




SPECIFICATION SHEET

| | |
|--------------------------------|--|
| SPECIFICATION SHEET NO. | P0130- SMW2WL005RFS42 |
| DATE | Jan. 31, 2022 |
| REVISION | A0 |
| DESCRIPTION | SMD Power Wire Wound Resistors, SMW series, SMD4527 Type, Rated Wattage 2W. Nominal Resistance 5 Ω, Tolerance: ±1% Operating Temp. Range -55°C ~+150°C, Package in Tape/Reel, 1000pcs/13" Reel RoHS/RoHS III compliant and Halogen Free |
| CUSTOMER | |
| CUSTOMER PART NUMBER | |
| CROSS REF. PART NUMBER | |
| ORIGINAL PART NUMBER | Aillen SMW2WL5RF |
| PART CODE | SMW2WL005RFS42 |

| | | | |
|-------------------------|---|--|---|
| VENDOR APPROVE | | | |
| Issued/Checked/Approved |  |  |  |
| DATE: Jan. 30, 2022 | | | |

| | |
|-------------------------|--|
| CUSTOMER APPROVE | |
| | |
| DATE: | |

2/2/2022

SMD POWER WIRE WOUND RESISTORS SMW SERIES



MAIN FEATURE

- Flameproof UL94V0 Molded Package, Resistant To Heat, Humidity & Insulation
- Special Design For Automatic Surface Mounting
- Excellent Mechanical Strength & Electrical Stability
- Reducing Assemble Cost
- Resistance Value Can Be As High As 2 Mohm
- Resistance Tolerance Can Reach To $\pm 1\%$
- Ultra High Thermal Conductivity Material, Excellent Power Dissipation In Small Volume.
- Cross And Replace Main Competitors' WSC/WSM/SMF series

APPLICATION

- For Photovoltaic Inverters, Automotive, Industrial Control Equipment
- Home Appliance, LED Power etc.
- Outdoor Lighting, Chargers, Monitor Systems
- UPS Devices, Smart Meter, Pump, Washing Machine, Dish Wash

RFQ

[Request For Quotation](#)

PART CODE GUIDE

| SMW | 2WL | 005R | F | S | 42 |
|-----|-----|------|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 |

1) **SMW**: SMD Power Wire Wound Resistors, SMW series

2) **2WL**: Rated Wattage code, 1WL: 1W; 2WL: 2W; 3WL: 3W

3) **005R**: Nominal Resistance code, 00R5: 0.5 ohm; 001R: 1 ohm; 002R: 2 ohm; 005R: 5 ohm; 010R: 10 ohm; 020R: 20 ohm; 050R: 50 ohm; 100R: 100 ohm

4) **F**: Tolerance code @25 °C, J: +/-5%; F: +/-1%

5) **S**: Package Code, S: Tape/Reel, 1000pcs/13" Reel

6) **42**: Device dimension code,

21: L0.25"xW0.15"xH0.125" (L6.35xW3.81xH3.17mm);

42: L0.455"xW0.275"xH0.177" (L11.56xW6.98xH4.49mm);

62: L0.69"xW0.275"xH0.295" (L17.53xW6.98xH7.49mm);

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DIMENSION (Unit: Inch/mm)

Image for reference



Material:

Terminal is to be firmly connected with resistors element, both electrically and mechanically and allow easy soldering

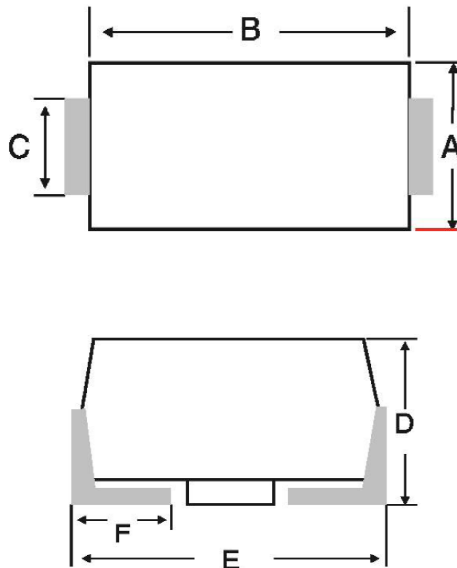
Coating:

Flameproof UL94V0 molded package, resistant to heat, humidity and insulation

Marking:

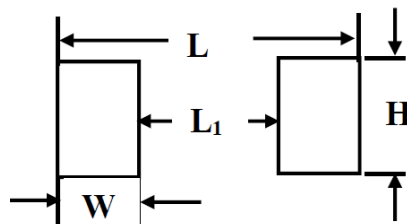
SMW
2WL5ΩF

SMW series,
SMD4527 Type



| Symbol | Unit (mm) |
|--------|------------|
| A | 5.5+/-0.3 |
| B | 10.5+/-0.3 |
| C | 1.7+/-0.3 |
| D | 5.0+/-0.3 |
| E | 12.0 Max. |
| F | 2.3+/-0.3 |

Recommend Pad Layout

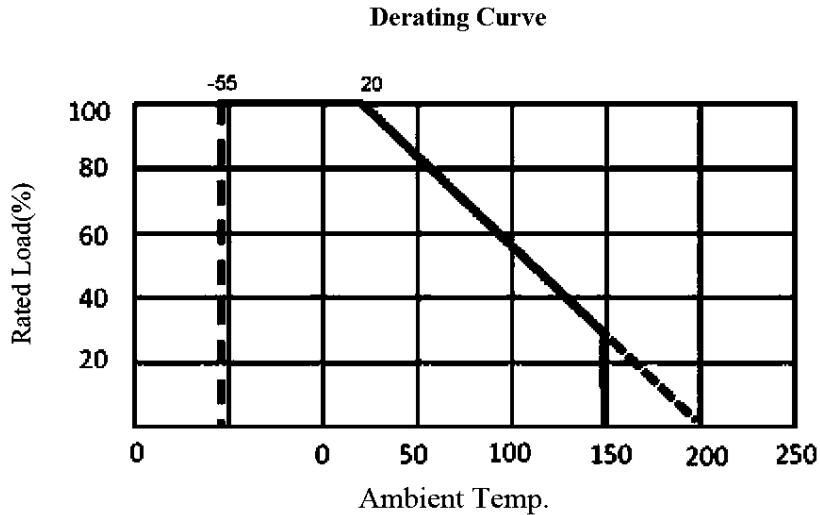


| Symbol | Unit (mm) |
|--------|-----------|
| W | 4.0 |
| H | 3.4 |
| L | 14 |
| L1 | 6.0 |

SMD POWER WIRE WOUND RESISTORS SMW SERIES

RATED POWER

Rated power is the values of load power Max. specified at the ambient temperature of 20 °C, and shall meet the functions of electrical and mechanical performance. When the ambient temperature surpasses above mentioned temperature, the value declines as per following curve.



STANDARD ELECTRICAL SPECIFICATION

| Type | Power Rating (P 70°C W) | Tolerance (%) | Resistance Range (ohm) |
|----------------|----------------------------|------------------|---------------------------|
| SMW2WL005RFS42 | 2 | ±1 | 5 |

STANDARD ELECTRICAL SPECIFICATION

| Parameter | Unit | Characteristics |
|---------------------------------|--------|--|
| Temperature Coefficient | ppm/°C | ±50 |
| Dielectric Withstanding Voltage | V AC | 500 |
| Operating Temperature Range | °C | -55 ~+ 150 |
| Insulation Resistance | Ω | > 10 ⁹ |
| Working Voltage Max. | V | (PXR) ½ P: Rated Power (W) R: Total nominal Resistance (Ω) |

SMD POWER WIRE WOUND RESISTORS SMW SERIES

ELECTRICAL PERFORMANCE

| Test Item | Test Condition | Test Limits | | | | | | | | | | | | | | | |
|--|---|--|---------------------------------|-------------|----------------------|-------------|----|----------------------|------------|-----|----------------------|------------|----|----------------------|------------|-----|--|
| Resistance Temperature Coefficient | <p>It shall be within: $\pm 200 \text{ppm}/^\circ\text{C}$ Max.</p> <p>$T.C > (\text{ppm}/^\circ\text{C}) = [(R_2 - R_1) / R_1] \times [(1 / (T_2 - T_1))] \times 10^6$</p> <p>R1: Resistance value at Ref. Temperature</p> <p>R2: Resistance value at Test Temperature</p> <p>T1: Ref. Temperature, $+25^\circ\text{C}$</p> <p>T2: Test Temperature, $+75^\circ\text{C}$</p> | / | | | | | | | | | | | | | | | |
| Rated Load | When the resistors are applied rated voltage for 30 min. continuously, it show no evidence of arc, flame...etc. Removing the voltage and place the resistors to the normal condition for 30 min. | The resistance value change rate between pre-and-post test shall be within $\pm 1\%$ | | | | | | | | | | | | | | | |
| Temperature | <p>Following temp. cycles are to be made 5 times and then put at room temp. for one hour:</p> <table border="1" data-bbox="368 1031 911 1288"> <thead> <tr> <th>Steps</th> <th>Temperature($^\circ\text{C}$)</th> <th>Time(Min.)</th> </tr> </thead> <tbody> <tr> <td>1st Step</td> <td>-55 ± 3</td> <td>30</td> </tr> <tr> <td>2nd Step</td> <td>Room Temp.</td> <td>2~3</td> </tr> <tr> <td>3rd Step</td> <td>15 ± 3</td> <td>30</td> </tr> <tr> <td>4th Step</td> <td>Room Temp.</td> <td>2~3</td> </tr> </tbody> </table> | Steps | Temperature($^\circ\text{C}$) | Time(Min.) | 1 st Step | -55 ± 3 | 30 | 2 nd Step | Room Temp. | 2~3 | 3 rd Step | 15 ± 3 | 30 | 4 th Step | Room Temp. | 2~3 | The resistance value change rate between pre-and-post test shall be within $\pm 1\%$. |
| Steps | Temperature($^\circ\text{C}$) | Time(Min.) | | | | | | | | | | | | | | | |
| 1 st Step | -55 ± 3 | 30 | | | | | | | | | | | | | | | |
| 2 nd Step | Room Temp. | 2~3 | | | | | | | | | | | | | | | |
| 3 rd Step | 15 ± 3 | 30 | | | | | | | | | | | | | | | |
| 4 th Step | Room Temp. | 2~3 | | | | | | | | | | | | | | | |
| Short Time Over Load | When the resistors are applied 5 times as much as rated wattage for 5 seconds continuously, it shows no evidence of arc, flame...etc. Removing the voltage and place the resistors to the normal condition for 30 minutes | The resistance value change rate between pre-and-post test shall be within $\pm 1\%$. | | | | | | | | | | | | | | | |
| Insulation Character | Resistors are located in a jig and applying DC 500V | Measuring the Insulation Resistance which shall be over $10000 \text{M}\Omega$ | | | | | | | | | | | | | | | |
| Voltage Withstanding | Resistors are located in a jig and applying AC 500V for 1 Min. | The resistance should find no physical damage to the resistors, such as arc, char...etc. | | | | | | | | | | | | | | | |

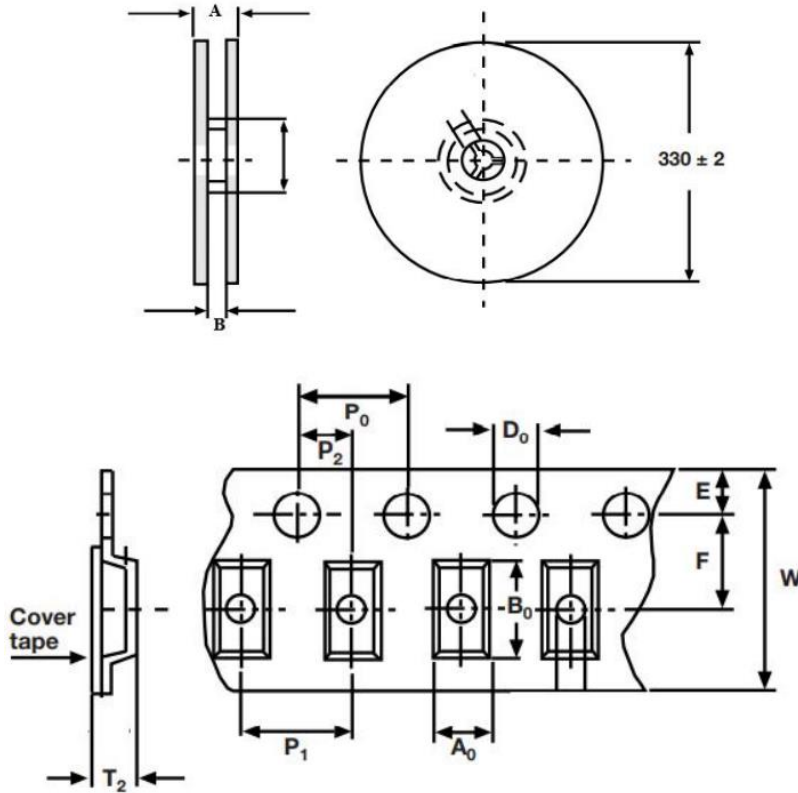
SMD POWER WIRE WOUND RESISTORS SMW SERIES

ELECTRICAL PERFORMANCE

| Test Item | Test Condition | Test Limits |
|------------------------------|---|---|
| Load Life | The resistors arrayed are sent into the 20°C oven, applying rated voltage at the cycle of 1.5 hours ON, 0.5 hour OFF for 1000+48 -0 hours in total. Then, after removing the voltage, take the resistors out of the oven and left under normal temp. for about one hour for cooling. | The resistance value change rate between pre-and-post test shall be within ±2% |
| Moisture-proof Load Life | The resistors arrayed are placed into a constant temp./humidity oven at the temp. of 40± 2°C and the humidity of 90 ~ 95%, then rated power is applied for 1.5 hours and cut off for 0.5 hour. The similar cycle will be repeated for 500+24 -0 hours in total (including cut-off time). Then remove the voltage, taking the resistors out of the oven and leaving them at room temp. for one hour. | The resistance value change rate between pre-and-post test shall be within ±2%. There also shall be no evidence of remarkable change on appearance, and the marking shall not be illegible. |
| Solder-ability | Immerse the resistors in the solder pot at 235 ±5°C for 2 seconds. | At least 95% solder coverage on the termination |
| Resistance to Soldering Heat | Immerse the resistors in the solder pot at 270 ±5°C for 10 ±1 seconds. Then remove the resistors out of the solder pot and leaving them at room temp. for one hour for cooling. | The resistance value change rate between pre-and-post test shall be within ±1%. |

SMD POWER WIRE WOUND RESISTORS SMW SERIES

TAPE/REEL (Unit: mm)



| Type Code | SMW1WL*****S21 (2000pcs/Reel) | SMW2WL*****S42 (1000pcs/Reel) | SMW3WL*****S62 (500pcs/Reel) |
|-----------|----------------------------------|----------------------------------|---------------------------------|
| A +/-1.0 | 21.0 | 29.0 | 37.0 |
| B+1/0 | 16.5 | 24.5 | 32.5 |
| A0+/-0.2 | 4.3 | 5.8 | 7.8 |
| B0+/-0.2 | 8.0 | 11.8 | 17.5 |
| P1+/-0.1 | 8.0 | 12.0 | 16.0 |
| P2+/-0.1 | 2.0 | 2.0 | 2.0 |
| P0+/-0.1 | 4.0 | 4.0 | 4.0 |
| D0+/-0.1 | 1.5 | 1.5 | 1.5 |
| E+/-0.1 | 1.75 | 1.75 | 1.75 |
| F+/-0.1 | 7.5 | 11.5 | 14.2 |
| W+/-0.3 | 16.0 | 24.0 | 32.0 |
| T+/-0.1 | 41.5 | 5.8 | 7.5 |

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PRECAUTIONS IN USE OF RESISTORS

1. If the resistor is used in equipment which request extremely high reliability such as automotive, airplane, satellite, medical device, etc. Please contact us in advance, we will test and confirm it to you.
2. In the process of using a resistor, please derate the power rating according to the derating curve when the ambient temperature is above the rated temperature.
3. A flameproof resistor will not flame or fire but it may emit smoke or red heat when an overload is applied.
4. When a resistor is molded or coated by resin material, the deterioration of the resistor by thermal stress or resin may affect its characteristics. Therefore, please confirm the performance and reliability with us in advance. Moreover, the resistance to moisture and corrosion may deteriorate after the resin absorbs moisture.
5. When the resistor is coated, potted and molded by resin material, the curing stress of the resin may cause a peeling of the protective coating and a crack of the solder fillet. Therefore, please use the resin material which has smaller curing stress and make a judge before using.
6. When a power exceeding the rated power is applied in a short time, we cannot guarantee the safety only that the average power is below the rated power. Please contact us and advise the voltage or current waveform to us for making a judge.
7. The flame retardant resistors are weaker against mechanical stress than general resistors due to the special coating. Please do not apply impact, vibration or pinching with pliers or tweezers to the resistor body. Never apply any external force to the protective coating until drying is fully completed after washing.
8. Avoid stocking the resistors under high temperature, moisture, direct sunlight and corrosion environment. The most suitable temperature and moisture is 5 ~ 35°C / 40 ~ 70%.

DISCLAIMER

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