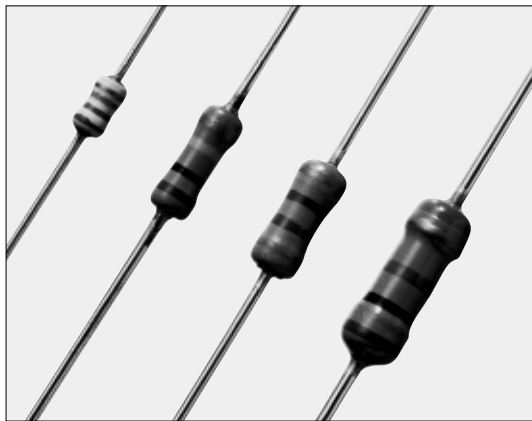


# CARBON FILM

## CF (RD) 小形塗装絶縁形炭素皮膜固定抵抗器 Coat-Insulated Fixed Carbon Film Resistors



外装色：CFS1/4、アイボリー その他、ベネチアンレッド  
Coating colors : CFS1/4-Ivory Others-venetian red  
表示：カラーコード Marking : Color code

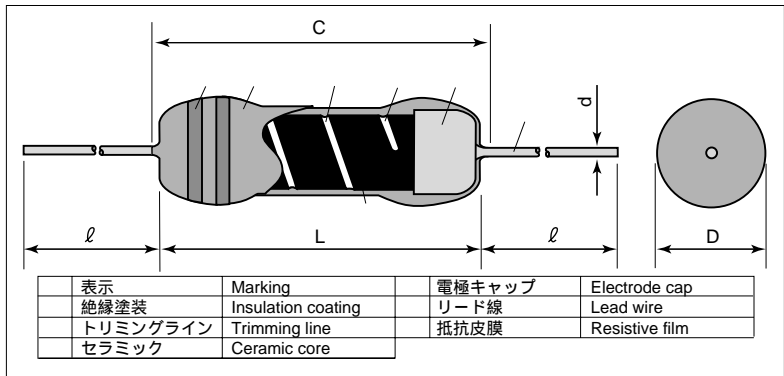
### ■特長 Features

- 汎用のリードタイプ抵抗器です。
- 自動挿入が可能です。
- 各種フォーミングが可能です。
- 同一電力のチップ抵抗よりも耐パルス性が強い。
- 1/4Wの小形タイプ (CFS 1/4) があります。
- General lead-type resistors.
- Automatic insertion is applicable.
- Various types of formings are available.
- Stronger in pulse resistance than chip resistors of the same power.
- The smaller type of 1/4W(CFS 1/4) is available.

### ■参考規格 Reference Standards

IEC 60115-2  
JIS C 5201-2  
EIAJ RC-2136

### ■構造図 Construction



### ■外形寸法 Dimensions

| 形名<br>Type | 寸法 Dimensions (mm) |        |                                       |             | Weight (g)<br>(1000pcs) |
|------------|--------------------|--------|---------------------------------------|-------------|-------------------------|
|            | L                  | C Max. | D                                     | d (Nominal) |                         |
| CFS1/4     | 3.2 ± 0.2          | 3.4    | 1.7 <sup>+0.2</sup> / <sub>-0.1</sub> | 0.45        | 20 min.                 |
| CF1/4      | 6.1 ± 0.5          | 7.1    | 2.3 ± 0.3                             | 0.6         |                         |
| CFB1/2     | 9.0 ± 1.0          | 11.0   | 3.5 ± 0.5                             | 0.7         |                         |
| CFS1/2     | 6.3 ± 0.5          | 7.1    | 2.85 ± 0.3                            | 0.6         |                         |

### ■品名構成 Type Designation

例 Example

| 品名<br>Product Code | 定格電力<br>Power Rating | 端子表面材質<br>Terminal Surface Material | 二次加工<br>Taping & Forming | 包装<br>Packaging                          | 公称抵抗値<br>Nominal Resistance | 抵抗値許容差<br>Resistance Tolerance |
|--------------------|----------------------|-------------------------------------|--------------------------|--|-----------------------------|--------------------------------|
| Old Type: RD       | 25S                  | C: SnCu<br>L: Sn/Pb                 | T52                      | A: アモパック<br>A: AMMO<br>R: リール<br>R: REEL | 10kΩ                        | J                              |
| New Type: CF       | 1/4                  |                                     | T52                      |  | 103                         | J                              |

端子表面材質は鉛フリーめっき品が標準となります。  
テーピング及びフォーミングの詳細については巻末のAPPENDIX Cを参照して下さい。  
For further information on taping and forming, please refer to APPENDIX C on the back pages.

### ■二次加工対応表 Taping & Forming Matrix

| 形名<br>Type | アキシアルテーピング<br>Axial Taping |     | ラジアルテーピング<br>Radial Taping |    |     |     | Uフォーミング<br>U Forming |   | Mフォーミング<br>M Forming |     |      |        |        |
|------------|----------------------------|-----|----------------------------|----|-----|-----|----------------------|---|----------------------|-----|------|--------|--------|
|            | T26                        | T52 | VT                         | MT | MHT | VTP | VTE                  | U | UCL                  | M5  | M10  | M12.5  | M12.5  |
| CFS 1/4    |                            |     |                            |    |     |     |                      |   |                      | M5F |      |        |        |
| CF 1/4     |                            |     |                            |    |     |     |                      |   |                      |     | M10H | M12.5H |        |
| CFB 1/2    |                            |     |                            |    |     |     |                      |   |                      |     |      |        | M12.5K |
| CFS 1/2    |                            |     |                            |    |     |     |                      |   |                      |     | M10H |        |        |

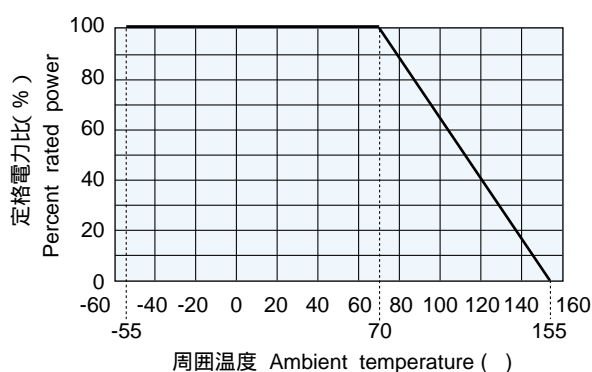
### ■定格 Ratings

| 形名<br>Type | 定格電力<br>Power Rating | 抵抗値範囲<br>Resistance Range (Ω) (E24) |            | 抵抗温度係数<br>T.C.R. (×10 <sup>-6</sup> /K) |             |             |             | 最高使用電圧<br>Max. Working Voltage | 最高過負荷電圧<br>Max. Overload Voltage | 耐電圧<br>Dielectric Withstanding Voltage | テーピングと包装数/アモ包装<br>Taping & Q'ty/AMMO (pcs) |       |
|------------|----------------------|-------------------------------------|------------|---|-------------|-------------|-------------|--------------------------------|----------------------------------|--|--|-------|
|            |                      | G: ±2%                              | J: ±5%     | +350~-450                               | 0~-700      | 0~-1000     | 0~-1300     |                                |                                  |  | T26A                                       | T52A  |
| CFS 1/4    | 0.25W                | 10 ~ 330k                           | 2.2 ~ 1M   | 2.2 ~ 47k                               | 51k ~ 100k  | 110k ~ 330k | 360k ~ 1M   | 250V                           | 500V                             | 300V                                   | 5,000                                      | 3,000 |
| CF 1/4     | 0.25W                | 10 ~ 1M                             | 2.2 ~ 5.1M | 2.2 ~ 100k                              | 110k ~ 330k | 360k ~ 1M   | 1.1M ~ 5.1M | 300V                           | 600V                             | 500V                                   | 2,000                                      | 2,000 |
| CFB 1/2    | 0.5W                 |                                     |            | 2.2 ~ 100k                              | 110k ~ 1M   | 1.1M ~ 2.2M | 2.4M ~ 5.1M | 400V                           | 800V                             | 700V                                   |  |       |
| CFS 1/2    | 0.5W                 |                                     |            | 2.2 ~ 91k                               | 100k ~ 1M   | 1.1M ~ 2.2M | 2.4M ~ 5.1M | 350V                           | 700V                             |  |  |       |

定格周囲温度 Rated Ambient Temperature : +70°C  
使用温度範囲 Operating Temperature Range : -55°C ~ +155°C

定格電圧は√(定格電力×公称抵抗値)による算出値、又は表中の最高使用電圧のいずれか小さい値が定格電圧となります。  
Rated voltage = √(Power Rating × Resistance value) or Max. working voltage, whichever is lower.

## ■負荷軽減曲線 Derating Curve



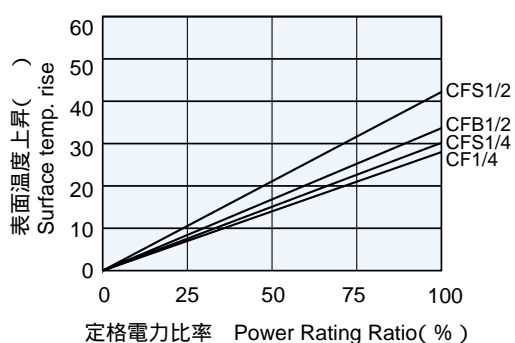
周囲温度70℃以上で使用される場合は、上図負荷軽減曲線に従って、定格電力を軽減して御使用下さい。

For resistors operated at an ambient temperature of 70℃ or above, a power rating shall be derated in accordance with the above derating curve.

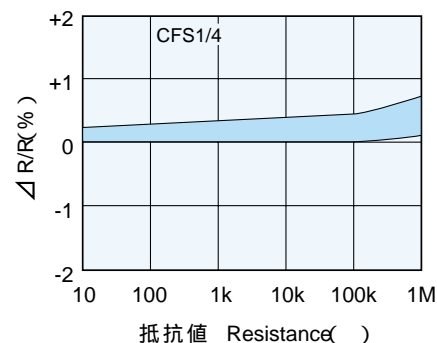
## ■性能 Performance

| 試験項目<br>Test Items                     | 規格値 Performance Requirements<br>R ±( % + 0.05 )                |             | 試験方法<br>Test Methods  |           |        |       |        |        |                                    |      |      |       |       |                     |   |   |   |   |
|--|--|-------------|---|-----------|--------|-------|--------|--------|------------------------------------|------|------|-------|-------|---------------------|---|---|---|---|
|  | 保証値 Limit  | 代表値 Typical |   |           |        |       |        |        |                                    |      |      |       |       |                     |   |   |   |   |
| 抵抗値<br>Resistance                      | 規定の許容差内<br>Within specified tolerance                          |             | 測定箇所は本体から10mm ± 1mmとする<br>Measuring points are at 10mm ± 1mm from the end cap.  |           |        |       |        |        |                                    |      |      |       |       |                     |   |   |   |   |
| 抵抗温度係数<br>T.C.R.                       | 規定値内<br>Within specified T.C.R.                                |             | 室温 / 100 up<br>Room temperature + 100   |           |        |       |        |        |                                    |      |      |       |       |                     |   |   |   |   |
| 過負荷(短時間)<br>Overload( Short time )     | 1  | 0.5         | 定格電圧 × 2.5倍又は最高過負荷電圧の低い方を5秒印加<br>Rated voltage × 2.5 or Max. overload vol., whichever is less, for 5s.  |           |        |       |        |        |                                    |      |      |       |       |                     |   |   |   |   |
| 断続過負荷<br>Intermittent overload         | 0.75   |             | 定格電圧 × Y倍又は最高断続過負荷電圧の低い方を 10,000 回印加<br>Rated voltage × Y or Max. intermittent overload vol., whichever is less, for 10,000 cycles.<br><table border="1" style="margin-left: 20px;"> <tr> <td>最高断続過負荷電圧</td> <td>CFS1/4</td> <td>CF1/4</td> <td>CFB1/2</td> <td>CFS1/2</td> </tr> <tr> <td>Max. intermittent overload voltage</td> <td>500V</td> <td>750V</td> <td>1000V</td> <td>1000V</td> </tr> <tr> <td>Y倍率 Y magnification</td> <td>3</td> <td>4</td> <td>4</td> <td>4</td> </tr> </table> | 最高断続過負荷電圧 | CFS1/4 | CF1/4 | CFB1/2 | CFS1/2 | Max. intermittent overload voltage | 500V | 750V | 1000V | 1000V | Y倍率 Y magnification | 3 | 4 | 4 | 4 |
| 最高断続過負荷電圧                              | CFS1/4   | CF1/4       | CFB1/2  | CFS1/2    |        |       |        |        |                                    |      |      |       |       |                     |   |   |   |   |
| Max. intermittent overload voltage     | 500V   | 750V        | 1000V   | 1000V     |        |       |        |        |                                    |      |      |       |       |                     |   |   |   |   |
| Y倍率 Y magnification                    | 3  | 4           | 4   | 4         |        |       |        |        |                                    |      |      |       |       |                     |   |   |   |   |
| はんだ耐熱性<br>Resistance to soldering heat | 1  | 0.5         | 260 ± 5 , 10s ± 1s  |           |        |       |        |        |                                    |      |      |       |       |                     |   |   |   |   |
| 端子強度<br>Terminal strength              | リード線の外れ、端子のコルミのないこと、<br>No lead-coming off and loose terminals |             | Twist 360 ° 5 times   |           |        |       |        |        |                                    |      |      |       |       |                     |   |   |   |   |
| 温度急変<br>Rapid change of temperature    | 1  | 0.5         | - 55 ( 30min. ) + 125 ( 30min. ) 5 cycles   |           |        |       |        |        |                                    |      |      |       |       |                     |   |   |   |   |
| 耐湿負荷<br>Moisture resistance            | 5  | 2.5         | 40 ± 2 , 90% ~ 95%RH, 1000h<br>1.5時間 ON/0.5時間 OFFの周期 1.5h ON/0.5h OFF cycle   |           |        |       |        |        |                                    |      |      |       |       |                     |   |   |   |   |
| 70 °Cでの耐久性<br>Endurance at 70          | 3  | 1.5         | 70 ± 2 , 1000h<br>1.5時間 ON/0.5時間 OFFの周期 1.5h ON/0.5h OFF cycle  |           |        |       |        |        |                                    |      |      |       |       |                     |   |   |   |   |

## ■表面温度上昇 Surface Temperature Rise



## ■耐久性(定格負荷) Load Life At 70℃ 1000Hr



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