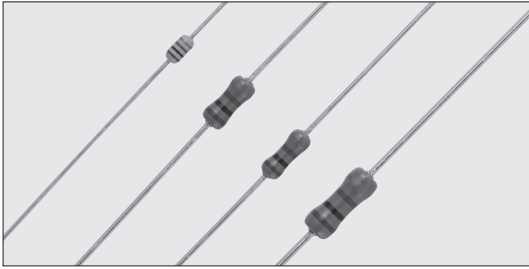
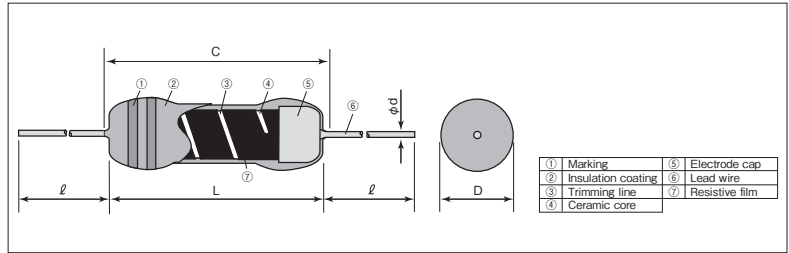


CF Coat-Insulated Fixed Carbon Film Resistors



Coating colors : CFS1/4-Ivory Others-venetian red
 Marking : Color code

Construction



Features

- General-purpose 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.
- Products meet EU-RoHS requirements.

Reference Standards

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

Dimensions

| Type | Dimensions (mm) | | | | Weight (g) (1000pcs) | |
|--------|-----------------|--------|-------------------------------------|------------|-------------------------|----------------------|
| | L | C Max. | D | d(Nominal) | Standard | Long |
| CFS1/4 | 3.2±0.2 | 3.4 | 1.7 ^{+0.2} _{-0.1} | 0.45 | 14min. ^{*1} | 20min. ^{*2} |
| CF1/4 | 6.1±0.5 | 7.1 | 2.3±0.3 | 0.6 | — | — |
| CFS1/2 | 6.3±0.5 | 7.1 | 2.85±0.3 | 0.6 | 20min. | — |
| CFB1/2 | 9.0±1.0 | 11.0 | 3.5±0.5 | 0.7 | — | — |

*1 Forming code S is applied for bulk type. *2 Long type is custom-made.
 *3 Lead length changes depending on taping and forming type.

Type Designation

Example

| CF | 1/4 | C | T52 | A | 103 | J |
|--------------|---|---------------------------|------------------|--------------------------------|--------------------|----------------------|
| Product Code | Power Rating | Terminal Surface Material | Taping & Forming | Packaging | Nominal Resistance | Resistance Tolerance |
| | S1/4:0.25W 1/4:0.25W S1/2:0.5W B1/2:0.5W | C:SnCu | See table below | A: AMMO R: REEL Nil: BOX | 3 digits | G: ±2% J: ±5% |

Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.
 For further information on taping and forming, please refer to APPENDIX C on the back pages.

Taping & Forming Matrix

| Type | Straight | | Axial Taping | | Radial Taping | | | | | U Forming | | M Forming | | | |
|----------|-----------------|-----------------|--------------|-----|---------------|----|-----|-----|-----|-----------|-----|-----------|------|--------|--------|
| | S | Nil | T26 | T52 | VT | MT | MHT | VTP | VTE | U | UCL | M5 | M10 | M12.5 | M12.5 |
| CFS 1/4C | ○ ^{*1} | ○ ^{*2} | ○ | ○ | ○ | ○ | ○ | — | — | ○ | — | M5F | — | — | — |
| CF 1/4C | ○ ^{*1} | ○ ^{*2} | ○ | ○ | ○ | — | — | ○ | ○ | — | ○ | — | M10H | M12.5H | — |
| CFS 1/2C | — | ○ | ○ | ○ | ○ | — | — | ○ | ○ | ○ | — | — | M10H | — | — |
| CFB 1/2C | — | ○ | — | ○ | — | — | — | — | — | — | — | — | — | — | M12.5K |

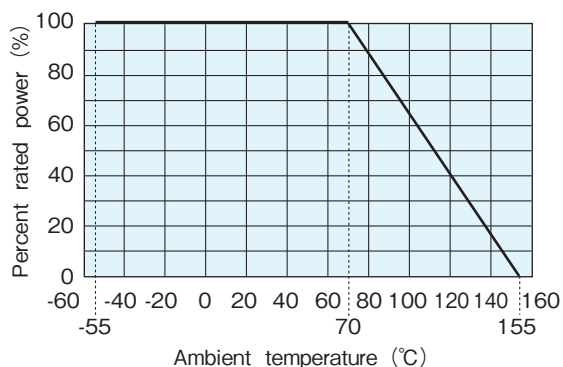
Ratings

| Type | Power Rating | Resistance Range (Ω) E24 | | T.C.R. (×10 ⁻⁶ /K) | | | | Max. Working Voltage | Max. Overload Voltage | Dielectric Withstanding Voltage | Taping & Q'ty/AMMO (pcs) | |
|----------|--------------|-----------------------------|------------|-------------------------------|-------------|-------------|-------------|----------------------|-----------------------|---------------------------------|--------------------------|-------|
| | | G: ±2% | J: ±5% | +350~-450 | 0~-700 | 0~-1000 | 0~-1300 | | | | T26A | T52A |
| CFS 1/4C | 0.25W | 10~330k | 2.2~1M | 2.2Ω~47kΩ | 51kΩ~100kΩ | 110kΩ~330kΩ | 360kΩ~1MΩ | 250V | 500V | 300V | 5,000 | 3,000 |
| CF 1/4C | 0.25W | 10~1M | 2.2~5.1M | 2.2Ω~100kΩ | 110kΩ~330kΩ | 360kΩ~1MΩ | 1.1MΩ~5.1MΩ | 300V | 600V | 500V | 2,000 | 2,000 |
| CFS 1/2C | 0.5W | | 1.0~5.1M | 1.0Ω~91kΩ | 100kΩ~1MΩ | 1.1MΩ~2.2MΩ | 2.4MΩ~5.1MΩ | 350V | 700V | 700V | | |
| CFB 1/2C | 0.5W | 2.2~5.1M | 2.2Ω~100kΩ | 110kΩ~1MΩ | 1.1MΩ~2.2MΩ | 2.4MΩ~5.1MΩ | 400V | 800V | — | | — | — |

Rated Ambient Temperature : +70°C
 Operating Temperature Range : -55°C ~ +155°C

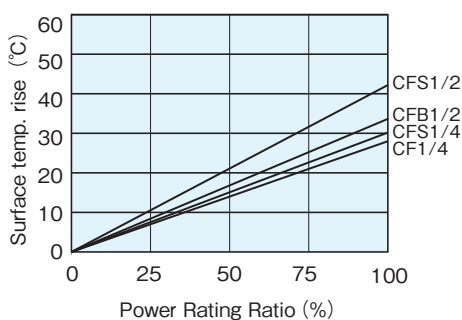
Rated voltage = √(Power Rating × Resistance value) or Max. working voltage, whichever is lower.

Derating Curve

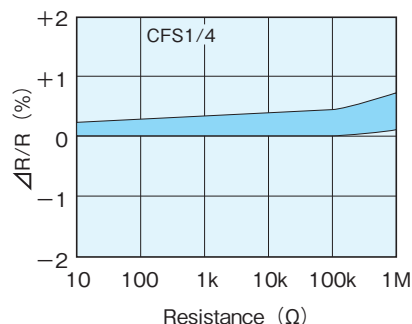


For resistors operated at an ambient temperature of 70°C or higher, the power shall be derated in accordance with the above derating curve.

Surface Temperature Rise



Load Life At 70°C 1000Hr



Performance

| Test Items | Performance Requirements $\Delta R \pm (\% + 0.05\Omega)$ | | Test Methods |
|------------------------------|--|---------|--|
| | Limit | Typical | |
| Resistance | Within specified tolerance | — | Measuring points are at 10mm±1mm from the end cap. |
| T.C.R. | Within specified T.C.R. | — | +25°C / +125°C |
| Overload (Short time) | 1 | 0.5 | Rated voltage × 2.5 or Max. overload vol., whichever is lower, for 5s. |
| Resistance to soldering heat | 1 | 0.5 | 260°C±5°C, 10s±1s, 350°C±10°C, 3.5s±0.5s |
| Terminal strength | No lead-coming off and loose terminals | — | Twist 360°, 5 times |
| Rapid change of temperature | 1 | 0.5 | -55°C (30min.) / +125°C (30min.) 5 cycles |
| Moisture resistance | 5 | 2.5 | 40°C±2°C, 90%~95%RH, 1000h 1.5h ON/0.5h OFF cycle |
| Endurance at 70°C | 3 | 1.5 | 70°C±2°C, 1000h 1.5h ON/0.5h OFF cycle |

Precautions for Use

- Ionic impurities such as flux etc. that are attached to these products or those mounted onto a PCB, negatively affect their moisture resistance, corrosion resistance, etc. The flux may contain ionic substances like chlorine, acid, etc. Please wash them to get rid of these ionic substances especially when using lead-free solder that may contain much of the said substances for improving a wetting characteristic. Using RMA solder or RMA flux, or well-washing is needed. Also, attaching ionic substances such as perspiration, salt etc. by storage environments or mounting conditions/environments negatively affects their moisture resistance, corrosion resistance etc. Please wash them to remove the ionic substances when they are polluted.