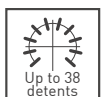


# PS-15 / PSC-15

## 15 mm carbon/cermet SMD potentiometer

The PS-15 and PSC-15 potentiometers provide reliable control in applications requiring frequent adjustment. Their shaftless design supports different engagement mechanisms, including customized shafts, motor control systems, and human-interface adjustments. These potentiometers can also control variable outputs, including frequency, motor speed, and volume, and can be customized to meet specific customer application requirements.



### KEY FEATURES

- ▶ Excellent performance (up to 3% linearity)
- ▶ Carbon or cermet resistive element
- ▶ Polyester / Alumina substrate
- ▶ Up to 38 mechanical detents for tactile feedback
- ▶ Up to 100,000 life cycles
- ▶ IP54 protection
- ▶ Embossed tape packaging according to IEC 60286-3:2007
- ▶ Wiper positioned at initial, 50% or fully clockwise
- ▶ Linear, logarithmic and antilogarithmic tapers (PSC-15)
- ▶ Self-extinguishable plastic UL 94V-0 (default in PSC-15)
- ▶ Locating pins for accurate PCB positioning
- ▶ Low torque version available

### On request

- ▶ Shaft and knobs
- ▶ Long life models for control potentiometer applications

### ELECTRICAL SPECIFICATIONS

|                                    | PS-15                               | PSC-15                              |
|------------------------------------|-------------------------------------|-------------------------------------|
| Taper <sup>1</sup>                 | Lin                                 | Lin, Log, Alog                      |
| Range of values <sup>1</sup>       |                                     |                                     |
| Lin                                | $1K\Omega \leq R_n \leq 1M\Omega$   | $100\Omega \leq R_n \leq 5M\Omega$  |
| Log, Alog                          | n/a                                 | $1K\Omega \leq R_n \leq 5M\Omega$   |
| Tolerance <sup>1</sup>             |                                     |                                     |
| $100\Omega \leq R_n \leq 1M\Omega$ | $\pm 30\%$                          | $\pm 20\%$                          |
| $1M\Omega < R_n \leq 5M\Omega$     | n/a                                 | $\pm 30\%$                          |
| Max. Voltage                       |                                     |                                     |
| Lin                                | 250 Vdc                             | 250 Vdc                             |
| Log, Alog                          | n/a                                 | 125 Vdc                             |
| Nominal power                      |                                     |                                     |
| Lin                                | 50°C (122°F)<br>0.25 W              | 70°C (158°F)<br>0.50 W              |
| Log, Alog                          | n/a                                 | 0.25 W                              |
| Residual resistance <sup>1</sup>   | $\leq 0.5\% R_n$ (5Ω min.)          |                                     |
| Equivalent noise resistance        | $\leq 3\% R_n$ (3Ω min.)            |                                     |
| Operating temperature <sup>1</sup> | -40°C to +85°C<br>(-40°F to +185°F) | -40°C to +90°C<br>(-40°F to +194°F) |

<sup>1</sup> Others available on request

### POTENTIAL APPLICATIONS

- ▶ Appliance program selection
- ▶ Thermostat adjustment
- ▶ Timer and control relays
- ▶ Consumer electronics
- ▶ Power tool controls
- ▶ Test and measurement equipment

# PS-15 / PSC-15

## 15 mm carbon/cermet SMD potentiometer

### MECHANICAL SPECIFICATIONS

|                                        | PS-15                                                     | PSC-15           |
|----------------------------------------|-----------------------------------------------------------|------------------|
| Mechanical rotation angle <sup>1</sup> | 265° ± 5°                                                 |                  |
| Electrical rotation angle <sup>2</sup> | 240° ± 20°                                                |                  |
| Torque<br>Rotational<br>Stop           | 0.5 to 2.5 Ncm (0.7 to 3.4 in-oz)<br>> 10 Ncm (>14 in-oz) |                  |
| Life <sup>2</sup>                      | Up to 100k cycles                                         | Up to 50k cycles |

<sup>1</sup> Endless rotation available: STS-15 2 Others check availability

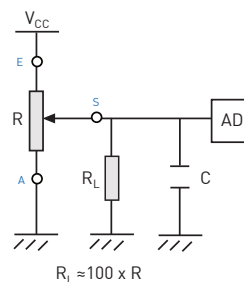
### ENVIRONMENTAL TESTING

|                            | Test method (CEI 393-1)                        | PS-15<br>$\Delta R(\%)$ - typical test results | PSC-15<br>$\Delta R(\%)$ - typical test results |
|----------------------------|------------------------------------------------|------------------------------------------------|-------------------------------------------------|
| Electrical life            | 1,000h at 50°C; 0.15W<br>1,000h at 70°C; 0.33W | ±10%<br>n/a                                    | n/a<br>±5%                                      |
| Mechanical life            | 1000 cycles at 10 to 15 cpm                    | ±10% (Rn < 1M)                                 | ±3% (Rn < 1 M)                                  |
| Temperature<br>coefficient | -40°C; +90°C<br>-40°C; +85°C<br>-25°C; +70°C   | n/a<br>±1,500 ppm/°C<br>±1,000 ppm/°C          | ±100 ppm/°C (Rn < 100K)<br>n/a<br>n/a           |
| Thermal cycling            | 16h at 90°C and 2h at -40°C                    | ±5%                                            | ±2.5%                                           |
| Damp heat                  | 500h at 40°C and 95% relative<br>humidity (RH) | ±15%                                           | ±5%                                             |
| Vibration                  | 2h each plane at 10Hz - 55Hz                   | ±3%                                            | ±2%                                             |
| Storage                    | 6 months at 23°C ±2°C and<br>50% RH            | ±5%                                            | ±5%                                             |

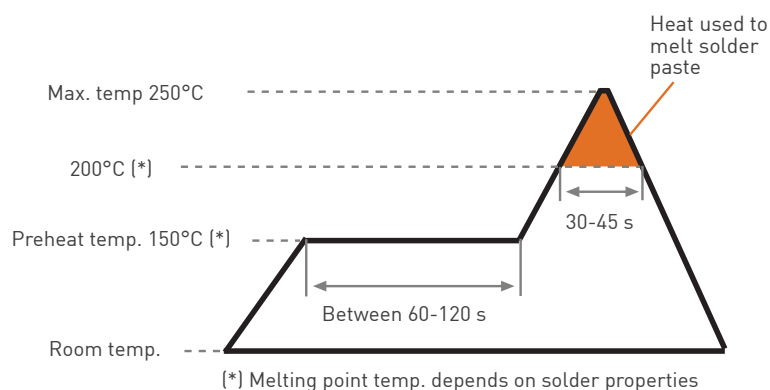
Out of range values may not comply with these results. Standard test conditions: temperature: 23°C ±2°C and 45% to 70% RH

### RECOMMENDED CONNECTIONS

Recommended connection circuit for a position sensor or control application (voltage divider circuit electronic design).



### RECOMMENDED REFLOW PROFILE



The recommended reflow profile is provided as a guideline. Optimal profile may differ due to oven type, assembly layout or other design or process variables.

Customers should verify device performance in their specific application and reflow process.

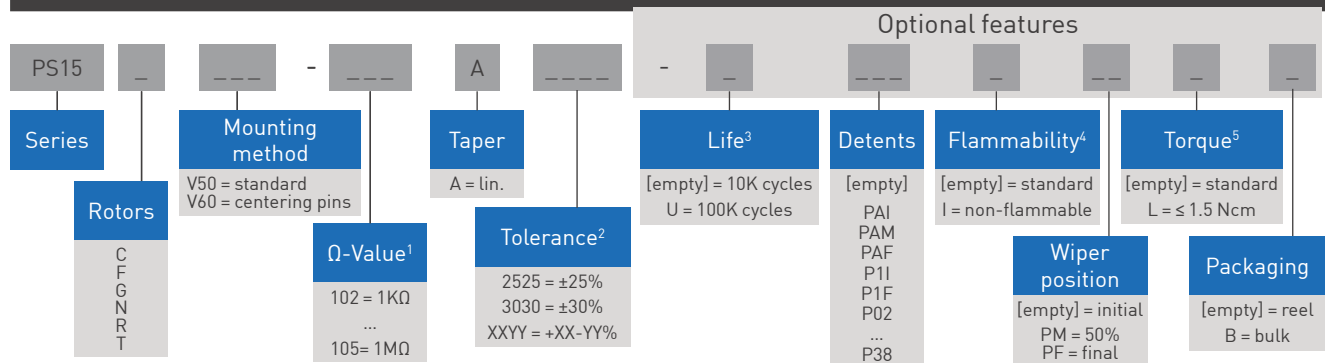
(\*) Melting point temp. depends on solder properties

# PS-15 / PSC-15

## 15 mm carbon/cermet SMD potentiometer

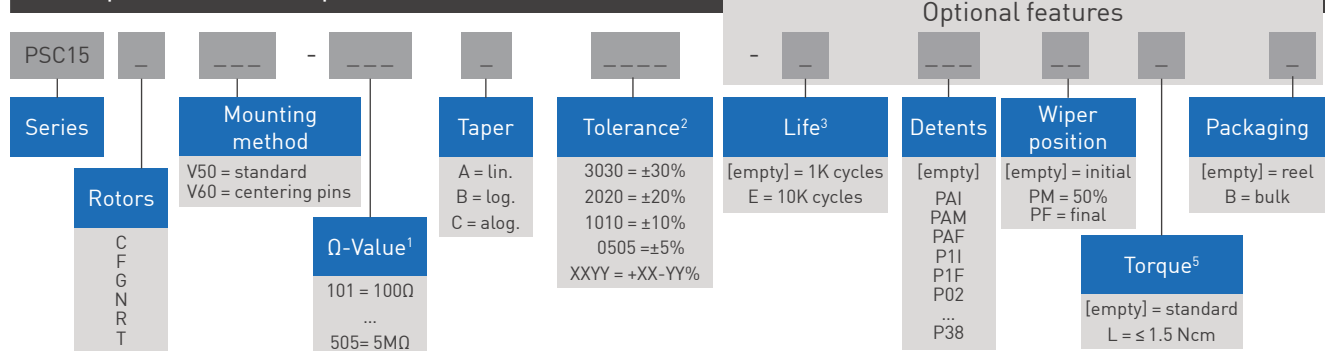
### HOW TO ORDER

Carbon potentiometer (Example: PS15TV50-102A3030)



[check inventory](#)

Cermet potentiometer (Example: PSC15TV50-103A3030)



[check inventory](#)

1. Q- Value: XXX - First two digits of Q-value; XXX - Number of zeros
2. Tolerance: For custom tolerance, please check availability: [info@piher.net](mailto:info@piher.net)
3. Life: Higher available. To be studied on request.
4. Non-flammable according to UL 94V-0: housing and rotor. PSC-15 made of non-flammable material by standard.
5. Torque: No detent option available for low torque models.

### DEFAULT CONFIGURATION

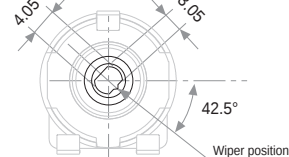
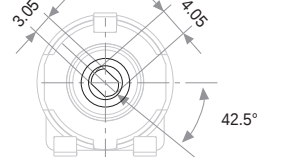
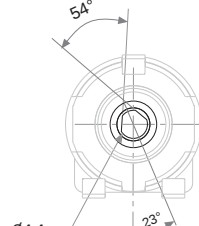
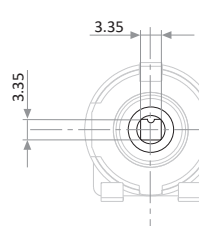
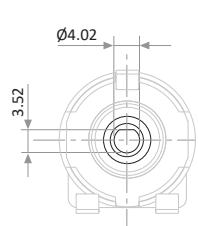
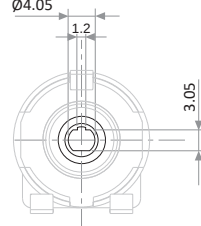
|                       | PS-15                                                          | PSC-15       |
|-----------------------|----------------------------------------------------------------|--------------|
| Life                  | 10,000 cycles                                                  | 1,000 cycles |
| Non-flammable plastic | no                                                             | yes          |
| Detents               | none                                                           |              |
| Packaging             | reel                                                           |              |
| Wiper Position        | initial                                                        |              |
| Housing color         | dark grey                                                      | brown        |
| Rotor color           | dark grey                                                      | brown        |
| Torque                | 0.5 to 2.5 Ncm                                                 |              |
| Linearity             | Controlled linearity up to 3% upon request                     |              |
| Shafts / knobs        | Available separately, see PT-15 datasheet for possible options |              |

# PS-15 / PSC-15

## 15 mm carbon/cermet SMD potentiometer

### ROTORS

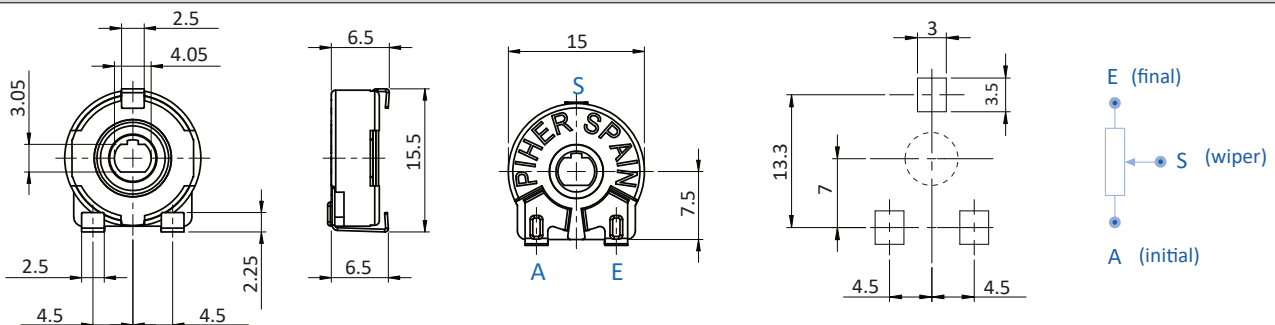
Removable shaft or thumbwheel / Wiper shown at initial position

| N                                                                                 |                                                                                   | G                                                                                  |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |                                                                                   |  |                                                                                     |
| Wiper shown positioned at 50%                                                     |                                                                                   |                                                                                    |                                                                                     |
| C                                                                                 | F                                                                                 | R                                                                                  | T                                                                                   |
|  |  |  |  |

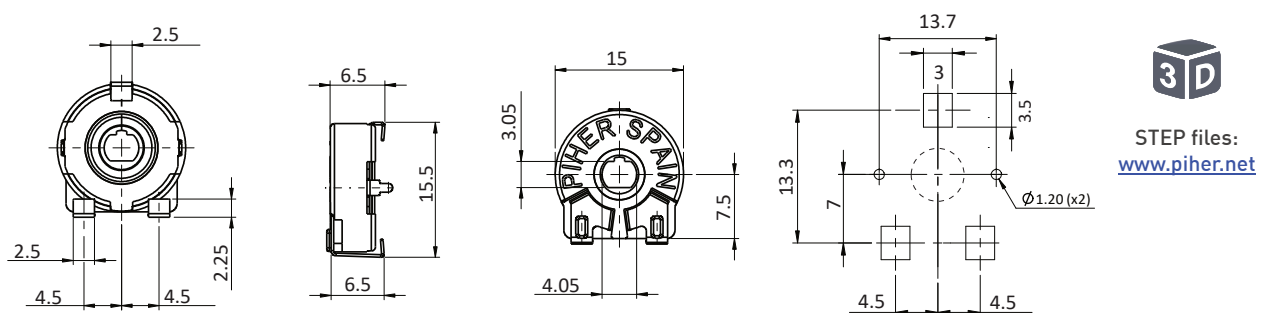
Default delivery is at initial position.

### MOUNTING METHOD

V50 - without centering pins



V60 - with centering pins



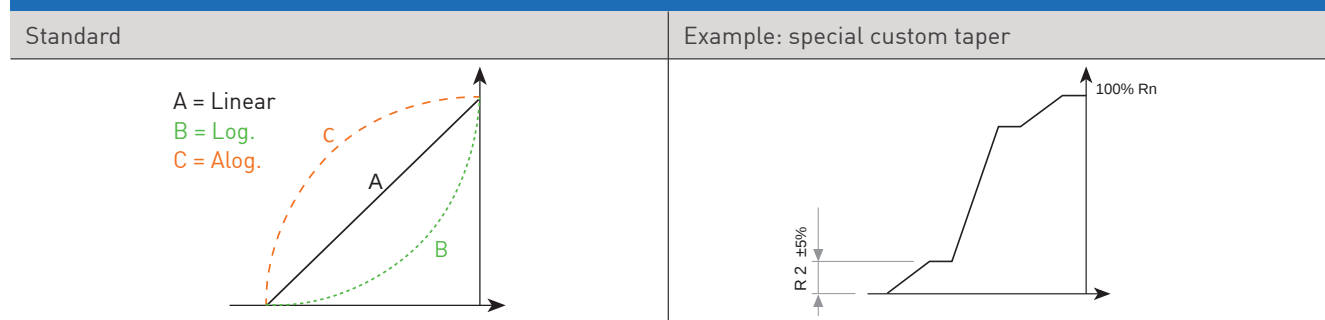
### STANDARD RESISTANCE-VALUES AND TOLERANCES

| Resistance $\Omega$ | 100 | 200 | 220 | 250 | 470 | 500 | 1K  | 2K  | 2.2K | 2.5K | 4.7K | 5K  | 10K | 20K | 22K | 25K | 47K | 50K | 100K | 200K | 220K | 250K | 470K | 500K | 1M  | 2M  | 2.5M       | 4.7M | 5M  |
|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|-----|-----|------------|------|-----|
| Order Code          | 101 | 201 | 221 | 251 | 471 | 501 | 102 | 202 | 222  | 252  | 472  | 502 | 103 | 203 | 223 | 253 | 473 | 503 | 104  | 204  | 224  | 254  | 474  | 504  | 105 | 205 | 255        | 475  | 505 |
| Tolerance (PS-15)   | n/a |     |     |     |     |     | 30% |     |      |      |      |     |     |     |     |     |     |     |      |      |      |      |      |      |     |     | contact us |      |     |
| Tolerance (PSC-15)  | 20% |     |     |     |     |     |     |     |      |      |      |     |     |     |     |     |     |     | 30%  |      |      |      |      |      |     |     |            |      |     |

# PS-15 / PSC-15

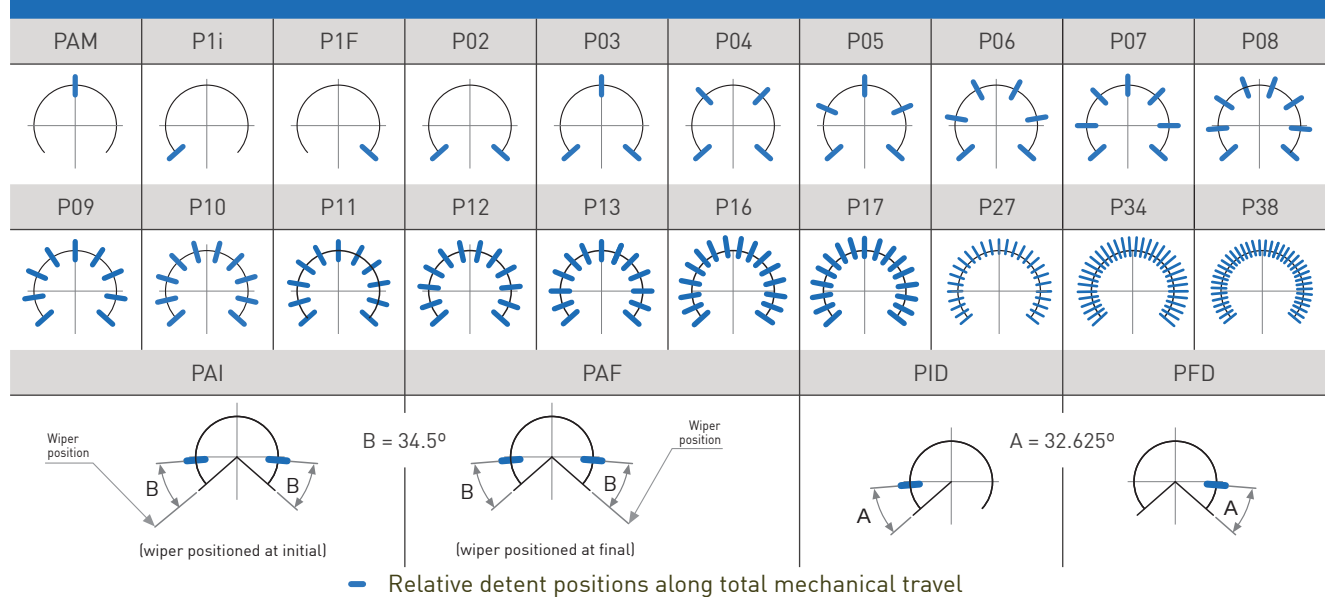
## 15 mm carbon/cermet SMD potentiometer

### TAPERS



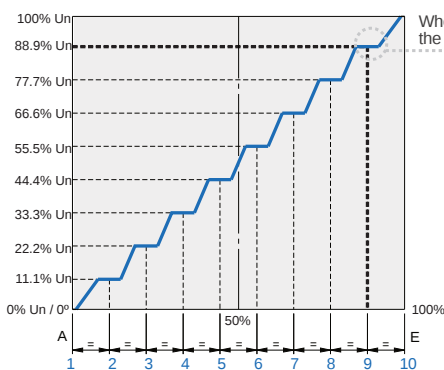
For more information on custom tapers contact Piher Sensing Systems.

### DETENTS

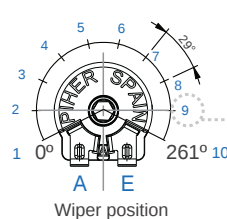


- Standard mechanical life is 500 cycles.
- Long life versions are available upon request and have the following characteristics at T<sup>a</sup>: Potentiometers with 1 to 3 detents up to 10K cycles; Potentiometers with 4 and more detents up to 5K cycles
- Please consult Piher Sensing Systems if unique non-overlapping values at each detent position or LOG/ALOG tapers are required.
- Different output voltage values can be matched at each detent position (see next section).
- Detent torque can vary from 1.2 to 2.5 times the standard potentiometer torque. For all detents versions of more than 13 detents the detent torque will be 0.5 to 3.5 Ncm

### STEPPED OUTPUTS / CONSTANT VALUE ZONES



When the potentiometer's wiper is located at detent n°9, the output voltage will be 88.9% Un ±% tolerance.



### IMPROVED REPEATABILITY

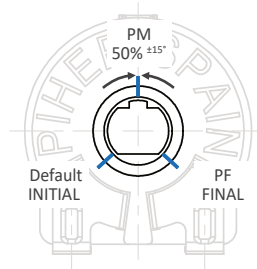
Constant value zones can be combined with strategically located mechanical detents to provide exact alignment between the electrical output (flat areas) and the mechanical detent position. This provides clear mechanical positions that are not only repeatable, but perfectly aligned electrical outputs at each of the (detent) angles. The detents also prevent output values from changing due to vibration or accidental rotor movements. The result is a higher level of precision when controlling lighting, temperature, motors, or other electronic control systems.

Contact Piher Sensing Systems for ordering information.

# PS-15 / PSC-15

15 mm carbon/cermet SMD potentiometer

## POSITIONING



Special delivery positions available on request.

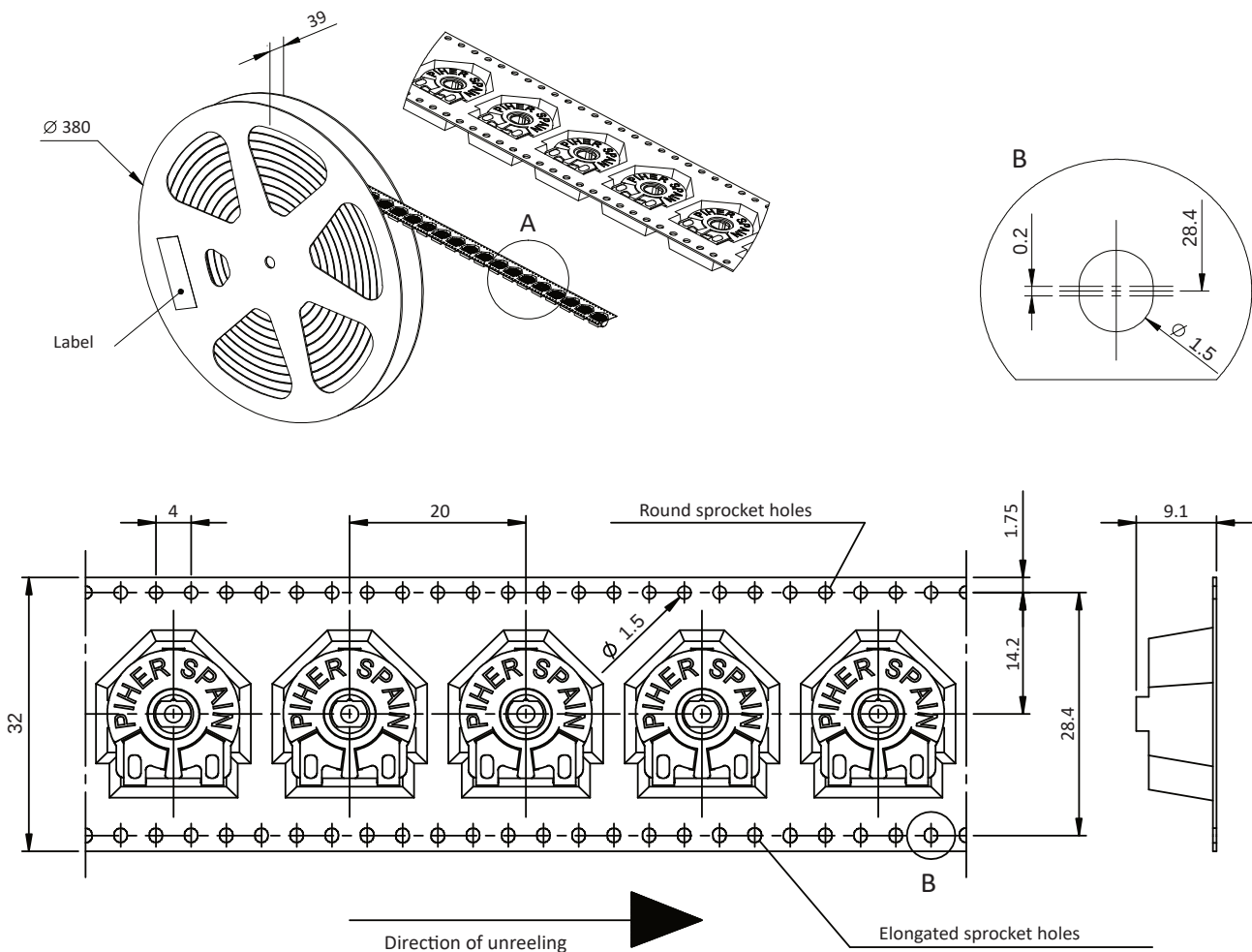
## PACKAGING

Bulk (500 units per box)



Dimensions (mm): 185x85x80

Reel - embossed tape (500 pcs/reel)



# PS-15 / PSC-15

15 mm carbon/cermet SMD potentiometer

## OUR ADVANTAGE

- ▶ Leading-edge innovative position sensing solutions
  - ▷ Contactless (Hall-effect and Inductive Technology)
  - ▷ Contacting (Potentiometers, Printed Electronics)
- ▶ Engineering design-in support
- ▶ All our products can be customized to fit target application and customer requirements
- ▶ Capability to move seamlessly from development to true high-volume production
- ▶ A global footprint with global engineering and commercial support
- ▶ One-stop shop not limited to position sensors (temperature, pressure, gas, etc.) through group collaboration
- ▶ Flexibility and entrepreneurship of a medium-sized company with the backing of Amphenol Corporation



Please always use the latest updated datasheets and 3D models published on our website.

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## CONTACT

**Piher Sensing Systems**  
Polígono Industrial Municipal  
Vial T2, N°22  
31500 Tudela, Spain

**sales@piher.net**

+34 948 820 450



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