

Type UPF Series

Key Features

High precision

Tolerance  
down to  
±0.02%

TCR down to  
±5PPM/°C

Excellent  
stability

The TE Connectivity High Precision Metal Film Leaded Resistor is available in two sizes with resistance tolerance down to 0.02% and TCR 5% as standard. This high precision, coupled with excellent stability makes it ideal for applications such as precision measurement equipment

Applications

Precision  
Equipment

Measurement  
Equipment



Characteristics – Electrical

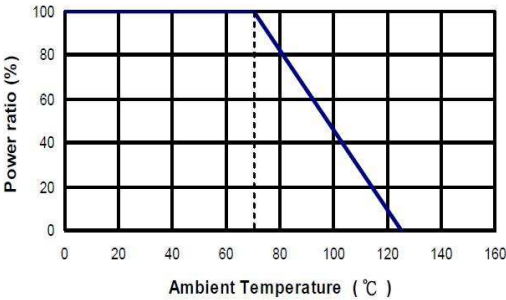
| Type  | Power Rating @70°C | Max. Operating Voltage | Max. Overload Voltage | Resistance Range |        |       | TCR (PPM/°C) |
|-------|--------------------|------------------------|-----------------------|------------------|--------|-------|--------------|
|       |                    |                        |                       | ±0.02%           | ±0.05% | ±0.1% |              |
| UPF25 | 1/4W               | 250V                   | 500V                  | 10Ω -500KΩ       |        |       | ±5           |
|       |                    |                        |                       | 10Ω 1M Ω         |        |       | ±10          |
|       |                    |                        |                       |                  |        |       | ±15          |
|       |                    |                        |                       |                  |        |       | ±25          |
| UPF50 | 1/2W               | 300V                   | 600V                  | 10Ω -500KΩ       |        |       | ±5           |
|       |                    |                        |                       | 10Ω 1M Ω         |        |       | ±10          |
|       |                    |                        |                       |                  |        |       | ±15          |
|       |                    |                        |                       |                  |        |       | ±25          |

Operating Voltage= $V(P \cdot R)$  or Max. operating voltage listed above, whichever is lower.

Overload Voltage= $2.5 \cdot V(P \cdot R)$  or Max. overload voltage listed above, whichever is lower.

Operating Temperature range -55 ~ 125°C

Derating



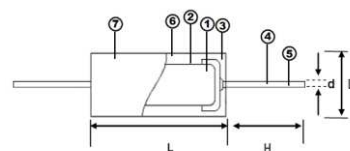
## Environmental Characteristics

| Item                                           | Requirement                               | Test Method                                                                                                                        |
|------------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Temperature Coefficient of Resistance (T.C.R.) | As Spec.                                  | Resistance value at room temperature and room temperature+60°C                                                                     |
| Short Time Overload                            | $\pm(0.05\%+0.05\Omega)$                  | <b>JIS-C-5201-1 5.5</b><br>RCWV*2.5 or Max. overload voltage for 5 seconds                                                         |
| Insulation Resistance                          | > 1,000M $\Omega$                         | <b>MIL-STD-202F Method 302</b><br>Apply 500V <sub>DC</sub> for 1 minute                                                            |
| Endurance                                      | $\pm(0.2\%+0.05\Omega)$                   | <b>MIL-STD-202F Method 108A</b><br>70 $\pm$ 2°C, RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"                             |
| Damp Heat with Load                            | $\pm(0.2\%+0.05\Omega)$                   | <b>MIL-STD-202F Method 103B</b><br>40 $\pm$ 2°C, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF" |
| Solderability                                  | 95% min. Coverage                         | <b>MIL-STD-202F Method 208H</b><br>245 $\pm$ 5°C for 5 seconds                                                                     |
| Resistance to Soldering Heat                   | $\pm(0.05\%+0.01\Omega)$                  | 350 $\pm$ 10°C for 3 seconds or 260 $\pm$ 5°C for 10 seconds                                                                       |
| Terminal Strength                              | Tensile: $\geq$ 2.5kg                     | Tensile strength: for 10 sec.<br>Torsional strength: Rotated through 360°, 5 rotations.                                            |
| Pulse Overload                                 | $\pm(0.1\%+0.01\Omega)$                   | <b>JIS-C-5201-1 5.8</b><br>4 times RCWV for 10000 cycles with 1second "ON" and 25 seconds "OFF"                                    |
| Temperature Cycle                              | $\pm(0.05\%+0.05\Omega)$                  | -25°C(30min)/+85°C(30min), 5 cycles                                                                                                |
| Resistance to Solvent                          | No deterioration of coatings and markings | <b>JIS-C-5201-1 6.9</b><br>Trichroethane for 3 min. with ultrasonic                                                                |

RCWV (Rated continuous working voltage)=  $\sqrt{P \cdot R}$  or Max. Operating voltage whichever is lower

Storage Temperature: 15~28°C; Humidity < 80%RH

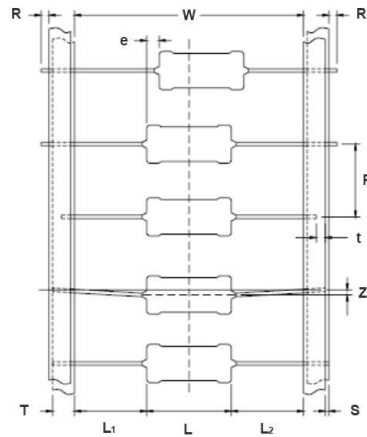
## Construction and Dimensions



|                                   |                                           |
|-----------------------------------|-------------------------------------------|
| ① Ceramic Core (Alumina ceramic)  | ⑤ Lead Wire (Tinned annealed copper wire) |
| ② Resistor Element (Nickel alloy) | ⑥ Molding (Expose)                        |
| ③ Terminal (Tinned iron cap)      | ⑦ Marking (expose based ink)              |
| ④ Connection                      |                                           |

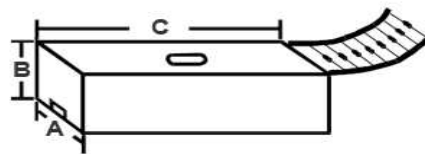
| Type  | L              | D             | H          | d              | Weight (g) (1000pcs) |
|-------|----------------|---------------|------------|----------------|----------------------|
| UPF25 | 7.0 $\pm$ 0.3  | 2.7 $\pm$ 0.4 | 26 $\pm$ 3 | 0.6 $\pm$ 0.05 | 230                  |
| UPF50 | 10.2 $\pm$ 0.3 | 4.0 $\pm$ 0.4 | 25 $\pm$ 3 | 0.6 $\pm$ 0.05 | 430                  |

## Taping Specification



| Type  | L        | W    | P     | L1-<br>L2<br>Max. | T     | Z<br>Max. | R<br>Max. | t<br>Max. | e<br>Max. | S<br>Max. |
|-------|----------|------|-------|-------------------|-------|-----------|-----------|-----------|-----------|-----------|
| UPF25 | 7.0±0.3  | 52±1 | 5±0.3 | 1.0               | 6±0.5 | 0.8       | 0         | 2.5       | 0.5       | 0.5       |
| UPF50 | 10.2±0.3 | 52±1 | 5±0.3 | 1.0               | 6±0.5 | 0.8       | 0         | 2.5       | 0.5       | 0.5       |

## Ammo Packing



| Type  | A    | B    | C     | Pack Qty |
|-------|------|------|-------|----------|
| UPF25 | 85±1 | 78±1 | 260±1 | 2,000    |
| UPF50 | 85±1 | 78±1 | 260±1 | 1,000    |

## How To Order

| UPF          | 50                  | B         | 500R                                                   | V                                               |                   |
|--------------|---------------------|-----------|--------------------------------------------------------|-------------------------------------------------|-------------------|
| Product Type | Power Rating        | Tolerance | Resistance                                             | TCR                                             | Packing           |
| UPF          | 25: ¼ W<br>50 : ½ W | B: ±0.1%  | 10R 10Ω<br>100R : 100Ω<br>1K0 : 1,000Ω<br>100K : 100KΩ | V: ±5PPM<br>B – 10ppm<br>Y – 15ppm<br>D – 25ppm | T: AMMO<br>: BULK |