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|  | Shunt Resistor Current Sensor CSSR Series | Document No | CSSR-107CS001 |
| | | Issued date | 2018/08/01 |
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1. Scope :

This specification applies to the products of CSSR series manufactured by HEYEH ELECTRONICS INDUSTRY CO., LTD.

2. Type Designation :

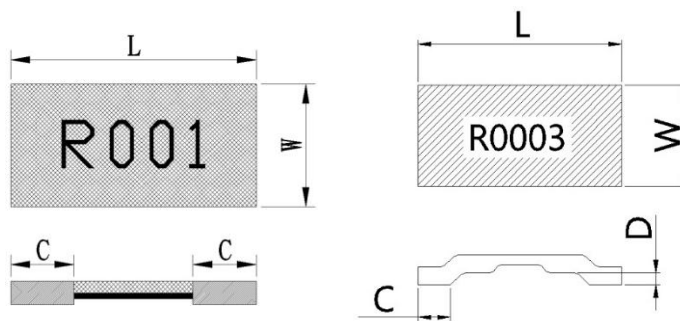
| CSSR | 25 | E | E | C | M | 1L0 |
|-------------|-----------|-------------------------|-----------------------|-------------|------------|-------------|
| Item | Series | Resistance Tolerance | Packaging Material | Rated Power | Material | Resistance |
| 08:0805 | | F:±1% | P:Paper | A=1.5W | M=CuMn | e.g: |
| 12:1206 | | G:±2% | E: Emboss | B=2W | N=CuMnNi | R0005=0.5mΩ |
| 25:2512 | | | | C=3W | S=CuMnSn | R001=1mΩ |
| | | | | | A=NiCrAlSi | 0L5=0.5mΩ |
| | | | | | | 1L0=1mΩ |

3. Construction and Dimension :

3.1 Construction:




3.2 Dimension:



UNIT : mm

| Style | mm | inch | L | W | C | D | Material |
|--------|------|------|-----------|-----------|-----------|-----------|------------------|
| CSSR08 | 2012 | 0805 | 2.10±0.20 | 1.30±0.20 | 0.40±0.20 | 0.30±0.25 | Strip : Ni Alloy |
| CSSR12 | 3216 | 1206 | 3.10±0.20 | 1.50±0.20 | 0.90±0.25 | 0.30±0.25 | |
| CSSR25 | 6432 | 2512 | 6.35±0.25 | 3.10±0.25 | 1.00±0.25 | 0.35±0.25 | |

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4. Features :


| Type | CSSR08 | CSSR12 | CSSR25 |
|--|-----------------------------|------------|--------------|
| Size (mm) | 2012 | 3216 | 6432 |
| (inch) | 0805 | 1206 | 2512 |
| Rated Power | 1.5 W | 2 W | 3 ~ 5W |
| Resistance Range | 1 ~ 5 mΩ | 0.5 ~ 5 mΩ | 0.3 ~ 5 mΩ |
| Operating Temperature Range | -55°C to +155°C | | |
| Temperature Coefficient | ±100 ppm/°C | | ±100* ppm/°C |
| Component temperature coefficient (including terminal) (1) ppm/°C TCR measured from -55 °C to 170 °C | ± 75 for 7 mΩ to 0.5 Ω | | |
| | ± 110 for 5 mΩ to 6.9 mΩ | | |
| | ± 150 for 3 mΩ to 4.9 mΩ | | |
| | ± 275 for 1 mΩ to 2.9 mΩ | | |
| | ± 400 for 0.5 mΩ to 0.99 mΩ | | |
| Element TCR (2) ppm/°C | < 20 | | |
| Resistance Tolerance | F:±1% G:±2% | | |

*Resistance not included in the table could be available, please contact the factory.

*Rated Power in the table indicates a normal rating.

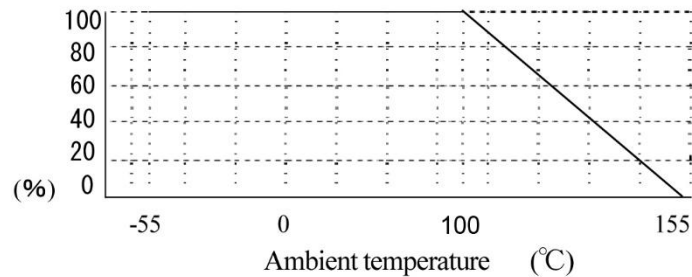
5. Tests and Requirements :

| Test | Procedure | Test Limits |
|---|--|---|
| Temperature Coefficient | +25°C ~ +125°C | Refer 4.0 |
| Life / Endurance | 1000 hours at 70±5°C, 1.5 hours ON, 0.5 hour OFF, still air required | < ±1% |
| Short Time Overload | 5 X rated power for 5sec | < ±0.5% No visible damage |
| Moisture no Load | 85°C, 85%RH, 1000hrs | < ±1% |
| Temperature cycle | -55°C & +155°C, 300cycle, 15min per extreme condition | < ±1% |
| Resistance to Soldering Heat | 260±5°C for 10±1 seconds immersion time | < ±0.5% No visible damage |
| Solderability | 245±3°C, Dipping time: 3±0.5seconds | Well tinned (At least 95% covered) No visible damage |
| High Temperature Exposure / Endurance at upper category temperature | 155±5°C, 1000hrs, unpowered | < ±1% |

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|--------------------------------|---|---------|
| Low Temperature Storage | -55°C, 1000hrs | <±0.5% |
| Board Flex / Substrate Bending | 2mm bending Bending time: 60±1 seconds | < ±1% |
| Insulation Resistance | 100V DC for 1 minute | >100 MΩ |

5.1 Rated Power - Derating Curve



5.2 Rated Voltage, Rated Current

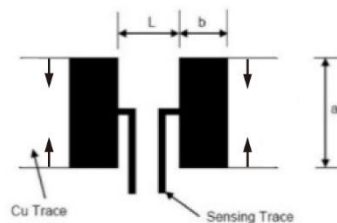
Rated Voltage and current are determined from the following :

$$E = \sqrt{P \times R}$$

$$I = \sqrt{P / R}$$

E:Rated Voltage (V) I :Rated Current(A) P:Rated Power (W) R:Resistance (Ω)


6. Recommended Solder Pad Dimension



| Type | a | b | L |
|--------|------|------|------|
| CSSR08 | 1.30 | 0.35 | 1.40 |
| CSSR12 | 1.50 | 0.85 | 1.40 |
| CSSR25 | 3.10 | 1.00 | 4.35 |

Unit: mm

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7. Number of Package :

4000 Pieces / reel

8. Label :

禾野電子工業有限公司
Heyeh Electronics Industry Co.,Ltd.



訂單號碼: A 107080 1-0 1
 客戶名稱: XXX有限公司
 品名規格: CSSR3920 ±1% 5W 1mΩ
 料號: CSSR39FEA MR00 1
 批號: HY 18K30-390 12
 日期: 20 18/ 11/30
 數量: 1000 PCS

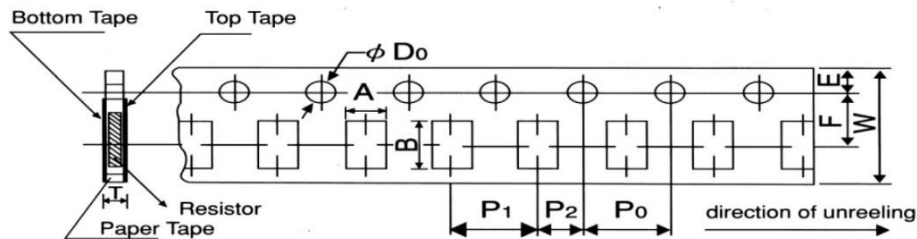


CSSR3920 ±1% 5W MR001 1000 pcs

Series Tolerance Rated Power Material Resistance Qty

9. Taped and Reel Package


9.1 Carrier Tape Dimension



| Type | A | B | W | F | E |
|--------|-----------|-----------|------------|-----------|-----------|
| CSSR08 | 1.42±0.10 | 2.25±0.10 | 8.00±0.10 | 3.50±0.05 | 1.75±0.10 |
| CSSR12 | 1.77±0.10 | 3.40±0.10 | 8.00±0.10 | 3.50±0.05 | 1.75±0.10 |
| CSSR25 | 3.50±0.10 | 6.80±0.10 | 12.00±0.10 | 5.50±0.05 | 1.75±0.10 |

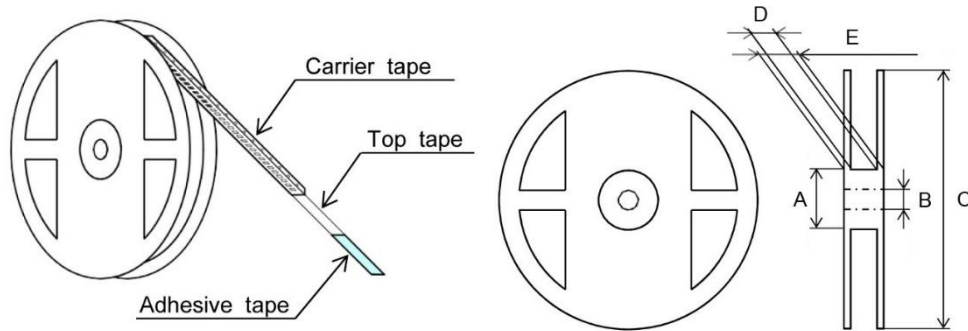
| Type | P1 | P2 | P0 | φD0 | T |
|--------------|-----------|-----------|-----------|--------------------------|-----------|
| CSSR08,12,25 | 4.00±0.10 | 2.00±0.05 | 4.00±0.10 | +0.10 Φ 1.50 -0.00 | 0.60±0.25 |

Unit: mm

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9.2 Physical Dimensions

Structure and dimensions of reel shall be as shown in the figure below.

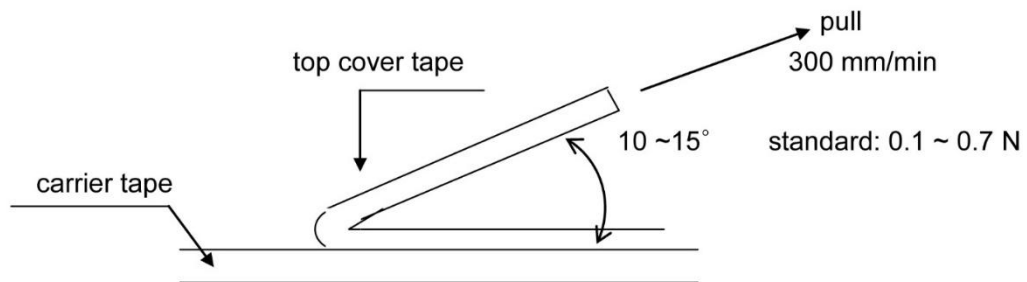


| Type | A | B | C | D | E |
|-----------|---------------------|---------------------|----------------------|----------------|----------------|
| | +0.5 | | | | |
| CSLR08,12 | $\Phi 60.0 -0.0$ | $\Phi 13.0 \pm 0.2$ | $\Phi 178.0 \pm 1.0$ | 9.0 ± 0.5 | 12.0 ± 0.5 |
| CSSR25 | $\Phi 60.2 \pm 0.5$ | $\Phi 13.0 \pm 0.5$ | $\Phi 178.0 \pm 1.0$ | 13.2 ± 1.5 | 16.0 ± 0.5 |

Unit: mm

9.3 Peeling Strength of Top Cover Tape

Peel – off force of paper and blister tape is in accordance with “JIS ” that is , 0.1 to 0.7 N at a peel-off speed of 300 mm / minute.




10. Storage Conditions:

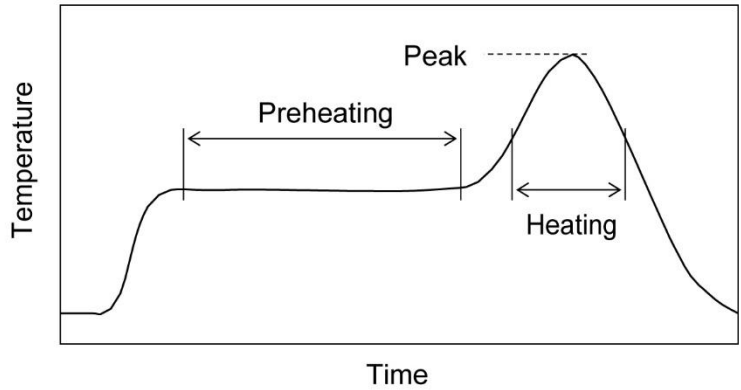
Temperature: 5°C~35°C, Humidity: 40%~75%

11. Shelf Life:

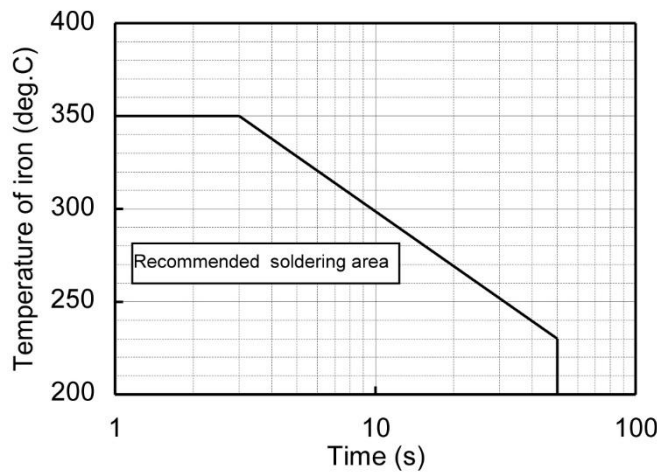
2 years from manufacturing date.

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12. Recommend IR – Reflow profile : (solder : Sn-3.0Ag-0.5Cu)



Peak : Max. 260°C ,Max. 10 sec
Preheating : 150 to 180 °C, 60~120 sec
Heating : Above 230°C, 30~40 sec



SolderIron : 350±10°C , 3+1/-0 sec

13. Manufacturing Country & City:

HEYEH ELECTRONICS INDUSTRY CO., LTD. (Taoyuan City, Taiwan)

Tel : (+886)3-3811061 Fax : (+886)3-3811060