

# 深圳市咸阳华星机电有限公司

SHENZHEN XIANYANG HUAXING MACHINERG & ELECTRONIC.CO;LTD

## 承认书

(APPROVE SHEET)

客 户(Customer): \_\_\_\_\_

品 名(Description): CR 系列 水泥电阻器

规格(Specification): \_\_\_\_\_

客户料号(Cus. P/N): \_\_\_\_\_

版本日期(Ver Date): 2020 年 07 月 20 日 A0 版

| 供方签章<br>(SUPPLIER SIGNATURE) |            | 客户承认签章<br>(APPROVAL SIGNATURE) |  |
|------------------------------|------------|--------------------------------|--|
| 制作<br>DRAWN BY               | 邓春光        | 核 準<br>APPROVED BY             |  |
| 审 核<br>CHECKED BY            | 李跃龙        | 结 果<br>RESULT                  |  |
| 日 期<br>DATE                  | 2020-07-20 | 日 期<br>DATE                    |  |

电话 TEL: 86+755—81785561 /562 /563 传真 FAX: 86+755—81785565

工厂地址: 深圳市宝安区石岩街道浪心社区洲石路“湖其斗”嘉达工业园 1 栋 2 楼.

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# 水泥电阻器

## Cement Type Resistors

### 1. 一般事项 General

#### 1.1 适用 Scope

本承认书适用于 [水泥型电阻器], 符合环境关联物质要求之 RoHS 测试。

This specification is available for Cement Type Resistors, it accords with RoHS test of Environment related substance requirement.

#### 1.2 形名(例) Type designation (example)

依使用种类、额定电力、公称电阻值、容许误差及型状而区别,其构造如下。

The type designation shall be in the following form and as specified.

CR-(?)                      5W                      0.1R                      J

|            |
|------------|
| 种类<br>Type |
| CR-L       |
| CR-M       |
| CR-YA      |
| CR-YB      |

|                     |
|---------------------|
| 额定电力<br>Rated power |
| 2W                  |
| 3W                  |
| 5W                  |

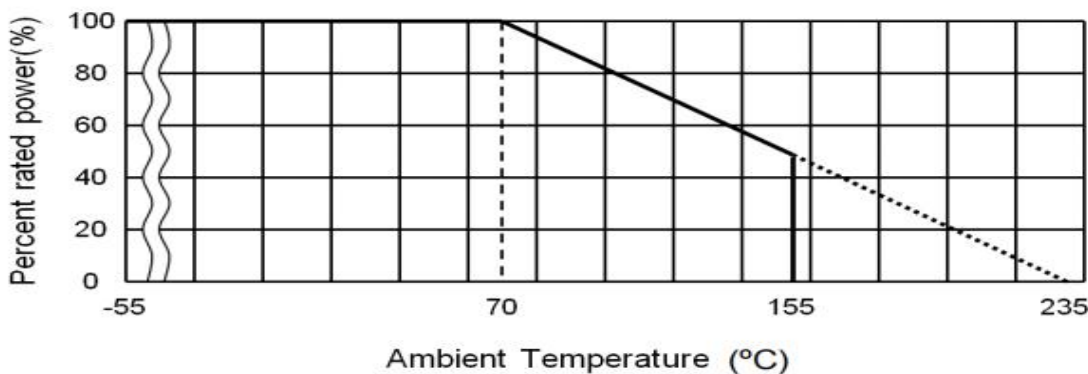
|                                      |
|--------------------------------------|
| 公称电阻值<br>Nominal resistance<br>value |
| E-12 Series                          |
| E-24 Series                          |

|                                    |      |
|------------------------------------|------|
| 电阻值容许误差<br>Resistance<br>tolerance |      |
| K                                  | ±10% |
| J                                  | ±5%  |

#### 1.3 额定功率 Rated power

额定电力系应在周围温度 70℃可以连续负载的最大电力, 如表-1;但周围温度如超过 70℃时之额定电力则依图一的电力递减曲线实施。

Rated power is maximum power which can be continuously loaded at specified ambient temperature 70℃,as Table-1;however when the ambient temperature exceeds 70℃,rated power should be determined from the derating curve of Fig.1.



#### 1.4 使用温度 Operating Temperature Range:-55℃~+250℃

#### 1.5 额定周围温度 Rated ambient temperature: 1W~10W:70℃, 15W 以上 or more:25℃

功率因数计算公式:  $E = \sqrt{P \times R}$  Where

E: 额定电压 Rated voltage(V)

P: 定格电力 Rated power(W)

R: 公称电阻值 Nominal resistance(Ω)



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| 定格电力<br>Rated power | 最高使用电压<br>Maximum working voltage | 最高过负荷电压<br>Maximum overload voltage | 介质耐电压<br>Dielectric withstanding voltage | 最高断续过负荷电压<br>Max Intermittence Overload Voltage |
|---------------------|-----------------------------------|-------------------------------------|--|---|
| 1W                  | 350V                              | 700V                                | 1000V                                    | 1500V   |
| 2W                  | 350V                              | 700V                                | 1000V                                    | 1500V   |
| 3W                  | 500V                              | 1000V                               | 1000V                                    | 1500V   |
| 5W                  | 750V                              | 1500V                               | 1000V                                    | 1500V   |
| 7W                  | 1000V                             | 1500V                               | 1000V                                    | 1500V   |
| 10W                 | 1000V                             | 1500V                               | 1000V                                    | 1500V   |
| 15W                 | 1000V                             | 1500V                               | 1000V                                    | 1500V   |
| 20W                 | 1000V                             | 1500V                               | 1000V                                    | 1500V   |
| 30W                 | 1000V                             | 1500V                               | 1000V                                    | 1500V   |
| 40W                 | 1000V                             | 1500V                               | 1000V                                    | 1500V   |

### 2. 构造 Construction

#### 2.1 外形尺寸 External dimensions

参照本承认书的 [5. 外形尺寸]。

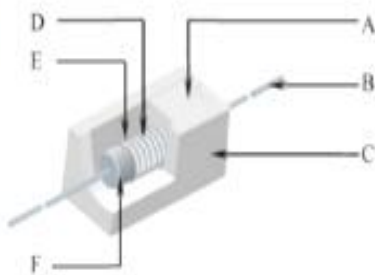
The dimensions shall be satisfied with [5. External dimensions].

#### 2.2 构造图 Structure diagram

CR-(?) 系列之水泥固定电阻器系按下表的材料而构成:

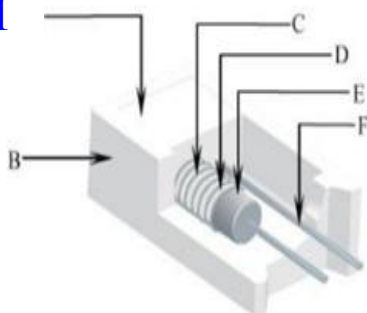
The construction of resistor Cement Type Resistors shall be as follow:

#### CR-L



- A、填充料 Padding materials
- B、镀锡铜线 Tinned copper lead wire
- C、瓷壳 Ceramic shell
- D、玻璃纤维或陶瓷基体或电阻膜层 Fiberglass or ceramic core or resistors film
- E、电阻丝或陶瓷基体 Resistance wire or ceramic core
- F、铁帽 Iron cap

#### CR-M



- A、填充料 Padding materials
- B、瓷壳 Ceramic shell
- C、电阻丝或陶瓷基体 Resistance wire or ceramic core
- D、玻璃纤维或陶瓷基体或电阻膜层 Fiberglass or ceramic core or resistors film
- E、铁帽 Iron cap
- F、镀锡铜线 Tinned copper lead wire



## 水泥电阻器

## Cement Type Resistors

## 3. 参数特性 Characteristics

表-3 Table-3

| 项目<br>Item                                   | 规格值<br>Performance   | 试验方法(依据 JIS C 5202)<br>Test methods(Conform to JIS C 5202)   |
|--|--|--|
| 温度系数<br>Temperature<br>Coefficient           | 皮膜电阻芯:±700PPM/°C<br>绕线电阻芯: ±300PPM/°C<br>Resistor Wire:±300PPM/°C  | 5.2 项参照 Comply with 5.2<br>$\frac{R_1-R_0}{R_0(T_1-T_0)} \times 10^6(\text{PPM}/^\circ\text{C})$<br>R <sub>0</sub> :室温(T <sub>0</sub> )所测量之电阻值。<br>R <sub>1</sub> :室温+100°C(T <sub>1</sub> )后所测量之电阻值。<br>R <sub>0</sub> :Resistance value at room temp.( T <sub>0</sub> ).<br>R <sub>1</sub> :Resistance value at room temp.plus 100°C (T <sub>1</sub> ) |
| 短时间过负荷<br>Short time<br>overload             | ±(2%+0.05 Ω)以内。<br>不得有机械的损伤。<br>Within ±(2%+0.05 Ω).<br>No evidence of mechanical damage.                  | 5.5 项参照 Comply with 5.5<br>定格电力×10 倍,5 秒。<br>不可超过最高过负荷电压(见表-1)<br>Rated power×10 times,5s<br>But not to exceed maximum overload<br>voltage.<br>(See table-1)   |
| 绝缘电阻<br>Insulation<br>Resistance             | 10 <sup>4</sup> MΩ 以上。<br>10 <sup>4</sup> MΩ or more.  | 5.6 项参照 Comply with 5.6<br>置于 V 型槽方法。<br>施加直流电压 500V 60 秒。<br>V-block method<br>Resistor shall be tested at DC 500V for 60<br>seconds.   |
| 耐电压<br>Dielectric<br>Withstanding<br>Voltage | 无电弧放电、烧损及绝<br>缘破坏等异状。<br>No evidence of flashover mechanical<br>damage, arcing<br>or insulation breakdown. | 5.7 项参照 Comply with 5.7<br>常压,置于 V 型槽方法。<br>施加个别规定之交流电压 60 秒。(见表-1)<br>Constant pressure, V-block method<br>Resistor shall be tested at AC potential<br>respectively for 60 seconds. (See table-1)   |
| 断续过负荷<br>Pulse overload                      | ±(2%+0.05 Ω)以内。<br>Within ±(2%+0.05 Ω)   | 5.8 项参照 Comply with 5.8<br>额定电压×4 倍,10000 回(1 秒 ON,25 秒<br>OFF)。<br>不可超过最高断续电压(见表-1)<br>Rated voltage X 4 times, 10000 cyc.(1s<br>ON, 25s OFF)<br>But not to exceed maximum pulse<br>voltage. (See table-1)  |



## Cement Type Resistors

| 项目<br>Item                            | 规格值<br>Performance  | 试验方法(依据 JIS C 5202)<br>Test methods(Conform to JIS C 5202)  |                   |                                |                |
|---------------------------------------|---|---|-------------------|--------------------------------|----------------|
| 端子强度<br>Terminal strength             | 端子不得断裂及松弛。<br>No evidence of mechanical damage.   | 6.1 项参照 Comply with 6.1   |                   |                                |                |
|                                       |   | 引张强度<br>Tensile strength  | 线径 mm<br>Diameter | 引张力<br>Tensile force<br>N(kgf) | 时 间<br>Time    |
|                                       |   |   | Φ0.38mm~0.50mm    | 5(0.51)                        | 10±1<br>second |
|                                       | Φ0.50mm~0.80 mm   | 10(1.02)  |                   |                                |                |
|                                       |   | 扭转强度：自电阻体起约 6mm~6.5mm 处之端子线,以约 0.75mm 曲率半径弯曲 90 度,其次由弯曲处向端子线先端 1.2±0.4mm 处挟定端子引出轴,作回转轴,以约 5 秒时间沿直面回转 360° 再逆转 360°,如此施行回逆转 2 次,不可发生折断及松动现象。<br>Tensional strength: To bend the lead wire at the point of about 6mm~6.5mm from resistor body. about 0.75mm curvature radii to 90° then catch the wire at 1.2 ± 0.4mm apart from the bend point end and turn it ( clockwise ) by 360 degrees perpendicular to the resistor axis at speed of same 5 seconds per turn, and do the same counterclockwise again which constitute a whole turn. Repeat the turn for 2 times without causing any break and looseness. |                   |                                |                |
| 焊锡耐热性<br>Resistance to soldering heat | ±(1%+0.05 Ω)以内。<br>不得有机械的损伤。<br>Within ±(1 %+0.05 Ω)<br>No evidence of mechanical damage. | 6.4 项参照 Comply with 6.4<br>350±10℃, 3±1.0 秒, 试验后放置半小时。<br>350±10℃, 3±1.0s<br>After test leave for 0.5h.   |                   |                                |                |
| 焊锡附着性<br>Solderability                | 导线至少 95%以上新锡覆盖。<br>Covered with new solder by 95% at least.                               | 6.5 项参照 Comply with 6.5<br>焊锡温度: 255±5℃。<br>浸锡时间: 3±1.0 秒。<br>Test temperature of solder:255±5℃<br>Dipping time in solder:3±1.0 s   |                   |                                |                |
| 耐溶剂性<br>Resistance to solvent         | 涂装及色码不得脱落。<br>No deterioration of protective coating and markings.                        | 6.9 项参照 Comply with 6.9<br>放入酒精溶剂之超音波机内, 保持 3 分钟。<br>Specimens shall be immersed in a bath of isoproalcohol completely for 3 minutes with ultrasonic.   |                   |                                |                |



## 水泥电阻器

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| 项目<br>Item                         | 规格值<br>Performance  | 试验方法(依据 JIS C 5202)<br>Test methods(Conform to JIS C 5202)   |
|------------------------------------|---|--|
| 温度循环<br>Temperature<br>cycle       | ±(2%+0.05 Ω)以内。<br>不得有机械的损伤。<br>Within ±(2%+0.05 Ω)<br>No evidence of mechanical<br>damage. | 7.4 项参照 Comply with 7.4<br>低温侧: -55°C/30 分, 室温: 10~15 分钟<br>高温侧: +80°C/30 分, 室温: 10~15 分钟<br>5 回<br>Low side: -55°C/30min, Room temp.: 10 to 15min<br>High side: 80°C/30min, Room temp.: 10 to 15min<br>5 cycles |
| 耐湿负荷寿命<br>Load life in<br>humidity | ±(5%+0.05 Ω)以内。<br>Within ±(5%+0.05 Ω)  | 7.9 项参照 Comply with 7.9<br>40±2°C, 湿度 90~95%, 1000 小时<br>定格电压(90 分钟 ON, 30 分钟 OFF)<br>40±2°C, 90 to 95%RH, 1000h<br>Rated voltage (90 min ON, 30 min OFF)  |
| 负荷寿命<br>Load life                  | ±(5%+0.05 Ω)以内。<br>Within ±(5%+0.05 Ω)  | 7.10 项参照 Comply with 7.10<br>70±3°C, 1000 小时<br>定格电压(90 分钟 ON, 30 分钟 OFF)<br>70±3°C, 1000h<br>Rated voltage (90 min ON, 30 min OFF)  |



# 水泥电阻器

## Cement Type Resistors

### 4. 表示 Indication

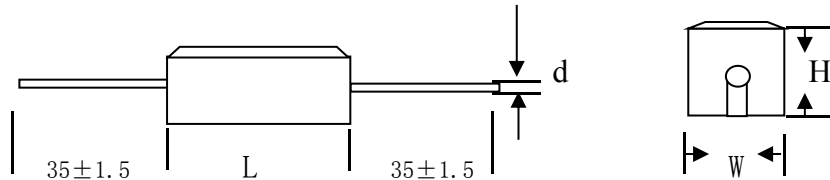
- (1)额定功率 Rated Power
- (2)公称电阻值 Resistance
- (3)允许容差 Tolerance

例： Sample

5W 0.1Ω J

### 5. 外形尺寸 External dimensions

#### 5.1 CR-L 型 CR-Ltype



单位:mm

Unit:mm

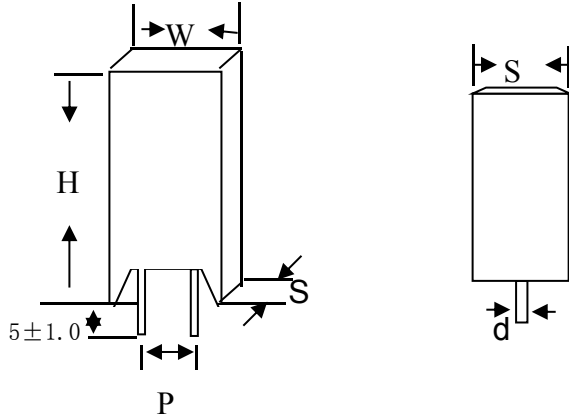
| 瓦特<br>Watt | 尺寸 Dimensions (mm) |         |         |        | 阻值范围(Ω)<br>Resistance Range(Ω) |               |
|------------|--------------------|---------|---------|--------|--------------------------------|---------------|
|            | L                  | W       | H       | Φd±0.1 | 线绕<br>Wire Wound               | 皮膜电阻芯<br>Film |
| 1W         | 14±1.0             | 6.5±1.0 | 6.5±1.0 | 0.55   | 0.1 Ω ~22 Ω                    | 25 Ω ~56K Ω   |
| 2W         | 18±1.0             | 7.0±1.0 | 7.0±1.0 | 0.55   | 0.1 Ω ~22 Ω                    | 25 Ω ~56K Ω   |
| 3W         | 22±1.0             | 8.0±1.0 | 8.0±1.0 | 0.70   | 0.1 Ω ~47 Ω                    | 50 Ω ~100K Ω  |
| 5W         | 22±1.0             | 9.5±1.0 | 9.5±1.0 | 0.70   | 0.1 Ω ~47 Ω                    | 50 Ω ~100K Ω  |
| 7W         | 35±1.5             | 9.5±1.5 | 9.5±1.5 | 0.70   | 0.5 Ω ~330 Ω                   | 450 Ω ~100K Ω |
| 10W        | 48±1.5             | 9.5±1.5 | 9.5±1.5 | 0.70   | 0.5 Ω ~450 Ω                   | 470 Ω ~100K Ω |
| 15W        | 48±1.5             | 13±1.5  | 13±1.5  | 0.70   | 1 Ω ~500 Ω                     | 510 Ω ~100K Ω |
| 20W        | 63±1.5             | 13±1.5  | 13±1.5  | 0.70   | 1 Ω ~600 Ω                     | 620 Ω ~100K Ω |
| 30W        | 75±2.0             | 19±2.0  | 17±2.0  | 0.70   | 1 Ω ~600 Ω                     | 620 Ω ~100K Ω |
| 40W        | 89±2.0             | 19±2.0  | 19±2.0  | 0.70   | 1 Ω ~600 Ω                     | 620 Ω ~100K Ω |

注：1W 引线长度上 23MM±1.5MM；2W 引线长度上 17.2MM~23.8MM 之间。



Cement Type Resistors

5.2 CR-M 型 CR-M type



单位: mm

Unit: mm

| 瓦特<br>Watt | 尺寸 Dimensions (mm) |       |       |        |       | 阻值范围(Ω)<br>Resistance Range(Ω) |               |
|------------|--------------------|-------|-------|--------|-------|--------------------------------|---------------|
|            | W±1.0              | S±1.0 | H±1.5 | Φd±0.1 | P±1.0 | 线绕芯<br>Wire Wound              | 皮膜电阻芯<br>Film |
| 2W         | 11.5               | 7.5   | 20.5  | 0.55   | 4.5   | 0.1 Ω ~47 Ω                    | 50 Ω ~100K Ω  |
| 3W         | 12                 | 8.5   | 25    | 0.70   | 4.5   | 0.1 Ω ~47 Ω                    | 50 Ω ~100K Ω  |
| 5W         | 13                 | 9.5   | 25    | 0.70   | 4.5   | 0.1 Ω ~47 Ω                    | 50 Ω ~100K Ω  |
| 7W         | 13                 | 9.5   | 38    | 0.70   | 4.5   | 0.5 Ω ~330 Ω                   | 450 Ω ~100K Ω |
| 10W        | 13                 | 9.5   | 52    | 0.70   | 4.5   | 0.5 Ω ~450 Ω                   | 470 Ω ~100K Ω |
| 10W        | 16                 | 11.5  | 36    | 0.70   | 4.5   | 0.5 Ω ~450 Ω                   | 470 Ω ~100K Ω |



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