

# DATASHEET

**Product Name**    **Carbon Film Capped Ceramic Rod**

---

**Part Name**    **CRC/CRD Series**

**File No.**    **DIP-SP-075**

## **Uniroyal Electronics Global Co., Ltd.**

88#, Longteng Road, Economic & Technical Development Zone, Kunshan, Jiangsu, China

Tel    +86 512 5763 1411 / 22 /33

Email    [marketing@uni-royal.cn](mailto:marketing@uni-royal.cn)

Manufacture Plant    Uniroyal Electronics Industry Co., Ltd.

Aeon Technology Corporation

Royal Electronic Factory (Thailand) Co., Ltd.

Royal Technology (Thailand) Co., Ltd.

## 1. Scope

- 1.1 This specification for approve relates to the Carbon Film Capped Ceramic Rod manufactured by UNI-ROYAL.
- 1.2 Filming in CVD technology.
- 1.3 Low cost, good performance at High Frequency.
- 1.4 Wide IRV range, can be sorted accurately.

## 2. Explanation of Part No. System

The standard Part No. includes 14 digits with the following explanation:

- 2.1 The 1st to 2nd digits are to indicate the product type .

Example: CR=Carbon Film

- 2.2 The 3th digit is the type.

Example: C= Capped Filming Rod ; D= Uncapped Filming Rod

- 2.3 The 4th digit is the Alumina Content.

Example: 1= Alumina 70% ; 2= Alumina 80% ; 3= Alumina 85%

- 2.4 The 8th to 11th digits is to denote the Size of Rod.

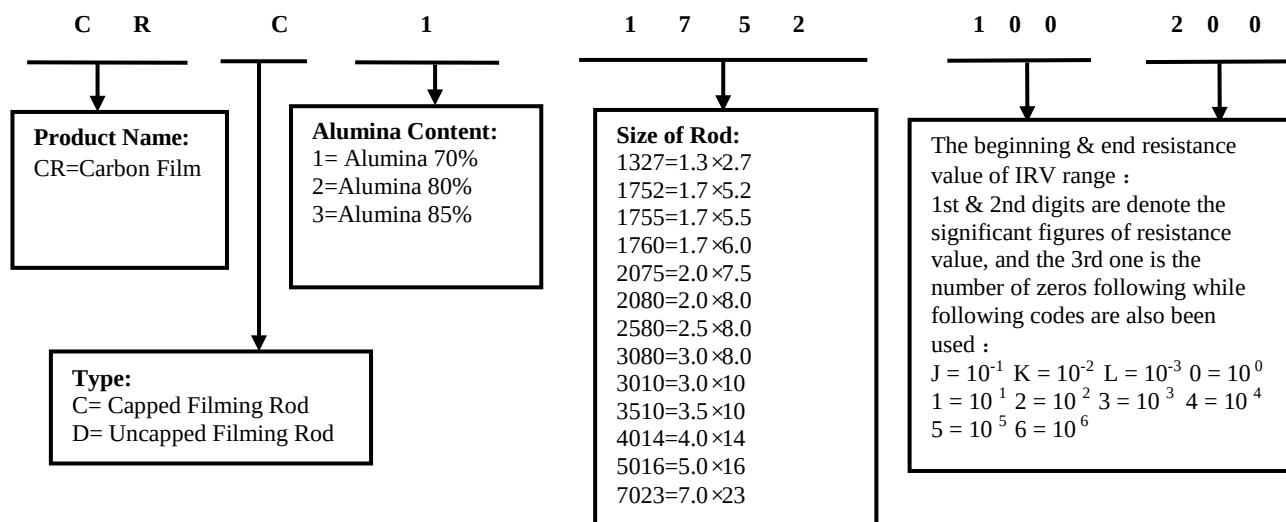
Example: 1327=1.3×2.7 ; 1752=1.7×5.2 ; 1755=1.7×5.5 ; 1760=1.7×6.0 ; 2075=2.0×7.5 ; 2080=2.0×8.0 ; 2580=2.5×8.0 ; 3080=3.0×8.0 ; 3010=3.0×10 ; 3510=3.5×10 ; 4014=4.0×14 ; 5016=5.0×16 ; 7023=7.0×23

- 2.5 The 9th to 14th digits is to denote the beginning & end resistance value of IRV range

1st & 2nd digits are denote the significant figures of resistance value, and the 3rd one is the number of zeros following while following codes are also been used:

$$J = 10^{-1} \quad K = 10^{-2} \quad L = 10^{-3} \quad 0 = 10^0 \quad 1 = 10^1 \quad 2 = 10^2 \quad 3 = 10^3 \quad 4 = 10^4 \quad 5 = 10^5 \quad 6 = 10^6$$

## 3. Ordering Procedure: (Example: CR 70% 1.7×5.2 10-20 Ω)



## 4. Material:

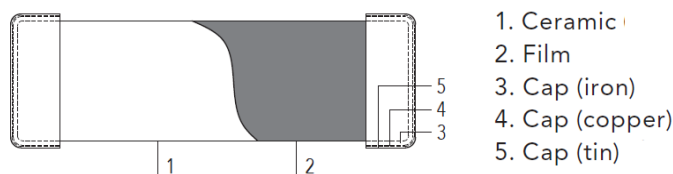
- (1) Ceramic rod main ingredient :  $Al_2O_3$  72% , tolerance:  $\pm 3\%$ (mark alumina content 70%) or customer requirement.

Remarks: 1.3\*2.7 content  $Al_2O_3$  80% , tolerance:  $\pm 2\%$ (mark alumina content 80%)

- (2) Iron cap main material: iron

Iron cap main ingredient: pure Cu pure Sn

## 5. Dimension



Unit: mm

| NO | Size    | Uncapped Filming Rod                   |                                     | Capped Filming Rod |             | MIN PULLING FORCE (KG) |
|----|---------|----------------------------------------|-------------------------------------|--------------------|-------------|------------------------|
|    |         | D                                      | L                                   | D                  | L           |                        |
| 1  | 1.3x2.7 | 1.30±0.02                              | 2.7±0.1                             | 1.54~1.66          | 2.86~3.16   | 2                      |
| 2  | 1.7x5.2 | 1.70±0.03                              | 5.2 <sup>+0.1</sup> <sub>-0.2</sub> | 2.03~2.17          | 5.36~5.76   | 3                      |
| 3  | 1.7x5.5 | 1.70±0.03                              | 5.5±0.2                             | 2.03~2.17          | 5.66~6.16   | 3                      |
| 4  | 1.7x6.0 | 1.70±0.03                              | 6.0±0.2                             | 2.03~2.17          | 6.16~6.66   | 3                      |
| 5  | 2.0x7.5 | 2.00 <sup>+0.04</sup> <sub>-0.03</sub> | 7.5±0.2                             | 2.33~2.58          | 7.66~8.27   | 5                      |
| 6  | 2.0x8.0 | 2.00±0.03                              | 8.0±0.2                             | 2.33~2.57          | 8.16~8.77   | 5                      |
| 7  | 2.5x8.0 | 2.50±0.04                              | 8.0±0.2                             | 2.82~3.08          | 8.16~8.77   | 6                      |
| 8  | 3.0x8.0 | 3.00±0.04                              | 8.0±0.2                             | 3.32~3.58          | 8.16~8.77   | 6                      |
| 9  | 3.0x10  | 3.00±0.04                              | 10.0±0.3                            | 3.32~3.58          | 10.06~10.89 | 6                      |
| 10 | 3.5x10  | 3.50 <sup>+0.04</sup> <sub>-0.05</sub> | 10.0±0.3                            | 3.81~4.08          | 10.06~10.89 | 6                      |
| 11 | 4.0x14  | 4.00±0.05                              | 14.0±0.3                            | 4.31~4.59          | 14.06~14.89 | 6                      |
| 12 | 5.0x16  | 5.00±0.05                              | 16.0±0.3                            | 5.41~5.59          | 16.16~16.89 | 6                      |
| 13 | 7.0x23  | 7.00±0.07                              | 23.0±0.5                            | 7.39~7.61          | 22.96~24.09 | 6                      |

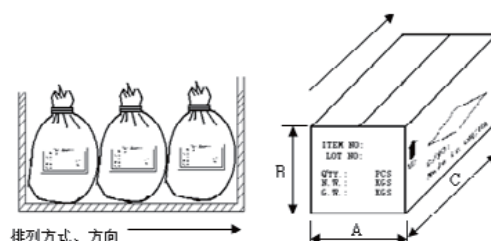
## 6. IRV (Initial Resistance Value) Range

| Code | Initial value range | Code | Initial value range | Code | Initial value range |
|------|---------------------|------|---------------------|------|---------------------|
| R01  | 1Ω-2Ω               | R14  | 50Ω-80Ω             | R27  | 2KΩ-4KΩ             |
| R02  | 1.5Ω-2.5Ω           | R15  | 60Ω-100Ω            | R28  | 3KΩ-5KΩ             |
| R03  | 2Ω-3.5Ω             | R16  | 80Ω-130Ω            | R29  | 4KΩ-7KΩ             |
| R04  | 3Ω-5Ω               | R17  | 100Ω-200Ω           | R30  | 5KΩ-10KΩ            |
| R05  | 4Ω-7Ω               | R18  | 150Ω-250Ω           | R31  | 6KΩ-12KΩ            |
| R06  | 5Ω-8Ω               | R19  | 200Ω-400Ω           | R32  | 8KΩ-16KΩ            |
| R07  | 6Ω-10Ω              | R20  | 300Ω-500Ω           | R33  | 10KΩ-20KΩ           |
| R08  | 8Ω-13Ω              | R21  | 400Ω-600Ω           | R34  | 15KΩ-30KΩ           |
| R09  | 10Ω-20Ω             | R22  | 500Ω-800Ω           | R35  | 20KΩ-40KΩ           |
| R10  | 15Ω-25Ω             | R23  | 600Ω-900Ω           | R36  | 30KΩ-60KΩ           |
| R11  | 20Ω-30Ω             | R24  | 800Ω-1.3KΩ          | R37  | 40KΩ-80KΩ           |
| R12  | 30Ω-50Ω             | R25  | 1KΩ-2KΩ             | R38  | 50KΩ-100KΩ          |
| R13  | 40Ω-60Ω             | R26  | 1.5KΩ-2.5KΩ         | R39  | 60KΩ-120KΩ          |

## 7. Standard for testing:

- (1) Appearance: Inspect appearance with eyes and sense of touch
  - ① Film layer without film bubble、protective film missing、rods pitted、uneven film distribution、protective film spots、protective film too thin、film oxide、uneven carbonization、uneven film color etc.
  - ② May promise range of initial resistance value: reference to initial resistance value specification list.
  - ③ Temperature coefficient resistor : according to customer order.
- (2) Size: Measure it with vernier caliper and micrometer.

## 9. Packing



| No. | Type    | Size (mm) |    |    | Quantity (KPCS) |      |
|-----|---------|-----------|----|----|-----------------|------|
|     |         | A         | B  | C  | Pouch           | Box  |
| 1   | 1.3x2.7 | 25        | 20 | 45 | 600             | 1800 |
| 2   | 1.7x5.2 | 25        | 20 | 45 | 200             | 600  |
| 3   | 1.7x5.5 | 25        | 20 | 45 | 200             | 600  |
| 4   | 1.7x6.0 | 25        | 20 | 45 | 200             | 600  |
| 5   | 2.0x7.5 | 25        | 20 | 45 | 100             | 300  |
| 6   | 2.0x8.0 | 25        | 20 | 45 | 100             | 300  |
| 7   | 2.5x8.0 | 25        | 20 | 45 | 60              | 180  |
| 8   | 3.0x8.0 | 25        | 20 | 45 | 40              | 120  |
| 9   | 3.0x10  | 25        | 20 | 45 | 40              | 120  |
| 10  | 3.5x10  | 25        | 20 | 45 | 25              | 75   |
| 11  | 4.0x14  | 25        | 20 | 45 | 12.5            | 37.5 |
| 12  | 5.0x16  | 25        | 20 | 45 | 7.5             | 22.5 |
| 13  | 7.0x23  | 25        | 20 | 45 | 2.5             | 7.5  |

## 11. Note

- 11.1 UNI-ROYAL recommend the storage condition temperature: 15℃~35℃, humidity :25%~75%  
(Put condition for individual product)  
Even under UNI-ROYAL recommended storage condition, solderability of products over 1 year old (Put condition for each product) may be degraded.
- 11.2 Store / transport cartons in the correct direction, which is indicated on a carton as a symbol.  
Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.
- 11.3 Product performance and soldered connections may deteriorate if the products are stored in the following places:
  - a. Storage in high Electrostatic
  - b. Storage in direct sunshine、rain and snow or condensation
  - c. Where the products are exposed to sea winds or corrosive gases, including Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, NO<sub>2</sub>.

## 12. Record

| Version | Description of amendment          | Page | Date        | Amended by  | Checked by |
|---------|-----------------------------------|------|-------------|-------------|------------|
| 1       | First issue of this specification | 1~7  | Jun.12,2018 | Chen Haiyan | Chen Nana  |