

# ITW SWITCHES SEALED IP67 PUSHBUTTONS

Design, development and manufacture of switch solutions

- PUSH BUTTON
- SNAP ACTION
- ACTUATORS
- SLIDE
- ROTARY
- CUSTOM ASSEMBLIES
- MILITARY / AEROSPACE



**ITW** Switches  
SENSORS, SWITCHES, ELECTRONIC CONTROLS



[WWW.ITWSWITCHES.COM](http://WWW.ITWSWITCHES.COM)

800.544.3354

# SEALED IP67 PUSHBUTTON SWITCHES

<b>Table Of Contents .....</b>	<b>ii – iii</b>
<b>Series 034: Sub-Miniature T-05 Space Saver .....</b>	<b>2 – 3</b>
<b>Series 39: 0.25 amp Miniature LED Lighted .....</b>	<b>4 – 5</b>
<b>Series 39-4 and 39-5 Mr. Clean® .....</b>	<b>6 – 7</b>
<b>Series 39-8: Surface Mount Miniature .....</b>	<b>8 – 9</b>
<b>Series 47: Low Cost Sealed Switch .....</b>	<b>10 – 11</b>
<b>Series 48: Electro-Mechanical Miniature Sealed .....</b>	<b>12 – 13</b>
<b>Series 48: Miniature Hall-Effect Sealed .....</b>	<b>14 – 15</b>
<b>Series 48M-EM: Panel Sealed Metal Electro-Mechanical Pushbutton .....</b>	<b>16 – 17</b>
<b>Series 48M-SS: Panel Sealed Metal Solid-State (Hall-Effect) Pushbutton .....</b>	<b>18 – 19</b>
<b>Series 49: Miniature Sealed ESD Resistant .....</b>	<b>20 – 21</b>
<b>Series 49-59: Fully Sealed with Wire Leads .....</b>	<b>22 – 23</b>
<b>Series 49-59: Panel Sealed with Terminals .....</b>	<b>24 – 25</b>
<b>Series 57: Vandal Resistant Miniature Sealed .....</b>	<b>26 – 27</b>
<b>Series 57M-EM: Miniature Panel Sealed Metal Electro-Mechanical Pushbutton .....</b>	<b>28 – 29</b>
<b>Series 57M-SS: Miniature Panel Sealed Metal Solid-State (Hall-Effect) Pushbutton .....</b>	<b>30 – 31</b>
<b>Series 58M-EM: Fully Sealed Metal Electro-Mechanical Pushbutton .....</b>	<b>32 – 33</b>
<b>Series 58M-SS: Fully Sealed Metal Solid-State (Hall-Effect) Pushbutton .....</b>	<b>34 – 35</b>
<b>Series 59: Miniature Panel Sealed Metal .....</b>	<b>36 – 37</b>
<b>Series 76-59: Extra Tough Sealed .....</b>	<b>38 – 39</b>
<b>Series 76-95: 10 amp Vandal Resistant .....</b>	<b>40 – 41</b>
<b>Series 76-97: Panel Sealed Switch .....</b>	<b>42 – 43</b>

## Sub-Miniature T-05 Space Saver

This sub-miniature pushbutton switch offers high quality and reliability in a very small package. With gold contacts, this switch offers up to 1,000,000 cycles. This switch is ideal for applications where PC board space is at a premium.

## APPLICATIONS

- Reset switch
- Detect switch



ACTUAL SIZE

## KEY FEATURES:

• Momentary action	• SPST-NO (Form A) circuitry
• Gold contacts	• Variety of actuator lengths
• PC terminals	• Up to 1,000,000 mechanical actuations

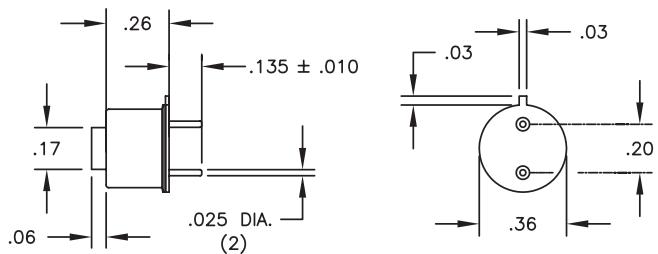
## ORDERING INFORMATION:

Part Number	Button Height
034-550-001	0.06
034-550-005	0.15
034-550-006	0.25
034-550-010	0.37
034-550-015	0.19

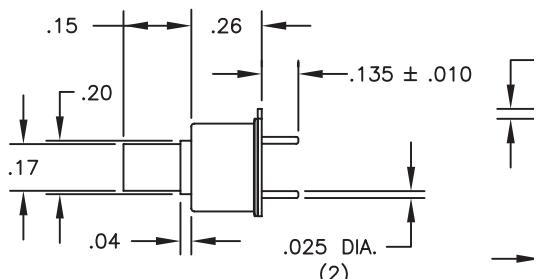
## STANDARDS / AGENCY / RATINGS:



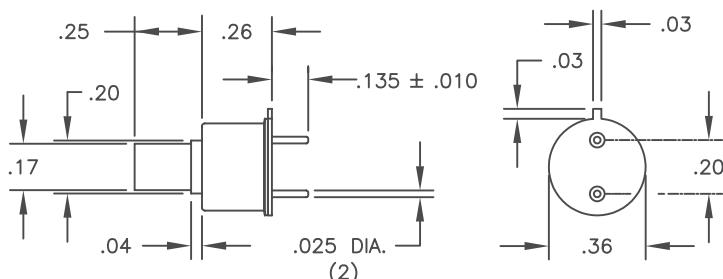
## 034-550-001



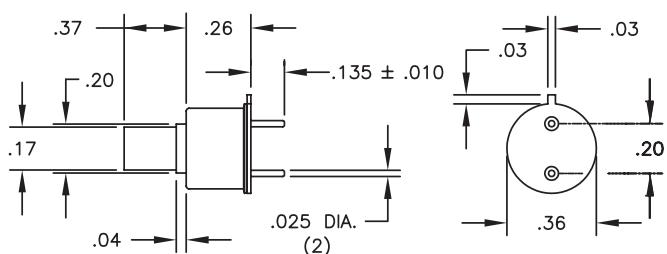
## 034-550-005



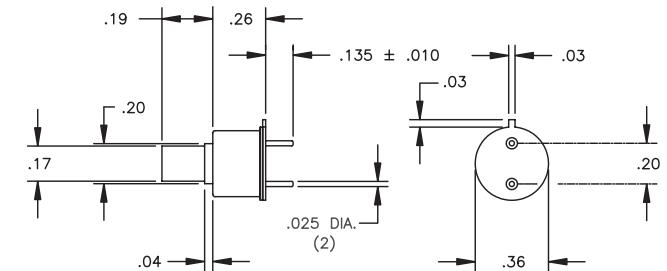
## 034-550-006



## 034-550-010



## 034-550-015



## MECHANICAL / ELECTRICAL CHARACTERISTICS:

## Circuit:

SPST-NO (Form A) Momentary

## Temperature rating:

-30°C to +65°C

(-22°F to +149°F)

## Life (mechanical):

1,000,000 actuations

## Contact rating:

100 mA @ 125 VAC

## Actuator:

thermoplastic (PBTP)

## Can:

Nickel-silver

## Contacts &amp; terminals:

gold over nickel plate

# Series 39

## 0.25 AMP MINIATURE LED LIGHTED

This highly reliable low cost pushbutton features bifurcated contacts that have wiping, self-cleaning action. The PC terminals allow for vertical mounting, while an optional connector allows for right angle mounting.

### APPLICATIONS

- Control panel assemblies
- Recording equipment
- Telecom switching systems
- Scientific instrumentation
- Telecom test gear



### KEY FEATURES:

- Momentary or maintained action
- Lighted (T-1 LED) or non-lighted
- Variety of button and keycap styles
- Wave solderable
- Bifurcated silver contacts



ACTUAL SIZE

### ORDERING INFORMATION:

#### Switches

Part Number	Lighted	LED Color	Button Color	Button Style	Action
<b>39-12101</b>	Yes*	—	Clear	Button	Momentary
<b>39-12111</b>	Yes*	—	Red	Button	Momentary
<b>39-12113</b>	Yes*	—	Yellow	Button	Momentary
<b>39-12114</b>	Yes*	—	Smoke Grey	Button	Momentary
<b>39-12502</b>	No	—	White	Button	Momentary
<b>39-12503</b>	No	—	Red	Button	Momentary
<b>39-12509</b>	No	—	Black	Button	Momentary
<b>39-12601</b>	Yes	Red	Clear	Button	Momentary
<b>39-12712</b>	Yes	Green	Green	Button	Momentary
<b>39-13101</b>	Yes*	—	Clear	Button	Maintained
<b>39-13113</b>	Yes*	—	Yellow	Button	Maintained
<b>39-22100</b>	Yes*	—	—	Keycap	Momentary
<b>39-22500</b>	No	—	—	Keycap	Momentary
<b>39-23100</b>	Yes*	—	—	Keycap	Maintained
<b>39-23500</b>	No	—	—	Keycap	Maintained

\* LED not included; LED support 80-390003 supplied in bulk.

#### Button/Keycap Colors

Part Number	Lighted	Color	Cap Size
<b>80-390101</b>	Yes*	White	Large
<b>80-390102</b>	Yes*	Light Grey	Large
<b>80-390103</b>	Yes*	Dark Grey	Large
<b>80-390106</b>	No	Light Grey	Large
<b>80-390107</b>	No	Dark Grey	Large
<b>80-390108</b>	No	Black	Large
<b>80-390111</b>	Yes**	Black	Small

\* Requires light pipe 80-390100 (order separately)

\*\* Requires light pipe 80-390109 (order separately)

#### Connectors

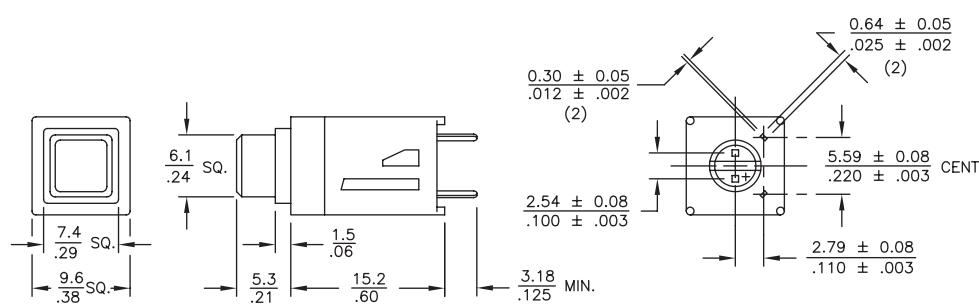
Part Number	Mount
<b>39-800001</b>	In-Line

### STANDARDS / AGENCY / RATINGS:

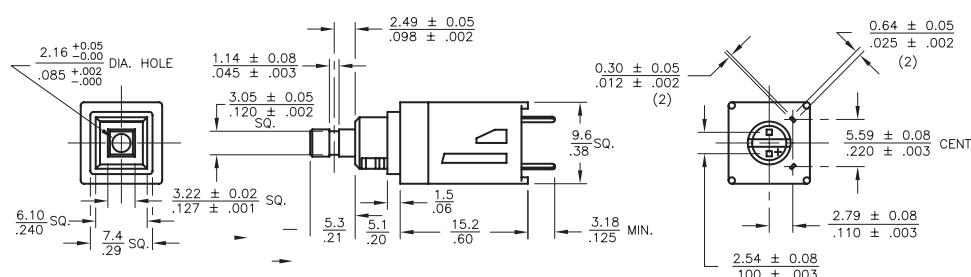


## SERIES 39: 0.25 AMP MINIATURE LED LIGHTED

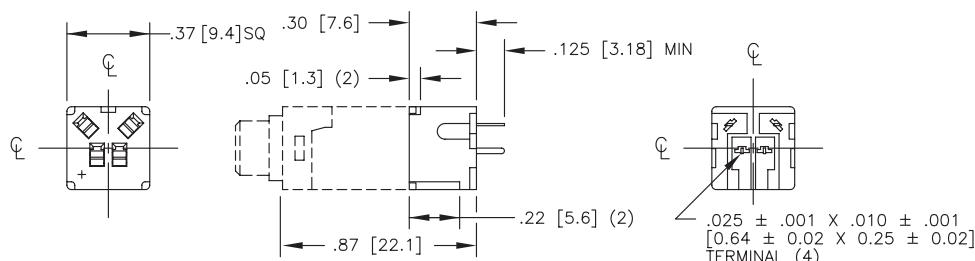
## STANDARD BUTTON STYLE



## KEYCAP BUTTON STYLE



## IN-LINE CONNECTOR



## MECHANICAL / ELECTRICAL CHARACTERISTICS:

## Action:

SPST-NO-DB (Form X)

## Button travel:

3.05 mm (.120 in) nominal

## Operating Force:

113 grams nominal

## Contact Resistance:

Initial: 25 mΩ max.

End of life: 50 mΩ max.

## Contact bounce:

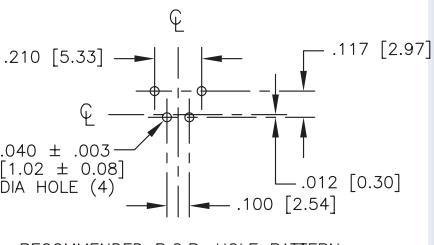
Initial: 1 millisecond max.  
End of life 3 milliseconds max.

## Electrical life:

Momentary: 1 million cycles  
Maintained: 25,000 cycles

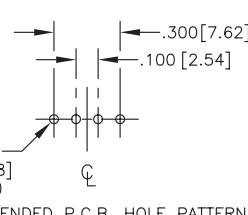
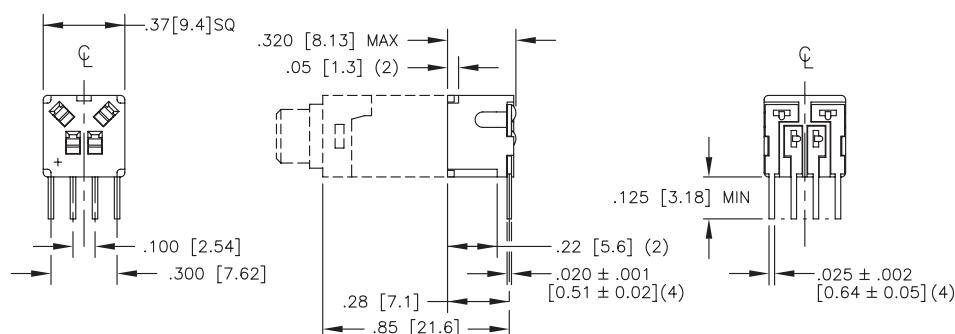
## Electrical rating:

.25A @ 30 VDC res.



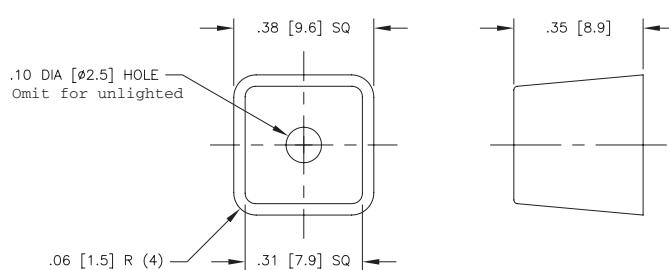
RECOMMENDED P.C.B. HOLE PATTERN

## RIGHT ANGLE CONNECTOR

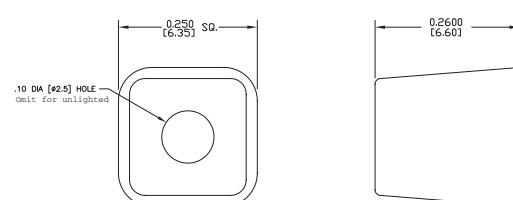


RECOMMENDED P.C.B. HOLE PATTERN

## LARGE LIGHTED &amp; UNLIGHTED KEYCAP



## SMALL LIGHTED &amp; UNLIGHTED KEYCAP



# Series 39-4

## 0.25 AMP RIGHT-ANGLE DPST LIGHTED

This miniature pushbutton meets the needs for a cleaner trouble-free switch in confined space PC board applications. Only the terminal base is exposed to soldering and cleaning in this unique two-piece construction.

### APPLICATIONS

- Control panel assemblies
- Recording equipment
- Telecom switching systems
- Scientific instrumentation
- Telecom test gear



### KEY FEATURES:

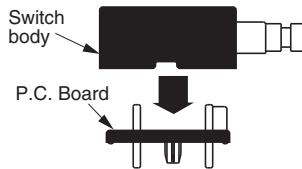
- Momentary or maintained action
- Lighted (T-1 LED) or non-lighted
- Variety of button and keycap styles
- Wave solderable
- Unique two piece construction



ACTUAL SIZE

### INSTALLATION:

The terminal base is installed manually, or with automatic equipment, on the PC board. It is then wave soldered along with other board components. The base is compatible with fluorinated, chlorinated and aqueous cleaning methods to remove flux. When the board and its components have been cleaned and dried, the pushbutton switch body, which has not been exposed to the contamination associated with these operations, is snapped positively onto the terminal base, where it is securely retained.



### ORDERING INFORMATION:

#### Button Style

Part Number	LED Color *	Button Color	Action
39-422106	—	Black	Momentary
39-422508	Red	Red	Momentary
39-422607	Green	Clear	Momentary
39-422609	Green	Green	Momentary
39-422707	Yellow	Clear	Momentary
39-422710	Yellow	Yellow	Momentary
39-423508	Red	Red	Maintained
39-423609	Green	Green	Maintained

\*Lighted styles have button and LED installed as required.

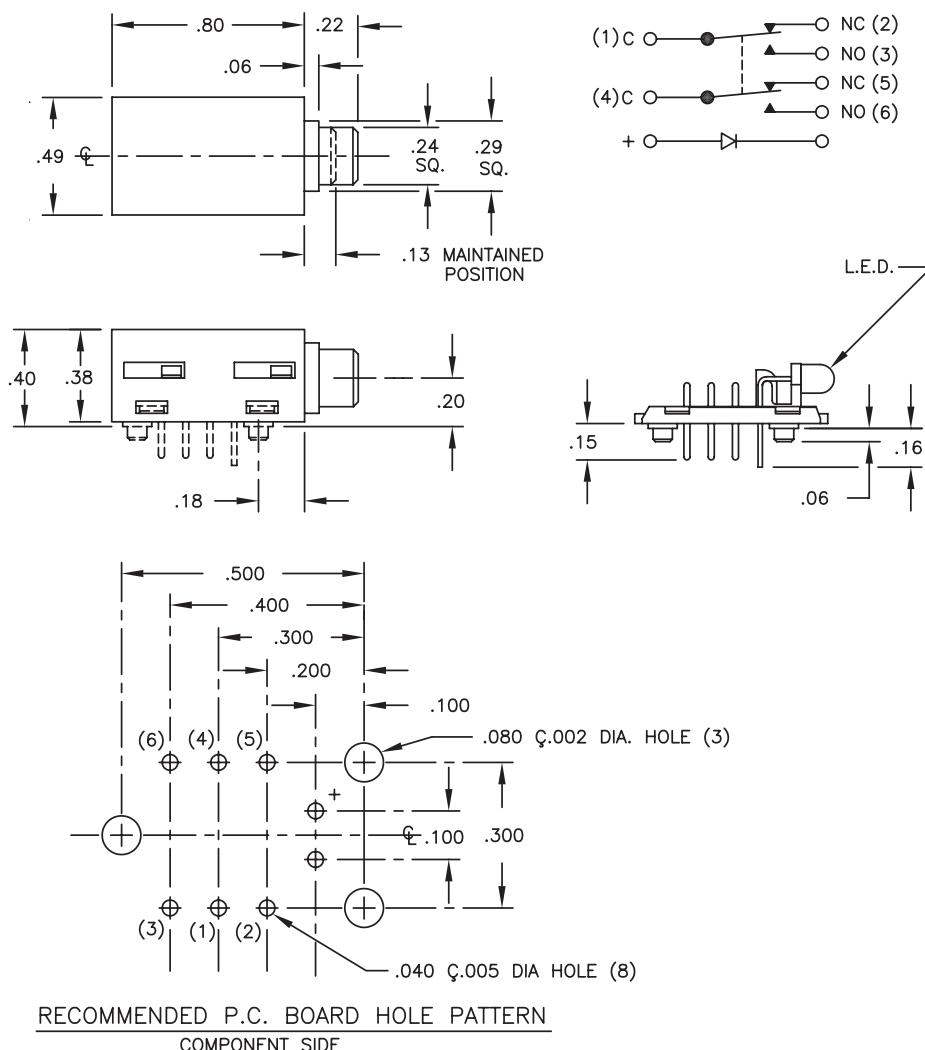
#### Keycap Style

Part Number	LED Color *	Action
39-522101	—	Momentary
39-522701	Yellow	Momentary
39-523101	—	Maintained
39-523501	Red	Maintained

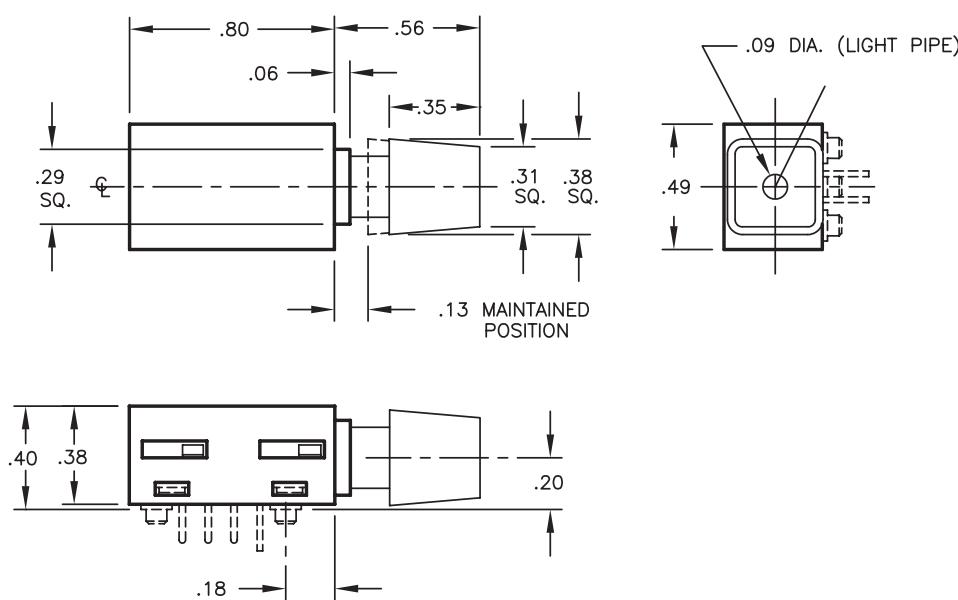
\* Order keycap and light pipe separately (see series 39) as necessary

### STANDARDS / AGENCY / RATINGS:



**BUTTON STYLE**

RECOMMENDED P.C. BOARD HOLE PATTERN  
COMPONENT SIDE

**KEYCAP STYLE****MECHANICAL / ELECTRICAL CHARACTERISTICS:****Circuit:**

DPDT-SB (Form CC)

**Operating force:**

8 oz nominal

**Total travel:**

.12 nominal

**Electrical rating:**

.25A @ 30 VDC resistive max.

**Contact Resistance:**

25 mΩ max. initial

50 mΩ max. final

**Contact bounce:**

500 microseconds max.

**Insulation resistance:**

1000 MΩ min.

@ 500 VDC

**Dielectric strength:**

1000 VAC

**Life Momentary:**

250,000 cycles

**Life Maintained:**

25,000 cycles

## SURFACE MOUNT / SOLID-STATE MINIATURE

The unique approach to SS /SMT switching allows the customer to process a Hall-effect chip and LED (optional) to their board. Then simply snap the ITW Switches Series 39-8 actuator in place. This can be done manually or robotically completing a totally process compatible switching system.

## APPLICATIONS

- Control panel assemblies
- Recording equipment
- Datacom switching systems
- Telecom switching systems
- Scientific instrumentation
- Computers

## KEY FEATURES:

- Solid-State (Hall-effect) switching
- No mechanical contacts
- Momentary or maintained action
- Lighted (Surface Mount LED) or non-lighted
- Key caps available
- Lower overall installed cost
- RoHS process compatibility

## ORDERING INFORMATION:

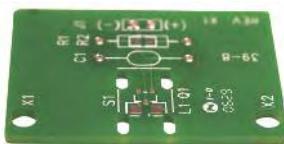
### Switches

Part Number	Action	Polarity
39-82N	Momentary	North
39-82S	Momentary	South
39-83N	Maintained	North
39-83S	Maintained	South



ACTUAL SIZE

①—Customer Designed PCB



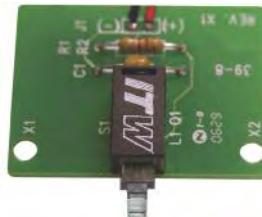
②—Customer Loaded PCB



③—ITW Series 39-8 SS/SMT Pushbutton Switch



④—Complete Assembly

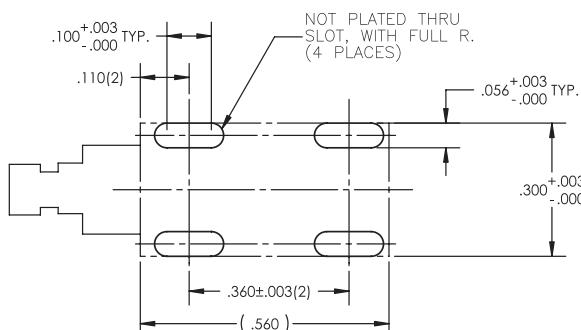
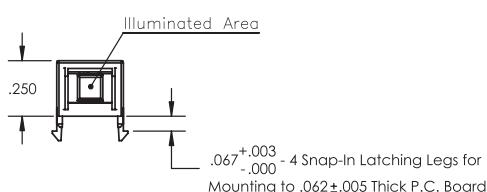
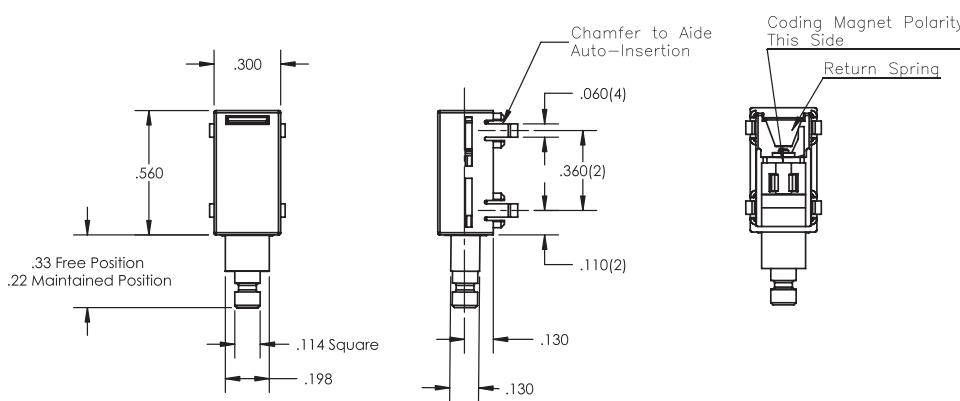


## STANDARDS / AGENCY / RATINGS:

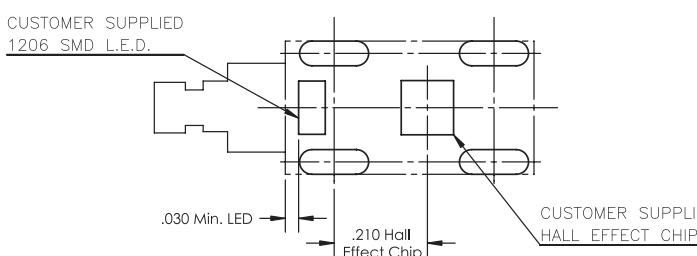


## SERIES 39-8: SURFACE MOUNT MINIATURE

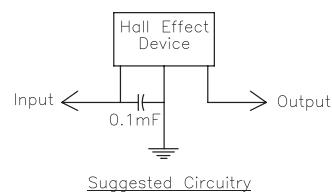
39-8XX



RECOMMENDED P.C. BOARD  
MOUNTING HOLE PATTERN  
(VIEWED FROM COMPONENT SIDE)



RECOMMENDED PLACEMENT OF  
L.E.D. AND HALL EFFECT CHIP  
(VIEWED FROM COMPONENT SIDE)

MECHANICAL / ELECTRICAL  
CHARACTERISTICS:

**Action:**  
SPST-NO

**Button travel:**  
3.05 mm (0.13 in) nominal

**Operating Force:**  
113 grams nominal

**Electrical life:**  
Momentary: 1 million cycles  
Maintained: 25,000 cycles

**Electrical rating:**  
5VDC, 5mA typical  
(when used with  
Allegro Hall Effect  
P/N A3280ELHLT,  
customer supplied)

# Series 47

## Low Cost Sealed

The Series 47 is a uniquely designed sealed miniature pushbutton switch. The silicone button and body can be panel mounted and terminated with a standard connector or mounted in a P.C. board. The switches come in two levels of sealing: a panel sealed only version and a fully sealed version with epoxy sealed base. Both meet respective IP67 requirements. The buttons are available in seven different colors. All this at a very affordable price.

## APPLICATIONS

- Marine equipment
- Medical equipment
- Outdoor controls
- Food processing equipment
- Recreational vehicles

## KEY FEATURES:

• Sealed to IP67	• P.C. terminals (connector available)
• Small size	• Long life
• 7 button colors	• Low cost

## ORDERING INFORMATION:

Part Number	Button Color	Panel Sealed	Epoxy Sealed Base
<b>47-1111</b>	Black	✓	✓
<b>47-1121</b>	Red	✓	✓
<b>47-1131</b>	Green	✓	✓
<b>47-1141</b>	White	✓	✓
<b>47-1151</b>	Yellow	✓	✓
<b>47-1161</b>	Blue	✓	✓
<b>47-1171</b>	Orange	✓	✓
<b>47-2111</b>	Black	✓	
<b>47-2121</b>	Red	✓	
<b>47-2131</b>	Green	✓	
<b>47-2141</b>	White	✓	
<b>47-2151</b>	Yellow	✓	
<b>47-2161</b>	Blue	✓	
<b>47-2171</b>	Orange	✓	

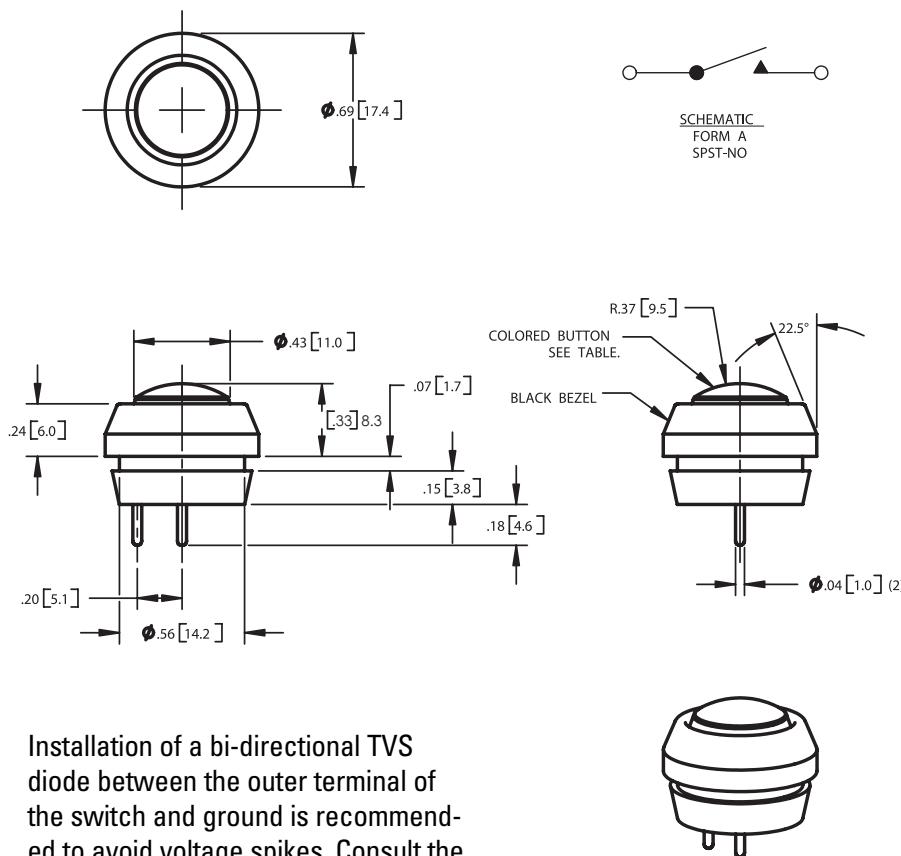


ACTUAL SIZE

## STANDARDS / AGENCY / RATINGS:



47-XXX



Installation of a bi-directional TVS diode between the outer terminal of the switch and ground is recommended to avoid voltage spikes. Consult the factory for details.

## MECHANICAL / ELECTRICAL CHARACTERISTICS:

**Travel (nom):**  
.020 inches

**Life:**  
100,000 cycles

**Operating force:**  
1,000 grams (nominal)

**Sealed to:**  
IP67

**Operating temperature:**  
-40°C to +85°C

**Button material:**  
silicone

**Contact:**  
metal snap dome providing a tactile feel

**Terminal finish:**  
gold over nickel

**Dielectric strength:**  
1,000 VAC

**Insulation Resistance:**  
10,000 MΩ

**Contact Resistance (initial):**  
<100 Ω

**Current rating:**  
20 mA @ 28 VDC

**Switch terminals mate with:**  
ITW Pancon Mas-Con  
Connector CE100F24-3-DB

**Recommended panel cut-out:**  
0.565" / 0.560" diameter  
(Ø14.40 / 14.22)

**Recommended panel thickness:**  
0.060" (1.52) max

## MINIATURE SEALED ELECTRO-MECHANICAL

This rugged multi-option sealed pushbutton series offers the utmost in choices of mounting styles, colors, terminations, bezels, lighting and momentary or alternate-action switching. The Series 48 offers all these options in one compact package size.

## APPLICATIONS

- Office equipment
- Medical equipment
- Industrial machinery
- Outdoor controls
- Mass transportation
- Food processing equipment



## KEY FEATURES:

- Momentary or maintained action
- Gold contacts
- Many button colors
- Choice of LED colors (or non-lighted versions)
- Long life
- Solder or PC terminals
- Panel sealed to IP 67

ACTUAL SIZE

## ORDERING INFORMATION:

Switch Function	Switch Termination	Module Type	Bezel Type	LED Color	Button Color	Mounting Type	Voltage Resistor
Momentary	Solder Tabs	<b>48-1</b>	<b>RB</b> - Round, Black	<b>N</b> - None	<b>RD</b> - Red	<b>B</b> - Bushing	If Blank*
Maintained	Solder Tabs	<b>48-2</b>	<b>SB</b> - Square, Black	<b>R</b> - Red	<b>GR</b> - Green	<b>S</b> - Snap-fit	<b>05</b> - 5V forward
Momentary	PC	<b>48-5</b>	<b>RC</b> - Round, Chrome	<b>G</b> - Green	<b>BK</b> - Black		
Maintained	PC	<b>48-6</b>	<b>SC</b> - Square, Chrome	<b>Y</b> - Yellow	<b>BL</b> - Blue		
Momentary	Wire Leads	<b>48-A</b>		<b>A</b> - Amber	<b>YL</b> - Yellow		
Maintained	Wire Leads	<b>48-B</b>		<b>B</b> - Blue	<b>OR</b> - Orange		
				<b>W</b> - White	<b>CR</b> - Chrome		
					<b>PK</b> - Black with Standby Symbol		
					<b>WH</b> - White		

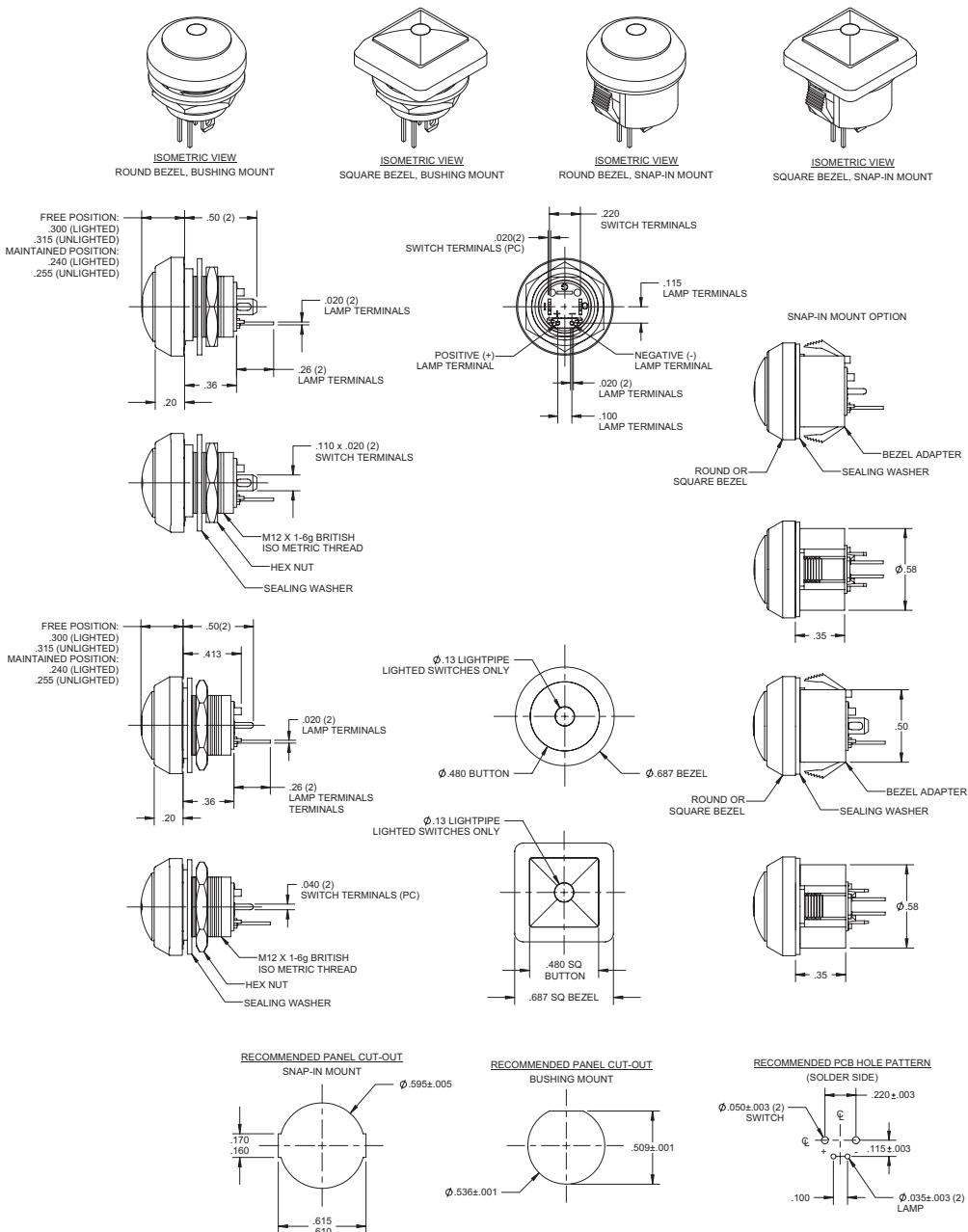
48- [ ] [ ] [ ] [ ] [ ] [ ] [ ]

\* Current limiting resistor is required to limit LED forward current to 20 mA (not included).

## STANDARDS / AGENCY / RATINGS:



## PRODUCT DRAWINGS



## MECHANICAL / ELECTRICAL CHARACTERISTICS:

## Circuit:

SPST-NO-DB

## Button travel (nominal):

0.09 inches / 2.3 mm

## Operating force (nominal):

3N / 306 grams

## Contact bounce (nominal):

1 millisecond

## Panel thickness:

0.02 – 0.12 inches / 0.5 – 3mm

## Temperature index:

-40° F to +185° F

## LED operating temperature:

-13° F to +185° F /

-25° C to +85° C

## Current ratings (resistive):

250mA @ 12VDC, 100K cycles

150mA @ 28VDC, 150K cycles  
(momentary)

100mA @ 48VDC, 100K cycles

10mA @ 12VDC, 1 million cycles  
(momentary)

## Dielectric strength:

1,000 VAC

## Insulation resistance:

1G OHM

## Contact resistance:

50 mΩ max (initial)

## Torque (max):

10 inch pounds

# Series 48SS

## MINIATURE HALL-EFFECT SEALED

This rugged sealed pushbutton switch uses a Hall-Effect sensor to achieve extremely long life, up to 1,000,000 cycles momentary. This switch is suited for harsh environments where long life and reliability are needed.



## APPLICATIONS

- Communications
- Data entry
- Hand-held control modules
- Outdoor controls
- Mass transport controls
- Instrumentation

## KEY FEATURES:

- 1,000,000 cycles momentary
- Momentary and maintained action
- Hall-Effect technology
- Choice of LED colors (or non-lighted versions)
- Panel sealed to IP67
- Variety of Button colors
- Square and round versions available

ACTUAL SIZE

## ORDERING INFORMATION:

Switch Function	Switch Termination	Module Type	Bezel Type	LED Color	Button Color	Mounting Type	Voltage Resistor
Momentary	Solder Tabs	<b>48-3</b>	<b>RB</b> - Round, Black	<b>N</b> - None	<b>RD</b> - Red	<b>B</b> - Bushing	If Blank*
Maintained	Solder Tabs	<b>48-4</b>	<b>SB</b> - Square, Black	<b>R</b> - Red	<b>GR</b> - Green	<b>S</b> - Snap-fit	<b>05</b> - 5V forward
Momentary	PC	<b>48-7</b>	<b>RC</b> - Round, Chrome	<b>G</b> - Green	<b>BK</b> - Black		
Maintained	PC	<b>48-8</b>	<b>SC</b> - Square, Chrome	<b>Y</b> - Yellow	<b>BL</b> - Blue		
Momentary	Wire Leads	<b>48-C</b>		<b>A</b> - Amber	<b>YL</b> - Yellow		
Maintained	Wire Leads	<b>48-D</b>		<b>B</b> - Blue	<b>OR</b> - Orange		
				<b>W</b> - White	<b>CR</b> - Chrome		
					<b>PK</b> - Black with Standby Symbol		
					<b>WH</b> - White		

**48-**            

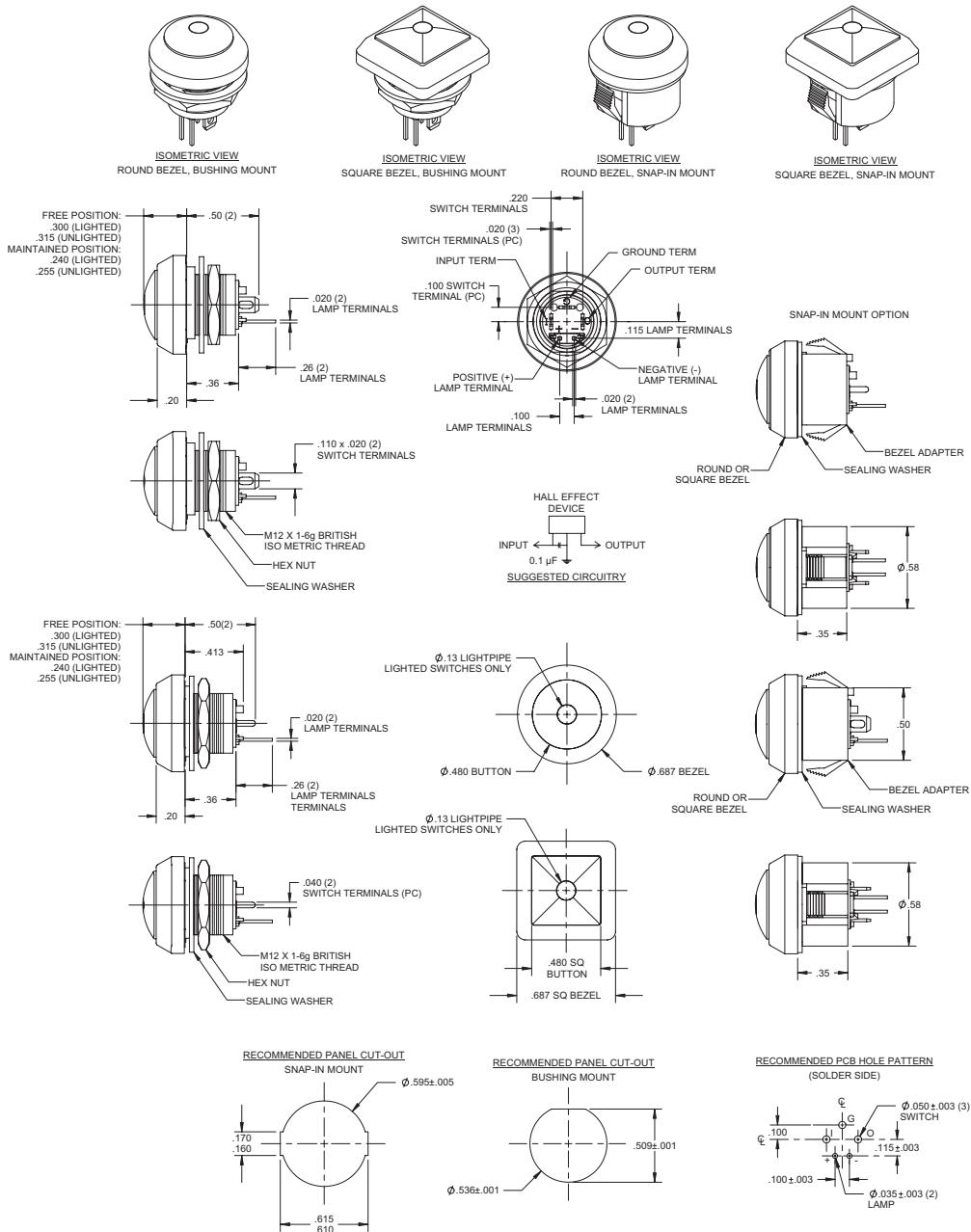
\* Current limiting resistor is required to limit LED forward current to 20 mA (not included).

## STANDARDS / AGENCY / RATINGS:



## SERIES 48: MINIATURE HALL-EFFECT SEALED

## PRODUCT DRAWINGS



## MECHANICAL / ELECTRICAL CHARACTERISTICS:

## Circuit:

SPST-NO

## Button travel (nominal):

0.09 inches / 2.3 mm

## Life (mechanical) (nominal):

1,000,000 cycles (momentary)

100,000 cycles (maintained)

## Operating force (nominal):

3N / 306 grams

## Panel thickness:

0.02 – 0.12 inches / 0.5 – 3mm

## Temperature index:

-40°F to +185°F

## LED operating temperature:

-13° F to +185° F /

-25° C to +85° C

## Supply voltage:

4.2V to 24V, 26.5V Max.

## Supply current:

B&lt;Brp, Vcc=12V: 3mA Typ.

To 8mA Max.

B&gt;Bop, Vcc=12V: 4mA Typ.

To 8mA Max.

## Output current:

20 mA

## Reverse battery voltage:

-30V Max.

## Reverse output current:

-50mA Max.

## Torque (max):

10 inch pounds

## PANEL SEALED METAL ELECTRO-MECHANICAL

Built on the proven series 48 platform these rugged switches come in stainless steel or chrome plated housings with either momentary or maintained action and lighted or unlighted versions. The variety of options in this compact package size make the 48M ideal for many applications

## APPLICATIONS

- Outdoor Controls
- Security Equipment
- Medical Equipment
- Food Processing Equipment
- Military Equipment
- Industrial Machinery
- Transportation: Mass-Transit, Lift Trucks

## KEY FEATURES:

• Momentary or Maintained Action	• Electro-Mechanical
• Stainless Steel Housing	• Panel Sealed to IP67
• Center Spot or Ring Illumination	• ROHS Compliant
• Variety of LED colors	• Gold Plated Contact and Terminals

ACTUAL SIZE



## ORDERING INFORMATION:

### SWITCH FUNCTION:

1. MECHANICAL, MOMENTARY, SOLDER TERMINAL
2. MECHANICAL, MAINTAINED, SOLDER TERMINAL
5. MECHANICAL, MOMENTARY, PC TERMINAL
6. MECHANICAL, MAINTAINED, PC TERMINAL
- A. MECHANICAL, MOMENTARY, WIRE LEADS
- B. MECHANICAL, MAINTAINED, WIRE LEADS
9. SPECIAL, DIGITS ARE IN SERIAL ORDER

### HOUSING MATERIAL:

1. STAINLESS STEEL
2. ZINC ALLOY  
CHROME PLATED

### ILLUMINATION:

0. NON-LIT
1. CENTER SPOT ILLUMINATION
2. RING ILLUMINATION
3. ILLUMINATED POWER SYMBOL

### LED COLOR:

- N. NONE
- G. GREEN L.E.D.
- R. RED L.E.D.
- A. AMBER L.E.D.
- B. BLUE L.E.D.
- W. WHITE L.E.D.

### VOLTAGE RESISTER

IF BLANK \*  
05 5V FORWARD

48M-

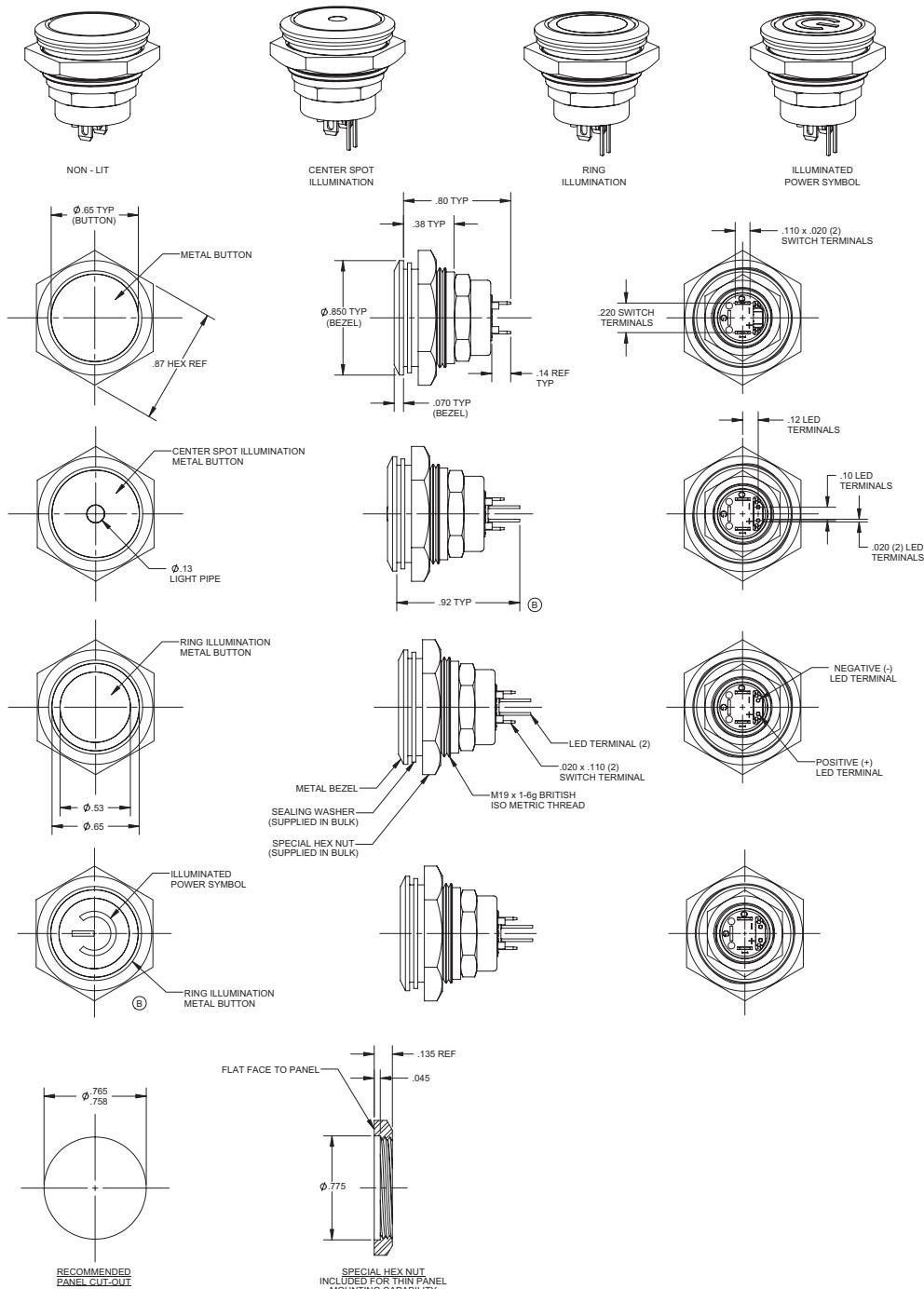
## STANDARDS / AGENCY / RATINGS:



\* Current limiting resistor is required to limit LED forward current to 20 mA (not included).

## SERIES 48M: PANEL SEALED METAL PUSHBUTTON

## PRODUCT DRAWINGS



## PANEL MOUNTING AND CONSTRUCTION INFORMATION

The series 48M mounts easily into panels of minimum 0.50" (1.3 mm) and maximum 0.150" (3.8 mm) thickness. Front panel sealing to IP67 is achieved by a sealing o-ring fitted to the body of the switch before it is inserted into the panel hole cut-out. It is held onto the panel by means of a metal hex nut tightened down to a torque of 10 inch pounds to achieve the correct sealing pressure.

## MECHANICAL / ELECTRICAL CHARACTERISTICS:

## Circuit:

SPST-NO-DB

## Button travel (nominal):

0.09 inches / 2.3 mm

## Operating force (nominal):

3N / 306 grams

## Contact bounce (nominal):

1 millisecond

## Panel thickness:

0.50" – 0.150" 1.3 – 3.8mm

## Temperature index:

-40°C to +85°C

## LED operating temperature:

-13° F to +185° F /

-25° C to +85° C

## Torque (max):

10 inch pounds

## LED operating temperature:

-13° F to +185° F /

-25° C to +85° C

## Current ratings (resistive):

250mA @ 12VDC, 100K cycles  
150mA @ 28VDC, 150K cycles (momentary)

100mA @ 48VDC, 100K cycles

10mA @ 12VDC, 1 million cycles (momentary)

## ELECTRO-MECHANICAL

## Dielectric strength:

1,000 VAC

## Insulation resistance:

1 GΩ

## Contact resistance:

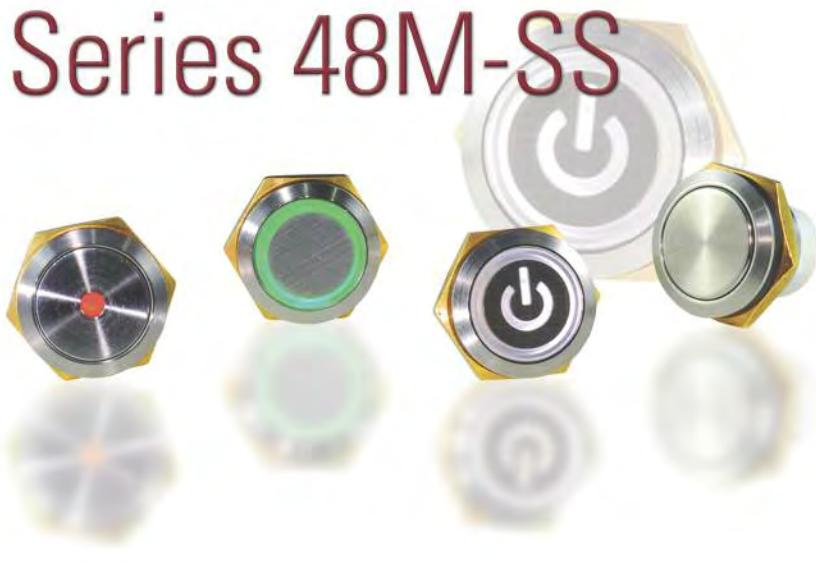
50 mΩ max (initial)

## PANEL SEALED METAL HALL-EFFECT

Built on the proven series 48 platform these rugged switches come in stainless steel or chrome plated housings with either momentary or maintained action and lighted or unlighted versions. The variety of options in this compact package size make the 48M ideal for many applications.

## APPLICATIONS

- Outdoor Controls
- Security Equipment
- Medical Equipment
- Food Processing Equipment
- Military Equipment
- Industrial Machinery
- Transportation: Mass-Transit, Lift Trucks



ACTUAL SIZE

## KEY FEATURES:

• Momentary or Maintained Action	• Solid State
• Stainless Steel Housing	• Panel Sealed to IP67
• Center Spot or Ring Illumination	• ROHS Compliant
• Variety of LED colors	• Gold Plated Contact and Terminals

## ORDERING INFORMATION:

### SWITCH FUNCTION:

3. SOLID STATE, MOMENTARY, SOLDER TERMINAL
4. SOLID STATE, MAINTAINED, SOLDER TERMINAL
7. SOLID STATE, MOMENTARY, PC TERMINAL
8. SOLID STATE, MAINTAINED, PC TERMINAL
- C. SOLID STATE, MOMENTARY, WIRE LEADS
- D. SOLID STATE, MAINTAINED, WIRE LEADS
9. SPECIAL, DIGITS ARE IN SERIAL ORDER

### HOUSING MATERIAL:

1. STAINLESS STEEL
2. ZINC ALLOY

CHROME PLATED

### ILLUMINATION:

0. NON-LIT
1. CENTER SPOT ILLUMINATION
2. RING ILLUMINATION
3. ILLUMINATED POWER SYMBOL

### LED COLOR:

- N. NONE
- G. GREEN L.E.D.
- R. RED L.E.D.
- A. AMBER L.E.D.
- B. BLUE L.E.D.
- W. WHITE L.E.D.

### VOLTAGE RESISTER

IF BLANK \*

05 5V FORWARD

48M-

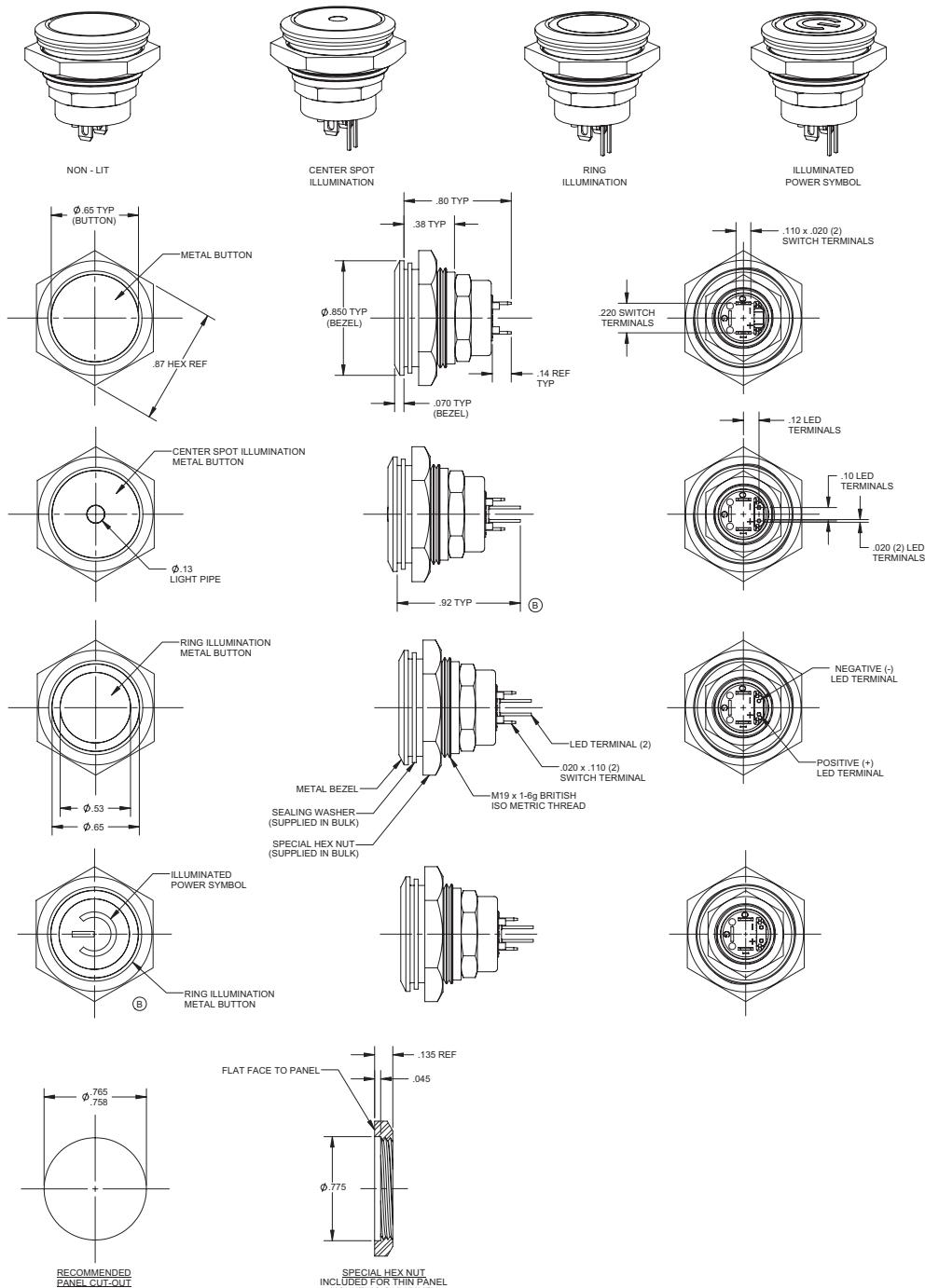
## STANDARDS / AGENCY / RATINGS:



\* Current limiting resistor is required to limit LED forward current to 20 mA (not included).

## SERIES 48M: PANEL SEALED METAL PUSHBUTTON

## PRODUCT DRAWINGS



## PANEL MOUNTING AND CONSTRUCTION INFORMATION

The series 48M mounts easily into panels of minimum 0.50" (1.3 mm) and maximum 0.150" (3.8 mm) thickness. Front panel sealing to IP67 is achieved by a sealing o-ring fitted to the body of the switch before it is inserted into the panel hole cut-out. It is held onto the panel by means of a metal hex nut tightened down to a torque of 10 inch pounds to achieve the correct sealing pressure.

## MECHANICAL / ELECTRICAL CHARACTERISTICS:

## Circuit:

SPST-NO

## Button travel (nominal):

0.09 inches / 2.3 mm

## Life (mechanical) (nominal):

1,000,000 cycles (momentary)

100,000 cycles (maintained)

## Operating force (nominal):

3N / 306 grams

## Panel thickness:

0.02 – 0.12 inches / 0.5 – 3mm

## Temperature index:

-40°F to +185°F

## LED operating temperature:

-13° F to +185° F /

-25° C to +85° C

## Supply voltage:

4.2V to 24V, 26.5V Max.

## Supply current:

B&lt;Brp, Vcc=12V: 3mA Typ.

To 8mA Max.

B&gt;Bop, Vcc=12V: 4mA Typ.

To 8mA Max.

## Output current:

20 mA

## Reverse battery voltage:

-30V Max.

## Reverse output current:

-50 mA Max.

## Torque (max):

10 inch pounds

# Series 49

## MINIATURE SEALED ESD RESISTANT

This switch series is rugged, panel sealed, available with round or square bezels and LED lighted or non-lighted. Bushing mount or snap-in mounting available. Series 49 switches are ideal for demanding applications in harsh environments where water, moisture or dust are problematic.

## APPLICATIONS

- Industrial equipment control handles
- Dog training control modules
- Outdoor controls
- Medical equipment
- Beverage dispensing

## KEY FEATURES:

- Normally open or closed circuitry
- Momentary action
- LED lighted or non-lighted
- .110 Quick Connect or Solder terminals available
- Gold contacts
- ESD 15KV minimum
- Panel sealed to IP67
- Long life – up to 1 million cycles
- Threaded or snap-in mounting

## ORDERING INFORMATION:

Part Number	Body Style	Button Color	LED Color	Contacts	Terminals
49-111	Round bezel	Black	—	Normally Open	Solder
49-112	Round bezel	Red	—	Normally Open	Solder
49-113	Round bezel	Green	—	Normally Open	Solder
49-411G	Illuminated round	Black	Green	Normally Open	Solder
49-411R	Illuminated round	Black	Red	Normally Open	Solder
49-412G	Illuminated round	Red	Green	Normally Open	Solder
49-412R	Illuminated round	Red	Red	Normally Open	Solder
49-413G	Illuminated round	Green	Green	Normally Open	Solder
49-413R	Illuminated round	Green	Red	Normally Open	Solder
49-9111	Snap-in round	Black	—	Normally Open	Solder
49-9113	Snap-in round	Green	—	Normally Open	Solder
49-611	Round bezel	Black	—	Normally Closed	Solder
49-612	Round bezel	Red	—	Normally Closed	Solder
49-613	Round bezel	Green	—	Normally Closed	Solder
49-131	Round bezel	Black	—	Normally Open	.110 QC
49-132	Round bezel	Red	—	Normally Open	.110 QC
49-133	Round bezel	Green	—	Normally Open	.110 QC



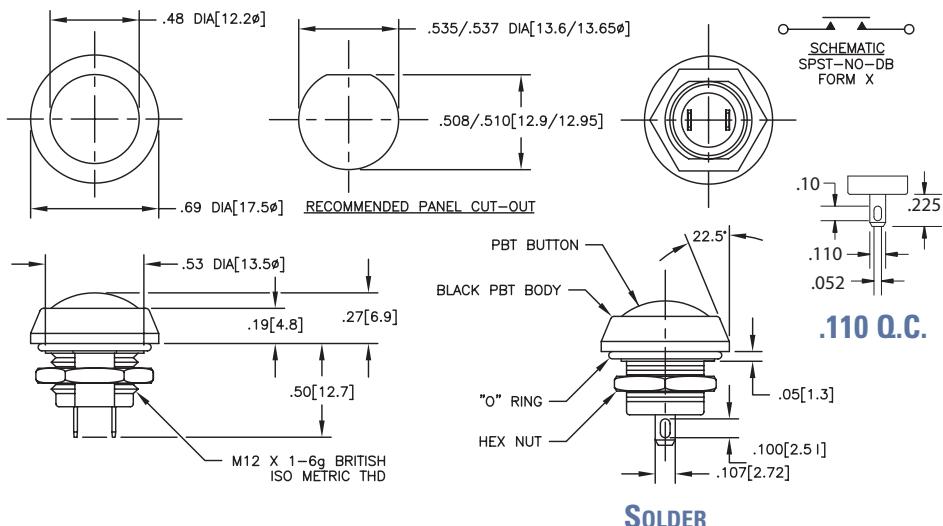
ACTUAL SIZE

## STANDARDS / AGENCY / RATINGS:

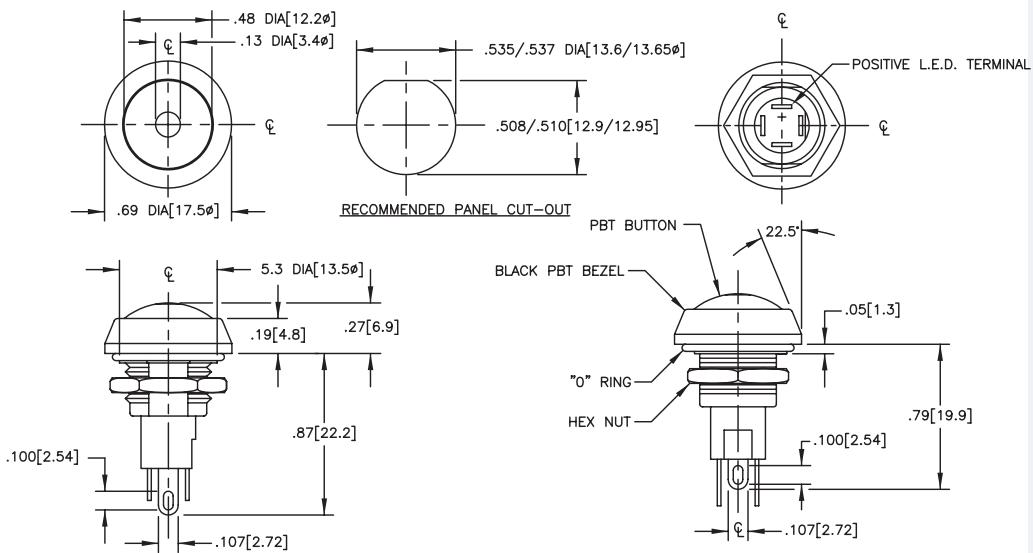


## SERIES 49: MINIATURE SEALED ESD RESISTANT

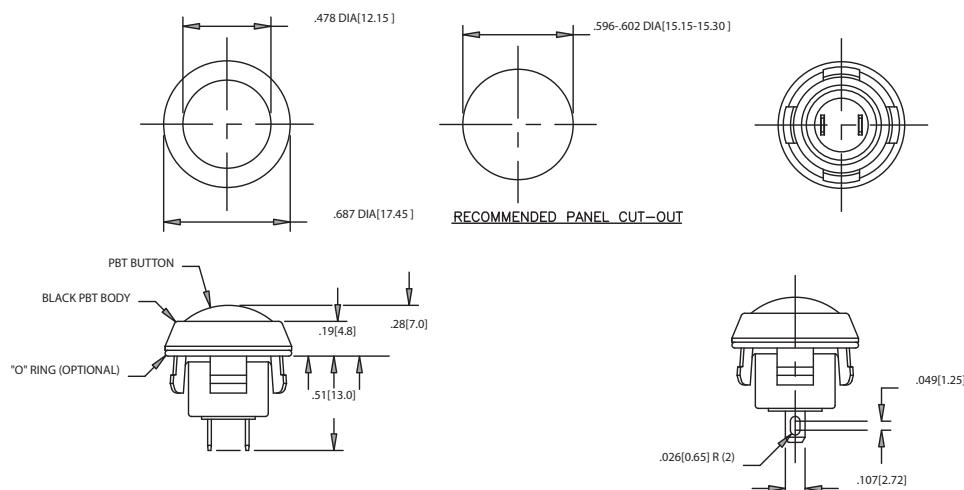
## 49-11X &amp; 49-61X SERIES



## 49-41X SERIES



## 49-91X SERIES



## MECHANICAL / ELECTRICAL CHARACTERISTICS:

## Circuit:

SPST-NO-DB or SPST-NC-DB

## Travel (nominal):

0.09 inches / 2.3 mm

## Life (nominal):

1,000,000 cycles

(mechanical)

500,000 cycles (electrical)

## Operating temperature:

-20°C to +85°C

(-4°F to +185°F)

## Operating force (nominal):

3N / 306 grams

## Contact bounce (nominal):

1 millisecond

## LED:

T-1

## Dielectric strength:

1,000 VAC

## Insulation resistance:

1 GΩ

## Contact resistance:

50 mΩ max (initial)

## Switching power (max):

16 VA AC

## Mounting Torque (max):

15 inch pounds

## Electrical Ratings:

Circuitry	Current	Voltage
SPST-DB-NO	400 mA	32 VAC Res
SPST-DB-NC	100 mA	50 VDC Res
	125 mA	125 VAC Res

## FULLY SEALED PUSHBUTTON WITH WIRE LEADS

This fully sealed switch series is SPST-DB for a variety of circuit requirements. The double break mechanism also provides reliable switching of DC loads. This rugged switch is ideal for harsh environments.

### APPLICATIONS

- Communications
- Instrumentation
- Data processing
- Military environments
- Mass transport controls
- Dry circuit switching

### KEY FEATURES:

• Fully sealed to IP67	• Flame retardant UL rated material
• Momentary action	• Gold plated contacts
• Wire leads	• Life up to 500,000 cycles



ACTUAL SIZE

### ORDERING INFORMATION:

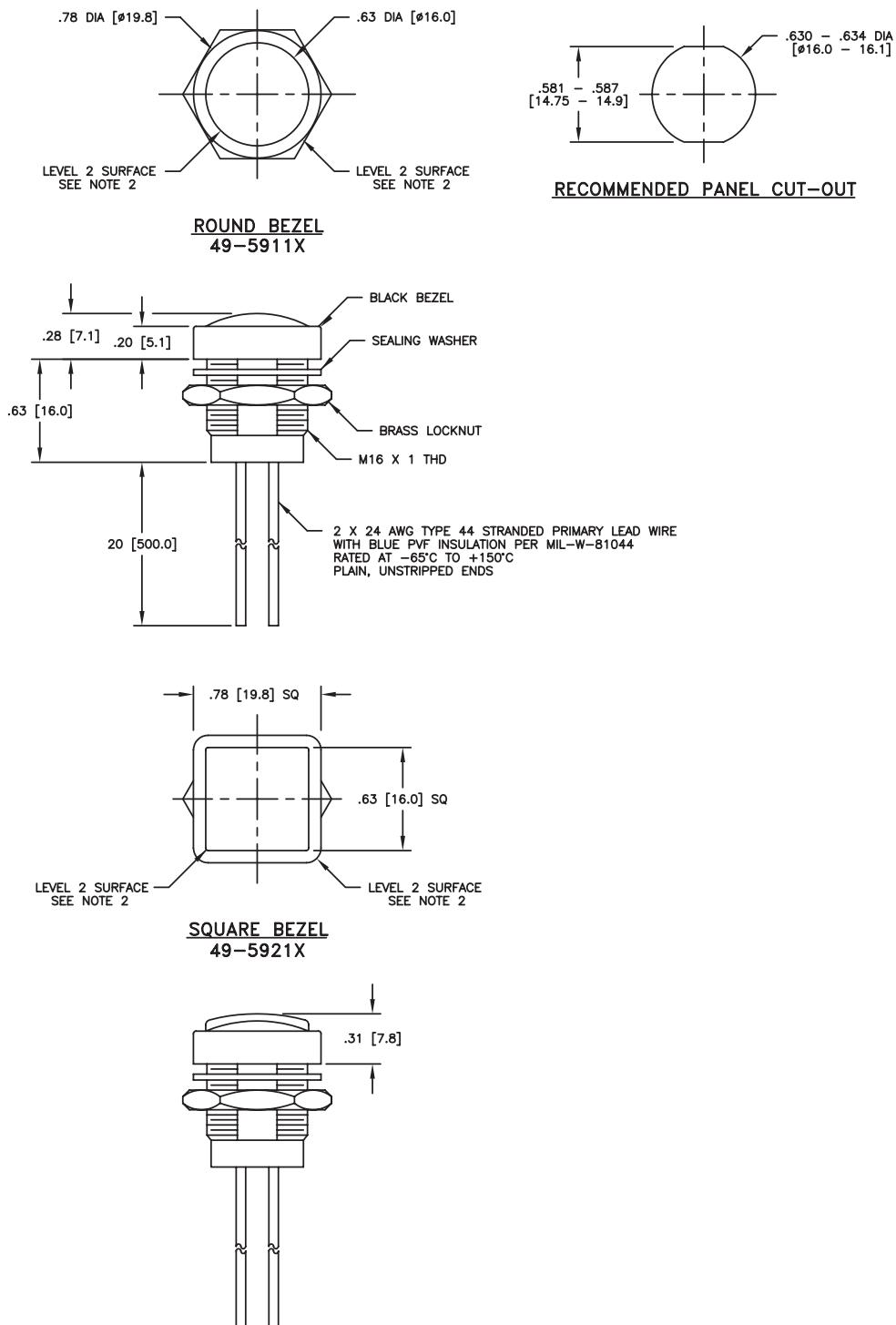
Part Number	Button Style	Button Color
49-59111	Round bezel	Black
49-59112	Round bezel	Red
49-59113	Round bezel	Green
49-59211	Square bezel	Black
49-59212	Square bezel	Red
49-59213	Square bezel	Green

### STANDARDS / AGENCY / RATINGS:



## SERIES 49-59: FULLY SEALED WITH WIRE LEADS

## PRODUCT DRAWINGS



## MECHANICAL / ELECTRICAL CHARACTERISTICS:

**Circuit:**

SPST-NO-DB

**Travel:**

0.09 inches / 2.3 mm (nominal)

**Operating force:**

3N / 306 grams

**Panel thickness:**

0.31 inches 8 mm (Max)

**Contact material:**

gold plated palladium nickel

**Contact resistance (initial):**

150 mΩ max including wire leads

**Current Rating (typical):**

400mA at 32 VAC resistive

100mA at 50 VDC resistive

125mA at 125 VAC resistive

**Dielectric strength:**

1000 VAC for 1 min

**Insulation resistance:**

1 GΩ @ 500 VDC

**Contact resistance:**

50 mΩ max initial including leads

**Life (nominal):**

1,000,000 cycles (mechanical)

500,000 (max) cycles (electrical)

**Operating temperature:**

-55°C to 105°C

(-67°F to +221°F)

**Body and button material:**

PBT

## PANEL SEALED PUSHBUTTON WITH SERIES 16 & 26 SNAP SWITCHES

These rugged panel sealed pushbuttons employ the workhorse basic switches for high (or low) current applications. The pushbuttons are available with square or round bezels. These switches are ideal for harsh environments.

### APPLICATIONS

- Environmentally demanding keypads
- Mass transport controls
- Communications
- Instrumentation
- Data processing
- Military environments

### KEY FEATURES:

- Panel sealed to IP67
- Momentary action
- Solder terminals
- Flame retardant UL rated material
- Life (min.) – 1,000,000 cycles
- Available with Series 16 or 26 switch
- Rated up to 10 amps

ACTUAL SIZE



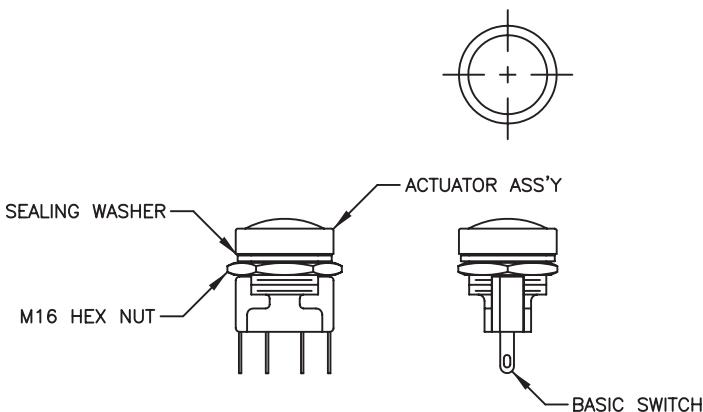
### ORDERING INFORMATION:

Part Number	Button Style	Button Color	Circuit	Contact Material
49-5911 / 530004	Round	Black	SPDT-DB	Silver
49-5912 / 530004	Round	Red	SPDT-DB	Silver
49-5913 / 530004	Round	Green	SPDT-DB	Silver
49-5911 / 810	Round	Black	DPDT-DB	Enhanced Gold
49-5912 / 810	Round	Red	DPDT-DB	Enhanced Gold
49-5913 / 810	Round	Green	DPDT-DB	Enhanced Gold

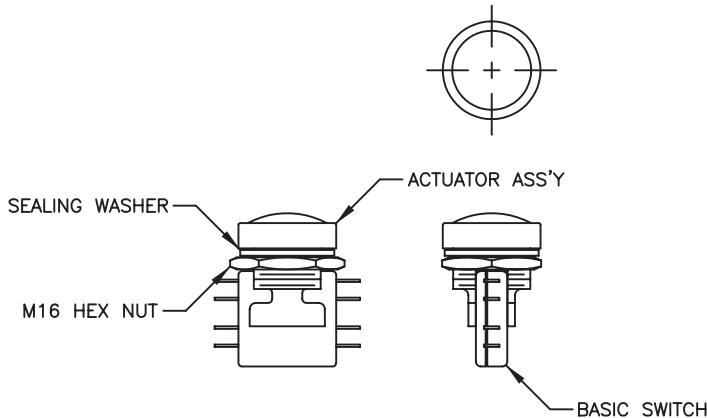
### STANDARDS / AGENCY / RATINGS:



## 49-591x / 530004



## 49-591x / 810



## Current rating: 26-810

Load	Sea Level				70,000 Ft.	
	28 VDC DPDT	28 VDC 4 CKT	115 VAC 60 HZ DPDT	115 VAC 60 HZ 4 CKT	28 VDC DPDT	28 VDC 4 CKT
Resistive	8 amp	8 amp	6 amp	4 amp	8 amp	8 amp
Inductive	6 amp	4 amp	4 amp	4 amp	2 amp	1 amp
Lamp	0.5 amp	0.5 amp	2 amp	1 amp	—	—

## INSTALLATION:

The actuator assembly is installed from the front of the panel and locked down with the hex nut using a 20mm spanner. To attain the correct sealing, the nut should be tightened to a recommended torque of between 1.106 pound/foot (1.5 Nm) not exceeding 1.475 pound/foot (2 Nm). The basic switch can then be snapped into place from the back of the panel. Panel Thickness (Max): .118 (3.0).

## MECHANICAL / ELECTRICAL CHARACTERISTICS:

**Travel (nom):**  
0.09 inches / 2.3 mm

**Operating force (nom):**  
387g–561g (3.8N–5.5N)

**Dielectric strength:**  
1,000 VAC for 1 minute

**Insulation resistance:**  
1 GΩ @ 500 VDC

**Contact resistance initial:**  
25 mΩ max.

**Electrical Life:**  
50,000 cycles @ 158°F (70°C)

**Current rating 16-530004:**  
Form X or Y: 10 amps 125 VAC;  
10 amps 28 VDC IND.  
Form Z: 5 amps 125/250 VAC;  
3 amps 28 VDC IND.

**Current rating 26-810:**  
See chart on left

**Operating temperature:**  
-67°F to +221°F  
(-55°C to +105°C)

**Body/Button material:**  
PBT

**Contacts 16-530004:**  
silver

**Contacts 26-810**  
enhanced gold

## MINIATURE VANDAL RESISTANT SEALED

This rugged miniature, momentary action, sealed switch series is ideal for a variety of applications in harsh environments where durability is key. It is panel sealed to IP67 and designed to be impact resistant.

## APPLICATIONS

- Military / Aerospace
- Process Controls
- Security Access Controls
- Medical Instrumentation
- Computers
- Transportation: Mass-transit, Marine, Lift Trucks, Personal and Recreational Vehicles, Rail



ACTUAL SIZE

## KEY FEATURES:

• Panel sealed to IP67	• Lighted and non-lighted versions
• Momentary action	• Wide temperature range: -40°C to +125°C
• Impact resistant	• Gold Plated Palladium Nickel contacts
• Non-spark material	

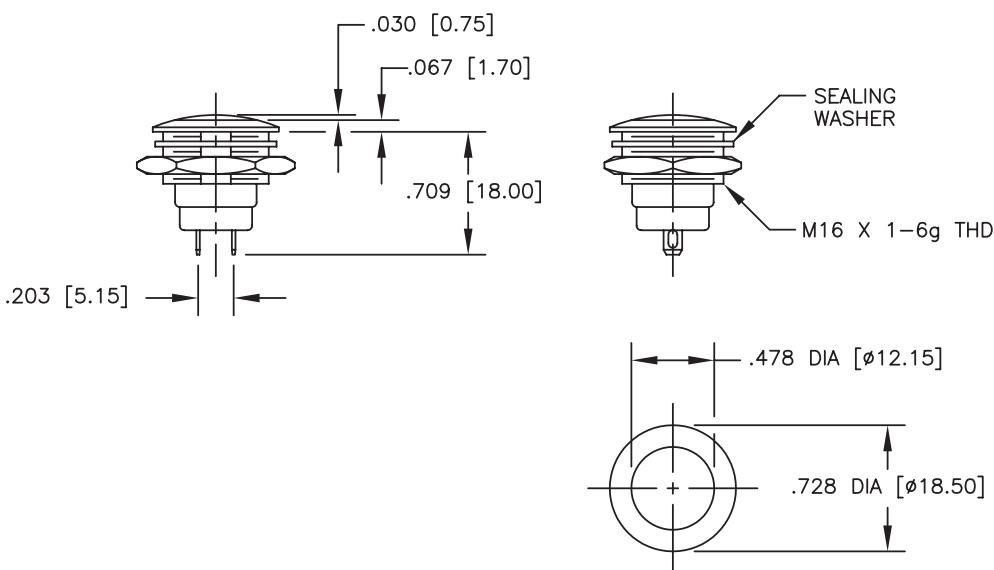
## ORDERING INFORMATION:

Part Number	Lighted	LED Color
<b>57-111</b>	No	—
<b>57-112B</b>	Yes	Blue
<b>57-112G</b>	Yes	Green
<b>57-112R</b>	Yes	Red

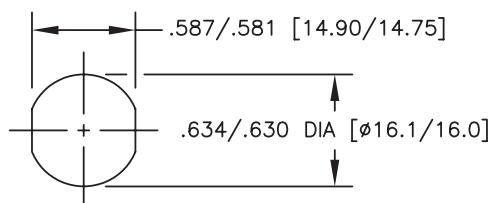
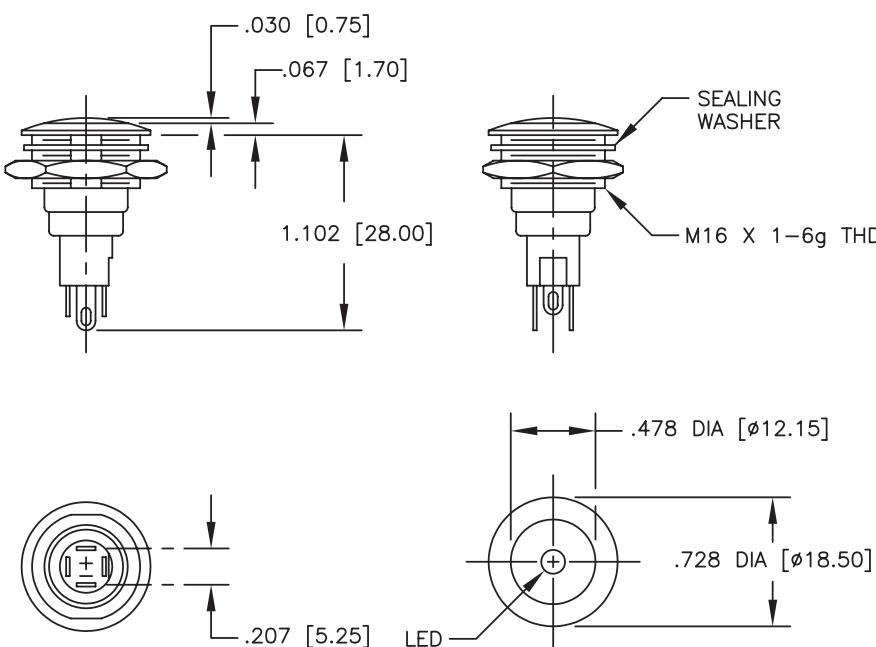
## STANDARDS / AGENCY / RATINGS:



## NON-LIGHTED



## LIGHTED



## MECHANICAL / ELECTRICAL CHARACTERISTICS:

**Travel (nom):**  
0.09 inches / 2.3 mm

**Life (nominal):**  
1,000,000 cycles (mechanical)  
500,000 cycles (electrical)

**Operating force (nom):**  
3N / 306 grams

**Contact bounce (nom):**  
1 millisecond

**Panel thickness (max):**  
0.118 inches / 3.0 mm

**Contact resistance initial:**  
50 mΩ (Max)

**Current Rating (typical):**  
400mA at 32 VAC resistive  
100mA at 50 VDC resistive  
125mA at 125 VAC resistive

**Switching power (max):**  
16VA AC

**Shock:**  
100g

**Body and button material:**  
Velour chrome plated  
zinc alloy

**Terminals:**  
gold plated brass

**Soldering information:**  
608°F (320°C) max for 3s

## MINIATURE PANEL SEALED METAL

The 57M is a miniature switch designed for rugged environments. The housing is zinc alloy with velour chrome plating. It is available as maintained or momentary action, Electro-mechanical operation with Gold plated contacts and solder terminals. It is ideal for a multitude of applications.



## APPLICATIONS

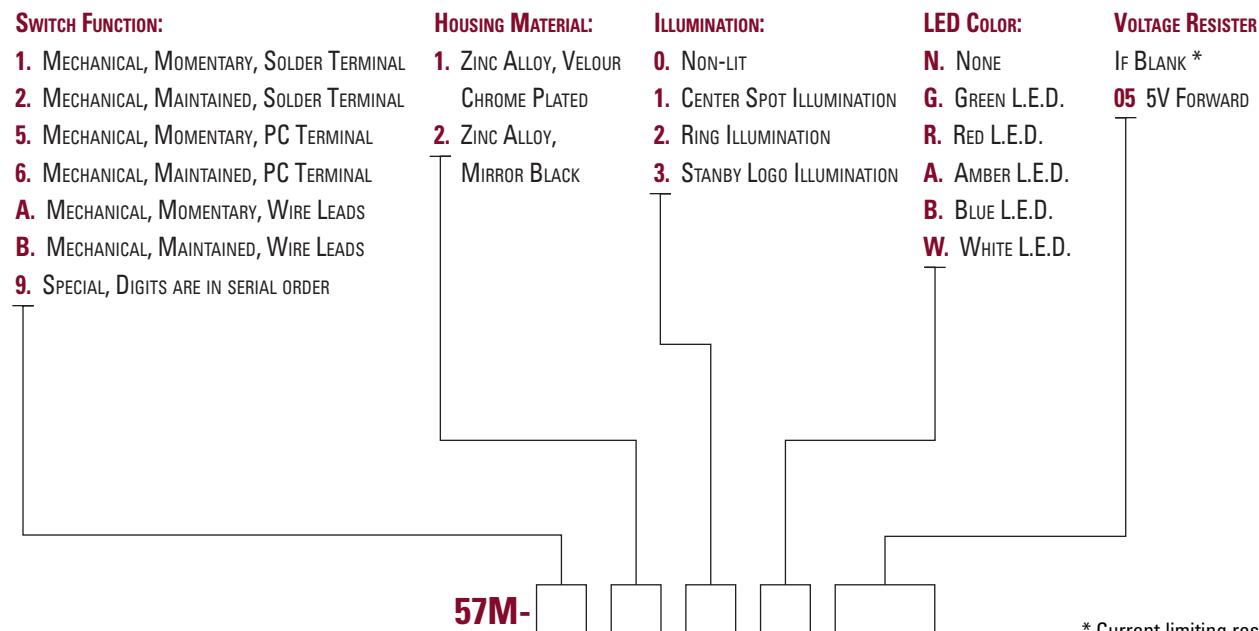
- Security Equipment
- Industrial Control
- Medical Equipment
- Military Equipment
- Food Processing
- Transportation
- Computers

## KEY FEATURES:

• Zinc Alloy/Velour Chrome Plated	• Panel Sealed to IP67
• Center Spot LED and Non-Lighted Versions	• RoHS Compliant
• Maintained or Momentary Action	• Electro-Mechanical
	• Gold Plated Contacts and Terminals

ACTUAL SIZE

## ORDERING INFORMATION:

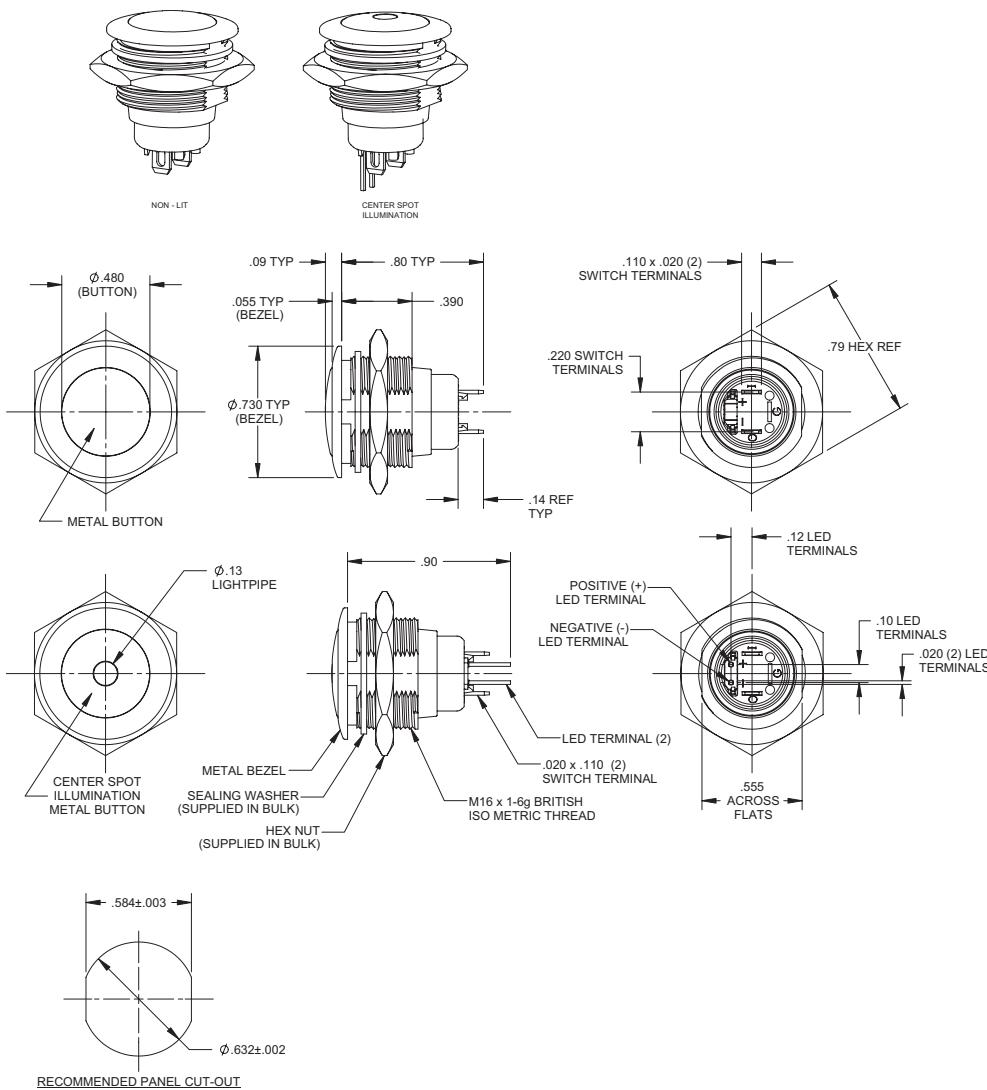


\* Current limiting resistor is required to limit LED forward current to 20 mA (not included).

## STANDARDS / AGENCY / RATINGS:



## PRODUCT DRAWINGS



## PANEL MOUNTING AND CONSTRUCTION INFORMATION

The series 57M mounts easily into panels of minimum 0.20" (0.5mm) and maximum 0.120" (3mm) thicknesses. Front panel sealing to IP67 is achieved by a sealing washer which is fitted to the body of the switch before it is inserted into the panel hole cutout. It is held onto the panel by means of a metal hex nut tightened down to a torque of 10 inch pounds to achieve the correct sealing pressure.

## MECHANICAL / ELECTRICAL CHARACTERISTICS:

## Circuit:

SPST-NO-DB

## Button travel (nominal):

0.09 inches / 2.3 mm

## Operating force (nominal):

3N / 306g

## Contact bounce (nominal):

1 millisecond

## Panel thickness:

0.20 – 0.120 inches /  
0.5 – 3mm

## Temperature index:

-40°C to +85°C

## Torque (max):

10 inch pounds

## LED operating temperature:

-13° F to +185° F /

-25° C to +85° C

## Current ratings (resistive):

250mA @ 12VDC, 100K cycles  
150mA @ 28VDC, 150K cycles  
(momentary)

100mA @ 48VDC, 100K cycles

10mA @ 12VDC, 1 million cycles  
(momentary)

## ELECTRO-MECHANICAL

## Dielectric strength:

1,000 VAC

## Insulation resistance:

1 GΩ

## Contact resistance:

50 mΩ max (initial)

## MINIATURE PANEL SEALED METAL

The 57M is a miniature switch designed for rugged environments. The housing is zinc alloy with velour chrome plating. It is available as maintained or momentary action, solid-state operation with Gold plated contacts and solder terminals. It is ideal for a multitude of applications.

## APPLICATIONS

- Security Equipment
- Industrial Control
- Medical Equipment
- Military Equipment
- Food Processing
- Transportation
- Computers



ACTUAL SIZE

## KEY FEATURES:

- Zinc Alloy/Velour Chrome Plated
- Center Spot LED and Non-Lighted Versions
- Maintained or Momentary Action
- Panel Sealed to IP67
- RoHS Compliant
- Solid State
- Gold Plated Contacts and Terminals

## ORDERING INFORMATION:

### SWITCH FUNCTION:

3. SOLID STATE, MOMENTARY, SOLDER TERMINAL
4. SOLID STATE, MAINTAINED, SOLDER TERMINAL
7. SOLID STATE, MOMENTARY, PC TERMINAL
8. SOLID STATE, MAINTAINED, PC TERMINAL
- C. SOLID STATE, MOMENTARY, WIRE LEADS
- D. SOLID STATE, MAINTAINED, WIRE LEADS
9. SPECIAL, DIGITS ARE IN SERIAL ORDER

### HOUSING MATERIAL:

1. ZINC ALLOY, VELOUR CHROME PLATED
2. ZINC ALLOY, MIRROR BLACK

### BUTTON STYLE:

0. NON-LIT
1. CENTER SPOT ILLUMINATION
2. RING ILLUMINATION
3. STANBY LOGO ILLUMINATION

### LED COLOR:

- N. NONE
- G. GREEN L.E.D.
- R. RED L.E.D.
- A. AMBER L.E.D.
- B. BLUE L.E.D.
- W. WHITE L.E.D.

### VOLTAGE RESISTER

If BLANK \*  
05 5V FORWARD

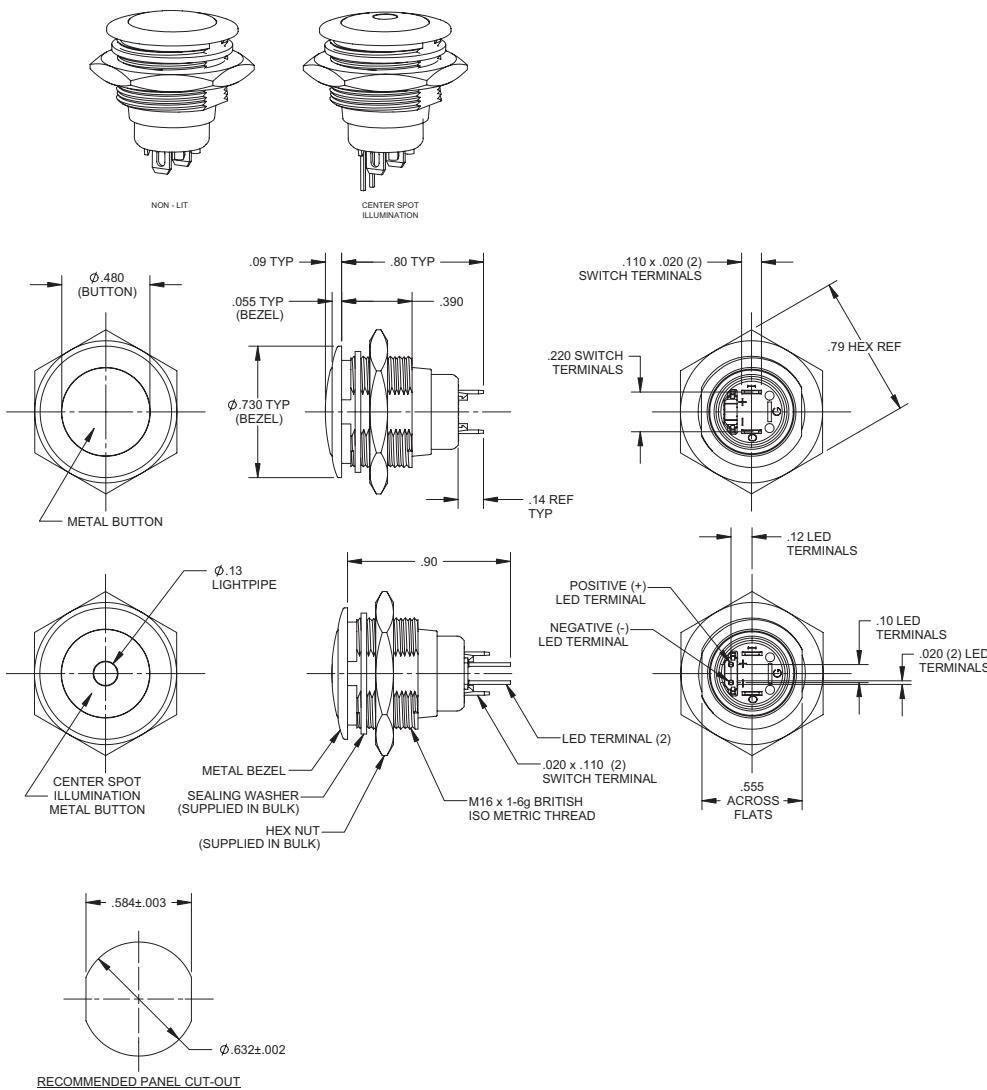
57M-

\* Current limiting resistor is required to limit LED forward current to 20 mA (not included).

## STANDARDS / AGENCY / RATINGS:



## PRODUCT DRAWINGS



## MECHANICAL / ELECTRICAL CHARACTERISTICS:

**Circuit:**  
SPST-NO

**Button travel (nominal):**  
0.09 inches / 2.3 mm

**Life (mechanical) (nominal):**  
1,000,000 cycles (momentary)  
100,000 cycles (maintained)

**Operating force (nominal):**  
3N / 306 grams

**Panel thickness:**  
0.02 – 0.12 inches / 0.5 – 3mm

**Temperature index:**  
-40°F to +185°F

**LED operating temperature:**  
-13° F to +185° F /  
-25° C to +85° C

**Supply voltage:**  
4.2V to 24V, 26.5V Max.

**Supply current:**  
B<Brp, Vcc=12V: 3mA Typ.  
To 8mA Max.  
B>Bop, Vcc=12V: 4mA Typ.  
To 8mA Max.

**Output current:**  
20 mA

**Reverse battery voltage:**  
-30V Max.

**Reverse output current:**  
-50mA Max.

**Torque (max):**  
10 inch pounds

## PANEL MOUNTING AND CONSTRUCTION INFORMATION

The series 57M mounts easily into panels of minimum 0.20" (0.5mm) and maximum 0.120" (3mm) thicknesses. Front panel sealing to IP67 is achieved by a sealing washer which is fitted to the body of the switch before it is inserted into the panel hole cutout. It is held onto the panel by means of a metal hex nut tightened down to a torque of 10 inch pounds to achieve the correct sealing pressure.

## FULLY SEALED METAL PUSHBUTTON WITH WIRE LEADS

Built on the proven series 48 platform these rugged switches come in stainless steel or aluminum housings, electro-mechanical with either momentary or maintained action and lighted or unlighted versions. The variety of options in this compact package size make the 58M ideal for many applications: transportation, outdoor controls, security products, food processing and medical products.

## APPLICATIONS

- Outdoor Controls
- Kiosks
- Security Equipment
- Medical Equipment
- Food Processing Equipment
- Military Equipment
- Industrial Machinery
- Transportation: Mass-Transit, Lift Trucks



ACTUAL SIZE

## KEY FEATURES:

- Momentary or Maintained Action
- Stainless Steel or Aluminum Housing
- Non Lit or Ring Illumination
- Variety of LED colors
- Electro-Mechanical
- Panel Sealed to IP67
- ROHS Compliant
- Gold Plated Contacts

## ORDERING INFORMATION:

### SWITCH FUNCTION:

**A.** MECHANICAL, MOMENTARY, WIRE LEADS  
**B.** MECHANICAL, MAINTAINED, WIRE LEADS

### HOUSING MATERIAL:

**1.** STAINLESS STEEL  
**2.** ALUMINUM

### BUTTON STYLE:

**0.** NON-LIT  
**2.** RING ILLUMINATION  
**R.** RED, NON-LIT

### LED COLOR:

**N.** NONE  
**G.** GREEN  
**R.** RED  
**B.** BLUE  
**W.** WHITE  
**RB.** RED / BLUE  
**RG.** RED / GREEN  
**BG.** BLUE / GREEN

### VOLTAGE RESISTER

IF BLANK \*  
**05** 5V FORWARD  
**12** 12V FORWARD  
**24** 24V FORWARD

58M-

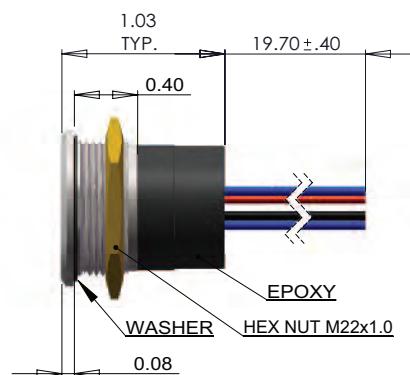
\* Current limiting resistor is required to limit LED forward current to 20 mA (not included).

## STANDARDS / AGENCY / RATINGS:

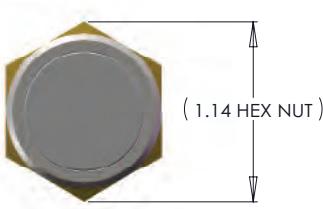


## PRODUCT DRAWINGS

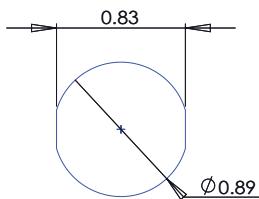
## ILLUMINATION



## NON-ILLUMINATION



## RECOMMENDED PANEL CUTOUT



## WIRELEADS DESCRIPTION

WIRELEADS TYPE	WIRELEADS SPECIFICATION	SW TERMINAL		LED	
		I	O	+	-
ILLUMINATION	AWG26/UL1007	BLUE	BLUE	RED	BLACK
NON-ILLUMINATION		BLUE	BLUE	---	---

## PANEL MOUNTING AND CONSTRUCTION INFORMATION

The series 58M mounts easily into panels of minimum 0.50" (1.3 mm) and maximum 0.150" (3.8 mm) thickness. Front panel sealing to IP67 is achieved by a sealing o-ring fitted to the body of the switch before it is inserted into the panel hole cut-out. It is held onto the panel by means of a metal hex nut tightened down to a torque of 10 inch pounds to achieve the correct sealing pressure.

## MECHANICAL / ELECTRICAL CHARACTERISTICS:

## Circuit:

SPST-NO-DB (Form X)

## Button travel (nominal):

0.09 inches / 2.3 mm

## Operating force (nominal):

3N / 306 grams

## Contact bounce (nominal):

1 millisecond

## Panel thickness:

0.50" – 0.150" (1.3 – 3.8mm)

## Temperature index:

-40°C to +85°C

## Torque (max):

10 inch pounds

## LED operating temperature:

-13° F to +185° F /

-25° C to +85° C

## Current ratings (resistive):

250mA @ 12VDC, 100K cycles

150mA @ 28VDC, 150K cycles (momentary)

100mA @ 48VDC, 100K cycles

10mA @ 12VDC, 1 million cycles (momentary)

## ELECTRO-MECHANICAL

## Dielectric strength:

1,000 VAC

## Insulation resistance:

1 GΩ

## Contact resistance:

50 mΩ max (initial)

## FULLY SEALED METAL PUSHBUTTON WITH WIRE LEADS

Built on the proven series 48 platform these rugged switches come in stainless steel or aluminum housings, solid state with either momentary or maintained action and lighted or unlighted versions. The variety of options in this compact package size make the 58M ideal for many applications: transportation, outdoor controls, security products, food processing and medical products.

### APPLICATIONS

- Outdoor Controls
- Kiosks
- Security Equipment
- Medical Equipment
- Food Processing Equipment
- Military Equipment
- Industrial Machinery
- Transportation: Mass-Transit, Lift Trucks



ACTUAL SIZE

### KEY FEATURES:

- Momentary or Maintained Action
- Stainless Steel or Aluminum Housing
- Non Lit or Ring Illumination
- Variety of LED colors
- Solid State
- Panel Sealed to IP67
- ROHS Compliant
- Gold Plated Contacts

### ORDERING INFORMATION:

#### SWITCH FUNCTION:

**C.** SOLID STATE, , MOMENTARY, WIRE LEADS

**D.** SOLID STATE, , MAINTAINED, WIRE LEADS

#### HOUSING MATERIAL:

**1.** STAINLESS STEEL

**2.** ALUMINUM

#### BUTTON STYLE:

**0.** NON-LIT

**2.** RING ILLUMINATION

**R.** RED, NON-LIT

#### LED COLOR:

**N.** NONE

**G.** GREEN

**R.** RED

**B.** BLUE

**W.** WHITE

#### VOLTAGE RESISTER

IF BLANK \*

**05** 5V FORWARD

**12** 12V FORWARD

**24** 24V FORWARD

**58M-**



\* Current limiting resistor is required to limit LED forward current to 20 mA (not included).

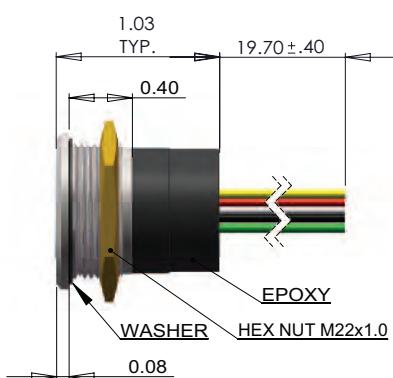
### STANDARDS / AGENCY / RATINGS:



## SERIES 58M: FULLY SEALED METAL PUSHBUTTON

## PRODUCT DRAWINGS

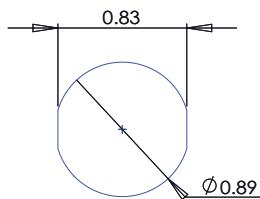
## ILLUMINATION



## NON-ILLUMINATION



## RECOMMENDED PANEL CUTOUT



## WIRELEADS DESCRIPTION

WIRELEADS TYPE	WIRELEADS SPECIFICATION	SW TERMINAL			LED	
		I	O	G	+	-
ILLUMINATION	AWG26/UL1007	YELLOW	GREEN	WHITE	RED	BLACK
NON-ILLUMINATION		YELLOW	GREEN	WHITE	---	---

## MECHANICAL / ELECTRICAL CHARACTERISTICS:

## Circuit:

SPST-NO-DB (Form X)

## Button travel (nominal):

0.09 inches / 2.3 mm

## Life (mechanical) (nominal):

1,000,000 cycles (momentary)

100,000 cycles (maintained)

## Operating force (nominal):

3N / 306 grams

## Panel thickness:

0.02 – 0.12 inches / 0.5 – 3mm

## Temperature index:

-40°F to + 185°F

## Supply voltage:

4.2V to 24V, 26.5V Max.

## Supply current:

B<Brp, Vcc=12V: 3mA Typ.  
To 8mA Max.B>Bop, Vcc=12V: 4mA Typ.  
To 8mA Max.

## Output current:

20 mA

## Reverse battery voltage:

-30V Max.

## Reverse output current:

-50mA Max.

## Torque (max):

10 inch pounds

## PANEL MOUNTING AND CONSTRUCTION INFORMATION

The series 58M mounts easily into panels of minimum 0.50" (1.3 mm) and maximum 0.150" (3.8 mm) thickness. Front panel sealing to IP67 is achieved by a sealing o-ring fitted to the body of the switch before it is inserted into the panel hole cut-out. It is held onto the panel by means of a metal hex nut tightened down to a torque of 10 inch pounds to achieve the correct sealing pressure.

## MINIATURE METAL PANEL SEALED PUSHBUTTON

This rugged panel sealed pushbutton is made of a special high creep strength non-spark zinc alloy suitable for use in mining or other potentially explosive atmospheres where dust and moisture are problematic.

# Series 59



ACTUAL SIZE

## APPLICATIONS

- Communications
- Instrumentation
- Data processing
- Process controls
- Transportation/ Material handling

## KEY FEATURES:

- Panel sealed to IP67
- Momentary action
- Non-spark material
- 500,000 life cycles @ max power
- Impact resistant
- Gold contacts
- Wide temperature range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$

## ORDERING INFORMATION:

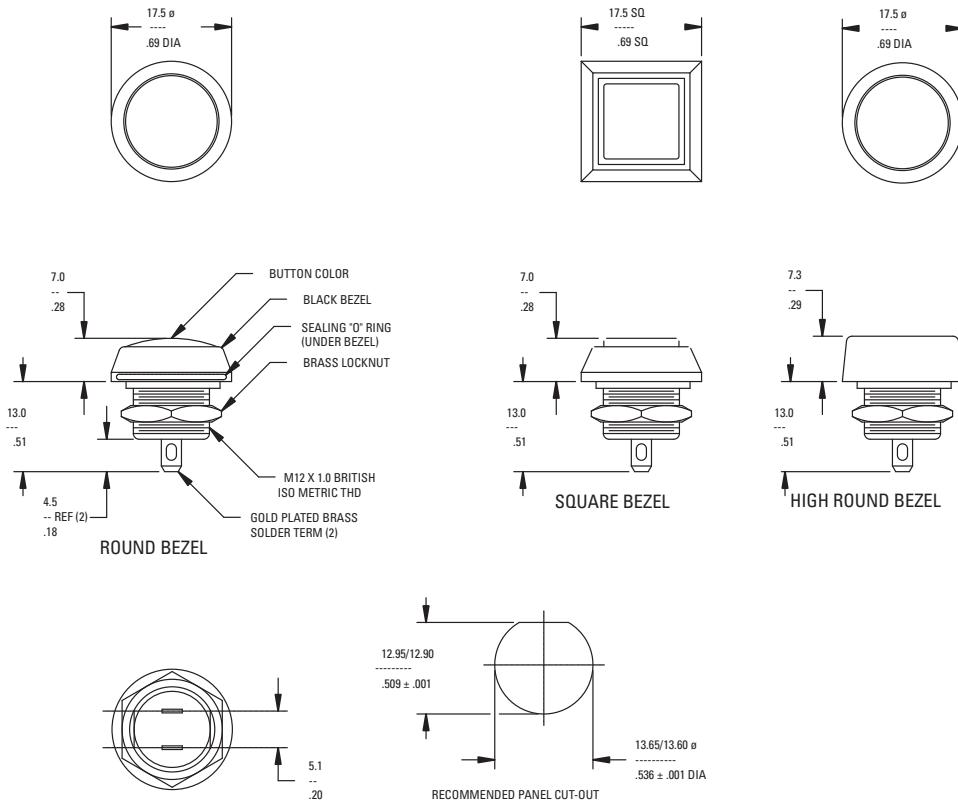
Part Number	Bezel Style	Button Color*
59-111	Round	Black
59-112	Round	Red
59-113	Round	Green
59-211	Square	Black
59-212	Square	Red
59-213	Square	Green
59-311	High Round	Black
59-312	High Round	Red
59-313	High Round	Green

\*Consult factory for additional colors.

## STANDARDS / AGENCY / RATINGS:



## PRODUCT DRAWINGS



## PANEL MOUNTING AND CONSTRUCTION INFORMATION

The series 59 mounts easily into panels of minimum 1.5mm (.060 in.) and maximum 3mm (.118 in.) thickness. Front panel sealing to IP67 is achieved by a sealing "O" ring fitted into a premachined groove on the body of the switch before it is inserted into the panel hole cut-out. It is held onto the panel by means of a metal hex nut tightened down by a 14mm spanner, to a torque of between 1.5Nm to 3.0Nm to achieve the correct sealing pressure. A "D" flat is provided to prevent rotation.

## MECHANICAL / ELECTRICAL CHARACTERISTICS:

**Travel (nom):**  
2.3mm (.090 in.)

**Life (max):**  
1,000,000 cycles

**Operating force (nom):**  
3N / 306 grams

**Contact bounce (nom):**  
1 millisecond

**Panel thickness (max):**  
3mm (.118 in.)

**Dielectric strength:**  
1000 VAC

**Insulation resistance:**  
1 GΩ

**Contact resistance (initial):**  
50 mΩ (Max)

**Current rating (typical):**  
400mA at 32 VAC resistive  
100mA at 50 VDC resistive  
125mA at 125 VAC resistive

**Shock:**  
100G

**Operating temp range:**  
-55°C to +125°C  
(-67°F to +257°F)

**Body material:**  
zinc alloy, black

**Button material:**  
PBT thermoplastic

**Contacts:**  
gold plated palladium nickel

**Terminals:**  
gold plated brass

## EXTRA TOUGH VANDAL RESISTANT SEALED PUSHBUTTON SWITCH

The Series 76-59 is an extra tough, stainless steel sealed pushbutton. It is made to withstand rough use and the concave stainless button makes it ADA compatible. The switch is momentary action and the button is available in a stainless or red powder coated button.



ACTUAL SIZE

## APPLICATIONS

- Security systems
- Kiosks
- Process control
- Public access equipment
- Gas pumps
- Outdoor machinery
- Industrial machinery

## KEY FEATURES:

- Sealed to IP67
- SPST-NO-DB
- Stainless steel body and button
- .110 quick connect terminals
- Standard ITW Pancon connector available
- Extra ruggedized construction
- ADA compatible

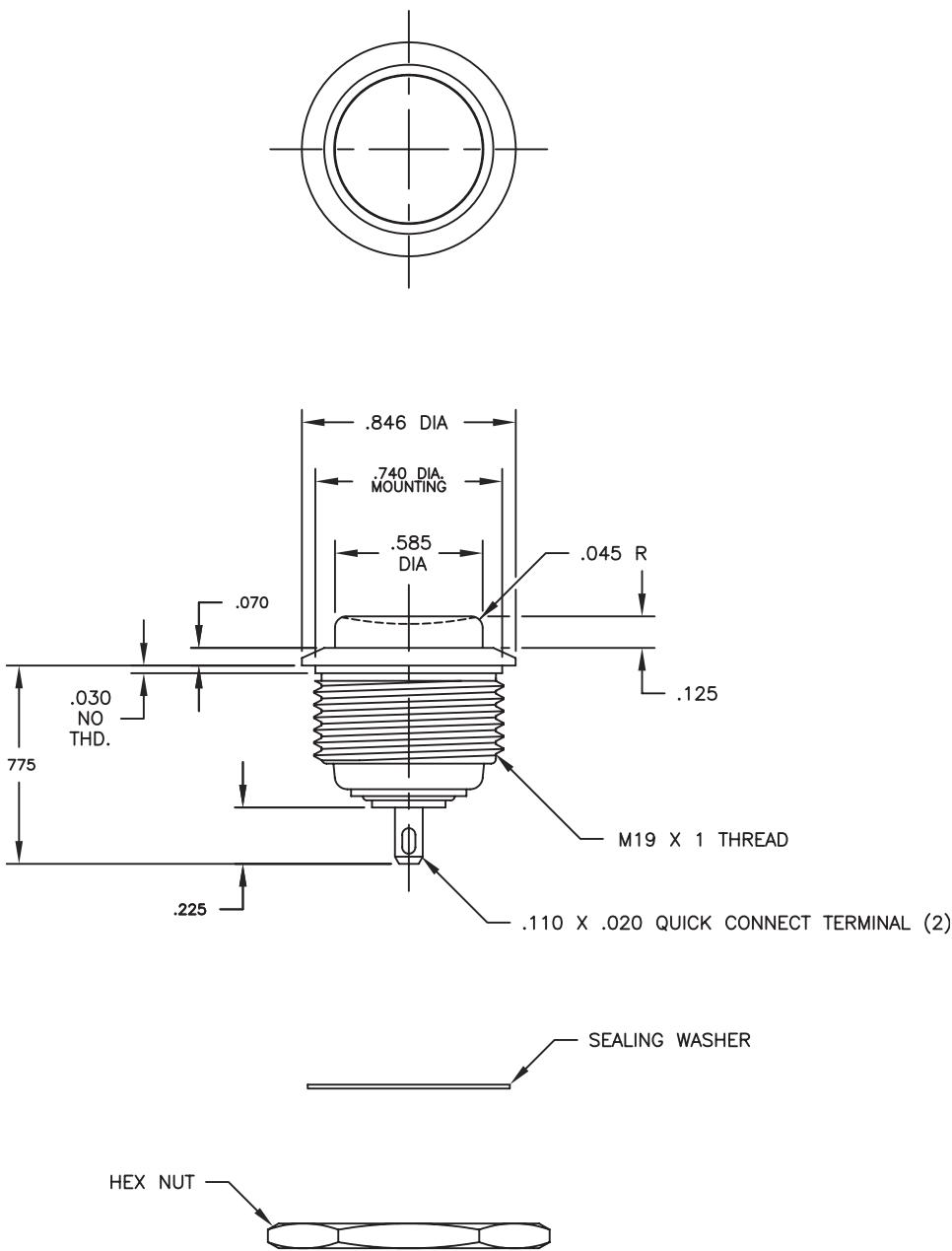
## ORDERING INFORMATION:

Part Number	Bushing	Button
76-59200	Stainless steel	Raised concave stainless steel
76-59300	Stainless steel	Raised concave brass with UV stabilized red powder coat finish

## STANDARDS / AGENCY / RATINGS:



## 76-59200 &amp; 76-59300



## MECHANICAL / ELECTRICAL CHARACTERISTICS:

## Electrical rating:

100 mA max @

50 VDC Resistive

## Life (electrical):

500,000 cycles @ max load

## Operating force:

3.0 N ref

## Operating temperature:

-55°C to +125°C

## Bushing material:

stainless steel

## Button material:

stainless steel (76-59200) or brass with UV stabilized red powder coat finish (76-59300)

## Contacts &amp; terminals:

gold plated brass

Switch terminals mate with  
ITW Pancon Connector  
CSF-MH-0202Recommended panel cutout:  
0.758 inch diameterRecommended panel thickness:  
0.06 – 0.31 inches

## 10 AMP VANDAL RESISTANT PUSHBUTTON SWITCHES

This rugged panel sealed switch is designed to withstand impacts of significant force. Using Series 16 and 26 Butterfly® snap action switches loads of up to 10.1 amps can be switched. The low profile makes it difficult to pry the switch from its mounting.

### APPLICATIONS

- Military/Aerospace
- Industrial: welding, motors, pumps, controls, valves
- Transportation: mass transit, marine, lift trucks, personal and recreational vehicles, rail
- Security access controls
- Elevators



ACTUAL SIZE

### KEY FEATURES:

- Panel sealed to IP67
- Form Z switch contacts
- Wide temperature range: -30°C to +105°C (-22°F to +221°F)
- UL recognized (16-530004 & 26-810 only) and CSA certified
- Solder Terminals
- Life: 50,000 cycles at full load

### ORDERING INFORMATION:

Part Number*	Contacts	Circuit
76-9510/530004	Silver	SPDT-DB
76-9510/810	Enhanced Gold	DPDT-DB

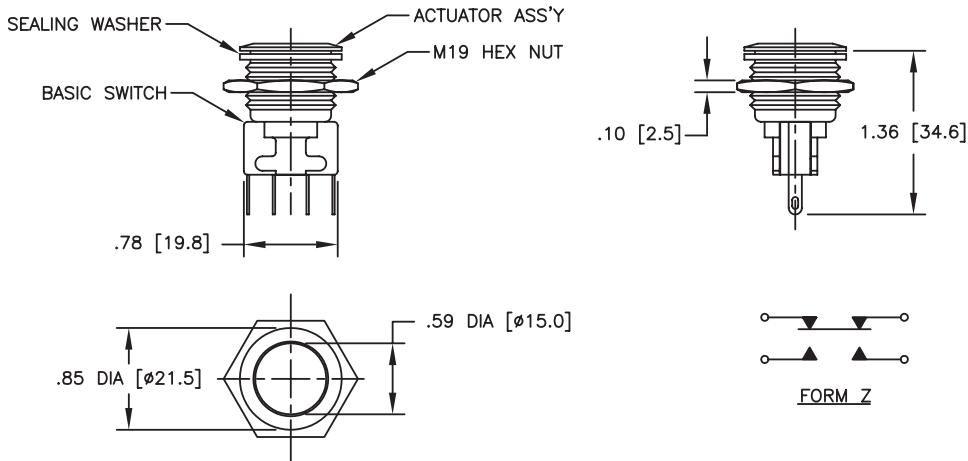
\* Switches are individually packaged with one each: actuator assembly, basic switch, sealing washer, and hex nut per bag.

### STANDARDS / AGENCY / RATINGS:

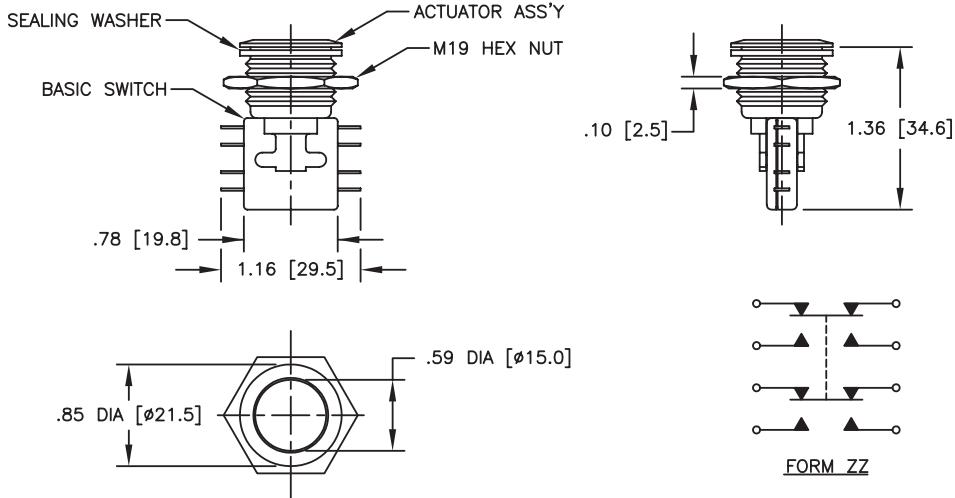


## SERIES 76-95: 10 AMP VANDAL RESISTANT

## 76-9510/530004



## 76-9510/810



## Current rating, 26-810:

Load	Sea Level				70,000 Ft.	
	28 VDC DPDT	28 VDC 4 CKT	115 VAC 60 HZ DPDT	115 VAC 60 HZ 4 CKT	28 VDC DPDT	28 VDC 4 CKT
Resistive	8 amp	8 amp	6 amp	4 amp	8 amp	8 amp
Inductive	6 amp	4 amp	4 amp	4 amp	2 amp	1 amp
Lamp	0.5 amp	0.5 amp	2 amp	1 amp	—	—

## MECHANICAL / ELECTRICAL CHARACTERISTICS:

## Mechanical Life:

1,000,000 cycles

## Operating force:

2.6N / 265 grams

## Panel thickness:

0.06 – 0.31 inches / 1.5 – 8mm

## Panel cut out:

0.758 inch Diameter / 19.25mm

## Dielectric strength:

1,000 VAC for 1 minute

## Insulation resistance:

1 GΩ @ 500VDC

## Contact resistance initial:

25 mΩ max

## Current rating, 16-530004:

Form X or Y: 10 amps 125 VAC;  
10 amps 28 VDC Ind.Form Z: 5 amps 125/250 VAC;  
3 amps 28 VDC Ind.

## Current rating, 26-810:

see chart on left

## Electrical:

Life: 50,000 cycles (max load)  
@ 158°F (70°C)

## Button and bezel material:

stainless steel

## Contact material:

16-530004: silver

## Contact material:

26-810: enhanced gold

## PANEL SEALED PUSHBUTTON SWITCH

The Series 76-97 is robust. The switch body and button are made from hard-wearing plastic and produced in front mounting style. The 76-97 series is available as momentary or maintained action. In addition the buttons have a brightly colored switch indicator which gives an "at a glance" recognition of the mode currently in use. Buttons and status rings can be supplied in a variety of colors. The 76-97 utilizes ITW Switches' proven Series 16 snap action switch.



## APPLICATIONS:

- Military environments
- Industrial machinery
- Mining equipment
- Petrochemical
- Process control
- Material handling



ACTUAL SIZE

## KEY FEATURES:

- Wide temperature range: from -40°C to +105°C
- Panel sealed to IP67
- Maintained and momentary action
- Solder terminals
- Status Indication

## ORDERING INFORMATION:

### Switch

Part Number*	Switch Action	Number of Poles
<b>76-9711/404X</b>	Momentary	1
<b>76-9711/804X</b>	Momentary	2
<b>76-9712/404X</b>	Maintained	1
<b>76-9712/804X</b>	Maintained	2

\* X = Button/Identity Ring Color

### Button

Button/Identity Ring Color	Add to Part Number
Black/Red	B
Red/Yellow	R
Green/Yellow	G
White/Yellow	W
Yellow/Red	Y
Blue/Red	N
Light Grey/Red	GY

## NON-STANDARD OPTIONS:

- PCB terminals
- Gold contacts
- 2 poles available
- Color variants
- Surface or sublimation legend printing

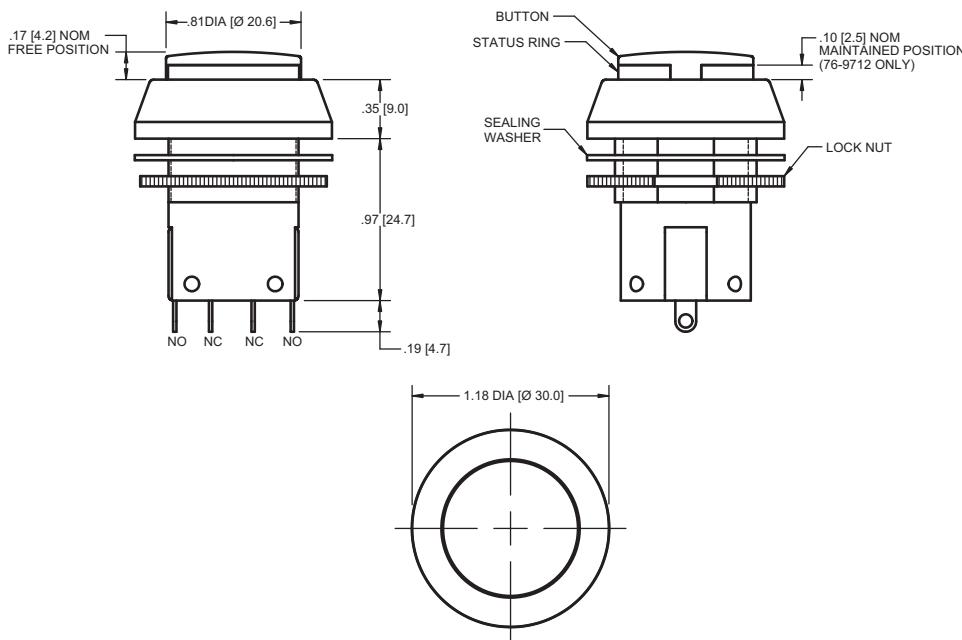
\*For non-standard options, please consult factory.

## STANDARDS / AGENCY / RATINGS:



## SERIES 76-97: PANEL SEALED SWITCH

## PRODUCT DRAWINGS



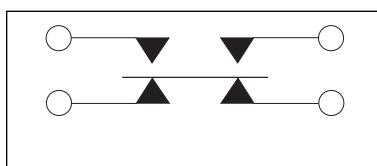
## PANEL MOUNTING AND CONSTRUCTION:

The 76-97 mounts easily into panels not exceeding .235" (6mm) thickness. Front panel sealing to IP67 is achieved by use of the sealing washer which is fitted to the switch before it is inserted into the panel hole cut out. It is held into the panel by means of a lock nut, tightened down to a torque of between 13 lb/in (1.5 Nm) to 25 lb/in (2.85 Nm) to achieve the correct sealing pressure. It is mounted into a standard .885" (22.5 mm) diameter and a double "D" flat is provided to prevent rotation if required (.800 between flats). Thread size —M2 x 1.5 ISO metric thread to British Standard 3643.

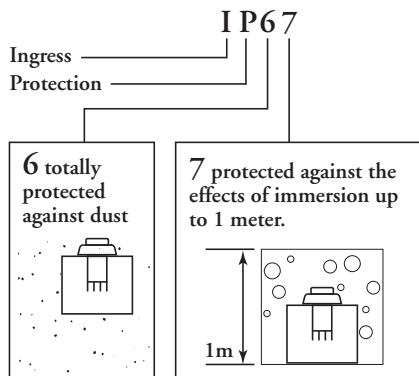
## MULTI-POLE INFORMATION:

The Series 76-97 has a non-standard option of 2 poles. The 2 pole switch is provided separate to the switch body and must be fitted, via a spring clip, after the switch body has been mounted in the panel.

## SWITCH CIRCUITRY:



## INGRESS PROTECTION:



Designs and specifications are subject to change without notice due to product improvement.

## MECHANICAL / ELECTRICAL CHARACTERISTICS:

## Travel:

.14" (3.5 mm)

## Mechanical Life:

2,000,000 (Momentary)

100,000 (Maintained)

## Operating force:

45 oz (12N) nominal

## Contact bounce:

5 milliseconds

## Panel thickness (max):

.235" (6 mm)

## Dielectric strength:

1000 VAC

## Insulation resistance:

1 GΩ

## Contact resistance (initial):

25 mΩ (Max)

## Current rating (max):

10A resistive 250 VAC

## Electrical Life:

100,000 cycles @ 20°C

## Ingress protection:

IP67

## Shock:

50g

## Operating temperature range:

-40°C to + 105°C

## Body / Actuator material:

PBT

## Contact material:

Fine silver

## Terminal material:

200 microseconds

(5 microns) bright acid tin plate, nickel flash undercoat.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## ITW Switches:

[47-2141](#) [47-2131](#) [47-2171](#) [47-2151](#) [47-1141](#) [47-1161](#) [47-1111](#) [47-1151](#) [47-1171](#)