

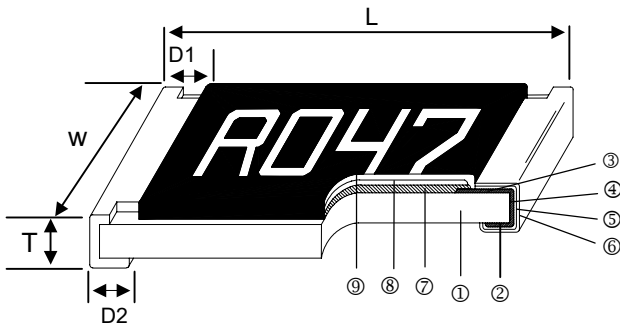
|      |            |
|------|------------|
| 系列号  | HoCS       |
| 修订日期 | 2022-08-16 |
| 版本号  | Ho-A0      |



## Features

- 3 Watts power rating in 1 Watt size, 1225 package
- Low TCR of  $\pm 100$  PPM/ $^{\circ}$ C
- Resistance values from 1m to 1 ohm
- High purity alumina substrate for high power dissipation
- Long side terminations with higher power rating
- RoHS Compliance

## Construction



## Applications

- Power Management Applications
- Switching Power Supply
- Over Current Protection in Audio Applications
- 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) |
|------|-------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------------|
| CS   | 1210        | 3.10 $\pm$ 0.10 | 2.60 $\pm$ 0.15 | 0.55 $\pm$ 0.10 | 0.50 $\pm$ 0.30 | 0.50 $\pm$ 0.25 | 15.5                 |

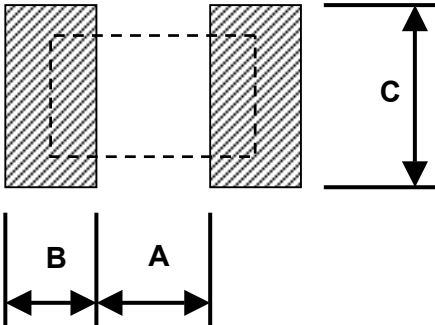
## Part Numbering

| Ho   | CS   | 1210 | 150mR       | 1%   | TCR200   |
|------|------|------|-------------|--|--|
| ↓    | ↓    | ↓    | ↓           | ↓  | ↓  |
| 制造商  | 产品类别 | 封装   | 阻值          | 精度   | 温度系数   |
| 毫欧电子 | 贴片陶瓷 | 1210 | 10mR~1000mR | D= $\pm$ 0.5%<br>F= $\pm$ 1%<br>G= $\pm$ 2%<br>J= $\pm$ 5% | F= $\pm$ 200<br>G= $\pm$ 300<br>H= $\pm$ 400<br>J= $\pm$ 600 |



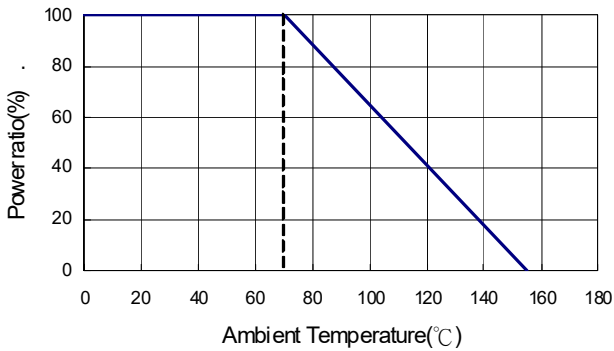
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### Recommend Land Pattern

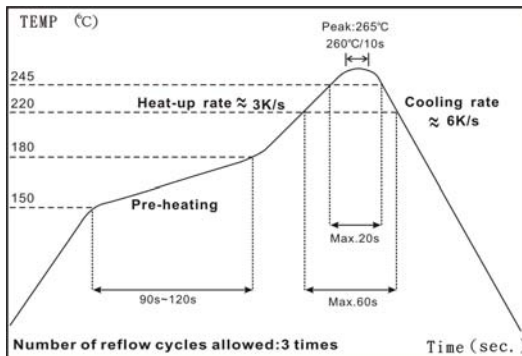


| Type   | A (mm) | B (mm) | C (mm)   |
|--------|--------|--------|----------|
| CS1210 | 2.00   | 1.15   | 2.50±0.2 |

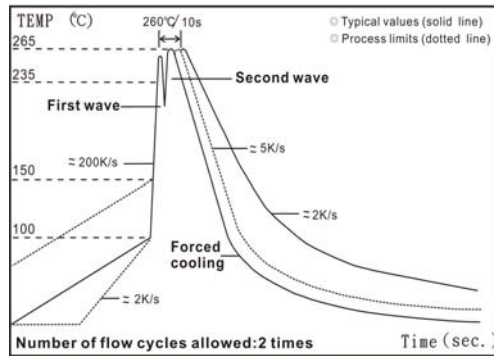
### Derating Curve



### 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

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|  |                   |      |            |
|--|-------------------|------|------------|
| <br>毫欧电阻 毫欧制造 | HoCS1210贴片陶瓷系列规格书 | 系列号  | HoCS       |
|  |                   | 修订日期 | 2022-08-16 |
|  |                   | 版本号  | Ho-A0      |

## Standard Electrical Specifications

| Type \ Item | Power Rating at 70°C | Operating Temp. Range | Max. Operating Current | Resistance Range (mΩ) |         |         |            | TCR (PPM/°C) |
|-------------|----------------------|-----------------------|------------------------|-----------------------|---------|---------|------------|--------------|
|             |                      |                       |                        | ±0.5%                 | ±1%     | ±2%     | ±5%        |              |
| CS1210      | 1/2W                 | -55 ~ +155°C          | 5.00A                  | 10 - 20               | 21 - 50 | 51 - 91 | 100 - 1000 | ±600         |
|             |                      |                       | 7.07A                  |                       |         |         |            |              |
|             |                      |                       | 8.66A                  |                       |         |         |            |              |
|             |                      |                       | 10.0A                  |                       |         |         |            |              |

## Low TCR Electrical Specifications

| Type \ Item | Power Rating at 70°C | Operating Temp. Range | Max. Operating Current | Resistance Range (mΩ) |     |     |     | TCR (PPM/°C) |
|-------------|----------------------|-----------------------|------------------------|-----------------------|-----|-----|-----|--------------|
|             |                      |                       |                        | ±0.5%                 | ±1% | ±2% | ±5% |              |
| CS1210      | 1/2W                 | -55 ~ +155°C          | 2.58A                  | 75 - 1000             |     |     |     | ±100         |

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

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## HoCS1210贴片陶瓷系列规格书

|      |            |
|------|------------|
| 系列号  | HoCS       |
| 修订日期 | 2022-08-16 |
| 版本号  | Ho-A0      |

### Environmental Characteristics

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

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

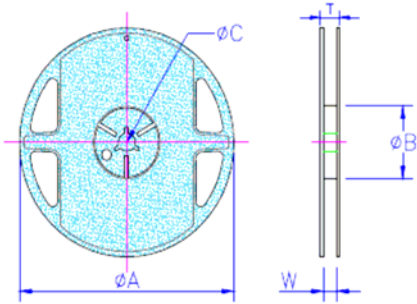
Storage Temperature: 15~28°C; Humidity < 80%RH

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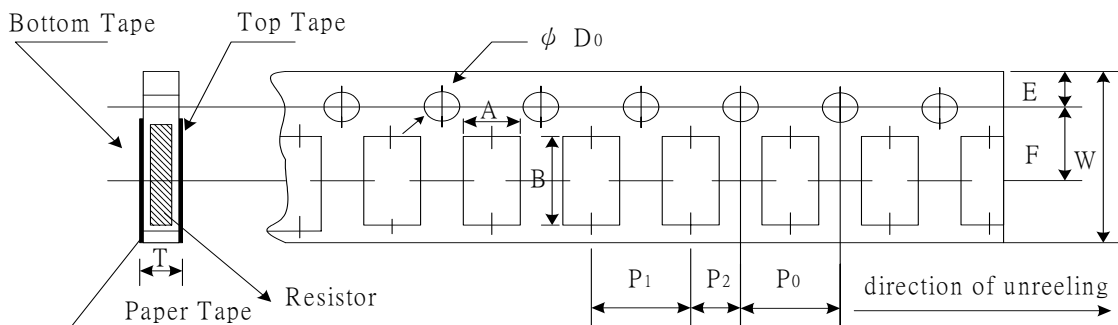
## ■Packaging

### Packaging Quantity & Reel Specifications



| Type   | ΦA (mm)   | ΦB (mm)  | ΦC (mm)  | W (mm)  | T (mm)   | Paper Tape (EA) | Embossed Plastic Tape (EA) |
|--------|-----------|----------|----------|---------|----------|-----------------|----------------------------|
| CS1210 | 178.0±1.0 | 60.0±1.0 | 13.5±0.7 | 9.5±0.1 | 11.5±1.0 | 5,000           |                            |

### Paper Tape Specifications



| Type   | A (mm)    | B (mm)    | W (mm)   | E (mm)    | F (mm)    | P0 (mm)   | P1 (mm)   | P2 (mm)   | ΦD <sub>0</sub> (mm) | T (mm)    |
|--------|-----------|-----------|----------|-----------|-----------|-----------|-----------|-----------|----------------------|-----------|
| CS1210 | 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 |

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