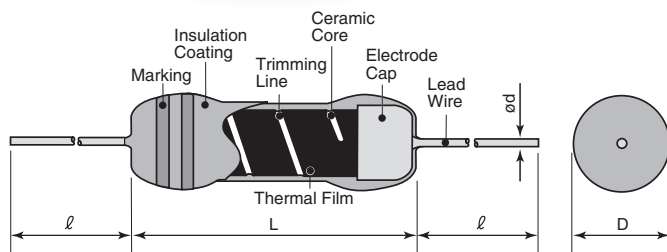


features

- LP series is thin-film thermal sensors and accomodates resistance tolerance $\pm 1\%$ and high T.C.R. $+5000 \times 10^{-6}/K$ with the standard products
- Suitable for control of temperatures for various industrial equipment
- Coating color: Ivory (LP1/16)
Brown (LP1/8) and marking
- Products meet EU RoHS requirements

dimensions and construction



| Type | Dimensions inches (mm) | | | |
|---------|----------------------------------------------------------------------------------|------------------------------------|--------------------------------------|---------------------------------|
| | L | D | d (Nom.) | I |
| LP 1/16 | .138 ^{+.008} _{-.016} (3.5 ^{+.02} _{-.04}) | .067 \pm .008 (1.7 \pm 0.2) | .020 \pm .002 (0.5 \pm 0.05) | 1.18 \pm .118 (30 \pm 3) |
| LP 1/8 | .25 \pm .031 (6.35 \pm 0.8) | .090 \pm .008 (2.3 \pm 0.2) | .026 \pm .002 (0.65 \pm 0.05) | 1.50 \pm .118 (38 \pm 3) |

ordering information

| LP | 1/8 | C | T26 | A | 103 | J | 362 |
|--------------|-----------------------------|------------------------------|---------------------------------------------------|----------------------|--------------------|----------------------------------------------|-----------------------------------|
| Product Code | Power Rating | Termination Surface Material | Taping | Packaging | Nominal Resistance | Resistance Tolerance | Symbol of T.C.R. |
| | 1/16: 0.063W 1/8: 0.125W | C: SnCu | Nil: Bulk T26: 26mm Taping T52: 52mm Taping | Nil: Bulk A: AMMO | 3 digits | F: $\pm 1\%$ G: $\pm 2\%$ J: $\pm 5\%$ | 3 digits 151: 150 362: 3600 |

applications and ratings

| Type | Power Rating | Thermal Time Constant | Thermal Dissipation Constant* | Rated Ambient Temperature | Operating Temperature Range |
|---------|--------------|-----------------------|-------------------------------|---------------------------|----------------------------------|
| LP1/16C | 0.063W | 8s | 2.5mW/ $^{\circ}C$ | +70 $^{\circ}C$ | -55 $^{\circ}C$ -150 $^{\circ}C$ |
| LP1/8C | 0.125W | 14s | 4.5mW/ $^{\circ}C$ | | |

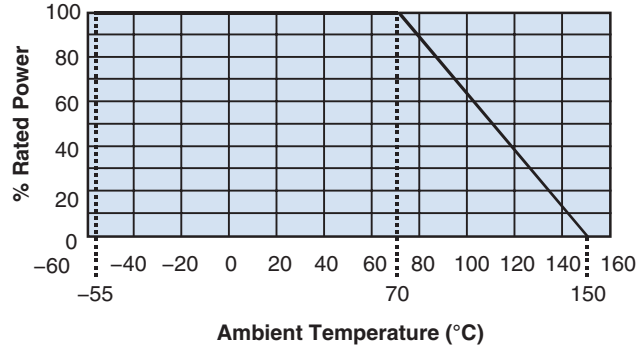
* Thermal time constant and dissipation constant are reference values, which are values of elements and vary with connecting or fixing methods.

| T.C.R. ($\times 10^{-6}/K$) | T.C.R. Tolerance | (Ω) Resistance Range (E24 & 2.5, 5.0 $\times 10^n$) | | | | | |
|-------------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------|--------------|--------------|--------------|--------------|--------------|
| | | LP1/16 | | | LP1/8 | | |
| | | F: $\pm 1\%$ | G: $\pm 2\%$ | J: $\pm 5\%$ | F: $\pm 1\%$ | G: $\pm 2\%$ | J: $\pm 5\%$ |
| 150, 250, 350 450 | $\pm 50 \times 10^{-6}/K$ | - | 150-10k | 150-10k | - | 150-51k0 | 150-51k0 |
| 550, 650, 750, 850 950, 1000, 1200 1400, 1600, 1800 2000, 2200, 2400 | | | 150-30k | 150-30k | | 150-100k | 150-100k |
| 2500 3000 3300 3600 4000, 4500, 5000 | $\pm 5\%$ | 100-30k | 10-30k | 1-30k | 100-100k | 10-100k | 1-100k |
| | | 100-10k | 10-10k | 1-10k | 100-51k | 10-51k | 1-51k |
| | | | | | 100-20k | 10-20k | 1-20k |
| | | | | | | | |

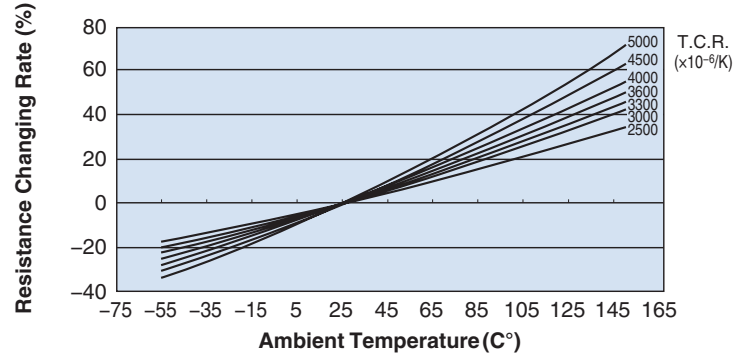
T.C.R. Measuring Temperature: +25 $^{\circ}C$ /+65 $^{\circ}C$. T.C.R. is guaranteed by random inspections.

environmental applications

Derating Curve



Examples of Temp. Characteristics of Resistance



thermal protection

Approximate Expression for Resistance-Temperature Characteristics

Values are not guaranteed but typical.

$R_T = R_{25} (C_0 + C_1 T + C_2 T^2)$ R_T : T°C R_T : Resistance value at T°C
 R_{25} : 25°C R_{25} : Resistance value at 25°C
 T : (°C) T : Ambient temperature (°C)
 C_0, C_1, C_2 : C_0, C_1, C_2 : Constants

| T.C.R. ($\times 10^{-6}/K$) | C_0 | C_1 | C_2 |
|-------------------------------|----------|------------|--------------------------|
| 3000 | 0.931258 | 0.00265213 | 3.90112×10^{-6} |
| 3300 | 0.924355 | 0.00292569 | 4.00516×10^{-6} |
| 3600 | 0.916356 | 0.00323714 | 4.34428×10^{-6} |
| 4000 | 0.907039 | 0.00361006 | 4.33457×10^{-6} |
| 4500 | 0.897412 | 0.00395222 | 6.05201×10^{-6} |
| 5000 | 0.886014 | 0.00437224 | 7.48809×10^{-6} |

Performance Characteristics

| Test Items | Performance Requirements $\Delta R \pm$ (%+0.05 Ω) | | Test Methods |
|------------------------------|------------------------------------------------------------|---------|--------------------------------------------------------------------------|
| | Limit | Typical | |
| Resistance | Within specified tolerance | — | 25°C |
| T.C.R. | Within specified T.C.R. | — | +25°C/+65°C |
| Overload (Short time) | 0.5% | 0.2% | Rated voltage \times 2.5 for 5 seconds |
| Resistance to Soldering Heat | 0.5% | 0.2% | 350°C \pm 10°C, 1 second |
| Rapid Change of Temperature | 0.5% | 0.2% | -55°C (30min.) /+25°C (10min.) /+150°C (30min.) /+25°C (10min.) 5 cycles |
| Moisture Resistance | 2% | 0.3% | 40°C \pm 2°C, 90%–95%RH, 1000h 1.5h ON/0.5h OFF cycle |
| Endurance at 70°C | 2% | 0.5% | 70°C \pm 3°C, 1000h 1.5h ON/0.5h OFF cycle |