 2.25    |
| 3               | 0.168            | 1.050             | 0.121                   | 32.8                  |  |  |  | 7.95                  | 10.89    | 3.87    | 2.98    | 2.21    |
| 4               | 0.171            | 1.065             | 0.123                   | 32.9                  |  |  |  | 7.98                  | 10.95    | 3.91    | 3.00    | 2.23    |
| 5               | 0.170            | 1.066             | 0.123                   | 33.0                  |  |  |  | 7.94                  | 10.90    | 3.90    | 3.00    | 2.21    |
| 6               | 0.172            | 1.048             | 0.124                   | 32.7                  |  |  |  | 7.96                  | 10.98    | 3.91    | 2.98    | 2.28    |
| 7               | 0.169            | 1.056             | 0.121                   | 33.2                  |  |  |  | 7.97                  | 11.00    | 3.89    | 2.92    | 2.24    |
| 8               | 0.168            | 1.064             | 0.121                   | 33.5                  |  |  |  | 7.96                  | 10.93    | 3.88    | 2.93    | 2.20    |
| 9               | 0.169            | 1.049             | 0.122                   | 33.4                  |  |  |  | 7.95                  | 10.94    | 3.90    | 3.00    | 2.25    |
| 10              | 0.170            | 1.053             | 0.123                   | 33.1                  |  |  |  | 7.95                  | 10.96    | 3.90    | 2.92    | 2.24    |
| AVG.            | 0.1693           | 1.055             | 0.122                   | 33.1                  |  |  |  | 7.955                 | 10.935   | 3.891   | 2.959   | 2.230   |
| R               | 0.005            | 0.02              | 0.004                   | 0.8                   |  |  |  | 0.04                  | 0.11     | 0.06    | 0.11    | 0.09    |

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