15mm potentiometer SMD

PS-15 & PSX-15

FEATURES

- Specifically designed for leadfree reflow soldering processes (excellent performance).
- IP54 protection according to IEC 60529.
- Carbon resistive element.
- Full traceability.
- Self extinguishable plastic UL 94V-0 and moisture sensitivity level 1 (PS-15).
- Embossed tape according to IEC 60286-3:2007
- Wiper positioned at initial, 50% or fully clockwise.
- Also upon request:
  - Mechanical detents.
  - Locating pins for accurate PCB positioning.
  - Low torque versions.
  - Log/alog and custom tapers.
  - Shafts and knobs.

MECHANICAL SPECIFICATIONS

– Mechanical rotation angle:	265° ± 5°
– Electrical rotation angle:	240° ± 20°
– Torque:	0.5 to 2.5 Ncm. (0.7 to 3.4 in-oz)
– Stop torque:	> 10 Ncm. (>14 in-oz)
– Mechanical life*:	up to 10K cycles

* Others upon request

ELECTRICAL SPECIFICATIONS

– Value*: 1kΩ to 1MΩ

– Tolerance*: ± 30%

– Taper*: Linear

– Nominal Power: 0.25W @ 50°C (122°F)

– Operating temperature: PSX-15: –25°C + 70°C
PS-15: –40°C + 85°C

– Residual resistance: ≤ 5.10^{-3} Rn

– Equivalent Noise Resistance: ≤ 3% Rn

HOW TO ORDER

STANDARD

OPTIONAL EXTRAS

PSX15	T	V50	103	A	3030						
Series	Rotors	Mounting	Value	Taper	Tolerance	Life	Detents	Wiper position	Torque	Packaging
PSX15 PS15	C F G N R T (See note 1)	V50 V60 (See note 2)	102 = 1kΩ ⋮ ⋮ 105 = 1MΩ	A = Linear	3030 = ± 30%	E = Long life (See note 3)	PAI PAM PAF P1I P1F P02 ⋮ P38	PM = 50% PF = Final	– = Standard L = Low torque (See note 4)	B = Bulk

NOTES:

(1) Rotors C and F not available for PSX-15.

(2) V50: without locating pins.
V60: with locating pins.

(3) "E" option for PSX-15 only. Higher life available upon request for both models to be studied case by case.

(4) Low Torque: ≤1.5Ncm. *No detent option available for low torque models*

HOW TO ORDER CUSTOM DRAWING

PS(X)-15 TV50 + DRAWING NUMBER (Max. 16 digits)

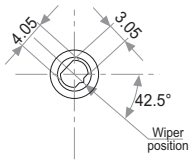
This way of ordering should be used for options which are not included in the "How to order" standard and optional extras.

STANDARD OPTIONS

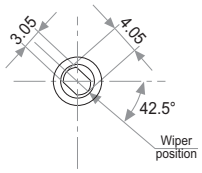
	PSX-15	PS-15
Detents	None	None
Rotor colour	Black	Grey
Housing colour	Black	Grey
Wiper position	Initial	Initial
Torque	Standard	Standard
Packaging	Reel	Reel
Mechanical Life	1K cycles	10K cycles

ROTORS (collector side view)

Wipers positioned at initial

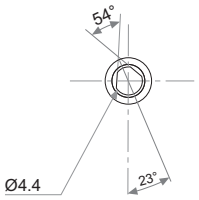


N =
Removable shaft or thumbwheel

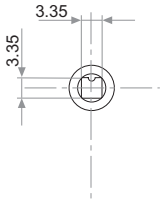


G =
Removable shaft or thumbwheel

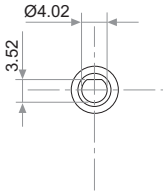
Wipers positioned at 50%



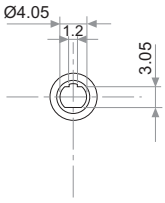
Rotor C



Rotor F

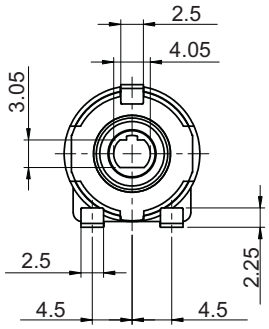


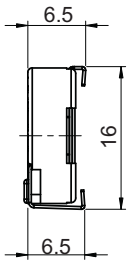
Rotor R

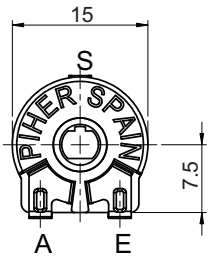


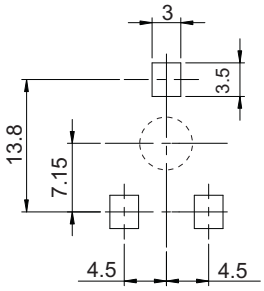
Rotor T

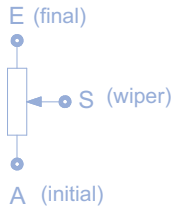
DIMENSIONS (V50 version)



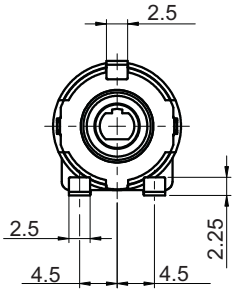


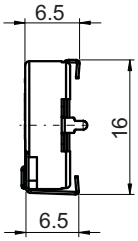


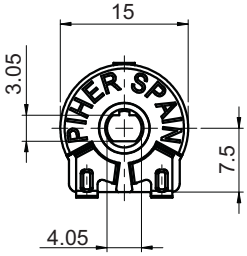


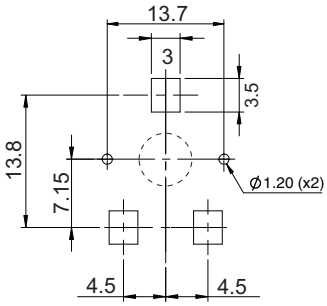


DIMENSIONS (V60 version - with centering pins)



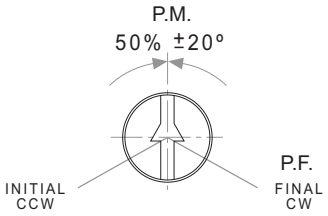




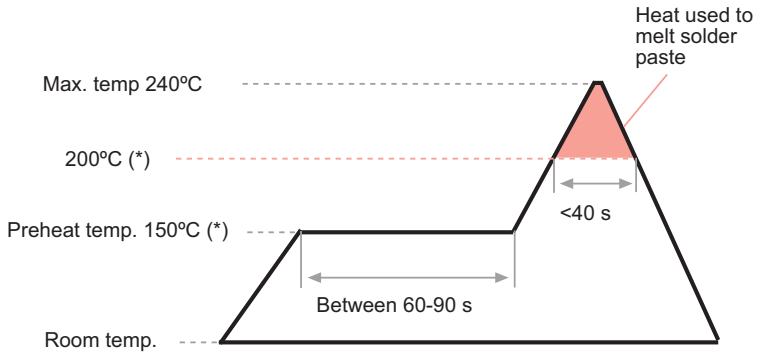


POSITIONING

Positioning (Std. Position = CCW)



PSX-15 RECOMMENDED REFLOW PROFILE



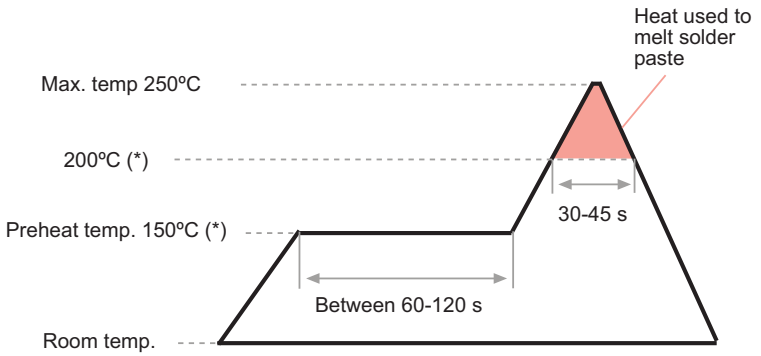
(*) Melting point temp. depends on solder properties

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 actual device performance in their specific application and reflow process. Please contact Piher if you require additional support.

PSX-15 TESTS		VARIATIONS
ELECTRICAL LIFE	1000 h. @ 50°C; 0.25 W	±10 %
MECHANICAL LIFE*	1k @ 10 CPM ...15 CPM	±10 %
TEMPERATURE COEFFICIENT	–25°C; +70°C	±1000 ppm
THERMAL CYCLING	16 h. @ 85°C; 2h. @ -25°C	±5 %
DAMP HEAT	500 h. @ 40°C @ 95% HR	±15 %
VIBRATION (for each plane X,Y,Z)	2 h. @ 10 Hz. ... 55 Hz.	±3 %

* Tests at room temperature. Other life cycles upon request.
NOTE: Out of range values may not comply these results. Please confirm with the factory all the information before designing in.

PS-15 RECOMMENDED REFLOW PROFILE



(*) Melting point temp. depends on solder properties

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 actual device performance in their specific application and reflow process. Please contact Piher if you require additional support.

PS-15 TESTS — VARIATIONS

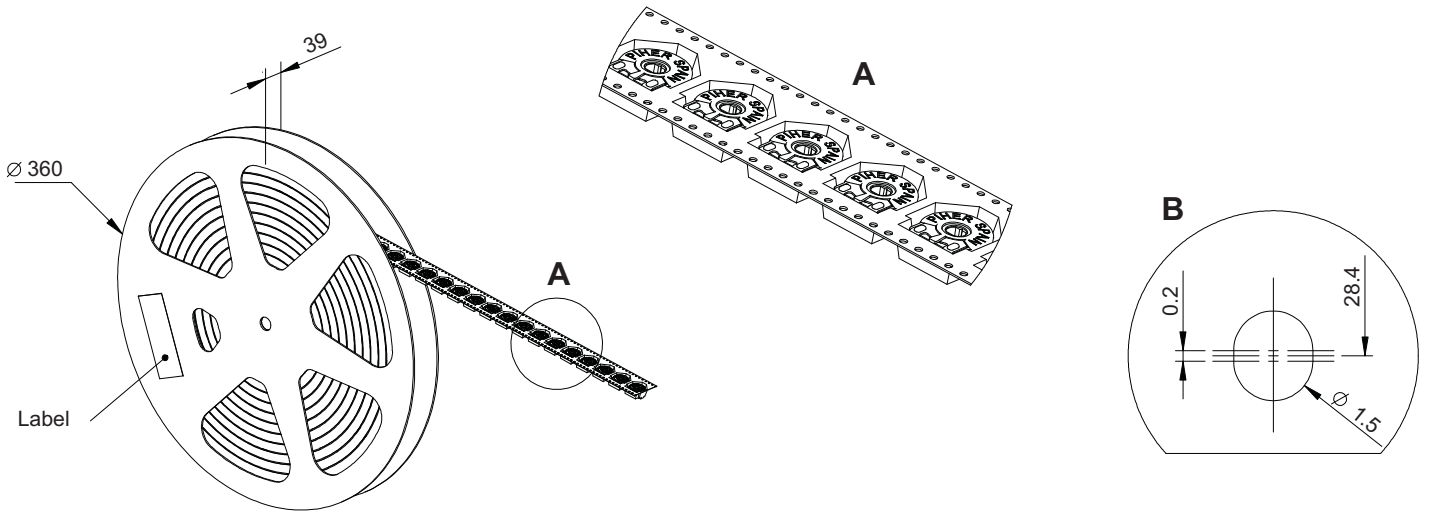
ELECTRICAL LIFE	1000 h. @ 50°C; 0.25 W	±10 %
MECHANICAL LIFE	10k @ 10 CPM ...15 CPM	±10 %
TEMPERATURE COEFFICIENT	–40°C; +85°C	±1500 ppm
	–25°C; +70°C	±1000 ppm
THERMAL CYCLING	16 h. @ 90°C; 2h. @ -40°C	±5 %
DAMP HEAT	500 h. @ 40°C @ 95% HR	±15 %
VIBRATION (for each plane X,Y,Z)	2 h. @ 10 Hz. ... 55 Hz.	±3 %

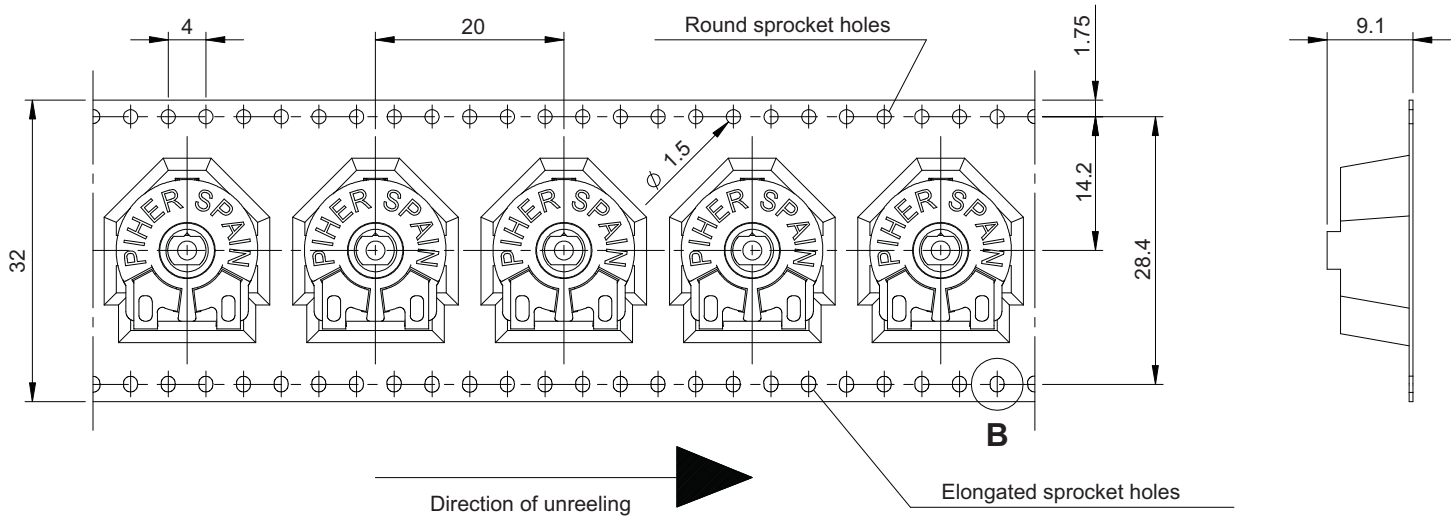
* Tests at room temperature. Other life cycles upon request.
NOTE: Out of range values may not comply these results. Please confirm with the factory all the information before designing in.

PACKAGING

BULK: 500pcs per box (80 x 85 x 185 mm.).

EMBOSSED TAPE: 400pcs per reel.



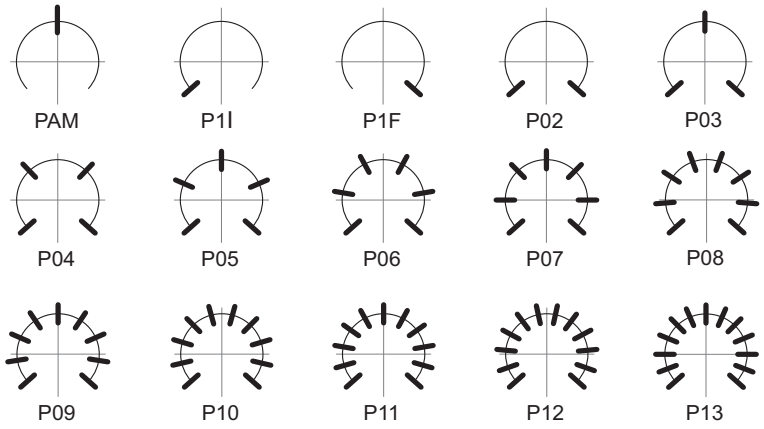


DETENT CONFIGURATIONS EXAMPLES

This innovative PT´s with detents family has been specifically developed to allow the integration of otherwise large and expensive external mechanisms into the body of the potentiometer thus allowing a high range of configurations: special tapers, torque, tolerances, linearity, cut track, etc.

This detent design not only adds a "click" sensation of position, but also offers enormous savings in both cost and space for any given application.

Detent number and positions can be made or fitted to the customer needs or preferences.



NOTES FOR DETENTED VERSIONS:

(1) Some configurations may have a longer leadtime.

(2) Standard mechanical life is 500 cycles.

(3) Long life versions are available under request and have the following characteristics at T[a]:
- Potentiometers with 1 to 3 detents: up to 10K cycles
- Potentiometers with 4 and more detents: up to 5K cycles

(4) Detent torque can vary from 1.2 to 2.5 times the standard potentiometer torque.

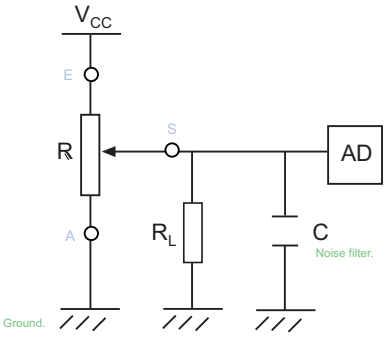
(5) Please consult your nearest Piher supplier if unique non-overlapping values at each detent position or LOG/ALOG tapers are required.

(6) Different output voltage values can be matched at each detent position (under request).

— Relative detent positions along the total mechanical travel.
Unless otherwise specified the detents are evenly spaced (using the end points as reference)

RECOMMENDED CONNECTIONS

Piher potentiometer's recommended connection circuit for a position sensor or control application.
(voltage divider circuit electronic design).



$R_L \simeq 100 \times R$

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