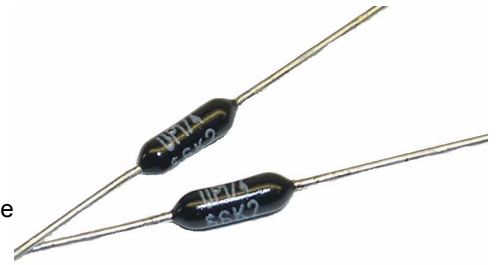


UP Series — Ultra Precision Metal Film Resistors

Features

- Highest stability metal film available
- Higher power options available
- Tolerances to $\pm 0.01\%$ available
- 1W available, contact factory
- Cut and formed product is available on select sizes; contact factory for details
- TCRs as low as 5 ppm
- Matched sets available
- Low noise
- Non-standard resistance values available



Electrical Specifications

| Type / Code | Power Rating (Watts) @ 70°C | Maximum Working Voltage* | Maximum Pulse Voltage |
|-------------|-----------------------------|--------------------------|-----------------------|
| UP 1/4 | 0.25W | 350 | 500 |
| UP 1/2 | 0.5W | 350 | 500 |

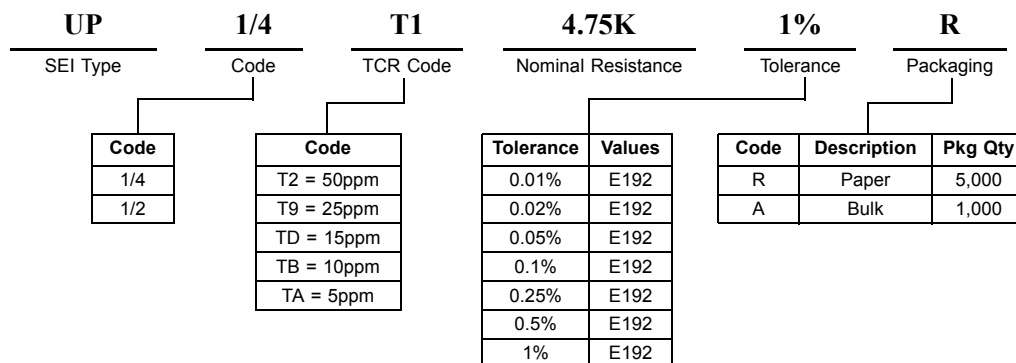
* Lesser of \sqrt{PR} or maximum working voltage.

Tolerance / TCR Combinations

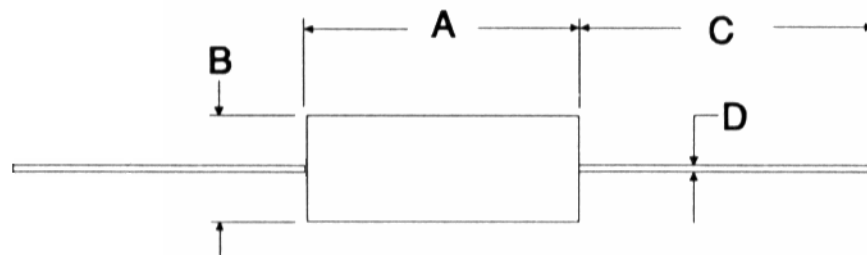
Electrical (Operating Temperature Range -20°C to +85°C)

| TCR Code | TCR | UP 1/4 | | | | UP 1/2 | | | |
|----------|-----|----------------------|------------------|--------------------|--------------------|----------------------|--------------------|--------------------|--------------------|
| | | 0.01–0.02% | 0.05% | 0.1–0.25% | 0.5–1% | 0.01–0.02% | 0.05% | 0.1–0.25% | 0.5–1% |
| TA | 5 | 51.1 Ω – 500K | 10 Ω – 1M | 10 Ω – 499K | 1 Ω – 4M | 51.1 Ω – 499K | 10 Ω – 499K | 10 Ω – 499K | 10 Ω – 499K |
| TB | 10 | 51.1 Ω – 500K | 10 Ω – 1M | 10 Ω – 4M | 1 Ω – 4M | 51.1 Ω – 499K | 10 Ω – 499K | 10 Ω – 1M | 1 Ω – 1M |
| TD | 15 | 51.1 Ω – 500K | 10 Ω – 1M | 10 Ω – 4M | 1 Ω – 4M | 51.1 Ω – 499K | 10 Ω – 499K | 5.11 Ω – 1M | 1 Ω – 1M |
| T9 | 25 | 51.1 Ω – 294K | 10 Ω – 1M | 5.11 Ω – 2M | 1 Ω – 2M | 51.1 Ω – 499K | 10 Ω – 499K | 5.11 Ω – 2M | 1 Ω – 2M |
| T2 | 50 | 51.1 Ω – 294K | 10 Ω – 1M | 5.11 Ω – 2M | 1 Ω – 3.92M | 51.1 Ω – 499K | 10 Ω – 499K | 5.11 Ω – 2M | 1 Ω – 3.92M |

How to Order



UP Series — Ultra Precision Metal Film Resistors



Mechanical Specifications

| Type / Code | A Body Length | B Body Width | C Lead Length | D Lead Diameter | Units |
|-------------|------------------|-----------------|------------------|--------------------|--------|
| UP 1/4 | 0.28 max | 0.10 max | 1.18 min | 0.024 ± 0.002 | inches |
| | 7.2 max | 2.5 max | 30.0 min | 0.61 ± 0.05 | mm |
| UP 1/2 | 0.39 max | 0.145 max | 1.18 min | 0.024 ± 0.002 | inches |
| | 10.0 max | 3.70 max | 30.0 min | 0.61 ± 0.05 | mm |

Performance Characteristics

| Environmental | | Maximum | Typical |
|------------------------------------------------|------|-----------|---------|
| Load at commercial rating: 1,000 hours at 70°C | ΔR% | 0.30 | 0.10 |
| Load at CECC rating: 1,000 hours at 70°C | ΔR% | 0.30 | 0.05 |
| Dry Heat: 1,000 hours at 155°C | ΔR% | 1.00 | 0.15 |
| Shelf Life: 12 months at room temperature | ΔR% | 0.10 | 0.03 |
| Short term overload | ΔR% | 0.10 | 0.02 |
| Climatic | ΔR% | 0.30 | 0.10 |
| Climatic category | | 55/155/56 | |
| Long term damp heat | ΔR% | 0.50 | 0.10 |
| Temperature rapid change | ΔR% | 0.20 | 0.05 |
| Resistance to solder heat | ΔR% | 0.06 | 0.03 |
| Vibration and bump | ΔR% | 0.06 | 0.02 |
| Noise (in a decade of frequency) | μV/V | 1.00 | 0.10 |