**Super anti-surge thick film chip resistors　ZPS series**

**ZPS05（0603）　ZPS10（0805）**　＊（　）：Inch size

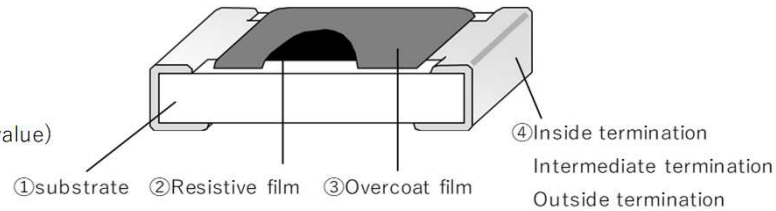
**Recommendation**

Ver.2

■Features

・Guaranteed 0603 size 0.3W, 0805 size 0.5W
・±0.5 resistance tolerance is in lineup.
・ESD (new JASO condition) 15KV is applied,
　resistance change rate within 10% (actual value)
・RoHS qualified
・ELV qualified
・AEC-Q200 qualified

■Structure




*This is only a schematic drawing of the structure.

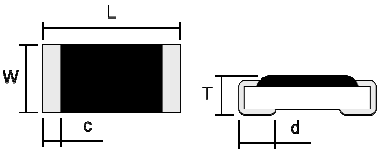
■Part No. Explanation (Example)

| Z | P | S | 0 | 5 | | T | 1 | 0 | 3 | J |
|---|---|---|---|---|---|---|---|---|---|---|

| Product type | Rated power and Size | T.C.R | Packaging form | Nominal resistance value(*) | Resistance tolerance |
|---|---|---|---|---|---|
| ZPS : super Anti-surge thick film chip resistors | 05:0.3W,0603<br>10:0.5W,0805 | Refer to "■Ratings" | T : 4mm pitch taping<br>$\phi$ 180 reel | The resistance value is indicated by 3-digit numbers. E96 sequence products are indicated by a 4-digit. | J: ±5%<br>F: ±1%<br>D: ±0.5% |

*The first two numbers are significant numbers,
　and the third one is the number of zeros "0" following to the first two numbers (multiple of 10).
*In the case of the E96 sequence,
　the first three values mean the significant figures and the fourth one represents the number of 0 following to them (multiplier of 10).
　If there is a decimal point in resistance value, it is indicated by "R" and all numbers are significant numbers.

■Dimensions




＊External dimensions are for reference only.
　Overcoat film color : Black

| | L | W | T | c | d |
|---|---|---|---|---|---|
| ZPS05 | 1.60±0.10 | 0.80±0.10 | 0.45 ±0.10 | 0.25 $^{+0.15}_{-0.10}$ | 0.25 $^{+0.15}_{-0.10}$ |
| ZPS10 | 2.00±0.15 | 1.25±0.15 | 0.55 $^{+0.10}_{-0.05}$ | 0.25 $^{+0.20}_{-0.15}$ | 0.40 ±0.15 |

(Unit: mm)

## ■Ratings

| | Rated power | Limiting element voltage(*1) | Maximum overload voltage(*2) | Range of rated resistance | Tolerance on rated resistance | Category temperature range | Temperature Coefficient of Resistance(T.C.R) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ZPS05 | 0.3W | 150V | 200V | J品：0.1Ω～10MΩ | J(±5%) | -55°C～+155°C | | +25°C～+125°C | 0.1Ω～9.1Ω | ±250×10⁻⁶/°C |
| | | | | | | | | | 10Ω～10MΩ | ±200×10⁻⁶/°C |
| | | | | F品：0.1Ω～1.5MΩ | F(±1%) | -55°C～+155°C | Z | +25°C～+125°C | 0.1Ω～0.91Ω | ±150×10⁻⁶/°C |
| | | | | | | | | +25°C～+125°C | 1Ω～9.1Ω | ±250×10⁻⁶/°C |
| | | | | | | | | | 10Ω～1.5MΩ | ±200×10⁻⁶/°C |
| | | | | D品：0.1Ω～1.5MΩ | D(±0.5%) | -55°C～+155°C | Z | +25°C～+125°C | 0.1Ω～0.976Ω | ±150×10⁻⁶/°C |
| | | | | | | | K | | 1Ω～1.5MΩ | ±100×10⁻⁶/°C |
| ZPS10 | 0.5W | 300V | 600V | J品：0.1Ω～10MΩ | J(±5%) | -55°C～+155°C | | +25°C～+125°C | 0.1Ω～0.91Ω | ±250×10⁻⁶/°C |
| | | | | | | | | | 1Ω～10MΩ | ±200×10⁻⁶/°C |
| | | | | F品：0.1Ω～1.5MΩ | F(±1%) | -55°C～+155°C | | +25°C～+125°C | 0.1Ω～0.91Ω | ±250×10⁻⁶/°C |
| | | | | | | | | | 1Ω～1.5MΩ | ±200×10⁻⁶/°C |
| | | | | D品：0.1Ω～1.5MΩ | D(±0.5%) | -55°C～+155°C | W | +25°C～+155°C | 0.1Ω～0.976Ω | ±100×10⁻⁶/°C |
| | | | | | | | K | +25°C～+125°C | 1Ω～1.5MΩ | ±100×10⁻⁶/°C |

(*1) Rated voltage = $\sqrt{Rated\ power \times Resistance\ value}$

In the case of rated voltage over above limiting element voltage, limiting element voltage will be the maximum.

(*2) The applied voltage in short time overload test = 2.5×rated voltage

In the case of the applied voltage in short time overload test over above maximum overload voltage, maximum overload voltage will be the maximum.

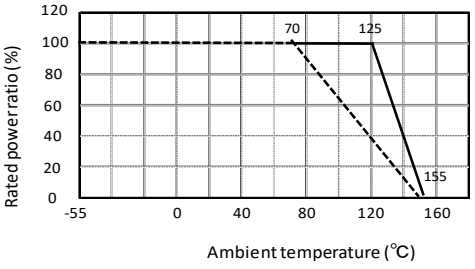
＊There are the supplementary information about rating on reference page.

＊Temperature Coefficient of Resistance (T.C.R) is based on JIS C5201-1 6.2 between two points: 25°C and 125°C.

## ■Specifications and test methods

| Item | Specifications | Test method |
|---|---|---|
| Overload | ±(2%+0.05Ω) | JIS C5201-1 8.1<br>2.5×Rated voltage, for 5 seconds |
| Bend strength of the face plating | ±(1%+0.05Ω) | JIS C5201-1 9.8<br>Bending distance : 3mm |
| Resistance to soldering heat | ±(1%+0.05Ω) | JIS C5201-1 11.2<br>260±5°C.10(sec.) |
| Solderability | Covered with more than 95% | JIS C5201-1 11.1<br>245±3°C.(sec.) |
| Rapid change of temperature | ±(1%+0.05Ω) | JIS C5201-1 10.1<br>-55°C⇔+125°C,1000(times) |
| Loadlife in humidity | ±(2%+0.05Ω) | 60±2°C.90~95% R.H 1000h |
| Endurance at 70°C | ±(2%+0.05Ω) | JIS C5201-1 7.1<br>70±2°C.1000h |

## ■Derating curve




＊Rated power of the resistor is the maximum power which can be loaded continuously at the ambient temperature of 70 °C.
For the ambient temperature above 70°C,
please use the item according to the load derating curve (dotted line)
Please note that the component surface temperature does not exceed operating temperature range.

＊If the component temperature is below 155°C,
the power rating can be used according to the load derating curve in the solid line.