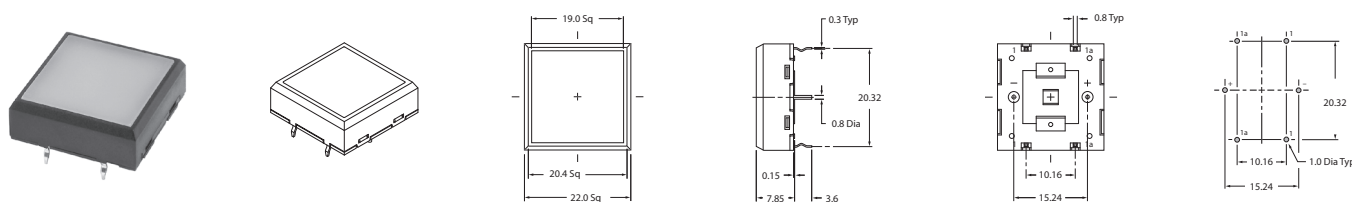


# Illuminated Switches

## Ultra-Thin Illuminated Tactile Switches

## JL Series

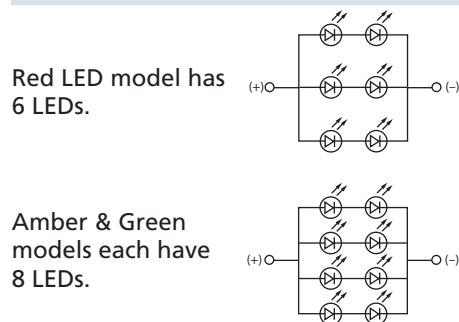


### JL15SKSCCP2

#### POLE & CIRCUIT

		Actuator Position		Switch Throw & Schematic	LED Schematic	Notes
Pole	Model	Normal	Down	SPST 		Terminal markings 1, 1a, - & + are shown on the switch
SP	JL15	OFF	MOM			

#### LED COLORS & SPECIFICATIONS

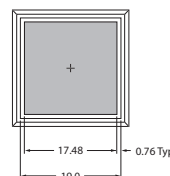
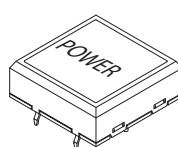
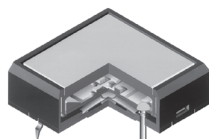
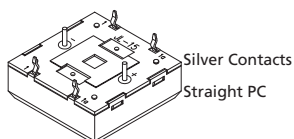


1-color, 1-element LEDs grouped in arrays of 6 or 8.		C Red	D Amber	F Green
Forward Peak Current	$I_{FM}$	75mA	100mA	100mA
Continuous Forward Current	$I_F$	60mA	80mA	80mA
Forward Voltage	$V_F$	4.0V	4.2V	4.2V
Reverse Peak Voltage	$V_{RM}$	8V	8V	8V
Current Reduction Rate Above 25°C	$\Delta I_F$	0.98mA/°C	1.31mA/°C	1.31mA/°C
Ambient Temperature Range		-25°C ~ +50°C		

#### TERMINALS

#### CUTAWAY

#### SUGGESTED PRINTABLE AREA



Shaded areas is printable area.  
Recommended Print Method: Screen Print or Pad Print  
Epoxy based ink is recommended.

### How to order:

JL

- 1 POLE & CIRCUIT:**  
15 SPST OFF-MOM
- 2 HOUSING & COLOR:**  
SK Square Black
- 3 ACTUATOR SHAPE:**  
S Square
- 4 ACTUATOR COLORS:**  
B White  
C Red  
D Amber  
F Green
- 5 TERMINALS:**  
P2 Silver Contacts Straight PC
- 6 LED COLORS:**  
C Red  
D Amber  
F Green

### General Specifications:

#### ELECTRICAL CAPACITY (Resistive Load)

» Low Level: 50mA@24VDC

#### OTHER RATINGS:

- » Contact Resistance: 50mΩ max.
- » Insulation Resistance: 500MΩ min.@250VDC
- » Mechanical Life: 1,000,000 operations min.
- » Electrical Life: 1,000,000 operations min.
- » Normal Operating Force: 3.0N
- » Total Travel: 0.75mm

#### MATERIALS

- » Movable Contacts: Phosphor bronze with silver plating
- » Stationary Contacts: Brass with silver plating
- » Switch Terminals: Brass with silver plating
- » Lamp Terminals: Brass with tin plating

#### ENVIRONMENTAL DATA

» Operating Temperature: -25°C through +50°C

#### PCB PROCESSING

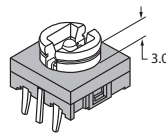
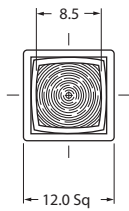
- » Soldering:  
Wave soldering 5 sec. max. @ 270°C max.  
Manual Soldering 3 sec. max. @ 350°C max.



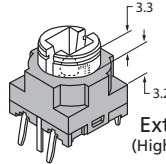
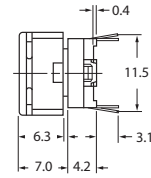
# Illuminated Switches

## Low Profile Process Sealed Illuminated Tactile Switches

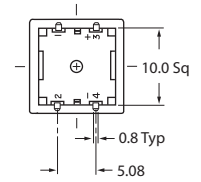
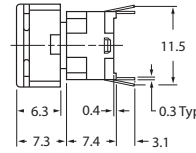
## JB Series



Short Actuator

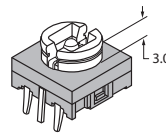
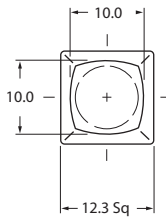
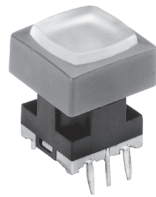


Extended Actuator  
(High operating force only)

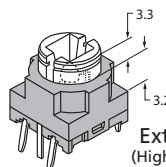
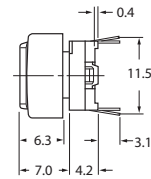


Spring action terminals conform to 2.54mm PCB spacing.

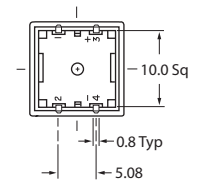
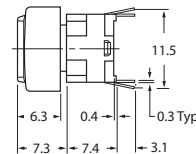
JB15LPC-JC



Short Actuator

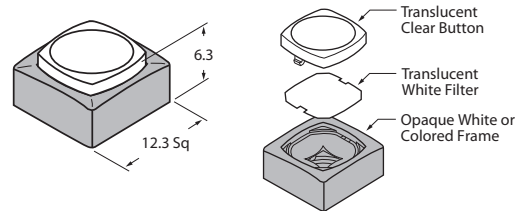
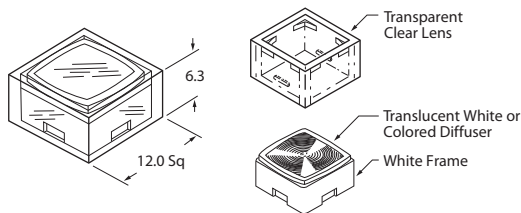


Extended Actuator  
(High operating force only)



Spring action terminals conform to 2.54mm PCB spacing.

JB15HBPC-BC



AT4060 Flat Cap

AT4076 Framed Cap

### How to order:

JB      -  (CAPS)

- 1** POLE & CIRCUIT:  
15 SPST OFF-MOM
- 2** OPERATING FORCE:  
No Code Standard 1.76N (L actuator only)  
H High 2.65N
- 3** ACTUATORS:  
L Short  
B Extended  
(H operating force only)
- 4** TERMINALS:  
P Straight PC
- 5** LED COLORS:  
C Red  
E Yellow  
F Green

- 6** CAP TYPES & COLORS:  
*Flat Cap (Lens/Diffuser Colors):*  
JB Clear/White  
JC Clear/Red  
JE Clear/Yellow  
JF Clear/Green  
(For JC, JE & JF, diffuser color must match LED color)  
*Framed Cap (Button/Frame Colors):*  
BB White/White  
BC White/Red  
BE White/Yellow  
BF White/Green  
BH White/Gray

### General Specifications:

#### ELECTRICAL CAPACITY (Resistive Load)

- » Low Level: 50mA@24VDC max. for standard operating force models; 125mA@24VDC max. for high operating force models.

#### OTHER RATINGS:

- » Contact Resistance: 50mΩ max.
- » Insulation Resistance: 500MΩ min.@250VDC
- » Mechanical Life: 5,000,000 operations min. for standard operating forces models; 1,000,000 operations min. for high operating force models.
- » Electrical Life: 5,000,000 operations min. for standard operating forces models; 1,000,000 operations min. for high operating force models.
- » Norminal Operating Force: 1.76N for standard; 2.65N for high.
- » Total Travel: 0.254mm for standard operating force models; 0.300mm for high operating force models.

#### MATERIALS

- » Movable Contacts: Beryllium copper with silver plating
- » Stationary Contacts: Brass with silver plating
- » Terminals: Brass with silver plating

#### ENVIRONMENTAL DATA

- » Operating Temperature: -25°C through +70°C

#### PCB PROCESSING

- » Soldering: Wave soldering recommended.  
Manual Soldering 4 sec. max. @ 390°C max.



Illuminated Switches

# Illuminated Switches

## Low Profile Process Sealed Illuminated Tactile Switches

## JB Series

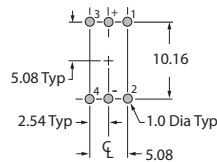
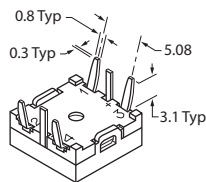
### POLE & CIRCUIT

		Actuator Position		Switch Throw & Schematic	LED Schematic	Notes
Pole	Model	Normal	Down			Terminal numbers are shown on switch. LED circuit is isolated and requires external power source.
SPST	JB15	OFF	MOM			

### LED COLORS & SPECIFICATIONS

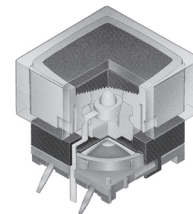
Color		Spot Illumination		
		C Red	E Yellow	F Green
Forward Peak Current	$I_{FM}$	25mA	25mA	25mA
Continuous Forward Current	$I_F$	20mA	20mA	20mA
Forward Voltage	$V_F$	2.0V	2.2V	2.1V
Reverse Peak Voltage	$V_{RM}$	4V	4V	4V
Current Reduction Rate Above 25°C	$\Delta I_F$	0.42mA/°C		
Ambient Temperature Range		-25°C ~ +70°C		

### TERMINALS

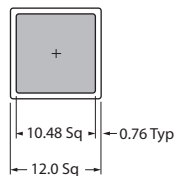


Straight PC Terminals

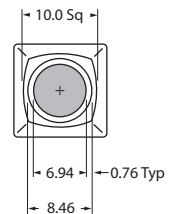
### CUTAWAY



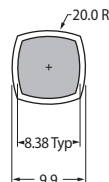
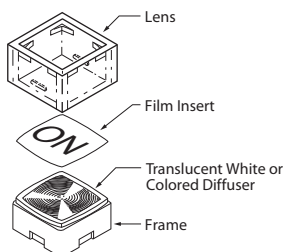
### SUGGESTED PRINTABLE AREA FOR LENS



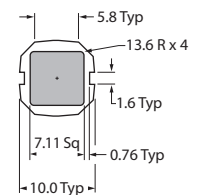
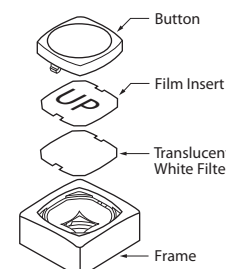
Shaded areas are printable areas.  
Recommended Print Method: Screen Print or Pad Print  
Epoxy based ink is recommended.



### SUGGESTED PRINTABLE AREA FOR FILM INSERTS



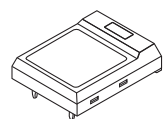
Shaded areas are printable areas.  
Recommended Methods:  
Laser Etch on clear lens, screen print, or pad print on lens; Screen print on film insert.  
Epoxy based ink is recommended.



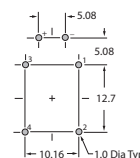
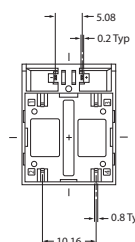
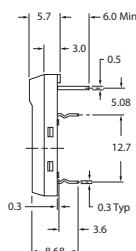
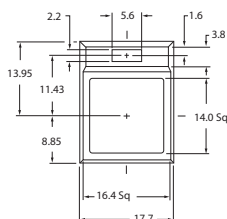
# Illuminated Switches

## Ultra-Thin Process Sealed Illuminated Tactile Switches

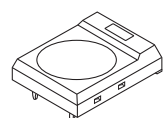
## JF Series



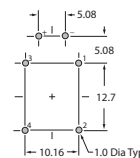
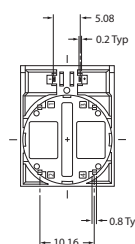
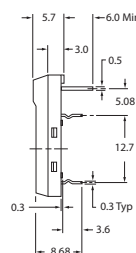
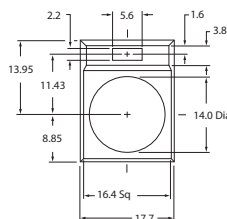
Spot Illumination  
Square Actuator



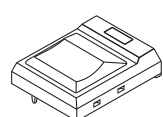
JF15RP1\_ \_



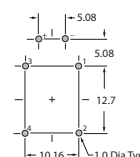
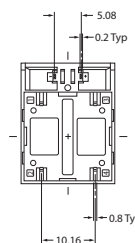
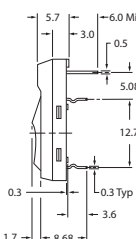
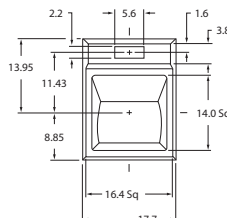
Spot Illumination  
Round Actuator



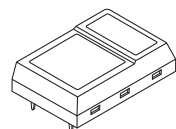
JF15RP2\_ \_



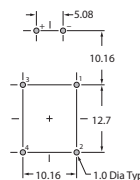
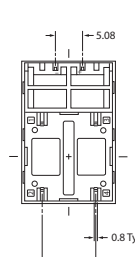
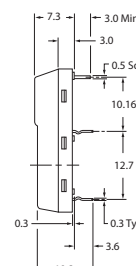
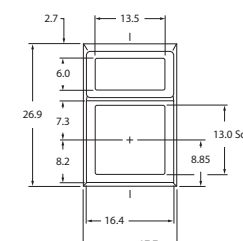
Spot Illumination  
Sculptured Actuator



JF15RP3\_ \_



Full Face Illumination  
Square Actuator



JF15AP1\_ \_

### How to order:

JF

- 1** POLE & CIRCUIT:  
15 SPST OFF-MOM
- 2** ILLUMINATION:  
R Spot  
A Full Face (with square actuator only)
- 3** TERMINALS:  
P Straight PC
- 4** ACTUATOR TYPES:  
1 Square  
2 Round  
3 Sculptured

- 5** ACTUATOR COLORS:  
*Spot Illuminated:*  
C Red  
D Orange  
F Green  
G Blue  
H Gray  
*Full Face Illuminated (LED color must match actuator color):*  
C Red  
E Yellow  
F Green

- 6** LED COLORS:  
C Red  
E Yellow  
F Green

### General Specifications:

#### ELECTRICAL CAPACITY (Resistive Load)

» Low Level: 50mA@24VDC

#### OTHER RATINGS:

- » Contact Resistance: 50mΩ max.
- » Insulation Resistance: 500MΩ min.@250VDC
- » Mechanical Life: 500,000 operations min.
- » Electrical Life: 500,000 operations min.
- » Nominal Operating Force: 3.0N for flush actuator  
2.0N for sculptured actuator
- » Total Travel: 0.4mm for flush actuator  
0.8mm for sculptured actuator

#### MATERIALS

- » Movable Contacts: Phosphor bronze with silver plating
- » Stationary Contacts: Brass with silver plating
- » Terminals: Brass with silver plating

#### ENVIRONMENTAL DATA

» Operating Temperature: -25°C through +70°C

#### PCB PROCESSING

- » Soldering: Wave soldering recommended.  
Manual Soldering 4 sec. max. @ 390°C max.



# Illuminated Switches

## Ultra-Thin Process Sealed Illuminated Tactile Switches

## JF Series

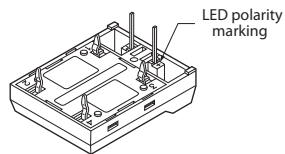
### POLE & CIRCUIT

		Actuator Position		Switch Throw & Schematic	LED Schematic	Notes
Pole	Model	Normal	Down			Terminal numbers are shown on switch. LED circuit is isolated and requires external power source.
SP	JF15	OFF	MOM			

### LED COLORS & SPECIFICATIONS

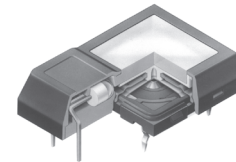
Color		Spot Illumination			Full Face Illumination		
		C Red	E Yellow	F Green	C Red	E Yellow	F Green
Forward Peak Current	$I_{FM}$	40mA	40mA	40mA	30mA	30mA	30mA
Continuous Forward Current	$I_F$	30mA	30mA	30mA	20mA	20mA	20mA
Forward Voltage	$V_F$	1.7V	2.2V	2.2V	1.77V	2.1V	2.3V
Reverse Peak Voltage	$V_{RM}$	4V	4V	4V	4V	4V	4V
Current Reduction Rate Above 25°C	$\Delta I_F$	0.67mA/°C	0.67mA/°C	0.67mA/°C	0.4mA/°C	0.4mA/°C	0.4mA/°C
Ambient Temperature Range		-25°C ~ +70°C			-25°C ~ +70°C		

### TERMINALS

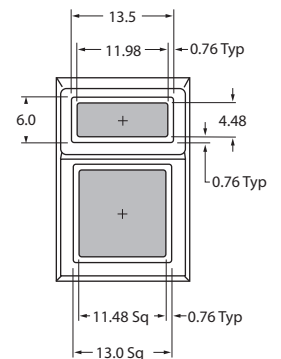
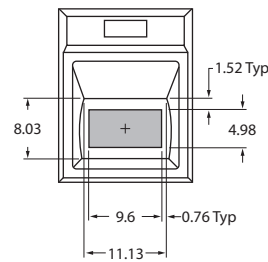
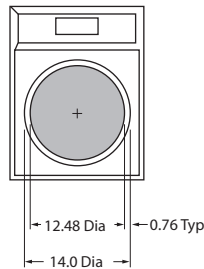
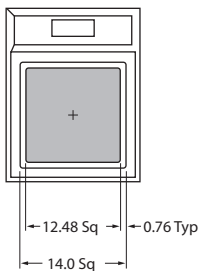
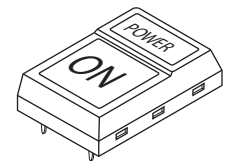
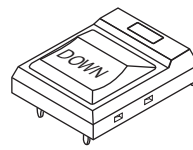
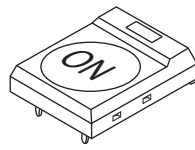
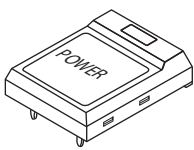


Straight PC Terminals  
With isolated lamp circuit

### CUTAWAY



### SUGGESTED PRINTABLE AREA



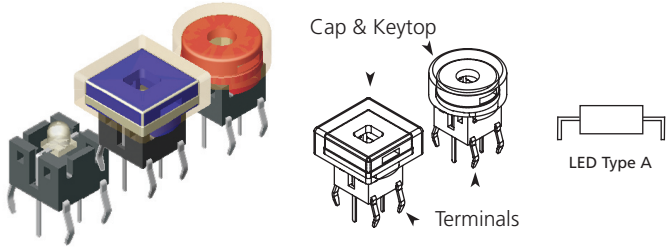
Shaded areas are printable areas.

Recommended Print Method: Screen Print or Pad Print  
Epoxy based ink is recommended.

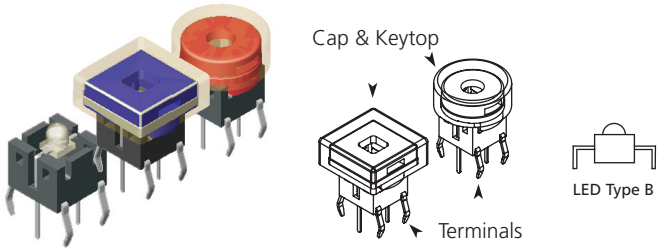
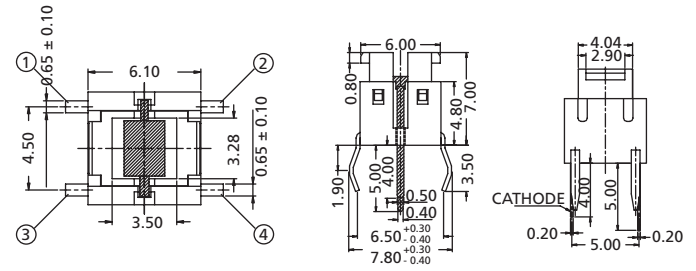


# Illuminated Switches

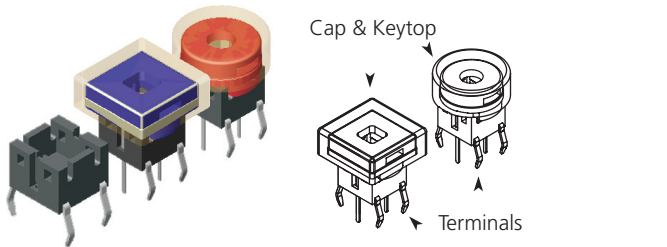
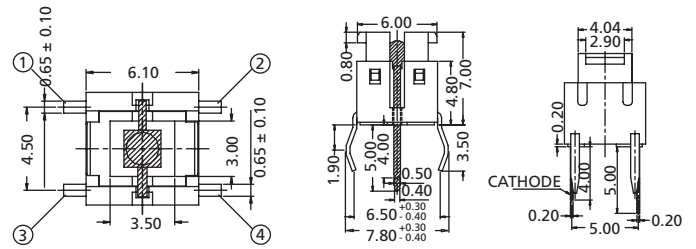
## 6 mm THT Tactile Switches with LED & 10 mm Clear Cap TL6 Series



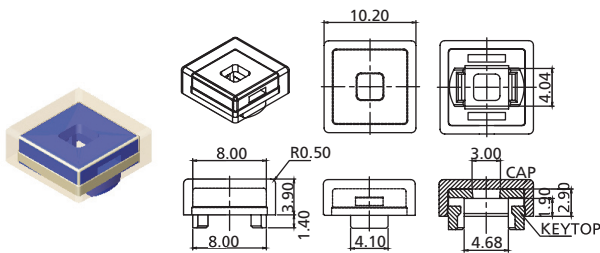
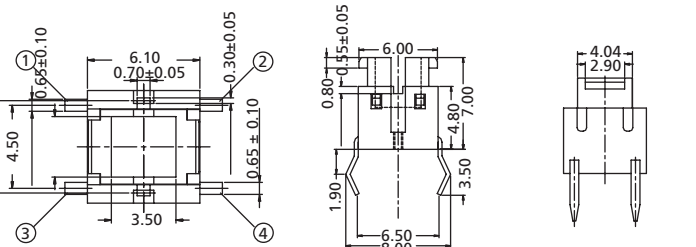
**TL6A** Tactile Switch with LED Type A



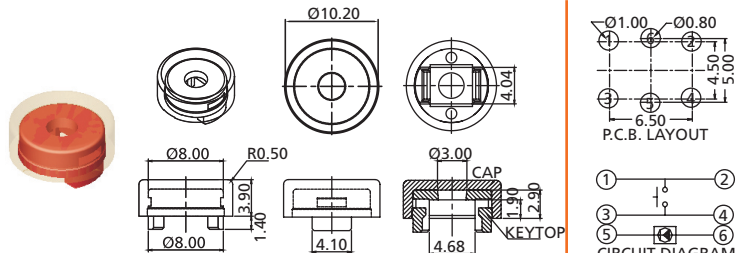
**TL6B** Tactile Switch with LED Type B



**TL6N** Tactile Switch without LED



**KTS** Square Cap



**KTR** Round Cap

### How to order:

TL6     +   (Caps)

#### 1 TYPE OF LED:

- A LED Type A
- B LED Type B
- N Without LED

#### 2 OPERATING FORCE:

- 10 100 ± 50 gf
- 16 160 ± 50 gf
- 26 260 ± 50 gf

#### 3 LED COLOR:

- C Red
- E Yellow
- F Green
- G Blue
- B White
- D Orange

#### 4 PACKAGE:

- TB Tube

#### 5 CAP TYPE:

- KTS Square Cap
  - KTR Round Cap
- (The color of the caps is clear)

#### 6 COLOR OF KEYTOP

- C Red
- E Yellow
- F Green
- G Blue
- U Ivory
- A Black
- S Salmon

### General Specifications:

#### FEATURES

- » Sharp click feel with a positive tactile feedback

#### MATERIALS

- » Contact: Stainless with silver cladding
- » Terminal: Brass with silver cladding

#### MECHANICAL

- » Stroke: 0.20 ± 0.10 mm
- » Operation Temperature: -20°C to +70°C
- » Storage Temperature: -30°C to +80°C

#### ELECTRICAL

- » Electrical Life: 200,000 cycles
- » Rating: 50mA, 12VDC
- » Contact Arrangement: Single pole single throw

#### LEADFREE SOLDERING PROCESSES

- » Wave Soldering: Recommended solder temperature at 260°C max. 5 seconds subject to P.C.B. 1.6 mm thickness.

General Tolerance: ± 0.2 mm