



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

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**SERIES 14**  
Sealed SMT Key Switch

**FEATURES**

- Sealed against dust while being actuated
- Bright LED illumination
- Excellent tactile feel
- High reliability / long life
- SMT lead free solder process compatible



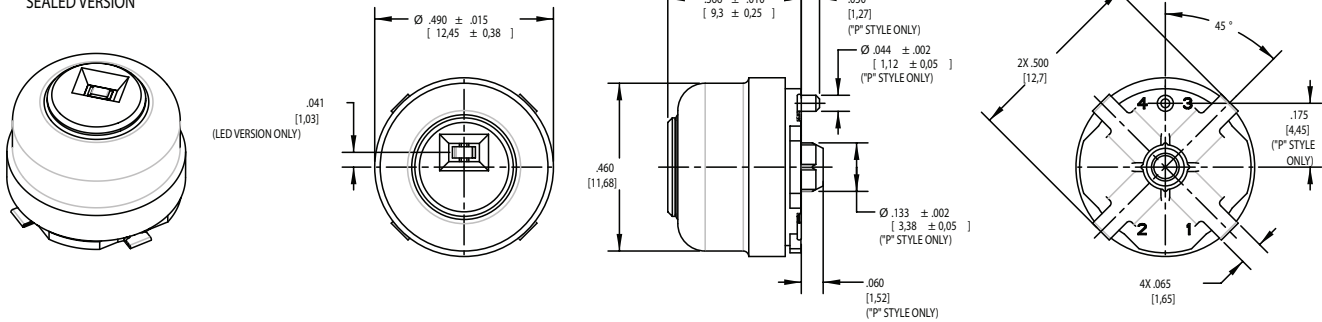
**APPLICATIONS**

- Multi-function handgrip or joysticks in open or closed cab work vehicles
- Handheld remote controllers for robotics & unmanned vehicles
- Portable medical electronics such as defibrillators
- Bellybox (remote control transmitter)
- Marine & motorcycles

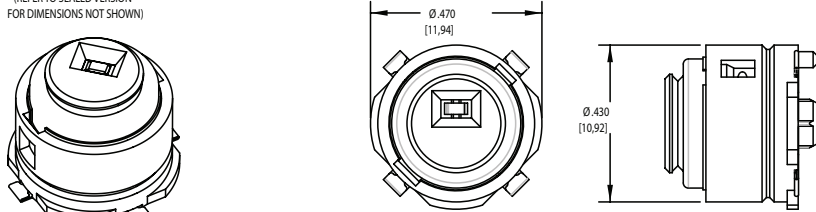
**DIMENSIONS** in inches [and millimeters]

(Unless otherwise noted, standard tolerances are +/- .015 [0, 38] )

**SEALED VERSION**

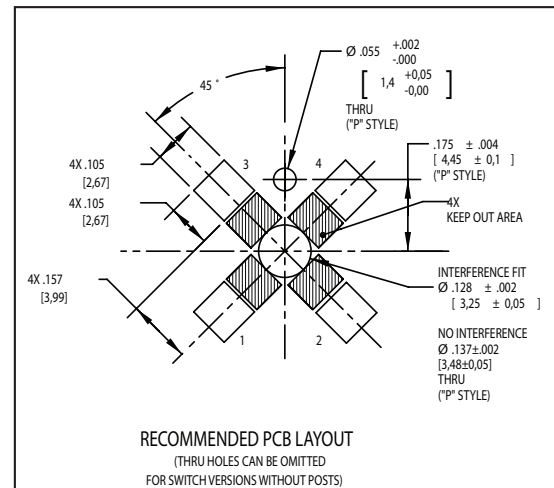
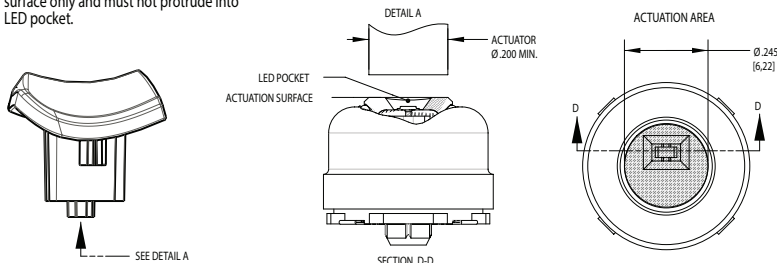


**UNSEALED VERSION**  
(REFER TO SEALED VERSION FOR DIMENSIONS NOT SHOWN)



**RECOMMENDED ACTUATOR DESIGN**

- Axis of actuator to be aligned within  $\varnothing .030''$  of the center of actuation area.
- Actuator must make contact with the actuation surface only and must not protrude into LED pocket.





## RATINGS

- **Operating Temperature Range:**  
-40°C to 85°C
- **Storage Temperature Range:**  
-40°C to 100°C (bulk), -20°C to 60°C (tape)
- **Life Expectancy:**  
14oz, 21oz: 1,000,000 cycles  
32oz: 100,000 cycles
- **Mechanical Shock:** Medium  
Impact: Contact openings/closings <10µs, Method I, shock type M, per MIL-STD-202, Method 213
- **Vibration:** 10-500Hz (10g peak), Contact openings/closings <10µs, Per MIL-STD-202, Method 204, test condition A
- **Weight:** 1.16 grams (14SP-L1)
- **Seal\* (Sealed Switch Versions):**  
Static: IP 67S  
Dynamic: IP6X

\*(Seal applies between rubber boot & switch only.)

## ELECTRICAL & MECHANICAL SPECIFICATIONS

- **Contact Resistance:**  
Initial: 50 milliohms maximum  
After life: 250 milliohms maximum
- **Insulation Resistance:** 10,000 megohms minimum
- **Dielectric Withstanding Voltage:**  
At atmospheric pressure: 500Vac min (50Hz, 60s)
- **Actuation Force:** 14oz, 21oz, 32oz (4N, 6N, 9N)
- **Minimum ESD withstanding (LED Versions):** 2KV
- **Travel:** Total: .06" (1,5 mm)
- **Rated Loads:**  
Min: 10 mA, 2VDC Resistive  
Max: 100 mA, 30VDC Resistive
- **Switch Bounce:** 5ms max throughout life

## MATERIALS & FINISHES

- **Base:** High temp thermoplastic
- **Button:** High temp thermoplastic
- **Contacts/Leads:** Beryllium copper, gold plated
- **Seal:** Silicone
- **ROHS:** Compliant

## REFLOW SOLDERING PROFILE

- Lead free solder process compatible  
(See [www.grayhill.com/products/pushbutton-switches](http://www.grayhill.com/products/pushbutton-switches))



## CIRCUITRY

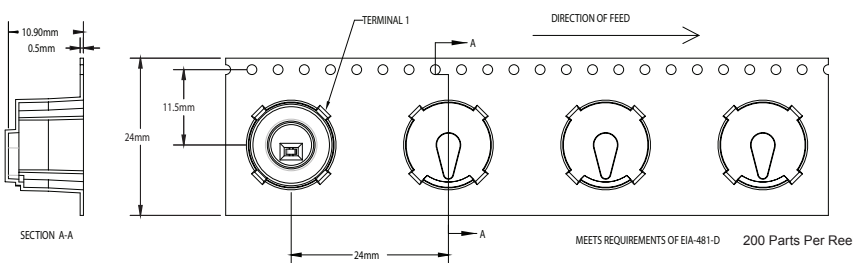
CIRCUIT/CONTACT CONFIGURATION	S1	S2	D1	D2	L1	L2
DIAGRAM						
CIRCUIT	SPST	SPST	DPST	DPST	SPST W/LED	SPST W/LED
CONTACTS	NORMALLY OPEN	NORMALLY CLOSED	NORMALLY OPEN	NORMALLY CLOSED	NORMALLY OPEN	NORMALLY CLOSED

## LED CHARACTERISTICS (@T=25°C)

COLOR	WAVELENGTH	LUMINOUS INTENSITY (mcd)	FORWARD VOLTAGE (V)	FORWARD CURRENT (mA)
RED	630nm	55 MIN, 110 TYP, I=20mA	2.0 TYP, 2.5 MAX.	20 [30 MAX.]
ORANGE	605nm	55 MIN, 100 TYP, I=20mA	2.0 TYP, 2.5 MAX.	20 [30 MAX.]
YELLOW	590nm	55 MIN, 120 TYP, I=20mA	2.0 TYP, 2.5 MAX.	20 [30 MAX.]
GREEN	530nm	71 MIN, 280 MAX, I=5mA	2.85 TYP, 3.00 MAX.	5 [15 MAX.]
BLUE	470nm	14 MIN, 45 MAX, I=5mA	2.85 TYP, 3.20 MAX.	5 [15 MAX.]
WHITE	CTR=8200K	90 MIN, 180 MAX, I=5mA	2.85 TYP, 3.10 MAX.	5 [15 MAX.]

## TAPE AND REEL PACKAGING

TAPE AND REEL PACKAGING



## ORDERING INFORMATION

Available from your local Grayhill Distributor.

For prices and discounts, contact a local sales office, an authorized local distributor or Grayhill.

Parts packaged in tape and reel, 200 parts per reel. Orders greater than 200 must be in increments of 200.

**14SP-L1-02-B**

<b>14 Series</b>			
<b>STYLE</b>			<b>LED COLOR</b>
A = Unsealed			R = Red
AP = Unsealed with Posts			O = Orange
S = Sealed			Y = Yellow/Amber
SP = Sealed with Posts			G = Green
			B = Blue
			W = White
			(Leave blank for no LED)
<b>CIRCUIT</b>			<b>OPERATING FORCE</b>
S = SPST			01 = 14 oz (Low tactile version)
D = DPST			02 = 21 oz
L = SPST with LED			03 = 32 oz
<b>CONTACTS</b>			
1 = Normally Open			
2 = Normally Closed			

