



**THE DATASHEET OF  
AP2N002SZBE**





# AP Series Industrial Pushbutton Switch

Pushbutton A

## Features/Benefits

- IP67 sealed
- 1,000,000 life cycle
- Illumination / non-illumination
- Multiple colored caps
- Threaded or snap-in mounting
- Caps available separately
- RoHS compliant

## Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Medical
- Transportation
- Joystick control modules
- Gaming
- Military



## Specifications

FUNCTION: SPST Momentary  
 CONTACT ARRANGEMENT: N.O.  
 MOUNTING TYPE:  
 Snap-in (no panel seal)  
 Threaded body (hex nut, lock washer, and panel seal gasket provided)  
 Torque spec for threaded body: Do not exceed 8-9 in-lbs (0.9-1.0 N.m)

## Mechanical

OPERATING LIFE: 1,000,000 cycles  
 TOTAL TRAVEL: 2.1 ± 0.2 mm  
 OPERATING POINT 1.55 ± 0.25 mm  
 OVER TRAVEL: 0.6 min.  
 OPERATING FORCE: 4N ± 1N standard configuration; other force option 2N ± 0.5N  
 VIBRATION: 10-500 Hz 10g Max  
 SHOCK: 60g 11ms sawtooth wave

## Electrical

CONTACT RATING:  
 200mA @ 24 V DC resistive (500,000 cycles)  
 100mA @ 50 V DC resistive (500,000 cycles)  
 400mA @ 32 V AC resistive (500,000 cycles)  
 125mA @ 125 V AC resistive (1,000,000 cycles)  
 DIELECTRIC STRENGTH: 1000 V AC min.  
 INSULATION RESISTANCE: 1 G Ω @ 500 VDC  
 INITIAL CONTACT RESISTANCE 50 mΩ max (without wire leads)  
 BOUNCE TIME: <5 ms

## Materials

HOUSING: PBT  
 BASE: PBT  
 CAP: PBT  
 ACTUATOR:  
 Illuminated: Clear polycarbonate  
 Non-illuminated: PBT  
 INTERNAL SEAL: Silicone rubber  
 TERMINALS: Copper alloy, gold over silver plating  
 MOVABLE CONTACT: Copper alloy, gold over silver plating  
 TERMINAL SEAL: Epoxy  
 WIRE LEADS: UL1569 Black 22 AWG

## Operating Environment

OPERATING TEMPERATURE: -40°C to 85°C (+105°C non-illuminated)  
 ESD PROTECTION: 20 KV min.

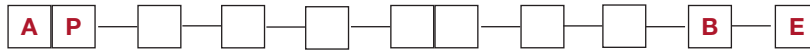
## Process Environment

SEALING: IP67 for threaded body  
 IP65 for snap-in version (no panel seal)

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



Designation \_\_\_\_\_

**AP** AP Series

Operating Force \_\_\_\_\_

**2** 2 Newtons  
**4** 4 Newtons

Actuator Style \_\_\_\_\_

**D** Dome / Convex  
**C** Concave  
**E** Extended Dome  
**N** None

Actuator Color \_\_\_\_\_

**0** No Cap  
**2** Black  
**3** Red  
**4** Orange  
**5** Yellow  
**6** Green  
**7** Blue  
**9** Gray

Illumination \_\_\_\_\_

**00** No LED\*  
**01** Super White  
**02** Bi-color; Red (Green)  
**03** Red  
**05** Amber  
**06** Green  
**07** Super Blue  
**08** Bi-color; Amber (Green)

Terminal Seal \_\_\_\_\_

**E** Epoxy  
 All models are epoxy sealed

Contact Material \_\_\_\_\_

**B** Gold

Termination \_\_\_\_\_

**Z** Solder Lug  
**W** 12" Wire Leads 22 AWG  
**C\*\*\*** PC Terminals

Bushing Style\*\* \_\_\_\_\_

**S\*\*** Snap-in plastic  
**T** Threaded plastic

\*\* No panel seal option

\*\*\* PC terminals not available with illumination

Contact Customer Service for additional hardware options.

Please contact Customer Service for additional colors and paint / laser etched button options.

\* No LED available in short body only



28 Jul 21

Specifications and dimensions subject to change

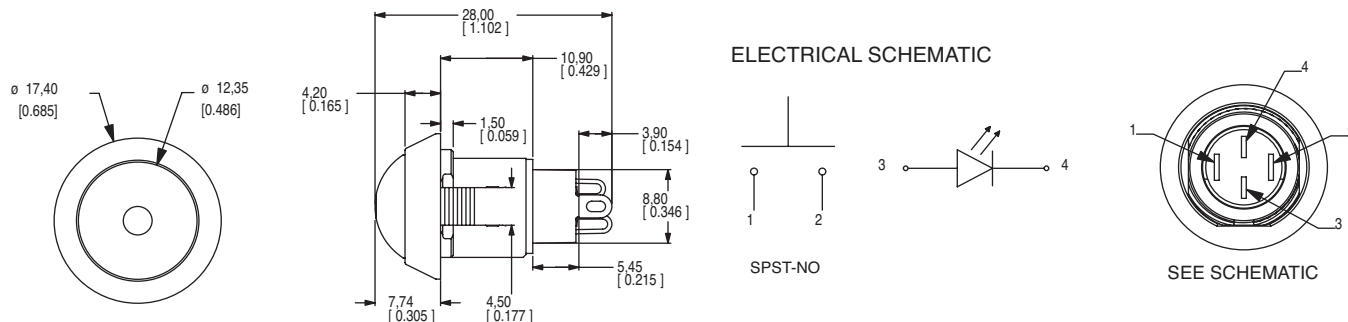
# AP Series Industrial Pushbutton Switch



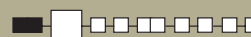
A

Pushbutton

## STANDARD VIEW

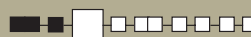


## OPERATING FORCE

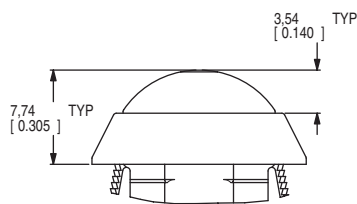


OPTION CODE	OPERATING FORCE
<b>2</b>	2 N, 200 g
<b>4</b>	4 N, 400 g

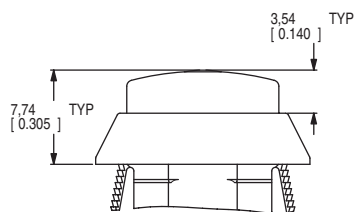
## ACTUATOR STYLE



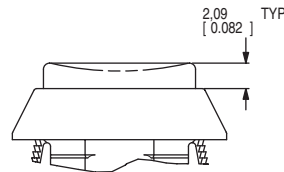
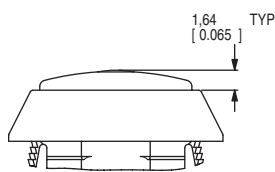
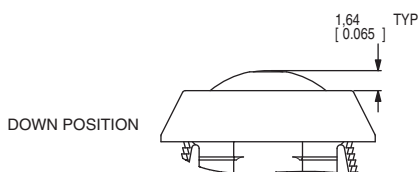
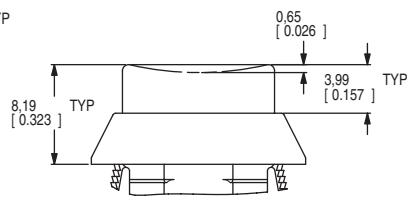
### D DOME / CONVEX



### E EXTENDED DOME



### C CONCAVE

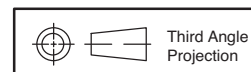


## ACTUATOR COLOR



OPTION CODE	ACTUATOR COLOR
<b>0</b>	No Cap
<b>2</b>	Black
<b>3</b>	Red
<b>4</b>	Orange
<b>5</b>	Yellow
<b>6</b>	Green
<b>7</b>	Blue
<b>9</b>	Gray

For additional colors please contact Customer Service.



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Dimensions are shown: mm (inches)  
 Specifications and dimensions subject to change



# AP Series Industrial Pushbutton Switch

A

Pushbutton

## ILLUMINATION



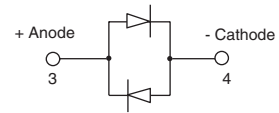
OPTION CODE	ILLUMINATION TYPE	TYPICAL INTENSITY*		PEAK WAVELENGTH	Vf Forward Voltage
		MIN	MAX		
		(mcd)		(nm)	
00	Model without illumination	N/A		N/A	
01	LED Super White	4,000	5,000	N/A	3.5
02	LED Bi-Color – Red (Green)	10	20	635/565	2.0
03	LED Red	4	8	700	2.0
05	LED Amber	35	50	610	2.0
06	LED Green	35	50	565	2.0
07	LED Super Blue	800	1,500	470	3.8
08	LED Bi-Color – Amber (Green)	10	10	585/565	2.0

\*LED FORWARD CURRENT: 20 mA  
 LED FORWARD VOLTAGE: see chart above  
 LED REVERSE VOLTAGE: 5.0 V MAX

\* For information on specific and custom LED, please contact Customer Service.

NOTE:

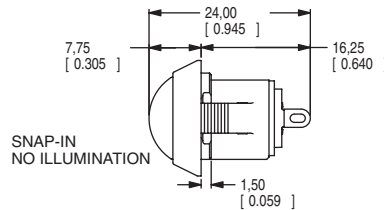
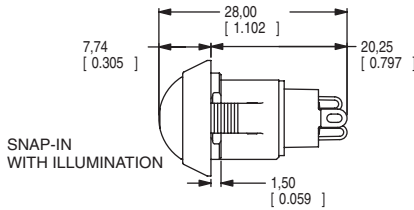
For bi-color LED's the polarity must be reversed to alternate the color



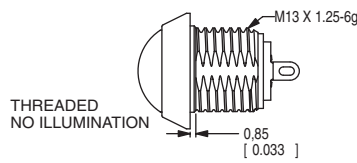
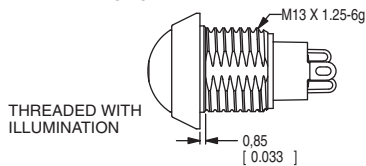
## BUSHING STYLE



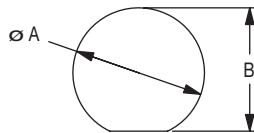
### S SNAP-IN



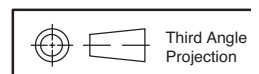
### T THREADED PLASTIC



### PANEL CUTOUT



PANEL THICKNESS	DIM A (± 0.05 mm)	DIM B (± 0.05 mm)
1 mm [0.039 in]	13.70 mm [0.539 in]	13.00 mm [0.512 in]
2 mm [0.079 in]	13.80 mm [0.539 in]	13.00 mm [0.512 in]
3 mm [0.118 in]	13.90 mm [0.547 in]	13.10 mm [0.516 in]
THREADED BODY MIN PANEL THICKNESS 1 mm	13.70 mm [0.539 in]	13.00 mm [0.512 in]



A 0.1mm min. chamfer on the leading edge of the mounting hole is recommended for snap-in version.  
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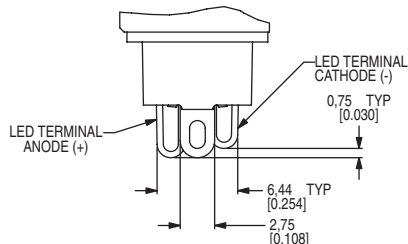
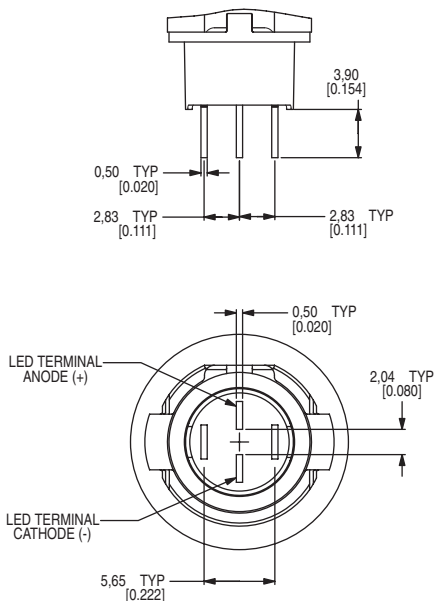
Dimensions are shown: mm (inches)  
 Specifications and dimensions subject to change



### TERMINATION



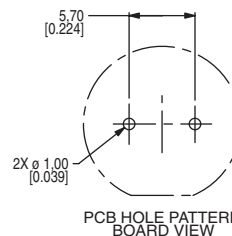
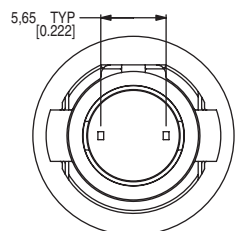
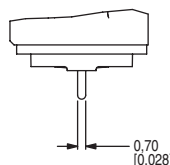
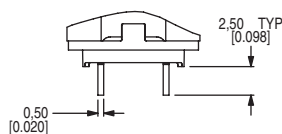
#### Z SOLDER LUG



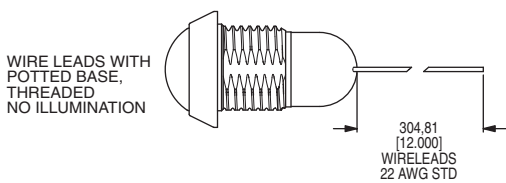
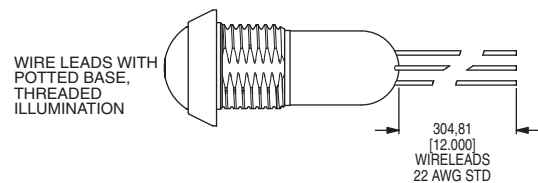
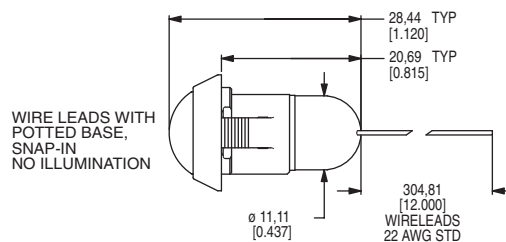
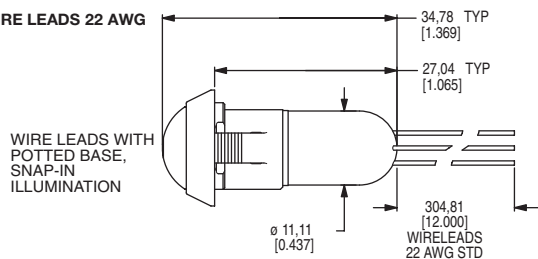
\* Switching terminals are gold and LED terminals are silver

#### C PC TERMINALS

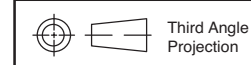
\*\*\* Illumination not available with PC Terminals



#### W 12" WIRE LEADS 22 AWG



Wires: Black wires - Terminals  
Red wires - LED (+) Positive  
White wire - LED (-) Negative





# AP Series Industrial Pushbutton Switch

Pushbutton  
A

## CONTACT MATERIAL



**B** GOLD

OPTION CODE	CONTACT MATERIAL
<b>B</b>	Gold

## TERMINAL SEAL



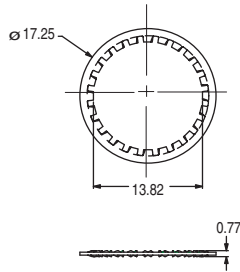
**E** EPOXY

All models are epoxy sealed

## HARDWARE

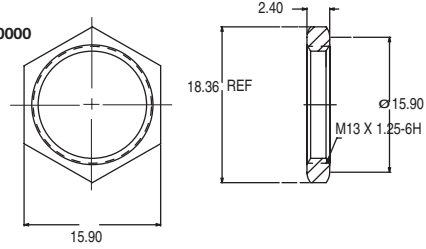
### LOCK WASHER

Part Number 647D00A47



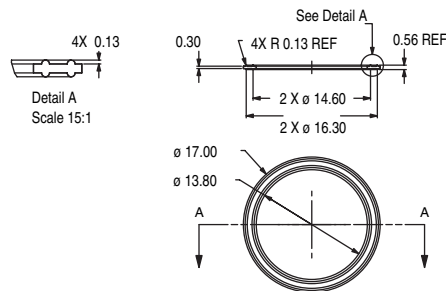
### HEX NUT

Part number 515D00000

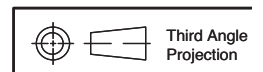


### PANEL SEAL

Part Number 655D00000



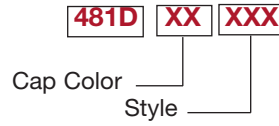
Caps available on next page



Third Angle  
Projection



## AVAILABLE CAPS

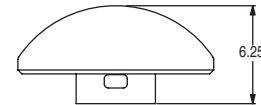
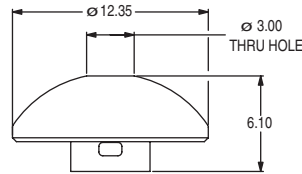


OPTION	CAP COLOR
01	WHITE
02	BLACK
03	RED
04	ORANGE
05	YELLOW
06	GREEN
07	BLUE
08	BROWN
09	GRAY

PART NUMBER	HOLE	STYLE
481DXX000	NO	DOME
481DXX001	YES	DOME
481DXX002	NO	EXTENDED DOME
481DXX003	YES	EXTENDED DOME
481DXX004	NO	CONCAVE
481DXX005	YES	CONCAVE

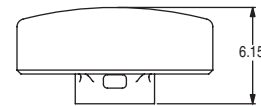
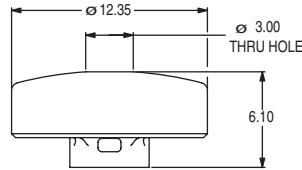
### DOME

481DXX000 = NO HOLE  
481DXX001 = HOLE



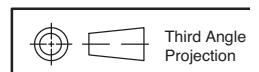
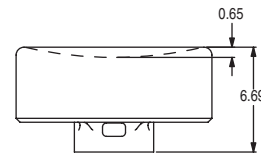
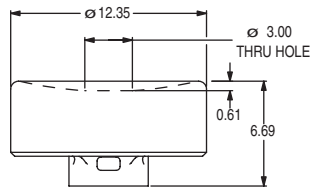
### EXTENDED DOME

481DXX002 = NO HOLE  
481DXX003 = HOLE



### CONCAVE

481DXX004 = NO HOLE  
481DXX005 = HOLE





# APB Series Backlit Pushbutton Switch

Pushbutton  
A

## Features/Benefits

- IP67 sealed
- 1,000,000 life cycle
- Illumination
- Threaded or snap-in mounting
- RoHS compliant

## Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Medical
- Transportation
- Joystick control modules
- Gaming
- Military



## Specifications

FUNCTION: SPST Momentary  
 CONTACT ARRANGEMENT: N.O.  
 MOUNTING TYPE:  
 Snap-in (no panel seal)  
 Threaded body (hex nut, lock washer, and panel seal gasket provided)  
 Torque spec for threaded body: Do not exceed 8-9 in-lbs (0.9-1.0 N.m)

### Mechanical

OPERATING LIFE: 1,000,000 cycles  
 TOTAL TRAVEL: 2.1 ± 0.2 mm  
 OPERATING POINT 1.55 ± 0.25 mm  
 OVER TRAVEL: 0.6 min.  
 OPERATING FORCE: 4N ± 1N standard configuration; other force option 2N ± 0.5N  
 VIBRATION: 10-500 Hz 10g Max  
 SHOCK: 60g 11ms sawtooth wave

### Electrical

CONTACT RATING:  
 200mA @ 24 V DC resistive (500,000 cycles)  
 100mA @ 50 V DC resistive (500,000 cycles)  
 400mA @ 32 V AC resistive (500,000 cycles)  
 125mA @ 125 V AC resistive (1,000,000 cycles)  
 DIELECTRIC STRENGTH: 1000 V AC min.  
 INSULATION RESISTANCE: 1 G Ω @ 500 VDC  
 INITIAL CONTACT RESISTANCE 50 mΩ max (without wire leads)  
 BOUNCE TIME: <5 ms

## Materials

HOUSING: PBT  
 BASE: PBT  
 CAP: Painted polycarbonate  
 ACTUATOR:  
 Illuminated: Clear polycarbonate  
 INTERNAL SEAL: Silicone rubber  
 TERMINALS: Copper alloy, gold over silver plating  
 MOVABLE CONTACT: Copper alloy, gold over silver plating  
 TERMINAL SEAL: Epoxy  
 WIRE LEADS: UL1569 Black 22 AWG

## Operating Environment

OPERATING TEMPERATURE: -40°C to 85°C  
 ESD PROTECTION: 20 KV min.

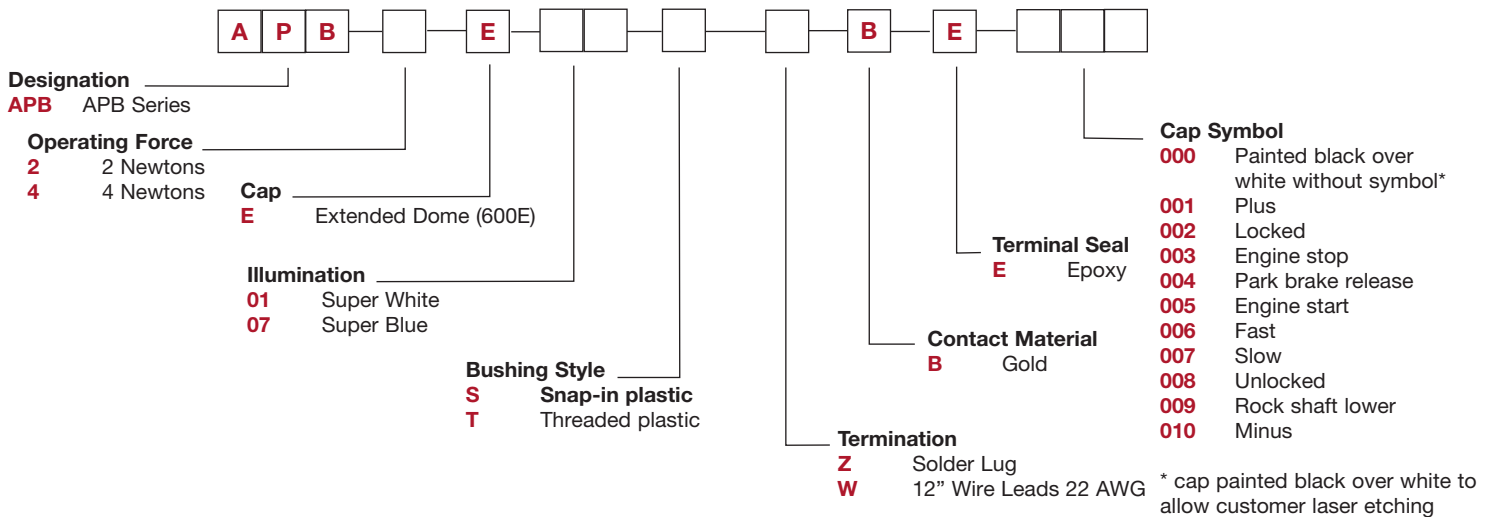
## Process Environment

SEALING: IP67 for threaded body  
 IP65 for snap-in version (no panel seal)

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



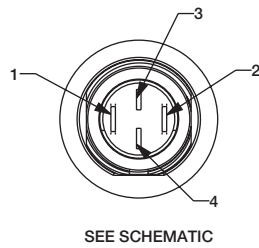
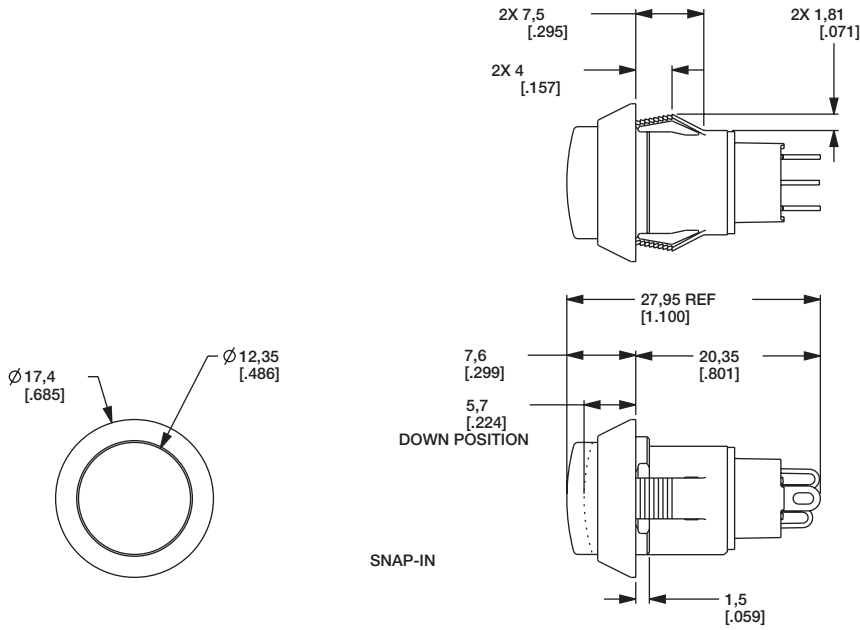
28 Jul 21

Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

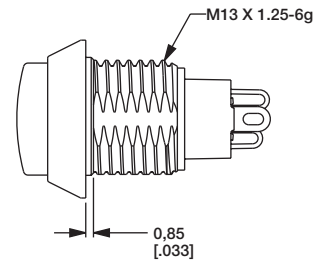
# APB Series Backlit Pushbutton Switch



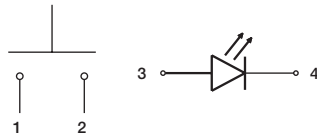
A  
Pushbutton



THREADED

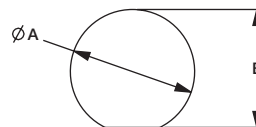


ELECTRICAL SCHEMATIC



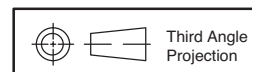
SPST-NO-DB

PANEL CUTOUT



PANEL THICKNESS	DIM A (±0.05 MM)	DIM B (±0.05 MM)
1 MM [0.039 IN]	13.70 MM [0.539 IN]	13.00 MM [0.512 IN]
2 MM [0.079 IN]	13.80 MM [0.539 IN]	13.00 MM [0.512 IN]
3 MM [0.118 IN]	13.90 MM [0.547 IN]	13.10 MM [0.516 IN]
THREADED BODY MIN PANEL THICKNESS 1 MM	13.70 MM [0.539 IN]	13.00 MM [0.512 IN]

A 0.1 MM MIN CHAMFER ON THE LEADING EDGE OF MOUNTING HOLE IS RECOMMENDED FOR SNAP-IN VERSION.





# APB Series Backlit Pushbutton Switch

## TERMINATION

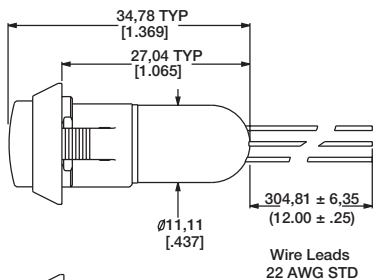
Pushbutton

A

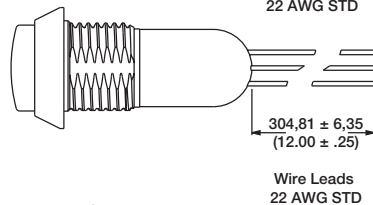
**W** 12" WIRE LEADS

**Z** SOLDER LUG

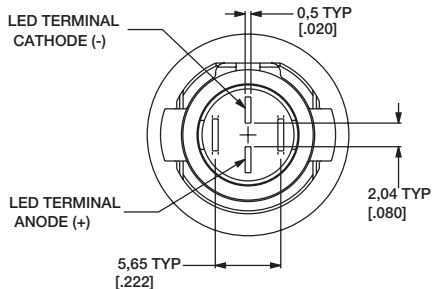
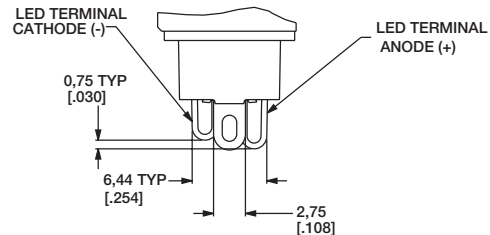
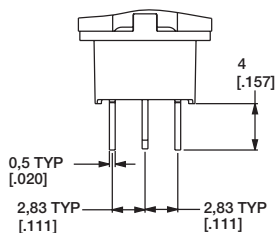
WIRE LEADS WITH  
POTTED BASE,  
SNAP-IN  
ILLUMINATION



WIRE LEADS WITH  
POTTED BASE,  
THREADED  
ILLUMINATION



WIRES:  
BLACK - TERMINALS  
RED - LED (+) POSITIVE  
WHITE - LED (-) NEGATIVE



## CONTACT MATERIAL



**B** GOLD

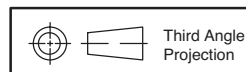
OPTION CODE	CONTACT MATERIAL
<b>B</b>	Gold

## TERMINAL SEAL



**E** EPOXY

All models are epoxy sealed

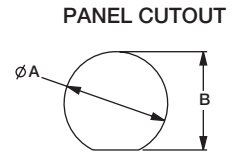




## CAP SYMBOLS

	-000		NO SYMBOL
	-001		PLUS
	-002		LOCKED
	-003		ENGINE STOP
	-004		PARK BRAKE RELEASE
	-005		ENGINE START

	-006		FAST
	-007		SLOW
	-008		UNLOCKED
	-009		ROCK SHAFT LOWER
	-010		MINUS



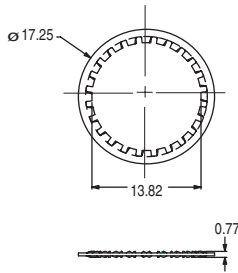
Panel Orientation  
Flat indicates bottom

See chart on previous page  
for dimensions

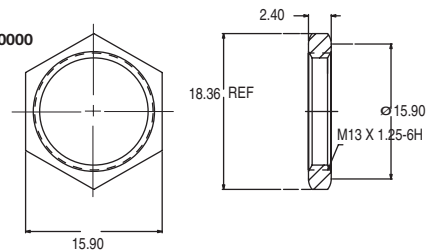
NOTES:  
1. ALL GRAPHICS MUST BE POSITIONED AS SHOWN, PERPENDICULAR TO ALIGNMENT FEATURE ON UNDERSIDE OF CAP.  
2. GRAPHIC MARKING MUST BE ALIGNED WITH THE FLAT FEATURE ON THE UNDERSIDE OF THE CAP AS SHOWN, TOLERANCE  $\pm 3^\circ$

## HARDWARE

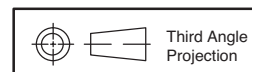
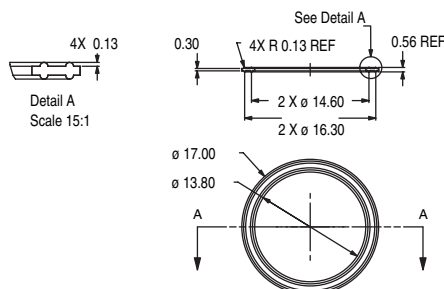
LOCK WASHER  
Part Number 647D00A47



HEX NUT  
Part number 515D00000



PANEL SEAL  
Part Number 655D00000



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- ✓ Excess Inventory Management