

HoCG2512SeriesAutomotive Grade Metal Alloy Resistors Datasheet

■ Features

- ① The first manufacturer of alloy resistors using high thermal conductivity epoxy resin in China.
- ② Eco-friendly laser-etched markings for a premium look.
- ③ Alloy chip, encapsulated for superior solderability, reliability, and overload ability.
- ④ Consistent performance, high precision, high reliability, high stability.
- ⑤ Low resistance temperature coefficient, ultra-low parasitic inductance, can be used for high-frequency AC current detection.
- ⑥ Compliant with ROHS and halogen-free requirements, automotive AEC-Q200 testing.



■ Application

- ① Power Module
- ② Aerospace and military industry
- ③ BMS Management System
- ④ Automatic Control System
- ⑤ Control unit for automotive modules
- ⑥ Variable frequency drive
- ⑦ Servo drive system
- ⑧ Industrial equipment

■ Product electrical parameters

| Part No. | Power | Resistance Range | TCR | Operating temperature range | Tolerance | Max. Rated Current | Max. Overload Current | Inductance |
|----------|-------|------------------|---------|-----------------------------|-----------------------------------|--------------------|-----------------------|------------|
| 2512 | 4W | 0R | \ | -55°C~170°C | \ | \ | \ | < 3nH |
| 2512(S) | 3W | 0.3mR | ±350ppm | | ±0.5%、±1% ±5% | 115.47A | 258.19A | |
| | 3.5W | 0.4mR~0.5mR | ±150ppm | | | 100A | 223.60A | |
| | 4W | | | | | 68.31A | 152.75A | |
| 2512 | 3W | 0.75mR~1mR | ±100ppm | | ±0.1%、±0.2% 、±0.5%、±1% 、±5% | 59.16A | 132.28A | |
| | 3.5W | 1mR | ±50ppm | | | 44.72A | 100A | |
| | 2W | 1.5mR | ±50ppm | | | 38.72A | 86.60A | |
| | | 2mR~5mR | ±25ppm | | | 22.36A | 50A | |
| | 3W | 6mR~100mR | ±25ppm | | | | | |

■ Product Structure

| No. | Layer Name |
|-----|------------|
| 1 | Tin |
| 2 | Nickel |
| 3 | Copper |
| 4 | Alloy body |
| 5 | Plastic |



Product Selection

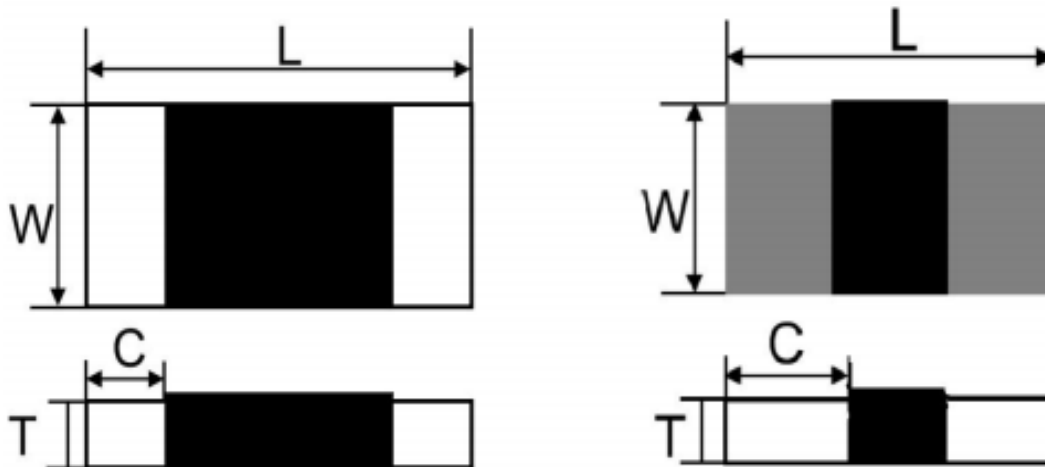
 Selection Example: **HoCG25123R010F4**

 Enclosure **Alloy** Resistors **2512 3 W 10 mΩ 1%**

| H | o | C | G | 2 | 5 | 1 | 2 | 3 | R | 0 | 1 | 0 | F | 4 |
|----------------------|---------------------------|-------------|--|---|---|--------------------|--|---|---|---|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| makers | product category | seal inside | rating | numerical value of electrical impedance | accurate | Packaging Quantity | pads | | | | | | | |
| milliohm electronics | Vehicle-grade body alloys | 2512 | 4=4W B=3.5W 3=3W 2=2W 1=1W | R001=1mR R010=10mR R100=100mR 0m50=0.5mR | A=±0.1% C=±0.2% D=±0.5% F=±1.0% G=±2.0% J=±5.0% ... | 4=4000pcs | S = large electrode (conventional small electrodes do not show letters by default) | | | | | | | |

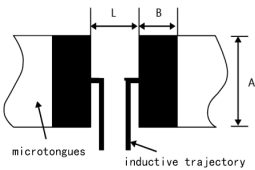
For the detail parameters , please check the following page

Dimension(Unit : mm)



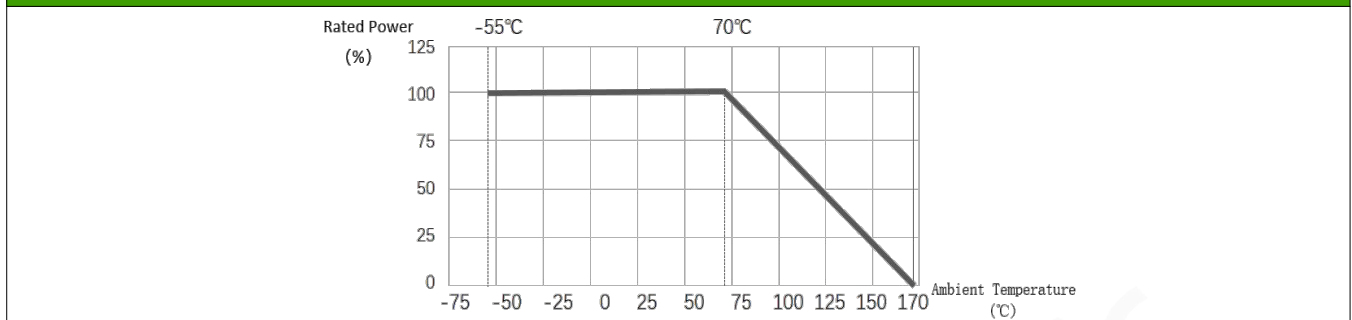
| Package | Resistance | L | W | C | T |
|---------|--------------|---------|---------|---------|---------|
| 2512 | 0.3mΩ~4mΩ(S) | 6.4±0.2 | 3.2±0.2 | 1.8±0.2 | 0.8±0.2 |
| | 0Ω~100mΩ | | | 0.8±0.2 | |

Recommended Pad Size

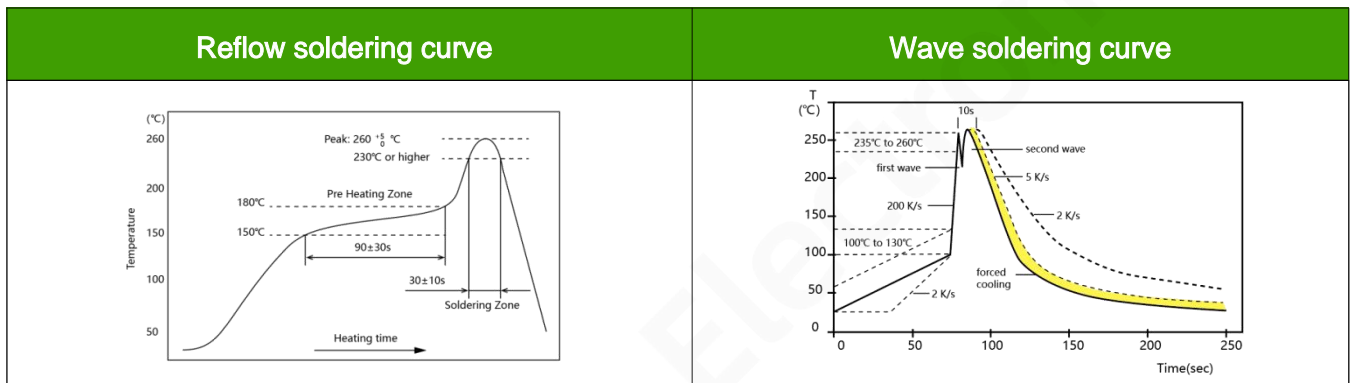
|  | pads | A | L | B |
|---|----------------------|-----|-----|-----|
| | (S) Large electrodes | 4.0 | 1.3 | 3.1 |
| small electrode | 4.0 | 4.0 | 2.1 | |

Power Curve

Power reduction diagram: Operating temperature range -55 ~ +170 Resistance temperature reaches 70°C



Recommended welding parameters



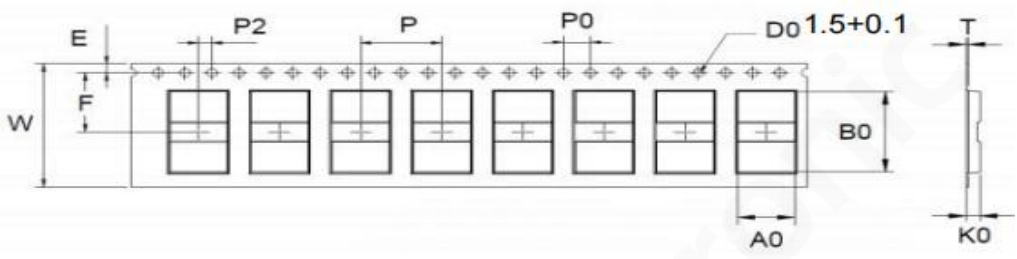
Reliability Test

| Item | Standard | Testing Conditions | Testing Limit |
|------------------------------------|---|--|---|
| Temperature coefficient | IEC60115-1-4.8 JIS-C5201-4.8 | Test temperature +25 ~ 125°C Reference temperature +25°C | Within specified value |
| Load Life | IEC60115-1-4.25.1 JIS-C5201-4.25.1 | At rated power: 1000 hours, 70°C, " on" 1.5 hours, " off" 0.5 hours | No visible damage $\Delta R \pm 1\%$ |
| Short-term overload | IEC60115-1-4.13 JIS-C5201-4.13 | 5 times rated power, 5 seconds | No visible damage $\Delta R \pm 1\%$ |
| High temperature and High humidity | IEC60115-1-4.24.2.1a) JIS-C5201-4.24.2.1a) | 85% RH, 85% relative humidity, 1000 hours, load 10% rated power | No visible damage $\Delta R \pm 1\%$ |
| Temperature Cycle | IEC60115-1-4.19 JIS-C5201-4.19 | -55@30min ~ +155@30min, 1000 cycles | No visible damage $\Delta R \pm 0.5\%$ |
| Withstand welding heat | IEC60115-1-4.18 JIS-C5201-4.18 | 260±5, 10±1sec | No visible damage $\Delta R \pm 0.5\%$ |
| Solderability | IEC60115-1-4.17 JIS-C5201-4.17 | 45±5, 2±0.5s | At least 95% of the electrode surface should be covered with new solder |
| High temperature storage | IEC60115-1-4.23.2 JIS-C5201-4.23.2 | 1000 hours @170, no load | No visible damage $\Delta R \pm 1\%$ |
| Low temperature storage | IEC60115-1-4.23.4 JIS-C5201-4.23.4 | 1000 hours @-55, no load | No visible damage $\Delta R \pm 1\%$ |
| Substrate bending | IEC60115-1-4.33 JIS-C5201-4.33 | 2mm, holding time 60±5 seconds | Within specified value |
| Withstand voltage | IEC60115-1 4.7 JIS C 5201-1 4.7 | Apply an AC voltage with an effective value of the maximum load voltage between the electrode and the substrate at a rate of about 100V/S for 60±5 seconds | No breakdown or arcing |
| Solvent resistance | IEC60115-1 4.29 JIS C 5201-1 4.29 | Isopropyl alcohol (IPA), solvent temperature: 23±5, duration 5±0.5min | Clear markings No visible damage |

Rated current calculation formula

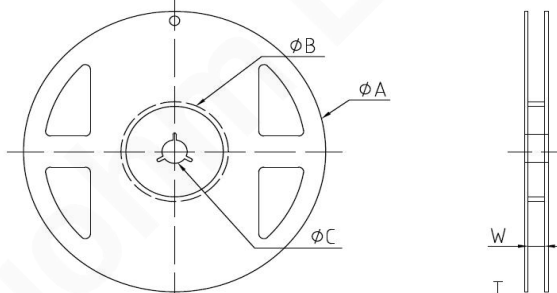
| Rated current calculation formula | | | |
|-----------------------------------|------------------|-----------------|-------------------------|
| $I = \sqrt{P/R}$ | I | P | R |
| | Rated Current(A) | Rated Power (W) | Resistance (Ω) |

Carrier tape size



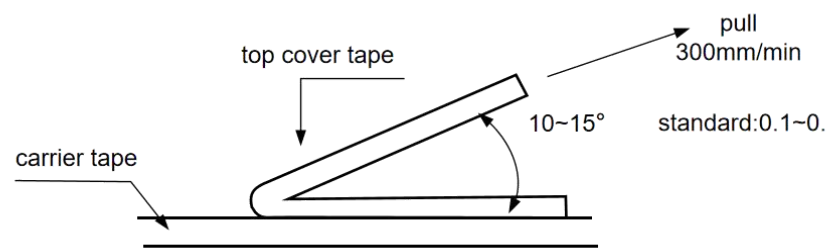
| A | B | W | F | E | P | P2 | P0 | D0 | T |
|---------|---------|--------|----------|----------|-------|-------|-------|---------|-----------|
| 3.2±0.2 | 6.9±0.2 | 12±0.2 | 5.5±0.05 | 1.75±0.1 | 4±0.1 | 2±0.1 | 4±0.1 | 1.5±0.1 | 0.85±0.15 |

Reel Specifications



| A | B | C | W | T | Quantity |
|-------|------|------|------|--------|----------|
| 180±3 | 60±1 | 13±1 | 13±1 | 15.4±2 | 4000PCS |

Peel strength of upper tape

| Peeling speed: 300 mm/min; peeling force between 0.1N and 0.7N | |
|---|--|
|  <p>pull 300mm/min standard: 0.1~0.7N</p> | |

■ Recommendations for product use

- ◆ During the use of the product, pay attention to surface protection: prevent defects such as bumps and scratches on the product surface.
- ◆ When installing and using the product, avoid mechanical stress on the product.
- ◆ The long-term use power of the product should be less than or equal to the rated power to avoid resistance drift caused by long-term use overload.
- ◆ When using the product under high temperature or poor heat dissipation conditions, refer to the power consumption reduction curve for derating applications.

■ Storage Instructions

- ◆ The product storage environment temperature is 5~35, humidity is <65%RH, and the humidity should be kept as low as possible.
- ◆ The product should be stored in a clean, dry environment without harmful gases.
- ◆ Avoid removing the product from the taping package before use.
- ◆ Under the above storage conditions, the product can be kept for 1 year.
- ◆ For products more than 1 year old, check the surface for oxidation and solder test is required.

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■ Specification Revision Record:

| Version | Revised Date | Revised Content | Reason of Revised | Revised by | Approved by |
|---------|--------------|--|----------------------|----------------|-------------|
| A1 | 2023-11-30 | Updated naming convention | Product Optimization | Yongkang Huang | Wenyi Leng |
| A2 | 2024-07-29 | Optimisation of the specification content position adjustment, optimisation can be Reliability testing | Product Optimization | Yongkang Huang | Wenyi Leng |
| A3 | 2024-11-14 | Updated specification content layout | standardised format | Yongkang Huang | Wenyi Leng |
| A4 | 2024-12-13 | Electrical parameters increase the maximum overload current | Product Optimization | Yongkang Huang | Wenyi Leng |
| A5 | 2025-03-15 | Resistancerange,sizeand applicationrangeupdated | Product Optimization | Yongkang Huang | Wenyi Leng |
| A6 | 2025-07-01 | Product specifications add material indication | Content Updates | Yongkang Huang | Wenyi Leng |
| A7 | 2025-11-07 | Resistance Value, Power Rating and Dimensions Update | Content Updates | Yongkang Huang | Wenyi Leng |