

Product Range



Pushbutton Switches

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, ...



TSP Series, Tiny, Process Sealedpage D3



TP Series, Tinypage D6



TP_ES Series, Tiny, Process Sealedpage D15



MSPM Series, Magnetic Reed, Long Life, Hermetically Sealedpage D18

Product Range (Continued)

Pushbutton Switches



MSPF Series, Front or Rear Mount, 15/32 Bushingpage D20



MPA103 Series, Panel Mountpage D22



MSP103 Series, 2.5mm Travel, Panel Mountpage D23



MPS Series, Snap Actionpage D25



MP / A / E / G Green Seriespage D28



A60 Seriespage D33



Accessoriespage D35



BP Series Boot Sealspage D37



BP Series Panel Sealspage 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

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

TSP Series, Tiny, Process Sealed (Continued)

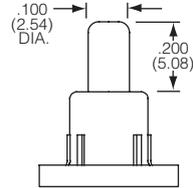
Actuator



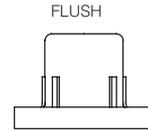
blank, F

standard actuator, flush actuator

blank, standard actuator



F, flush actuator



Terminations

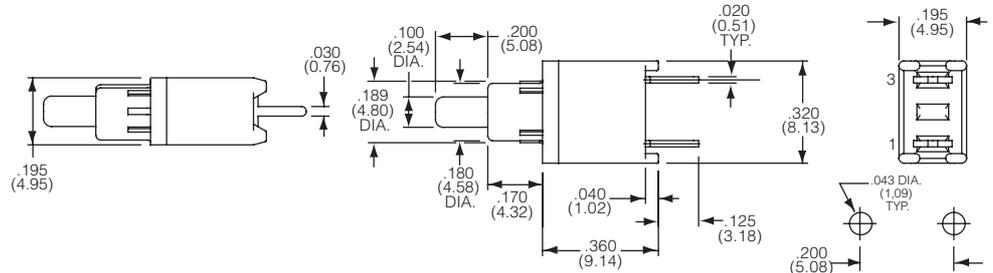


PC

printed circuit board

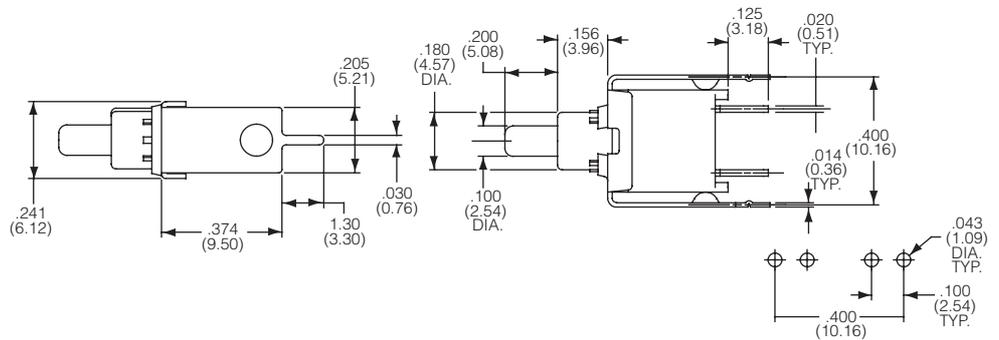


TSPD11CPC004



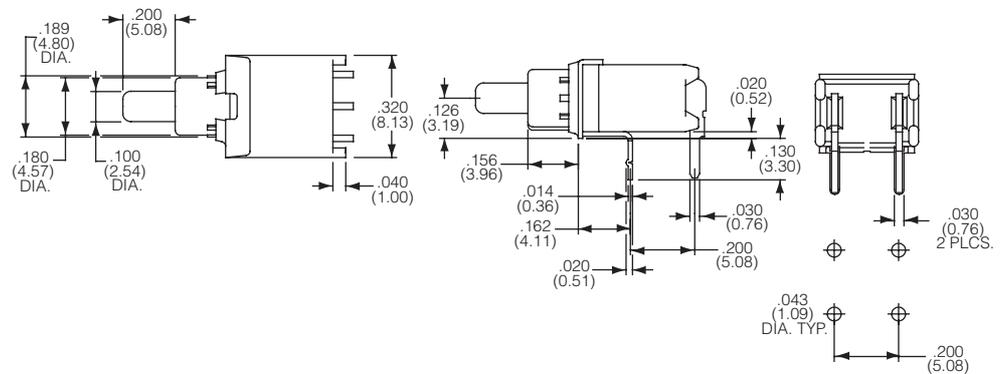
PCV

printed circuit board with vertical bracket



RA

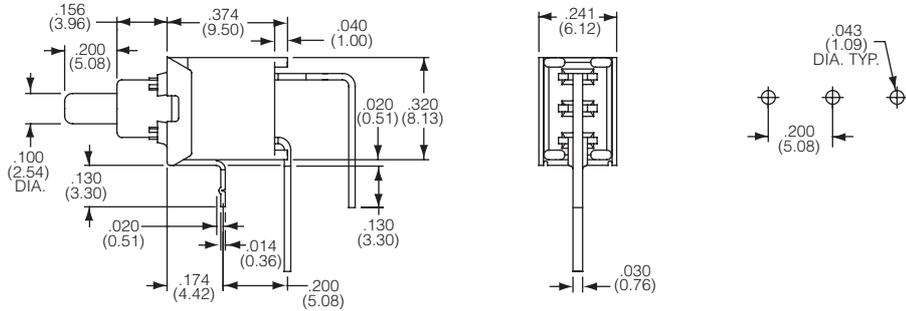
right angle



TSP Series, Tiny, Process Sealed (Continued)

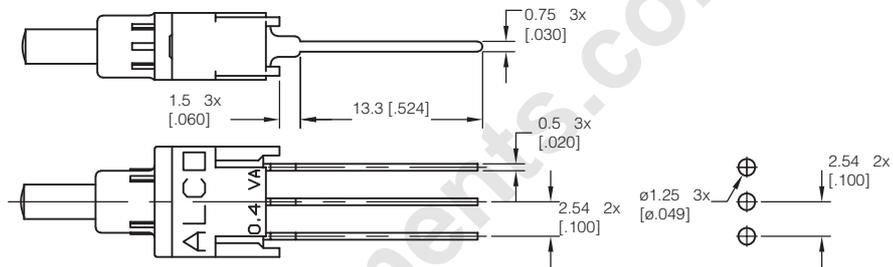
VRA

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

Pushbutton Switches

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

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

TP Series, Tiny (Continued)

Bushing

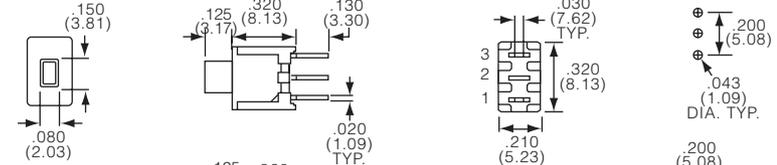


blank, square, no bushing

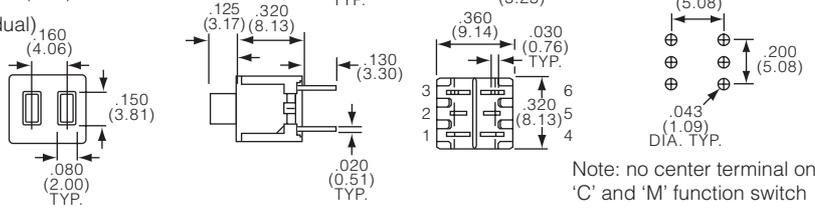
printed circuit board



Single pole



2 x Single pole (dual)

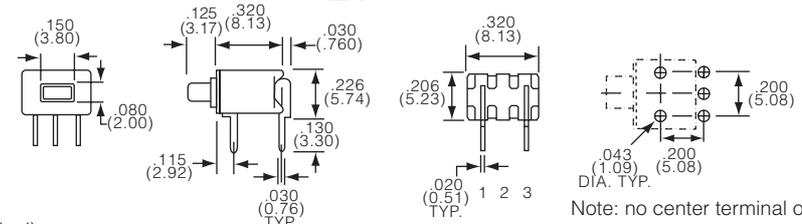


Note: no center terminal on 'C' and 'M' function switch

right angle



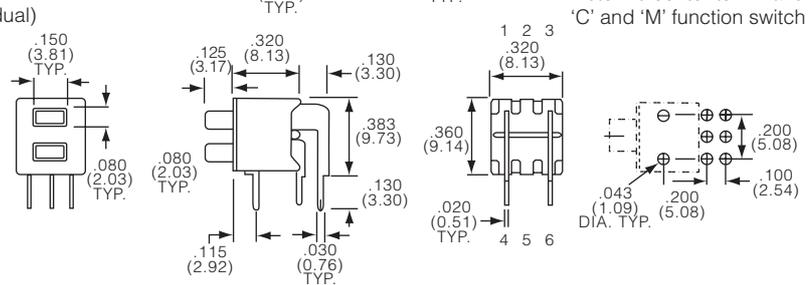
Single pole



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



2 x Single pole (dual)

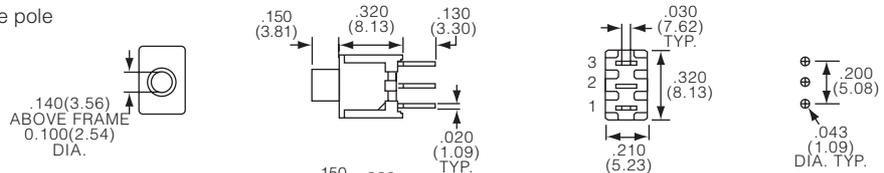


A, Round, no bushing

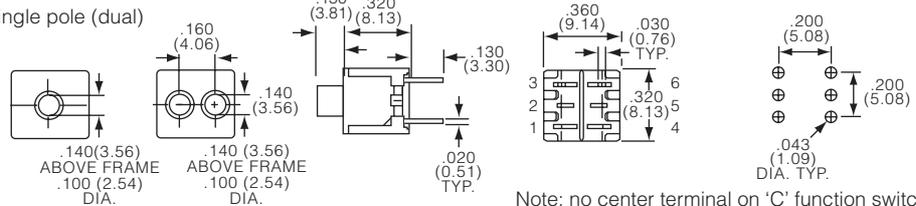
printed circuit board



Single pole



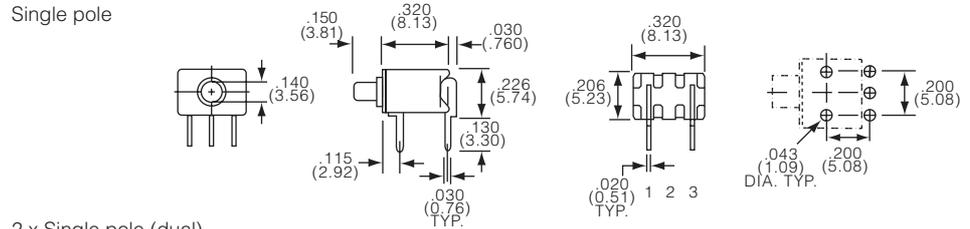
2 x Single pole (dual)



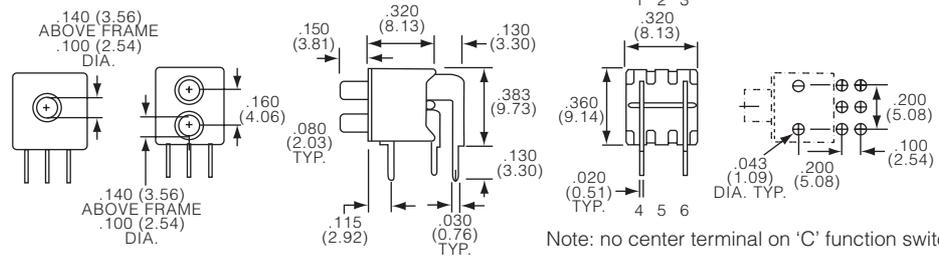
Note: no center terminal on 'C' function switch

TP Series, Tiny (Continued)

right angle

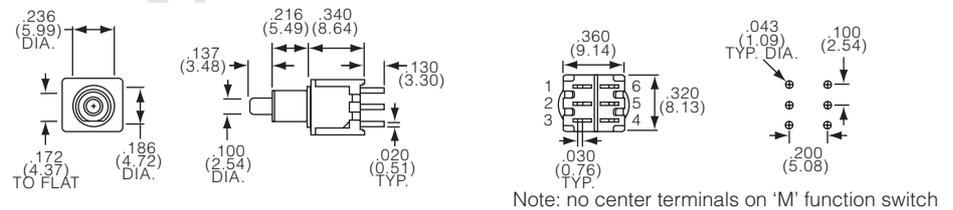
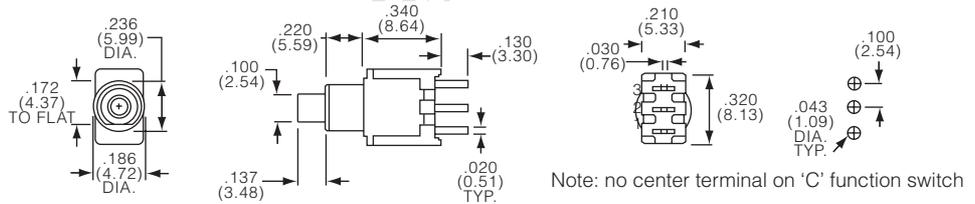


2 x Single pole (dual)

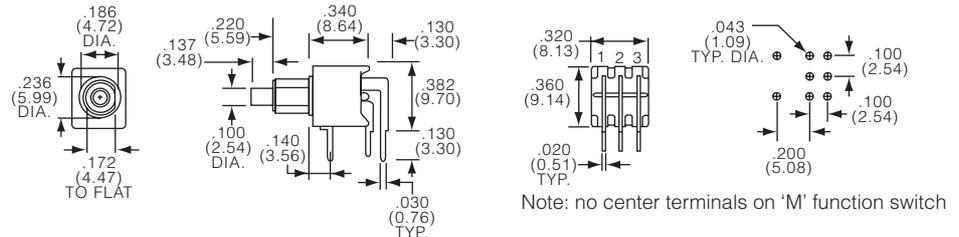
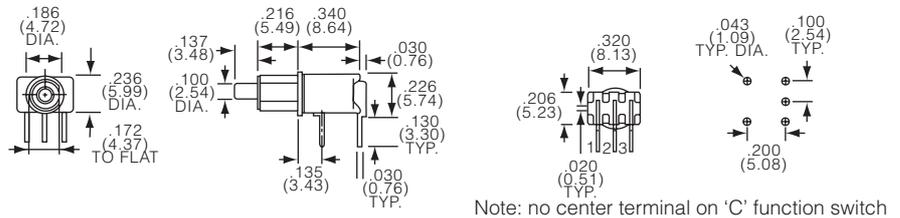


B, Round .188 (4.78) dia. bushing not threaded

printed circuit board

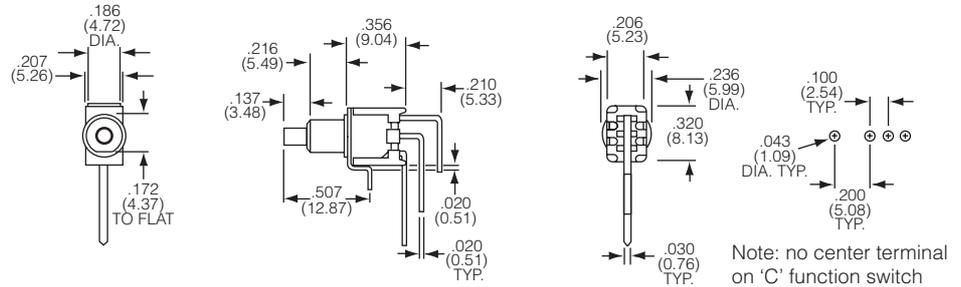


right angle

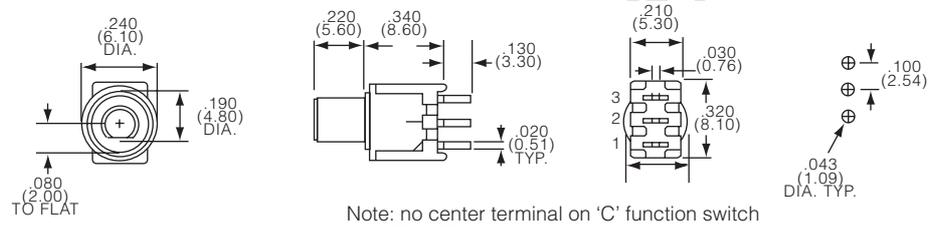


TP Series, Tiny (Continued)

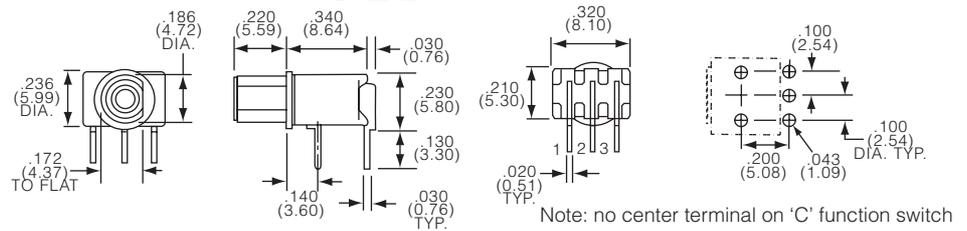
vertical right angle



printed circuit board, flush actuator

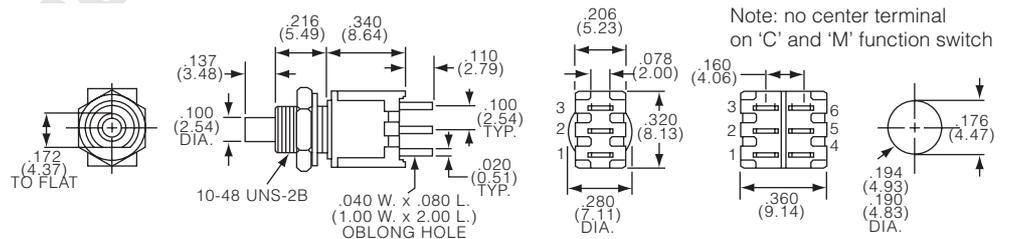


right angle, flush actuator

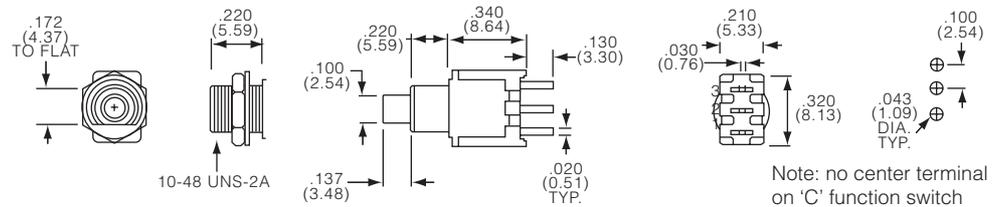


C, Round 10/48 UNS 2B thread

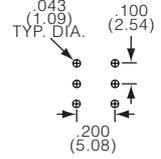
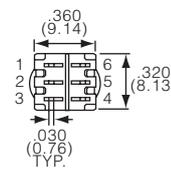
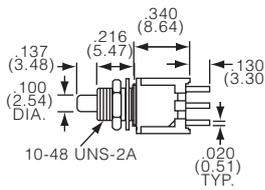
wire lug



printed circuit board

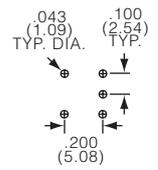
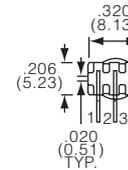
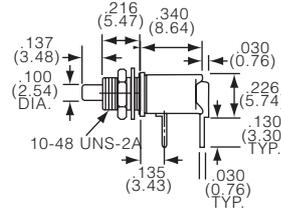


TP Series, Tiny (Continued)

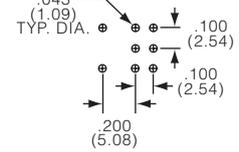
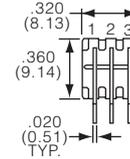
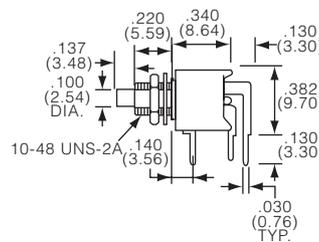


Note: no center terminals on 'M' function switch

right angle

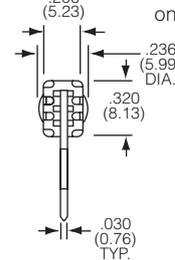
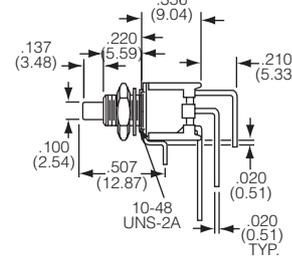
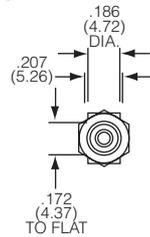


Note: no center terminal on 'C' function switch

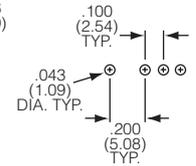


Note: no center terminals on 'M' function switch

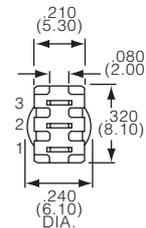
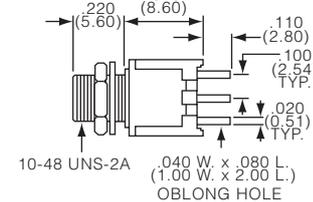
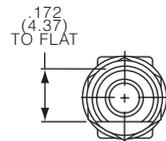
vertical right angle



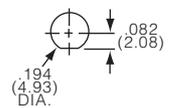
Note: no center terminal on 'C' function switch



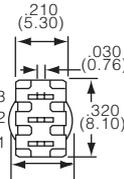
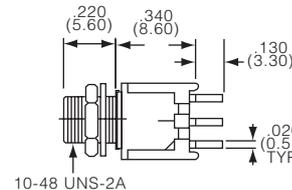
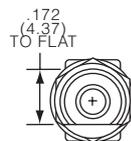
wire lug, flush actuator



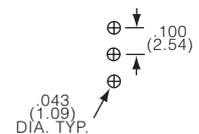
Note: no center terminal on 'C' function switch



printed circuit board, flush actuator

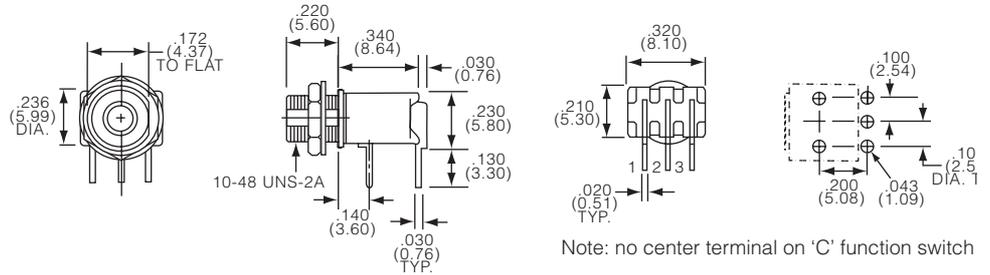


Note: no center terminal on 'C' function switch

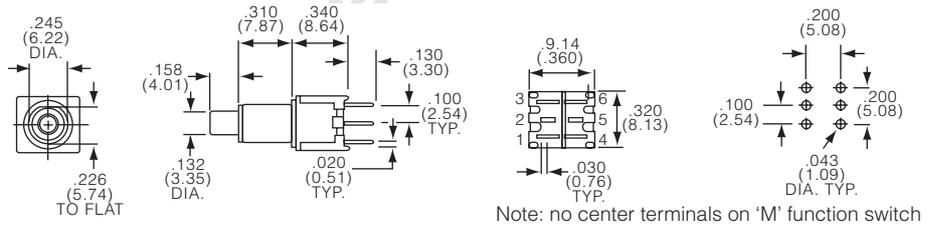
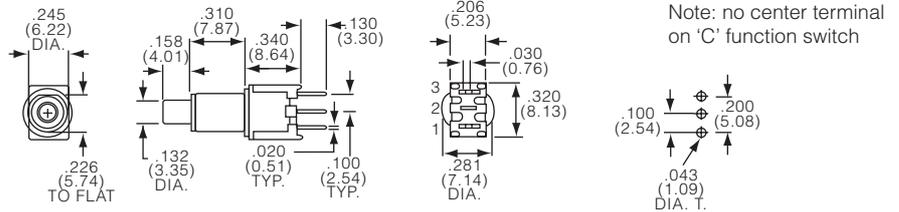


TP Series, Tiny (Continued)

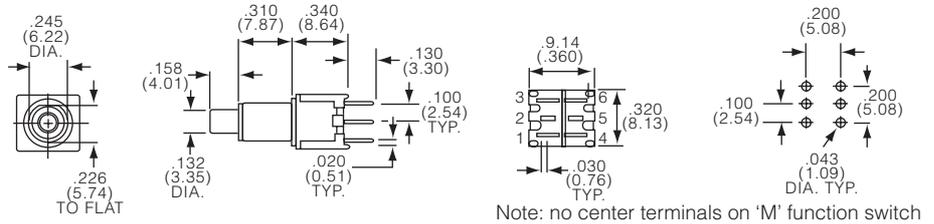
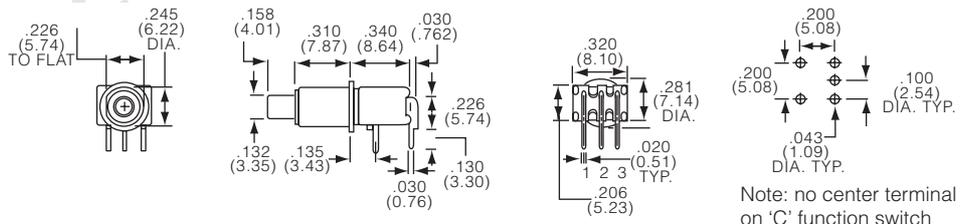
right angle, flush actuator



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



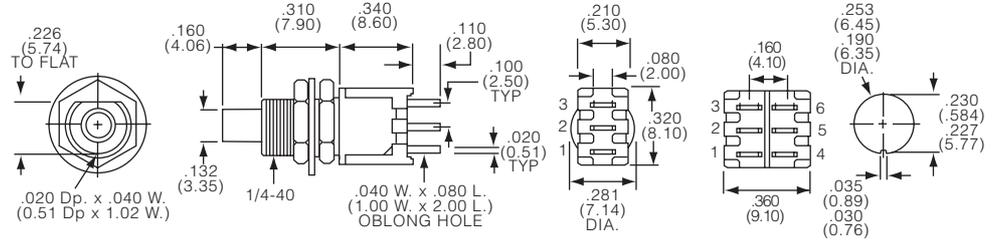
right angle



TP Series, Tiny (Continued)

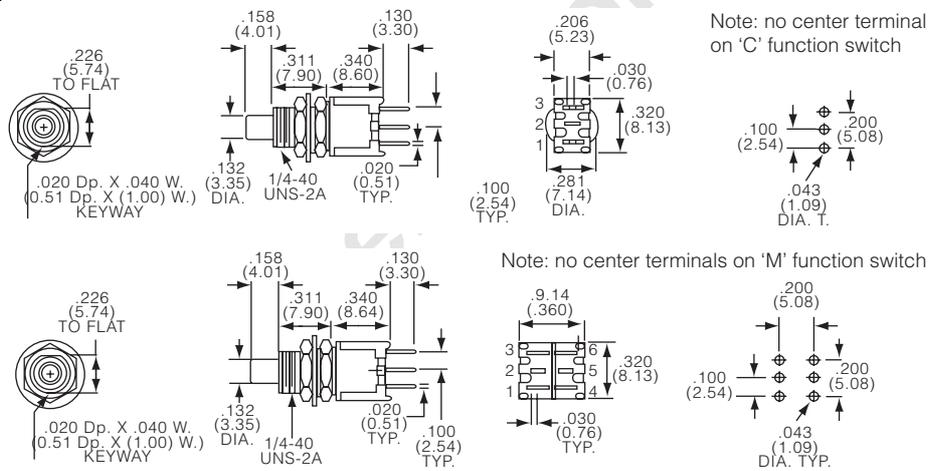
F, Round 1/4-40 UNS 2B thread

wire lug



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

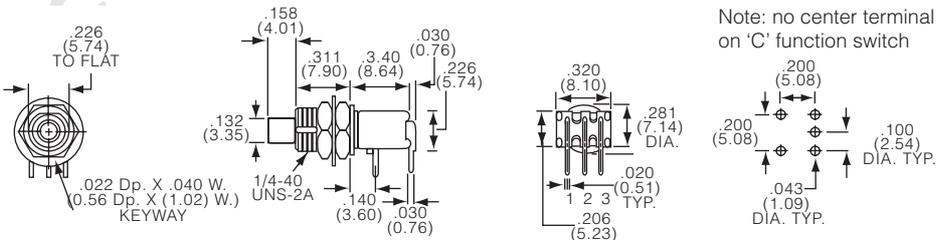
printed circuit board



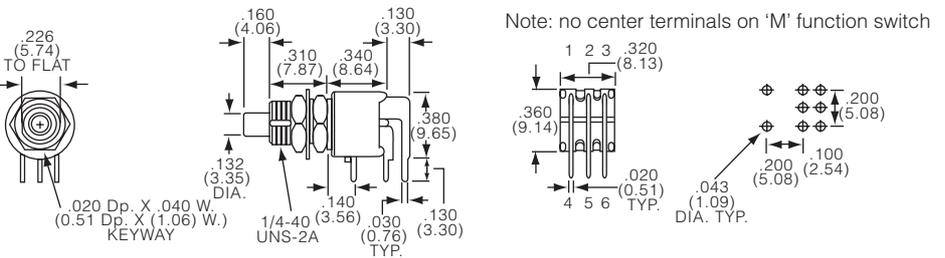
Note: no center terminal on 'C' function switch

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
TPA11CGPC004	round		1		Off-(On)	Off	1-3		pcb			1825096-1
TPA11CGPC204	no bushing									red		1825096-2
TPA11CGPC604										blue		1825096-3
TPA11CGRA004									right angle	black		1825096-4
TPA11CGRA204										red		1825096-5
TPA11CGRA604										blue		1825096-6
TPA11FGPC004					On-(On)	1-2	2-3		pcb	black		1825096-7
TPA11FGPC204										red		1825096-8
TPA11FGPC604										blue		1825096-9
TPA11FGRA004									right angle	black		1-1825096-0
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
TPB11CGPC004	round	std	1				1-3		pcb			1825097-1
TPB11CGPC204	.188 (4.78)									red		1825097-2
TPB11CGRA004	dia								right angle	black		1825097-6
TPB11CGRA204	bushing,									red		1825097-4
TPB11CGVRA004	not								vertical r.a.	black		1825097-8
TPB11FGPC004	threaded				On-(On)	1-2	2-3		pcb			1825097-9
TPB11FGRA004									right angle			1-1825097-1
TPB11FGRA204										red		1-1825097-2
TPB11FGRA604										blue		1-1825097-3
TPB11FGVRA004									vertical r.a.	black		1-1825097-6
TPB21MGPC004			2		Off-(On)	Off	1-3, 4-6		pcb			1-1825097-7
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

Pushbutton Switches

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

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

Pushbutton Switches

TP_ES Series, Tiny, Process Sealed (Continued)

Bushing

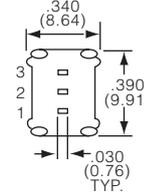
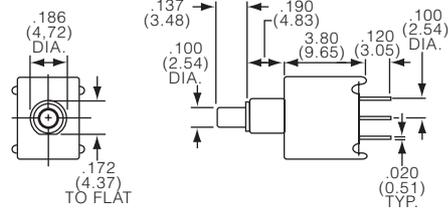


B, Round .188 (4.78) dia. bushing not threaded

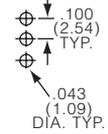
printed circuit board



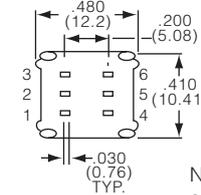
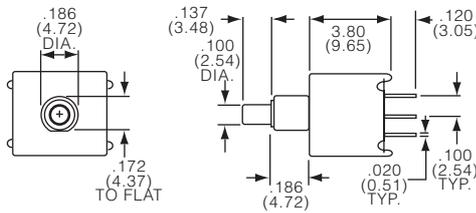
TPB11CGPCES



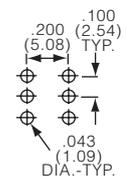
Note: no center terminal on 'C' function switch



TPB21RGPCES



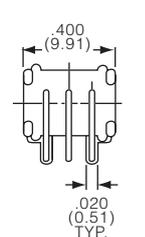
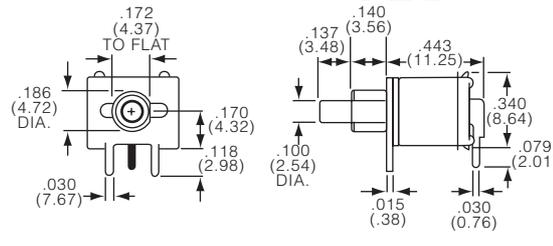
Note: no center terminals on 'M' function switch



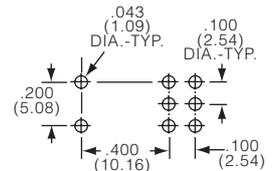
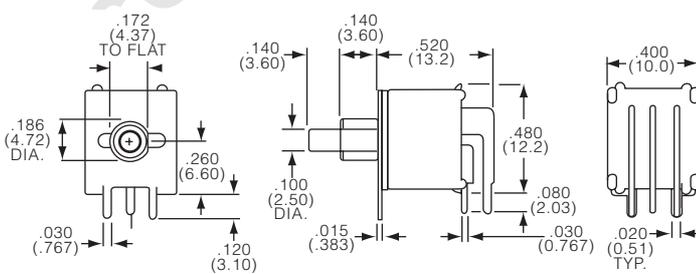
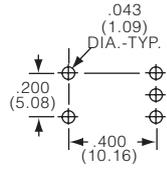
right angle



TPB11CGRAES



Note: no center terminal on 'C' function switch

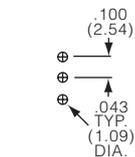
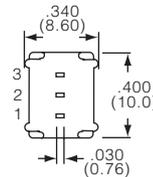
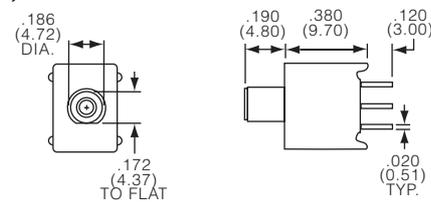


Note: no center terminals on 'M' function switch

printed circuit board, flush actuator



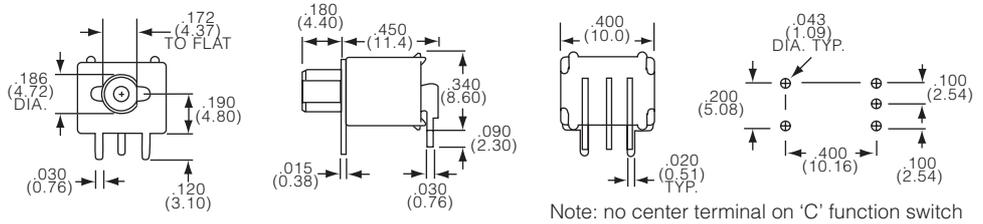
TPBF11CGPCES



Note: no center terminal on 'C' function switch

TP_ES Series, Tiny, Process Sealed (Continued)

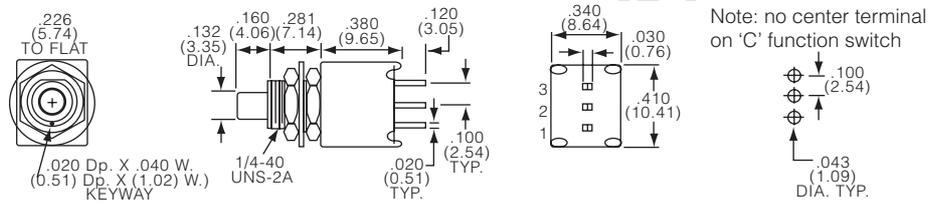
right angle, flush actuator



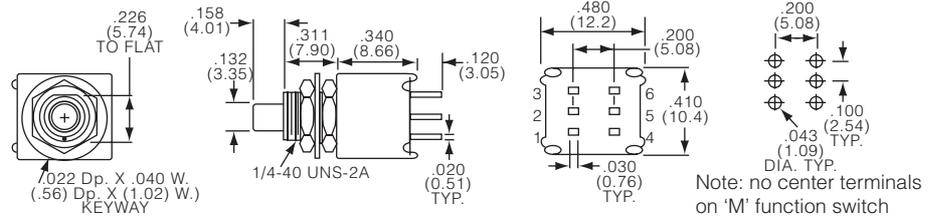
Note: no center terminal on 'C' function switch

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

printed circuit board



Note: no center terminal on 'C' function switch



Note: no center terminals on 'M' function switch

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

Pushbutton Switches

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

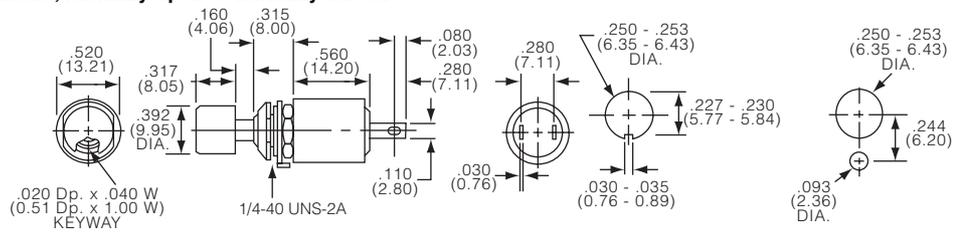
Contacts copper alloy gold plated over nickel
 Actuator polyamide
 Terminals copper alloy gold plated over nickel
 Case steel
 RoHS Directive 2002/95/EC compliant

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

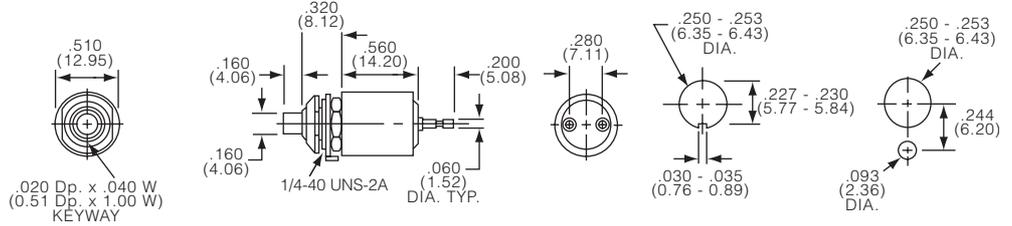
MSPM Series, Magnetic Reed, Long Life, Hermetically Sealed (Continued)

Button

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



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

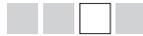


Product key	Action	Button	Terminals	Material	Part Number
MSPM101B004	normally closed	with button	pin	RoHS	1825538-1
MSPM101B104	black button	soft detent	wire lug	compliant	1825538-2
MSPM101C104	normally open				1825538-3
MSPM101C204	red button		pin		1825538-4
MSPM101BS04	normally closed	without button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

Pushbutton Switches

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

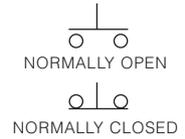
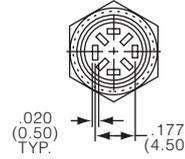
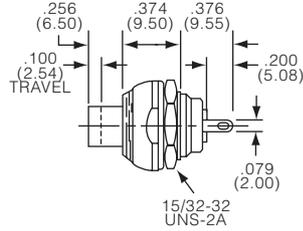
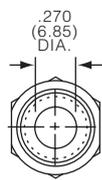
Action



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



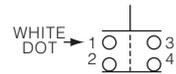
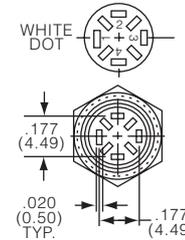
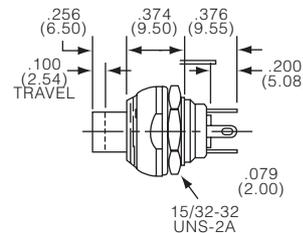
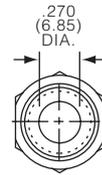
MSPF101B



Code BC normally closed and normally open, 2 circuits

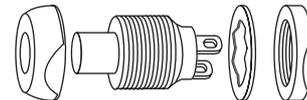


MSPF101BC



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

Pushbutton Switches

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



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

Type

MPA Sub-Miniature Pushbutton

Version

103 standard

Action

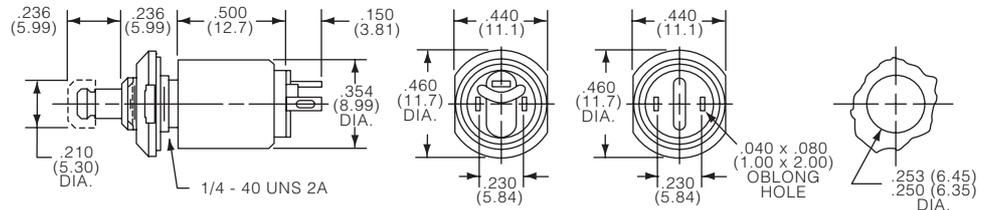
B Normally Closed, momentary	D Push on/Push off - (tactile)
C Normally Open, momentary	F Momentary - (tactile)

Material

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 (Continued)

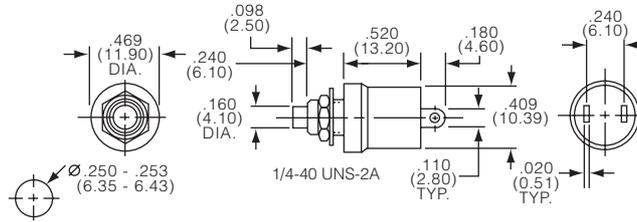
Contact



103 3 A contact



MSP103B

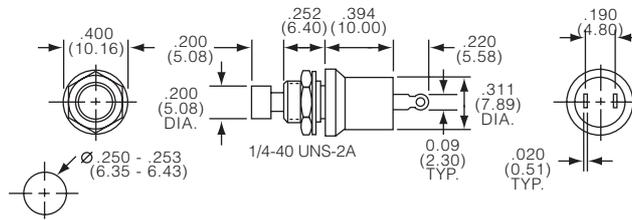


Contact	Action	Bushing len.
103	B	6.00mm (.236)
	C	6.00mm (.236)
	C0	6.00mm (.236)
	C2	9.50mm (.374)

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 @125 VAC	N/C	SPST	black	wire lug	RoHS	1825516-1
MSP103C04		N/O		red		compliant	1825516-2
MSP103C004				black			1825516-3
MSP103C204				red			1825516-4
MSPS103B	0.5 A @125 VAC	N/C		black			1437568-5
MSPS103C0		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

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

MPS Series, Snap Action (Continued)

Function



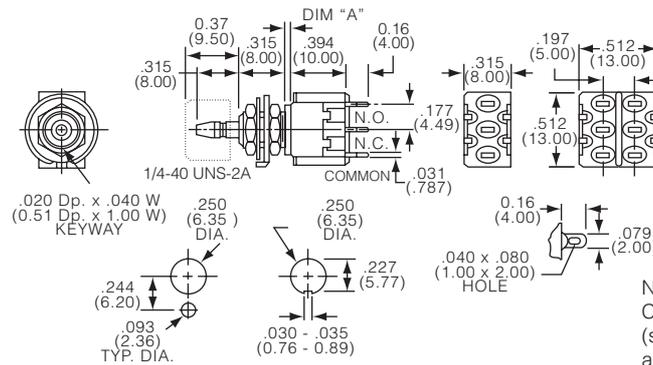
Fct.	Poles				
D	1	On	On	3-2	3-1
F	1	On	(On)	3-2	3-1
N	2	On	On	3-2, 6-5	3-1, 6-4
R	2	On	(On)	3-2, 6-5	3-1, 6-4

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

Terminals



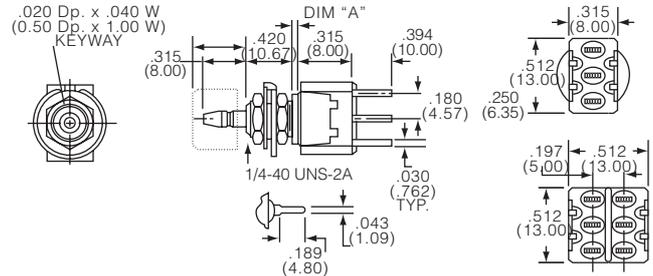
blank wire lug



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)

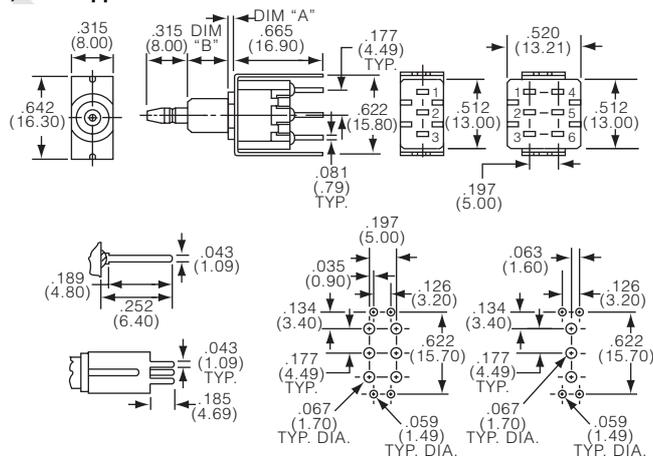
PC printed circuit board



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

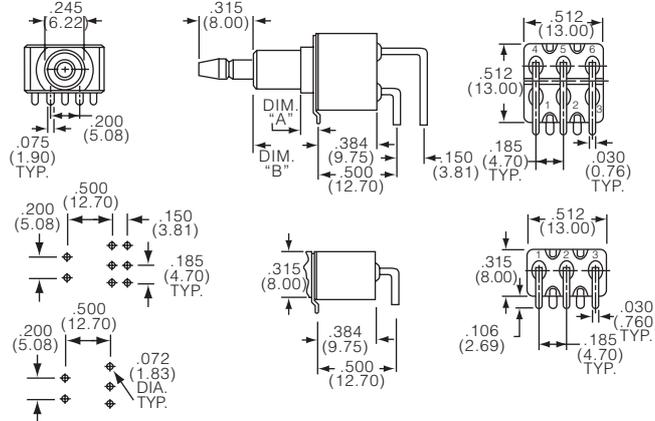


Funct	Dim A	Dim B
D	2.03 (.080)	8.00 (.315)
F	1.01 (.040)	7.49 (.295)
R	1.01 (.040)	7.49 (.295)

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

MPS Series, Snap Action (Continued)

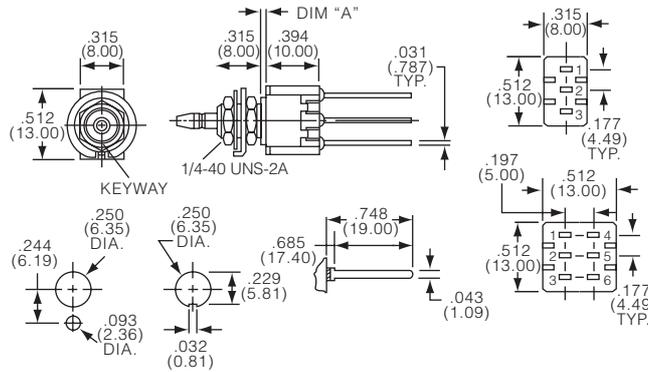
RA right angle, printed circuit board



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 @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

Pushbutton Switches

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 momentary			N 2 & 4 pole push-on/push-off momentary			R momentary		
Terminals	blank wire lug			PC printed circuit board					
Material	04 RoHS compliant								

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

Bushing style A



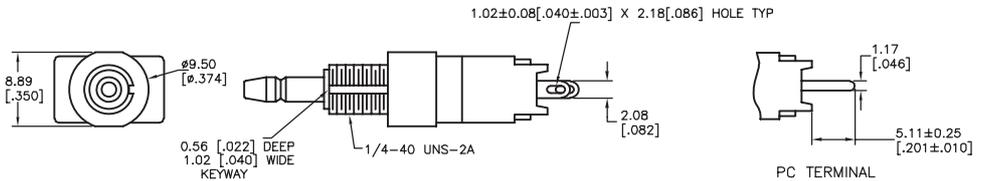
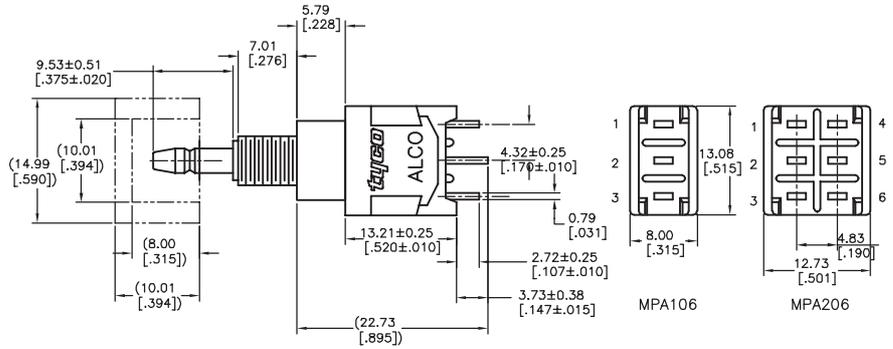
single & double pole



MPA106D



MPA206N



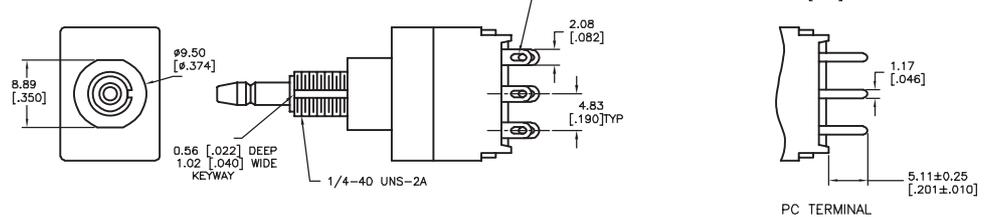
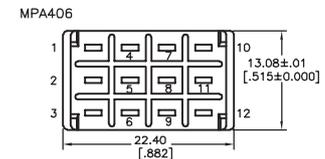
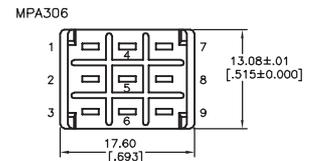
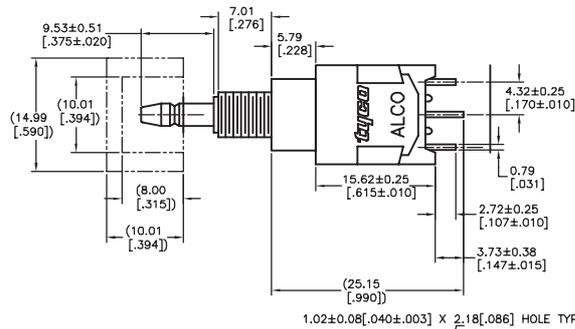
3 & 4 pole



MPA306D

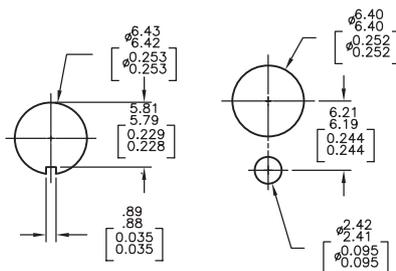


MPA406N

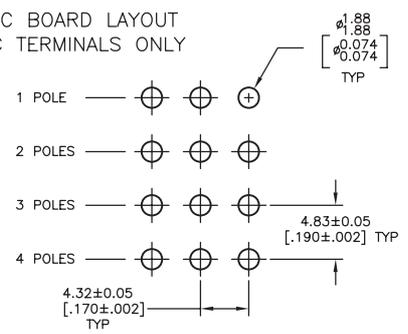


mounting

RECOMMENDED HOLE LAYOUT TO PREVENT ROTATION



PC BOARD LAYOUT PC TERMINALS ONLY



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

Bushing style E

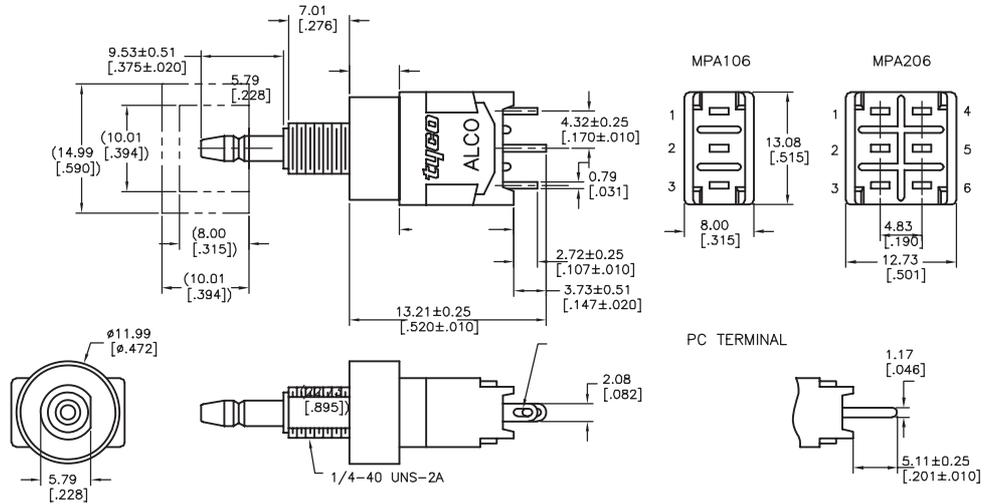
single & double pole



MPE106D



MPE206N



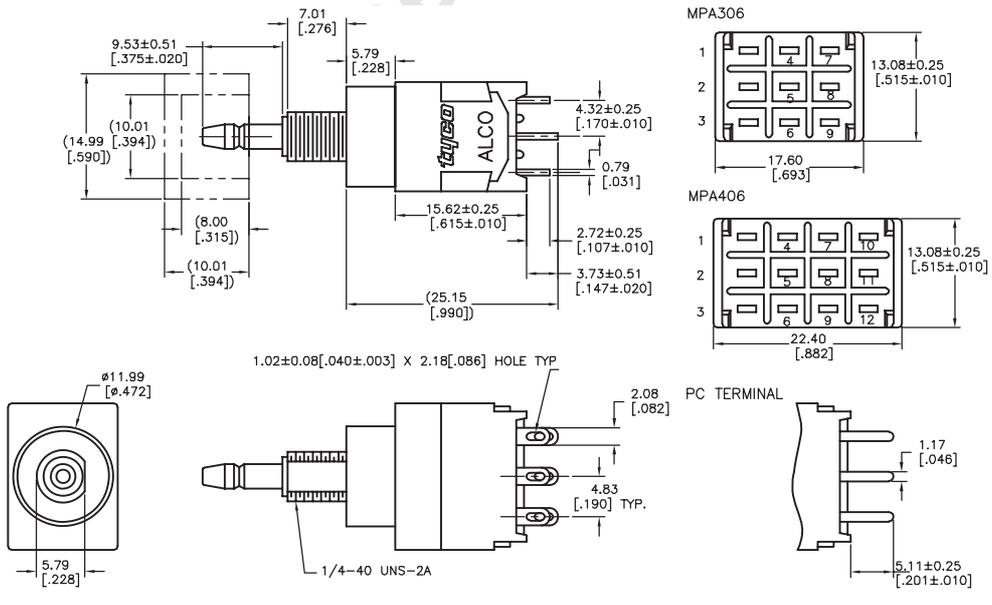
3 & 4 pole



MPE306F

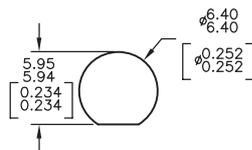


MPE406N

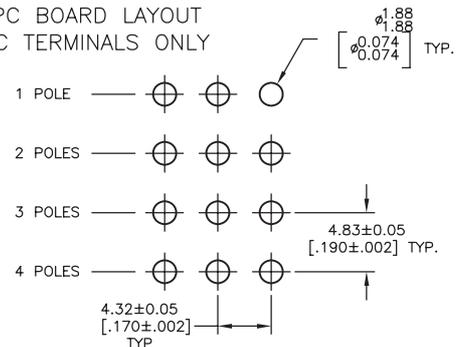


mounting

RECOMMENDED HOLE LAYOUT TO PREVENT ROTATION



PC BOARD LAYOUT
PC TERMINALS ONLY



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

Bushing style G

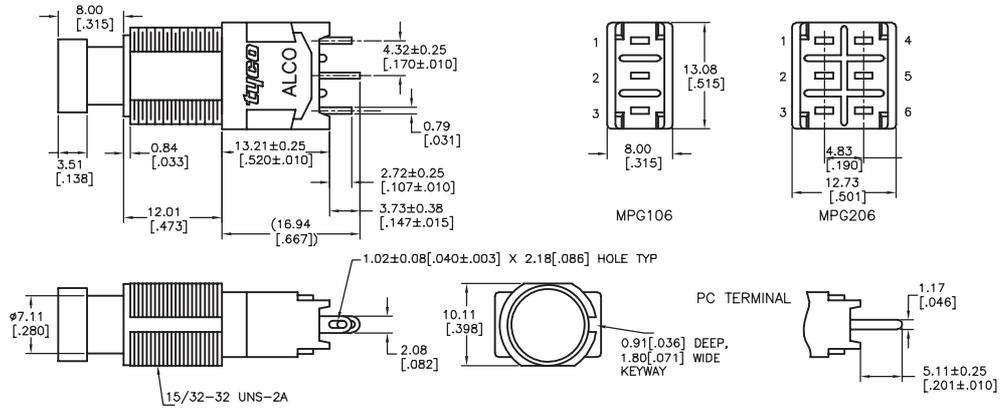
single & double pole



MPG106D



MPG206NPC



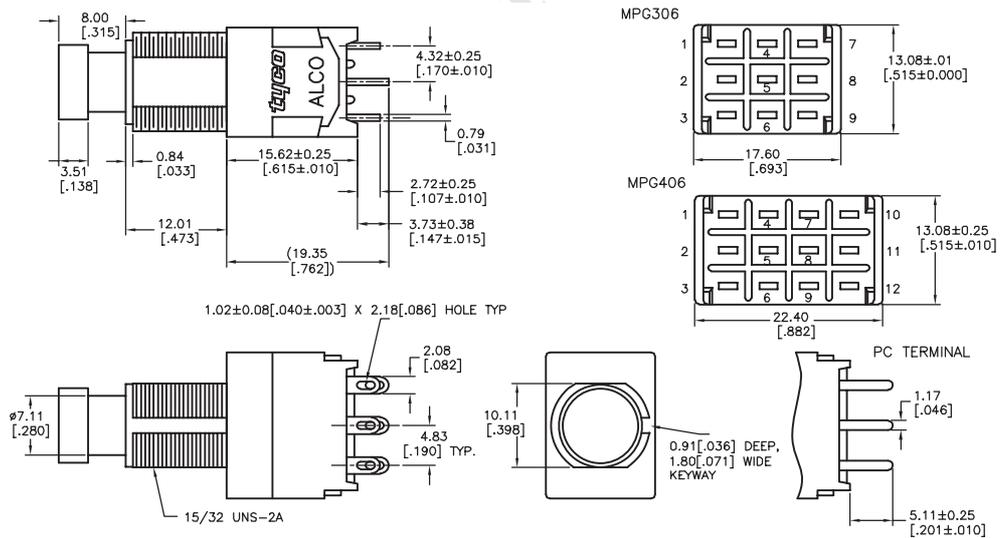
3 & 4 pole



MPG306D

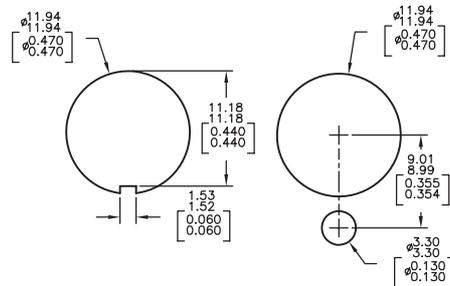


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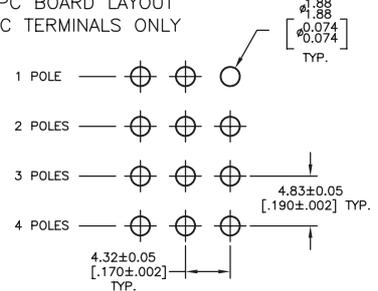


mounting

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
MPA106D04	1/4-40	single pole	6 Amps	push-on/push-off	wire lug	RoHS compliant	1825040-1
MPA106F04	3.4mm			momentary			1825040-2
MPA106DPC04	actuator			push-on/push-off	pcb		1825040-3
MPA106FPC04				momentary			1825040-4
MPA206N04		double pole		push-on/push-off	wire lug		1825040-5
MPA206NPC04					pcb		1825040-6
MPA206R04				momentary	wire lug		1825040-7
MPA206RPC04					pcb		1825040-8
MPA306D04		3 poles		push-on/push-off	wire lug		1825040-9
MPA306F04				momentary			1-1825040-0
MPA406N04		4 poles		push-on/push-off			1-1825040-1
MPA406R04				momentary			1-1825040-2
MPE106D04	1/4-40	single pole		push-on/push-off			1825041-1
MPE106F04	3.4mm			momentary			1825041-2
MPE206N04	actuator	double pole		push-on/push-off			1825041-3
MPE206R04	with 'O' ring			momentary			1825041-4
MPE306D04		3 poles		push-on/push-off			1825041-5
MPE306F04				momentary			1825041-6
MPE406N04		4 poles		push-on/push-off			1825041-7
MPE406R04				momentary			1825041-8
MPG106D04	15/32-32	single pole		push-on/push-off			1825042-1
MPG106DPC04	large			push-on/push-off	pcb		1825042-2
MPG106F04	actuator			momentary	wire lug		1825042-3
MPG106FPC04					pcb		1825042-4
MPG206N04		double pole		push-on/push-off	wire lug		1825042-5
MPG206NPC04					pcb		1825042-6
MPG206R04				momentary	wire lug		1825042-7
MPG206RPC04					pcb		1825042-8
MPG306D04		3 poles		push-on/push-off	wire lug		1825042-9
MPG306F04				momentary			1-1825042-0
MPG406N04		4 poles		push-on/push-off			1-1825042-1
MPG406R04				momentary			1-1825042-2

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

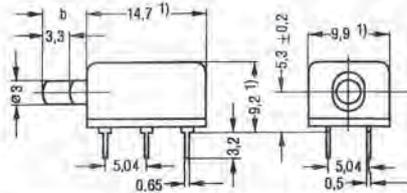
Environmental specification

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

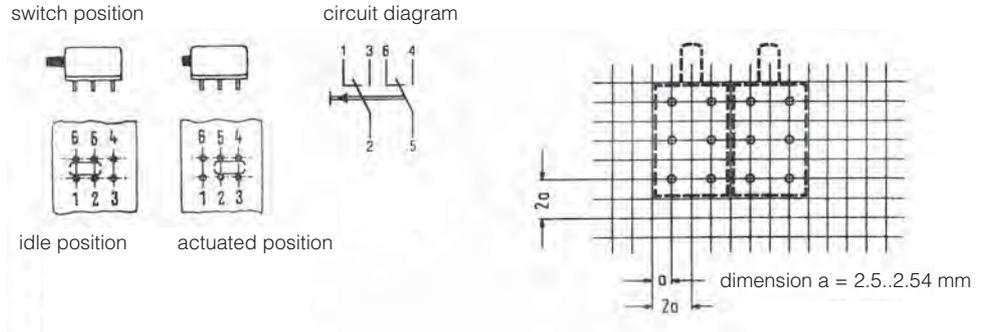
Dimensions



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

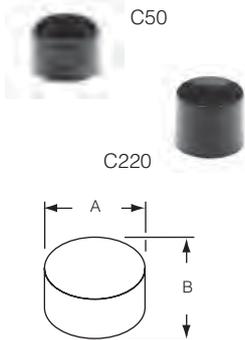
Pushbutton Switches

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Accessories

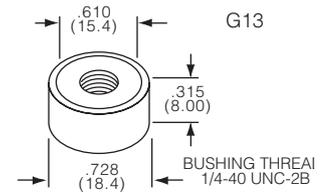
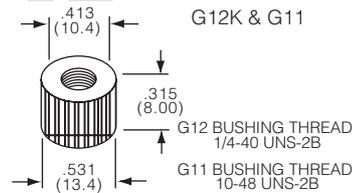


Caps



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)	4.06 (.160)		6-1437627-7
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 MPE/MPA6	black	10.2 (.402)	8.00 (.315)		1825068-1
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

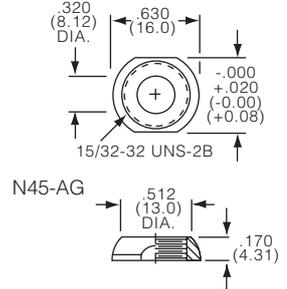
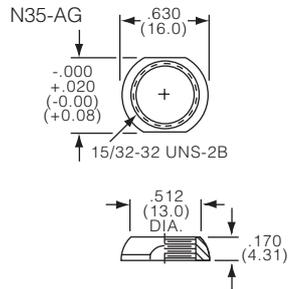
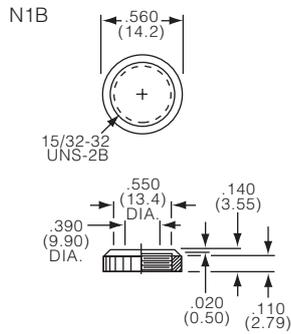


Product key	Thread	Color	Texture	Material	Part Number
G11A	10-48	natural Aluminum	smooth	RoHS compliant	7-1437627-6
G11B		black Aluminum			7-1437627-7
G11C		chrome brass			7-1437627-8
G11KA	1/4-40	natural Aluminum	straight knurl		7-1437627-9
G11KB		black Aluminum			8-1437627-0
G12A		natural Aluminum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

Pushbutton Switches

Accessories (Continued)

Decorative Hardware



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

Pushbutton Switches

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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

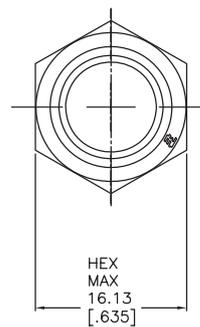
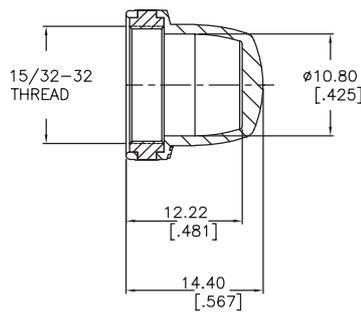
Type		BP Pushbutton boot seals	
Nut thread		1048 10-48 UNS 2-B A1440 1/4-40 UNS 2-B 1440 1/4-40 UNS 2-B 1532 15/32-32 UNS 2-B 2010 1/4-40 UNS 2B with knurl	
Color		0 black 2 red 8 gray	
Material		04 RoHS compliant	

Nut thread

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



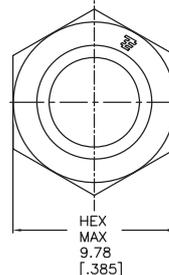
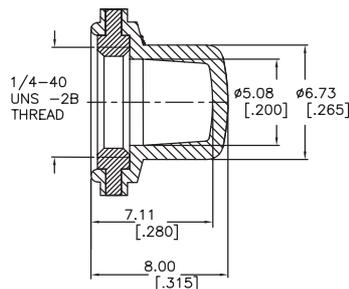
BP1048004



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



BPA1440004

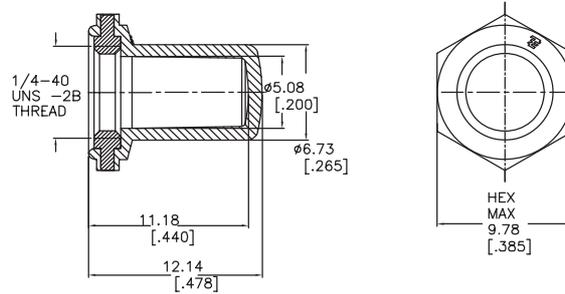


BP Series Boot Seals (Continued)

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



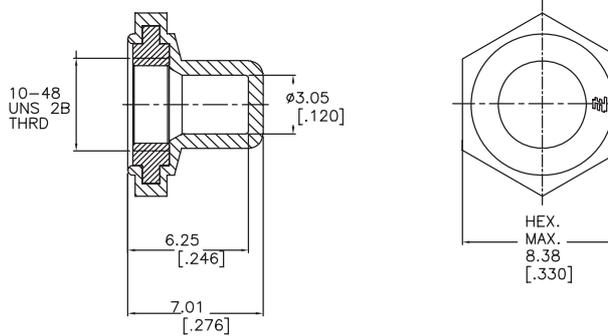
BP1440004



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



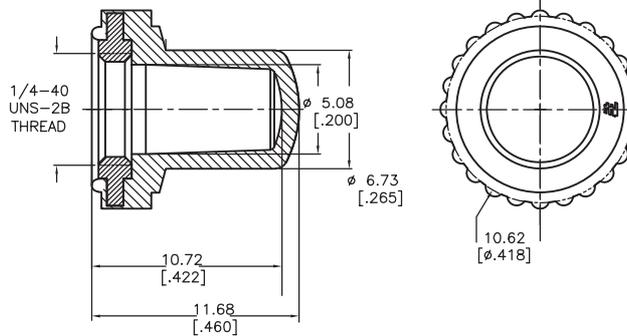
BP1532004



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
15/32-32 Pushbutton Boot Seals					
BP1532004	MSPF and MPG series	15/32-32	black	RoHS compliant	1825603-1
BP1532204			red		1825603-2
BP1532804			gray		1825603-3
1/4-40 Pushbutton Boot Seals					
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
10-48 Pushbutton Boot Seals					
BP1048004	TP series	10-48	black	RoHS compliant	1825615-1
BP1048204			red		1825615-2
1/4-40 Knurled Pushbutton Boot Seal					
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

Product key

Typical product key

BP M 1532 0 04

Type

BP Pushbutton switch panel seal

Switch series

M MPA Series
T TP & TP_ES Tiny Series

Nut thread

1532 15/32-32 UNS 2-A

Color

0 black **2** red **8** gray

Material

04 RoHS compliant

BP Series Panel Seal (Continued)

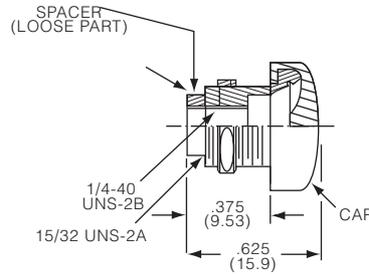
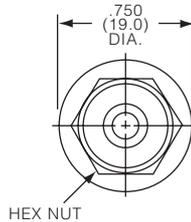
Switch series



BPM BPM Series panel seal, suited for MPA series switches



BPM1532004

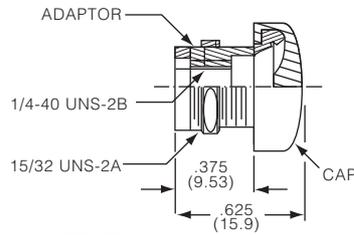
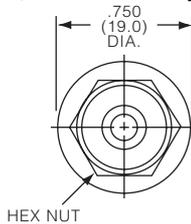


For use with Miniature Pushbutton
The BPM seal adaptor accommodates all Tyco MPA Series of pushbutton switches utilizing the 1/4-40 threaded bushing.

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