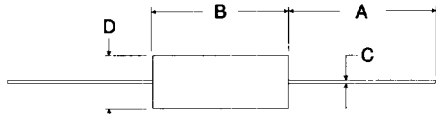


# Ultra Precision Metal Film Resistors

## SEI Type UP

- Highest Stability Metal Film Available
- TCRs as Low as 5 PPM
- Tolerances as Low as .01% Available
- Matched Sets Available
- Low Noise
- Higher Power Options Available



### PERFORMANCE CHARACTERISTICS

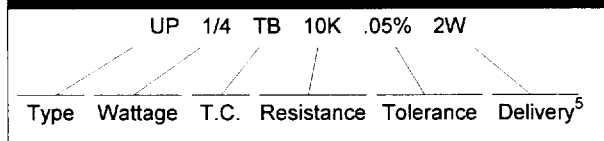
ELECTRICAL	UP 1/4		UP 1/2	
Power Rating (Watts)	1/4 @ 70°C		1/2 @ 70°C <sup>1</sup>	
Maximum Working Voltage	√PR or 250V whichever is less		√PR or 350V whichever is less	
Resistance Range	1Ω-4M		1Ω-4M	
Ambient Temperature Range	-55°C to +155°C		-55°C to +155°C	
Tolerance (%)	±1, 0.5, 0.25, 0.1, 0.05, 0.02, 0.01		±1, 0.5, 0.25, 0.1, 0.05, 0.02, 0.01	
TCR (-20°C to +85°C) PPM/°C	5 (TA), 10 (TB), 15 (TD), 25 (T9), 50 (T2)		5 (TA), 10 (TB), 15 (TD), 25 (T9), 50 (T2)	
ENVIRONMENTAL (%ΔR)	Typical		Typical	
For Resistance Value of	<= 250K	> 250K	<= 250K	> 250K
Load Life @ 70°C — 1,000 hrs	±0.02	±0.05	±0.02	±0.05
Short Time Overload	±0.001	±0.01	±0.001	±0.01
Noise (in a decade frequency) (μV/V)	±0.02	±0.1	±0.03	±0.1
Shelf Life (12 month)	±0.003	±0.02	±0.003	±0.02
Thermal Shock	±0.05	±0.02	±0.05	±0.02

### TOLERANCE / TCR COMBINATIONS

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

SEI Code	TCR	UP 1/4				UP 1/2 <sup>1</sup>			
		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	50Ω-300K	10Ω-500K	10Ω-500K	1Ω-500K	50Ω-500K	10Ω-500K	10Ω-500K	1Ω-500K
TB	10	50Ω-300K	10Ω-1M	10Ω-1M	1Ω-1M	50Ω-500K	10Ω-500K	10Ω-1M	1Ω-1M
TD	15	50Ω-300K	10Ω-1M	5Ω-1M	1Ω-1M	50Ω-500K	10Ω-500K	5Ω-1M	1Ω-1M
T9	25	50Ω-300K	10Ω-1M	5Ω-2M	1Ω-2M	50Ω-500K	10Ω-500K	5Ω-2M	1Ω-2M
T2	50	50Ω-300K	10Ω-1M	5Ω-2M	1Ω-4M	50Ω-500K	10Ω-500K	5Ω-2M	1Ω-4M

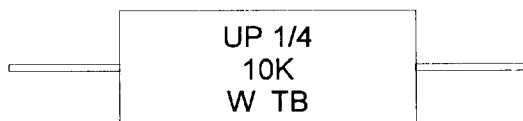
### ORDERING INFORMATION



### DIMENSIONS: Inches (mm)

FEATURE	UP 1/4	UP 1/2
A - Lead Length (typ.) <sup>4</sup>	1.18 min. (30.0 min.)	1.18 min. (30.0 min.)
B - Body Length	.28 max. (7.2 max.)	.39 max. (10.0 max.)
C - Lead Diameter	.024 nom. (0.61 nom.)	.024 nom. (0.61 nom.)
D - Body Diameter	.10 max. (2.5 max.)	.145 max. (3.70 max.)

### PART MARKING



### NOTES

1. Must be rated at .33 watts for tolerances below 0.05%.
2. T.C. Codes: T2 = 50ppm, T9 = 25ppm, TD = 15ppm, TB = 10ppm, TA = 5ppm.
3. Tolerance codes for marking: L = 0.01%, P = 0.02%, W = 0.05%, B = 0.1%, C = 0.25%, D = 0.5%, F = 1%.
4. See packaging section for taped lead lengths.
5. Delivery options: 2W = 2 week, 3W = 3 week, F = small bulk qty of 500 pcs.