

**Product Range**



**Pushbutton Switches**

- **Tiny Push Buttons:** TP, TSP Series
- **Panel Mount Push Buttons:** MSP, MPA Series
- **Higher Current Push Buttons:** MP Green-, A 60 Series

**Main features:**

- Up to 4 poles
- N/O or C/O contact configuration
- Gold or silver contacts
- Sealed or unsealed versions
- Right angle versions
- Single or dual actuator
- Round or rectangular actuator buttons
- Flush actuator versions
- Snap action versions
- Bushing versions with and without thread
- Hermetically sealed versions
- THT or wire lug terminals
- Panel mounting versions
- Accessories: boot seals, caps, ...



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**Product Range** (Continued)

Pushbutton Switches



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**MPA103 Series, Panel Mount** .....page D22



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**MPS Series, Snap Action** .....page D25



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**BP Series Panel Seals** .....page D39

**TSP Series, Tiny, Process Sealed**

**Features**

- Washable process sealed construction (internal "O" ring)
- Compact design



**Typical performance characteristics**

Contact configuration . . . . . SPST SPDT  
 Contact timing . . . . . Break-Before-Make  
 Contact rating max. . . . . gold 0.4VA @20VAC/DC  
 Electrical life . . . . . function C: 80,000 cycles  
 . . . . . function F: 60,000 cycles  
 Contact resistance, initial . . . . . max.20 mOhms  
 Insulation resistance . . . . . 1,000 MOhms @ 500VDC  
 Dielectric strength . . . . . function C: 1,000 Volts rms @ sea level  
 . . . . . function F: 500 Volts rms @ sea level  
 Actuator travel . . . . . momentary .035" (0.89)

**Environmental specification**

Operating temperature . . . . . -30°C to +85°C  
 Storage temperature . . . . . -55°C to +85°C  
 Solder heat resistance . . . . . wave solder capable to 265° C  
 Seal . . . . . process sealed with internal "O" ring

**Material specifications**

Contacts . . . . . copper or brass, gold over nickel finish  
 Actuator . . . . . thermoplastic  
 Terminals . . . . . brass with gold over nickel in contact area  
 . . . . . tin over nickel in solder area  
 Case . . . . . thermoplastic (LCP)  
 Spring . . . . . music wire zinc plated  
 Support bracket . . . . . steel tin plated  
 Seal . . . . . "O" ring rubber  
 RoHS Directive 2002/95/EC . . . . . compliant

|                        |   |  |              |                                 |  |                        |  |  |  |  |  |
|------------------------|---|--|--------------|---------------------------------|--|------------------------|--|--|--|--|--|
| <b>Product key</b>     | Typical product key <b>TSP D 1 1 C G RA 0 04</b>  |  |              |                                 |  |                        |  |  |  |  |  |
| <b>Type</b>            | <b>TSP</b> Tiny pushbutton, process sealed        |  |              |                                 |  |                        |  |  |  |  |  |
| <b>Bushing</b>         | <b>D</b> plain, not threaded                      |  |              |                                 |  |                        |  |  |  |  |  |
| <b>Actuator</b>        | <b>blank</b> length .200 (5.08)<br><b>F</b> flush |  |              |                                 |  |                        |  |  |  |  |  |
| <b>Number of Poles</b> | <b>1</b> single pole                              |  |              |                                 |  |                        |  |  |  |  |  |
| <b>Contact rating</b>  | <b>1</b> 0.4VA Gold                               |  |              |                                 |  |                        |  |  |  |  |  |
| <b>Function</b>        | <b>C</b> SPST, Off (On)                           |  |              |                                 |  | <b>F</b> SPDT, On (On) |  |  |  |  |  |
| <b>Plating</b>         | <b>G</b> Gold                                     |  |              |                                 |  |                        |  |  |  |  |  |
| <b>Terminals</b>       | <b>PC</b> printed circuit board                   |  |              | <b>RA</b> right angle           |  |                        |  |  |  |  |  |
|                        | <b>PCV</b> printed circuit board, w bracket       |  |              | <b>VRA</b> vertical right angle |  |                        |  |  |  |  |  |
|                        |   |  |              | <b>WW</b> wire wrap             |  |                        |  |  |  |  |  |
| <b>Button Color</b>    | <b>0</b> black                                    |  | <b>2</b> red |                                 |  |                        |  |  |  |  |  |
| <b>Material</b>        | <b>04</b> RoHS compliant                          |  |              |                                 |  |                        |  |  |  |  |  |

**TSP Series, Tiny, Process Sealed (Continued)**

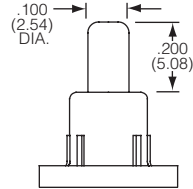
**Actuator**



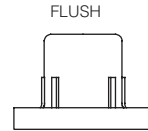
blank, F

**standard actuator, flush actuator**

blank, standard actuator



F, flush actuator



**Terminations**

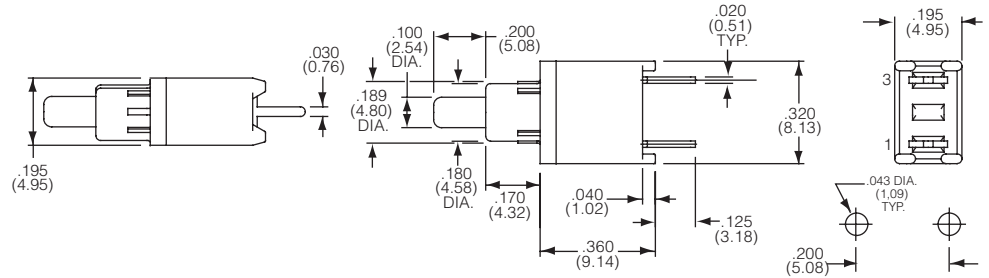


**PC**

**printed circuit board**

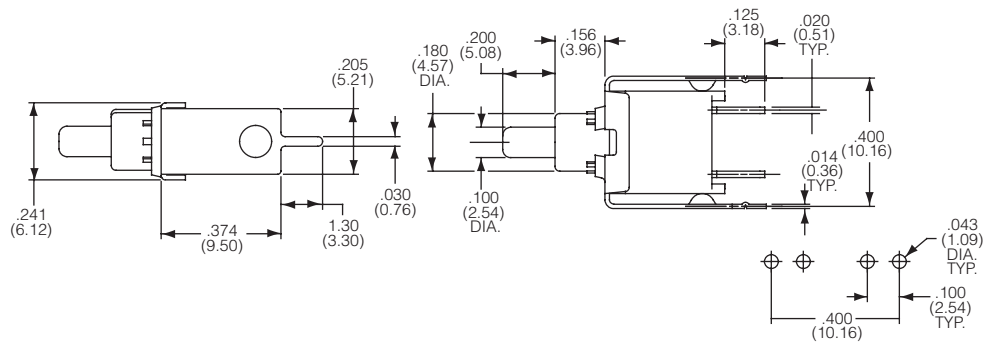


TSPD11CPC004



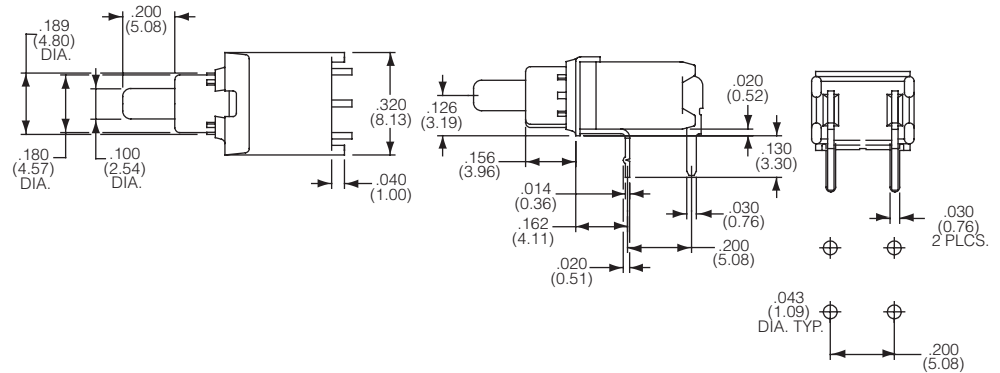
**PCV**

**printed circuit board with vertical bracket**



**RA**

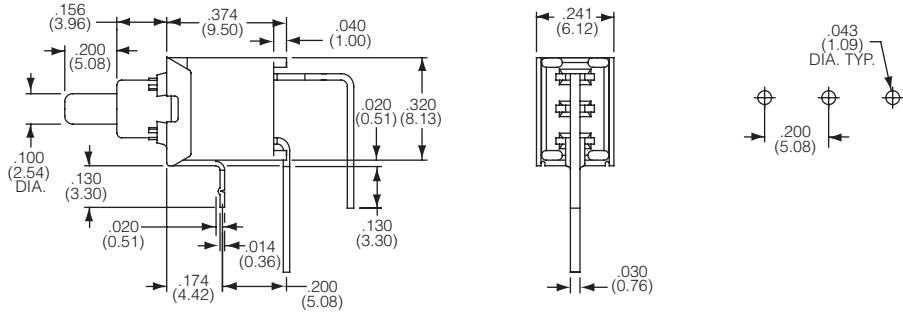
**right angle**



**TSP Series, Tiny, Process Sealed (Continued)**

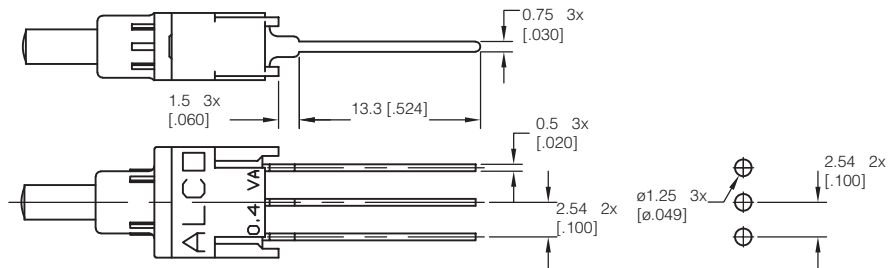
**VRA**

**vertical right angle**



**WW**

**wire wrap**



| Product key     | Bushing  | Act.   | Poles | Rating | Function | Conn. | Conn. | Plating | Terminals     | Btn.  | Material  | Part Number |
|-----------------|----------|--------|-------|--------|----------|-------|-------|---------|---------------|-------|-----------|-------------|
| TSPD11CGPC004   | plain,   | length | 1     | 0.4VA  | Off (On) | Off   | 1-3   | Gold    | pcb           | black | RoHS      | 1571990-1   |
| TSPD11CGPC204   | not      | .200   |       |        |          |       |       |         |               | red   | compliant | 1571990-2   |
| TSPD11CGPCV004  | threaded | (5.08) |       |        |          |       |       |         |               | black |           | 1571990-3   |
| TSPD11CGRA004   |          |        |       |        |          |       |       |         | right angle   |       |           | 1571990-4   |
| TSPD11CGRA204   |          |        |       |        |          |       |       |         |               | red   |           | 1571990-5   |
| TSPD11CGVRA004  |          |        |       |        |          |       |       |         | vertical r.a. | black |           | 1-1571990-3 |
| TSPD11CGWW004   |          |        |       |        |          |       |       |         | wire wrap     |       |           | 1-1571990-4 |
| TSPD11FGPC004   |          |        |       |        | On (On)  | 1-2   | 2-3   |         | pcb           |       |           | 1-1571990-5 |
| TSPD11FGPCV004  |          |        |       |        |          |       |       |         | pcb w brack.  |       |           | 1-1571990-6 |
| TSPD11FGRA004   |          |        |       |        |          |       |       |         | right angle   |       |           | 1-1571990-7 |
| TSPD11FGVRA004  |          |        |       |        |          |       |       |         | vertical r.a. |       |           | 2-1571990-1 |
| TSPDF11CGPC004  |          | flush  |       |        | Off (On) | Off   | 1-3   |         | pcb           |       |           | 2-1571990-2 |
| TSPDF11CGRA004  |          |        |       |        |          |       |       |         | right angle   |       |           | 2-1571990-5 |
| TSPDF11CGVRA004 |          |        |       |        |          |       |       |         | vertical r.a. |       |           | 2-1571990-7 |
| TSPDF11FGPC004  |          |        |       |        | On (On)  | 1-2   | 2-3   |         | pcb           |       |           | 2-1571990-8 |
| TSPDF11FGRA004  |          |        |       |        |          |       |       |         | right angle   |       |           | 2-1571990-9 |

**TP Series, Tiny**

**Features**

- Compact design
- Round or rectangular actuator buttons.
- Vertical or right angle versions



Pushbutton Switches

**Typical performance characteristics**

Contact configuration . . . . . SPST, SPDT, DPDT  
 Contact timing . . . . . Break-Before-Make  
 Contact rating max. . . . . gold: 0.4VA @20VDC or peak AC  
 . . . . . silver: 1A @ 125VAC or 28 VDC resistive  
 Electrical life . . . . . 1 pole2 . . .2 pole  
 . . . . . gold . . . . . 100,000 . . .80,000 cycles  
 . . . . . silver . . . . . 60,000 . . .50,000 cycles  
 Contact resistance, initial . . . . . max.20 mOhms  
 Insulation resistance . . . . . 1,000 MOhms @ 500VDC  
 Dielectric strength . . . . . 1,000 Volts rms @ sea level  
 Actuation force . . . . . 0.5 to 4N (50-400gf)  
 Actuator travel . . . . . momentary .030" (.762)

**Environmental specification**

Operating temperature . . . . . -30°C to +65°C  
 Storage temperature . . . . . -30°C to +65°C  
 Solder heat resistance . . . . . wave solder capable to 265° C

**Material specifications**

Contacts . . . . . copper or brass, gold over nickel finish or silver  
 . . . . . clad with silver over nickel finish  
 Actuator . . . . . thermoplastic  
 Terminals . . . . . brass with gold over nickel or silver over nickel  
 Case . . . . . thermoplastic  
 Frame and support bracket . . . . . steel with tin over copper finish  
 RoHS Directive 2002/95/EC . . . . . compliant

|                        |   |          |  |              |          |  |               |           |          |           |  |
|------------------------|---|----------|--|--------------|----------|--|---------------|-----------|----------|-----------|--|
| <b>Product key</b>     | Typical product key   |          |  |              |          |  |               |           |          |           |  |
|                        | <b>TP</b>   | <b>A</b> |  | <b>1</b>     | <b>1</b> | <b>C</b>   | <b>G</b>      | <b>PC</b> | <b>0</b> | <b>04</b> |  |
| <b>Type</b>            | Tiny pushbutton series  |          |  |              |          |  |               |           |          |           |  |
| <b>Bushing</b>         |   |          |  |              |          |  |               |           |          |           |  |
| <b>blank</b>           | square, no bushing  |          |  |              |          |  |               |           |          |           |  |
| <b>A</b>               | round, no bushing   |          |  |              |          |  |               |           |          |           |  |
| <b>B</b>               | round .188 (4.78) dia. bushing not threaded                         |          |  |              |          |  |               |           |          |           |  |
| <b>C</b>               | round 10/48 UNS 2B thread   |          |  |              |          |  |               |           |          |           |  |
| <b>D</b>               | .250" (6.35) dia. bushing, not threaded                             |          |  |              |          |  |               |           |          |           |  |
| <b>F</b>               | round 1/4-40 UNS 2B thread  |          |  |              |          |  |               |           |          |           |  |
| <b>Actuator</b>        |   |          |  |              |          |  |               |           |          |           |  |
| <b>blank</b>           | standard  |          |  |              |          |  |               |           |          |           |  |
| <b>F</b>               | flush (available with B and C bushings only)                        |          |  |              |          |  |               |           |          |           |  |
| <b>Number of Poles</b> |   |          |  |              |          |  |               |           |          |           |  |
| <b>1</b>               | single pole   |          |  |              |          | <b>2</b> double pole   |               |           |          |           |  |
| <b>Contact rating</b>  |   |          |  |              |          |  |               |           |          |           |  |
| <b>1</b>               | 0.4VA Gold  |          |  |              |          |  |               |           |          |           |  |
| <b>2</b>               | 1.0 A Silver (Silver available only in wire lug and PC termination) |          |  |              |          |  |               |           |          |           |  |
| <b>Function</b>        |   |          |  |              |          |  |               |           |          |           |  |
| <b>single pole</b>     |   |          |  |              |          | <b>double pole</b>   |               |           |          |           |  |
| <b>C</b>               | single throw, momentary   |          |  |              |          | <b>M</b> single throw, momentary   |               |           |          |           |  |
| <b>F</b>               | double throw, momentary   |          |  |              |          | <b>R</b> double throw, momentary   |               |           |          |           |  |
| <b>CC</b>              | dual function C - 2 x single throw, momentary                       |          |  |              |          |  |               |           |          |           |  |
| <b>FF</b>              | dual function F - 2 x double throw, momentary                       |          |  |              |          |  |               |           |          |           |  |
| <b>Plating</b>         |   |          |  |              |          |  |               |           |          |           |  |
| <b>G</b>               | Gold  |          |  |              |          | <b>blank</b> Silver (Silver available only in wire lug and PC termination) |               |           |          |           |  |
| <b>Terminals</b>       |   |          |  |              |          |  |               |           |          |           |  |
| <b>blank</b>           | wire lug  |          |  |              |          |  |               |           |          |           |  |
| <b>PC</b>              | printed circuit board   |          |  |              |          | <b>RA</b> right angle  |               |           |          |           |  |
|                        |   |          |  |              |          | <b>VRA</b> vertical, right angle (available only in single pole)           |               |           |          |           |  |
| <b>Button Color</b>    |   |          |  |              |          |  |               |           |          |           |  |
| <b>0</b>               | black   |          |  | <b>2</b> red |          |  | <b>6</b> blue |           |          |           |  |
| <b>Material</b>        |   |          |  |              |          |  |               |           |          |           |  |
| <b>04</b>              | RoHS compliant  |          |  |              |          |  |               |           |          |           |  |

**TP Series, Tiny (Continued)**

**Bushing**

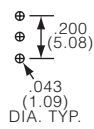
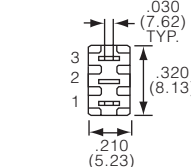
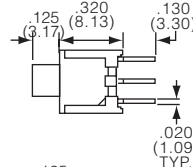
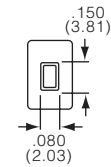


**blank, square, no bushing**

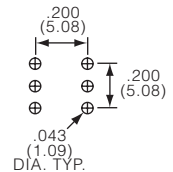
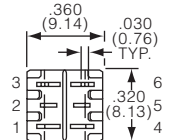
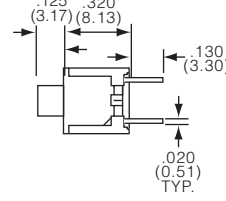
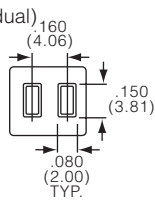
**printed circuit board**



Single pole



2 x Single pole (dual)

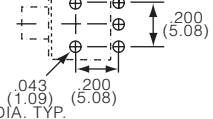
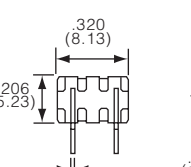
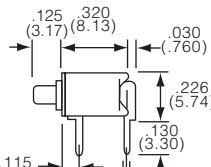
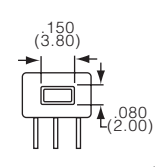


Note: no center terminal on 'C' and 'M' function switch

**right angle**



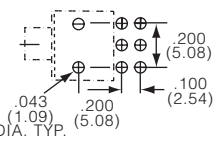
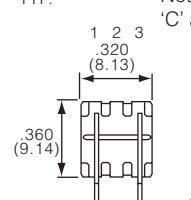
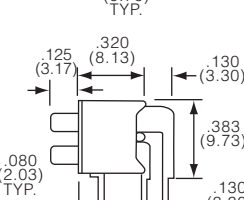
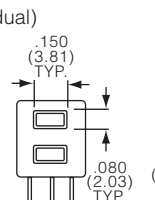
Single pole



Note: no center terminal on 'C' and 'M' function switch



2 x Single pole (dual)

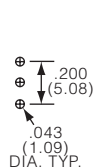
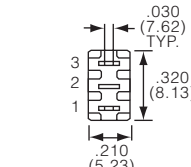
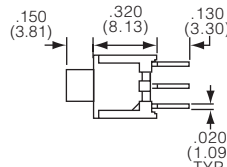
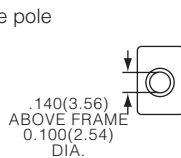


**A, Round, no bushing**

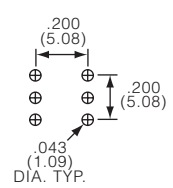
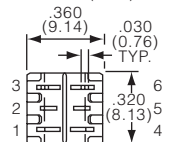
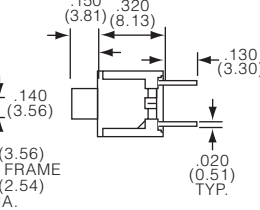
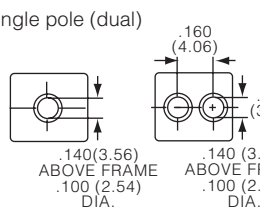
**printed circuit board**



Single pole



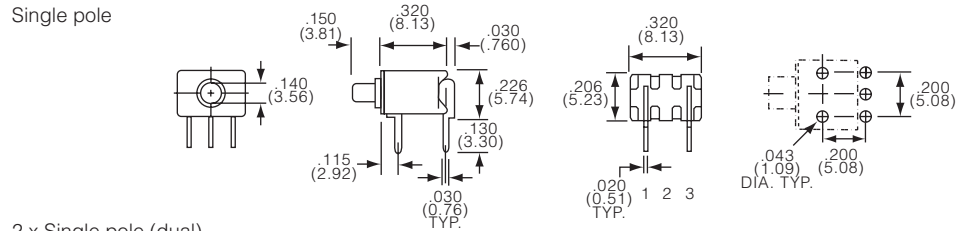
2 x Single pole (dual)



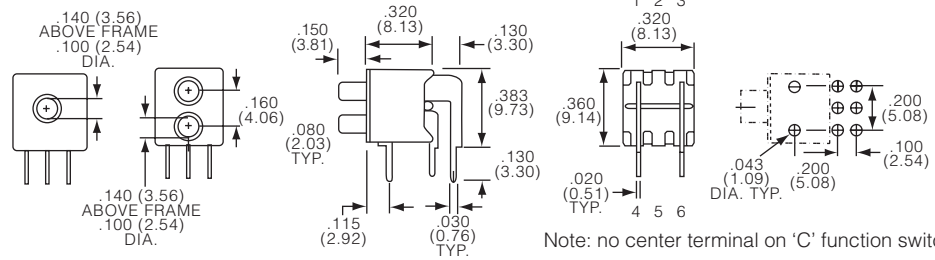
Note: no center terminal on 'C' function switch

**TP Series, Tiny (Continued)**

**right angle**

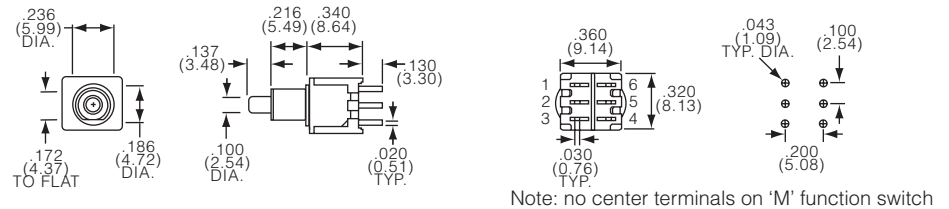
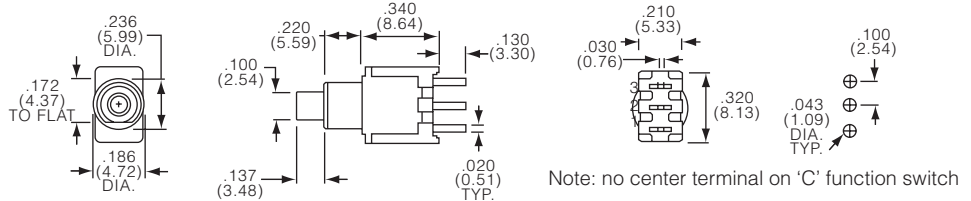


2 x Single pole (dual)

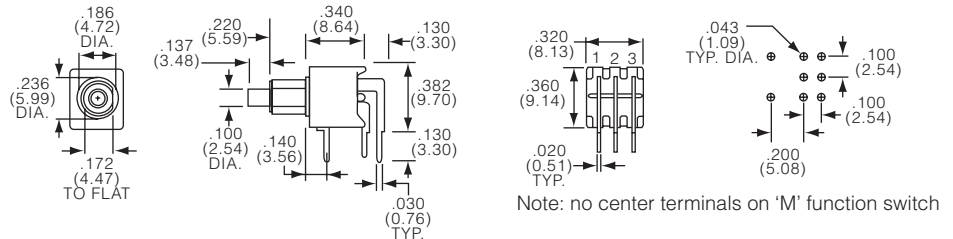
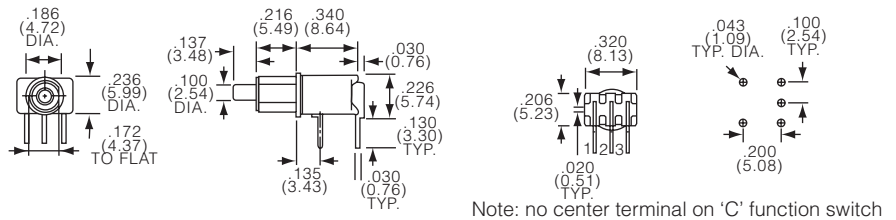


**B, Round .188 (4.78) dia. bushing not threaded**

**printed circuit board**



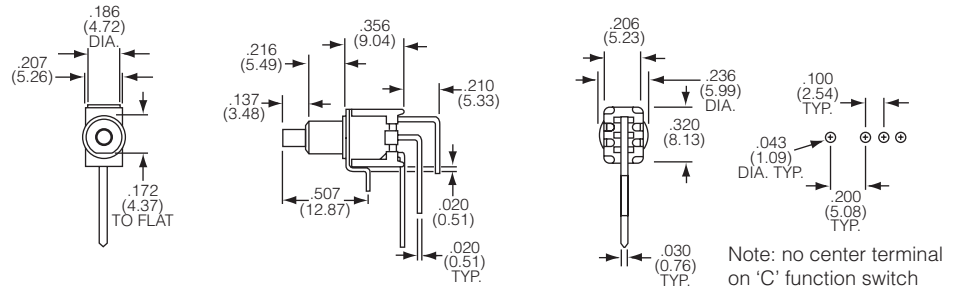
**right angle**



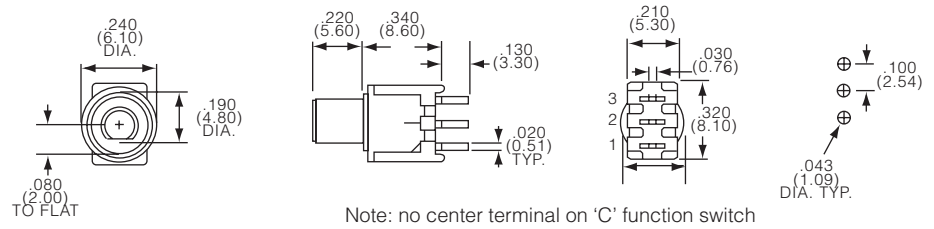


**TP Series, Tiny (Continued)**

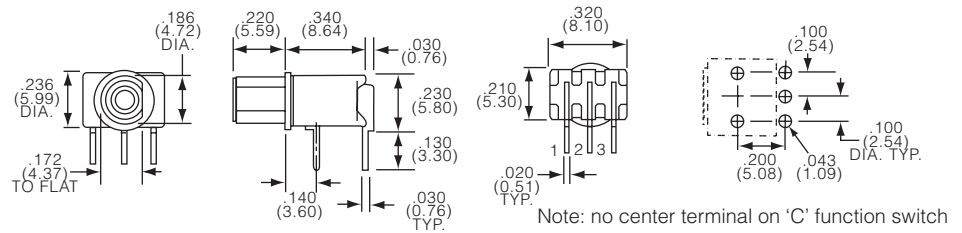
**vertical right angle**



**printed circuit board, flush actuator**

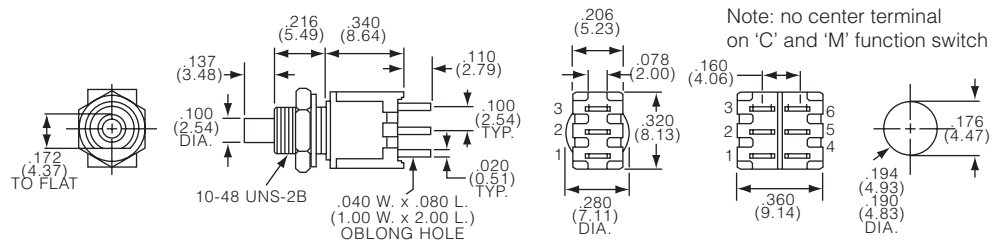


**right angle, flush actuator**

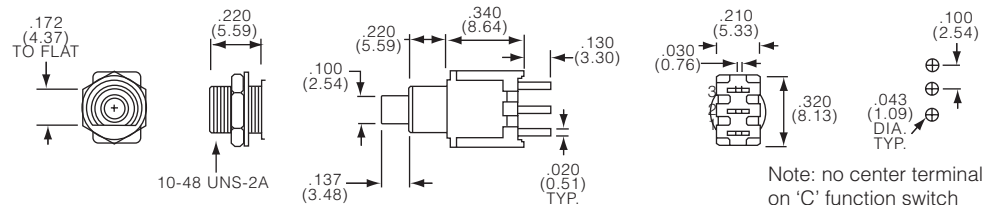


**C, Round 10/48 UNS 2B thread**

**wire lug**



**printed circuit board**

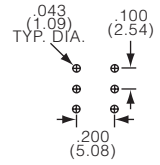
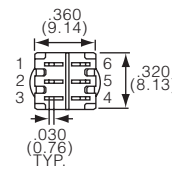
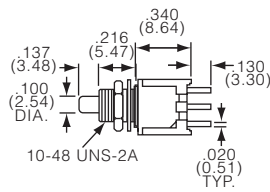


Pushbutton Switches

**TP Series, Tiny (Continued)**



TPC21RGPC

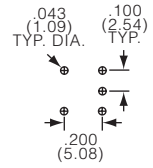
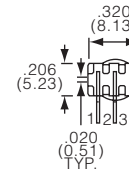
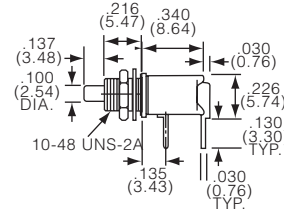


Note: no center terminals on 'M' function switch

**right angle**



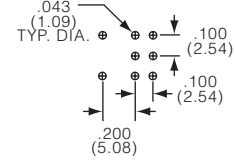
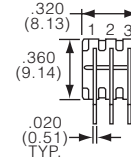
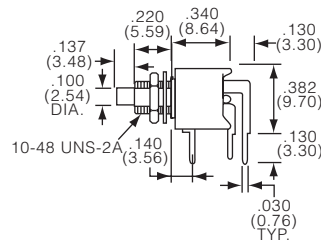
TPC11CGRA



Note: no center terminal on 'C' function switch

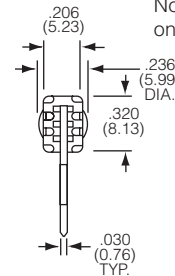
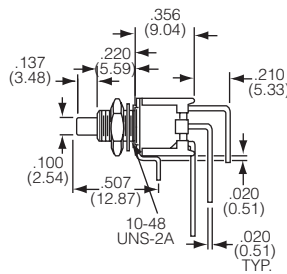
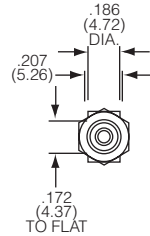


TPC21MGRA

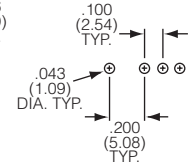


Note: no center terminals on 'M' function switch

**vertical right angle**



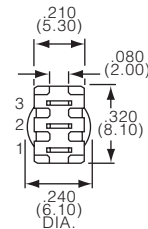
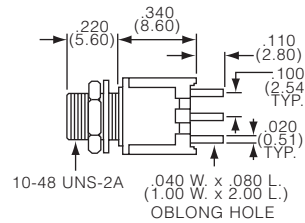
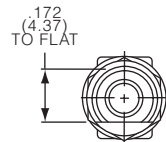
Note: no center terminal on 'C' function switch



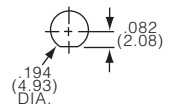
**wire lug, flush actuator**



TPCF13C



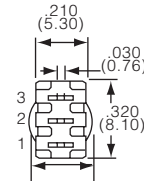
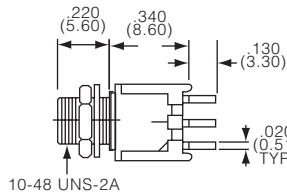
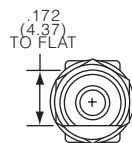
Note: no center terminal on 'C' function switch



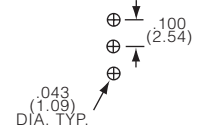
**printed circuit board, flush actuator**



TPCF11CGPC

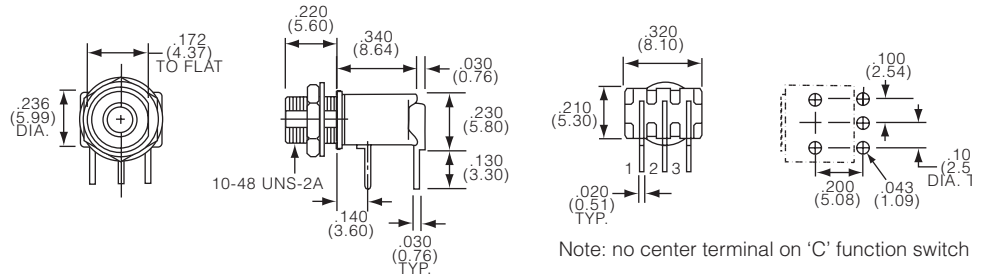


Note: no center terminal on 'C' function switch



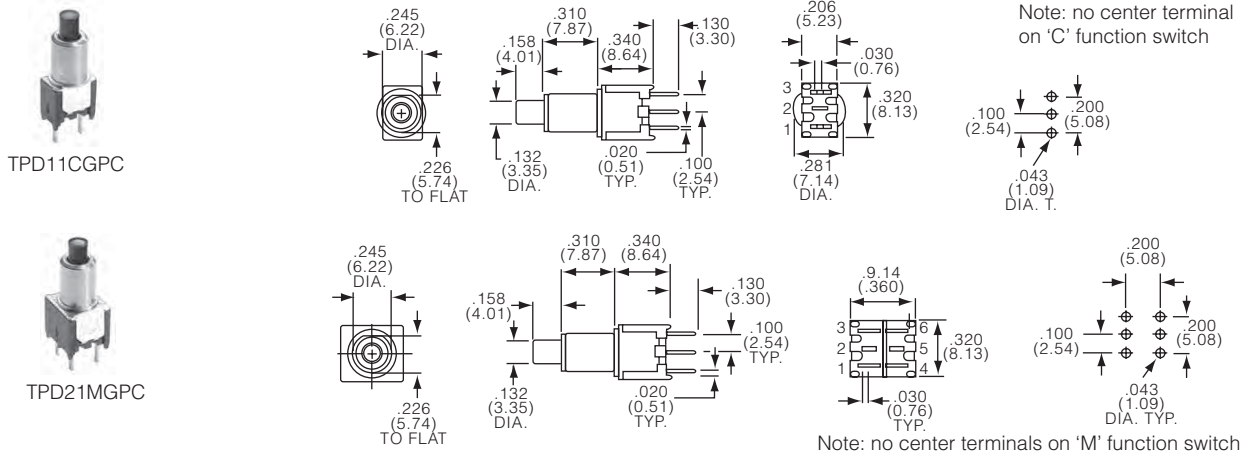
**TP Series, Tiny (Continued)**

**right angle, flush actuator**

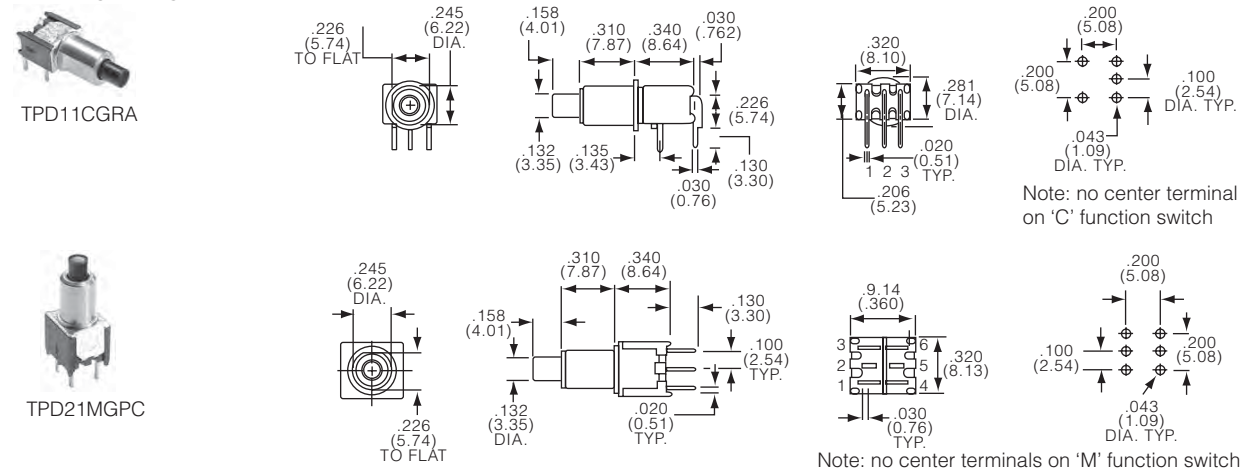


**D, .250" (6.35) dia. bushing, not threaded**

**printed circuit board**



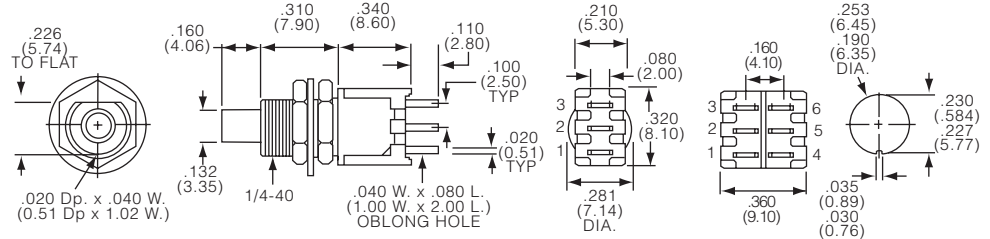
**right angle**



**TP Series, Tiny (Continued)**

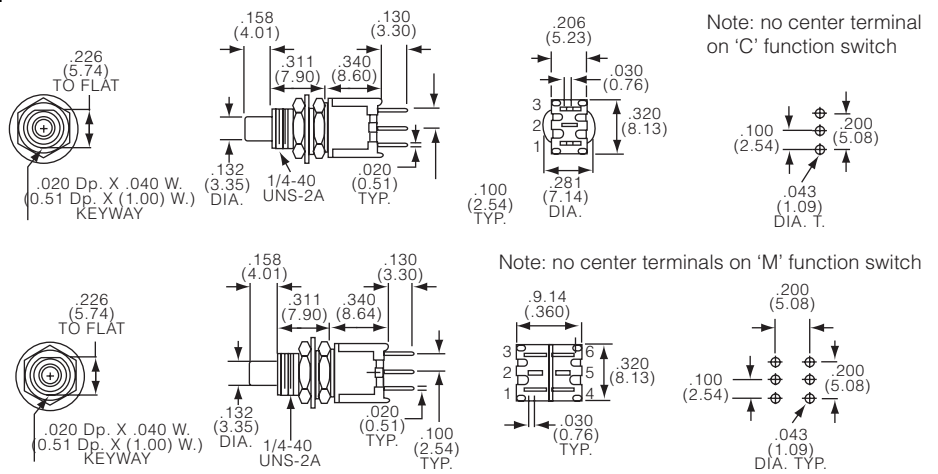
**F, Round 1/4-40 UNS 2B thread**

**wire lug**



Note: no center terminal on 'C' and 'M' function switch

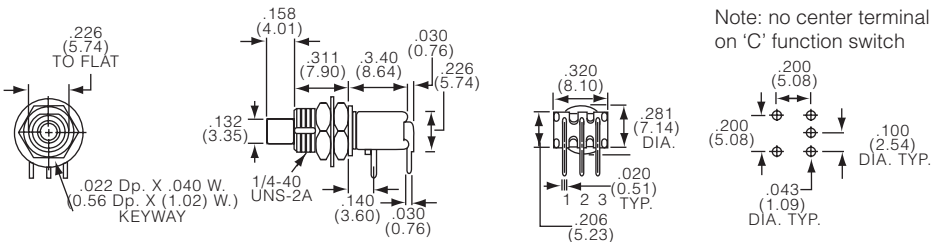
**printed circuit board**



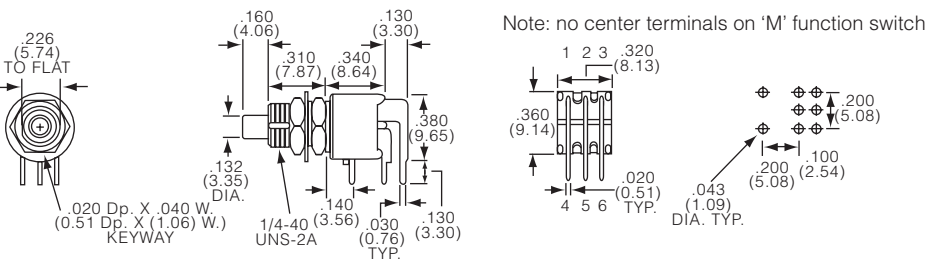
Note: no center terminal on 'C' function switch

Note: no center terminals on 'M' function switch

**right angle**





Note: no center terminal on 'C' function switch



Note: no center terminals on 'M' function switch



**TP Series, Tiny (Continued)**

| Product key         | Bushing     | Act.  | Poles   | Rating | Function |  |  | Plating | Terminals     | Btn.  | Material  | Part Number        |
|---------------------|-------------|-------|---------|--------|----------|---|---|---------|---------------|-------|-----------|--------------------|
| TP11CGPC004         | square      | n/a   | 1       | 0.4VA  | Off-(On) | Off   | 1-3   | Gold    | pcb           | black | RoHS      | 1825095-1          |
| TP11CGPC204         | no bushing  |       |         |        |          |   |   |         |               | red   | compliant | 1825095-2          |
| TP11CGRA004         |             |       |         |        |          |   |   |         | right angle   | black |           | 1825095-3          |
| TP11CGRA204         |             |       |         |        |          |   |   |         |               | red   |           | 1825095-4          |
| TP11CGRA604         |             |       |         |        |          |   |   |         |               | blue  |           | 1825095-5          |
| TP11FGPC004         |             |       |         |        | On-(On)  | 1-2   | 2-3   |         | pcb           | black |           | 1825095-6          |
| TP11FGPC204         |             |       |         |        |          |   |   |         |               | red   |           | 1825095-7          |
| TP11FGRA004         |             |       |         |        |          |   |   |         | right angle   | black |           | 1825095-8          |
| TP11FGRA204         |             |       |         |        |          |   |   |         |               | red   |           | 1825095-9          |
| TP11FGRA604         |             |       |         |        |          |   |   |         |               | blue  |           | 1-1825095-0        |
| TP21CCGRA004        |             |       | 2 (1+1) |        | Off-(On) | Off   | 1-3   |         |               | black |           | 1-1825095-1        |
| TP21CCGRA204        |             |       |         |        |          |   |   |         |               | red   |           | 1-1825095-2        |
| TP21FFGRA004        |             |       |         |        | On-(On)  | 1-2   | 2-3   |         |               | black |           | 1-1825095-3        |
| <b>TPA11CGPC004</b> | round       |       | 1       |        | Off-(On) | Off   | 1-3   |         | pcb           |       |           | <b>1825096-1</b>   |
| TPA11CGPC204        | no bushing  |       |         |        |          |   |   |         |               | red   |           | 1825096-2          |
| TPA11CGPC604        |             |       |         |        |          |   |   |         |               | blue  |           | 1825096-3          |
| <b>TPA11CGRA004</b> |             |       |         |        |          |   |   |         | right angle   | black |           | <b>1825096-4</b>   |
| TPA11CGRA204        |             |       |         |        |          |   |   |         |               | red   |           | 1825096-5          |
| TPA11CGRA604        |             |       |         |        |          |   |   |         |               | blue  |           | 1825096-6          |
| <b>TPA11FGPC004</b> |             |       |         |        | On-(On)  | 1-2   | 2-3   |         | pcb           | black |           | <b>1825096-7</b>   |
| TPA11FGPC204        |             |       |         |        |          |   |   |         |               | red   |           | 1825096-8          |
| TPA11FGPC604        |             |       |         |        |          |   |   |         |               | blue  |           | 1825096-9          |
| <b>TPA11FGRA004</b> |             |       |         |        |          |   |   |         | right angle   | black |           | <b>1-1825096-0</b> |
| TPA11FGRA204        |             |       |         |        |          |   |   |         |               | red   |           | 1-1825096-1        |
| TPA11FGRA604        |             |       |         |        |          |   |   |         |               | blue  |           | 1-1825096-2        |
| TPA21CCGPC004       |             |       | 2 (1+1) |        | Off-(On) | Off   | 1-3, 4-6  |         | pcb           | black |           | 1-1825096-3        |
| TPA21CCGRA004       |             |       |         |        |          |   |   |         | right angle   |       |           | 1-1825096-4        |
| TPA21FFGRA204       |             |       |         |        | On-(On)  | 1-2, 4-5  | 2-3, 5-6  |         |               | red   |           | 1-1825096-5        |
| TPA21MGRA004        |             |       | 2       |        | Off-(On) | Off   | 1-3, 4-6  |         |               | black |           | 1-1825096-6        |
| <b>TPB11CGPC004</b> | round       | std   | 1       |        |          |   | 1-3   |         | pcb           |       |           | <b>1825097-1</b>   |
| TPB11CGPC204        | .188 (4.78) |       |         |        |          |   |   |         |               | red   |           | 1825097-2          |
| <b>TPB11CGRA004</b> | dia         |       |         |        |          |   |   |         | right angle   | black |           | <b>1825097-6</b>   |
| TPB11CGRA204        | bushing,    |       |         |        |          |   |   |         |               | red   |           | 1825097-4          |
| TPB11CGVRA004       | not         |       |         |        |          |   |   |         | vertical r.a. | black |           | 1825097-8          |
| <b>TPB11FGPC004</b> | threaded    |       |         |        | On-(On)  | 1-2   | 2-3   |         | pcb           |       |           | <b>1825097-9</b>   |
| <b>TPB11FGRA004</b> |             |       |         |        |          |   |   |         | right angle   |       |           | <b>1-1825097-1</b> |
| TPB11FGRA204        |             |       |         |        |          |   |   |         |               | red   |           | 1-1825097-2        |
| TPB11FGRA604        |             |       |         |        |          |   |   |         |               | blue  |           | 1-1825097-3        |
| TPB11FGVRA004       |             |       |         |        |          |   |   |         | vertical r.a. | black |           | 1-1825097-6        |
| <b>TPB21MGPC004</b> |             |       | 2       |        | Off-(On) | Off   | 1-3, 4-6  |         | pcb           |       |           | <b>1-1825097-7</b> |
| TPB21MGPC204        |             |       |         |        |          |   |   |         |               | red   |           | 1-1825097-8        |
| TPB21MGRA004        |             |       |         |        |          |   |   |         | right angle   | black |           | 2-1825097-8        |
| TPB21RGRA004        |             |       |         |        | On-(On)  | 1-2, 4-5  | 2-3, 5-6  |         |               |       |           | 1-1825097-9        |
| TPB21RGRA0EDC04     |             |       |         |        |          |   |   |         |               |       |           | 1825112-1          |
| TPBF11CGRA004       |             | flush | 1       |        | Off-(On) | Off   | 1-3   |         |               |       |           | 2-1825097-1        |
| TPBF11FGRA004       |             |       |         |        | On-(On)  | 1-2   | 2-3   |         |               |       |           | 2-1825097-4        |
| TPBF11FGRA204       |             |       |         |        |          |   |   |         |               | red   |           | 2-1825097-5        |

Preferred parts in bold print

**TP Series, Tiny (Continued)**

Pushbutton Switches

| Product key   | Bushing     | Act.  | Poles | Rating | Function |  |  | Plating | Terminals     | Btn.  | Material       | Part Number |
|---------------|-------------|-------|-------|--------|----------|---|---|---------|---------------|-------|----------------|-------------|
| TPC11CGPC004  | round       | std   | 1     | 0.4VA  | Off-(On) | Off   | 1-3   | Gold    | pcb           | black | RoHS compliant | 1825098-1   |
| TPC11CGRA004  | 10/48       |       |       |        |          |   |   |         | right angle   |       |                | 1825098-2   |
| TPC11CGRA204  | UNS 2B      |       |       |        |          |   |   |         |               | red   |                | 1825098-3   |
| TPC11CGVRA004 | thread      |       |       |        |          |   |   |         | vertical r.a. | black |                | 1825098-4   |
| TPC11FGPC004  |             |       |       |        | On-(On)  | 1-2   | 2-3   |         | pcb           |       |                | 1825098-5   |
| TPC11FGRA004  |             |       |       |        |          |   |   |         | right angle   |       |                | 1825098-6   |
| TPC11FGVRA004 |             |       |       |        |          |   |   |         | vertical r.a. |       |                | 1825098-7   |
| TPC11FGVRA204 |             |       |       |        |          |   |   |         |               | red   |                | 1825098-8   |
| TPC13C004     |             |       |       | 1.0 A  | Off-(On) | Off   | 1-3   | Silver  | wire lug      | black |                | 1825098-9   |
| TPC13C204     |             |       |       |        |          |   |   |         |               | red   |                | 1-1825098-0 |
| TPC13CPC004   |             |       |       |        |          |   |   |         | pcb           | black |                | 1-1825098-1 |
| TPC13F004     |             |       |       |        | On-(On)  | 1-2   | 2-3   |         | wire lug      |       |                | 1-1825098-2 |
| TPC21MGRA204  |             |       | 2     | 0.4VA  | Off-(On) | Off   | 1-3, 4-6  | Gold    | right angle   | red   |                | 1-1825098-3 |
| TPC21RGPC004  |             |       |       |        | On-(On)  | 1-2, 4-5  | 2-3, 5-6  |         | pcb           | black |                | 1-1825098-4 |
| TPC23M004     |             |       |       | 1.0 A  | Off-(On) | Off   | 1-3, 4-6  | Silver  | wire lug      |       |                | 1-1825098-5 |
| TPC23R204     |             |       |       |        | On-(On)  | 1-2, 4-5  | 2-3, 5-6  |         |               | red   |                | 1-1825098-6 |
| TPCF11CGPC004 |             | flush | 1     | 0.4VA  | Off-(On) | Off   | 1-3   | Gold    | pcb           | black |                | 1-1825098-7 |
| TPCF11CGRA004 |             |       |       |        |          |   |   |         | right angle   |       |                | 1-1825098-8 |
| TPCF11FGRA004 |             |       |       |        | On-(On)  | 1-2   | 2-3   |         |               |       |                | 1-1825098-9 |
| TPCF13C004    |             |       |       | 1.0 A  | Off-(On) | Off   | 1-3   | Silver  | wire lug      |       |                | 2-1825098-0 |
| TPCF13F004    |             |       |       |        | On-(On)  | 1-2   | 2-3   |         |               |       |                | 2-1825098-1 |
| TPD11CGPC004  | .259 (6.35) | n/a   |       | 0.4VA  | Off-(On) | Off   | 1-3   | Gold    | pcb           |       |                | 1825099-1   |
| TPD11CGPC204  | dia         |       |       |        |          |   |   |         |               | red   |                | 1825099-2   |
| TPD11CGRA004  | bushing,    |       |       |        |          |   |   |         | right angle   | black |                | 1825099-3   |
| TPD11CGRA204  | not         |       |       |        |          |   |   |         |               | red   |                | 1825099-4   |
| TPD11CGRA604  | threaded    |       |       |        |          |   |   |         |               | blue  |                | 1825099-5   |
| TPD11FGPC004  |             |       |       |        | On-(On)  | 1-2   | 2-3   |         | pcb           | black |                | 1825099-6   |
| TPD11FGRA004  |             |       |       |        |          |   |   |         | right angle   |       |                | 1825099-7   |
| TPD11FGRA204  |             |       |       |        |          |   |   |         |               | red   |                | 1825099-8   |
| TPD21MGRA004  |             |       | 2     |        | Off-(On) | Off   | 1-3, 4-6  |         |               | black |                | 1825099-9   |
| TPD21RGPC004  |             |       |       |        | On-(On)  | 1-2, 4-5  | 2-3, 5-6  |         | pcb           |       |                | 1-1825099-0 |
| TPF11CGPC004  | round       |       | 1     |        | Off-(On) | Off   | 1-3   |         |               |       |                | 1825100-1   |
| TPF11CGPC204  | 1/4-40      |       |       |        |          |   |   |         |               | red   |                | 1825100-2   |
| TPF11CGRA004  | UNS 2B      |       |       |        |          |   |   |         | right angle   | black |                | 1825100-4   |
| TPF11CGRA204  | thread      |       |       |        |          |   |   |         |               | red   |                | 1825100-5   |
| TPF11CGRA604  |             |       |       |        |          |   |   |         |               | blue  |                | 1825100-6   |
| TPF11FGPC004  |             |       |       |        | On-(On)  | 1-2   | 2-3   |         | pcb           | black |                | 1825100-7   |
| TPF11FGPC204  |             |       |       |        |          |   |   |         |               | red   |                | 1825100-8   |
| TPF11FGPC604  |             |       |       |        |          |   |   |         |               | blue  |                | 1825100-9   |
| TPF11FGRA004  |             |       |       |        |          |   |   |         | right angle   | black |                | 1-1825100-1 |
| TPF13C004     |             |       |       | 1.0 A  | Off-(On) | Off   | 1-3   | Silver  | wire lug      |       |                | 1-1825100-2 |
| TPF13C204     |             |       |       |        |          |   |   |         |               | red   |                | 1-1825100-3 |
| TPF13F204     |             |       |       |        | On-(On)  | 1-2   | 2-3   |         |               |       |                | 1-1825100-4 |
| TPF13F604     |             |       |       |        |          |   |   |         |               | blue  |                | 1-1825100-5 |
| TPF21MGPC004  |             |       | 2     | 0.4VA  | Off-(On) | Off   | 1-3, 4-6  | Gold    | pcb           | black |                | 1-1825100-6 |
| TPF21RGRA004  |             |       |       |        | On-(On)  | 1-2, 4-5  | 2-3, 5-6  |         | right angle   |       |                | 1-1825100-7 |
| TPF23M004     |             |       |       | 1.0 A  | Off-(On) | Off   | 1-3, 4-6  | Silver  | wire lug      |       |                | 1-1825100-8 |

**TP\_ES Series, Tiny, Process Sealed**

**Features**

- Process and non-process sealed
- Compact design
- Vertical or right angle versions



**Typical performance characteristics**

Contact configuration . . . . . SPST, SPDT, DPDT  
 Contact timing . . . . . Break-Before-Make  
 Contact rating max. . . . . gold: 0.4VA @20VDC or peak AC  
 . . . . . silver: 1A @ 125VAC or 28 VDC resistive  
 Electrical life . . . . . 1 pole2 . . .2 pole  
 . . . . . gold . . . . . 100,000 . . .80,000 cycles  
 . . . . . silver . . . . . 60,000 . . .50,000 cycles  
 Contact resistance, initial. . . . . max.20 mOhms'  
 Insulation resistance . . . . . 1,000 MOhms @ 500VDC  
 Dielectric strength . . . . . 1,000 Volts rms @ sea level  
 Actuation force . . . . . 0.5 to 4N (50-400gf)  
 Actuator travel . . . . . momentary .030" (.762)

**Environmental specification**

Operating temperature . . . . . -30°C to +65°C  
 Storage temperature . . . . . -30°C to +65°C  
 Solder heat resistance . . . . . wave solder capable to 265° C  
 Seal . . . . . versions with process seal, with disposable cap

**Material specifications**

Contacts . . . . . copper or brass, gold over nickel finish or silver  
 . . . . . clad with silver over nickel finish  
 Actuator . . . . . thermoplastic  
 Terminals . . . . . brass with gold over nickel or silver over nickel  
 Case . . . . . thermoplastic  
 Frame and support bracket. . . . . steel with tin over copper finish  
 RoHS Directive 2002/95/EC . . . . . compliant

|                        |  |          |  |          |              |          |   |           |               |          |           |  |
|------------------------|--|----------|--|----------|--------------|----------|---|-----------|---------------|----------|-----------|--|
| <b>Product key</b>     | Typical product key                                      |          |  |          |              |          |   |           |               |          |           |  |
|                        | <b>TP</b>  | <b>B</b> |  | <b>1</b> | <b>1</b>     | <b>C</b> | <b>G</b>  | <b>RA</b> | <b>ES</b>     | <b>0</b> | <b>04</b> |  |
| <b>Type</b>            | Tiny pushbutton series                                   |          |  |          |              |          |   |           |               |          |           |  |
| <b>Bushing</b>         |  |          |  |          |              |          |   |           |               |          |           |  |
| <b>B</b>               | round .188 (4.78) dia. bushing not threaded              |          |  |          |              |          |   |           |               |          |           |  |
| <b>F</b>               | round 1/4-40 UNS 2B thread                               |          |  |          |              |          |   |           |               |          |           |  |
| <b>Actuator</b>        |  |          |  |          |              |          |   |           |               |          |           |  |
| <b>blank</b>           | standard   |          |  |          |              |          |   |           |               |          |           |  |
| <b>F</b>               | flush (available with B bushings only)                   |          |  |          |              |          |   |           |               |          |           |  |
| <b>Number of Poles</b> |  |          |  |          |              |          |   |           |               |          |           |  |
| <b>1</b>               | single pole  |          |  |          |              |          |   |           |               |          |           |  |
| <b>Contact rating</b>  |  |          |  |          |              |          |   |           |               |          |           |  |
| <b>1</b>               | 0.4VA Gold   |          |  |          |              |          |   |           |               |          |           |  |
| <b>Function</b>        |  |          |  |          |              |          |   |           |               |          |           |  |
| <b>C</b>               | single throw, momentary                                  |          |  |          |              |          |   |           |               |          |           |  |
| <b>F</b>               | double throw, momentary                                  |          |  |          |              |          |   |           |               |          |           |  |
| <b>Plating</b>         |  |          |  |          |              |          |   |           |               |          |           |  |
| <b>G</b>               | Gold   |          |  |          |              |          |   |           |               |          |           |  |
| <b>Terminals</b>       |  |          |  |          |              |          |   |           |               |          |           |  |
| <b>PC</b>              | printed circuit board                                    |          |  |          |              |          | <b>RA</b> right angle (right angle, ES available with B and C bushing only) |           |               |          |           |  |
| <b>Process Seal</b>    |  |          |  |          |              |          |   |           |               |          |           |  |
| <b>ES</b>              | process sealed with disposable boot, epoxied double case |          |  |          |              |          |   |           |               |          |           |  |
| <b>Button Color</b>    |  |          |  |          |              |          |   |           |               |          |           |  |
| <b>0</b>               | black  |          |  |          | <b>2</b> red |          |   |           | <b>6</b> blue |          |           |  |
| <b>Material</b>        |  |          |  |          |              |          |   |           |               |          |           |  |
| <b>04</b>              | RoHS compliant   |          |  |          |              |          |   |           |               |          |           |  |

**TP\_ES Series, Tiny, Process Sealed (Continued)**

**Bushing**

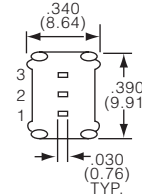
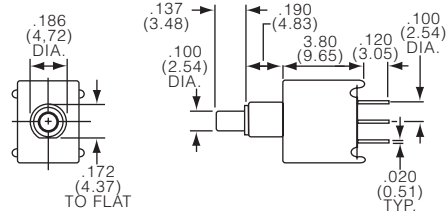


**B, Round .188 (4.78) dia. bushing not threaded**

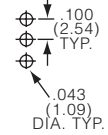
**printed circuit board**



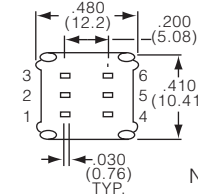
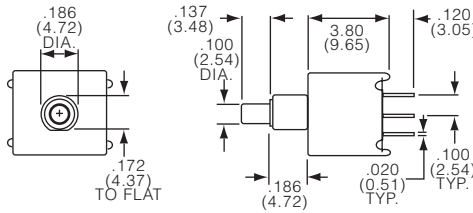
TPB11CGPCES



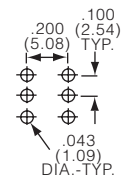
Note: no center terminal on 'C' function switch



TPB21RGPCES



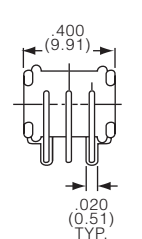
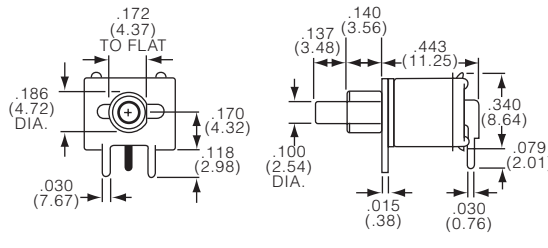
Note: no center terminals on 'M' function switch



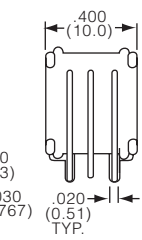
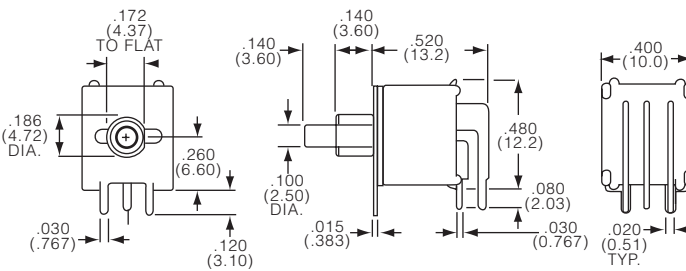
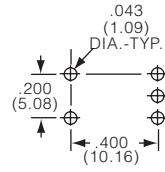
**right angle**



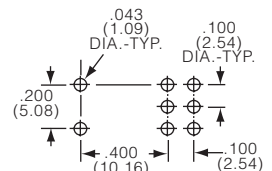
TPB11CGRAES



Note: no center terminal on 'C' function switch



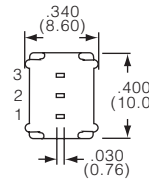
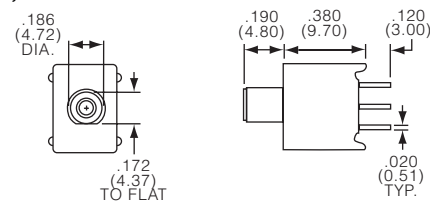
Note: no center terminals on 'M' function switch



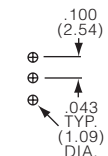
**printed circuit board, flush actuator**



TPBF11CGPCES



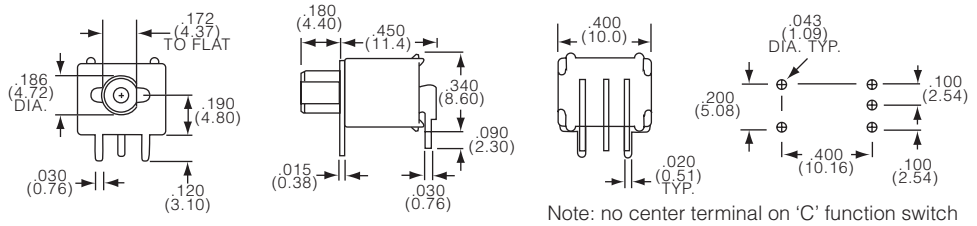
Note: no center terminal on 'C' function switch





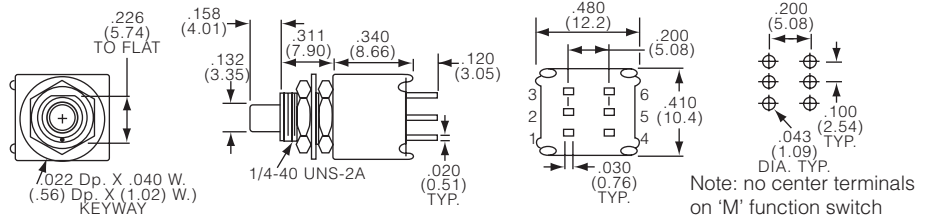
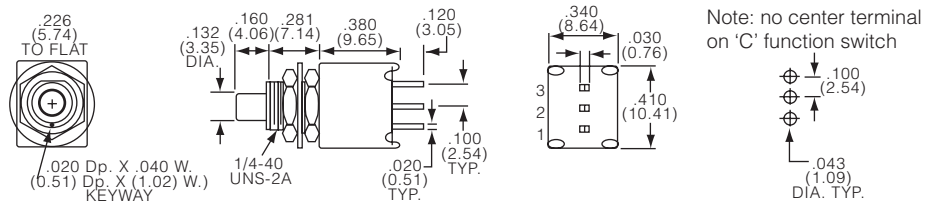
**TP\_ES Series, Tiny, Process Sealed (Continued)**

**right angle, flush actuator**



**F, Round 1/4-40 UNS 2B thread**

**printed circuit board**



| Product key     | Bushing      | Act.  | Poles | Rating | Function | Off | On  | Plating | Terminals   | Btn.  | Material       | Part Number |
|-----------------|--------------|-------|-------|--------|----------|-----|-----|---------|-------------|-------|----------------|-------------|
| TPB11CGPCES004  | round        | std   | 1     | 0.4VA  | Off-(On) | Off | 1-3 | Gold    | pcb         | black | RoHS compliant | 1825097-3   |
| TPB11CGRAES004  | .188 (4.78)  |       |       |        |          |     |     |         | right angle |       |                | 1825097-5   |
| TPB11CGRAES204  | dia          |       |       |        |          |     |     |         |             | red   |                | 1825097-7   |
| TPB11FGPCES204  | bushing, not |       |       |        | On-(On)  | 1-2 | 2-3 |         | pcb         |       |                | 1-1825097-0 |
| TPB11FGRAES004  | threaded     |       |       |        |          |     |     |         | right angle | black |                | 1-1825097-4 |
| TPB11FGRAES604  |              |       |       |        |          |     |     |         |             | blue  |                | 1-1825097-5 |
| TPBF11CGPCES004 |              | flush |       |        | Off-(On) | Off | 1-3 |         | pcb         | black |                | 2-1825097-0 |
| TPBF11CGRAES004 |              |       |       |        |          |     |     |         | right angle |       |                | 2-1825097-2 |
| TPBF11FGPCES004 |              |       |       |        | On-(On)  | 1-2 | 2-3 |         | pcb         |       |                | 2-1825097-3 |
| TPBF11FGRAES004 |              |       |       |        |          |     |     |         | right angle |       |                | 2-1825097-6 |
| TPF11CGPCES004  | 1/4-40       | std   |       |        | Off-(On) | Off | 1-3 |         | pcb         |       |                | 1825100-3   |
| TPF11FGPCES004  | UNS 2B       |       |       |        | On-(On)  | 1-2 | 2-3 |         |             |       |                | 1-1825100-0 |

**MSPM Series, Magnetic Reed, Long Life, Hermetically Sealed**

**Features**

- Glass to metal hermetic seal
- Magnetic return (no springs)
- Wire lug or pc terminals
- Actuator cap and mounting hardware supplied



Pushbutton Switches

**Typical performance characteristics**

Contact configuration . . . . . SPST  
 Contact timing . . . . . Break-Before-Make  
 Contact rating max. . . . . 1.0 VA (100 mA max. 100 VDC max.)  
 Electrical life . . . . . at 0.1 VA: 5,000,000 cycles  
 . . . . . at 5 VA: 50,000 cycles  
 Contact resistance, initial. . . . . max. 100 mOhms'  
 Insulation resistance . . . . . 1,000 MOhms min.  
 Dielectric strength . . . . . 1,000 Volts rms @ sea level  
 Actuation force . . . . . tactile "keyboard feel" 1.15 to 2 N (115 to 200 gf.)  
 . . . . . "breakaway reducing immediately  
 . . . . . to 0.43 N (43gf.) "follow-through"  
 Actuator travel. . . . . .078" (2.0 mm)

**Environmental specification**

Operating temperature . . . . . -10°C to +80°C  
 Storage temperature . . . . . -10°C to +80°C  
 Solder heat resistance . . . . . hand solder  
 Seal . . . . . glass to metal

**Material specifications**

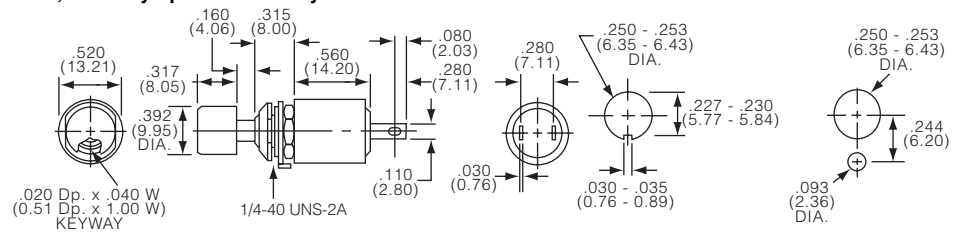
Contacts . . . . . copper alloy gold plated over nickel  
 Actuator . . . . . polyamide  
 Terminals . . . . . copper alloy gold plated over nickel  
 Case . . . . . steel  
 RoHS Directive 2002/95/EC . . . . . compliant

|                    |  |          |             |            |          |          |           |
|--------------------|--|----------|-------------|------------|----------|----------|-----------|
| <b>Product key</b> | Typical product key  |          | <b>MSPM</b> | <b>101</b> | <b>B</b> | <b>1</b> | <b>04</b> |
| <b>Type</b>        | <b>MSPM</b> Pushbutton, magnetic reed, long life, hermetically sealed          |          |             |            |          |          |           |
| <b>Version</b>     | <b>101</b> standard version  |          |             |            |          |          |           |
| <b>Action</b>      | <b>B</b> normally closed, black button<br><b>C</b> normally open, red cap      |          |             |            |          |          |           |
| <b>Button</b>      | <b>blank</b> with button soft detent<br><b>S</b> without button audible detent |          |             |            |          |          |           |
| <b>Terminals</b>   | <b>blank</b> pin   | <b>2</b> | pin         |            |          |          |           |
|                    | <b>0</b> pin   | <b>1</b> | wire lug    |            |          |          |           |
| <b>Material</b>    | <b>04</b> RoHS compliant   |          |             |            |          |          |           |

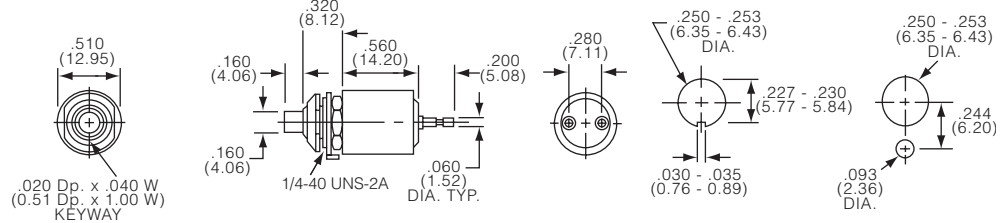
**MSPM Series, Magnetic Reed, Long Life, Hermetically Sealed (Continued)**

Button

**blank with button, soft detent, normally open or normally closed**



**S without button, audible detent, normally open or normally closed**



| Product key  | Action          | Button         | Terminals | Material  | Part Number |
|--------------|-----------------|----------------|-----------|-----------|-------------|
| MSPM101B004  | normally closed | with button    | pin       | RoHS      | 1825538-1   |
| MSPM101B104  | black button    | soft detent    | wire lug  | compliant | 1825538-2   |
| MSPM101C104  | normally open   |                |           |           | 1825538-3   |
| MSPM101C204  | red button      |                | pin       |           | 1825538-4   |
| MSPM101BS04  | normally closed | without button |           |           | 1825539-1   |
| MSPM101BS104 | black button    | audible detent | wire lug  |           | 1825539-2   |
| MSPM101CS04  | normally open   |                | pin       |           | 1825539-3   |
| MSPM101CS104 | red button      |                | wire lug  |           | 1825539-4   |

**MSPF Series, Front or Rear Mount, 15/32 Bushing**

**Features**

- Versatile front or rear entry mounting
- Relative small depth for 15/32-32 size threaded switch
- Decroitive mounting hardware supplied, others available
- Various button (actuator) colors



Pushbutton Switches

**Typical performance characteristics**

Contact configuration . . . . . SPST and 2 circuit  
 Contact timing . . . . . Break-Before-Make  
 Contact rating max. . . . . 0.5 A @ 125 VAC  
 Electrical life . . . . . 10,000 cycles  
 Contact resistance, initial . . . . . max.100 mOhms  
 Insulation resistance . . . . . 1,000 MOhms min.  
 Dielectric strength . . . . . 1,000 Volts rms @ sea level  
 Actuation force . . . . . 4.5 N (450 gf.)  
 Actuator travel . . . . . .098" (2.5 mm)

**Environmental specification**

Operating temperature . . . . . -20°C to +80°C  
 Storage temperature . . . . . -20°C to +80°C  
 Solder heat resistance . . . . . hand solder  
 Seal . . . . . epoxy sealed terminals

**Material specifications**

Contacts . . . . . copper alloy silver plated  
 Actuator (button) . . . . . thermoplastic  
 Terminals . . . . . copper alloy silver plated  
 Case . . . . . thermoset plastic  
 RoHS Directive 2002/95/EC . . . . . compliant

**Product key**

Typical product key

**MSPF 101 B**

**Type**

**MSPF** Pushbutton switch, front or rear mount, 15/32-32 bushing

**Version**

**101** standard version

**Action**

**B** NC, normally closed, black button  
**C** NO, normally open, red button

**BC** NO & NC, 2 circuit normally open and normally closed

**Button color (BC Action only)**

|          |       |          |       |
|----------|-------|----------|-------|
| <b>0</b> | black | <b>6</b> | blue  |
| <b>2</b> | red   | <b>9</b> | white |

**MSPF Series, Front or Rear Mount, 15/32 Bushing (Continued)**

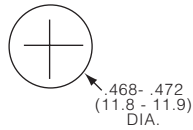
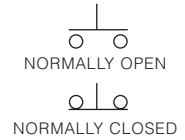
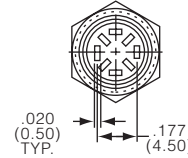
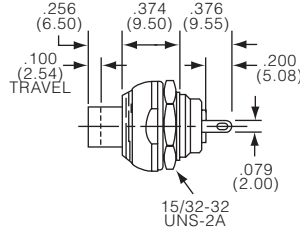
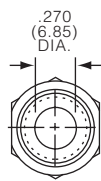
**Action**



**Codes B, C normally closed or normally open, 1 circuit**



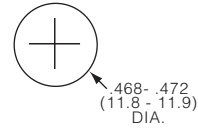
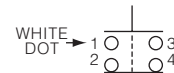
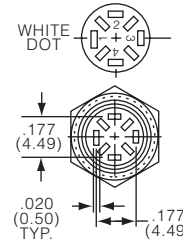
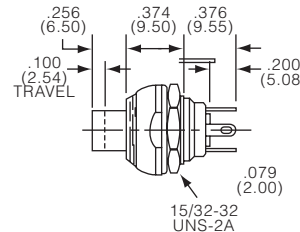
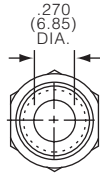
MSPF101B



**Code BC normally closed and normally open, 2 circuits**

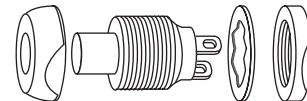


MSPF101BC



**Mounting**

Application note: Illustration shows versatile front or rear entry usage with hardware supplied



| Product key | Action          | Type      | Button color | Terminals | Part Number |
|-------------|-----------------|-----------|--------------|-----------|-------------|
| MSPF101B    | normally closed | SPST      | black        | wire lug  | 8-1437567-8 |
| MSPF101C    | normally open   |           | red          |           | 9-1437567-3 |
| MSPF101BC0  | NO/NC           | 2 circuit | black        |           | 8-1437567-9 |
| MSPF101BC2  |                 |           | red          |           | 9-1437567-0 |
| MSPF101BC6  |                 |           | bluw         |           | 9-1437567-1 |
| MSPF101BC9  |                 |           | white        |           | 9-1437567-2 |

**MPA103 Series, Panel Mount**

**Features**

- Relatively high current carrying capacity for size of switch
- One piece bushing and shoulder designed to reduce tear off
- Decorative hardware supplied



Pushbutton Switches

**Typical performance characteristics**

|                             |                             |
|-----------------------------|-----------------------------|
| Contact configuration       | SPST SPDT                   |
| Contact timing              | Break-Before-Make           |
| Contact rating max.         | 3A @ 125VAC                 |
| Electrical life             | 10,000 cycles               |
| Contact resistance, initial | 20 mOhms max                |
| Insulation resistance       | 1,000 MOhms min             |
| Dielectric strength         | 1,000 Volts rms @ sea level |
| Actuator travel             | .098" (2.5mm)               |
| Actuator Force              | SPST: 2.8 N (.283)          |
|                             | SPDT: 4.5 N (.453kg)        |

**Environmental specification**

|                        |                                       |
|------------------------|---------------------------------------|
| Operating temperature  | -20°C to +70°C                        |
| Storage temperature    | -40°C to +80°C                        |
| Solder heat resistance | hand solder 420°C max. 3 seconds max. |

**Material specifications**

|                           |                            |
|---------------------------|----------------------------|
| Contacts                  | copper alloy silver clad   |
| Actuator (button)         | phenol resin               |
| Terminals                 | copper alloy silver plated |
| Case                      | thermoset plastic          |
| RoHS Directive 2002/95/EC | compliant                  |

**Product key**

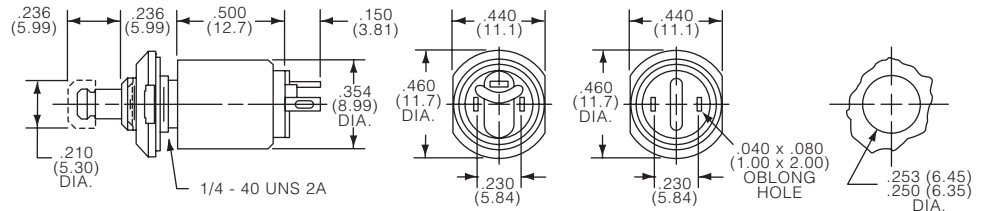
Typical product key

**MPA 103 C 04**

|                       |                            |          |                              |
|-----------------------|----------------------------|----------|------------------------------|
| <b>Type</b><br>MPA    | Sub-Miniature Pushbutton   |          |                              |
| <b>Version</b><br>103 | standard                   |          |                              |
| <b>Action</b><br>B    | Normally Closed, momentary | <b>D</b> | Push on/Push off - (tactile) |
| <b>C</b>              | Normally Open, momentary   | <b>F</b> | Momentary - (tactile)        |
| <b>Material</b><br>04 | RoHS compliant             |          |                              |



MPA103C



Black cap supplied. Other colors available, order separately (see accessories pushbuttons).

| Product key | Action           | Type | Terminals | Material       | Part Number |
|-------------|------------------|------|-----------|----------------|-------------|
| MPA103B04   | N/C              | SPST | Wire Lug  | RoHS compliant | 1825403-1   |
| MPA103C04   | N/O              |      |           |                | 1825403-2   |
| MPA103D04   | Push on/Push off | SPDT |           |                | 1825404-1   |
| MPA103F04   | Momentary        |      |           |                | 1825404-2   |

**MSP103 Series, 2.5mm Travel, Panel Mount**

**Features**

- MSP series over-travel design (self cleaning contacts) 3A
- MSPS butt contact design 0.5 A
- One piece bushing and sholder designed to reduce tear off
- Mounting hardware supplied, decorative hardware available



**Typical performance characteristics**

Contact configuration . . . . . SPST  
 Contact timing . . . . . Break-Before-Make  
 Contact rating max. . . . . MSP: 3 A @ 125 VAC  
 . . . . . MSPS: 0.5 A @ 125 VAC  
 Electrical life . . . . . 10,000 cycles  
 Contact resistance, initial . . . . . 100 mOhms max.  
 Insulation resistance . . . . . 1,000 mega ohms min.  
 Dielectric strength . . . . . 1,000 Volts rms @ sea level  
 Actuator travel . . . . . .098" (2.5 mm)

**Environmental specification**

Operating temperature . . . . . -20°C to +80°C  
 Storage temperature . . . . . -20°C to +80°C  
 Solder heat resistance . . . . . hand solder 420°C max. 3 seconds max.

**Material specifications**

Contacts . . . . . copper alloy silver plated  
 Actuator (Button) . . . . . thermoplastic  
 Terminals . . . . . copper alloy silver plated  
 Case . . . . . MPS: phenol resin, MSPS: thermoset plastic  
 RoHS Directive 2002/95/EC . . . . . compliant

|                            |             |  |  |              |                |          |           |
|----------------------------|-------------|--|--|--------------|----------------|----------|-----------|
| <b>Product key</b>         |             | Typical product key  |  | <b>MSP</b>   | <b>103</b>     | <b>B</b> | <b>04</b> |
| <b>Type</b>                | <b>MSP</b>  | Pushbutton switch, 2.5mm travel, panel mount               |  |              |                |          |           |
| <b>Contact</b>             | <b>103</b>  | 3 A @125 VAC   |  |              |                |          |           |
|                            | <b>S103</b> | 0.5 A @125 VAC   |  |              |                |          |           |
| <b>Action/button color</b> | <b>B</b>    | NC, normally closed, black actuator                        |  |              |                |          |           |
|                            | <b>C</b>    | NO, normally open, red actuator (contact version 103 only) |  |              |                |          |           |
|                            | <b>C0</b>   | NO, normally open, black actuator                          |  |              |                |          |           |
|                            | <b>C2</b>   | NO, normally open, red actuator, long bushing              |  |              |                |          |           |
| <b>Material</b>            | <b>04</b>   | RoHS compliant   |  | <b>blank</b> | RoHS compliant |          |           |

**MSP103 Series, 2.5mm Travel, Panel Mount (Continued)**

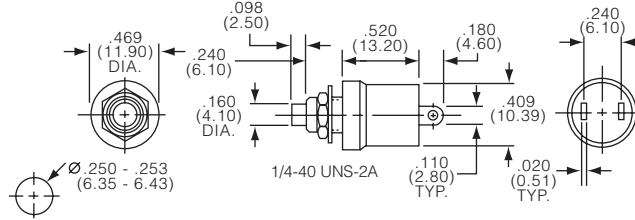
**Contact**



**103 3 A contact**



MSP103B

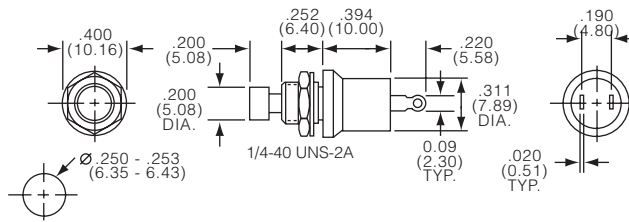


| Contact | Action | Bushing len.  |
|---------|--------|---------------|
| 103     | B      | 6.00mm (.236) |
|         | C      | 6.00mm (.236) |
|         | C0     | 6.00mm (.236) |
|         | C2     | 9.50mm (.374) |

**S103 0.5 A contact**



MSPS103B



| Contact | Action | Bushing len.  |
|---------|--------|---------------|
| S103    | B      | 6.22mm (.245) |
|         | C0     | 6.22mm (.245) |
|         | C2     | 6.22mm (.245) |

Pushbutton Switches

| Product key | Contact  | Action | Type | Button color | Terminals | Material  | Part Number |
|-------------|----------|--------|------|--------------|-----------|-----------|-------------|
| MSP103B04   | 3 A      | N/C    | SPST | black        | wire lug  | RoHS      | 1825516-1   |
| MSP103C04   | @125 VAC | N/O    |      | red          |           | compliant | 1825516-2   |
| MSP103C004  |          |        |      | black        |           |           | 1825516-3   |
| MSP103C204  |          |        |      | red          |           |           | 1825516-4   |
| MSPS103B    | 0.5 A    | N/C    |      | black        |           |           | 1437568-5   |
| MSPS103C0   | @125 VAC | N/O    |      |              |           |           | 1437568-7   |
| MSPS103C2   |          |        |      | red          |           |           | 1437568-6   |



**MPS Series, Snap Action**

**Features**

- Wire lug or pc terminals
- Customer selected actuator cap size and color
- Entire series epoxy sealed terminals
- Actuator guards, decorative hardware, and silicone boot seals available



**Typical performance characteristics**

|                             |                             |
|-----------------------------|-----------------------------|
| Contact configuration       | SPDT, DPDT                  |
| Contact timing              | Break-Before-Make           |
| Contact rating max.         | 3 A @ 125 VAC               |
| Electrical life             | 50,000 cycles               |
| Contact resistance, initial | 10 mOhms max.               |
| Insulation resistance       | 1,000 MOhms min.            |
| Dielectric strength         | 1,500 Volts rms @ sea level |
| Actuation force             | 200-700 gf                  |
| Actuator travel             | momentary .04 (1.0mm)       |
|                             | push on/off .098 (2.5mm)    |

**Environmental specification**

|                        |  |
|------------------------|--|
| Operating temperature  | -15°C to +70°C                               |
| Storage temperature    | -15°C to +70°C                               |
| Solder heat resistance | wave solder capable to 265°C and hand solder |
| Seal                   | epoxy sealed terminals                       |

**Material specifications**

|                           |                             |
|---------------------------|-----------------------------|
| Contacts                  | phosphor bronze silver clad |
| Actuator                  | copper alloy nickel plated  |
| Terminals                 | copper alloy silver plated  |
| Case                      | epoxy resin                 |
| Frame                     | stainless steel             |
| Support Bracket           | brass tin plated            |
| RoHS Directive 2002/95/EC | compliant                   |

Pushbutton Switches

|                    |   |                     |   |            |          |           |          |           |           |
|--------------------|---|---------------------|---|------------|----------|-----------|----------|-----------|-----------|
| <b>Product key</b> |   | Typical product key |   | <b>MPS</b> | <b>1</b> | <b>03</b> | <b>F</b> | <b>PC</b> | <b>04</b> |
| <b>Type</b>        | <b>MPS</b> Pushbutton Switches, Snap Action, 3Amp         |                     |   |            |          |           |          |           |           |
| <b>Poles</b>       | <b>1</b> 1 pole   | <b>2</b> 2 poles    |   |            |          |           |          |           |           |
| <b>Contact</b>     | <b>03</b> 3 A @125 VAC                                    |                     |   |            |          |           |          |           |           |
| <b>Function</b>    | <b>D</b> <b>single pole</b><br>Push-On/Push-Off momentary |                     | <b>N</b> <b>double pole</b><br>Push-On/Push-Off momentary |            |          |           |          |           |           |
| <b>Terminals</b>   | <b>blank</b> wire lug                                     |                     | <b>RA</b> right angle PC terminal                         |            |          |           |          |           |           |
|                    | <b>PC</b> printed circuit board                           |                     | <b>WW</b> wire wrap or extended PC                        |            |          |           |          |           |           |
|                    | <b>PCV</b> printed circuit board, with support            |                     |   |            |          |           |          |           |           |
| <b>Material</b>    | <b>04</b> RoHS compliant                                  |                     |   |            |          |           |          |           |           |

**MPS Series, Snap Action (Continued)**

**Function**



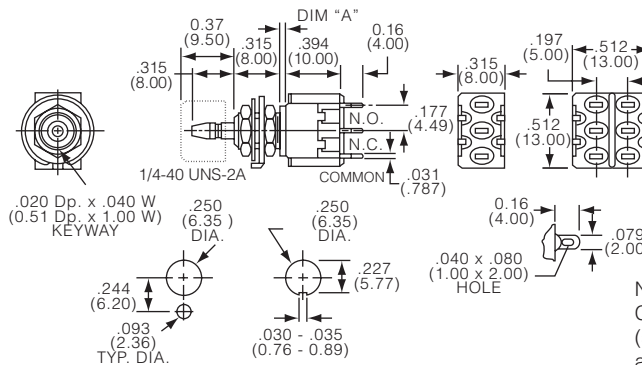
| Fct. | Poles |    |      |          |          |
|------|-------|----|------|----------|----------|
| D    | 1     | On | On   | 3-2      | 3-1      |
| F    | 1     | On | (On) | 3-2      | 3-1      |
| N    | 2     | On | On   | 3-2, 6-5 | 3-1, 6-4 |
| R    | 2     | On | (On) | 3-2, 6-5 | 3-1, 6-4 |

Off indicates a mechanical position with no electrical connection  
 (On) indicates momentary connection

**Terminals**



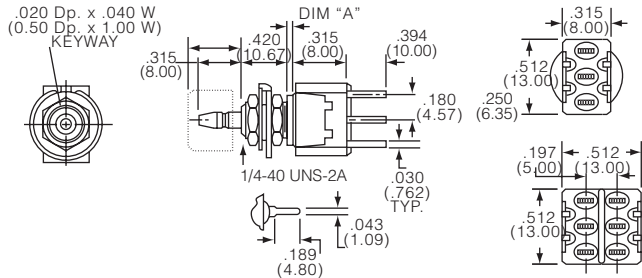
**blank wire lug**



| Funct | Action          | Dim A        |
|-------|-----------------|--------------|
| D     | 1p, push-On/Off | 2.54 (.100)  |
| F     | 1p, momentary   | 1.016 (.040) |
| N     | 2p, push-On/Off | 2.54 (.100)  |
| R     | 2p, momentary   | 1.016 (.040) |

Note: hardware included with switches. Caps not supplied, order separately (see cap model C22 and C23 under accessories)

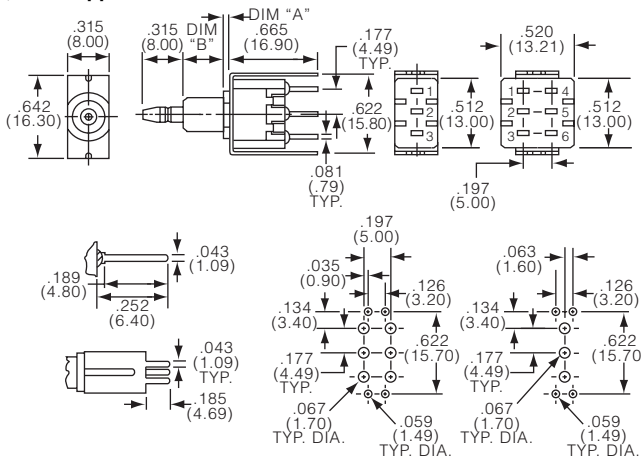
**PC printed circuit board**



| Funct | Action          | Dim A        |
|-------|-----------------|--------------|
| D     | 1p, push-On/Off | 2.54 (.100)  |
| F     | 1p, momentary   | 1.016 (.040) |
| N     | 2p, push-On/Off | 2.54 (.100)  |
| R     | 2p, momentary   | 1.016 (.040) |

Caps not supplied, order separately (see cap model C22 and C23 under accessories)

**PCV printed circuit board, with support**

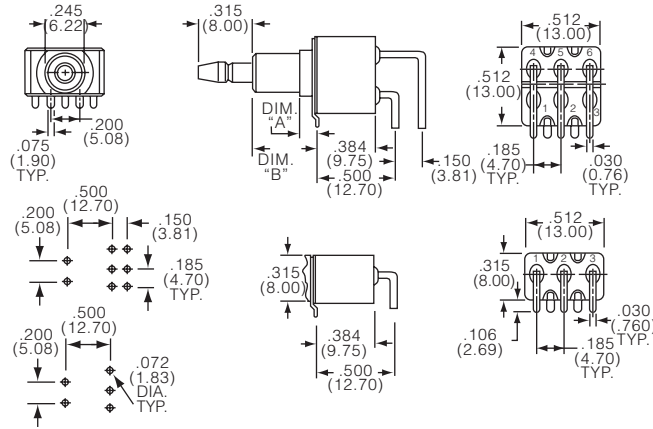
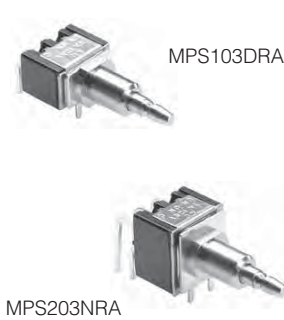


| Funct | Dim A       | Dim B       |
|-------|-------------|-------------|
| D     | 2.03 (.080) | 8.00 (.315) |
| F     | 1.01 (.040) | 7.49 (.295) |
| R     | 1.01 (.040) | 7.49 (.295) |

Caps not supplied, order separately (see cap model C22 and C23 under accessories)

**MPS Series, Snap Action (Continued)**

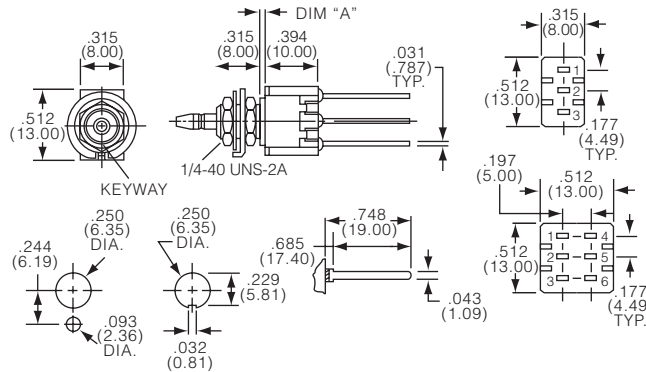
**RA right angle, printed circuit board**



| Funct | Dim A       | Dim B       |
|-------|-------------|-------------|
| D     | 2.54 (.100) | 10.7 (.432) |
| F     | 1.52 (.060) | 9.24 (.364) |
| N     | 2.54 (.100) | 10.7 (.432) |
| R     | 1.52 (.060) | 9.24 (.364) |

Caps not supplied, order separately (see cap model C22 and C23 under accessories)

**WW wire wrap, extended pcb**



| Funct | Action          | Dim A        |
|-------|-----------------|--------------|
| F     | 1p, momentary   | 1.016 (.040) |
| N     | 2p, push-On/Off | 2.54 (.100)  |
| R     | 2p, momentary   | 1.016 (.040) |

Caps not supplied, order separately (see cap model C22 and C23 under accessories)

| Product key  | Poles       | Contact         | Function         | Terminals             | Material  | Part Number |
|--------------|-------------|-----------------|------------------|-----------------------|-----------|-------------|
| MPS103D04    | single pole | 3 A<br>@125 VAC | Push-On/Push-Off | solder lug            | RoHS      | 1825092-1   |
| MPS103DPC04  |             |                 |                  | printed circuit board | compliant | 1825399-1   |
| MPS103DPCV04 |             |                 |                  | PCB, with support     |           | 1825401-1   |
| MPS103DRA04  |             |                 |                  | right angle PCB       |           | 1825400-1   |
| MPS103F04    | double pole |                 | momentary        | solder lug            |           | 1825092-2   |
| MPS103FPC04  |             |                 |                  | printed circuit board |           | 1825399-2   |
| MPS103FPCV04 |             |                 |                  | PCB, with support     |           | 1825401-2   |
| MPS103FRA04  |             |                 |                  | right angle PCB       |           | 1825400-2   |
| MPS103FWW04  |             |                 | wire wrap        |                       |           | 1825402-1   |
| MPS203N04    | double pole |                 | Push-On/Push-Off | solder lug            |           | 1825092-3   |
| MPS203NPC04  |             |                 |                  | printed circuit board |           | 1825399-3   |
| MPS203NPCV04 |             |                 |                  | PCB, with support     |           | 1825401-3   |
| MPS203NRA04  |             |                 |                  | right angle PCB       |           | 1825400-3   |
| MPS203R04    | double pole |                 | momentary        | solder lug            |           | 1825092-4   |
| MPS203RPC04  |             |                 |                  | printed circuit board |           | 1825399-4   |
| MPS203RPCV04 |             |                 |                  | PCB, with support     |           | 1825401-4   |
| MPS203RRA04  |             |                 |                  | right angle PCB       |           | 1825400-4   |
| MPS203RWW04  |             |                 | wire wrap        |                       |           | 1825402-2   |

**MP / A / E / G, Green Series**

**Features**

- Wire lug or pC terminals
- Customer selected actuator cap size and color on MPA series
- MPE series sealed to IP65
- Entire series with epoxy sealed terminals
- Actuator guards, decorative hardware, and silicone boot seals available



**Typical performance characteristics**

Contact configuration . . . . . SPDT, DPDT, 3PDT, 4PDT  
 Contact timing . . . . . Break-Before-Make  
 Contact rating max. . . . . 6 A @ 125 VAC, 3 A @ 250 VAC  
 Electrical life . . . . . push on/push off: 30,000 cycles  
 . . . . . momentary: . 20,000 cycles  
 Contact resistance, initial. . . . . 10 mOhms max.  
 Insulation resistance . . . . . 1,000 MOhms min.  
 Dielectric strength. . . . . 1,500Volts rms @ sea level  
 Actuation force . . . . . 4 to 20 N (400 to 2000 gf)  
 Actuator travel . . . . . 3.55 mm

**Environmental specification**

Operating temperature . . . . . -20°C to +80°C  
 Storage temperature . . . . . -40°C to +80°C  
 Solder heat resistance . . . . . wave solder capable to 265°C  
 Seal . . . . . mpe switches IP65

**Material specifications**

Contacts . . . . . copper alloy silver clad  
 Actuator . . . . . brass nickel plated  
 Terminals . . . . . copper alloy gold plated  
 Case . . . . . alkyd polyester (green)UL94 V-O  
 Frame. . . . . stainless steel  
 RoHS Directive 2002/95/EC . . . . . compliant

Pushbutton Switches

**Product key**

Typical product key

**MP A 1 06 D 04**

**Type**

**MP** Green Series Pushbutton Switches, panel mount

**Bushing style**

**A** 1/4-40 3.4mm actuator  
**E** 1/4-40 3.4mm actuator with 'O' rings  
**G** 15/32-32 large actuator

**Number of poles**

**1** single pole **3** 3 poles  
**2** double pole **4** 4 poles

**Rating**

**06** 6 Amp

**Function**

**D** 1 & 3 pole push-on/push-off  
**F** momentary **N** 2 & 4 pole push-on/push-off  
**R** momentary

**Terminals**

**blank** wire lug **PC** printed circuit board

**Material**

**04** RoHS compliant

**MP / A / E / G, Green Series (Continued)**

Bushing style A

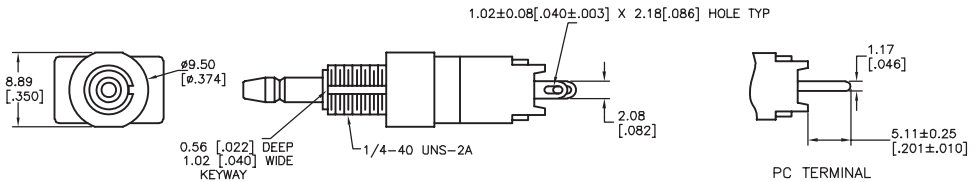
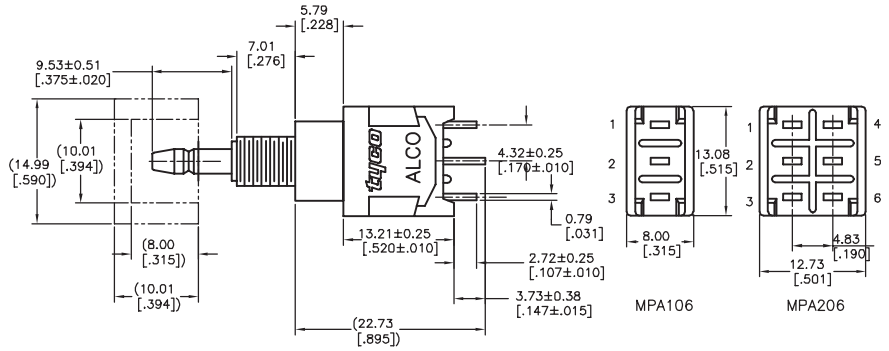
single & double pole



MPA106D



MPA206N



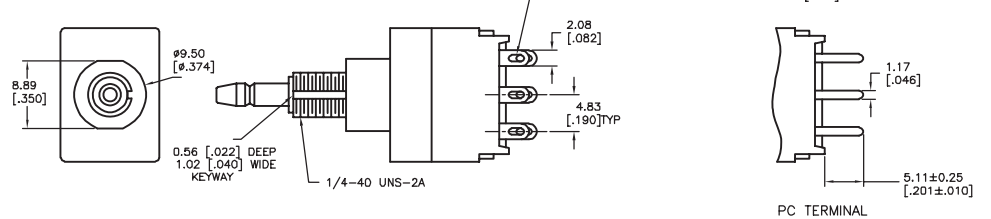
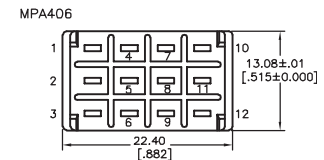
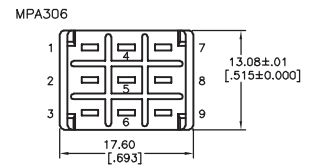
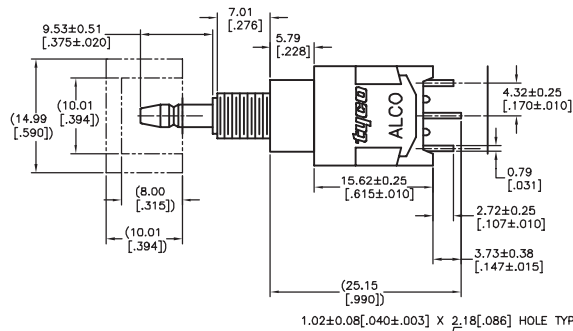
3 & 4 pole



MPA306D

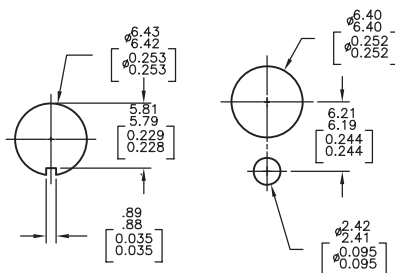


MPA406N

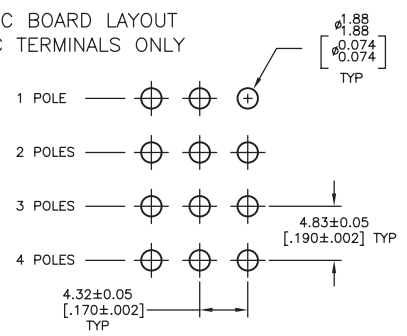


mounting

RECOMMENDED HOLE LAYOUT TO PREVENT ROTATION



PC BOARD LAYOUT PC TERMINALS ONLY



**MP / A / E / G, Green Series (Continued)**

**Bushing style E**



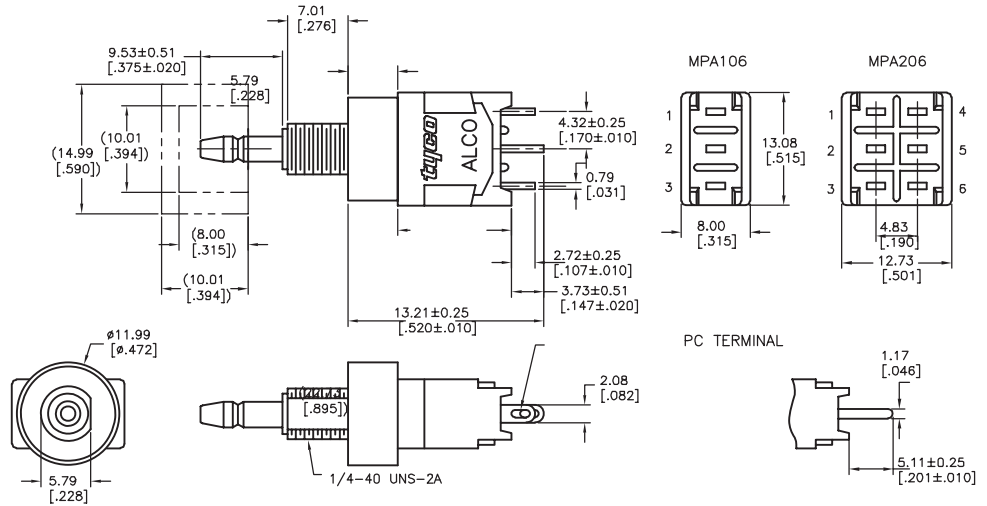
**single & double pole**



MPE106D



MPE206N



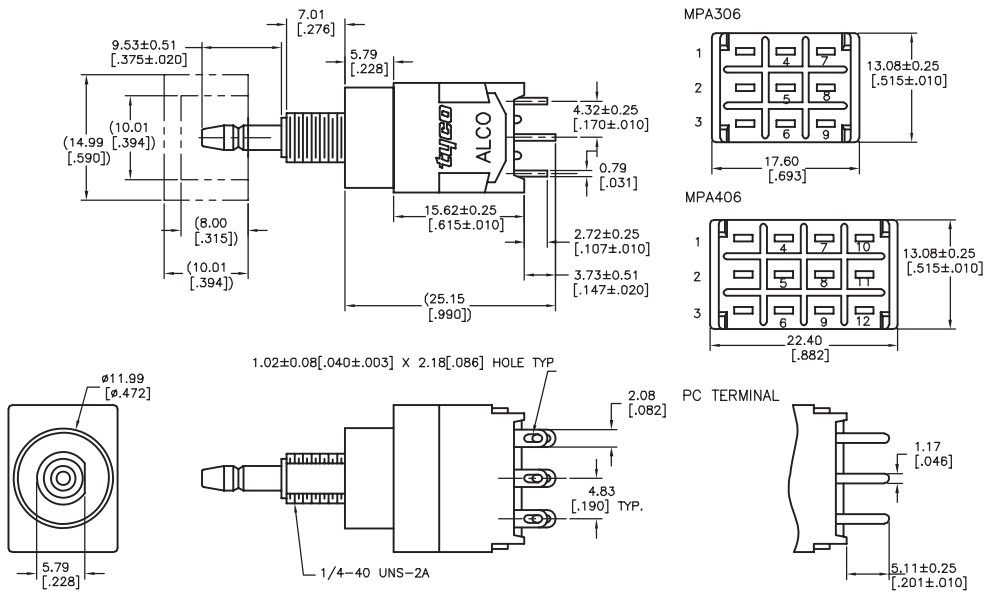
**3 & 4 pole**



MPE306F

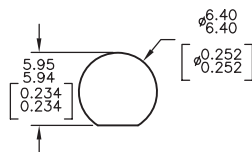


MPE406N

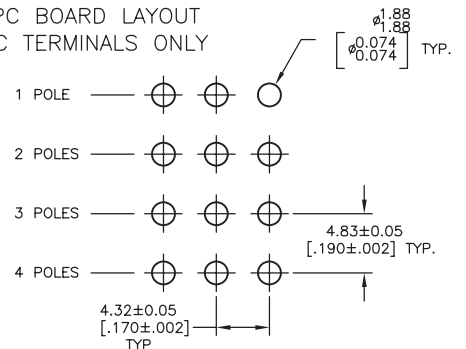


**mounting**

**RECOMMENDED HOLE LAYOUT TO PREVENT ROTATION**



**PC BOARD LAYOUT PC TERMINALS ONLY**



**MP / A / E / G, Green Series (Continued)**

Bushing style G

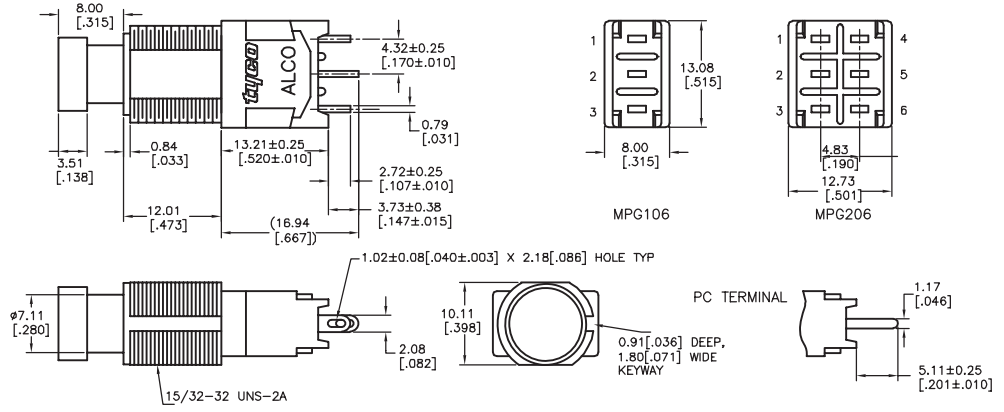
single & double pole



MPG106D



MPG206NPC



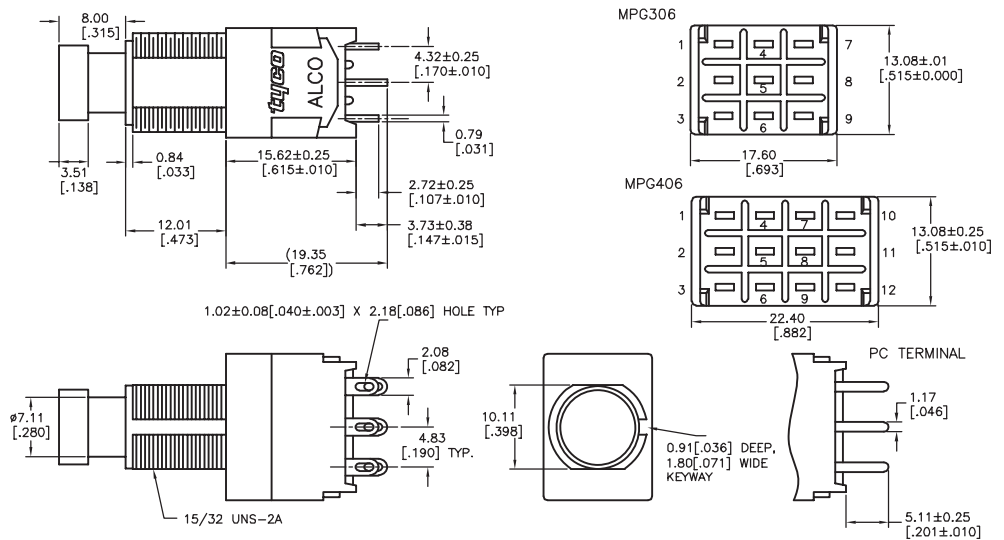
3 & 4 pole



MPG306D

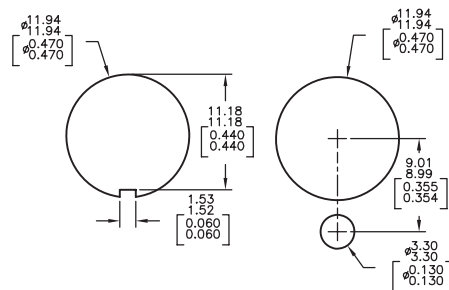


MPG406N

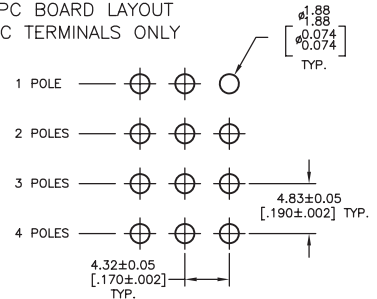


mounting

RECOMMENDED HOLE LAYOUT TO PREVENT ROTATION



PC BOARD LAYOUT PC TERMINALS ONLY



**MP / A / E / G, Green Series** (Continued)

Function



| Fct. | Poles |    |      |                   |                   |
|------|-------|----|------|-------------------|-------------------|
| D    | 1     | On | On   | 2-1               | 2-3               |
| F    | 1     | On | (On) | 2-1               | 2-3               |
| N    | 2     | On | On   | 2-1, 5-4          | 2-3, 5-6          |
| R    | 2     | On | (On) | 2-1, 5-4          | 2-3, 5-6          |
| D    | 3     | On | On   | 2-1, 5-4, 8-7     | 2-3, 5-6, 8-9     |
| F    | 3     | On | (On) | 2-1, 5-4, 8-7     | 2-3, 5-6, 8-9     |
| N    | 4     | On | On   | 2-1,5-4,8-7,11-10 | 2-3,5-6,8-9,11-12 |
| R    | 4     | On | (On) | 2-1,5-4,8-7,11-10 | 2-3,5-6,8-9,11-12 |

Off indicates a mechanical position with no electrical connection  
(On) indicates momentary connection

Pushbutton Switches

| Product key        | Bushing       | No. of poles | Rating | Function         | Terminals | Material       | Part Number        |
|--------------------|---------------|--------------|--------|------------------|-----------|----------------|--------------------|
| <b>MPA106D04</b>   | 1/4-40        | single pole  | 6 Amps | push-on/push-off | wire lug  | RoHS compliant | <b>1825040-1</b>   |
| <b>MPA106F04</b>   | 3.4mm         |              |        | momentary        |           |                | <b>1825040-2</b>   |
| <b>MPA106DPC04</b> | actuator      |              |        | push-on/push-off | pcb       |                | <b>1825040-3</b>   |
| <b>MPA106FPC04</b> |               |              |        | momentary        |           |                | <b>1825040-4</b>   |
| <b>MPA206N04</b>   |               | double pole  |        | push-on/push-off | wire lug  |                | <b>1825040-5</b>   |
| <b>MPA206NPC04</b> |               |              |        |                  | pcb       |                | <b>1825040-6</b>   |
| <b>MPA206R04</b>   |               |              |        | momentary        | wire lug  |                | <b>1825040-7</b>   |
| <b>MPA206RPC04</b> |               |              |        |                  | pcb       |                | <b>1825040-8</b>   |
| <b>MPA306D04</b>   |               | 3 poles      |        | push-on/push-off | wire lug  |                | <b>1825040-9</b>   |
| <b>MPA306F04</b>   |               |              |        | momentary        |           |                | <b>1-1825040-0</b> |
| <b>MPA406N04</b>   |               | 4 poles      |        | push-on/push-off |           |                | <b>1-1825040-1</b> |
| <b>MPA406R04</b>   |               |              |        | momentary        |           |                | <b>1-1825040-2</b> |
| <b>MPE106D04</b>   | 1/4-40        | single pole  |        | push-on/push-off |           |                | <b>1825041-1</b>   |
| <b>MPE106F04</b>   | 3.4mm         |              |        | momentary        |           |                | <b>1825041-2</b>   |
| <b>MPE206N04</b>   | actuator      | double pole  |        | push-on/push-off |           |                | <b>1825041-3</b>   |
| <b>MPE206R04</b>   | with 'O' ring |              |        | momentary        |           |                | <b>1825041-4</b>   |
| <b>MPE306D04</b>   |               | 3 poles      |        | push-on/push-off |           |                | <b>1825041-5</b>   |
| <b>MPE306F04</b>   |               |              |        | momentary        |           |                | <b>1825041-6</b>   |
| <b>MPE406N04</b>   |               | 4 poles      |        | push-on/push-off |           |                | <b>1825041-7</b>   |
| <b>MPE406R04</b>   |               |              |        | momentary        |           |                | <b>1825041-8</b>   |
| <b>MPG106D04</b>   | 15/32-32      | single pole  |        | push-on/push-off |           |                | <b>1825042-1</b>   |
| MPG106DPC04        | large         |              |        | push-on/push-off | pcb       |                | 1825042-2          |
| <b>MPG106F04</b>   | actuator      |              |        | momentary        | wire lug  |                | <b>1825042-3</b>   |
| MPG106FPC04        |               |              |        |                  | pcb       |                | 1825042-4          |
| <b>MPG206N04</b>   |               | double pole  |        | push-on/push-off | wire lug  |                | <b>1825042-5</b>   |
| <b>MPG206NPC04</b> |               |              |        |                  | pcb       |                | <b>1825042-6</b>   |
| <b>MPG206R04</b>   |               |              |        | momentary        | wire lug  |                | <b>1825042-7</b>   |
| <b>MPG206RPC04</b> |               |              |        |                  | pcb       |                | <b>1825042-8</b>   |
| <b>MPG306D04</b>   |               | 3 poles      |        | push-on/push-off | wire lug  |                | <b>1825042-9</b>   |
| <b>MPG306F04</b>   |               |              |        | momentary        |           |                | <b>1-1825042-0</b> |
| <b>MPG406N04</b>   |               | 4 poles      |        | push-on/push-off |           |                | <b>1-1825042-1</b> |
| <b>MPG406R04</b>   |               |              |        | momentary        |           |                | <b>1-1825042-2</b> |

Preferred parts in bold print



**A60 Series, THT**

**Features**

- Approved construction
- 2 different actuator lengths
- 2 Change-over contacts
- Versions with sealed base available



**Typical performance characteristics**

|                       |                                  |
|-----------------------|----------------------------------|
| Contact configuration | DPDT                             |
| Contact timing        | Break-before-Make timing         |
| Contact rating max    | 0,5 A @ 60 V AC/DC               |
| Electrical life       | >10,000 cycles (200 mA @ 15 VAC) |
| Mechanical life       | 20,000 cycles                    |
| Contact resistance    | max 40 mOhm                      |
| Insulation resistance | min. 10,000 MOhm                 |
| Dielectric strength   | 500 VAC                          |
| Actuator travel       | momentary 3.3 mm                 |

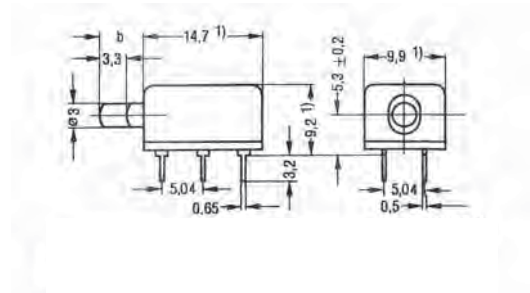
**Environmental specification**

|                        |                 |
|------------------------|-----------------|
| Operating temperature  | -25°C to +85°C  |
| Storage temperature    | -25°C to +85°C  |
| Solder heat resistance | 265°C/ 10s wave |

**Material specifications**

|                 |                          |
|-----------------|--------------------------|
| Base            | pc-gf                    |
| Cover           | psu                      |
| Contacts        | copper alloy gold finish |
| Terminals       | copper alloy tin finish  |
| actuator        | pom                      |
| RoHS compliance | compliant                |

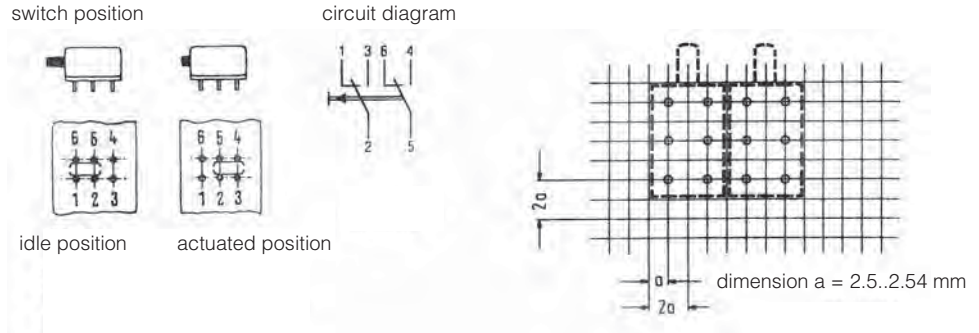
**Dimensions**



dimension b = 5.4 mm or 9.4 mm

**A60 Series, THT (Continued)**

**Function, Mounting**

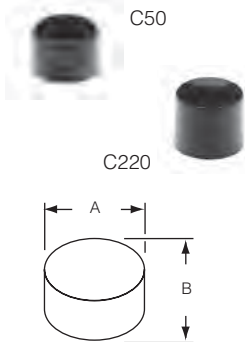


| Product key  | Actuator | Sealed base | Material  | Part Number |
|--------------|----------|-------------|-----------|-------------|
| C42315A60A3  | standard | no          | RoHS      | 1393683-1   |
| C42315A60A4  | long     | no          | compliant | 1393683-2   |
| C42315A60A13 | standard | yes         |           | 1393683-3   |
| C42315A60A14 | long     | yes         |           | 1393683-4   |

**Accessories**

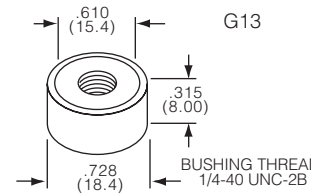
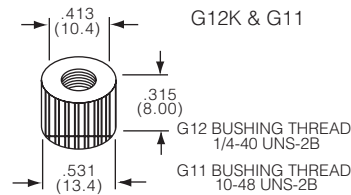


**Caps**



| Product key | for    | Color                | Diam A      | Length B    | Material       | Part Number |
|-------------|--------|----------------------|-------------|-------------|----------------|-------------|
| C50         | MPA3   | black                | 4.95 (.195) | 3.05 (.120) | RoHS compliant | 6-1437627-2 |
| C52         |        | red                  |             |             |                | 6-1437627-3 |
| C55         |        | green                |             |             |                | 6-1437627-5 |
| C59         |        | white                |             |             |                | 6-1437627-6 |
| C80         |        | black                |             |             |                | 7.87 (.310) |
| C82         | red    | 6-1437627-8          |             |             |                |             |
| C85         | green  | 6-1437627-9          |             |             |                |             |
| C89         | white  | 7-1437627-0          |             |             |                |             |
| C9004       | MPG    | black                | 9.00 (.354) | 3.47 (.137) | 1825070-1      |             |
| C9204       |        | red                  |             |             | 1825070-2      |             |
| C9604       |        | orange               |             |             | 1825070-3      |             |
| C9904       |        | yellow               |             |             | 1825070-4      |             |
| C22004      |        | MPS/MSPM<br>MPE/MPA6 |             |             | black          | 10.2 (.402) |
| C22204      | red    |                      | 1825068-2   |             |                |             |
| C22304      | orange |                      | 1825068-3   |             |                |             |
| C22404      | yellow |                      | 1825068-4   |             |                |             |
| C22504      | green  |                      | 1825068-5   |             |                |             |
| C22604      | blue   | 1825068-6            |             |             |                |             |
| C22904      | white  | 1825068-7            |             |             |                |             |
| C23004      |        | black                | 15.2 (.600) | 10.0 (.394) | 1825069-1      |             |
| C23204      |        | red                  |             |             | 1825069-2      |             |
| C23304      |        | orange               |             |             | 1825069-3      |             |
| C23404      |        | yellow               |             |             | 1825069-4      |             |
| C23504      |        | green                |             |             | 1825069-5      |             |
| C23604      |        | blue                 |             |             | 1825069-6      |             |
| C23904      |        | white                |             |             | 1825069-7      |             |

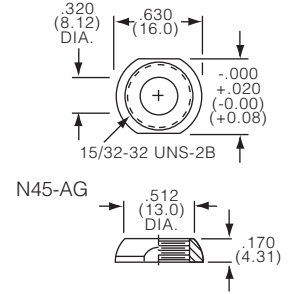
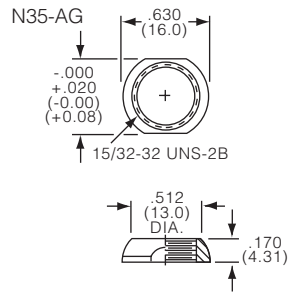
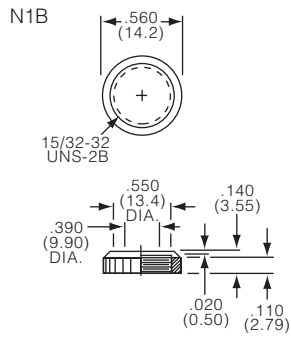
**Guards**



| Product key | Thread         | Color            | Texture        | Material       | Part Number |
|-------------|----------------|------------------|----------------|----------------|-------------|
| G11A        | 10-48          | natural Aluminum | smooth         | RoHS compliant | 7-1437627-6 |
| G11B        |                | black Aluminum   |                |                | 7-1437627-7 |
| G11C        |                | chrome brass     |                |                | 7-1437627-8 |
| G11KA       | 1/4-40         | natural Aluminum | straight knurl |                | 7-1437627-9 |
| G11KB       |                | black Aluminum   |                |                | 8-1437627-0 |
| G12A        |                | natural Aluminum |                |                | 8-1437627-1 |
| G12B        | black Aluminum | 8-1437627-2      |                |                |             |
| G12C        | chrome brass   | 8-1437627-3      |                |                |             |
| G12KA       | 15/32-32       | natural Aluminum | straight knurl |                | 8-1437627-4 |
| G12KB       |                | black Aluminum   |                |                | 8-1437627-5 |
| G12KC       |                | chrome brass     |                |                | 8-1437627-6 |
| G13A        |                | natural Aluminum | smooth         |                | 8-1437627-7 |
| G13B        |                | black Aluminum   |                |                | 8-1437627-8 |
| G13C        |                | chrome brass     |                |                | 8-1437627-9 |
| G13KA       |                | natural Aluminum | straight knurl |                | 9-1437627-0 |
| G13KB       |                | black Aluminum   |                |                | 9-1437627-1 |
| G13KC       |                | chrome brass     |                |                | 9-1437627-2 |
| G15         |                |                  | smooth         |                | 9-1437627-3 |

**Accessories (Continued)**

**Decorative Hardware**



| Product key | Thread   | Material       | Part Number |
|-------------|----------|----------------|-------------|
| N1B04       | 15/32-32 | RoHS compliant | 1825622-2   |
| N3504       |          |                | 1825621-2   |
| N4504       |          |                | 1825623-3   |

**BP Series Boot Seals**

**Features**

- One piece design, nut over molded "bonded" to silicone boot element
- Silicone rubber eliminates cure dates
- Protects against moisture, oil, dirt, dust, most solvents, and some acids



**Environmental specification**

Operating temperature ..... -65°C to 265°C

**Material specifications**

Boot material ..... silicone rubber  
 Threaded nut material, and finish..... brass nut, black oxide finish  
 RoHS Directive 2002/95/EC ..... compliant

**Product key**

Typical product key

**BP 1532 0 04**

|                   |  |   |  |
|-------------------|--|---|--|
| <b>Type</b>       |  | BP Pushbutton boot seals  |  |
| <b>Nut thread</b> |  | 1048 10-48 UNS 2-B<br>A1440 1/4-40 UNS 2-B<br>1440 1/4-40 UNS 2-B<br>1532 15/32-32 UNS 2-B<br>2010 1/4-40 UNS 2B with knurl |  |
| <b>Color</b>      |  | 0 black                      2 red                      8 gray  |  |
| <b>Material</b>   |  | 04 RoHS compliant   |  |

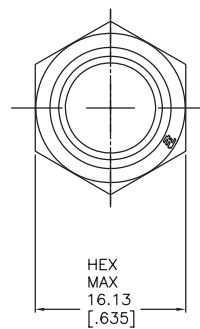
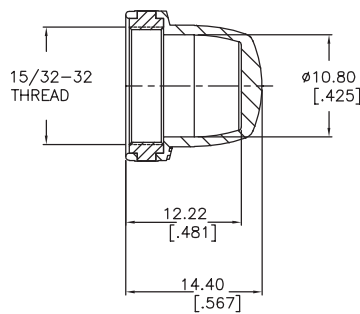
**Nut thread**



**1048 10-48 UNS 2-B, suited for MSPF and MPG series switches**



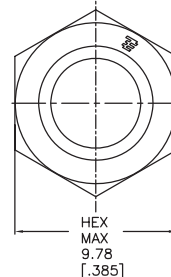
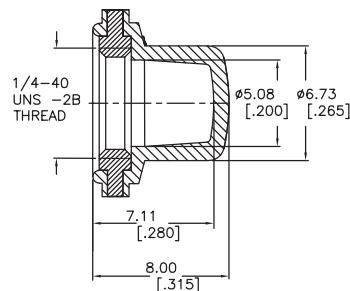
BP1048004



**A1440 1/4-40 UNS 2-B, suited for MSPMBS, MSPMCS, MSP3, MPA3, TP series switches**



BPA1440004



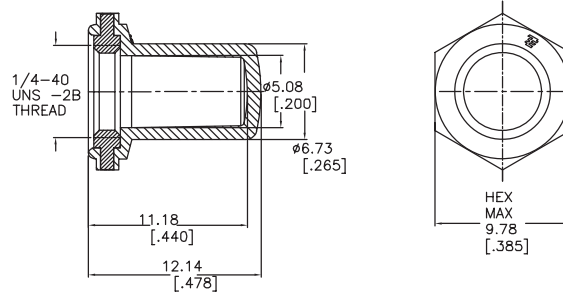
**BP Series Boot Seals (Continued)**

Pushbutton Switches

**1440 1/4-40 UNS 2-B, suited for MSPM,MPA3,MPS and TP series switches**



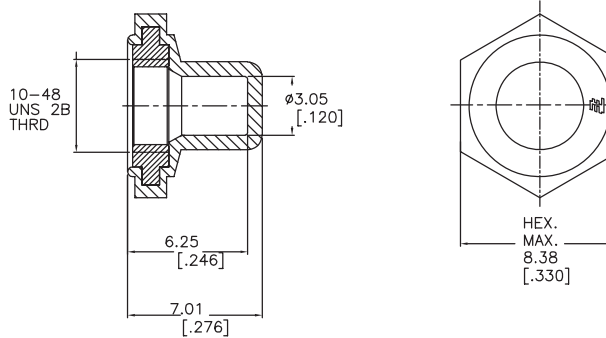
BP1440004



**1532 15/32-32 UNS 2-B, suited for TP series switches**



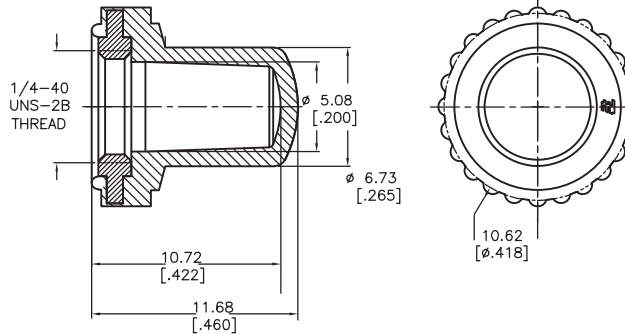
BP1532004



**2010 1/4-40 UNS 2B with knurl, suited for MSPM,MSP3,MPA3, and TP series switches**



BP201004



| Product key                                | Used on switch type               | Nut thread | Color | Material       | Part Number |
|--|-----------------------------------|------------|-------|----------------|-------------|
| <b>15/32-32 Pushbutton Boot Seals</b>      |                                   |            |       |                |             |
| BP1532004                                  | MSPF and MPG series               | 15/32-32   | black | RoHS compliant | 1825603-1   |
| BP1532204                                  |                                   |            | red   |                | 1825603-2   |
| BP1532804                                  |                                   |            | gray  |                | 1825603-3   |
| <b>1/4-40 Pushbutton Boot Seals</b>        |                                   |            |       |                |             |
| BPA1440004                                 | MSPMBS,MSPMCS,MSP3,MPA3,TP series | 1/4-40     | black | RoHS compliant | 1825604-1   |
| BPA1440204                                 |                                   |            | red   |                | 1825604-2   |
| BPA1440804                                 |                                   |            | gray  |                | 1825604-3   |
| BP1440004                                  | MSPM,MPA3,MPS and TP series       |            | black |                | 1825610-1   |
| BP1440204                                  |                                   |            | red   |                | 1825610-2   |
| BP1440804                                  |                                   |            | gray  |                | 1825610-3   |
| <b>10-48 Pushbutton Boot Seals</b>         |                                   |            |       |                |             |
| BP1048004                                  | TP series                         | 10-48      | black | RoHS compliant | 1825615-1   |
| BP1048204                                  |                                   |            | red   |                | 1825615-2   |
| <b>1/4-40 Knurled Pushbutton Boot Seal</b> |                                   |            |       |                |             |
| BP201004                                   | MSPM,MSP3,MPA3, and TP series     | 1/4-40     | black | RoHS compl.    | 1825617-2   |

**BP Series Panel Seal**

**Features**

- Unique design allows 1/4-40 threaded switch on almost any panel thickness
- Fits in a 15/32" (11.9mm) or 1/2" (12.7mm) diameter panel hole.
- Multiple cap colors available



**Material specifications**

Cap material . . . . . silicone rubber  
 Housing material . . . . . ABS thermoplastic black  
 Jam nut, spacer material & finish . . . . . brass nickel plated  
 RoHS Directive 2002/95/EC . . . . . compliant

|                      |                              |          |     |          |      |           |          |             |          |           |
|----------------------|------------------------------|----------|-----|----------|------|-----------|----------|-------------|----------|-----------|
| <b>Product key</b>   | Typical product key          |          |     |          |      | <b>BP</b> | <b>M</b> | <b>1532</b> | <b>0</b> | <b>04</b> |
| <b>Type</b>          | Pushbutton switch panel seal |          |     |          |      |           |          |             |          |           |
| <b>BP</b>            |                              |          |     |          |      |           |          |             |          |           |
| <b>Switch series</b> |                              |          |     |          |      |           |          |             |          |           |
| <b>M</b>             | MPA Series                   |          |     |          |      |           |          |             |          |           |
| <b>T</b>             | TP & TP_ES Tiny Series       |          |     |          |      |           |          |             |          |           |
| <b>Nut thread</b>    |                              |          |     |          |      |           |          |             |          |           |
| <b>1532</b>          | 15/32-32 UNS 2-A             |          |     |          |      |           |          |             |          |           |
| <b>Color</b>         |                              |          |     |          |      |           |          |             |          |           |
| <b>0</b>             | black                        | <b>2</b> | red | <b>8</b> | gray |           |          |             |          |           |
| <b>Material</b>      |                              |          |     |          |      |           |          |             |          |           |
| <b>04</b>            | RoHS compliant               |          |     |          |      |           |          |             |          |           |

**BP Series Panel Seal (Continued)**

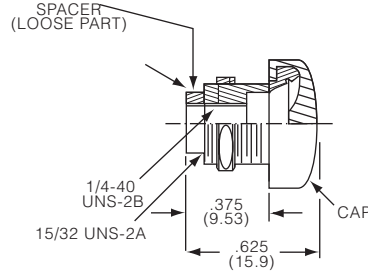
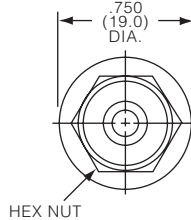
Switch series



**BPM BPM Series panel seal, suited for MPA series switches**



BPM1532004

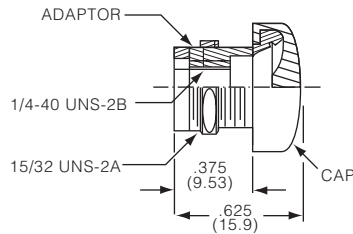
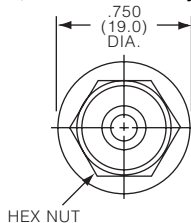


For use with Miniature Pushbutton  
The BPM seal adaptor accommodates all Tyco MPA Series of pushbutton switches utilizing the 1/4-40 threaded bushing.

**BPT BPT Series panel seal, suited for TP Tiny series switches**



BPT1532804



For use with Tiny Series TPF Pushbutton  
The BPT seal adaptor accommodates all Tyco TPF Series Tiny Pushbutton switches utilizing the 1/4-40 threading bushing.

Pushbutton Switches

| Product key | Used on switch type | Color | Material  | Part Number |
|-------------|---------------------|-------|-----------|-------------|
| BPM1532004  | MPA series          | black | RoHS      | 1825618-1   |
| BPM1532204  |                     | red   | compliant | 1825618-2   |
| BPM1532804  | TP Tiny series      | gray  |           | 1825618-3   |
| BPT1532004  |                     | black |           | 1825599-3   |
| BPT1532204  |                     | red   |           | 1825599-1   |
| BPT1532804  |                     | gray  |           | 1825599-2   |



Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

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- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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