



SP4T Electromechanical Relay Normally Open Switch DC to 12.4 GHz, 2M Lifecycles, N, 160 Watts, 28V, Solder Pins

## Electromechanical Relay Switches Technical Data Sheet

**PE71S6503**

### Features

- Single Pole Four Throw Electromechanical Relay Switch
- DC to 12 GHz Frequency Range
- Normally Open Actuator
- 2M Lifecycle Rating
- Insertion Loss 0.2 dB typ
- Isolation > 70 dB typ
- VSWR as low as 1.25:1 max
- +28 Volt DC Bias
- Terminal Solder Pins for DC Control
- N Type Female Connectors
- -25°C to +65°C Operating Temperature
- Up to 160 Watt Average Power Handling
- 50 Ohm Design
- Hot Switching Capability - Consult Factory
- S-Parameter Data available upon request
- Rugged Design meets Mil-STD-202 Test Conditions

### Applications

- Aerospace & Defense
- Test & Measurement
- Microwave Radio Systems
- Military & Commercial Communication Systems
- Research & Development
- SATCOM
- Wireless Communications
- Enterprise
- IoT

### Description

The PE71S6503 is a Single Pole Four Throw (SP4T) electromechanical relay switch that operates across a wide frequency range of DC to 12 GHz and can handle up to 160W of average power in a break before make condition. The 50 Ohm design is rated for 2 million lifecycles and features a Normally Open Actuator where the selected position remains active with constant voltage, all positions are open when voltage is removed. Impressive typical performance includes 0.2 dB insertion loss and isolation greater than 70 dB. This switch requires +28 Vdc bias voltage and operates over a temperature range of -25°C to +65°C. The rugged and compact package assembly supports N Type female connectors and Solder Pins for DC control. And for highly reliable operation, the model is guaranteed to meet MIL-STD-202 environmental test conditions for shock and random vibration.

### Electrical Specifications (TA = +25°C, DC Voltage = +28 Vdc)

Switch Type SP4T  
Actuator Type Normally Open

| Description                       | Minimum | Typical | Maximum | Units |
|-----------------------------------|---------|---------|---------|-------|
| Frequency Range                   | DC      |         | 12.4    | GHz   |
| Operating Voltage                 |         | +28     |         | Volts |
| Actuating Set Current @ +28 Volts |         |         | 280     | mA    |
| VSWR                              |         | 1.4:1   | 1.7:1   |       |
| Insertion Loss                    |         | 0.2     | 0.7     | dB    |
| Isolation                         | 60      | 70      |         | dB    |
| Input Power (CW)<br>(at 12.4 GHz) |         |         | 160     | Watts |

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [SP4T Electromechanical Relay Normally Open Switch DC to 12.4 GHz, 2M Lifecycles, N, 160 Watts, 28V, Solder Pins PE71S6503](#)



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## Electromechanical Relay Switches Technical Data

**PE71S6503**

### Performance by Frequency

| Description         | F1      | F2     | F3     | F4      | F5 | Units |
|---------------------|---------|--------|--------|---------|----|-------|
| Frequency Range     | DC to 1 | 1 to 4 | 4 to 8 | 8 to 12 |    | GHz   |
| VSWR, Max           | 1.25:1  | 1.4:1  | 1.45:1 | 1.7:1   |    |       |
| Insertion Loss, Max | 0.3     | 0.4    | 0.4    | 0.7     |    | dB    |
| Isolation, Min      | 70      | 60     | 60     | 60      |    | dB    |

### Mechanical Specifications

#### Size

|                |                    |
|----------------|--------------------|
| Length         | 2.15 in [54.61 mm] |
| Width/Diameter | 2.5 in [63.5 mm]   |
| Height         | 2.5 in [63.5 mm]   |
| Weight         | 0.1 lbs [45.36 g]  |

#### Connectors

|                   |          |
|-------------------|----------|
| RF Connector Type | N Female |
|-------------------|----------|

### Environmental Specifications

#### Temperature

|                 |                   |
|-----------------|-------------------|
| Operating Range | -25 to +65 deg C  |
| Storage Range   | -55 to +100 deg C |

|       |  |
|-------|--|
| Shock | MIL-STD-202 Method 213, Condition D, 500G (non oper) |
|-------|--|

|           |   |
|-----------|---|
| Vibration | MIL-STD-202 Method 204, Condition D, 10G RMS (non oper) |
|-----------|---|

**Compliance Certifications** (see [product page](#) for current document)

### Plotted and Other Data

Notes:

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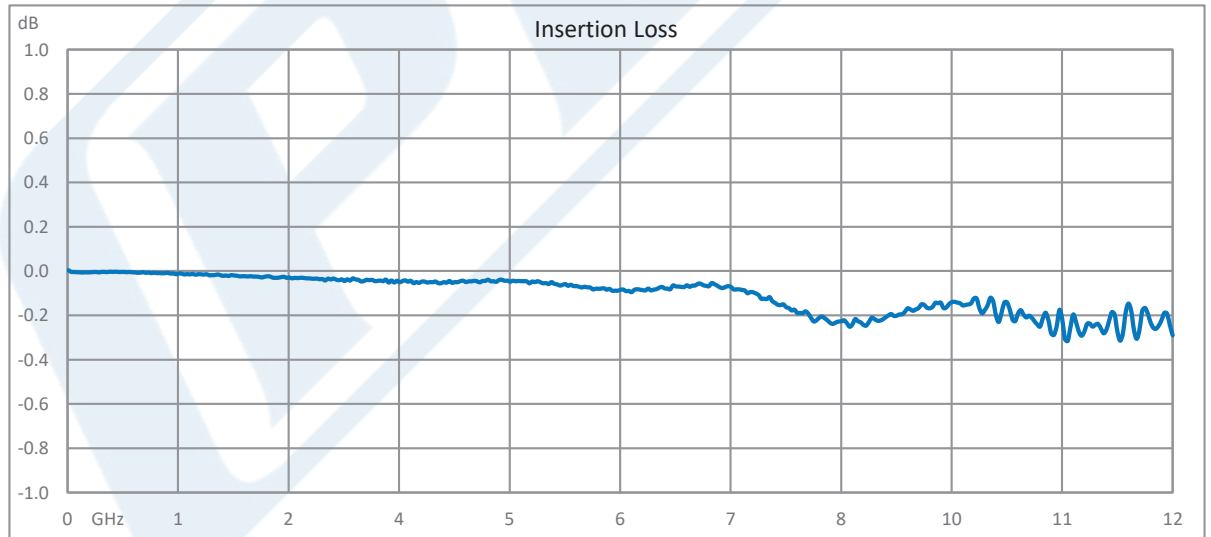
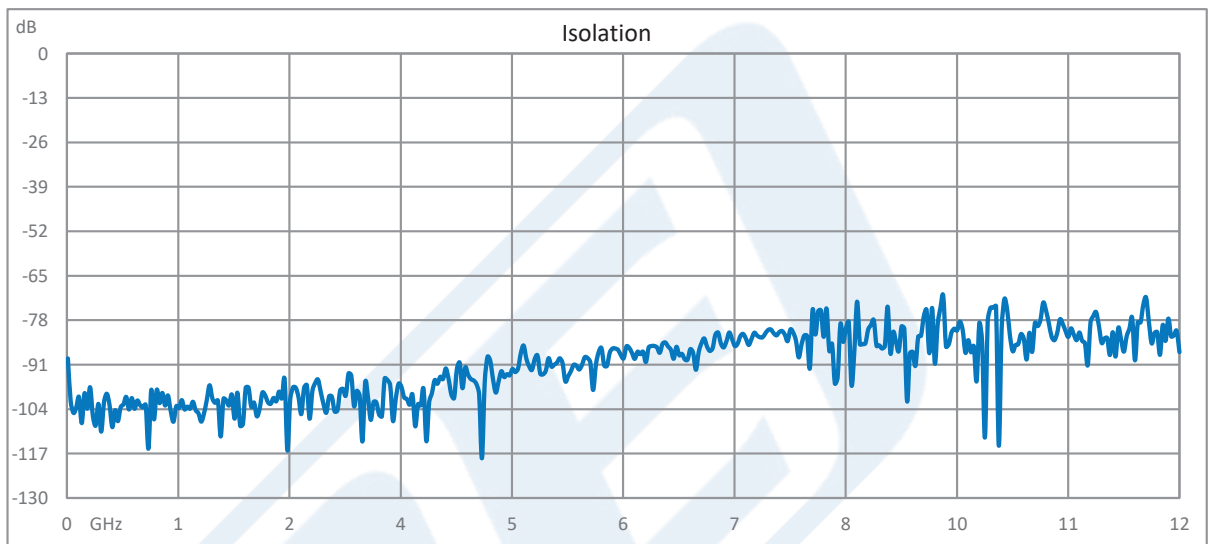


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## Electromechanical Relay Switches Technical Data

**PE71S6503**

### Typical Performance Data



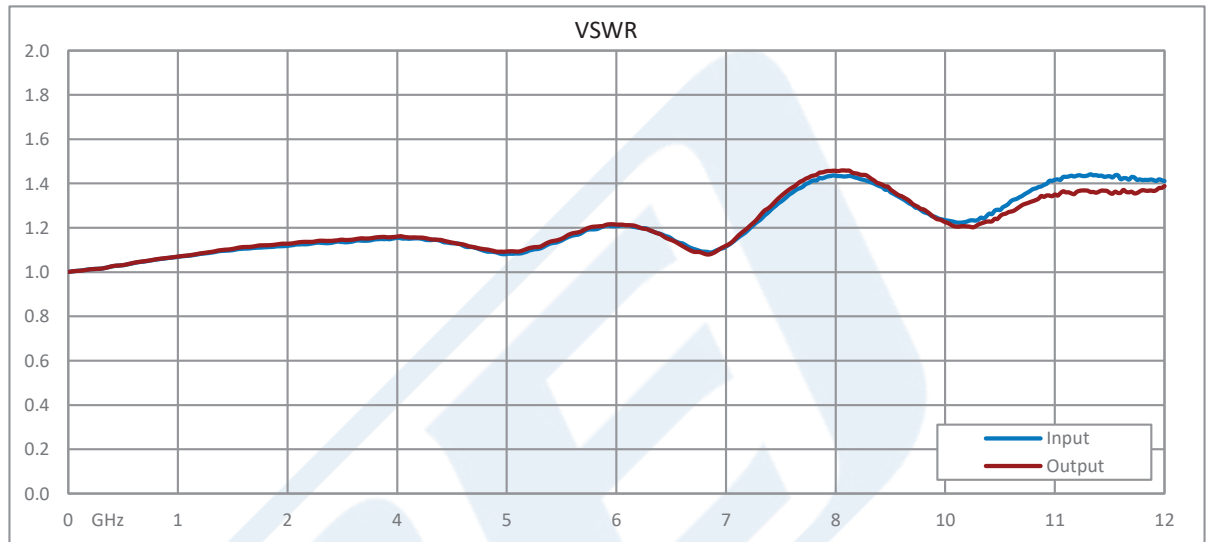
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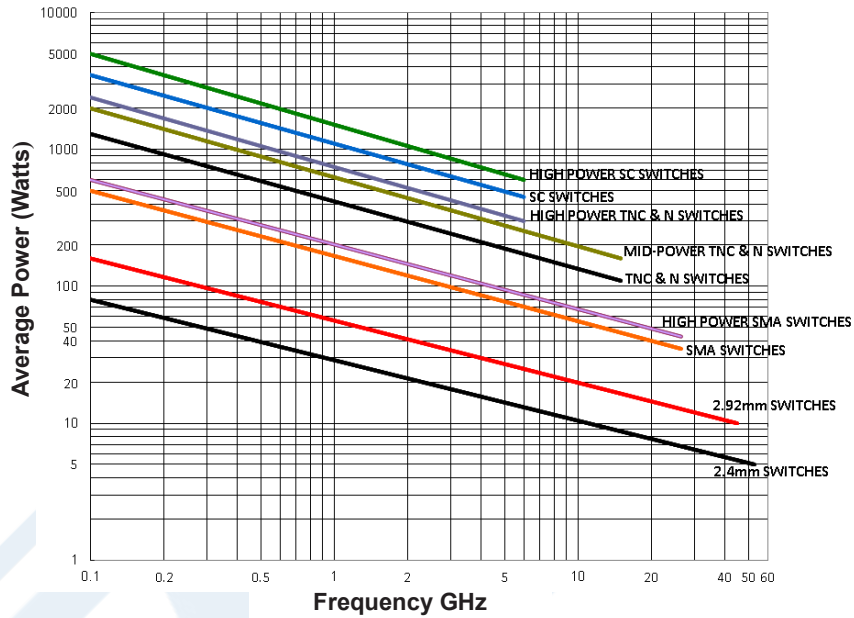


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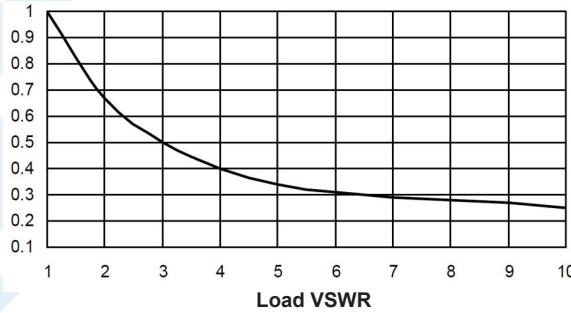
**Electromechanical Relay Switches Technical Data**

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**Power Handling vs. Frequency**



**Power Handling De-rating vs. Load VSWR**



Power Handling Chart and Derating Curves based on the following Test and Environmental Conditions:  
 Ambient temperature: 20-25°C  
 Altitude: Sea Level to 1,000 feet  
 Relative Humidity: 50-55%  
 Load VSWR: ≤ 1.20:1  
 Operation: Cold Switching

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## Electromechanical Relay Switches Technical Data

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SP4T Electromechanical Relay Normally Open Switch DC to 12.4 GHz, 2M Lifecycles, N, 160 Watts, 28V, Solder Pins from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [SP4T Electromechanical Relay Normally Open Switch DC to 12.4 GHz, 2M Lifecycles, N, 160 Watts, 28V, Solder Pins PE71S6503](https://www.pasternack.com/sp4t-electromechanical-relay-normally-open-switch-dc-to-12.4-ghz-2m-lifecycles-n-160-watts-28v-solder-pins-pe71s6503)

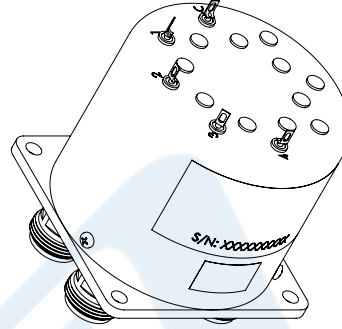
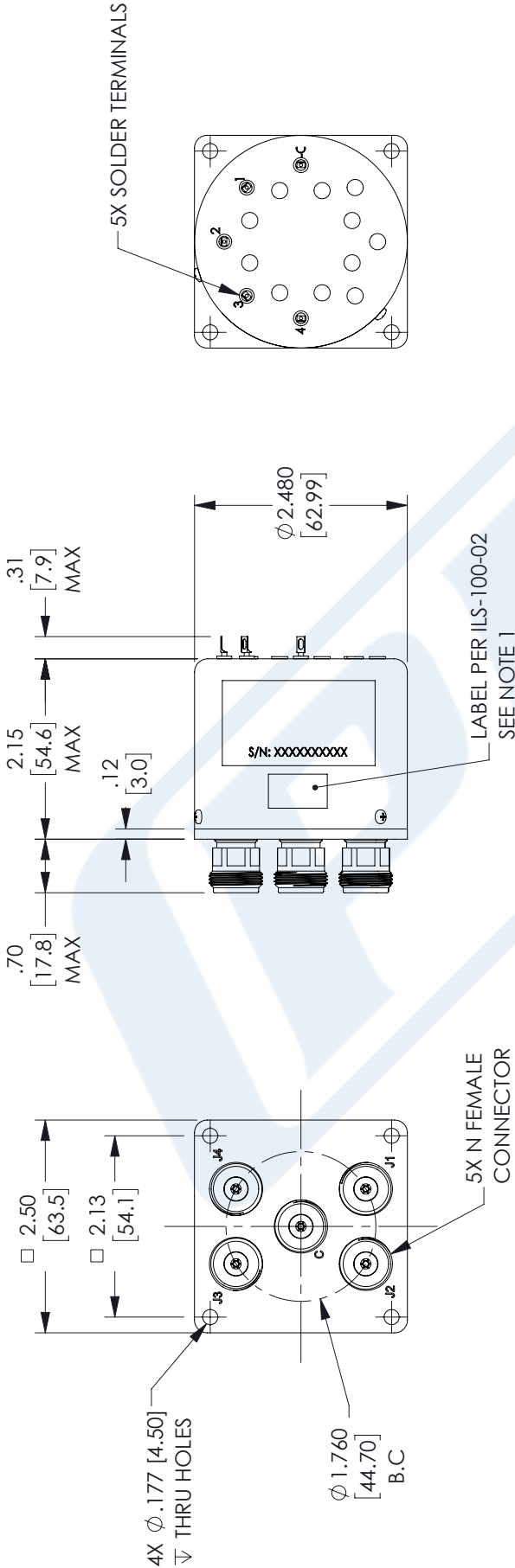
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# PE71S6503 CAD Drawing

SP4T Electromechanical Relay Normally Open Switch DC to 12.4 GHz, 2M Lifecycles, N, 160 Watts, 28V, Solder Pins

| REVISIONS |                 |            |          |
|-----------|-----------------|------------|----------|
| REV.      | DESCRIPTION     | DATE       | APPROVED |
| A         | INITIAL RELEASE | 05/17/2022 | T. GALLA |



UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES DIMENSIONS IN [ ] ARE MILLIMETERS

TOLERANCES:

|              |        |             |
|--------------|--------|-------------|
| .X = ±.2     | [5.08] | FRACTIONS   |
| .XX = ±.02   | [.51]  | ±.132       |
| .XXX = ±.005 | [.13]  | ANGLES ± 1° |

CABLE LENGTH (L) TOLERANCES:

|                      |        |                 |
|----------------------|--------|-----------------|
| L ≤ 12               | [305]  | = +1 [25] / -0  |
| 12 [305] < L ≤ 60    | [1524] | = +2 [51] / -0  |
| 60 [1524] < L ≤ 120  | [3048] | = +4 [102] / -0 |
| 120 [3048] < L ≤ 300 | [7620] | = +6 [152] / -0 |
| 300 [7620] < L       |        | = +5%L / -0     |

ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

THIRD-ANGLE PROJECTION

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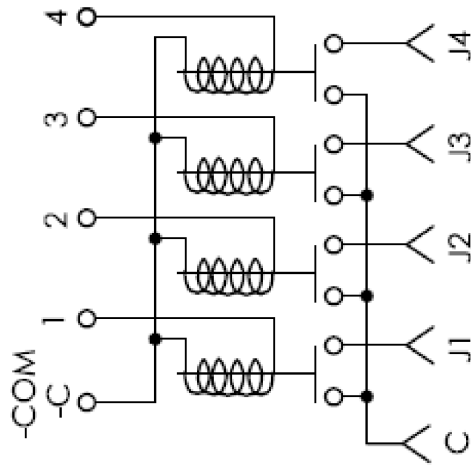
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RF POSITION  
**SCHEMATIC**

TRUTH TABLE/PIN ASSIGNMENT :  
PIN ASSIGNMENT

| TERMINALS<br>PIN ASSIGNMENT | RF PATH |     |     |     |
|-----------------------------|---------|-----|-----|-----|
|                             | J1      | J2  | J3  | J4  |
| 1                           | ON      | OFF | OFF | OFF |
| 2                           | OFF     | ON  | OFF | OFF |
| 3                           | OFF     | OFF | ON  | OFF |
| 4                           | OFF     | OFF | OFF | ON  |

PIN -C, -COM

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TOLERANCES:  
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