

**MESSRS.****SPECIFICATION FOR APPROVAL**  
**承 認 书**

|                          |                               |
|--------------------------|-------------------------------|
| <b>Product</b>           | <b>DYNAMIC SPEAKER</b>        |
| <b>Part No.</b>          | <b>HDK-3608BB-15C7 (RoHS)</b> |
| <b>Customer Approval</b> |                               |

|                    |                    |                     |
|--------------------|--------------------|---------------------|
| <b>Approved By</b> | <b>Checked By</b>  | <b>Made By</b>      |
| 王台平<br>FEB-21-2023 | 曹丽萍<br>FEB-21-2023 | LILY<br>FEB-21-2023 |

**常 州 华 龙 电 子 有 限 公 司**  
Changzhou Dragon State Electronic Co., Ltd

中国江苏省常州市新区电子园新四路 36 号

Tel: +86-519-85110078. 86-519-85106698, Fax: +86-519-85101081

EDITION:1.1



## 1. Specification

**HDK-3608BB-15C7 (RoHS)**

| ITEM |                            | SPECIFICATIONS                                                                                                |                                  |
|------|----------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------|
| 01   | Type                       | Dynamic speaker                                                                                               |                                  |
| 02   | Dimension                  | External diameter 36 mm                                                                                       |                                  |
| 03   | Rated Input Power          | 1.0W                                                                                                          |                                  |
| 04   | Max. Input Power           | 1.2W for 1 minute                                                                                             |                                  |
| 05   | Impedance                  | 8 ohm $\pm$ 15% at 1500Hz.                                                                                    |                                  |
| 06   | Resonance Frequency (Fo)   | 480Hz $\pm$ 20% at Fo, 1V                                                                                     |                                  |
| 07   | Sensitivity (S.P.L.)       | 90dB (0.1W / 0.1m) $\pm$ 3dB                                                                                  | at AVE<br>0.6K,0.8K,1.0K,1.2KHz. |
| 08   | Frequency Range            | Fo – 20KHz                                                                                                    |                                  |
| 09   | Dustproof and waterproof   | IPX4                                                                                                          |                                  |
| 10   | Total Harmonics Distortion | Max 5 % at 1 KHz,0.1W.                                                                                        |                                  |
| 11   | Voice Coil                 | Diameter 13.3 mm                                                                                              |                                  |
| 12   | Magnet                     | Rare earth permanent (Nd-Fe-B) magnet $\Phi$ 12.5 x 1.5 mm                                                    |                                  |
| 13   | Appearance                 | Should not exist any obstacle to be harmful to normal operation; damages, cracks, rusts and distortions, etc. |                                  |
| 14   | Operation Test             | Must be normal at program source –1.0W                                                                        |                                  |
| 15   | Buzz, Rattle, etc.         | Should not be audible at 2.83V sine Wave between Fo to 20KHz                                                  |                                  |
| 16   | Polarity                   | When positive voltage is applied to the terminal marked (+), diaphragm should move to the front.              |                                  |
| 17   | Terminal Strength          | Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection.                    |                                  |
| 18   | Temperature                | Operating temperature: -20℃ to +60℃<br>Storage temperature: -30℃ to +70℃                                      |                                  |

## 2-1. Test Condition Standard

Temperature : 15 ~ 35°C

Relative humidity : 25% ~ 85%,

Atmospheric pressure : 860mbar to 1060mbar.

### Basic

Temperature : 20±3°C

Relative humidity : 60% ~ 70%,

Atmospheric pressure : 860mbar to 1060mbar

## 2-2. Standard Test Fixture

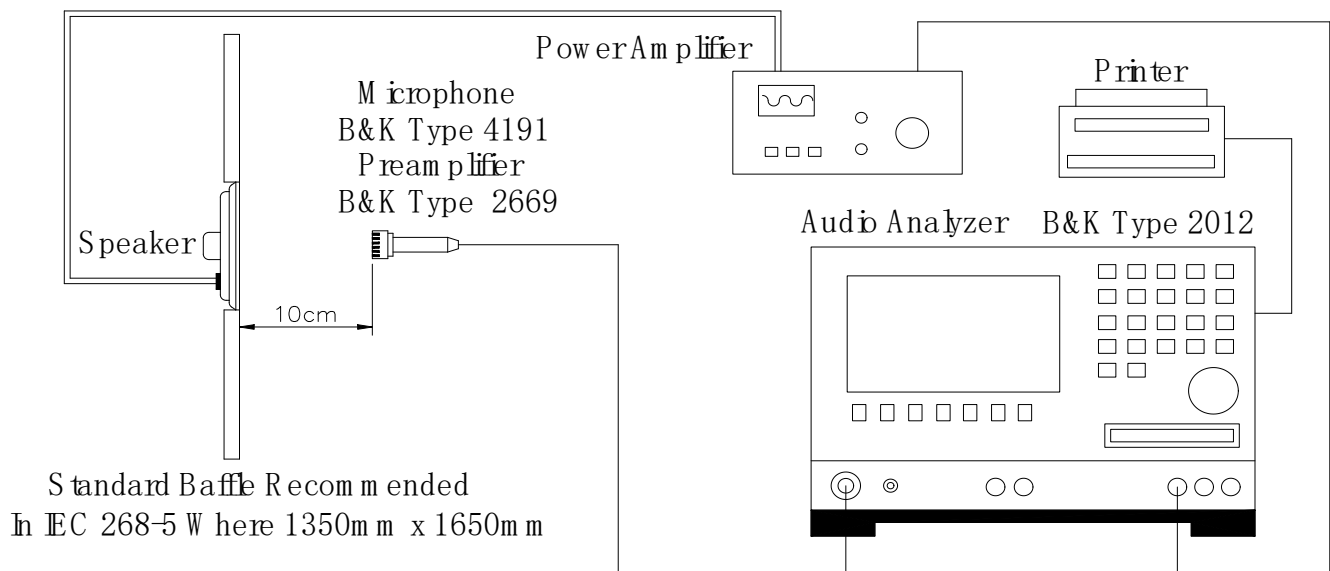
1. Input Power : 0.1W ( 0.89V )

2. Zero Level : -dB

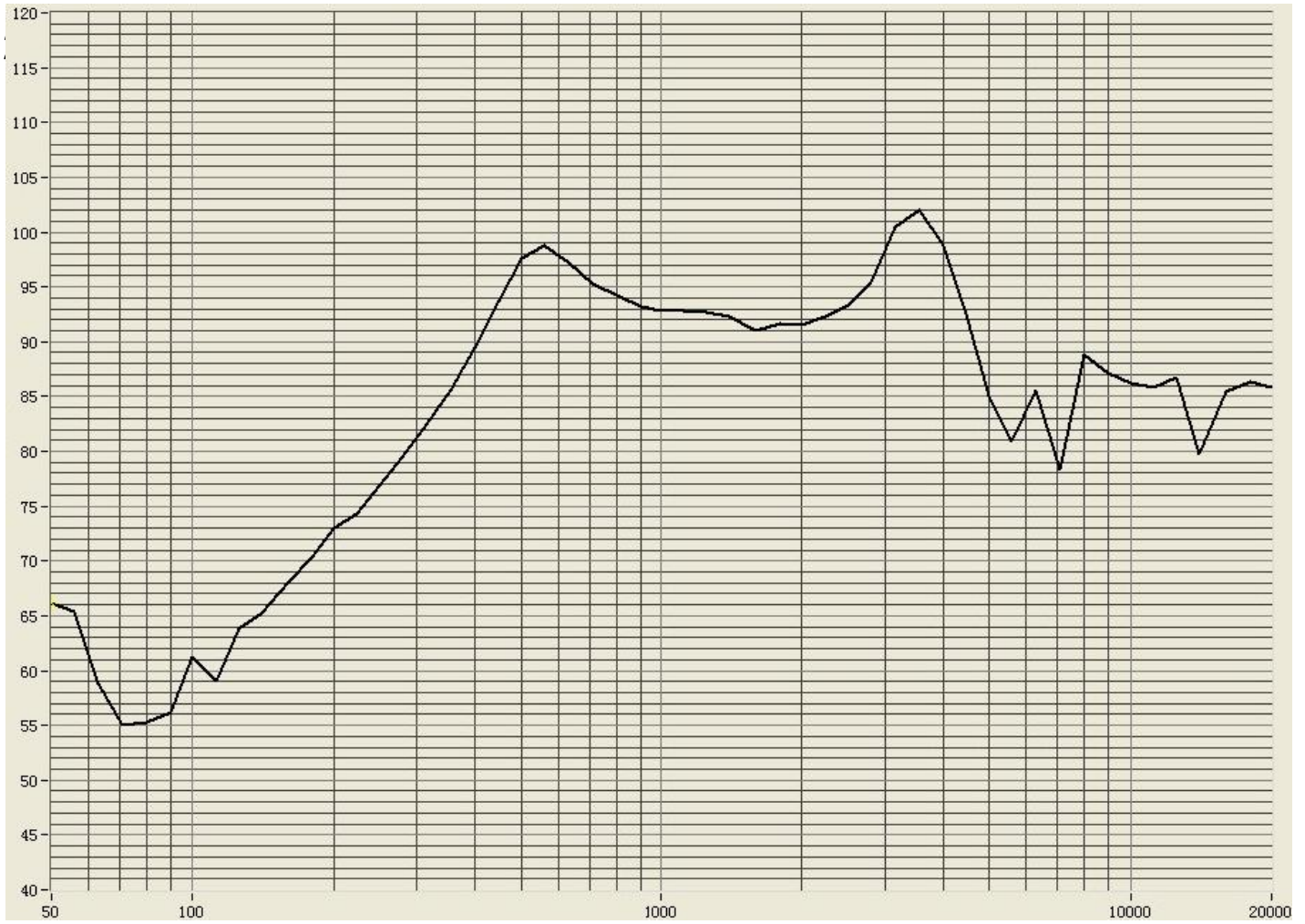
3. Mode : SPEAKER

4. potentiometer Range : 50dB

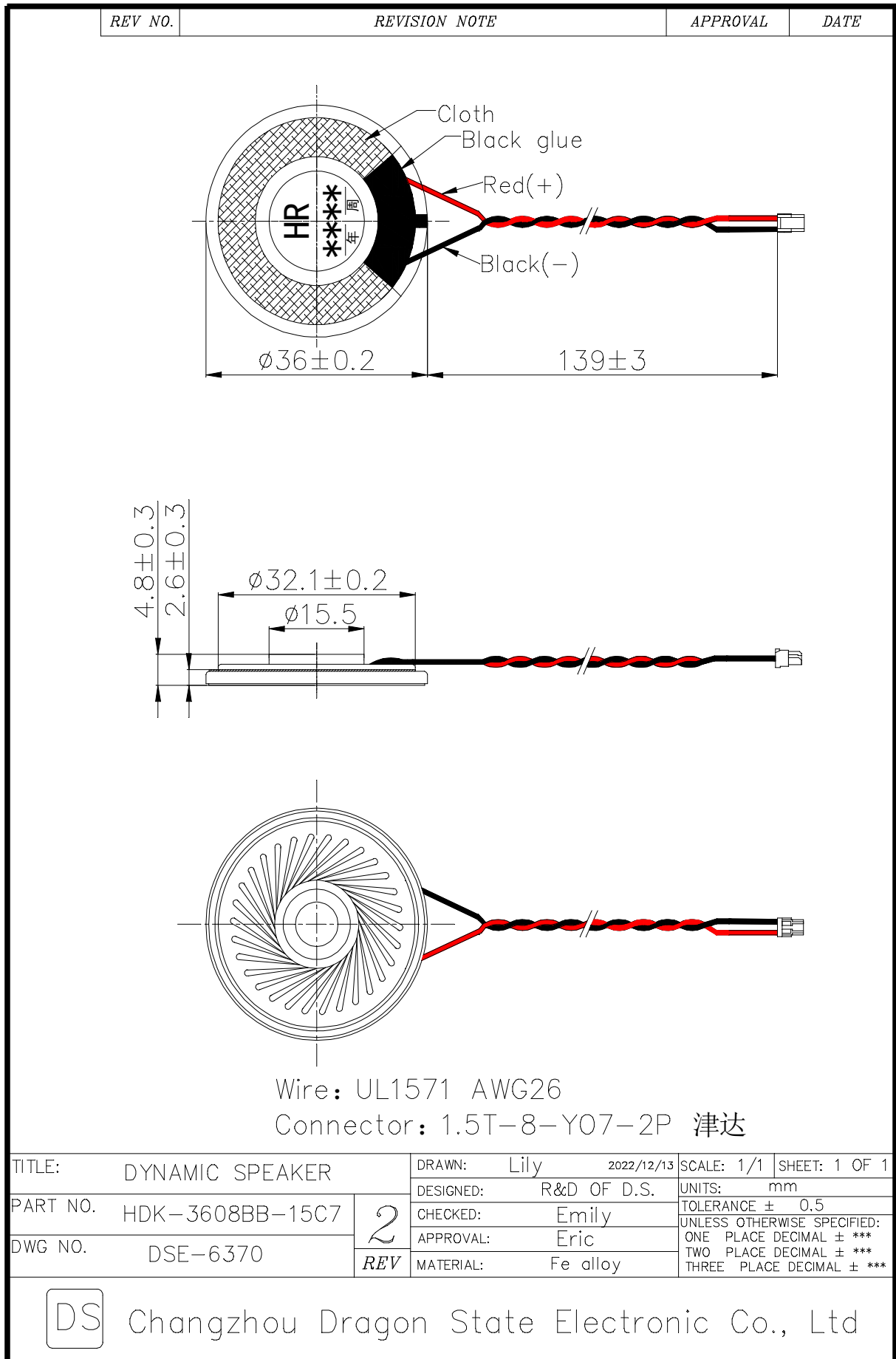
5. Sweep Time : 0.5sec



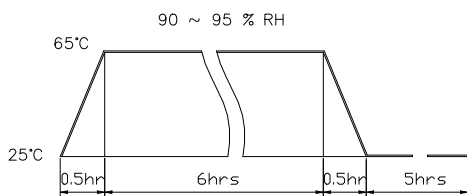
## 2-3. Frequency Response Curve



### 3.Dimension



## 4. Reliability Test

| Items. |                        | Specifications                                                                                                                                                                        |
|--------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01     | High temp. Test        | Keep 96 hours at $+70^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check                                                                   |
| 02     | Low temp. Test         | Keep 96 hours at $-30^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check                                                                   |
| 03     | Humidity test          | Keep 96 hours at $+40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ relative humidity 95% and leave 3 hours in normal temperature and then checked.                                          |
| 04     | Temp./Humidity cycle   | <p>The part shall be subjected 5 cycles. One cycle shall be 12 hours and consist of;</p>            |
| 05     | Thermal cycle test.    | Low temperature: $-30^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , temperature: $+70^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , cycle: 1 hour/cycle each, and then keep 5 cycles in a room. |
| 06     | Vibration              | 10~200~10Hz sin-wave sweep 15min. 5G(constant) X,Y, Z 3 direction. 2 hours each, total 6 hours.                                                                                       |
| 07     | Fix drop test          | Fix on jig. Then drop from 152cm height to the concrete floor<br>X,y, z 6 direction. 5 times each, total 30 times.                                                                    |
| 08     | Free drop test         | Free drop from 100cm height to the concrete floor<br>X,y, z 6 direction. 1 times each, total 6 times.                                                                                 |
| 09     | Rated Power test       | Rated Power white noise is applied for 96 hours                                                                                                                                       |
| 10     | Max Power test         | Max power 1 min on – 2 min off 10 cycles.                                                                                                                                             |
| 11     | Terminal strength test | Capable of withstand 1kg load for 30 seconds without resulting in any damage or rejection.                                                                                            |

**Criterion: After these test , the change of S.P.L shall be within  $\pm 3$  dB .**

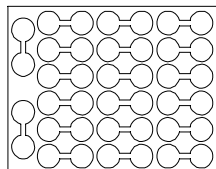
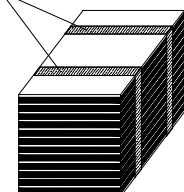
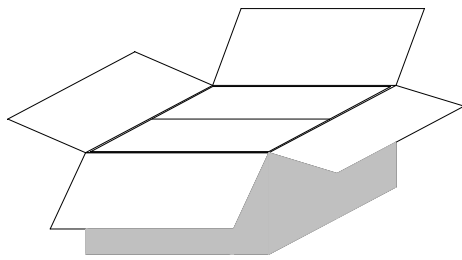
**For trail products and samples, random 10pcs test. For MP products, test cycle is 6 month.**

### SOLDERING CONDITION

Recommend using constant branding iron in **15 ~ 30W**, and in temperature range  **$350 \pm 10^{\circ}\text{C}$** .

Soldering time not over **3** seconds.

## 5.Packing

| REV NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | REVISION NOTE | APPROVAL               | DATE  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------------|-------|
| <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;">  <p>↓</p>  <p>↓</p>  <p>↓</p>  </div> <div style="margin-left: 20px;"> <p>Cover(330*250*5mm)<br/>Material:Eps</p> <p>Box(330*250*16mm)<br/>40pcs<br/>Material:Eps</p> <p>Middle(330*250*160mm)<br/>440pcs<br/>Material:Eps</p> <p>Outer Box(490*350*360mm)<br/>1800pcs(3*440+480pcs)<br/>Material:Paper</p> </div> </div> |               |                        |       |
| 单位: mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                        |       |
| TITLE: packing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               | DRAWN: Lily 2014/06/09 |       |
| PART NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               | DESIGNED: R&D OF D.S.  |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               | CHECKED: Emily         |       |
| DWG NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               | APPROVAL: Eric         |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               | MATERIAL: ***          |       |
| <div style="border: 1px solid black; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">DS</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               | SCALE: 2:1             |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               | SHEET: 1 of 1          |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               | UNITS: mm              |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               | TOLERANCE              |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               | 20~11                  | ± 0.3 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               | 10~5                   | ± 0.2 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               | <4                     | ± 0.1 |
| <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin-right: 10px;">DS</div> <div>Changzhou Dragon State Electronic Co., Ltd</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |                        |       |

## 内标签

PN:  
  
 QUANTITY:  
  
 MPN:  
  
  
 规格型号:  
 常州华龙电子有限公司

## 内包装



## 外箱标签

|                                                                                           |            |                                                                 |
|-------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------|
| Roborock PN:                                                                              |            | RoHS 标签                                                         |
| 供应商名称:                                                                                    | 1. 1. 100  |                                                                 |
| 制造商名称:                                                                                    | 常州华龙电子有限公司 |                                                                 |
| MPN:                                                                                      |            | PASS 章                                                          |
| 规格描述:                                                                                     |            |                                                                 |
| 批次号:                                                                                      |            |                                                                 |
| 生产日期:                                                                                     |            | 二维码<br>(Roborock PN, 供应商代码, MPN, 生产日期, 批次号, 订单编号, 数量 QTY, 特殊用途) |
| 出货日期:                                                                                     |            |                                                                 |
| 订单编号:                                                                                     |            |                                                                 |
| 数量 QTY:                                                                                   |            |                                                                 |
| QR CODE 二维码包含信息规则 (最大 128 位):                                                             |            |                                                                 |
| Roborock PN: 预留 10 位, 在 Roborock 系统中的料号 (包含料号中的间隔 “.” 点符号), 如 1.01.0001, 多余位留空;           |            |                                                                 |
| 供应商代码: 在 Roborock 系统中的代码 (包含中间的间隔 “.” 点符号), 共 7 位;                                        |            |                                                                 |
| MPN: 预留 15 位, 多余位留空; 无此信息可以留空;                                                            |            |                                                                 |
| 生产日期: 预留 8 位, 日期格式 20180601; 周别格式 1803, 18 年第 3 周; 多余位留空;                                 |            |                                                                 |
| 批次号: 预留 20 位, 多余位留空; 无此信息可以留空;                                                            |            |                                                                 |
| 订单编号: 预留 15 位; 多余位留空;                                                                     |            |                                                                 |
| 数量 QTY: 预留 7 位; 如 1234567; 多余位留空;                                                         |            |                                                                 |
| 特殊用途: 预留 4 位; 如用于试产、验证、特采等; 无此信息留空;                                                       |            |                                                                 |
| 二维码内容格式: Roborock PN, 供应商代码, MPN, 生产日期, 批次号, 订单编号, 数量 QTY, 特殊用途 (共计 93 位, 中间务必用英文 “,” 隔开) |            |                                                                 |