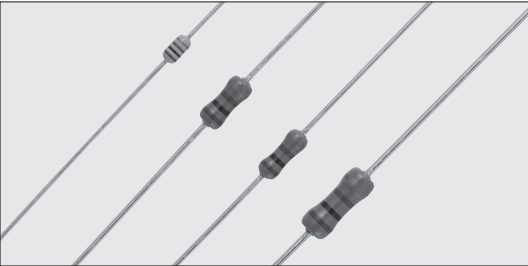


CF Coat-Insulated Fixed Carbon Film Resistors



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

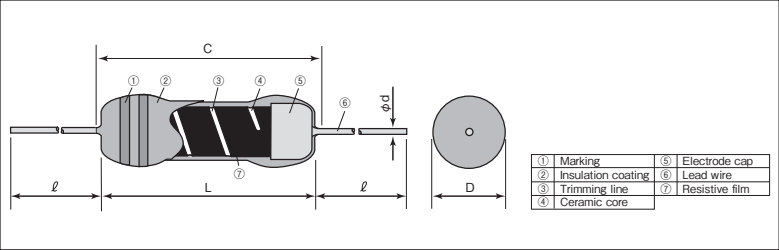
Features

- 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

Construction

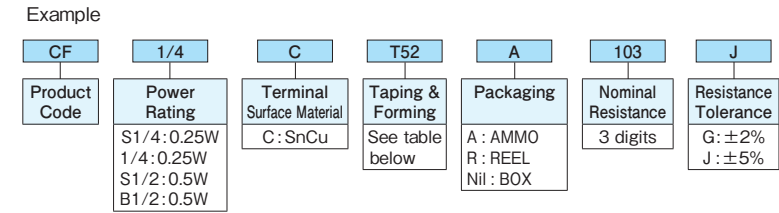


Dimensions

Type	Dimensions (mm)					Weight (g) (100pcs)	
	L	C Max.	D	d(Nominal)	ℓ #3		
					Standard		Long
CFS1/4	3.2±0.2	3.4	1.7 ^{+0.2 -0.1}	0.45	14min. #1	20min. #2	80
CF1/4	6.1±0.5	7.1	2.3±0.3	0.6			160
CFS1/2	6.3±0.5	7.1	2.85±0.3	0.6	20min.	—	290
CFB1/2	9.0±1.0	11.0	3.5±0.5	0.7		—	520

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

Type Designation



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

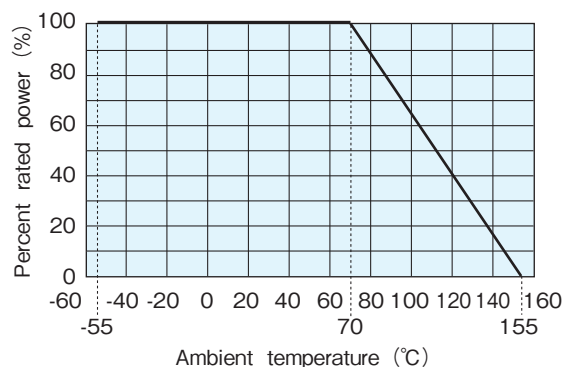
Ratings

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		2.2~5.1M	2.2Ω~100kΩ	110kΩ~330kΩ	360kΩ~1MΩ	1.1MΩ~5.1MΩ	300V	600V	500V		
CFS 1/2C	0.5W	10~1M	1.0Ω~91kΩ	100kΩ~1MΩ	1.1MΩ~2.2MΩ	2.4MΩ~5.1MΩ		350V	700V	700V	2,000	2,000
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℃
Operating Temperature Range : −55℃~+155℃

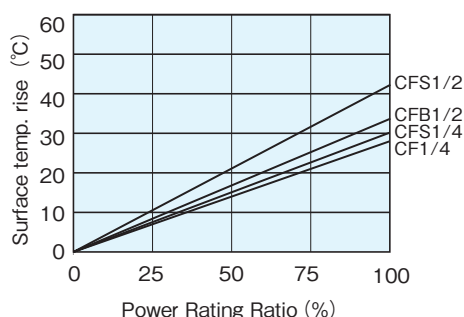
Rated voltage= $\sqrt{\text{Power Rating} \times \text{Resistance value}}$ or Max. working voltage, whichever is lower.

Derating Curve

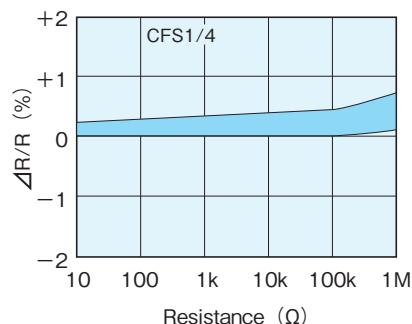


For resistors operated at an ambient temperature of 70°C or higher, the power shall be derated in accordance with the above derating curve.

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