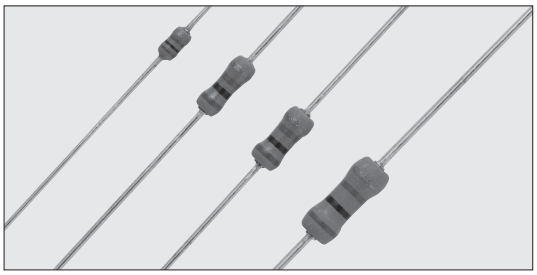
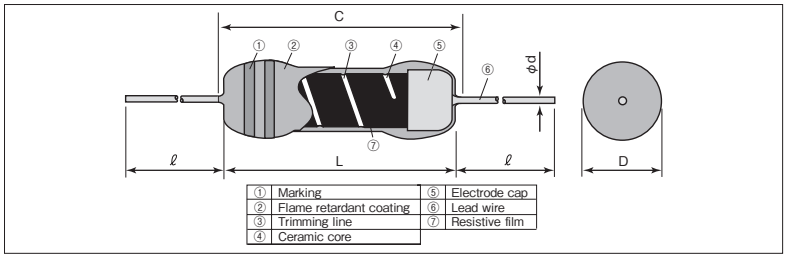
EU RoHS

CFP Coat-Insulated Fixed Carbon Film Resistors (Flame retardant coating)



Coating color : Green
Marking : Color code

■Construction



■Features

- Equivalent to flame retardant coat. (UL94 V-0)
- Automatic insertion is applicable.
- Stronger in pulse resistance than chip resistors of the same power.
- The smaller type of 1/4W (CFPS 1/4) is available.
- Products meet EU-RoHS requirements.

■Reference Standards

IEC 60115-2
JIS C 5201-2

■Dimensions

Type	Dimensions (mm)						Weight(g) (1000pcs)
	L	C Max.	D	d(Nominal)	ℓ ※3 Standard	ℓ ※3 Long	
CFPS1/4	3.2±0.2	3.4	$1.7^{+0.2}_{-0.1}$	0.45	14min.※1	20min.※2	80
CFP1/4	6.1±0.5	7.1	2.3±0.3	0.6			160
CFPS1/2	6.3±0.5	7.1	2.85±0.3	0.6	20min.	—	290
CFPB1/2	9.0±1.0	11.0	3.5±0.5	0.7		—	520

※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

CFP	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

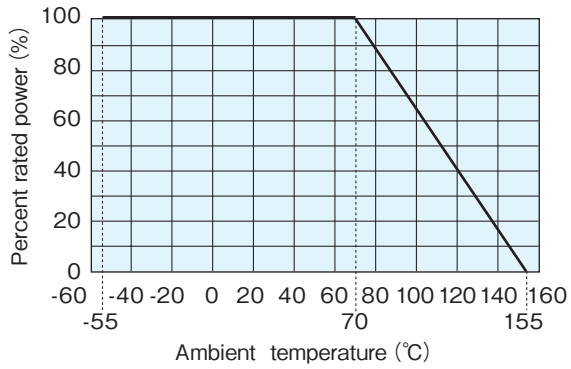
Type	Straight		Axial Taping			Radial Taping					M Forming	L Forming
	S	Nil	T26	T52	L52	VT	MT	MHT	VTP	GT		
CFPS 1/4C	○※1	○※2	○	○	—	—	○	○	—	—	M5F	—
CFP 1/4C	○※1	○※2	○	○	○	○	—	—	○	○	M10H	L10A
CFPS 1/2C	—	○	○	○	—	○	—	—	○	○	—	—
CFPB 1/2C	—	○	—	○	○	—	—	—	—	—	M12.5K	L12.5A

■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	L52A
CFPS 1/4C	0.25W	10~100K	2.2~1M	2.2Ω~47kΩ	51kΩ~100kΩ	110kΩ~330kΩ	360kΩ~1MΩ	250V	500V	300V	5,000	3,000	—
CFP 1/4C	0.25W	10~1M		2.2Ω~100kΩ	110kΩ~330kΩ	360kΩ~1MΩ	—	300V	600V	500V	2,000	2,000	2,000
CFPS 1/2C	0.5W			2.2Ω~91kΩ	100kΩ~1MΩ	—	—	350V	700V	700V			—
CFPB 1/2C	0.5W			2.2Ω~100kΩ	110kΩ~1MΩ	—	—	400V	800V		—		2,000

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℃ or higher, the power shall be derated in accordance with the above derating curve.

■Performance

Test Items	Performance Requirements ΔR±(%+0.05Ω)		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℃/+125℃
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℃±5℃, 10s±1s、350℃±10℃, 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℃(30min.)/+125℃(30min.) 5 cycles
Moisture resistance	5	2.5	40℃±2℃, 90%~95%RH, 1000h 1.5h ON/0.5h OFF cycle
Endurance at 70℃	3	1.5	70℃±2℃, 1000h 1.5h ON/0.5h OFF cycle
Resistance to solvent	No abnormality in appearance. Marking shall be easily legible.	—	Ultrasonic washing with Isopropyl alcohol for 2 min. Power : 0.3W/cm^2, f : 28kHz, Temp. : 35℃±5℃
Flame retardant	No evidence of flaming or self-flaming.	—	Flame test : The test flame shall be applied and removed for each 15 sec respectively to repeat the cycle 5 times. Overload flame retardant : AC Voltage corresponding to 2, 4, 8, 16 and 32 times the power rating shall be applied for each 1min. until disconnection occurs. However the applied voltage shall not exceed 4 times the maximum operating voltage.

■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, estc. 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.
- Be careful to handle these resistors because outer coatings are comparatively weak to outer shock due to flameproof special coats. Please wash them to a minimum. No external force is given to the coating films until they are well dried because the coating films become weaker right after washing. The original strength will be returned after they are dried, so please pay attention not to apply any external force onto the coating film of resistors for 20 minutes after drying. Especially no PC boards shall be piled up.