

# TP series

Subminiature washable momentary pushbutton switches



## DISTINCTIVE FEATURES

- Process sealed
- Single piece case
- Front and rear sealing
- Wide variety of contact materials
- Same PCB layout as TL, TR and TG subminiature switches



## ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
  - gold plated contacts : 0.4 VA 20 V max. AC or DC
  - silver plated contacts : 0.5 A 48 V max. AC or DC
- Minimum load : 10 mA 50 mV - 10  $\mu$ A 5 VDC
- Contact resistance : 50 m $\Omega$  max.
- Insulation resistance : 1,000 M $\Omega$  min. at 500 VDC
- Dielectric strength :
  - 1,000 Vrms 50 Hz min. between terminals and frame
  - 500 Vrms 50 Hz min. between terminals
- Electrical life at full load :
  - gold plated contacts : 60,000 cycles
  - silver plated contacts : 20,000 cycles



## ENVIRONMENTAL SPECIFICATIONS

- Operating temperature : -30 °C to +85 °C (-22 °F to +185 °F)
- Moisture : 21 days 95 % (NFC 20-603 - IEC 68-2-3)



## GENERAL SPECIFICATIONS

- Total travel :
  - function 2 : 1 mm (.039)
  - function 3 : 0.8 mm (.031)
- Strength of terminals : pull-out force - 10 N max.
- Cleaning : solvents or water + detergent
- Wave soldering : 260 °C (500 °F) - 5 sec.

The company reserves the right to change specifications without notice.



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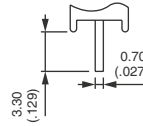
## MATERIALS

- Case : PBT
- Actuator : polyamide, glass filled
- Contacts and terminals :
  - 0 : brass, gold plated
  - 1 : brass, silver plated
  - 3 : brass, gold plated (1.27 micron gold)
  - 8 : contact brass, gold plated + tin plated terminals
  - 9 : contact brass, gold plated (1.27 micron gold) + tin plated terminals
- Terminal seal : epoxy

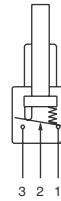
APEM products may be recycled at end-of-life for the re-claiming of valuable metal components.



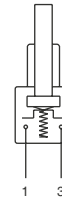
## TERMINALS



## ELECTRICAL FUNCTIONS



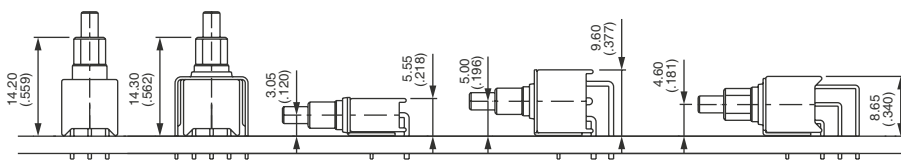
Function 2  
(ON - MOM)



Function 3 (NO)  
(OFF - MOM)

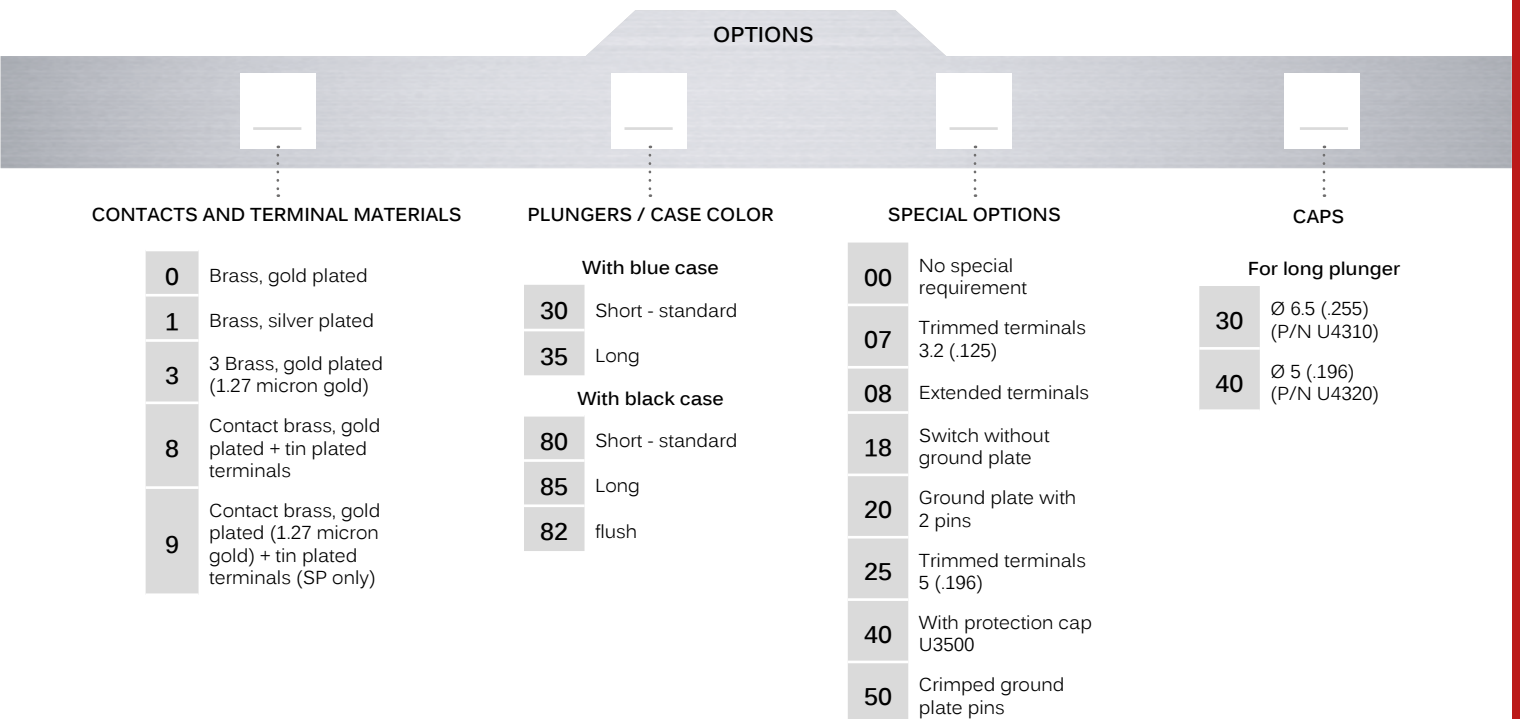
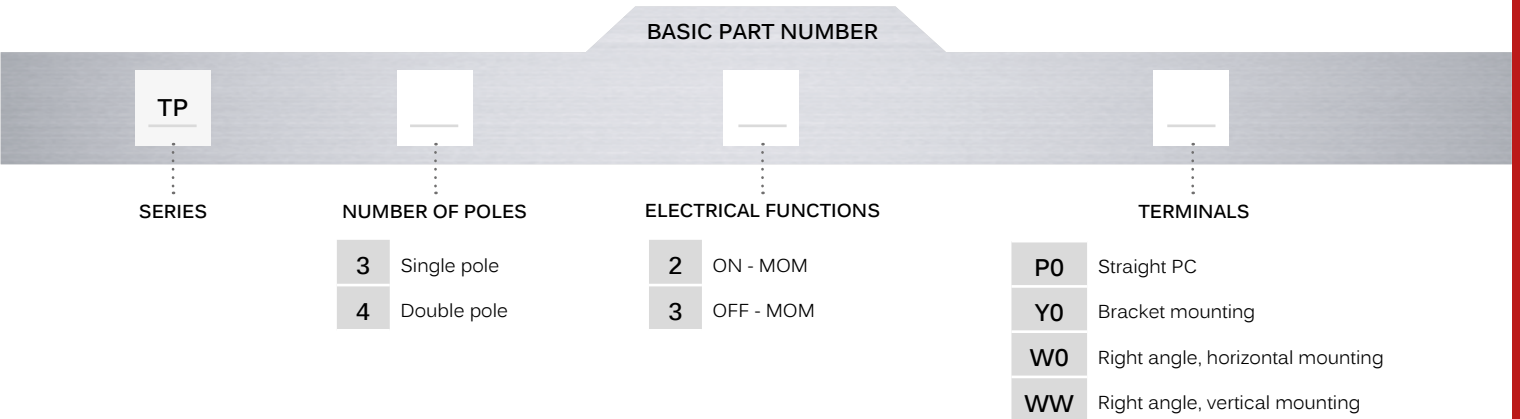


## PCB MOUNTING





### BUILD YOUR PART NUMBER



### ABOUT THIS SERIES

On the following pages, you will find successively basic part numbers of switches and options in the same order as in above chart.



**Notice** : please note that not all combinations of above numbers are available. Refer to the following pages for further information.

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## STRAIGHT PC TERMINALS : TP..PO





Single pole	Double pole		
TP32PO	TP42PO	ON	MOM
TP33PO	TP43PO	OFF	MOM

Function 3 has two terminals only (3 and 1) per pole

## STRAIGHT TERMINALS BRACKET MOUNTING : TP..YO





Single pole	Double pole		
TP32YO	TP42YO	ON	MOM
TP33YO	TP43YO	OFF	MOM

Function 3 has two terminals only (3 and 1) per pole

## RIGHT ANGLE TERMINALS HORIZONTAL MOUNTING : TP..W0





Single pole	Double pole		
TP32W0	TP42W0	ON	MOM
TP33W0	TP43W0	OFF	MOM

Function 3 has two terminals only (3 and 1) per pole

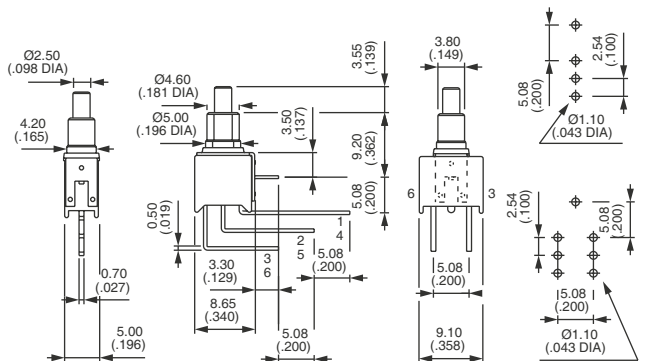
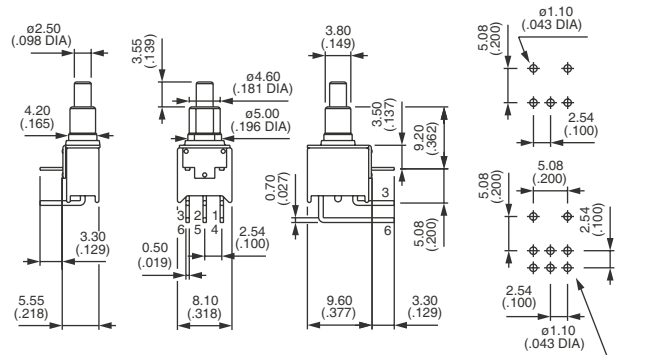
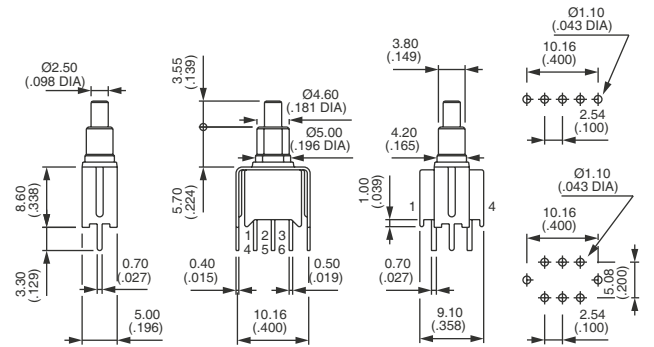
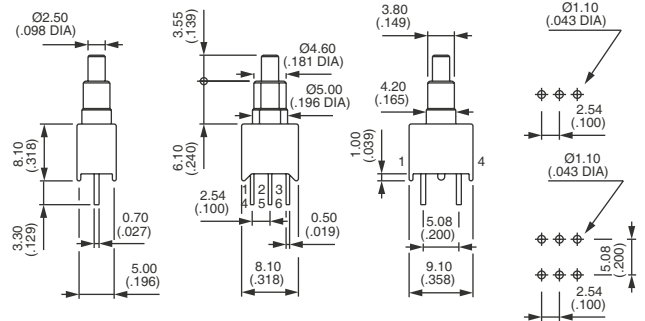
## RIGHT ANGLE TERMINALS VERTICAL MOUNTING : TP..WW



Single pole	Double pole		
TP32WW	TP42WW	ON	MOM
TP33WW	TP43WW	OFF	MOM

Function 3 has two terminals only (3 and 1) per pole

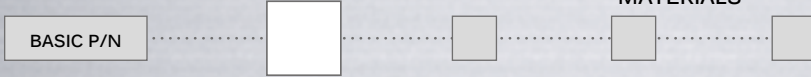
Shown in function 2, with standard plunger



# TP series

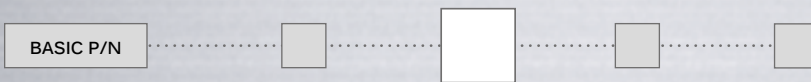
Subminiature washable momentary pushbutton switches

## CONTACT AND TERMINAL MATERIALS



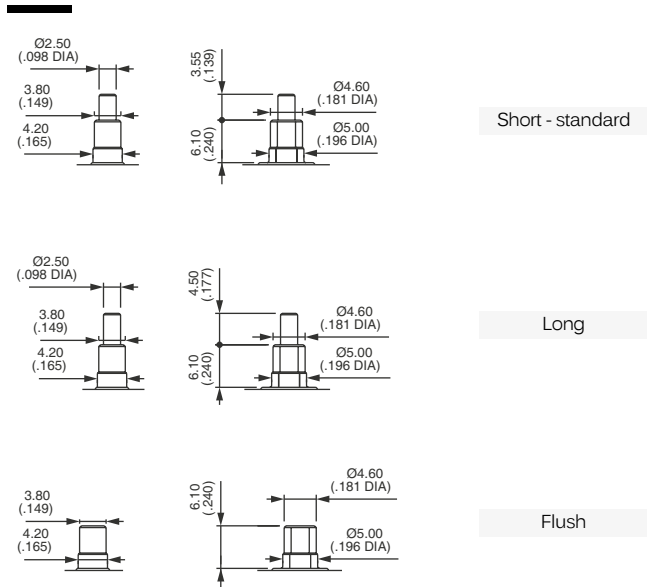
- 0 Brass, gold plated
- 1 Brass, silver plated
- 3 Brass, gold plated (1.27 micron gold)
- 8 Contact brass, gold plated + tin plated terminals
- 9 Contact brass, gold plated (1.27 micron gold) + tin plated terminals (single pole only)

## PLUNGERS

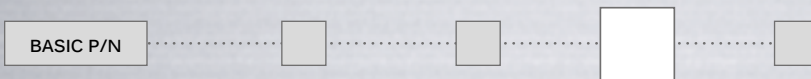


Standard plunger color is black.

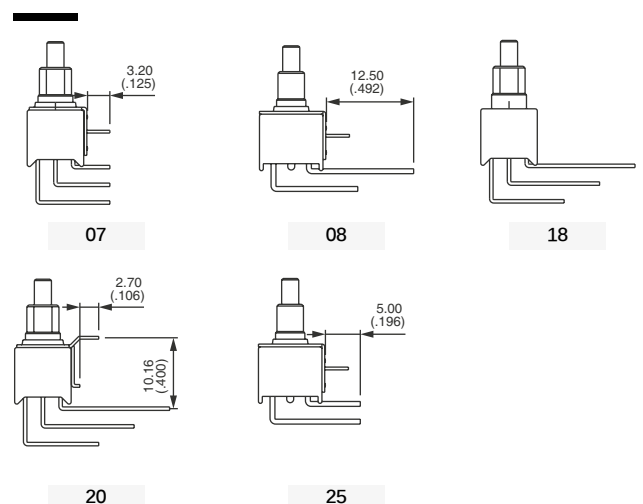
- 30 Short - standard - with blue case
- 80 Short - standard - with black case
- 35 Long with blue case
- 85 Long with black case
- 82 Flush with black case



## SPECIAL OPTIONS



- 00 No special requirement
- 07 **Trimmed terminals** - length 3.2 mm (.125) for TP..WW models only
- 08 **Extended terminals** for TP..W0 models only
- 18 Switch **without ground plate** for TP..WW models only
- 20 **Ground plate with 2 pins** for TP..WW models only
- 25 **Trimmed terminals** - length 5 mm (.196) for all models, except TP..WW



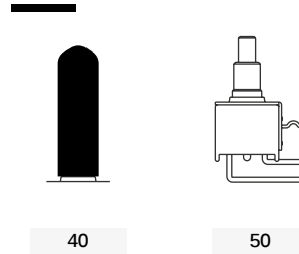
# TP series

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## SPECIAL OPTIONS (CONTINUED)

BASIC P/N

- 40 With cap U3500 mounted over plunger and bushing. Further protects the switch during PCB processing
- 50 **Crimping of ground plate pins.** Retains switch on PC during handling and wave soldering. For models TP..W0, TP..WW and TP..Y0 single and double pole.



40

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## CAPS

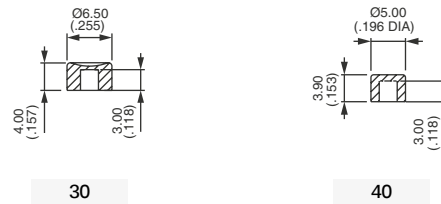
BASIC P/N

- Blank** Without cap
- 30 P/N U4310 - for long plunger only
- 40 P/N U4320 - for long plunger only

To order caps separately, use their part number (U...).

For cap colors, replace "0" by number :

- 1 Blue
- 1/4 Dark blue
- 2 Black
- 3 Green
- 4 Grey
- 5 Yellow
- 6 Red
- 7 Ivory
- 7/1 White
- 9 Orange



30

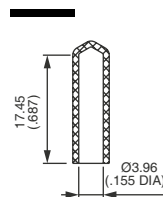
40

## CAPS FOR PCB PROCESSING

### Order separately

Provide additional protection during PCB processing. Supplied separately. For cap mounted on the switch, see special option 40.

Material : vinyl



U3502

# Mouser Electronics

Authorized Distributor

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## [Apem:](#)

[TP33W003050](#) [TP32P008000](#) [TP32P00850042](#) [TP32W003000](#) [TP32W003500](#) [TP32W003550](#) [TP32W008000](#)  
[TP32W008200](#) [TP32WW03300](#) [TP32WW08000](#) [TP32WW08500](#) [TP33P008000](#) [TP33P008500](#) [TP33P018000](#)  
[TP33W00850036](#) [TP33W013000](#) [TP33W083025](#) [TP33W088000](#) [TP33WW08000](#) [TP33WW08050](#)  
[TP33WW0850036](#) [TP33Y003000](#) [TP42P008000](#) [TP42W008000](#) [TP42WW08000](#) [TP32MW03000](#) [TP32MW08000](#)  
[TP32P003000](#) [TP32W003050](#) [TP32WS83500](#) [TP32WS83565](#) [TP32WW03050](#) [TP32Y003050](#) [TP33MW03000](#)  
[TP33P003000](#) [TP33P003500](#) [TP33W003000](#) [TP33W008000](#) [TP33W008250](#) [TP33WS83500](#) [TP33WS83565](#)  
[TP33WW03000](#) [TP33WW03050](#) [TP33Y003050](#) [TP33Y008000](#) [TP42MW03000](#) [TP42P003000](#) [TP42W003050](#)  
[TP42WW03050](#) [TP42Y003050](#) [TP43P003000](#) [TP43W003050](#) [TP43WW03050](#) [TP43WW03550](#) [TP43Y003050](#)  
[TP33W018000](#)