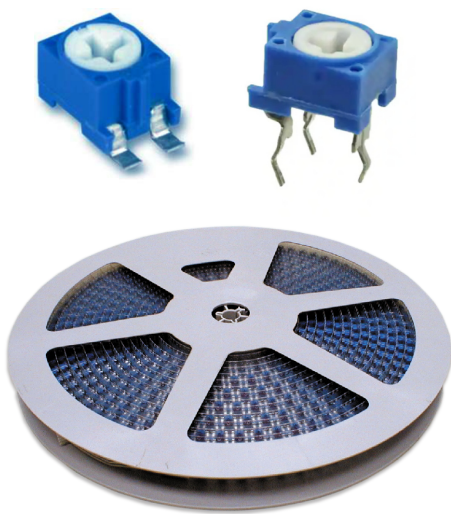


# N-6

## 6 mm miniature carbon potentiometer

The N6 is a unique, fully RoHS & REACH ready Miniature Control Potentiometer with all the features of traditional full size potentiometers. The combination of wide electrical angle, reduced form factor, tape on reel packaging for automated high speed placement and overmoulding technology provides market leading performance in a compact & robust design. A ROHS reflow version (N6-R) with extra long mechanical life is also available.

The N6 has been conceived for the Industrial, Automotive and Appliance markets to provide a cost effective control solution. Further options include improved linearity and a selection of custom shafts and knobs.



### KEY FEATURES

- ▶ RoHS compliant materials
- ▶ Carbon resistive element
- ▶ Plastic substrate
- ▶ Over-molding manufacturing technique
- ▶ SMD or through hole mounting
- ▶ Embossed Tape (for SMD), Tape on reel, Ammopack packaging for automatic insertion and bulk for manual assembly
- ▶ Wiper positioned at 50%
- ▶ Both sides cross slot easy adjustment
- ▶ Accidental rotor movement protected
- ▶ Traceability ensured by date code marking
- ▶ Assembly method: stand up and lay down
- ▶ IP54 protection according to IEC 60529

### ELECTRICAL SPECIFICATIONS

|                             |  |
|-----------------------------|--|
| Taper                       | Linear   |
| Range of values*            | {Decad. 1.0 - 2.0 - 2.2 - 2.5 - 4.7 - 5.0}<br>$100\Omega \leq R_n \leq 1M\Omega$ |
| Tolerance*                  | $\pm 30\%$   |
| Max. Voltage                | 100 VDC  |
| Nominal power 50°C (122°F)  | 0.1 W  |
| Residual resistance         | $\leq 2\% R_n$ (100 min.)  |
| Equivalent noise resistance | $\leq 5\% R_n$   |
| Operating temperature **    | -25°C to +70°C<br>(-13°F to + 158°F)   |

\* Others available on request \*\* Up to 85°C depending on application.

### APPLICATIONS

- ▶ Home and building automation
- ▶ Appliances
- ▶ Timer and control relays
- ▶ Power Supplies
- ▶ Alarms and Detectors
- ▶ Light dimmers

# N-6

## 6 mm miniature carbon potentiometer

### MECHANICAL SPECIFICATIONS

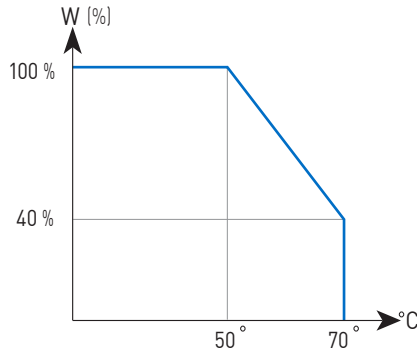
|                              |   |
|------------------------------|---|
| Mechanical rotation angle    | 280° ± 10°  |
| Electrical rotation angle    | 245° ± 25°  |
| Torque<br>Rotational<br>Stop | 0.2 to 3 Ncm [0.28 to 4.2 in-oz]<br>> 7.5 Ncm [>10.5 in-oz] |
| Life                         | 100 cycles  |

### ENVIRONMENTAL TESTING

|                         | Test conditions (CEI 393-1)                 | ΔR - Typical test results |
|-------------------------|---|---------------------------|
| Electrical life         | 1.000h at 50°C; 0.1 W                       | ±5%                       |
| Mechanical life         | 100 cycles at 10 to 15 cpm                  | ±3 % (Rn < 1M )           |
| Temperature coefficient | -25° C; +70° C                              | ±300 ppm/°C (Rn ≤ 100K)   |
| Thermal cycling         | 16h at 85°C and 2h at -25°C                 | ±2.5%                     |
| Damp heat               | 500h at 40°C and 95% relative humidity (RH) | ±5%                       |
| Vibration               | 2h each plane at 10Hz - 55Hz                | ±2%                       |
| Storage                 | 6 month at 23°C ±2°C and 50% RH             | ±2.5%                     |

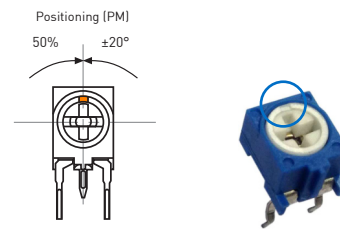
Out of range values may not comply with these results. Standard test conditions: temperature: 23°C ±2°C and 45% to 70% RH

### POWER RATING CURVE



### POSITIONING

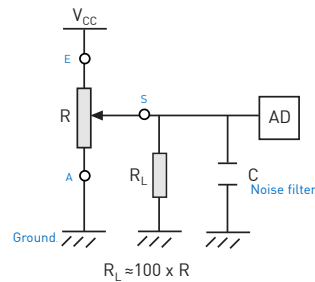
Marking in the rotor indicates the wiper's position.



(shown at 50% of travel)

### RECOMMENDED CONNECTIONS

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



# N-6

## 6 mm miniature carbon potentiometer

### HOW TO ORDER

Stand-up Mounting / Through Hole - Example: N6S25T0N-102-3030

| N6     | S               | 25            | ---   | ---                         | ---                            | ---                                       |
|--------|-----------------|---------------|---|-----------------------------|--------------------------------|---|
| Series | Mounting method | Terminal size | Packaging <sup>2</sup>  | Mounting type <sup>3</sup>  | Ω-Value <sup>4</sup>           | Tolerance <sup>5</sup>                    |
|        | S - stand up    | 25 - 2.5mm    | T0 = bulk<br>T1 = reel (A = 20)<br>T2 = reel (A = 21.5)<br>T3 = ammpack (A = 20)<br>T4 = ammpack (A = 21.5) | N = straight<br>C = crimped | 101 = 100Ω<br>...<br>105 = 1MΩ | 1010 = ±10%<br>2020 = ±20%<br>3030 = ±30% |

Lay-down Mounting / Through Hole- Example: N6L30T0N-102-3030

| N6     | L               | ---                                    | ---   | ---                         | ---                            | ---                                       |
|--------|-----------------|--|---|-----------------------------|--------------------------------|---|
| Series | Mounting method | Terminal size <sup>1</sup>             | Packaging <sup>2</sup>  | Mounting type <sup>3</sup>  | Ω-Value <sup>4</sup>           | Tolerance <sup>5</sup>                    |
|        | L - lay down    | 25 - 2.5mm<br>30 - 3.0mm<br>50 - 5.0mm | T0 = bulk<br>T1 = reel (A = 20)<br>T2 = reel (A = 21.5)<br>T3 = ammpack (A = 20)<br>T4 = ammpack (A = 21.5) | N = straight<br>C = crimped | 101 = 100Ω<br>...<br>105 = 1MΩ | 1010 = ±10%<br>2020 = ±20%<br>3030 = ±30% |

Lay-down Mounting / SMD - Example: N6L50T8S-102-3030

| N6     | L               | 50            | ---  | S                          | ---                            | ---                                       | ---   |
|--------|-----------------|---------------|--|----------------------------|--------------------------------|---|---|
| Series | Mounting method | Terminal size | Packaging <sup>2</sup>   | Mounting type <sup>3</sup> | Ω-Value <sup>4</sup>           | Tolerance <sup>5</sup>                    | RoHS reflowable <sup>6</sup>  |
|        | L - lay down    | 50 - 5.0mm    | T0 = bulk<br>T7 = embossed tape<br>T8 = embossed tape (sealed for vacuum pickup) | S = SMD                    | 101 = 100Ω<br>...<br>105 = 1MΩ | 1010 = ±10%<br>2020 = ±20%<br>3030 = ±30% | See N6R datasheet at <a href="http://www.piher.net">www.piher.net</a> |

1. Terminal style: Terminal style "50" not available with packaging "T2" or "T4".
2. Packaging: packaging possibilities depend on mounting, terminal style and crimping, see "available packaging option" below.
3. Crimping: - crimped terminal only available in bulk packaging "T0".
4. Ω- Value: XXX - First two digits of Ω-value  
XXX - Number of zeros
5. Tolerance: Default tolerance is ± 30%. For ±10%, ±20% and others: check availability
6. Option R: black housing & rotor color. Range of values: 250Ω ≤ Rn ≤ 500KΩ (see separate data sheet "N6R" at [www.piher.net](http://www.piher.net))

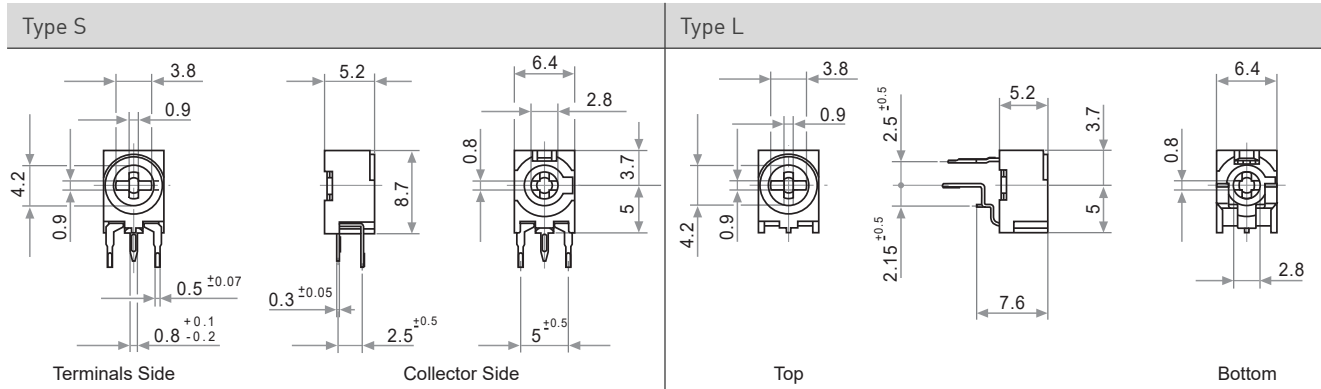
### AVAILABLE PACKAGING OPTIONS

| Mounting Type | Order Code    | Bulk |    | Tape |    |    | Embossed Tape |
|---------------|---------------|------|----|------|----|----|---------------|
|               |               | T0   | T1 | T2   | T3 | T4 | T7 / T8       |
| Non Crimped   | N-6 S 25 __ N | x    | x  | x    | x  | x  |               |
|               | N-6 L 25 __ N | x    | x  |      | x  |    |               |
|               | N-6 L 30 __ N | x    | x  | x    | x  | x  |               |
|               | N-6 L 50 __ N | x    | x  |      | x  |    |               |
| Crimped       | N-6 S 25 __ C | x    |    |      |    |    |               |
|               | N-6 L 25 __ C | x    |    |      |    |    |               |
|               | N-6 L 30 __ C | x    |    |      |    |    |               |
|               | N-6 L 50 __ C | x    |    |      |    |    |               |
| SMD           | N-6 L 50 __ S | x    |    |      |    |    | x             |

# N-6

## 6 mm miniature carbon potentiometer

### MOUNTING METHOD

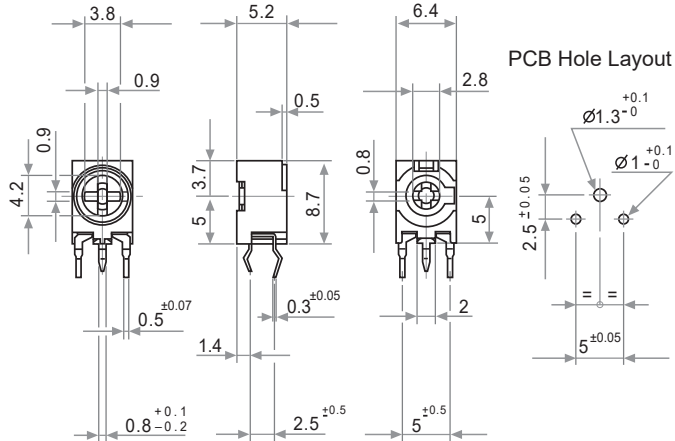


### DIMENSIONS

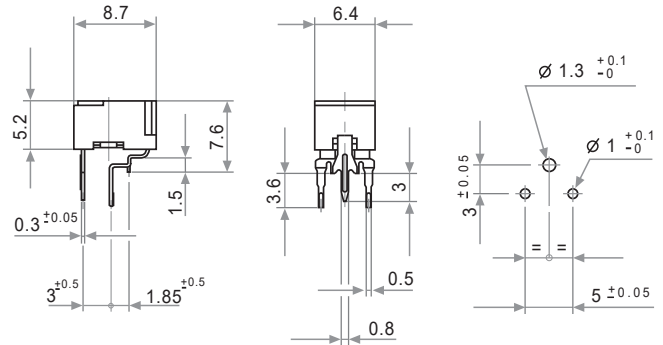
#### Bulk packaging

N6S25 T0 C

N6L30 T0 N

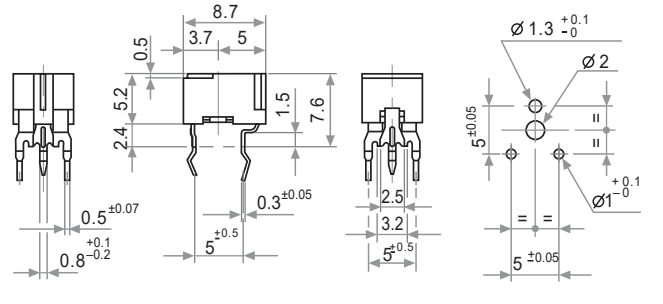
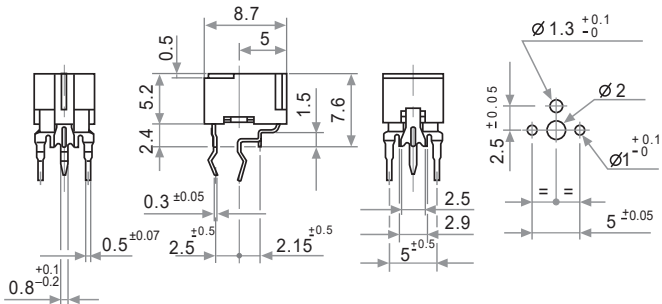


Download the STEP files at [www.pihher.net](http://www.pihher.net)



N6L25 T0 C

N6L50 T0 C



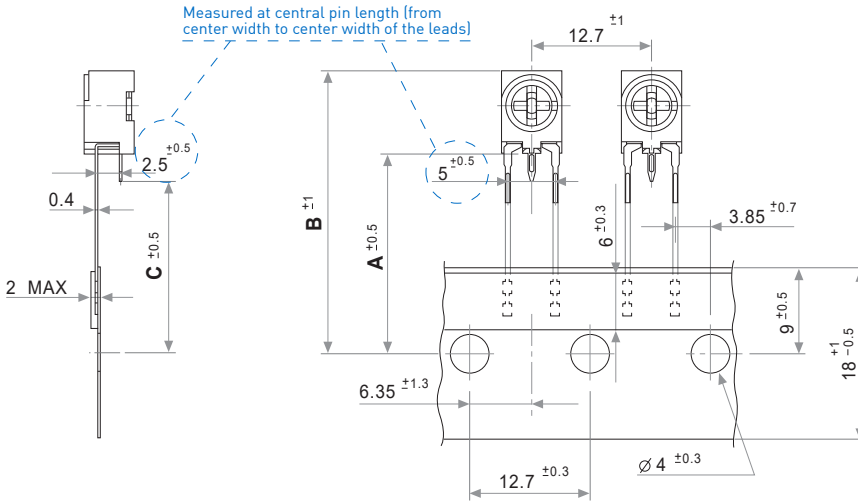
# N-6

## 6 mm miniature carbon potentiometer

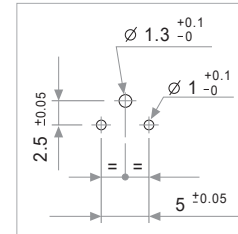
### DIMENSIONS IN MM

Tape

N6S25

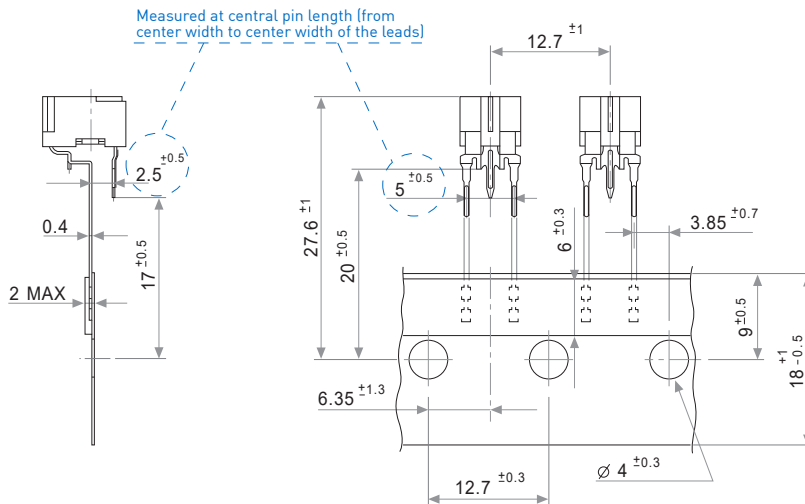


PCB Hole Layout

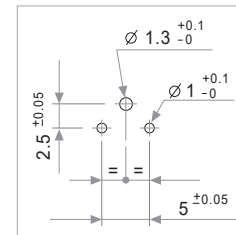


| PACKAGING | A    | B    | C    |
|-----------|------|------|------|
| T1 / T3   | 20   | 28.7 | 17   |
| T2 / T4   | 21.5 | 30.2 | 18.5 |

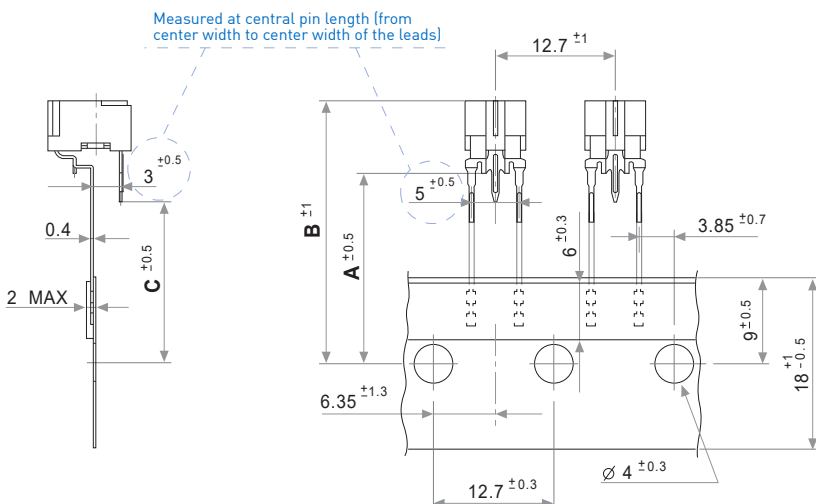
N6L25 T1 / T3



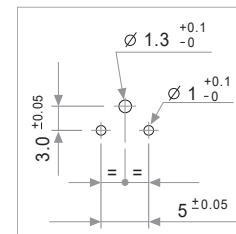
PCB Hole Layout



N6L30



PCB Hole Layout



| PACKAGING | A    | B    | C    |
|-----------|------|------|------|
| T1 / T3   | 20   | 27.6 | 17   |
| T2 / T4   | 21.5 | 29.1 | 18.5 |

# N-6

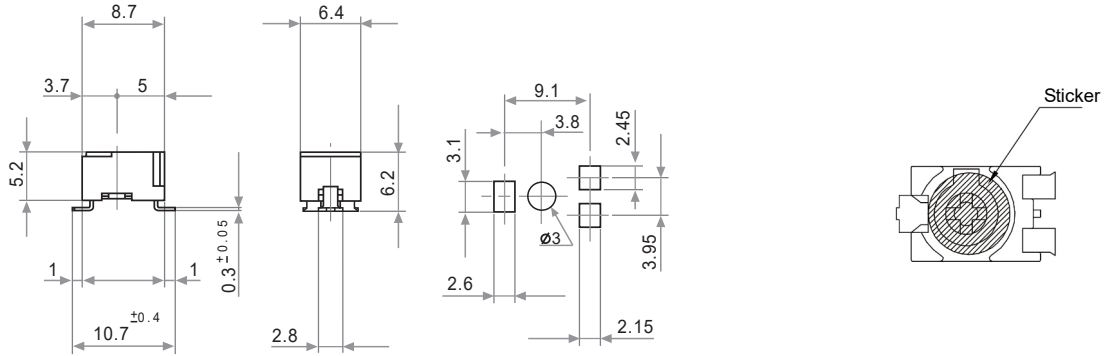
## 6 mm miniature carbon potentiometer

### DIMENSIONS IN MM

#### SMD

N6L50 T0/T7/T8 S

T8 with sticker at bottom side



#### Crimping

| Type S | Type L | Detail |
|--------|--------|--------|
|        |        |        |

#### KNOBS / SHAFTS

| Knob - Ref.: 6580 | Shaft - Ref.: 6133 |
|-------------------|--------------------|
|                   |                    |

Please order both Knob and Shaft separately. If you wish to use your own custom plastic shaft/knob/actuator please contact Piher for advice about compatible materials.