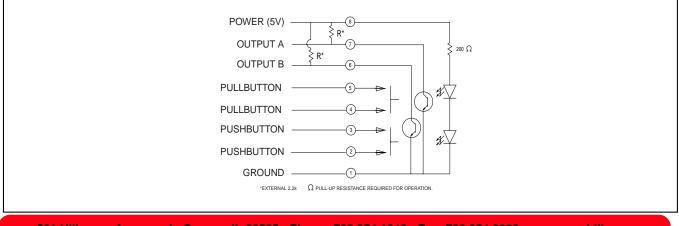
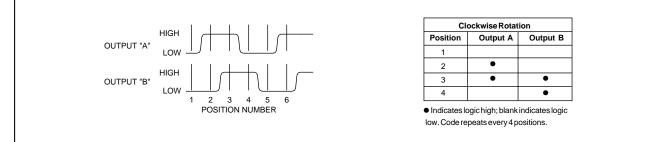


SWITCH SCHEMATIC, WAVEFORM, AND TRUTH TABLE



561 Hillgrove Avenue • LaGrange, IL 60525 • Phone: 708.354.1040 • Fax: 708.354.2820 • www.grayhill.com

WAVEFORM AND TRUTH TABLE Standard Quadrature 2-Bit Code



SPECIFICATIONS

Environmental Specifications

Operating Temperature Range: -40° C to 85° C Storage Temperature Range: -55° C to 100° C Humidity: 96 hours at 90-95% humidity at 40° C

Mechanical Vibration: Harmonic motion with amplitude of 15 g, within a varied frequency of 10 to 2000 Hz

Mechanical Shock:

Test 1: 100 g for 6 ms half-sine wave with a velocity change of 12.3 ft/sec Test 2: 100 g for 6 ms sawtooth wave with a velocity change of 9.7 ft/sec

Rotary Electrical and Mechanical Specifications

Operating Voltage: 5.00±.25 Vdc **Supply Current:** 30 mA maximum at 5 Vdc **Output:** Open collector phototransistor, external pull-up resistors are required **Output Code:** Two-bit quadrature, channel A leads channel B by 90° electrically during clockwise rotation of the shaft **Logic Output Characteristics:**

Logic bigh signal shall be no less

than 3.0 Vdc

Logic low signal shall be no greater than 1.0 Vdc

Minimum Sink Current: 2.0 mA

Power Consumption: 150 mW maximum **Mechanical Life:** 1 million rotational cycles of operation. One cycle is a rotation through all positions and a full return

Average Rotational Torque: 6.0±1.5 in-oz initially. Torque shall be within 50% of initial value throughout life

Mounting Torque: 15 in-oz maximum Shaft Push-Out Force: 45 lbs minimum Shaft Pull-Out Force: 20 lbs minimum Terminal Strength: 15 lbs minimum terminal pull-out force for cable or header termination

Solderability: 95% free of pin holes and voids

Pull-Button/Push-Button Electrical and Mechanical Specifications

Rating: 10 mA at 5 Vdc Contact Resistance: <10 ohms Life: 3 million actuations minimum Contact Bounce: <4 ms make,<10 ms break Actuation Force: 1700±450 g for both push and pull-button Shaft Travel: .030±.010 standard travel. .050±.010 long travel

Materials and Finishes

Bushing: Zinc Diecast, Cadmium Plated per QQP-416, Class II, Type II Shaft: Aluminum Detent Cover: Powered Metal per SS-316N1-25 Through Bolts: 305 Stainless Steel Through Bolts Nuts: 305 Stainless Steel Shaft Travel Springs: Carbon Steel, **Oil Dip Finish** Detent Ball: Stainless Steel Detent Spring: Tinned Music Wire Spacer/Push Dome Retainer: Ryton R-4 Push Actuator: Zytel 70G33L Snap Dome: Stainless Steel Printed Circuit Boards: Nema Grade FR4, Double Clad with Copper, Plated with Gold over Nickel Infrared Light Emitting Diode Chips: Gallium Aluminum Arsenide

Silicon Phototransistor Chips: Gold and Aluminum Alloys

Resistor: Metal Oxide on Ceramic Substrate Solder Pins: Brass, Plated with Tin Code Rotor: Delrin 100 Code Housing: Hiloy-610 Pull Dome Retainer: Ryton R-4 Pull Actuator: Polyurethane, Isoplast 101 LGF40 Blk Cover: Ryton R-4 Cable: Copper Standard with Topcoat in PVC

Connector: PA4.6 with Tin/Lead Plated

Phosphor Bronze (Cable/Connector Versions)

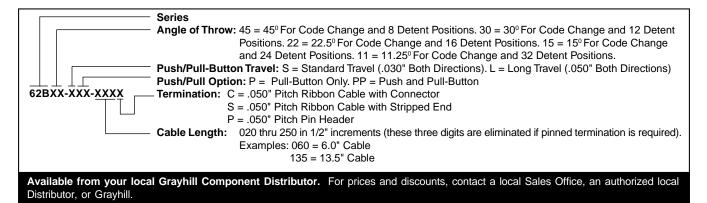
Label: TT406 Thermal Transfer Cast Film Solder: 60/40 Tin Lead, No Clean - Low Residue Flux

Lubricating Grease:

Mounting Hex Nut: Cadmium Over 1/2 Hard Brass

Lockwasher: 8-18 Stainless Steel, Passivate Finish

Pin Header: Hi-Temp Glass Filled Thermoplastic UL94V-0, Phosphor Bronze (Pinned Versions Only)



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