

# CoilMaster Co.,Ltd

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## SPECIFICATION

LEAD FREE



**SMD POWER INDUCTOR**

**CMI-DOP252012NH SERIES**

Revision history

Rev.0

13.08.28

|           | Drafted by | Checked by | Approned by |
|-----------|------------|------------|-------------|
| Name      | Q.Y.Z      | K.H.W      | C.X.Y       |
| Signature |            |            |             |
| Date      | 13.08.28   | 13.08.28   | 13.08.28    |

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|                |                        |                      |          |          |
|----------------|------------------------|----------------------|----------|----------|
| Customer       |                        | <b>SPECIFICATION</b> | REVISION | 0        |
|                |                        |                      | DATE     | 13.08.28 |
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#### Revision

| REVISION | DATE     | ORIGINATED BY | REASON FOR CHANGE |
|----------|----------|---------------|-------------------|
| 0        | 13.08.28 | Q.Y.Z         | FIRST RELEASED    |
|          |          |               |                   |

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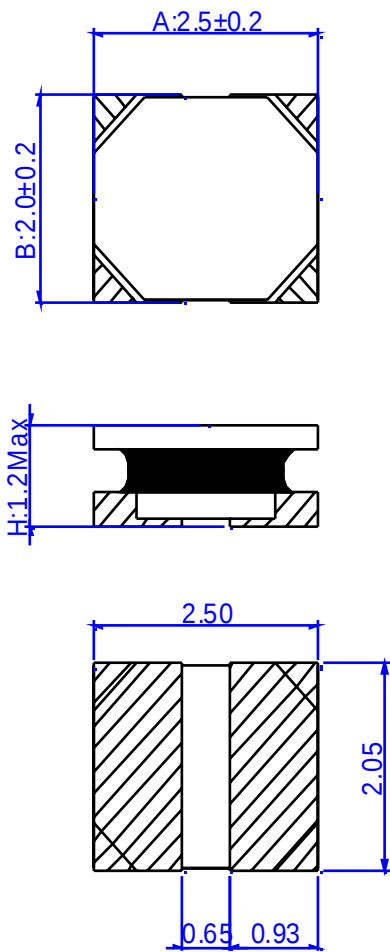
#### 6. RoHS Test Report

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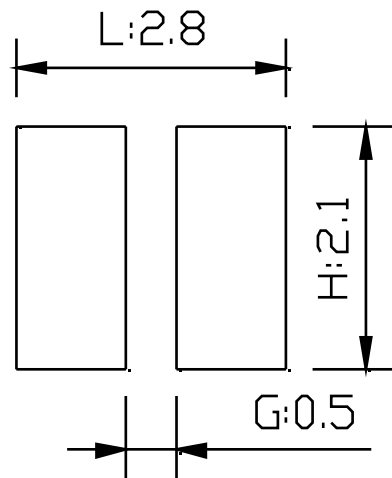
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1. Dimension

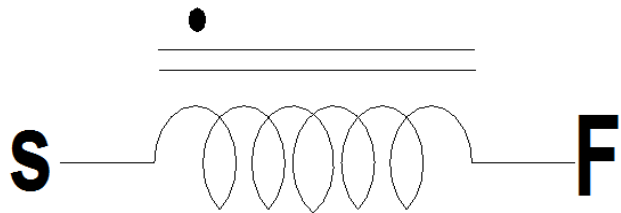
1.1 Dimension



1.2 Land pattern



1.3 Circuit



|                |                        |                    |          |          |
|----------------|------------------------|--------------------|----------|----------|
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## 2. Specification

### 2.1 Electrical Characteristic

| Part No.             | Inductance (μH) | DCR (mΩ) ± 20% | Isat (A) Max. | Irms(A) |
|----------------------|-----------------|----------------|---------------|---------|
| CMI-DOP252012NH-R47N | 0.47± 30%       | 27             | 3.90          | 3.80    |
| CMI-DOP252012NH-R68N | 0.68± 30%       | 36             | 3.50          | 3.50    |
| CMI-DOP252012NH-1R0N | 1.0± 30%        | 43             | 2.70          | 2.80    |
| CMI-DOP252012NH-1R5N | 1.5± 30%        | 65             | 2.30          | 2.40    |
| CMI-DOP252012NH-2R2M | 2.2± 20%        | 80             | 1.90          | 2.10    |
| CMI-DOP252012NH-3R3M | 3.3 ± 20%       | 148            | 1.40          | 1.50    |
| CMI-DOP252012NH-4R7M | 4.7± 20%        | 183            | 1.25          | 1.30    |
| CMI-DOP252012NH-6R8M | 6.8± 20%        | 266            | 1.00          | 1.10    |
| CMI-DOP252012NH-100M | 10.0 ± 20%      | 334            | 0.86          | 0.89    |
| CMI-DOP252012NH-220M | 22.0 ± 20%      | 1080           | 0.55          | 0.50    |

■ TEST FREQUENCY : 1MHz , 1.0 Vrms.

■ DC current(Isat) that will cause Lo to drop approximately 30% Max.at I sat(A)

■ DC current(Irms) that will cause an approximastely ΔT of 40℃

■ TESTING INSTRUMENT :

1) LCR METER (HP 4284A)

2) DC BIAS CURRENT SOURCE (HP 42841A)

### 2.2 Regulation of Part number

|    |   |   |     |        |    |   |     |   |
|----|---|---|-----|--------|----|---|-----|---|
| CM | I | - | DOP | 252012 | NH | - | 2R2 | M |
| ①  | ② |   | ③   | ④      | ⑤  |   | ⑥   | ⑦ |

① - CoilMaster's initial

② - Inductor

③ - Series Code

④ - Size (unit: mm)

⑤ - Lead Free Type , Halogen Free

⑥ - Typical inductance value (2.2uH)

⑦ - Inductance tolerance(±20%)

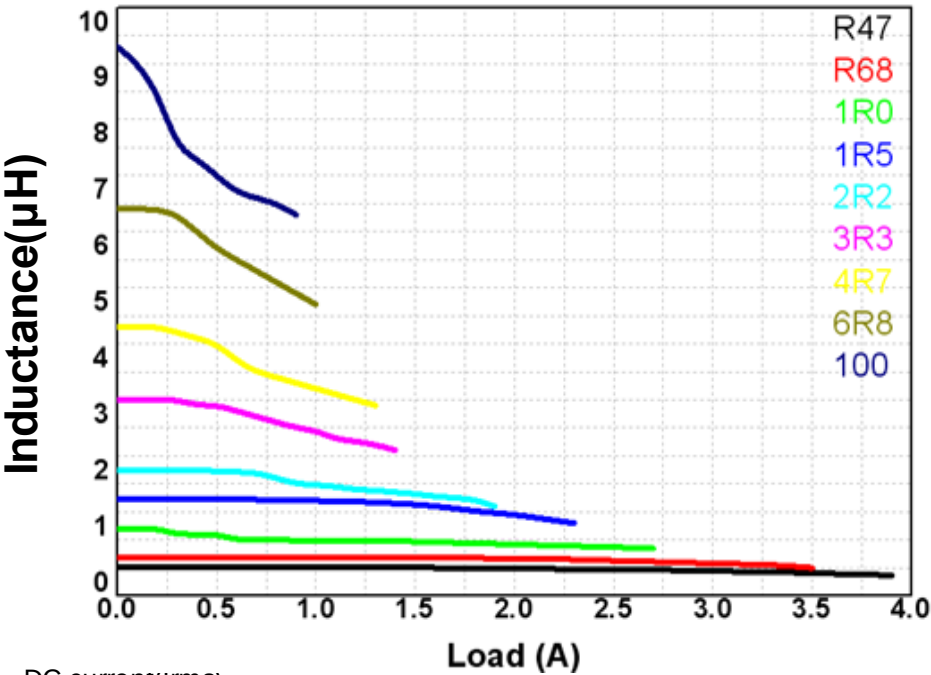
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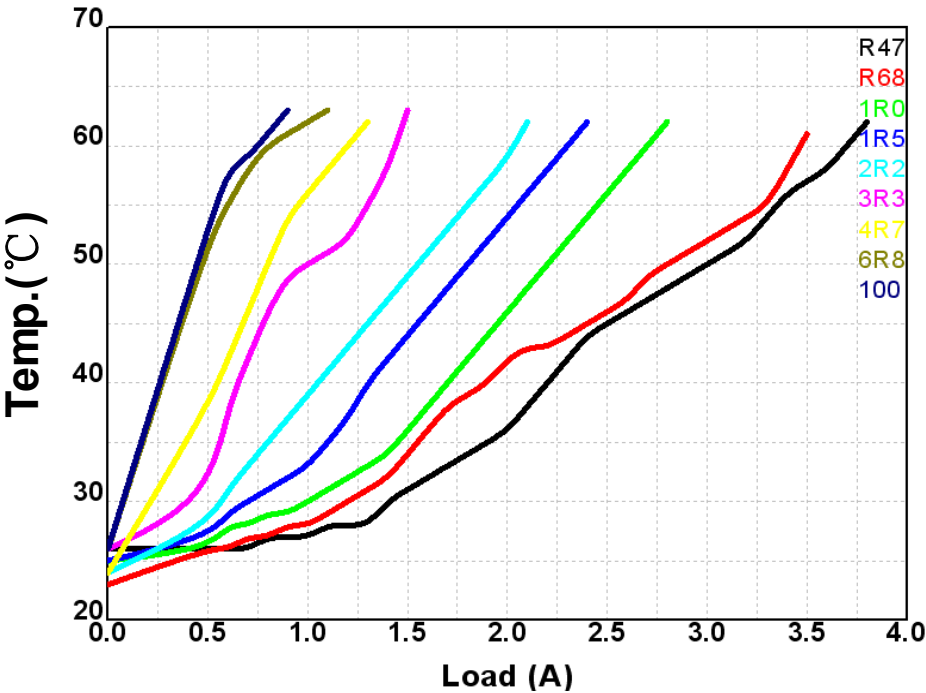
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2.3 Current Characteristic

2.3.1 DC current(Isat)



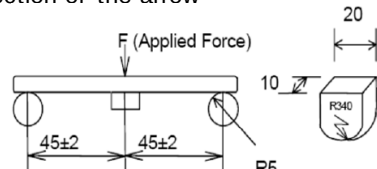
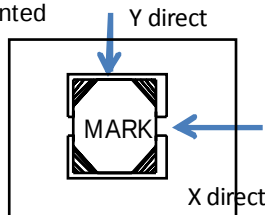
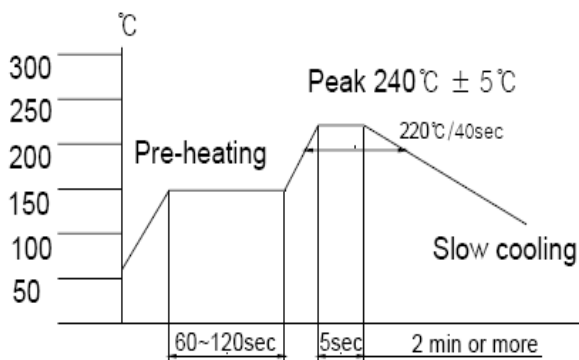
2.3.1 DC current(Irms)



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3.. RELIABILITY AND SPECIFICATION

3-1. MECHANICAL TESTS

| No. | TEST ITEM                                            | SPECIFICATION                                                                        | TEST DETAILS                                                                                                                                                                                                                                                                                                 |
|-----|------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Electrode strength<br>(bendability of substrate)     | $\Delta L/L_0 \leq \pm 5\%$<br><br>There shall be no mechanical or electrical damage | The sample shall be soldered onto the printed circuit board in figure 1 and the load is applied until the bending in the direction of the arrow is approximately 3mm<br>(Hold Time = 30seconds)<br>                       |
| 2   | Electrode adhesion<br>(sticking-tendency)            | $\Delta L/L_0 \leq \pm 5\%$<br><br>There shall be no mechanical or electrical damage | the sample shall be soldered on the printed circuit board, Force of 10N(1.02Kgf) shall be applied with pressing jig.<br>Holding time is 5seconds;<br>                                                                     |
| 3   | Vibration Test                                       | $\Delta L/L_0 \leq \pm 5\%$<br><br>There shall be no mechanical damage               | The sample is solderde onto the printed circuit board. It is then a vibration test as follows :<br><br>Vibration Amplitude = 1.52mm<br>Frequency varies from 10Hz to 55Hz and back over a 1 minute period<br>The test is carried out in the 3 directions ( X, Y, Z ) for 2 hours each ( A total of 6 hours ) |
| 4   | Resistance to soldering heat<br>( Reflow soldering ) | There shall be no damage                                                             | Then remain the following condition 2 times.<br>Measure the test items after leaving them in normal temperature and humidity for more than 1 hour.<br>                                                                   |
|     | ( Manual soldering )                                 | $\Delta L/L_0 \leq \pm 5\%$<br><br>There shall be no mechanical damage               | Using soldering iron<br>Max. tip temperature : 350±10℃<br>Max. exposure time : 3±1 sec<br>Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity for hour.                                                                    |

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### 3-2. ENVIROMENTAL CHARAC

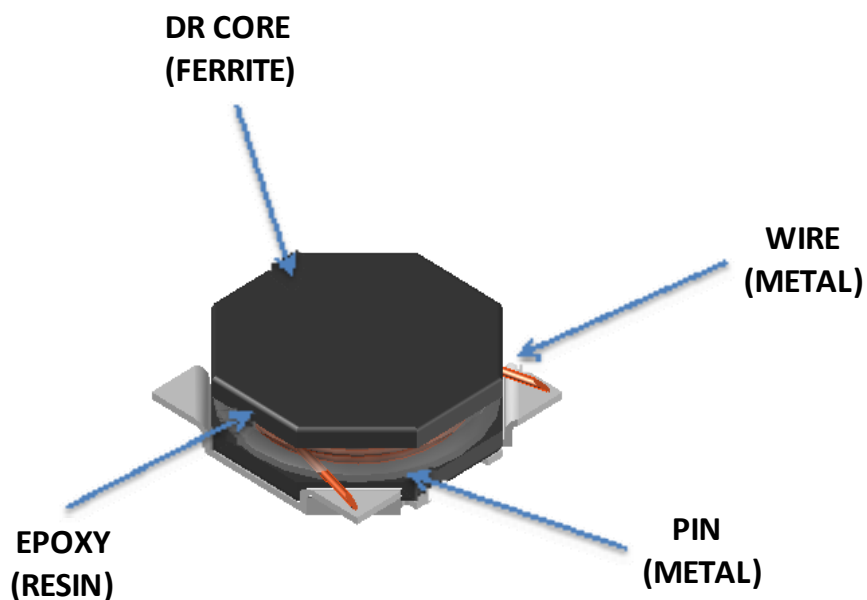
| No. | TEST ITEM                | SPECIFICATION                                                          | TEST DETAILS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |             |          |   |        |        |   |                      |                          |   |        |       |   |                      |                          |
|-----|--------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------|----------|---|--------|--------|---|----------------------|--------------------------|---|--------|-------|---|----------------------|--------------------------|
| 5   | High Temperature Storage | $\Delta L/L_o \leq \pm 5\%$<br><br>There shall be no mechanical damage | The sample shall be left f or 500±12 houre in an atmosphere with a temperature of 105±2℃ and normal humidity . Upon completion of the test the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.                                                                                                                                                                                                                                                                                                                                                                               |     |             |          |   |        |        |   |                      |                          |   |        |       |   |                      |                          |
| 6   | Low Temperature Storage  | $\Delta L/L_o \leq \pm 5\%$<br><br>There shall be no mechanical        | <div>The sample shall be left for 500±12 houre in an atmosphere with a temperature of -40±3℃.<br/>Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.</div> <div><table><caption>Table 2</caption><tr><th>No.</th><th>Temperature</th><th>Duration</th></tr><tr><td>1</td><td>-25±2℃</td><td>30 min</td></tr><tr><td>2</td><td>Standard Atmospheric</td><td>5 sec or less<br/>NO1→No2</td></tr><tr><td>3</td><td>+85±2℃</td><td>30min</td></tr><tr><td>4</td><td>Standard Atmospheric</td><td>5 sec or less<br/>NO1→No2</td></tr></table></div> | No. | Temperature | Duration | 1 | -25±2℃ | 30 min | 2 | Standard Atmospheric | 5 sec or less<br>NO1→No2 | 3 | +85±2℃ | 30min | 4 | Standard Atmospheric | 5 sec or less<br>NO1→No2 |
| No. | Temperature              | Duration                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |             |          |   |        |        |   |                      |                          |   |        |       |   |                      |                          |
| 1   | -25±2℃                   | 30 min                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |             |          |   |        |        |   |                      |                          |   |        |       |   |                      |                          |
| 2   | Standard Atmospheric     | 5 sec or less<br>NO1→No2                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |             |          |   |        |        |   |                      |                          |   |        |       |   |                      |                          |
| 3   | +85±2℃                   | 30min                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |             |          |   |        |        |   |                      |                          |   |        |       |   |                      |                          |
| 4   | Standard Atmospheric     | 5 sec or less<br>NO1→No2                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |             |          |   |        |        |   |                      |                          |   |        |       |   |                      |                          |
| 8   | Moisture Storage         | $\Delta L/L_o \leq \pm 5\%$<br><br>There shall be no mechanical damage | The sample shall be left 500±4 hours in a temperayure of +40±2℃ and a humidity (RH) of 90 ~ 95%<br>Upon completion of the test, the measurement shall be made of left in a normal temperature and nomal humidity more than 1 hour. ( NO Bias )                                                                                                                                                                                                                                                                                                                                                                                                |     |             |          |   |        |        |   |                      |                          |   |        |       |   |                      |                          |

### 13-3. ENVIROMENTAL CHARACTERISTICS

| No. | TEST ITEM     | SPECIFICATION                                       | TEST DETAILS                                                                                                                                  |
|-----|---------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 9   | Solderability | At least 75% Area should be covered with new solder | The sample shall be immersed for 5 to 10 seconds in flux. Then immersed in molten solder at $240 \pm 5^\circ\text{C}$ for $3 \pm 1/0$ seconds |

|                |                        |                    |          |          |
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#### 4. Material List



| NO | ITEM                 | MATERIAL & DIMENISON |             | MANUFACTURER       | SAFETY             |
|----|----------------------|----------------------|-------------|--------------------|--------------------|
| 1  | DR CORE<br>(FERRITE) | 2.57*2.07*1.07       |             | S-(D.G) CORP.      |                    |
| 2  | PIN<br>(METAL)       | DOP252012NH          |             | L-FACTORY          |                    |
| 3  | WIRE<br>(METAL)      | E180<br>EIW          | Ø0.07~0.20  | E-CORP.<br>Y-CORP. | E143312<br>E225155 |
| 4  | EPOXY<br>(RESIN)     | EPOXY 1              | EPOXY RESIN | P-CORP.            |                    |
|    |                      | EPOXY 2              |             | T-CORP.            |                    |

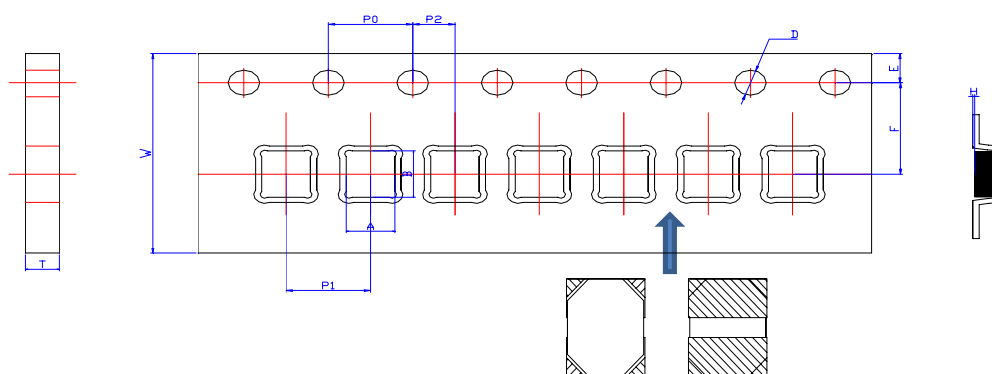
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## 5. Packing

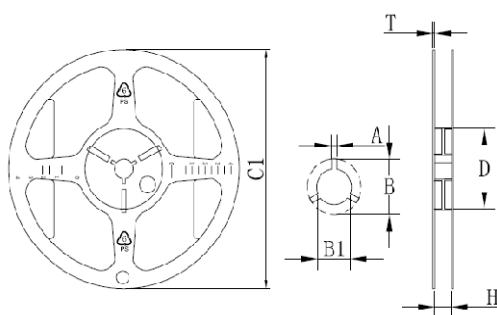
### 5.1 Property of packing material

|                                 |                                 |
|---------------------------------|---------------------------------|
| Tensile of carrier tape         | 10N ( 1kgf ) Min.               |
| Tensile of cover tape           | 10N ( 1kgf ) Min.               |
| Adhesive strength of cover tape | 0.1 N ( 10gf ) ~ 0.7 N ( 70gf ) |
| Pulling degree of carrier tape  | 165° ~ 180°                     |
| Spin speed of reel              | 300mm / min                     |

### 5.2 Dimension of packing material



| A        | B        | W     | F       | E        | P <sub>1</sub> | P <sub>2</sub> | P <sub>0</sub> | D       | T         |
|----------|----------|-------|---------|----------|----------------|----------------|----------------|---------|-----------|
| 2.45±0.1 | 2.85±0.1 | 8±0.1 | 3.5±0.1 | 1.75±0.1 | 4±0.1          | 2±0.1          | 4±0.1          | 1.5±0.1 | 0.25±0.05 |



<SPQ Box>



<PQ Box>

| C1     | A       | B        | B1       |
|--------|---------|----------|----------|
| 178±1  | 2.6±0.3 | 22.5±0.5 | 13.5±0.3 |
| D      | T       | H        |          |
| 60±0.5 | 1±0.2   | 9.0±0.5  |          |

| Packing unit | Quantity                            |
|--------------|-------------------------------------|
| Reel         | 3,000pcs / reel                     |
| Middle box   | 5 Reel / box (15,000pcs)            |
| Large box    | 2 Middle boxes, 4 Reels (60,000pcs) |

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6.RoHS TEST REPORT

| No. | Part Name | 실측 무게<br>(총중량) | Substance Content(ppm) |       |     |      |      |       |     |     |
|-----|-----------|----------------|------------------------|-------|-----|------|------|-------|-----|-----|
|     |           |                | Pb                     | Cd    | Hg  | Cr+6 | PBBs | PBDEs | Br  | Cl  |
|     |           |                | 200/700                | 50/70 | 700 | 700  | 100  | 100   | 900 | 900 |
| 1   | DR CORE   | 0.03g          | 0                      | 0     | 0   | 0    | 0    | 0     | 0   | 0   |
| 2   | PIN       |                | 41.9                   | 0     | 0   | 0    | 0    | 0     | 0   | 0   |
| 3   | WIRE      |                | 0                      | 0     | 0   | 0    | 0    | 0     | 0   | 0   |
| 4   | EPOXY(1)  |                | 0                      | 0     | 0   | 0    | 0    | 0     | 0   | 620 |
| 5   | EPOXY(2)  |                | 0                      | 0     | 0   | 0    | 0    | 0     | 0   | 108 |

| Product | CMI-DOP series                                                                      | <div>QC Flow Chart</div>                |                               |                                                                             |                                                      | Approval                                                                            |
|---------|-------------------------------------------------------------------------------------|-----------------------------------------|-------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------|
| Rev.    | 0                                                                                   |                                         |                               |                                                                             |                                                      |  |
| Date    | 2012.04.17                                                                          |                                         |                               |                                                                             |                                                      |                                                                                     |
| No      | Flow Chart                                                                          | Process                                 | Equipment                     | Control Item                                                                | Measurement                                          | Document                                                                            |
| 1       |    | IQC                                     |                               | 1)Appearance 2)Size<br>3)Characteristic 4)Quantity                          | Visual                                               | Inspection guidelines                                                               |
| 2       |    | Core Arrange                            | Arrange Jig                   | 1)DRCore Standard<br>2)DRCore Arrange condition                             | Visual                                               | Process instructions                                                                |
| 3       |    | Epoxy painting                          | Epoxy painting Jig            | 1)Epoxy Standard<br>2)Epoxy storage condition<br>3)Epoxy paint condition    | 1)Visual<br>2)Thermometer<br>3)Visual                | Process instructions                                                                |
| 4       |    | Pin Adhesion                            |                               | 1)Pin adhesion condition                                                    | Visual                                               | Process instructions                                                                |
| 5       |    | Dry                                     | Dry oven                      | 1)Dry time/temperature<br>2)Dry condition<br>3)Dry state                    | 1)Timer/Thermometer<br>2)Visual<br>3)Push/Pull Gauge | Process instructions                                                                |
| 6       |    | Core and PIN<br>arranging<br>inspection |                               | 1)arranging condition                                                       | Microscope                                           | Inspection guidelines                                                               |
| 7       |    | Winding                                 | Winding M/C                   | 1)Wire Standard<br>2)Wire Turn number<br>3)Wire condition                   | 1)Calipers<br>2)Calipers<br>3)Visual                 | Process instructions                                                                |
| 8       |    | Welding<br>(CTQ)                        | Welding M/C                   | 1)Welding Current<br>2)Welding Pressure<br>3)Welding Time                   | Visual                                               | Process instructions                                                                |
| 9       |    | Wire cutting                            | Cutting M/C                   | 1)Cutting condition                                                         | Visual                                               | Process instructions                                                                |
| 10      |    | Winding and<br>welding<br>Inspection    |                               | 1)Winding condition<br>2)welding condition<br>3)Wire cutting condition      | Microscope                                           | Inspection guidelines                                                               |
| 11      |  | Epoxy painting                          | Epoxy painting Jig            | 1)Epoxy Standard<br>2)Epoxy storage condition<br>3)Epoxy paint condition    | 1)Visual<br>2)Thermometer<br>3)Visual                | Process instructions                                                                |
| 12      |  | Dry                                     | Dry oven                      | 1)Dry time/temperature<br>2)Dry condition                                   | 1)Timer/Thermometer<br>2)Visual                      | Process instructions                                                                |
| 13      |  | PIN cutting                             | Cutting M/C                   | 1)Cutting condition                                                         | Visual                                               | Process instructions                                                                |
| 14      |  | Visual sorting                          | Visual sorting M/C            | 1)Marking condition<br>2)CORE condition<br>3)PIN condition                  | Visual/Magnifier                                     | Visual guidelines<br>Appearance Guidelines                                          |
| 15      |  | Characteristic<br>sorting               | Characteristic<br>sorting M/C | 1)Inductance<br>2)Resistance                                                | LCR METER<br>DCR METER                               | Characteristic guidelines                                                           |
| 16      |  | OQC 1                                   | Reflow M/C                    | 1)Inductance/Resistance<br>2)DC Bias<br>3)Reflow Test                       | LCR METER<br>DCR METER                               | Inspection guidelines                                                               |
| 17      |  | REEL Packing                            | Packing M/C                   | 1)Packing condition<br>2)Packing Quantity<br>3)Adhesive Strength<br>4)Label | Strength measuring gauge                             | Packing guidelines                                                                  |
| 18      |  | OQC 2                                   |                               | 1)Packing condition<br>2)Label condition                                    | Visual                                               | Inspection guidelines                                                               |

单击下面可查看定价，库存，交付和生命周期等信息

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