



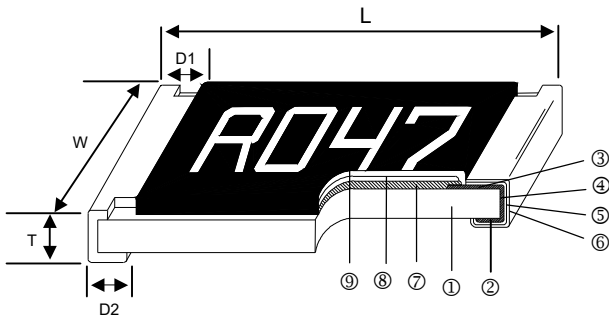
Scope

- This specification applies to all sizes of rectangular-type fixed chip resistors with Ruthenium-base as material.

Features

- Low inductance
- Highly reliable multilayer electrode construction
- Higher component and equipment reliability
- Reduced size of final equipment reliability
- RoHS Compliance

Construction



Applications

- Power Management Applications
- Switching Power Supply
- Over Current Protection in Audio Application
- Voltage Regulation Module (VRM)
- DC-DC Converter, Battery Pack, Charger, Adaptor
- Automotive Engine Control
- Disk Driver

| | | |
|---------------------|----------------------|----------------------|
| ① Alumina Substrate | ④ Edge Electrode | ⑦ Resistor Layer |
| ② Bottom Electrode | ⑤ Barrier Layer | ⑧ Primary Overcoat |
| ③ Top Electrode | ⑥ External Electrode | ⑨ Secondary Overcoat |

Dimensions

| Type | Size (Inch) | L (mm) | W (mm) | T (mm) | D1 (mm) | D2 (mm) | Weight (g) (1000pcs) |
|------|-------------|-----------|-----------|-----------|-----------|-----------|----------------------|
| RS | 0402 | 1.00±0.05 | 0.50±0.05 | 0.35±0.05 | 0.20±0.10 | 0.20±0.10 | 0.620 |
| RS | 0603 | 1.60±0.10 | 0.80±0.10 | 0.45±0.10 | 0.30±0.20 | 0.30±0.20 | 2.042 |
| RS | 0805 | 2.00±0.10 | 1.25±0.10 | 0.50±0.10 | 0.35±0.20 | 0.40±0.20 | 4.368 |
| RS | 1206 | 3.10±0.10 | 1.55±0.10 | 0.55±0.10 | 0.50±0.25 | 0.50±0.20 | 8.947 |
| RS | 1210 | 3.10±0.10 | 2.60±0.15 | 0.55±0.10 | 0.50±0.25 | 0.50±0.20 | 15.959 |
| RS | 2010 | 5.00±0.10 | 2.50±0.15 | 0.55±0.10 | 0.60±0.25 | 0.50±0.20 | 24.241 |
| RS | 2512 | 6.35±0.10 | 3.10±0.15 | 0.55±0.10 | 0.60±0.25 | 0.50±0.20 | 39.448 |

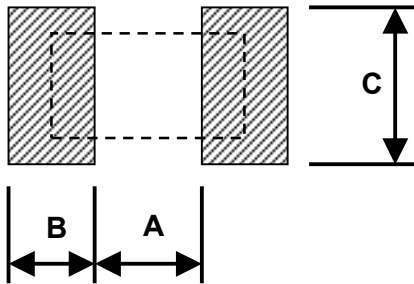


Part Numbering

| | | | | | |
|----|----|------|----|-------|----|
| Ho | RS | 2512 | 1W | 200mR | 1% |
|----|----|------|----|-------|----|

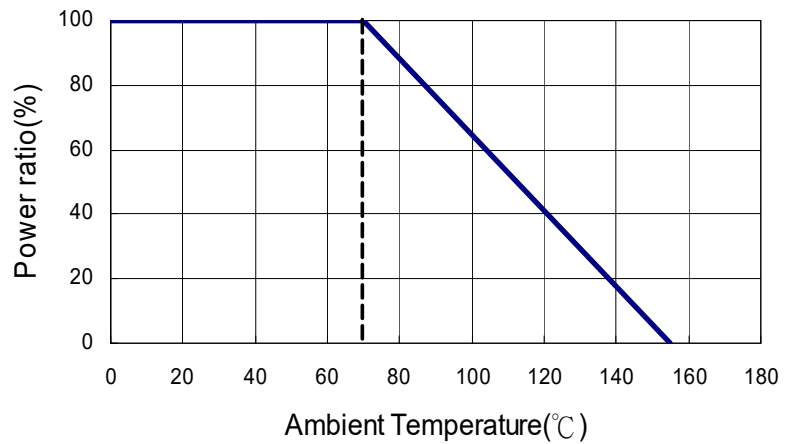
| 制造商 | 产品系列 | 封装尺寸 | 额定功率(W) | 阻值(mR) | 精度(%) |
|------|------|------|---------|-------------------------|------------------|
| 毫欧电子 | 贴片陶瓷 | 0402 | 1/16W | - 0R047: 0.047Ω | F: ±1% J: ±5% |
| | | 0603 | 1/10W | - - - 0R1: 0.1Ω | |
| | | 0805 | 1/8W | "-" to fill up 6 spaces | |
| | | 1206 | 1/4W | | |
| | | 1210 | 1/3W | | |
| | | 2010 | 3/4W | | |
| | | 2512 | 1W | | |

Recommend Land Pattern

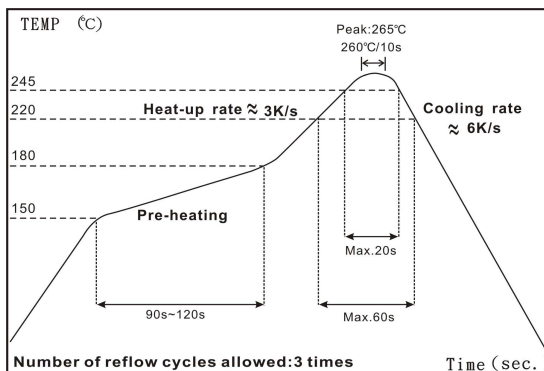


| Type | A (mm) | B (mm) | C (mm) |
|--------|--------|--------|--------|
| RS0402 | 0.50 | 0.45 | 0.60 |
| RS0603 | 0.90 | 0.60 | 0.90 |
| RS0805 | 1.20 | 0.70 | 1.30 |
| RS1206 | 2.00 | 0.90 | 1.60 |
| RS1210 | 2.00 | 0.90 | 2.80 |
| RS2010 | 3.80 | 0.90 | 2.80 |
| RS2512 | 3.80 | 1.60 | 3.50 |

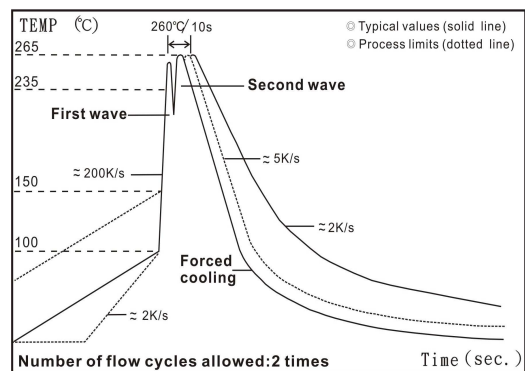
Derating Curve



Soldering Condition



IR Reflow Soldering



Wave Soldering (Flow Soldering)

- (1) Time of IR reflow soldering at maximum temperature point 260°C : 10s
- (2) Time of wave soldering at maximum temperature point 260°C : 10s
- (3) Time of soldering iron at maximum temperature point 410°C : 5s



毫欧电阻 毫欧制造

HoRS贴片陶瓷系列规格书

系列号

HoRS

修订日期

2020-03-06

版本号

Ho-A0

Standard Electrical Specifications

| Item Type | Power Rating at 70°C | Operating Temp. Range | Max. Operating Current | Resistance Range (mΩ) | | TCR (PPM/°C) |
|--------------|-------------------------|--------------------------|---------------------------|--|-----|--------------------------------|
| | | | | ±1% | ±5% | |
| RS0402 | 1/16W | -55 ~ +155°C | 1.11A | 50 - 91 100 - 976 | | ±800 ±500 |
| RS0603 | 1/10W | -55 ~ +155°C | 2.23A | 20 - 47 50 - 91 100 - 976 | | ±1200 ±800 ±500 |
| RS0805 | 1/8W | -55 ~ +155°C | 3.53A | 10 - 18 20 - 47 50 - 91 100 - 976 | | ±1500 ±1200 ±800 ±500 |
| RS1206 | 1/4W | -55 ~ +155°C | 5.00A | | | |
| RS1210 | 1/3W | -55 ~ +155°C | 5.77A | | | |
| RS2010 | 3/4W | -55 ~ +155°C | 8.66A | 10 - 18 20 - 91 100 - 976 | | ±1500 ±800 ±500 |
| RS2512 | 1W | -55 ~ +155°C | 10.0A | | | |

Operating Voltage= $\sqrt{P \cdot R}$; Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$

High Power Electrical Specifications

| Item Type | Power Rating at 70°C | Operating Temp. Range | Max. Operating Current | Resistance Range (mΩ) | | TCR (PPM/°C) |
|--------------|-------------------------|--------------------------|---------------------------|--|-----|--------------------------------|
| | | | | ±1% | ±5% | |
| RS0402 | 1/10W | -55 ~ +155°C | 1.40A | 50 - 91 100 - 976 | | ±800 ±500 |
| RS0603 | 1/8W | -55 ~ +155°C | 2.50A | 20 - 47 50 - 91 100 - 976 | | ±1200 ±800 ±500 |
| RS0805 | 1/4W | -55 ~ +155°C | 5.00A | 10 - 18 20 - 47 50 - 91 100 - 976 | | ±1500 ±1200 ±800 ±500 |
| RS1206 | 1/2W | -55 ~ +155°C | 7.07A | | | |
| RS1210 | 1/2W | -55 ~ +155°C | 7.07A | | | |
| RS2010 | 1W | -55 ~ +155°C | 10.0A | 10 - 18 20 - 91 100 - 976 | | ±1500 ±800 ±500 |
| RS2512 | 2W | -55 ~ +155°C | 14.1A | | | |

Operating Voltage= $\sqrt{P \cdot R}$

Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$

Operating Current= $\sqrt{P/R}$

| | | | |
|---|---------------|------|------------|
|  毫欧电阻 毫欧制造 | HoRS贴片陶瓷系列规格书 | 系列号 | HoRS |
| | | 修订日期 | 2020-03-06 |
| | | 版本号 | Ho-A0 |

Environmental Characteristics

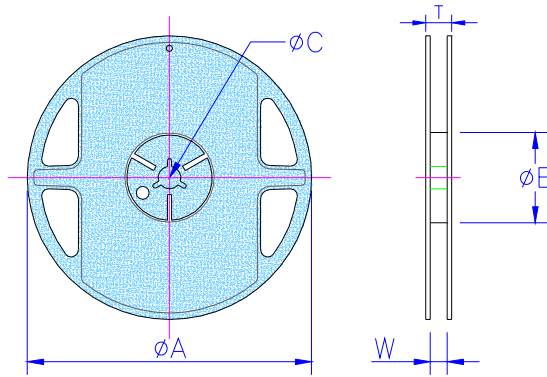
| Item | Requirement | | Test Method |
|--|---|---------------|--|
| | ±1% | ±5% | |
| Temperature Coefficient of Resistance (T.C.R.) | As Spec. | | JIS-C-5201-1 4.8 IEC-60115-1 4.8 -55°C~+125°C, 25°C is the reference temperature |
| Short Time Overload | ±(1.0%+0.05Ω) | ±(2.0%+0.05Ω) | JIS-C-5201-1 4.13 IEC-60115-1 4.13 RCWV*2.5 or Max. Overload Voltage whichever is lower for 5 seconds, 2 seconds for High Power Series |
| Insulation Resistance | ≥10G | | JIS-C-5201-1 4.6 IEC-60115-1 4.6 Max. Overload Voltage for 1 minute |
| Endurance | ±(1.0%+0.10Ω) | ±(2.0%+0.10Ω) | JIS-C-5201-1 4.25 IEC-60115-1 4.25.1 70±2°C, RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" |
| Damp Heat with Load | ±(1.0%+0.10Ω) | ±(2.0%+0.10Ω) | JIS-C-5201-1 4.24 IEC-60115-1 4.24 40±2°C, 90~95% R.H., RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" |
| Dry Heat | ±(1.0%+0.05Ω) | ±(1.5%+0.10Ω) | JIS-C-5201-1 4.23 IEC-60115-1 4.23.2 at +155°C for 1000 hrs |
| Bending Strength | ±(1.0%+0.05Ω) | ±(1.0%+0.05Ω) | JIS-C-5201-1 4.33 IEC-60115-1 4.33 Bending once for 5 seconds 2010, 2512 sizes: 2mm Other sizes: 3mm |
| Solderability | 95% min. coverage | | JIS-C-5201-1 4.17 IEC-60115-1 4.17 245±5°C for 3 seconds |
| Resistance to Soldering Heat | ±(0.5%+0.05Ω) | ±(1.0%+0.05Ω) | JIS-C-5201-1 4.18 IEC-60115-1 4.18 260±5°C for 10 seconds |
| Voltage Proof | No breakdown or flashover | | JIS-C-5201-1 4.7 IEC-60115-1 4.7 1.42 times Max. Operating Voltage for 1 minute |
| Leaching | Individual leaching area ≤5% Total leaching area ≤ 10% | | JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1 260±5°C for 30 seconds |
| Rapid Change of Temperature | ±(0.5%+0.05Ω) | ±(1.0%+0.05Ω) | JIS-C-5201-1 4.19 IEC-60115-1 4.19 -55°C to +155°C, 5 cycles |

RCWV(Rated Continuous Working Voltage)= $\sqrt{P \cdot R}$ or Max. Operating Voltage whichever is lower.

Storage Temperature: 15~28°C; Humidity < 80%RH

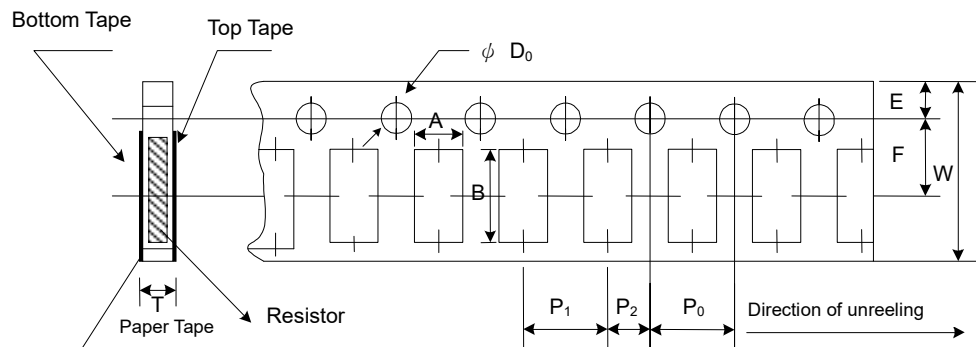
■Packaging

Reel Specifications & Packaging Quantity



| Type | Packaging Quantity | Tape Width | Reel Diameter | ΦA (mm) | ΦB (mm) | ΦC (mm) | W (mm) | T (mm) | |
|---------|--------------------|------------|---------------|---------|-----------|---------------------|----------|----------|----------|
| RS0402 | Paper | 10K | 8mm | 7 inch | 178.5±1.5 | 60 ^{+1/-0} | 13.0±0.2 | 9.0±0.5 | 12.5±0.5 |
| | | 20K | 8mm | 10 inch | 254±1.0 | 100±0.5 | 13.0±0.2 | 9.5±0.5 | 13.5±0.5 |
| | | 40K | 8mm | 13 inch | 330±1.0 | 100±0.5 | 13.0±0.2 | 9.5±0.5 | 13.5±0.5 |
| RS0603 | Paper | 5K | 8mm | 7 inch | 178.5±1.5 | 60 ^{+1/-0} | 13.0±0.2 | 9.0±0.5 | 12.5±0.5 |
| RS0805 | | 10K | 8mm | 10 inch | 254±1.0 | 100±0.5 | 13.0±0.2 | 9.5±0.5 | 13.5±0.5 |
| RS1206 | | 20K | 8mm | 13 inch | 330±1.0 | 100±0.5 | 13.0±0.2 | 9.5±0.5 | 13.5±0.5 |
| RS1210 | | | | | | | | | |
| RS2010) | Embossed | 4K | 12mm | 7 inch | 178.5±1.5 | 60 ^{+1/-0} | 13.0±0.5 | 13.0±0.5 | 15.5±0.5 |
| RS2512 | | 8K | 12mm | 10 inch | 250±1.0 | 62±0.5 | 13.0±0.5 | 12.5±0.5 | 16.5±0.5 |

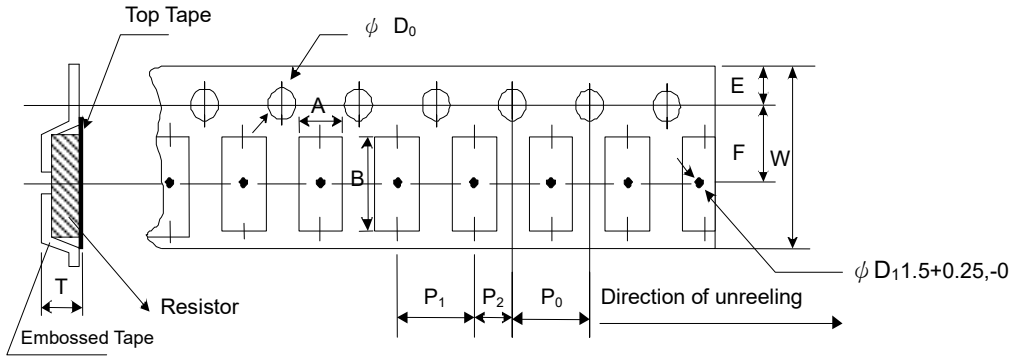
Paper Tape Specifications



| Type | A (mm) | B (mm) | W (mm) | E (mm) | F (mm) | P ₀ (mm) | P ₁ (mm) | P ₂ (mm) | ΦD ₀ (mm) | T (mm) |
|--------|-----------|-----------|----------|-----------|-----------|---------------------|---------------------|---------------------|----------------------|-----------|
| RS0402 | 0.65±0.10 | 1.15±0.10 | 8.0±0.20 | 1.75±0.10 | 3.50±0.05 | 4.00±0.10 | 2.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.45±0.10 |
| RS0603 | 1.10±0.10 | 1.90±0.10 | 8.0±0.20 | 1.75±0.10 | 3.50±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.70±0.10 |
| RS0805 | 1.60±0.10 | 2.40±0.20 | 8.0±0.20 | 1.75±0.10 | 3.50±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.85±0.10 |
| RS1206 | 1.90±0.10 | 3.50±0.20 | 8.0±0.20 | 1.75±0.10 | 3.50±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.85±0.10 |
| RS1210 | 2.90±0.10 | 3.50±0.20 | 8.0±0.20 | 1.75±0.10 | 3.50±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.85±0.10 |

| | |
|------|------------|
| 系列号 | HoRS |
| 修订日期 | 2020-03-06 |
| 版本号 | Ho-A0 |

Embossed Plastic Tape Specifications



| Type | A (mm) | B (mm) | W (mm) | E (mm) | F (mm) | P ₀ (mm) | P ₁ (mm) | P ₂ (mm) | ΦD_0 (mm) | T (mm) |
|--------|----------|----------|-----------|-----------|----------|---------------------|---------------------|---------------------|-----------------|-------------------|
| RS2010 | 2.8±0.10 | 5.5±0.10 | 12.0±0.30 | 1.75±0.10 | 5.5±0.05 | 4.00±0.10 | 4.00±0.10 | 2.00±0.05 | 1.50+0.1, -0 | 1.2 ⁺⁰ |
| RS2512 | 3.5±0.10 | 6.7±0.10 | 12.0±0.30 | 1.75±0.10 | 5.5±0.05 | 4.00±0.10 | 4.00±0.10 | 2.00±0.05 | 1.50+0.1, -0 | 1.2 ⁺⁰ |

Marking

No Marking for 0402

1%, 5% for 0805/1206/1210/2010/2512: 4 digits marking

Example:

| Resistance | 47mΩ | 75mΩ | 15mΩ | 750mΩ | 820mΩ |
|------------|------|------|------|-------|-------|
| Marking | R047 | R075 | R015 | R750 | R820 |

5% for 0603: 3 digits marking in E24

1% for 0603: 3 digits marking with under-line in E96 (non-including E24 series)



3 digits marking for E24 or R value suffix is zero in E96: R10=100mΩ; R28=280mΩ



3 digits marking for E96: 243=243mΩ; 511=511mΩ

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Thick Film Resistors - SMD category](#):

Click to view products by [Milliohm manufacturer](#):

Other Similar products are found below :

[CR-05FL7--150R](#) [CR-05FL7--19K6](#) [CR-05FL7--243R](#) [CR-05FL7--40K2](#) [CR-05FL7--698K](#) [CR-12FP4--324R](#) [CR-12JP4--680R](#)
[M55342K06B1E78RS3](#) [M55342K06B6E19RWL](#) [M55342K06B6E81RS3](#) [M55342M05B200DRWB](#) [M55342M06B4K70MS3](#) [MC0603-511-](#)
[JTW](#) [742C083750JTR](#) [MCR01MZPF1202](#) [MCR01MZPF1601](#) [MCR01MZPF1800](#) [MCR01MZPF6201](#) [MCR01MZPF9102](#) [MCR01MZPJ113](#)
[MCR01MZPJ121](#) [MCR01MZPJ125](#) [MCR01MZPJ751](#) [MCR03EZHZ103](#) [MCR03EZPF2004](#) [MCR03EZPJ270](#) [MCR03EZPJ821](#)
[MCR10EZPF1102](#) [MCR18EZPJ330](#) [RC0603F1473CS](#) [RC0603F150CS](#) [RC1005F1152CS](#) [RC1005F1182CS](#) [RC1005F1372CS](#)
[RC1005F183CS](#) [RC1005F1911CS](#) [RC1005F1912CS](#) [RC1005F203CS](#) [RC1005F2052CS](#) [RC1005F241CS](#) [RC1005F2431CS](#)
[RC1005F3011CS](#) [RC1005F303CS](#) [RC1005F4321CS](#) [RC1005F4642CS](#) [RC1005F471CS](#) [RC1005F4751CS](#) [RC1005F5621CS](#)
[RC1005F6041CS](#) [RC1005J106CS](#)