

**coat-insulated wirewound resistors  
(with fusing function)**

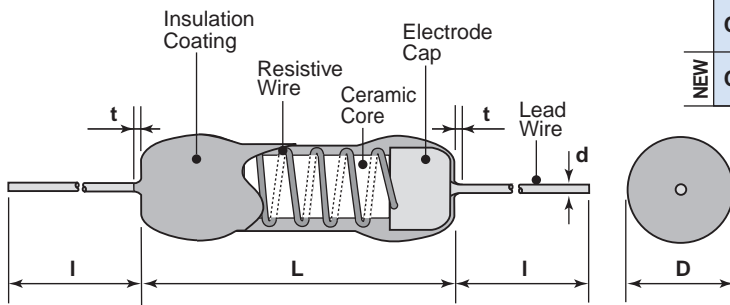


**features**

- Flameproof retardant coating (equivalent to UL94-V-0)
- Fail-safe mains fusing at AC 250V (CWFS23: 4.7Ω~9.1Ω: AC200V)
- Products with lead-free terminations meet EU RoHS



**dimensions and construction**



Type	Dimensions inches (mm)				
	L	D	I	d (nom.)	t (max.)
CWFS23	.472±.039 (12.0±1.0)	.157±.039 (4.0±1.0)	1.18±.118 (30.0±3.0)	.031 (0.8)	.118 (3.0)
<b>NEW</b> CWFS35	.591±.039 (15.0±1.0)	.236±.039 (6.0±1.0)	1.18±.118 (30.0±3.0)	.031 (0.8)	.118 (3.0)

**ordering information**

<b>Product Code</b> CWF	<b>Type</b> S: Safety Fusing	<b>Power Rating</b> 23: 3W <b>NEW</b> 35: 5W	<b>Termination Material</b> C: SnCu	<b>Taping and Forming</b> 23: T52 35: T521	<b>Packaging</b> A: Ammo	<b>Nominal Resistance</b> J: 3 digits	<b>Tolerance</b> J: ±5%
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Contact KOA when you have control request for environmental hazardous material other than the substance specified by EU RoHS.  
For further information on packaging, please refer to Appendix C.  
Lead length changes depending on taping and forming type.

leaded resistors

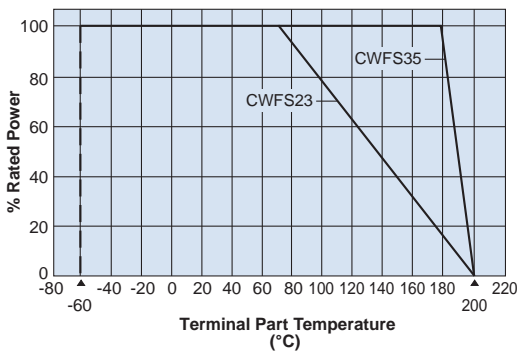
## applications and ratings

Part Designation	Power Rating	Rated Terminal Part Temperature	Resistance Range E-24 (J±5%)	Fusing Characteristics		T.C.R. (x10 <sup>-6</sup> /K)	Operating Temperature Range
				Fusing Power	Fusing Time		
CWFS23	3	+120°C	4.7Ω - 100Ω	90W	30 Sec Max.	±100	-55°C to +200°C
NEW CWFS35	5	+180°C	4.7Ω - 100Ω	150W	30 Sec Max.	±100	

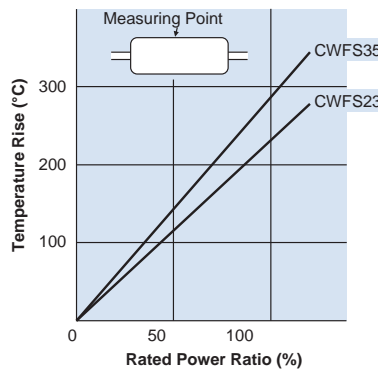
Rated voltage=  $\sqrt{\text{Power Rating} \times \text{Resistance value}}$

## environmental applications

### Derating Curve



### Temperature Rise (Ref.)



Fixing Board  $t=1.2$  Material: Glass Epoxy Board

## Performance Characteristics

Parameter	Requirement $\Delta R \pm(\% + 0.05\Omega)$		Test Method
	Limit	Typical	
Resistance	Within regulated tolerance	—	25°C
T.C.R.	$\pm 100 \times 10^{-6}/K$	—	+25°C/-55°C and +25°C/+125°C
Melt Time	30 seconds	4 seconds	Power rating x 30
Overload (Short Time)	5%	2%	Rated rating x 10, 5 seconds
Resistance to Solder Heat	1%	0.8%	350°C $\pm$ 10°C for 3.5 seconds or 260°C $\pm$ 5°C for 10 seconds
Moisture Resistance	5%	4%	Power rating x 1/10, 40°C, 90 - 95% RH, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle
Endurance of Rated Terminal Part Temperature	5%	3%	CWFS23: 120°C $\pm$ 2°C; CWFS35: 180°C $\pm$ 2°C 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle
Resistance to Solvent	No abnormality in appearance such as disappearance of making, etc.	—	On immersing the sample in IPA for 3 min., the resistor surface should be lightly wiped with a dry cloth (velvet or gauze)