

Data Sheet

Customer:

Product: MELF High Voltage Resistor-CSRH Series

Size: 0207/0309

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VIKING TECH CORPORATION
光韻科技股份有限公司
No.70, Guangfu N. Rd.,
Hukou Township, Hsinchu County
303, Taiwan (R.O.C)

TEL:886-3-5972931
FAX:886-3-5972935•886-3-5973494
E-mail:sales@viking.com.tw

VIKING TECH CORPORATION KAOHSIUNG BRANCH
光韻科技股份有限公司高雄分公司
No.248-3, Sin-Sheng Rd., Cian-Jhen Dist., Kaohsiung,
806, Taiwan

TEL:886-7-8217999
FAX:886-7-8228229
E-mail:sales@viking.com.tw

WUXI TMTEC CO., LTD.
無錫泰銘電子有限公司
No.22 Xixia Road, Machinery & Industry Park,
National Hi-Tech Industrial Development Zone
of Wuxi, Wuxi, Jiangsu Province, China
Zip Code:214028
TEL:86-510-85203339
FAX:86-510-85203667•86-510-85203977
E-mail:china@viking.com.tw

| Produced by (QC) | Checked (QC) | Approved by (QC) | Prepared by (Sales) | Accepted by (Customer) |
|---------------------|------------------|---------------------|------------------------|---------------------------|
| 19-Mar-21 | 19-Mar-21 | 19-Mar-21 | | |
| <i>Kris Chen</i> | <i>Ben Chang</i> | <i>Ben Chang</i> | | |

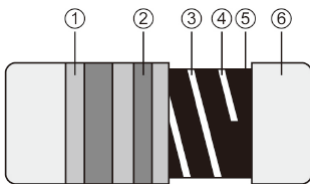
MELF High Voltage Resistor



■ Features

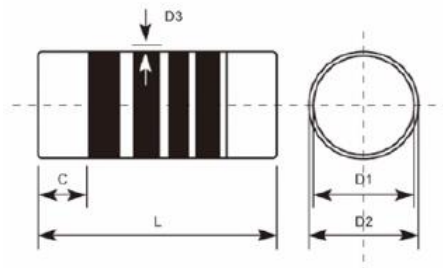
- For SMD enabled structure
- It is epoxy resin coating material
- High voltage applications for power capacitor, motor start-up protection, car & motorcycle engine ignition, etc. other surge energy request able to design for engineer design request

■ Construction



| | |
|----------------------|------------------|
| ① Insulation Coating | ④ Ceramic Rod |
| ② Marking | ⑤ Resistor Layer |
| ③ Trimming Line | ⑥ Electrode Cap |

■ Dimension



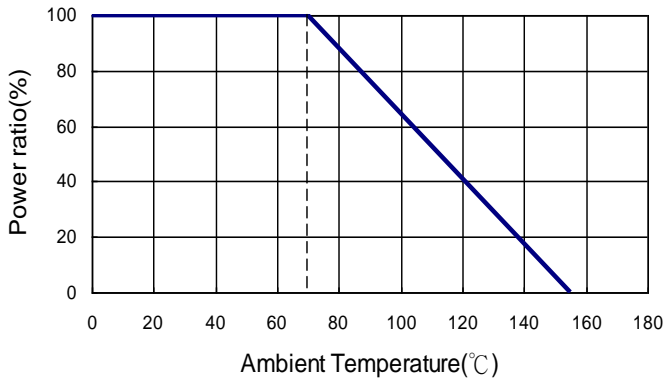
| Type | L (mm) | D1 (mm) | D2 max (mm) | D3 max (mm) | C min (mm) |
|----------|-----------|-----------|-------------|-------------|------------|
| CSRH0207 | 5.90±0.20 | 2.20±0.10 | 2.40 | 0.15 | 0.5 |
| CSRH0309 | 8.50±0.20 | 3.20±0.20 | 3.40 | 0.30 | 0.5 |

■ Part Numbering

| | | | | | | |
|--------------|---|--|----------------------------------|------------------------------------|----------------------------------|--|
| CSRH | 0207 | F | T | E | U | 1003 |
| Product Type | Dimensions (LxD2) 0207: 5.9x2.4 0309: 8.5x3.4 | Resistance Tolerance F: ±1% J: ±5% | Packaging Code T: Taping Reel | TCR (PPM/°C) E: ±100 F: ±200 | Power Rating U: 1/2W T: 1W | Resistance 1003: 100KΩ 1004: 1MΩ |

MELF High Voltage Resistor

Derating Curve



Standard Electrical Specifications

| Item Type | Power Rating at 70°C | Operating Temp. Range | Max. Operating Voltage | Max. Overload Voltage | Resistance Range | | TCR (PPM/°C) |
|--------------|-------------------------|--------------------------|------------------------------|-----------------------------|------------------|-----|-----------------|
| | | | | | ±1% | ±5% | |
| 0207 | 1/2W | -55 ~ +155°C | 500V | 700V | 100KΩ-22MΩ | | ±100 ±200 |
| 0309 | 1W | -55 ~ +155°C | 700V | 1000V | 100KΩ-22MΩ | | ±100 ±200 |

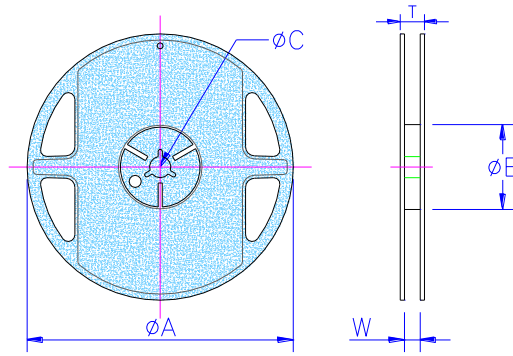
Environmental Characteristics

| Item | Requirement | Test Method | | |
|--|--|---|------|------|
| Temperature Coefficient of Resistance (T.C.R.) | As Spec. | +25/-55/+25/+125°C | | |
| Short Time Overload | ±(1%+0.05Ω) | $V = \sqrt{(P \cdot R) \cdot 2.5}$ for 5 seconds | | |
| | | Size | 0207 | 0309 |
| | | Power Rating | 1/2W | 1W |
| | | Voltage Max | 200V | 250V |
| Resistance to Soldering Heat | ±(1%+0.05Ω) | 260±5°C for 10±1 seconds | | |
| Solderability | 95% min. coverage | 245±5°C for 3±0.5 seconds | | |
| Thermal Shock Test | ±(2%+0.05Ω) | 5cycle for -55°C 30minute 155°C 30minute | | |
| Load Life Test | ±(5%+0.05Ω) | 70±2°C, DC 1.5 hrs "ON" and 0.5 hrs "OFF", applied continuously for 1000±48 hrs | | |
| Humidity Test | ±(5%+0.05Ω) | 40±2°C, 90~95% R.H., 1.5 hrs "ON" and 0.5 hrs "OFF", 1000 hrs | | |
| Resistance to Solvent | Epoxy insulation coating can not be peeled | 3 circles, each circle takes 1 min | | |

Storage Temperature: 5~40°C; Humidity 55~75%RH

MELF High Voltage Resistor

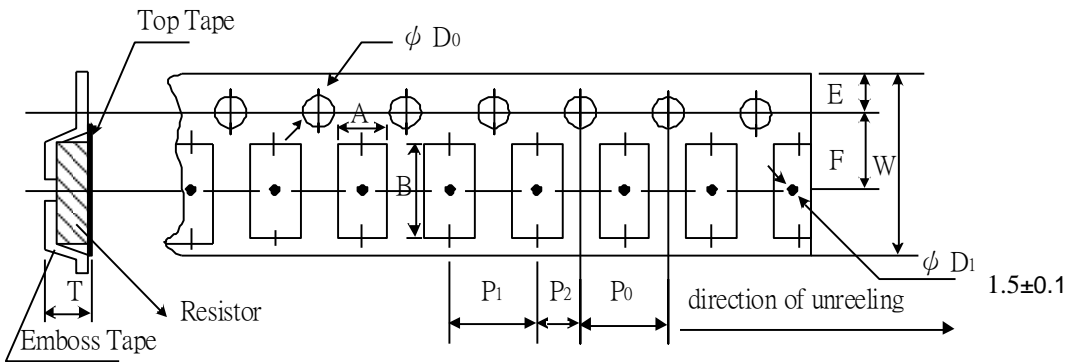
■ Packaging



Packaging Quantity & Reel Specifications

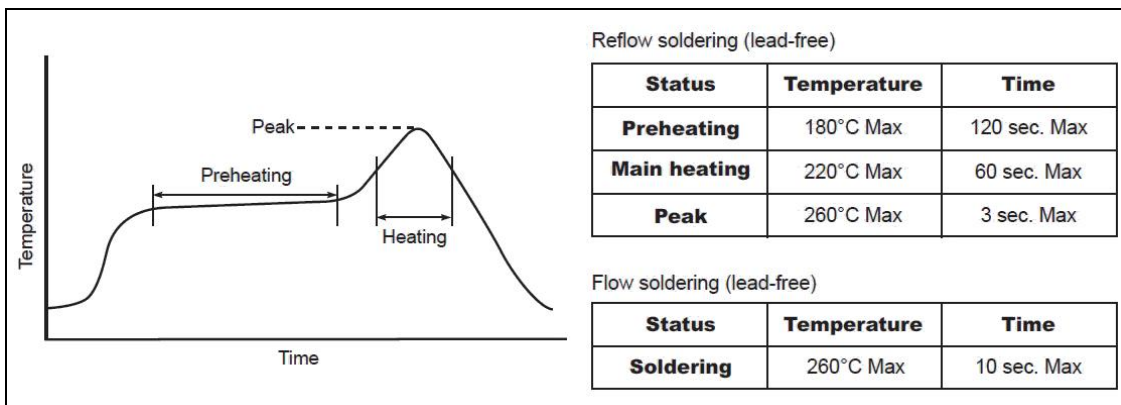
| Type | Reel Diameter | ΦA (mm) | ΦB (mm) | ΦC (mm) | W (mm) | T (mm) | Emboss Plastic Tape (EA) |
|----------|---------------|-----------|-----------|----------|----------|-----------|--------------------------|
| CSRH0207 | 7 inch | 178.0±1.0 | 60.0±0.5 | 13.0±0.5 | 13.2±0.5 | 16.0±0.20 | 2,000 |
| CSRH0309 | 13 inch | 330.0±1.0 | 100.0±1.0 | 13.0±0.5 | 17.0±0.5 | 21.5±0.20 | 2,500 |

Emboss Plastic Tape Specifications



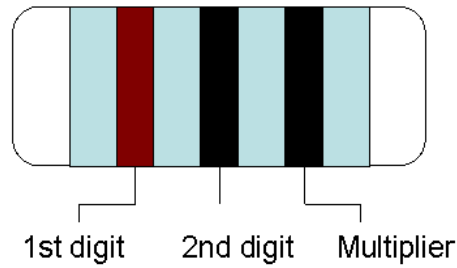
| Type | A (mm) | B (mm) | W (mm) | E (mm) | F (mm) | P ₀ (mm) | P ₁ (mm) | P ₂ (mm) | ΦD ₀ (mm) | T (mm) |
|----------|-----------|-----------|-----------|-----------|-----------|---------------------|---------------------|---------------------|----------------------|-----------|
| CSRH0207 | 2.40±0.10 | 6.05±0.10 | 12.0±0.10 | 1.75±0.10 | 5.50±0.05 | 4.00±0.10 | 4.00±0.10 | 2.00±0.10 | 1.50±0.10 | 2.80±0.10 |
| CSRH0309 | 3.50±0.10 | 8.85±0.10 | 16.0±0.10 | 1.75±0.10 | 7.50±0.10 | 4.00±0.10 | 8.00±0.10 | 2.00±0.10 | 1.50±0.10 | 3.85±0.10 |

■ Soldering Condition

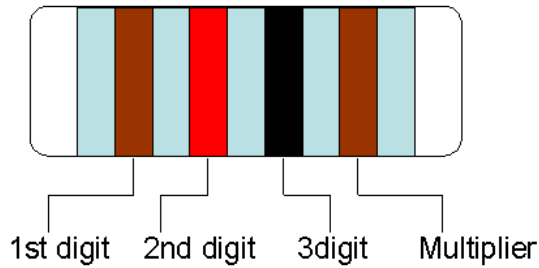


MELF High Voltage Resistor

■ Marking & Resistance Tolerance



| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ±5% | E-24 | 1.0 | 1.1 | 1.2 | 1.3 | 1.5 | 1.6 | 1.8 | 2.0 | 2.2 | 2.4 | 2.7 | 3.0 | 3.3 | 3.6 | 3.9 | 4.3 | 4.7 | 5.1 | 5.6 | 6.2 | 6.8 | 7.5 | 8.2 | 9.1 |
|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|



| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| ±1% | E-24 | 1.0 | 1.1 | 1.2 | 1.3 | 1.5 | 1.6 | 1.8 | 2.0 | 2.2 | 2.4 | 2.7 | 3.0 | 3.3 | 3.6 | 3.9 | 4.3 | 4.7 | 5.1 | 5.6 | 6.2 | 6.8 | 7.5 | 8.2 | 9.1 |
| | E-96 | 1.00 | 1.02 | 1.05 | 1.07 | 1.10 | 1.13 | 1.15 | 1.18 | 1.21 | 1.24 | 1.27 | 1.30 | 1.33 | 1.37 | 1.40 | 1.43 | 1.47 | 1.50 | 1.54 | 1.58 | 1.62 | 1.65 | 1.69 | 1.74 |
| | | 1.78 | 1.82 | 1.87 | 1.91 | 1.96 | 2.00 | 2.05 | 2.10 | 2.15 | 2.21 | 2.26 | 2.32 | 2.37 | 2.43 | 2.49 | 2.55 | 2.61 | 2.67 | 2.74 | 2.80 | 2.87 | 2.94 | 3.01 | 3.09 |
| | | 3.16 | 3.24 | 3.32 | 3.40 | 3.48 | 3.57 | 3.65 | 3.74 | 3.83 | 3.92 | 4.02 | 4.12 | 4.22 | 4.32 | 4.42 | 4.53 | 4.64 | 4.75 | 4.87 | 4.99 | 5.11 | 5.23 | 5.36 | 5.49 |
| | | 5.62 | 5.76 | 5.90 | 6.04 | 6.19 | 6.34 | 6.49 | 6.65 | 6.81 | 6.98 | 7.15 | 7.32 | 7.50 | 7.68 | 7.87 | 8.06 | 8.25 | 8.45 | 8.66 | 8.87 | 9.09 | 9.31 | 9.53 | 9.76 |

| Color | Digit | Multiplier |
|--------|-------|------------------|
| Silver | - | 10 ⁻² |
| Gold | - | 10 ⁻¹ |
| Black | 0 | 10 ⁰ |
| Brown | 1 | 10 ¹ |
| Red | 2 | 10 ² |
| Orange | 3 | 10 ³ |
| Yellow | 4 | 10 ⁴ |
| Green | 5 | 10 ⁵ |
| Blue | 6 | 10 ⁶ |
| Violet | 7 | 10 ⁷ |
| Grey | 8 | 10 ⁸ |
| White | 9 | 10 ⁹ |