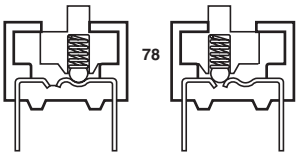
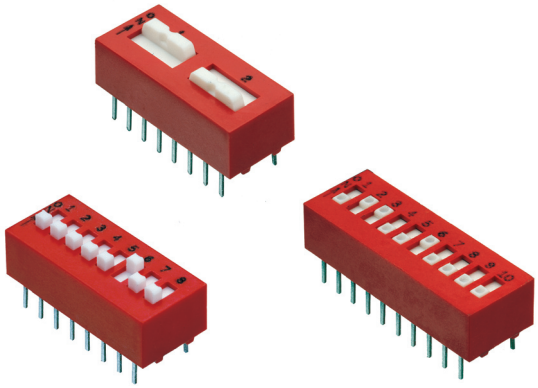
# SERIES 78
## SPST To 4PST Slide

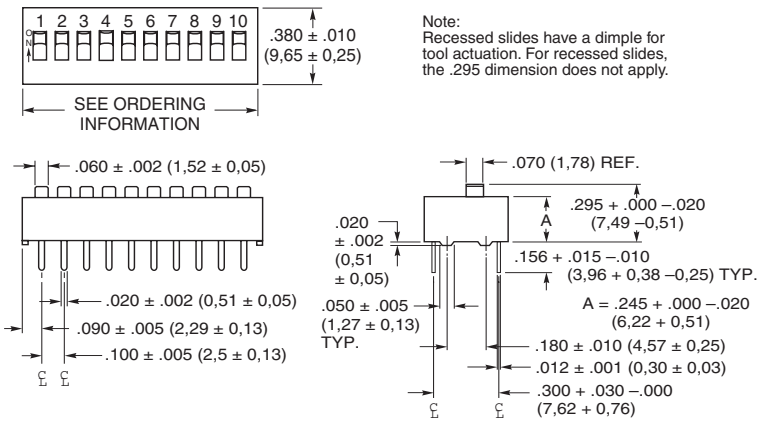



## FEATURES
- Raised and Recessed Slides
- SPST, 2PST, 3PST, 4PST
- Sealed Base Standard
- Spring and Ball Contact
- Top Tape Seal Option

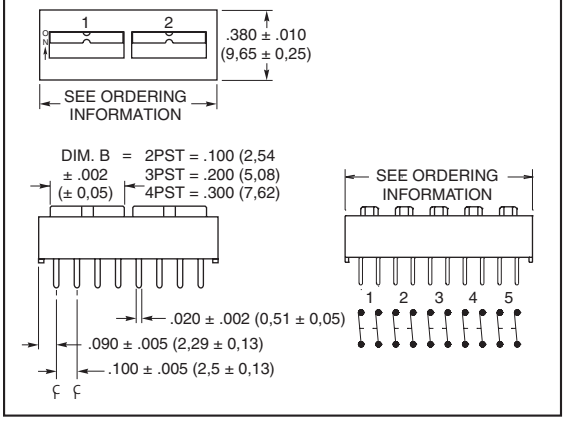


## DIMENSIONS In inches (and millimeters)

### Single Pole/Single Throw Switch in Raised and Recessed Slides

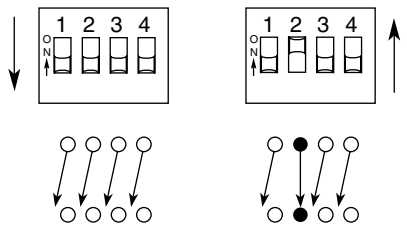



### Double Pole/Single Throw and Typical Multiple Pole Switch with Raised Slides

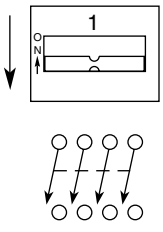



## CIRCUITRY

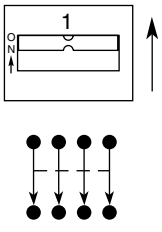
### Single Pole/Single Throw Switch




**Typical Multiple Pole Switch**




**Typical Circuit Diagram**




For switches with 5, 6, 7, 8, or 10PST circuitry, contact Grayhill.

## ORDERING INFORMATION

| Circuitry | No. of Positions | Length Inches | Length Metric | No./ Tube | Raised Slides* | Recessed Slides* |
|---|---|---|---|---|---|---|
| SPST | 2 | 0.280" | 7,1mm | 35 | **78B02** | **78RB02** |
| | 3 | 0.380" | 9,7mm | 27 | **78B03** | **78RB03** |
| | 4 | 0.480" | 12,2mm | 21 | **78B04** | **78RB04** |
| | 5 | 0.580" | 14,7mm | 18 | **78B05** | **78RB05** |
| | 6 | 0.680" | 17,3mm | 15 | **78B06** | **78RB06** |
| | 7 | 0.780" | 19,8mm | 13 | **78B07** | **78RB07** |
| | 8 | 0.880" | 22,4mm | 12 | **78B08** | **78RB08** |
| | 9 | 0.980" | 24,9mm | 10 | **78B09** | **78RB09** |
| | 10 | 1.080" | 27,4mm | 9 | **78B10** | **78RB10** |
| | 12 | 1.280" | 32,5mm | 8 | **78B12** | **78RB12** |
| 2PST | 1 | 0.280" | 7,1mm | 35 | **78F01** | Recessed Slides Not Available |
| | 2 | 0.480" | 12,2mm | 21 | **78F02** | |
| | 3 | 0.680" | 17,3mm | 15 | **78F03** | |
| | 4 | 0.880" | 22,4mm | 12 | **78F04** | |
| | 5 | 1.080" | 27,4mm | 9 | **78F05** | |
| | 6 | 1.280" | 32,5mm | 8 | 78F06 | |
| 3PST | 1 | 0.380" | 9,7mm | 27 | **78G01** | |
| | 2 | 0.680" | 17,3mm | 15 | **78G02** | |
| | 3 | 0.980" | 24,9mm | 10 | **78G03** | |
| 4PST | 1 | 0.480" | 12,2mm | 21 | **78H01** | |
| | 2 | 0.880" | 22,4mm | 12 | **78H02** | |

*A top tape seal is required for switches that are machine soldered or heavily cleaned after hand soldering. To order top seal versions, add "S" to the Grayhill part number.

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

## SPECIFICATIONS: Standard Styles

| Ratings | 76 | 78 | 90B |
|---|---|---|---|
| Mechanical Life: Operations per switch position | 2,000 | 2,000 | 2,000 |
| Make-and-break Current Rating: Operations per switch position at these resistive loads | | | |
| 1 mA, 5 Vdc; 50 mA, 30 Vdc; or 150 mA, 30 Vdc: | 2,000 | 2,000 | — |
| 10 mA, 30 Vdc; or 10 mA, 50 mVdc: | — | — | 2,000 |
| 10 mA, 50 mVdc; or 25 mA, 24 Vdc; or 100 mA, 6 Vdc: | — | — | 2,000 |
| Contact Resistance: Initially: | ≤ 30 mΩ | ≤ 30 mΩ | ≤ 20 mΩ |
| After life, at 10 mA, 50 mVdc, open circuit: | ≤ 100 mΩ | ≤ 100 mΩ | ≤ 100 mΩ |
| Insulation Resistance: Minimum, at 100 Vdc between adjacent closed contacts and also across open switch contacts | | | |
| Initially (Mohms): | 5,000 | 5,000 | 5,000 |
| After life (Mohms): | 1,000 | 1,000 | 1,000 |
| Dielectric Strength: Minimum voltage (AC, RMS) measured between adjacent closed contacts and also across open switch contacts. | | | |
| Initially: | 750 V | 750 V | 500 V |
| After life: | 500 V | 500 V | 500 V |
| Current Carry Rating: Maximum rise of 20°C | 5 A | 4 A | 3 A |
| Switch Capacitance: At 1 megahertz | 2 pF | 2 pF | 2 pF |
| Operating Temperature Range: | -40°C to + 85°C | -40°C to + 85°C | -40°C to + 85°C |
| Storage Temperature Range: | -55°C to + 85°C | -55°C to + 85°C | -55°C to + 85°C |

### Mechanical Ratings

**Vibration Resistance:** Per Method 204, Test Condition B, 1 mS opening (10 mS allowed)
**Mechanical Shock:** Per Method 213, Test Condition A. 1 mS opening (10 mS allowed)
**Thermal Shock Resistance:** Per specification; no failures; passes contact resistance.
**Terminal Strength:** Per specification
**Thermal Aging:** 1,000 hours at 85°C; no failures.

### Environmental Ratings

Meets all requirements of MIL- S-83504.**
Where Grayhill performance is superior, the MIL spec is listed in parentheses.
**Moisture Resistance:** Per MIL-STD-202, Method 106.

### Soldering Information

Series 90 MIDIP and Series 76 recessed rocker (76RSB style) sealed switches have been tested to EIA Standard RS-448-2. Similar performance can be expected from other sealed Series 76 and 78 DIP switches.
**Solderability:** Per MIL-STD-202, Method 208
**Resistance to Soldering Heat:** 76RSB: Passes EIA Standard using two, four, and six second soldering time. 90: Per MIL-S-83504, six second test.
**Fluxing:** Per EIA RS-448-2 with flux touching switch body.
**Cleaning:** 76, 78 and 90 series tape sealed products: Passes immersion test using water/detergent. Acceptable solutions include 1-1-1 trichlorethane, freon, (TF, TE, or TMS), isopropyl alcohol, detergent (140°F maximum). Terpene acceptable for Series 90 only. Solutions which are not recommended include acetone, methylene chloride, freon TMC.

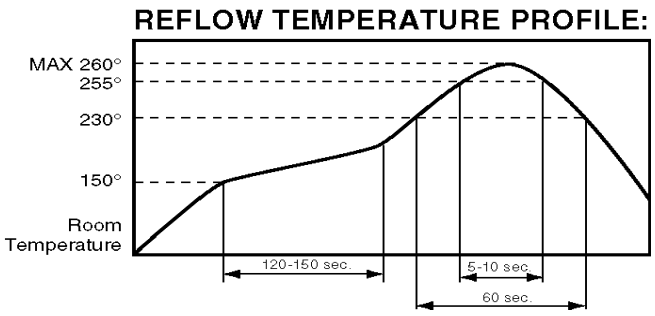
### Materials and Finishes

**Shorting Member (Ball):** Brass, gold-plated over nickel barrier.
**Base Contacts:** Copper alloy, gold-plated over nickel barrier.
**Terminals:** Copper alloy, matte tin plated over nickel barrier.
**Non-Conductive Parts:** Thermoplastic (UL94V-O)
**Potting Material:** Epoxy, 76,78 only.
**Protective Cover:** 76,78, only-Polycarbonate.
**Tape Seal:**
76, 78: Polyester film
90: Polyimide film
**Tape Seal Integrity:** Passes gross leak test using 125°C flourinert for 20 seconds minimum. Reference MIL-STD-202, Method 112.

### Recommended Soldering Conditions:

Reflow Soldering Profile:

(260°C Peak Temperature)




WAVE SOLDERING: 260°C maximum solder temperature for 5 seconds max.
** Note: 100% matte tin terminal plating does not meet MIL-S-83504 for lead content.