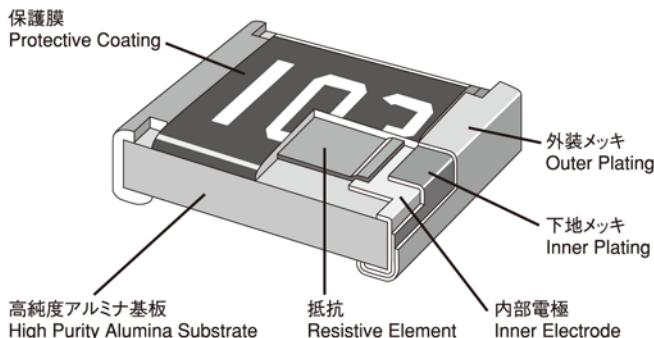


### 製品構造 / Construction



### 特 長 / Feature

- 0603から6332の9形状でシリーズを構成しています。
- 3層構造の電極とメタルグレイズ厚膜抵抗体により高い信頼性が得られます。
- リフロー、フローはんだ付けのいずれにも対応します。
- テーピング、バルクケース等、各種自動実装機に対応します。
- TSR\_G series consist of 9 types from 0201 to 2512 inch.
- High reliability with triple layers of electrodes and metal graze thick film resistive element.
- Suitable for the both flow and reflow soldering.
- Taping & Bulk cassettes are available for automatic-pick and mount-machines.

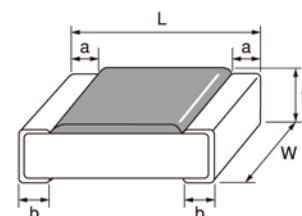
### 品番構成 / Type Designation

| TSR                 | 6G                             | T                                                | J                                  | 103                                                                                                          | V                                         |
|---------------------|--------------------------------|--------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| 品 種<br>Product Code | 形状・特性<br>Size, Characteristics | 表 示<br>Marking                                   | 抵抗値許容差<br>Resistance Tolerance     | 公称抵抗値<br>Nominal Resistance                                                                                  | 包 装<br>Packing                            |
|                     |                                | T=表示あり<br>T=Marking<br>空白=表示なし<br>Nil=No Marking | D=±0.5%<br>F=±1%<br>G=±2%<br>J=±5% | 101:10×10 <sup>1</sup> →100Ω<br>473:47×10 <sup>3</sup> →47kΩ<br>10R0→10.0Ω<br>4702:470×10 <sup>2</sup> →47kΩ | V=テーピング<br>V=Taping<br>空白=バルク<br>Nil=Bulk |

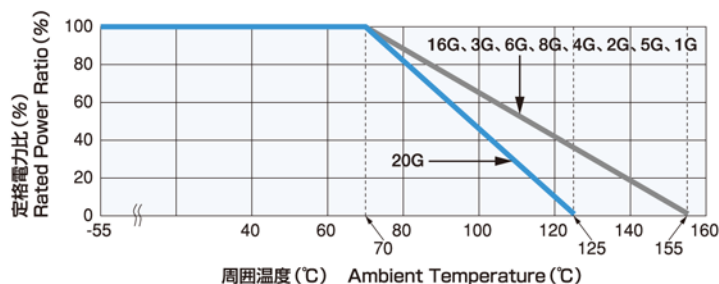
注意\*1: TSR20G、16Gタイプの標準は表示なし。TSR3G、6G、8G、4G、5G、2G、1Gタイプの標準は表示あり。

### 外形寸法 / Dimension

| 形名 Type | Inch size | L                                      | W                                      | t         | a         | b                                      | 包装数量/Q'ty |
|---------|-----------|----------------------------------------|----------------------------------------|-----------|-----------|----------------------------------------|-----------|
| TSR20G  | 0201      | 0.60±0.03                              | 0.30±0.03                              | 0.23±0.03 | 0.13±0.05 | 0.15±0.05                              | 15,000pcs |
| TSR16G  | 0402      | 1.00±0.05                              | 0.50±0.05                              | 0.35±0.05 | 0.20±0.10 | 0.25 <sup>+0.05</sup> <sub>-0.10</sub> | 10,000pcs |
| TSR3G   | 0603      | 1.60±0.10                              | 0.80±0.10                              | 0.45±0.10 | 0.30±0.20 | 0.30±0.20                              | 5,000pcs  |
| TSR6G   | 0805      | 2.00±0.20                              | 1.25±0.10                              | 0.50±0.10 | 0.40±0.20 | 0.40±0.20                              |           |
| TSR8G   | 1206      | 3.20 <sup>+0.05</sup> <sub>-0.20</sub> | 1.60 <sup>+0.05</sup> <sub>-0.15</sub> | 0.60±0.10 | 0.50±0.25 | 0.50±0.20                              |           |
| TSR4G   | 1210      | 3.20±0.20                              | 2.50 <sup>+0.20</sup> <sub>-0.10</sub> | 0.60±0.10 | 0.50±0.20 | 0.50±0.20                              |           |
| TSR2G   | 2010      | 5.00±0.20                              | 2.50±0.15                              | 0.60±0.10 | 0.60±0.20 | 0.50±0.30                              | 4,000pcs  |
| TSR5G   | 1812      | 4.50±0.20                              | 3.20±0.20                              | 0.60±0.10 | 0.50±0.20 | 0.50±0.20                              |           |
| TSR1G   | 2512      | 6.30±0.20                              | 3.20±0.20                              | 0.60±0.10 | 0.70±0.20 | 0.70±0.20                              |           |



### 負荷電力軽減曲線 / Power Derating Curve



■ 定格電力は、周囲70℃以下において連続使用に適する負荷電力をいい、周囲温度が70℃を超える場合は、図の軽減曲線に従って定格電力を軽減してください。

■ For resistors operated in ambient temperature above 70℃, rated power shall be derated in accordance with the figure.

## 定 格 / Rating

| 形 名<br>Type | 定格電力<br>Rated Power | 最高<br>使用電圧<br>MAX.<br>Working<br>Voltage | 最高<br>過負荷電圧<br>MAX.<br>Overload<br>Voltage | 使用温度範囲<br>Category<br>Temperature<br>Range | 抵抗温度特性<br>TCR | 抵抗値範囲<br>Resistance Range |                 |            |            |
|-------------|---------------------|------------------------------------------|--------------------------------------------|--------------------------------------------|---------------|---------------------------|-----------------|------------|------------|
|             |                     |                                          |                                            |                                            |               | ±0.5%<br>E96, E24         | ±1%<br>E96, E24 | ±2%<br>E24 | ±5%<br>E24 |
| TSR20G      | 0.05W               | 25V                                      | 50V                                        | -55~+125℃                                  | ±200ppm/℃     | 100~1MΩ                   | 100~1MΩ         | 100~1MΩ    | 100~10MΩ   |
|             |                     |                                          |                                            |                                            | ±250ppm/℃     | —                         | 10~97.6Ω        | 10~91Ω     | 10~91Ω     |
|             |                     |                                          |                                            |                                            | ±400ppm/℃     | —                         | —               | —          | 1.0~9.1Ω   |
| TSR16G      | 0.063W              | 50V                                      | 100V                                       | -55~+155℃                                  | ±100ppm/℃     | 200~1MΩ                   | 200~1MΩ         | —          | —          |
|             |                     |                                          |                                            |                                            | ±200ppm/℃     | 10~196Ω                   | 10~196Ω         | 10~1MΩ     | 10~1MΩ     |
|             |                     |                                          |                                            |                                            | ±350ppm/℃     | —                         | 3.9~9.1Ω        | 3.9~9.1Ω   | 3.9~9.1Ω   |
|             |                     |                                          |                                            |                                            | ±400ppm/℃     | —                         | 1.1M~10MΩ       | 1.1M~10MΩ  | 1.1M~10MΩ  |
| TSR3G       | 0.1W                | 50V                                      | 100V                                       |                                            | ±100ppm/℃     | 10~1MΩ                    | 10~1MΩ          | —          | —          |
|             |                     |                                          |                                            |                                            | ±200ppm/℃     | —                         | —               | 10~1MΩ     | 10~1MΩ     |
|             |                     |                                          |                                            |                                            | ±350ppm/℃     | —                         | 1.0~9.1Ω        | 1.0~9.1Ω   | 1.0~9.1Ω   |
| TSR6G       | 0.125W              | 150V                                     | 300V                                       |                                            | ±100ppm/℃     | —                         | 1.1M~10MΩ       | 1.1M~10MΩ  | 1.1M~22MΩ  |
|             |                     |                                          |                                            |                                            | ±200ppm/℃     | —                         | 1.0~3.6Ω        | 1.0~3.6Ω   | 1.0~3.6Ω   |
|             |                     |                                          |                                            |                                            | ±350ppm/℃     | —                         | 1.0~3.6Ω        | 1.0~3.6Ω   | 1.0~3.6Ω   |
|             |                     |                                          |                                            |                                            | ±400ppm/℃     | —                         | 5.6M~10MΩ       | 5.6M~10MΩ  | 5.6M~22MΩ  |
| TSR8G       | 0.25W               | 200V                                     | 400V                                       |                                            | ±100ppm/℃     | 10~1MΩ                    | 10~1MΩ          | —          | —          |
|             |                     |                                          |                                            |                                            | ±200ppm/℃     | —                         | —               | 10~1MΩ     | 10~1MΩ     |
|             |                     |                                          |                                            |                                            | ±250ppm/℃     | —                         | 3.9~9.1Ω        | 3.9~9.1Ω   | 3.9~9.1Ω   |
|             |                     |                                          |                                            |                                            | ±350ppm/℃     | —                         | 1.1M~5.1MΩ      | 1.1M~5.1MΩ | 1.1M~5.1MΩ |
| TSR4G       | 0.33W               | 200V                                     | 400V                                       |                                            | ±100ppm/℃     | —                         | 1.0~3.6Ω        | 1.0~3.6Ω   | 1.0~3.6Ω   |
|             | 0.5W                |                                          |                                            |                                            | ±200ppm/℃     | —                         | 5.6M~10MΩ       | 5.6M~10MΩ  | 5.6M~22MΩ  |
|             |                     |                                          |                                            |                                            | ±100ppm/℃     | 10~1MΩ                    | 10~1MΩ          | —          | —          |
|             |                     |                                          |                                            |                                            | ±200ppm/℃     | —                         | —               | 10~1MΩ     | 10~1MΩ     |
|             |                     |                                          |                                            |                                            | ±250ppm/℃     | —                         | 3.9~9.1Ω        | 3.9~9.1Ω   | 3.9~9.1Ω   |
| TSR2G       | 0.75W               | 200V                                     | 400V                                       |                                            | ±350ppm/℃     | —                         | 1.0~3.6Ω        | 1.0~3.6Ω   | 1.0~3.6Ω   |
|             |                     |                                          |                                            |                                            | ±100ppm/℃     | 10~1MΩ                    | 10~1MΩ          | —          | —          |
|             |                     |                                          |                                            |                                            | ±200ppm/℃     | —                         | —               | 10~1MΩ     | 10~1MΩ     |
|             |                     |                                          |                                            |                                            | ±250ppm/℃     | —                         | 2.2~9.1Ω        | 2.2~9.1Ω   | 2.2~9.1Ω   |
| TSR5G       | 0.75W               | 200V                                     | 400V                                       |                                            | ±350ppm/℃     | —                         | 1.0~2.0Ω        | 1.0~2.0Ω   | 1.0~2.0Ω   |
|             |                     |                                          |                                            |                                            | ±100ppm/℃     | 10~1MΩ                    | 10~1MΩ          | —          | —          |
|             |                     |                                          |                                            |                                            | ±200ppm/℃     | —                         | —               | 10~1MΩ     | 10~1MΩ     |
|             |                     |                                          |                                            |                                            | ±250ppm/℃     | —                         | 2.2~9.1Ω        | 2.2~9.1Ω   | 2.2~9.1Ω   |
| TSR1G       | 1W                  | 200V                                     | 400V                                       |                                            | ±350ppm/℃     | —                         | 1.0~2.0Ω        | 1.0~2.0Ω   | 1.0~2.0Ω   |
|             |                     |                                          |                                            |                                            | ±100ppm/℃     | 10~1MΩ                    | 10~1MΩ          | —          | —          |
|             |                     |                                          |                                            |                                            | ±200ppm/℃     | —                         | —               | 10~1MΩ     | 10~1MΩ     |
|             |                     |                                          |                                            |                                            | ±250ppm/℃     | —                         | 2.2~9.1Ω        | 2.2~9.1Ω   | 2.2~9.1Ω   |
|             |                     |                                          |                                            |                                            | 0~+800ppm/℃   | —                         | 0.22~0.91Ω      | 0.22~0.91Ω | 0.22~0.91Ω |