



SP4T Electromechanical Relay Normally Open  
Switch DC to 12.4 GHz, 2M Cycles, N, 50 Watts,  
12V, Indicators, TTL, Diodes, Solder Pins

## Electromechanical Relay Switches Technical Data Sheet

**PE71S6499**

### Features

- Single Pole Four Throw (SP4T) Electromechanical Relay Switch
- DC to 12 GHz Frequency Range
- Normally Open Actuator
- TTI Logic Control
- Suppression Diodes
- 2M Lifecycle Rating
- Insertion Loss 0.2 dB typ
- Isolation > 70 dB typ
- VSWR as low as 1.25:1 max
- +12 Volt DC Bias
- Solder Terminal Pins for DC Control
- N Type Female Connectors
- -25°C to +65°C Operating Temperature
- Up to 50 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 PE71S6499 is a Single Pole Four Throw (SP4T) electromechanical relay switch that operates across a wide frequency range from DC to 12 GHz and can handle up to 50W 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. Additional features include TTL control logic, and suppression diodes which limit voltage spikes or reverse current. Impressive typical performance includes 0.2 dB insertion loss and isolation greater than 70 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 N Type female connectors and solder pins for DC command control functions. 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 = +12 Vdc)

Switch Type	SP4T
Actuator Type	Normally Open
Actuator Options	Indicators, TTL Logic
TTL Control	on: 2.4 to 5 Volts off: 0 to 0.8 Volts

Description	Minimum	Typical	Maximum	Units
Frequency Range	DC		12.4	GHz
Operating Voltage		+12		Volts
Actuating Set Current @ +12 Volts			600	mA
VSWR		1.3:1	1.7:1	
Insertion Loss		0.2	0.7	dB

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 Cycles, N, 50 Watts, 12V, Indicators, TTL, Diodes, Solder Pins PE71S6499](#)



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Isolation	60	70		dB
Input Power (CW) (at 12.4 GHz)			50	Watts

### 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	3.2 in [81.28 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
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### 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)
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Vibration	MIL-STD-202 Method 204, Condition D, 10G RMS (non oper)
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**Compliance Certifications** (see [product page](#) for current document)

### Plotted and Other Data

Notes:

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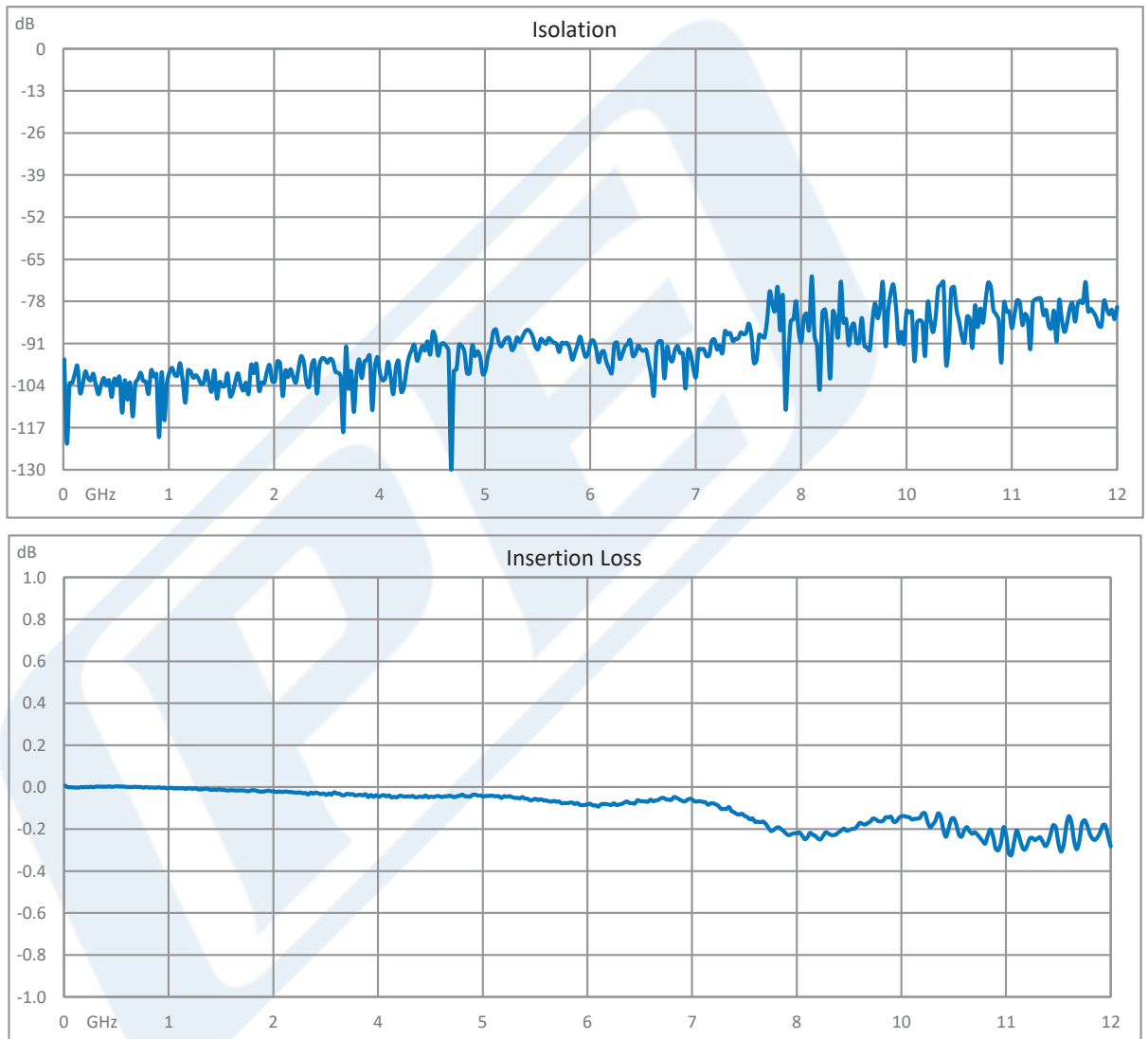


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## Electromechanical Relay Switches Technical Data

**PE71S6499**

### Typical Performance Data



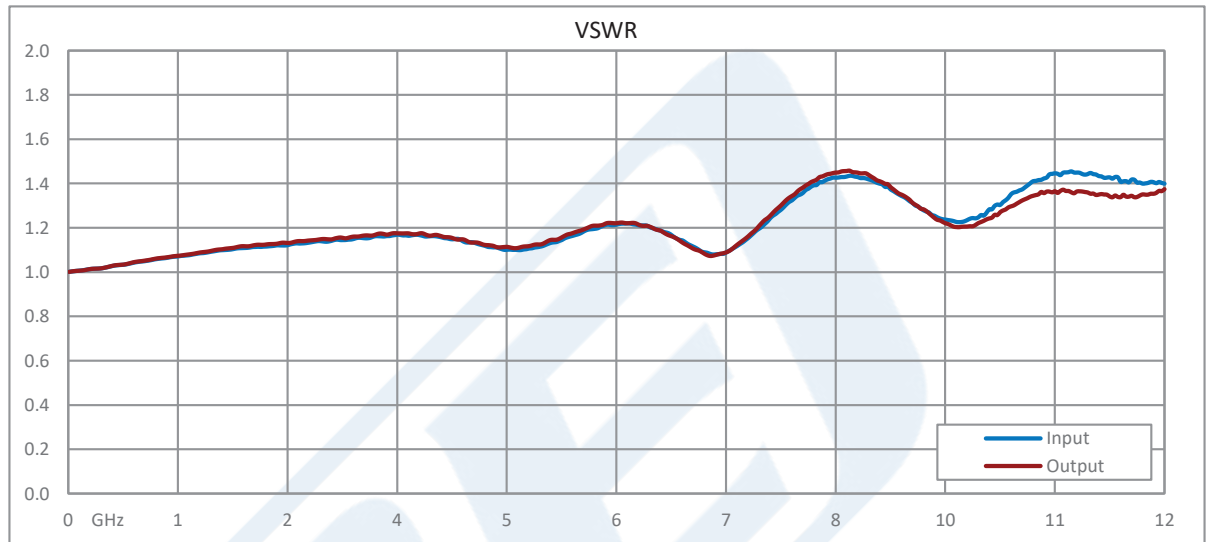
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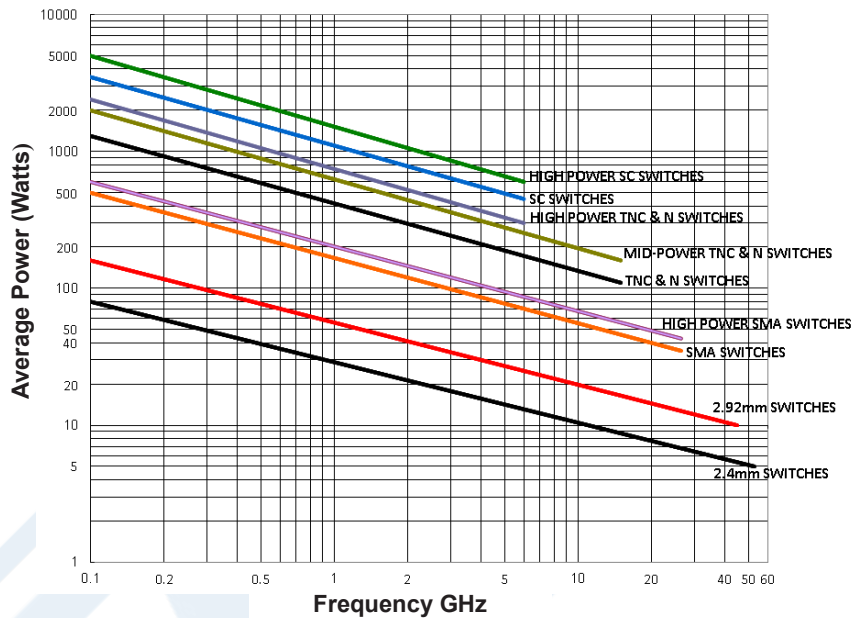


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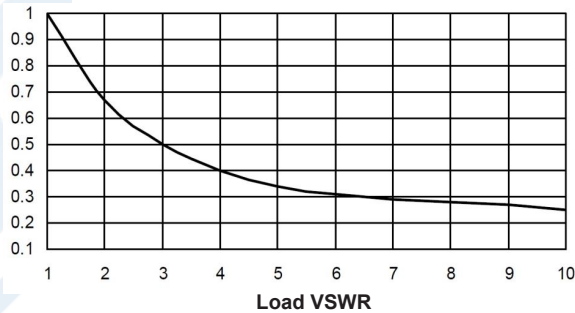
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**Power Handling vs. Frequency**



**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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SP4T Electromechanical Relay Normally Open Switch DC to 12.4 GHz, 2M Cycles, N, 50 Watts, 12V, Indicators, TTL, Diodes, 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.

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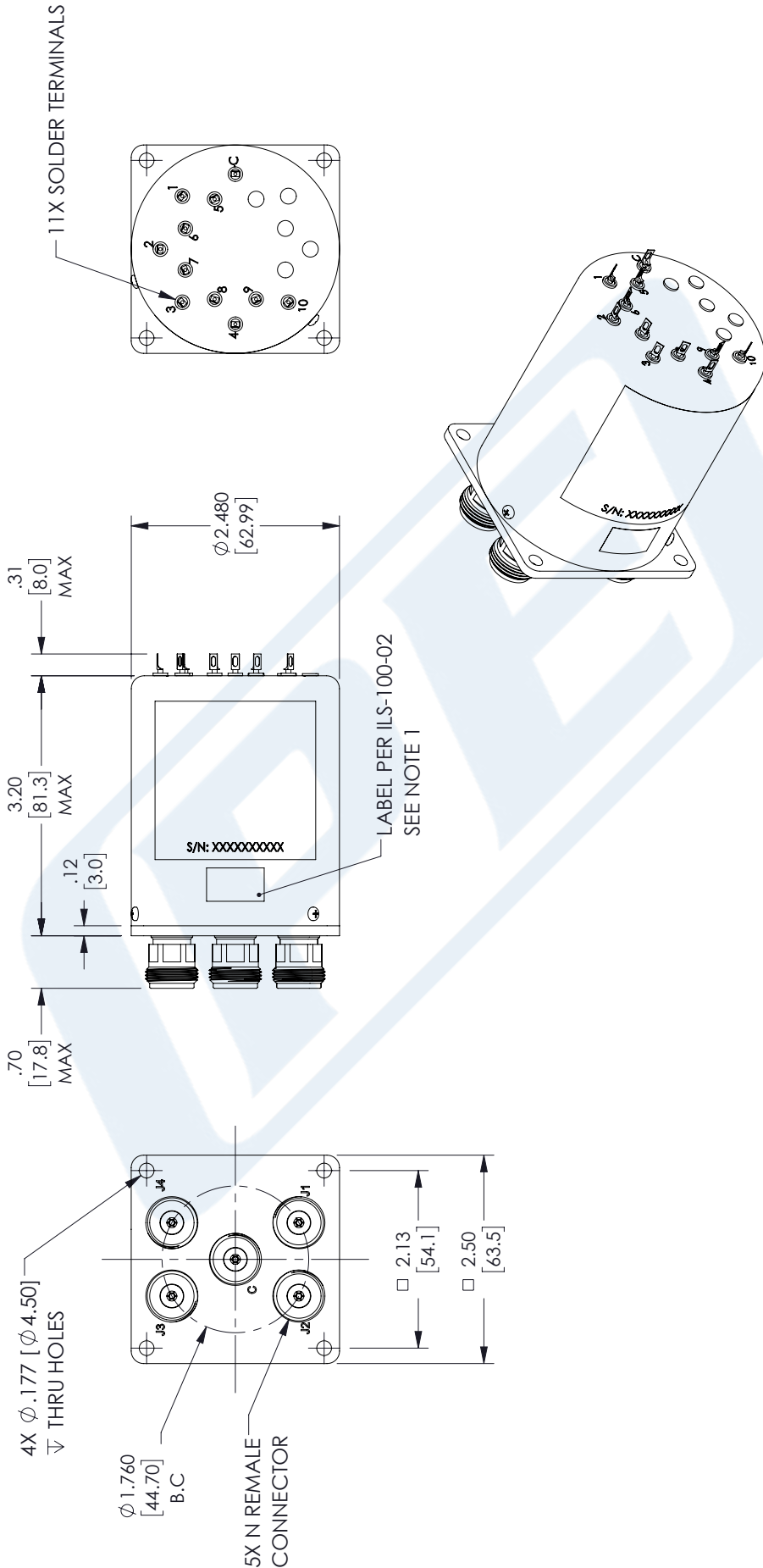
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# PE71S6499 CAD Drawing

SP4T Electromechanical Relay Normally Open Switch DC to 12.4 GHz,  
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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	05/17/2022	T. GALLA



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	<p>SCALE N/A</p>
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TOLERANCES:

.X = ±.2	[5.08]	FRACTIONS	± 1/32
.XX = ±.02	[.51]	ANGLES ± 1°	
.XXX = ±.005	[.13]	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			

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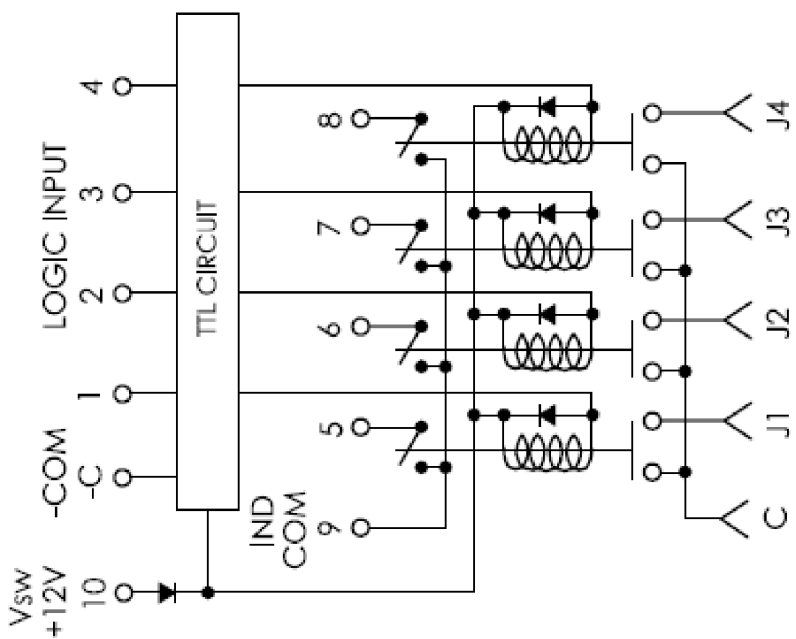
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RF POSITION  
SCHEMATIC

TRUTH TABLE/PIN ASSIGNMENT:  
PIN ASSIGNMENT

TERMINALS LOGIC INPUT PINS	RF PATH				INDICATOR			
	J1	J2	J3	J4	5	6	7	8
1 ("1")	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
2 ("1")	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
3 ("1")	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF
4 ("1")	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON

PIN -C, -COM  
PIN 10, V<sub>sw</sub> +12V  
PIN 9, IND COM

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