



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

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



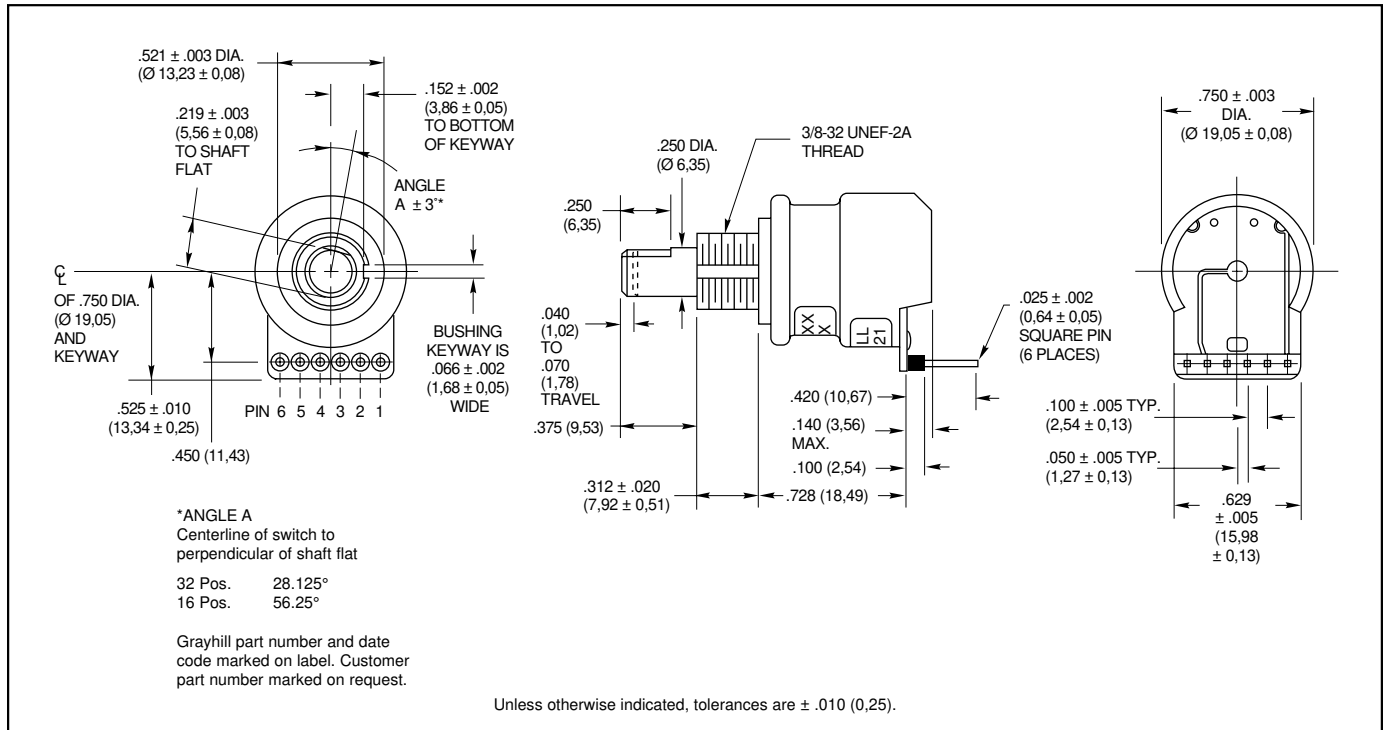
**SERIES 61C**  
**16 or 32 Position with Pushbutton**

**FEATURES**

- Competitively Priced to Similar Electromechanical Switches
- Optically Coupled For More Than A Million Trouble-Free Rotations
- Has Data Entry Pushbutton Switch Activated By Switch Shaft
- Compatible With CMOS, TTL and HCMOS Logic
- Operationally Used to Move Display Icon and Input Data
- Used to Set Radio Frequency, Drill Depth, RPM, etc.



**DIMENSIONS** In inches (and millimeters)



**CIRCUITRY, TRUTH TABLE, AND WAVEFORM: Standard Quadrature 2-Bit Code**

Clockwise Rotation		
Position	Output A	Output B
1		
2	●	
3	●	●
4		●

● Indicates logic high; blank indicates logic low. Code repeats every 4 positions.

**SPECIFICATIONS**

**Pushbutton Switch Ratings**

- Rating:** 5 Vdc, 10 mA, resistive
- Contact Resistance:** less than 10 ohms (TTL or CMOS Compatible)
- Voltage Breakdown:** 250 Vac between mutually insulated parts.
- Contact Bounce:** Less than 4 milliseconds at make and less than 10 milliseconds at break.
- Actuation Life:** 3,000,000 operations.
- Actuation Force:** maximum actuation force of 330 grams and a minimum actuation force of 250 grams.

**Encoder Ratings**

- Coding:** 2-bit quadrature coded output.
- Operating Voltage:** 5.0 ±.25 Vdc
- Supply Current:** 30 mA maximum at 5 Vdc
- Logic High:** 3.8V for CMOS and 2.7V for TTL minimum.
- Logic Low:** 0.8V maximum
- Logic Rise and Fall Times:** Rise Time less

- than 30 mS at 16.6 RPM. Fall Time less than 30 mS at 16.6 RPM.
- Operating Torque:** 1.5 in-oz ± 30% initial (1.0 in-oz ± 50% after life for 32 position only)
- Rotational Life:** more than 1,000,000 cycles of operation (1 cycle = 360° rotation and return)
- Shaft Push Out Force:** 20 lbs minimum
- Mounting Torque:** 10 in-lbs maximum

**Environmental Ratings**

- Operating Temperature Range:** -40°C to 85°C
- Storage Temperature Range:** -55°C to 100°C
- Relative Humidity:** 90-95% at 40°C for 96 hours.
- Vibration Resistance:** Harmonic motion with amplitude of 15g, within a varied 10 to 2000 Hz frequency for 12 hours per MIL-STD-202, Method 204
- Shock Resistance:** Test 1: Tested at 100g for 6 mS, half sine, 12.3 ft/s Test 2: 100g for 6 mS, sawtooth, 9.7 ft/s

**Materials and Finishes**

- Bushing:** Reinforced thermoplastic
- Shaft:** Reinforced thermoplastic
- Detent Balls:** Steel, nickel-plated
- Detent and Pushbutton Springs:** Tinned music wire
- Printed Circuit Boards:** NEMA grade FR-4
- Pushbutton Contact:** Stainless steel, gold-plated
- Board Terminals:** Phosphor bronze, tin-plated
- Mounting Hardware:** One brass, cadmium-plated nut and lockwasher supplied with each switch. Nut is 0.094 inches thick by 0.562 inches across flats.
- Rotor:** Reinforced thermoplastic
- Aperture/Dome Retainer:** Lexan 141, Polycarbonate

**ORDERING INFORMATION**

**Series**  
**Style:** C = Standard  
**Angle of Throw:** 00 = No detent  
 11 = 11.25° or 32 Positions  
 22 = 22.25° or 16 Positions  
**Coding:** 01 = Quadrature

**Pushbutton Option:** 01 = Without pushbutton, 02 = With pushbutton  
**Number of Changes per Revolution:** 04 for no detent and 22.25° angle of throw  
 08 for no detent and 11.25° angle of throw

Custom knobs available, see page I-57.

Available from your local Grayhill Distributor. For prices and discounts, contact a local Sales Office, an authorized local Distributor or Grayhill.

**ACCESSORIES**

See page I-41.