

## SP3T Electromechanical Relay Latching Switch, Underterminated DC to 40 GHz, 5W, 12V,TTL(H), 2.92mm Female Type

### Electromechanical Relay Switches Technical Data Sheet

### SWS3T-MK40G12V-L3D9-01

#### Features

- Single Pole Three Throw (SP3T) Electromechanical Relay Switch
- DC to 40 GHz Frequency Range
- Latching Actuator
- TTL Logic Control
- 2M Lifecycle Rating
- Insertion Loss 0.9 dB typ
- VSWR as low as 1.9:1 max
- +12Volt DC Bias
- D-Sub 9 for DC Command Control
- -25°C to +65°C Operating Temperature
- Up to 5 Watt Average Power Handling
- 50 Ohm Design
- Isolation >55 dB typ
- Rugged Design meets Mil-STD-202 Test Conditions

#### Applications

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

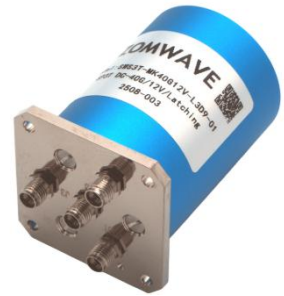
#### Description

The SWS3T-MK40G12V-L3D9-01 is a Single Pole Three Throw (SP3T) electromechanical relay switch that operates across a wide frequency range of DC to 40 GHz and can handle up to 5W of average power in a break before make condition. The design is rated for 2.5 million lifecycles and features a Latching Actuator where the selected position remains active with constant voltage, all positions are open when voltage is removed. Impressive typical performance includes 0.9 dB insertion loss and isolation greater than 55 dB. This switch requires +12Vdc bias voltage and operates over a temperature range of -25°C to +65°C. The rugged and compact package assembly supports 2.92mm Type female connectors and D-sub 9pin 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

|                   |                     |
|-------------------|---------------------|
| Switch Type       | SP3T                |
| Actuator Type     | Latching            |
| Self Cut-Off Time | 40 ms < CT < 120 ms |

| Description                      | Minimum | Typical | Maximum | Units |
|----------------------------------|---------|---------|---------|-------|
| Frequency Range                  | DC      |         | 40      | GHz   |
| Impedance                        |         | 50      |         | Ohms  |
| Operating Voltage                | 10.2    | 12      | 13      | Volts |
| Actuating Set Current @ 28 Volts |         | 320     |         | mA    |
| VSWR                             |         |         | 1.90:1  |       |
| Insertion Loss                   |         |         | 0.9     | dB    |
| Isolation                        | 55      |         |         | dB    |
| Input Power (CW)                 |         |         | 5       | Watts |
| Switching Time                   |         |         | 15      | ms    |



## SP3T Electromechanical Relay Latching Switch, Unterminated DC to 40 GHz, 5W, 12V,TTL(H), 2.92mm Female Type

### Electromechanical Relay Switches Technical Data Sheet

**SWS3T-MK40G12V-L3D9-01**

#### Performance by Frequency

| Description           | F1      | F2        | F3         | F4         | F5         | Units |
|-----------------------|---------|-----------|------------|------------|------------|-------|
| Frequency Range       | DC to 6 | 6 to 12.4 | 12.4 to 18 | 18 to 26.5 | 26.5 to 40 | GHz   |
| VSWR, Max             | 1.25:1  | 1.35:1    | 1.45:1     | 1.70:1     | 1.90:1     |       |
| Insertion Loss, Max   | 0.40    | 0.50      | 0.60       | 0.70       | 0.90       | dB    |
| Isolation, Min        | 80      | 70        | 65         | 60         | 55         | dB    |
| Input Power, Max (CW) | 40      | 27        | 22         | 14         | 5          | Watts |

Electrical Specification Notes:

Average Power and Actuating Current values at 25°C.

#### Mechanical Specifications

##### Size

|                |                   |
|----------------|-------------------|
| Length         | 2.42 in [61.5 mm] |
| Width/Diameter | 1.75 in [44.5mm]  |
| Height         | 1.75 in [44.5mm]  |
| Weight         | 0.39 lbs [180g]   |
| Package Type   | Connectorized     |
| Operating Life | 2,500,000 Cycles  |

##### Connectors

|                            |               |
|----------------------------|---------------|
| RF Connector Type          | 2.92mm Female |
| RF Connector Specification | MIL C 39012   |
| Control Connector          | D-Sub 9       |

Mechanical Specification Notes:

D-Sub 9: 250°C max/30sec.

#### Environmental Specifications

##### Temperature

|                 |                  |
|-----------------|------------------|
| Operating Range | -25 to +65 deg C |
| Storage Range   | -55 to +85 deg C |

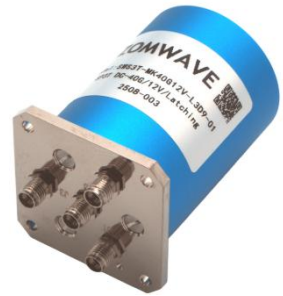
|              |                                  |
|--------------|----------------------------------|
| Construction | Splashproof                      |
| Shock        | MIL-STD-202, Method 213B, Cond.C |
| Vibration    | MIL-STD-202, Method 204D, Cond.D |

Environmental Specification Notes:

Environmental specifications are guaranteed but not tested.

#### Compliance Certifications

RoHS Compliant  
REACH Compliant



## SP3T Electromechanical Relay Latching Switch, Unterminated DC to 40 GHz, 5W, 12V,TTL(H), 2.92mm Female Type

### Electromechanical Relay Switches Technical Data Sheet

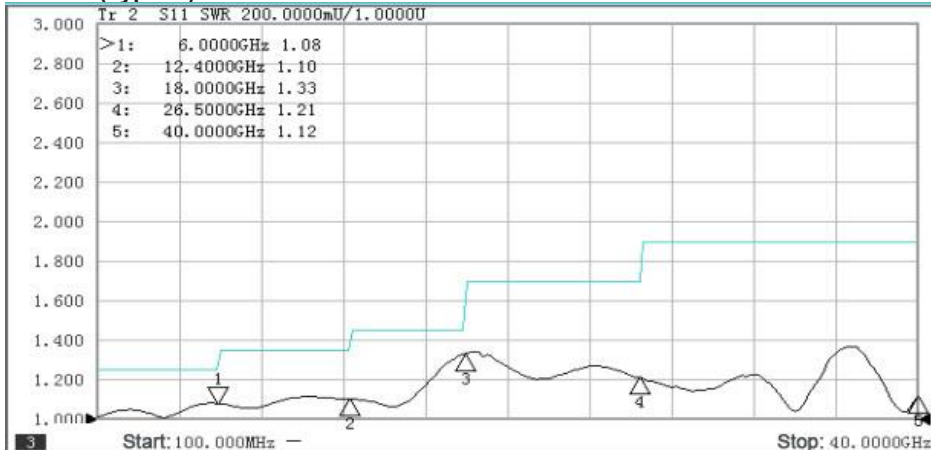
**SWS3T-MK40G12V-L3D9-01**

#### Typical Performance data

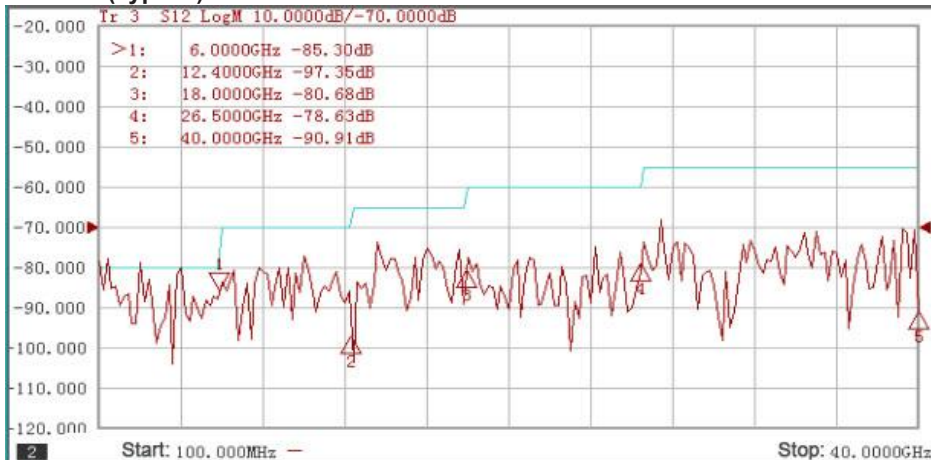
##### Insertion Loss(Typical)

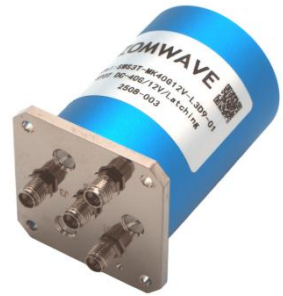


##### V.S.W.R(Typical)



##### Isolation(Typical)



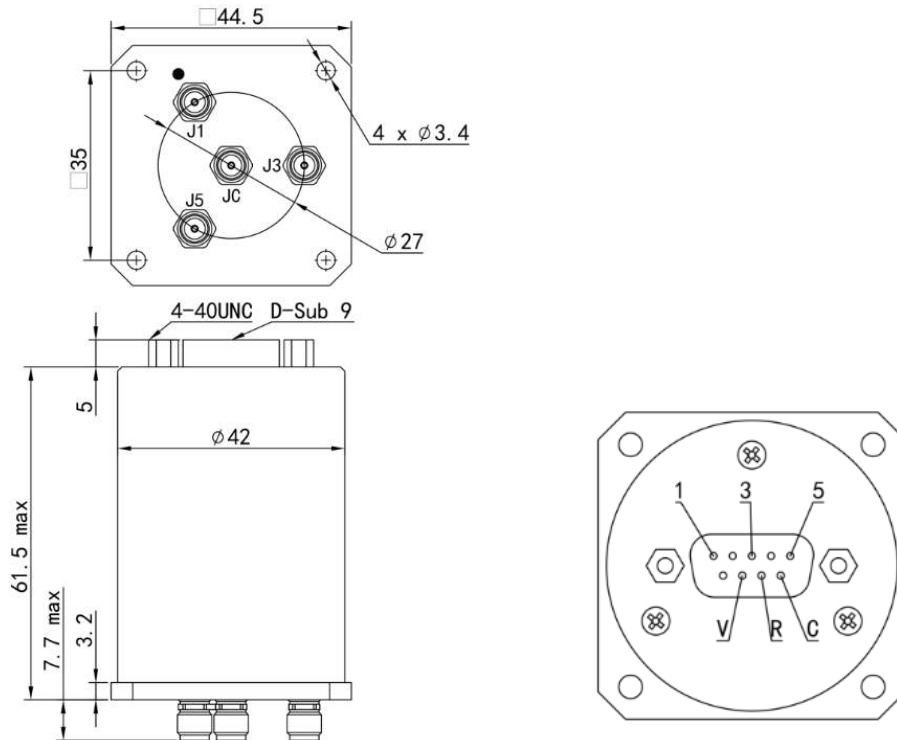


SP3T Electromechanical Relay Latching Switch, Unterminated  
DC to 40 GHz, 5W, 12V,TTL(H), 2.92mm Female Type

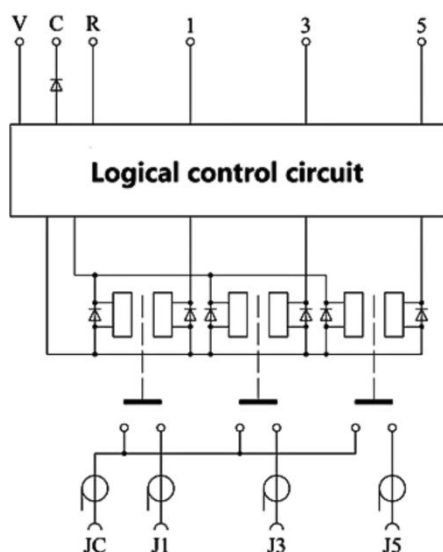
## Electromechanical Relay Switches Technical Data Sheet

**SWS3T-MK40G12V-L3D9-01**

### CAD Drawing



### Schematic & Truth Table/ PIN Assignment:



| PIN ASSIGNMENT | RF PATH               |
|----------------|-----------------------|
| "1"=1          | J1 ↔ JC               |
| "3"=1          | J3 ↔ JC               |
| "5"=1          | J5 ↔ JC               |
| V (Voltage)    |                       |
| "R"=1          | Reset: All Ports Open |
| C (GND)        |                       |

LOGIC LOW (OFF)= 0-0.8 Vdc

LOGIC HIGH (ON)= 2.5-5.5 Vdc