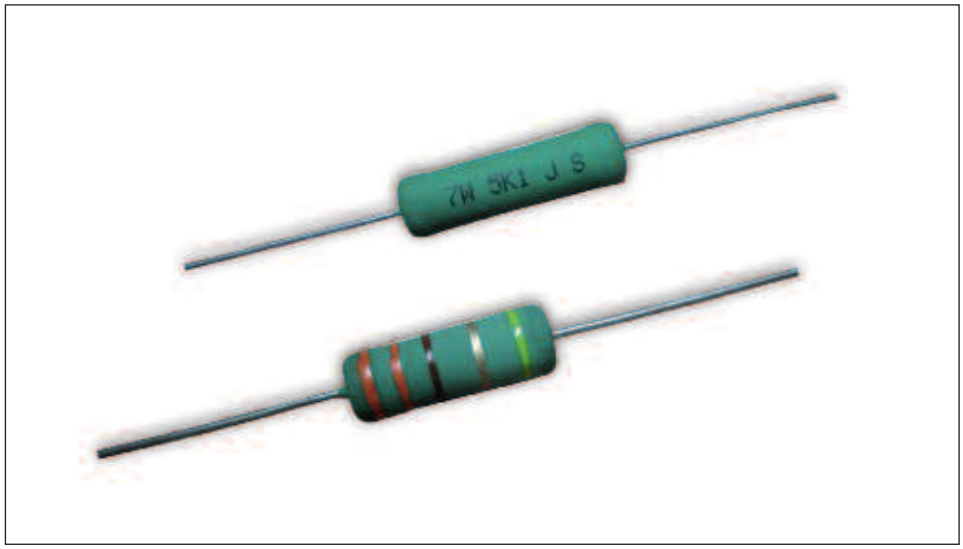
# Type EP Series

## Key Features

- Power up to 10W in Small Size
- 16 Size / Power Options
- Specially Designed and Tested for Surge Immunity
- Flame Resistant Coating

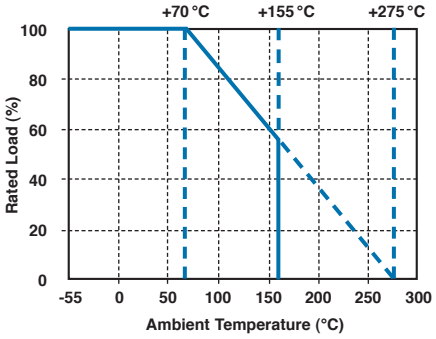



TE Connectivity is pleased to offer this wire wound axial leaded resistor. Robustly manufactured with high quality materials this resistor offers flame proof coating, and is designed and tested to withstand power surges of up to 12KV.

## Characteristics – Electrical

| | Type | Rated Power at 70° C | Max. Working Voltage | Max. Overload Voltage | Dielectric Withstanding Voltage | Resistance Range | Operating Temp. Range |
|---|---|---|---|---|---|---|---|
| Normal size | EP05W | 1/2W (0.50W) | 500 V | 1,000 V | 350 V | 10Ω – 560Ω | -55°C – +155°C |
| | EP1W | 1W | 500 V | 1,000 V | 500 V | 10Ω – 1KΩ | |
| | EP2W | 2W | 500 V | 1,000 V | 500 V | 10Ω – 2KΩ | |
| | EP3W | 3W | 500 V | 1,000 V | 500 V | 10Ω – 3KΩ | |
| | EP5W | 5W | 500 V | 1,000 V | 500 V | 10Ω – 5KΩ | |
| | EP7W | 7W | 500 V | 1,000 V | 500 V | 10Ω – 6KΩ | |
| | EP8W | 8W | 500 V | 1,000 V | 500 V | 10Ω – 10KΩ | |
| | EP9W | 9W | 500 V | 1,000 V | 500 V | 10Ω – 15KΩ | |
| Small size | EP1WS | 1W | 500 V | 1,000 V | 500 V | 10Ω – 560Ω | -55°C – +155°C |
| | EP2WS | 2W | 500 V | 1,000 V | 500 V | 10Ω – 1KΩ | |
| | EP3WS | 3W | 500 V | 1,000 V | 500 V | 10Ω – 2KΩ | |
| | EP5WS | 5W | 500 V | 1,000 V | 500 V | 10Ω – 3KΩ | |
| | EP7WS | 7W | 500 V | 1,000 V | 500 V | 10Ω – 5KΩ | |
| | EP8WS | 8W | 500 V | 1,000 V | 500 V | 10Ω – 6KΩ | |
| | EP9WS | 9W | 500 V | 1,000 V | 500 V | 10Ω – 10KΩ | |
| | EP10WS | 10W | 500 V | 1,000 V | 500 V | 10Ω – 15KΩ | |

## Power Derating Curve




For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with this curve.



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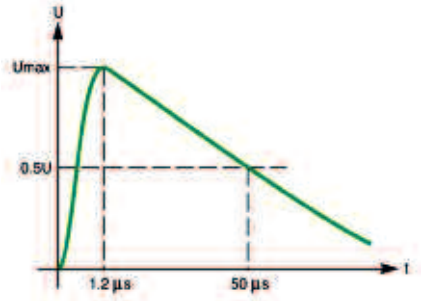
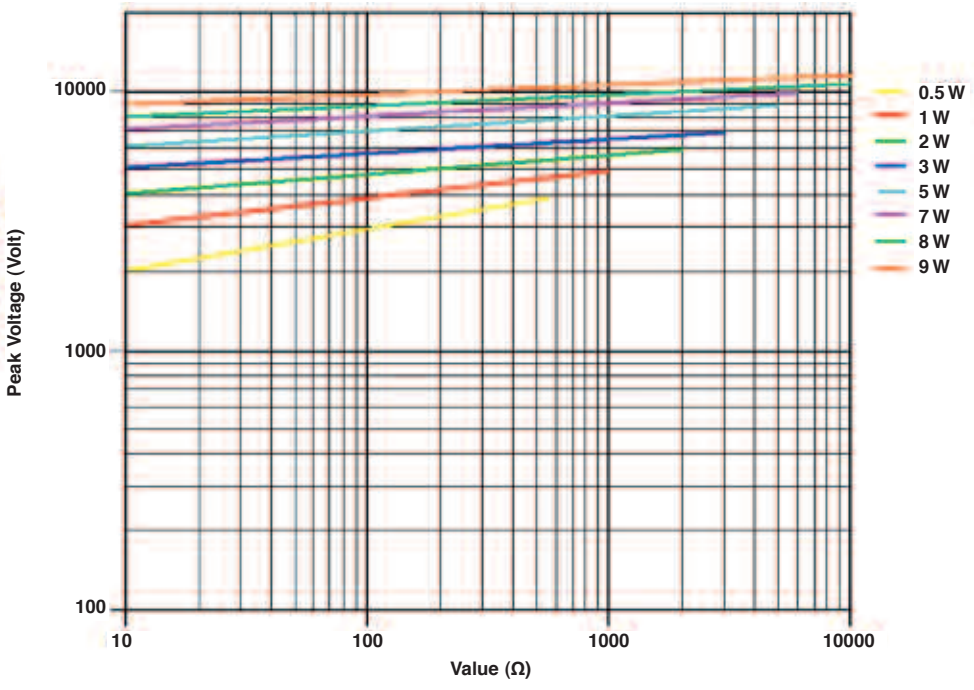
## Surge Rating

| Type | Low Resistance Range | Maximum Surge Voltage | Medium Resistance Range | Maximum Surge Voltage | High Resistance Range | Maximum Surge Voltage |
|---|---|---|---|---|---|---|
| EP05W | 10Ω – 40Ω | 3KV | 43Ω – 240Ω | 4kV | 270Ω – 560Ω | 4kV |
| EP1W | 10Ω – 50Ω | 4KV | 51Ω – 240 Ω | 5kV | 270Ω – 1kΩ | 5kV |
| EP2W | 10Ω – 100Ω | 5KV | 110Ω – 240Ω | 6kV | 270Ω – 2kΩ | 6kV |
| EP3W | 10Ω – 100Ω | 7KV | 110Ω – 680Ω | 8kV | 750Ω – 3kΩ | 8kV |
| EP5W | 10Ω – 160Ω | 8KV | 180Ω – 680Ω | 9kV | 750Ω – 5kΩ | 9kV |
| EP7W | 10Ω – 160Ω | 9KV | 180Ω – 680Ω | 10kV | 750Ω – 6kΩ | 10kV |
| EP8W | 10Ω – 160Ω | 10KV | 180Ω – 680Ω | 11kV | 750Ω – 10kΩ | 11kV |
| EP9W | 10Ω – 160Ω | 10KV | 180Ω – 680Ω | 11kV | 750Ω – 15kΩ | 12kV |
| | | | **Small Size** | | | |
| EP1WS | 10Ω – 40Ω | 3KV | 43Ω – 240Ω | 4kV | 270Ω – 560Ω | 4kV |
| EP2WS | 10Ω – 50Ω | 4KV | 51Ω – 240 Ω | 5kV | 270Ω – 1kΩ | 5kV |
| EP3WS | 10Ω – 100Ω | 5KV | 110Ω – 240Ω | 6kV | 270Ω – 2kΩ | 6kV |
| EP5WS | 10Ω – 100Ω | 7KV | 110Ω – 680Ω | 8kV | 750Ω – 3kΩ | 8kV |
| EP7WS | 10Ω – 160Ω | 8KV | 180Ω – 680Ω | 9kV | 750Ω – 5kΩ | 9kV |
| EP8WS | 10Ω – 160Ω | 9KV | 180Ω – 680Ω | 10kV | 750Ω – 6kΩ | 10kV |
| EP9WS | 10Ω – 160Ω | 10KV | 180Ω – 680Ω | 11kV | 750Ω – 10kΩ | 11kV |
| EP10WS | 10Ω – 160Ω | 10KV | 180Ω – 680Ω | 11kV | 750Ω – 15kΩ | 12kV |

## Surge Waveform (1.2 /50 µs)




## 1.2 / 50 µs Voltage Capability



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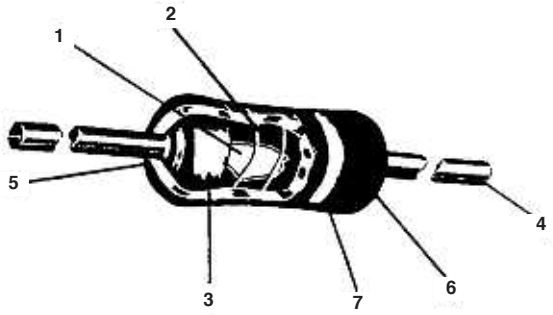
For email, phone or live chat, go to: **te.com/help**

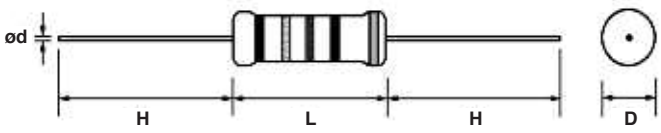
# Type EP Series

## Construction




| No. | Name | Material |
|---|---|---|
| 1 | Basic Body | Rod Type Ceramics |
| 2 | Resistance Wire | Ni-Cr Alloy, Cu-Ni Alloy |
| 3 | End Cap | Steel (Tin plated iron surface) |
| 4 | Lead Wire | Annealed copper wire coated with tin |
| 5 | Joint | By welding |
| 6 | Coating | Insulated & Non-Flame paint (Color: Light Green) |
| 7 | Color Code | Non-Flame epoxy resin |

## Dimensions




| Part No. | Power Rating at 70 °C | Dimension (mm) D ± 1 | L ± 1 | d ± 0.05 | H ± 3 |
|---|---|---|---|---|---|
| EP05W | 1/2W (0.50W) | 3.5 | 10.0 | 0.54 | 28 |
| EP1W | 1W | 5.0 | 12.0 | 0.70 | 25 |
| EP2W | 2W | 5.5 | 16.0 | 0.70 | 28 |
| EP3W | 3W | 6.5 | 17.5 | 0.75 | 28 |
| EP5W | 5W | 8.5 | 25.0 | 0.75 | 38 |
| EP7W | 7W | 8.5 | 30.0 | 0.75 | 38 |
| EP8W | 8W | 8.5 | 40.0 | 0.75 | 38 |
| EP9W | 9W | 8.5 | 53.0 | 0.75 | 38 |
| EP1WS | 1W-S | 3.5 | 10.0 | 0.54 | 28 |
| EP2WS | 2W-S | 5.0 | 12.0 | 0.70 | 25 |
| EP3WS | 3W-S | 5.5 | 16.0 | 0.70 | 28 |
| EP5WS | 5W-S | 6.5 | 17.5 | 0.75 | 28 |
| EP7WS | 7W-S | 8.5 | 25.0 | 0.75 | 38 |
| EP8WS | 8W-S | 8.5 | 30.0 | 0.75 | 38 |
| EP9WS | 9W-S | 8.5 | 40.0 | 0.75 | 38 |
| EP10WS | 10W-S | 8.5 | 53.0 | 0.75 | 38 |



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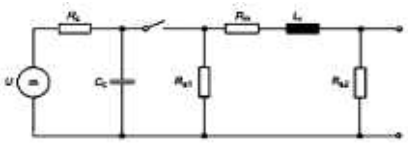
# Type EP Series

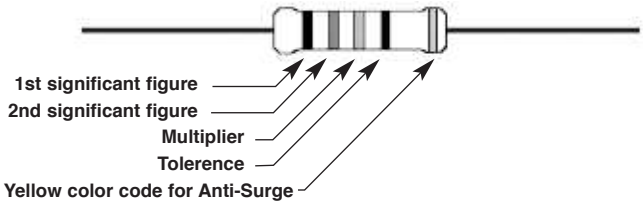
## Characteristics – Environmental

| Item | Limits | Test Method (JIS C 5201-1) | | |
|---|---|---|---|---|
| **Temperature Coefficient of Resistance (TCR):** | <20Ω : ±400PPM/°C<br>≥20Ω : ±300PPM/°C | R2-R1<br>R1 (t2-t1) x$10_6$ (PPM/°C) | | |
| **Short Time Overload:** | ± (2% + 0.05Ω) Max | RCWV*2.5 for 5 seconds | | |
| **Load Life:** | ±(5.0%+0.05Ω) | 70±2°C Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF" | | |
| **Load Life in Humidity:** | ±(5.0%+0.05Ω) | 40±2°C, 90-95% R.H. Max working voltage for 1000 hrs with 1.5hrs hrs "ON" and 0.5 hrs "OFF" | | |
| **Solderability:** | 95% min. coverage | 245±5°C for 3 seconds | | |
| **Resistance to Soldering Heat:** | ±(1.0%+0.05Ω) | Leads immersed 3.2 – 4.8 mm from body - 350±10°C for 3±0.05 seconds | | |
| **Resistance to Solvent:** | No deterioration of protective coating and markings | Immersed in trichroethane bath for 3 minutes with ultrasonic | | |
| **Surge Immunity Test:** | ±(5% + 0.05Ω) Max. | Refer to IEC61000-4-5 | Max Surge Voltage | |
| |  | | 1/2W 1WS | 4KV |
| | | | 1W 2WS | 5KV |
| | | | 2W 3WS | 6KV |
| | | | 3W 5WS | 8KV |
| | 1.2 µsec rising time and 50 µsec discharge; every 1 minute for 10 cycle | | 5W 7WS | 9KV |
| | | | 7W 8WS | 10KV |
| | | | 8W 9WS | 11KV |
| | | | 9W 10WS | 12KV |

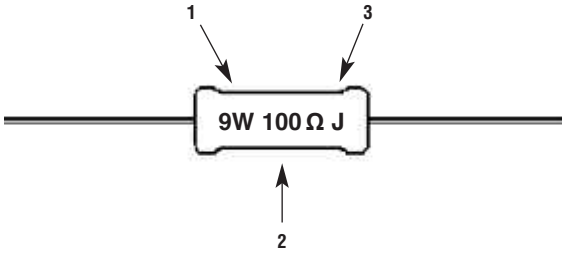
**Storage Temperature: 25±3°C; Humidity 60% RH ±10%**

## Marking

For EP Normal Size 1/2W, 1W, 2W, 3W and EP Small Size 1WS, 2WS, 3WS, 5WS Resistors shall be marked with color coding in accordance with JIS C 0802.




For EP Normal Size 5W, 7W, 8W 9W and EP Small Size 7WS, 8WS, 9WS, 10WS Resistors will be marked with power rating, nominal resistance and resistance tolerance code.



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# Type EP Series

## Packaging

EP Normal Size: 1/2W, 1W, 2W, 3W and EP Small Size 1WS, 2WS, 3WS, 5WS supplied taped in “ammo boxes”.
All larger sizes supplied bulk packed in boxes

## How to Order

| EP | 3W | 200R | J |
|---|---|---|---|
| Common Part | Power rating | Nominal Resistance | Resistance Tolerance |
| EP | 05W = 1/2W<br>1W = 1W<br>1WS = 1WS<br>As per Electrical characteristics chart | 10Ω – 10R<br>1KΩ -1K0<br>(1000Ω) | F = ±1%<br>G = ±2%<br>J = ±5%<br>K = ±10% |

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