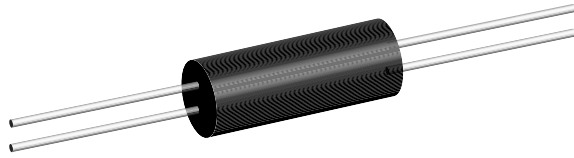


Wirewound Resistors, Molded Style, Current Shunts, Very Low Value, Four Terminal



FEATURES

- Molded four-terminal resistors for specialized applications
- Extremely low resistance values for current sensing applications
- Precision resistance tolerance
- Low temperature coefficients
- Complete welded construction
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


**HALOGEN
FREE**

STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HISTORICAL MODEL | POWER RATING ⁽¹⁾ $P_{25\text{ }^\circ\text{C}}$ W | RESISTANCE RANGE Ω | TOLERANCE \pm % | WEIGHT (typical) g |
|--------------|------------------|--|------------------------------|----------------------|-----------------------|
| SPU050 | SPU-50 | 1 | 0.001 to 0.060 | 1 | 2.5 |
| SPU051 | SPU-51 | 2 | 0.001 to 0.060 | 1 | 3.7 |
| SPU052 | SPU-52 | 4 | 0.001 to 0.200 | 1 | 4.8 |
| SPU053 | SPU-53 | 5 | 0.010 to 0.500 | 1 | 10.8 |

Notes

- Standard resistance tolerances available are 0.5 %, 1.0 %, 3.0 %, and 5.0 %.
- ⁽¹⁾ Wattage rating is limited to 25 A maximum

TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | SPU MOLDED STYLE RESISTOR CHARACTERISTICS |
|---------------------------------|-----------------------|--|
| Temperature Coefficient | ppm/ $^\circ\text{C}$ | ± 100 (-10 $^\circ\text{C}$ to +80 $^\circ\text{C}$) |
| Dielectric Withstanding Voltage | V_{AC} | 500 minimum |
| Short Time Overload | - | 5 x power for 5 s, limited to 25 A maximum |
| Maximum Working Voltage | V | $(P \times R)^{1/2}$ |
| Insulation Resistance | Ω | 10 000 M Ω minimum dry |
| Operating Temperature Range | $^\circ\text{C}$ | SPU050 and SPU051 = -55 to +175, SPU052 and SPU053 = -55 to +275 |

GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: SPU052R10000FD

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|
| S | P | U | 0 | 5 | 2 | R | 1 | 0 | 0 | 0 | 0 | F | D | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|

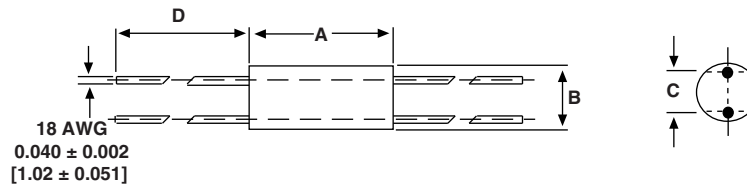
| GLOBAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING | SPECIAL |
|--------------------------------------|--|--|---|---|
| SPU050 SPU051 SPU052 SPU053 | L = m Ω (below 0.01 Ω) R = Decimal 5L0000 = 0.005 Ω R10000 = 0.10 Ω | D = ± 0.5 % F = ± 1.0 % H = ± 3.0 % J = ± 5.0 % | E ⁽²⁾ = Lead (Pb)-free, bulk D = Tin/lead, bulk | (Dash Number) (up to 2 digits) From 1 to 99 as applicable |

 Historical Part Numbering example: SPU-52 0.1 Ω 1 % S51

| | | | |
|------------------|------------------|----------------|-----------|
| SPU-52 | 0.100 Ω | 1 % | S51 |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

Note

- ⁽²⁾ Lead (Pb)-free termination

DIMENSIONS in inches [millimeters]


| GLOBAL MODEL | DIMENSIONS in inches [millimeters] | | | |
|--------------|------------------------------------|---------------------------------|--------------------------------|---|
| | A | B | C | D |
| SPU050 | 0.660 ± 0.010 [16.76 ± 0.25] | 0.312 ± 0.010 [7.92 ± 0.25] | 0.200 ± 0.015 [5.08 ± 0.38] | 1.000 + 0.25 - 0.125 [25.40 + 6.35 - 3.17] |
| SPU051 | 0.790 ± 0.010 [20.06 ± 0.25] | 0.375 ± 0.010 [9.52 ± 0.25] | 0.200 ± 0.015 [5.08 ± 0.38] | 1.000 + 0.25 - 0.125 [25.40 + 6.35 - 3.17] |
| SPU052 | 1.000 ± 0.010 [25.40 ± 0.25] | 0.375 ± 0.010 [9.52 ± 0.25] | 0.125 ± 0.015 [3.17 ± 0.38] | 1.000 minimum [25.40 minimum] |
| SPU053 | 1.870 ± 0.010 [47.50 ± 0.25] | 0.437 ± 0.010 [11.10 ± 0.25] | 0.125 ± 0.015 [3.17 ± 0.38] | 1.000 minimum [25.40 minimum] |

MATERIAL SPECIFICATIONS

Element: Nickel-chromium alloy or copper-manganese alloy, depending on resistance value

Molding Material: SPU050/051 thermo-set epoxy
SPU052/053 thermo-set silicone

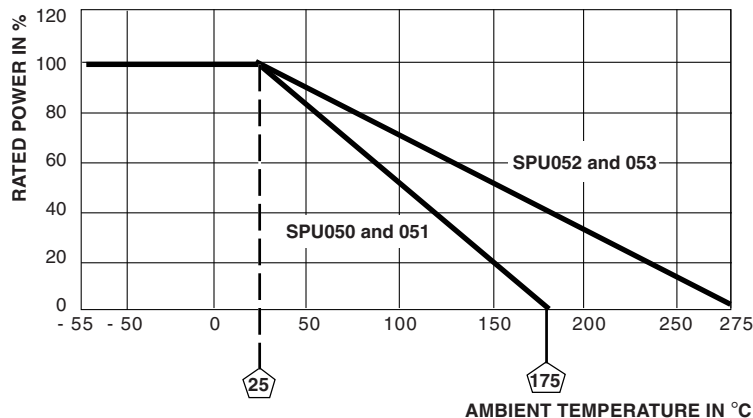
Standard Terminals: SPU050/051: 100 % Sn or 60/40 Sn/Pb coated Copperweld®

SPU052/053: 100 % Sn or 60/40 Sn/Pb coated copper

Part Marking: DALE, model, wattage, value, tolerance, date code

AMBIENT TEMPERATURE DERATING

Derating is required for ambient temperature above 25 °C per the following graph

DERATING




Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.