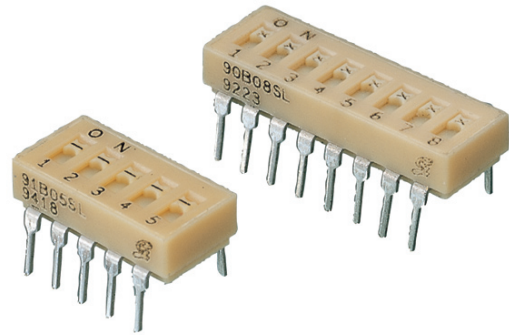


## SERIES 90B AND 90GB

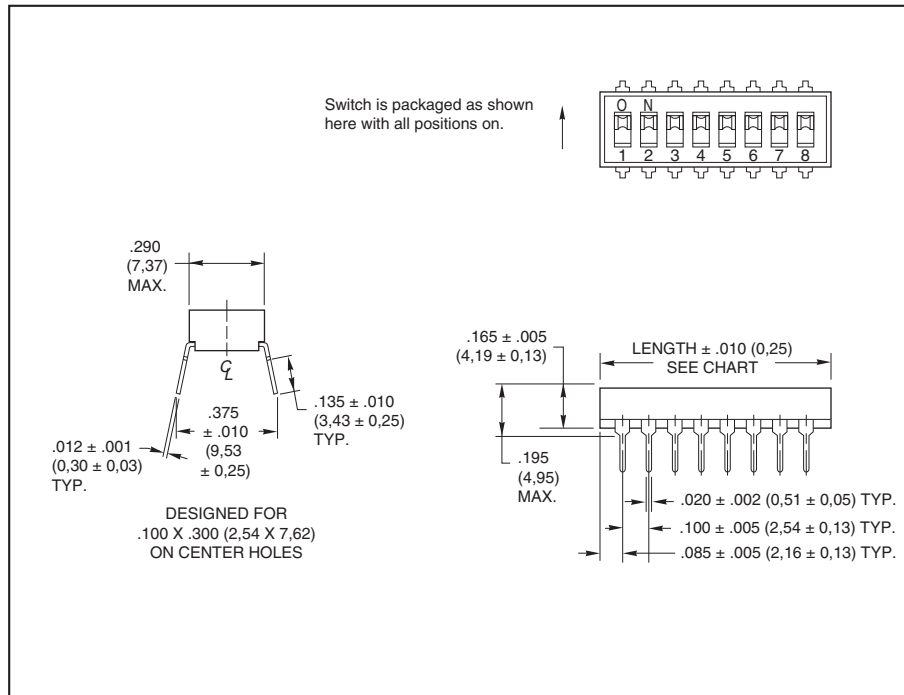
### Machine Insertable MIDIP

#### FEATURES

- Tested for TO-116 Equipment
- Up to 10 Positions
- High Pressure, Reliable Contacts
- Molded (Sealed) Base and Optional Top Seal
- RoHS Compliant

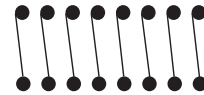


#### DIMENSIONS In inches (and millimeters)

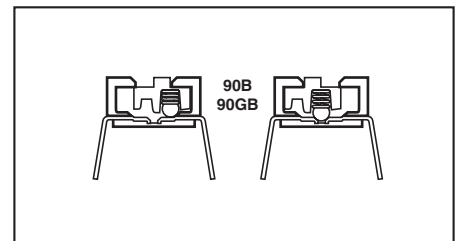


#### CIRCUITRY

As viewed from the top of the switch in the positions shown in the drawing.



#### CONTACT SYSTEM



#### ORDERING INFORMATION: Tube Packaging (Each tube is 19.5 inches long)

| No. of Positions | Length Inches | Length Metric | Number Per Tube | Part Number |          |
|------------------|---------------|---------------|-----------------|-------------|----------|
| 2                | .270"         | 6,9 mm        | 60              | 90B02ST     | 90GB02ST |
| 3                | .370"         | 9,4 mm        | 47              | 90B03ST     | 90GB03ST |
| 4                | .470"         | 11,9 mm       | 37              | 90B04ST     | 90GB04ST |
| 5                | .570"         | 14,5 mm       | 31              | 90B05ST     | 90GB05ST |
| 6                | .670"         | 17,0 mm       | 26              | 90B06ST     | 90GB06ST |
| 7                | .770"         | 19,6 mm       | 23              | 90B07ST     | 90GB07ST |
| 8                | .870"         | 22,1 mm       | 20              | 90B08ST     | 90GB08ST |
| 9                | .970"         | 24,6 mm       | 18              | 90B09ST     | 90GB09ST |
| 10               | 1.070"        | 27,2 mm       | 16              | 90B10ST     | 90GB10ST |

\*The "S" in the part number denotes top tape seal versions. To order without top tape seal, leave the "S" off the part number when ordering.

\*\*Style "GB" contains 30μ gold plated terminals.

#### ADDITIONAL INFORMATION

Please visit our website for accessories.

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

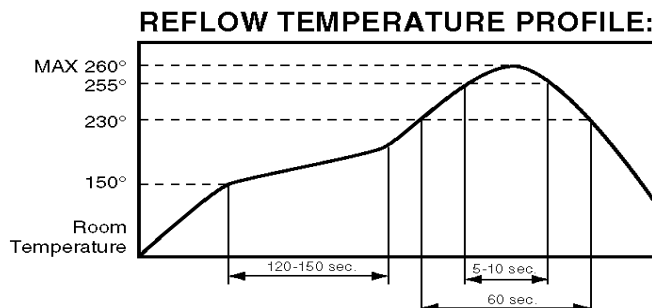
90: Polyimide film

**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.