



SP4T Electromechanical Relay Normally Open Switch, DC to 40 GHz, 2M Lifecycles, 3W, 28V, Indicators, TTL, Diodes, 2.92mm, Solder Pins

Electromechanical Relay Switches Technical Data Sheet

PE71S6489

Features

- Single Pole Four Throw (SP4T) Electromechanical Relay Switch
- DC to 40 GHz Frequency Range
- Normally Open Actuator
- 2M Lifecycle Rating
- Insertion Loss 0.5 dB typ
- Isolation > 70 dB typ
- VSWR as low as 1.25:1 max
- +28 Volt DC Bias
- Solder Terminal Pins for DC Control
- 2.92mm Female Connectors
- -25°C to +65°C Operating Temperature
- Up to 3 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 PE71S6489 is a Single Pole Four Throw (SP4T) electromechanical relay switch that operates across a wide frequency range from DC to 40 GHz and can handle up to 3W of average power in a break before make condition. The 50 Ohm design is rated for 2M 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, suppression diodes which limit voltage spikes or reverse current, and Indicators to monitor the switch position. Impressive typical performance includes 0.5 dB insertion loss and isolation greater than 70 dB. This switch requires +28Vdc bias voltage and operates over a temperature range of -25°C to +65°C. The rugged and compact package assembly supports 2.92mm female connectors and solder terminal 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 = +28 Vdc)

Switch Type	SP4T
Actuator Type	Normally Open
Actuator Options	Indicators, TTL Logic
TTL Control	on: 2.4 to 5.5 Volts off: 0 to 0.8 Volts

Description	Minimum	Typical	Maximum	Units
Frequency Range	DC		40	GHz
Operating Voltage		+28		Volts
Actuating Set Current @ +28 Volts			140	mA
VSWR		1.5:1	1.8:1	
Insertion Loss		0.5	1.3	dB
Isolation	50	70		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 40 GHz, 2M Lifecycles, 3W, 28V, Indicators, TTL, Diodes, 2.92mm, Solder Pins PE71S6489](#)



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Input Power (CW) (at 40 GHz)	3	Watts
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Performance by Frequency

Description	F1	F2	F3	F4	F5	Units
Frequency Range	DC to 6	6 to 12	12 to 18	18 to 28	28 to 40	GHz
VSWR, Max	1.25:1	1.4:1	1.5:1	1.8:1	1.8:1	
Insertion Loss, Max	0.2	0.4	0.5	0.9	1.3	dB
Isolation, Min	70	60	60	60	50	dB

Mechanical Specifications

Size

Length	1.75 in [44.45 mm]
Width/Diameter	1.75 in [44.45 mm]
Height	2.5 in [63.5 mm]
Weight	0.1 lbs [45.36 g]

Connectors

RF Connector Type	2.92mm 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)

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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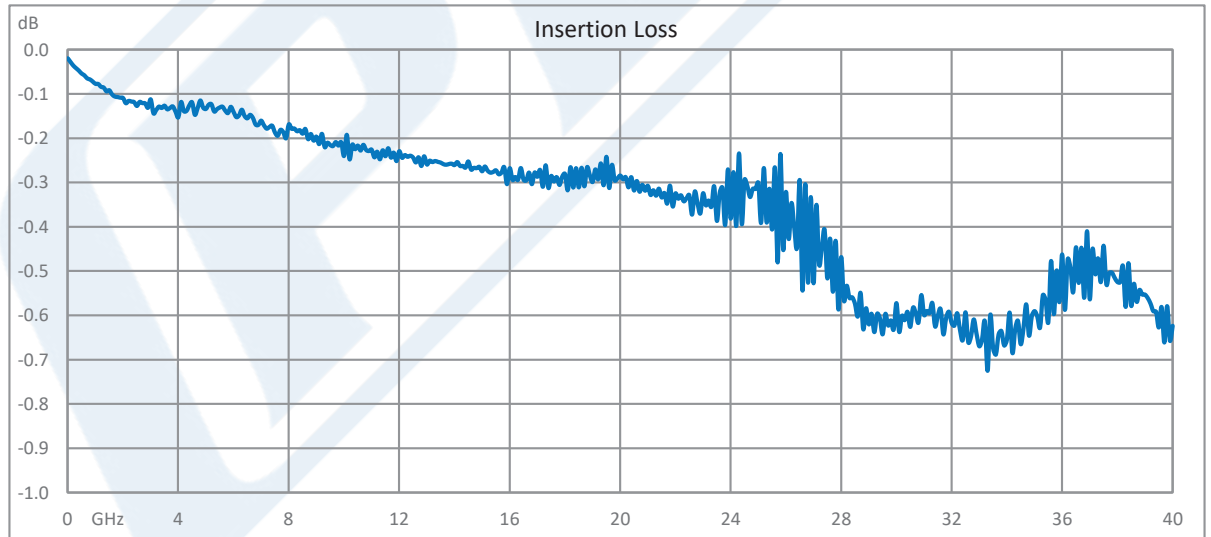
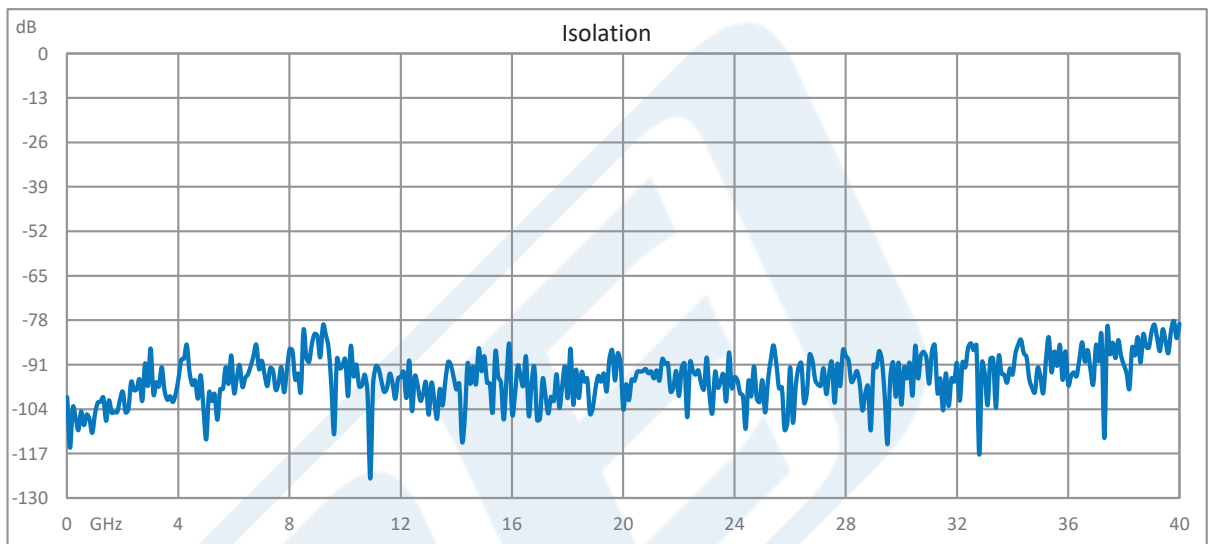


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Electromechanical Relay Switches Technical Data

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Typical Performance Data



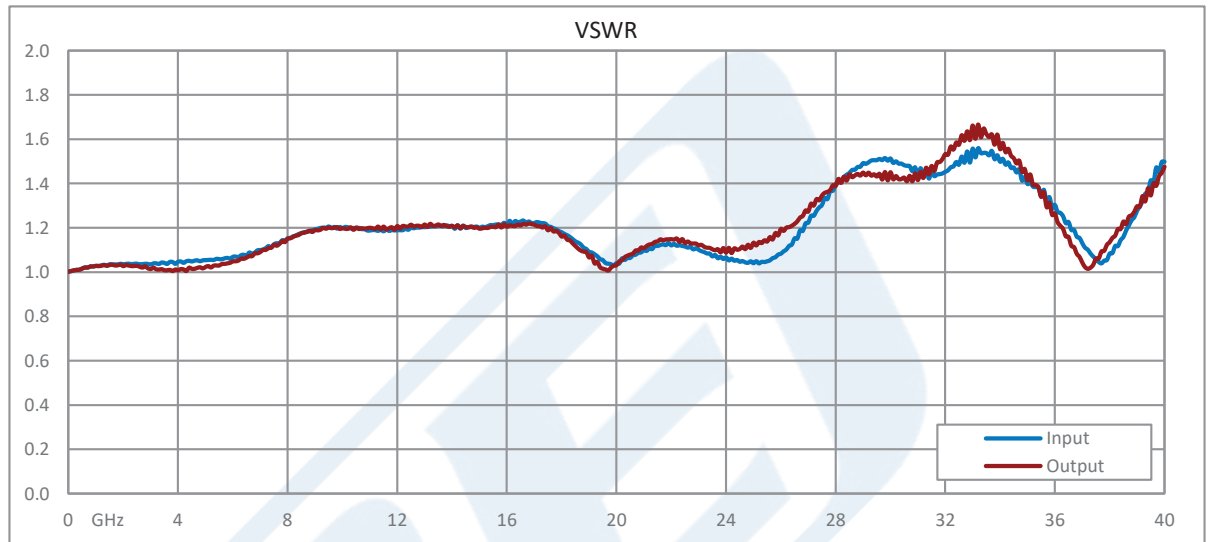
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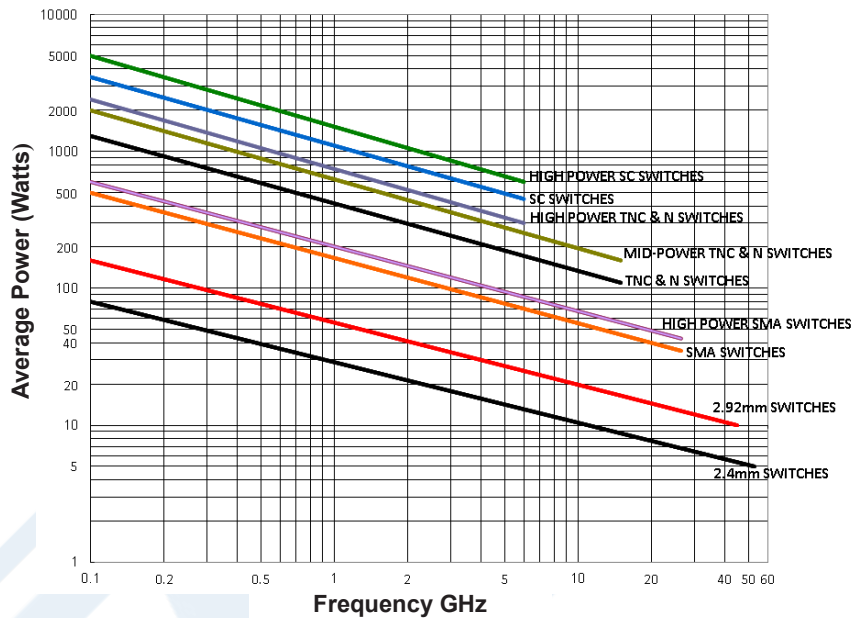


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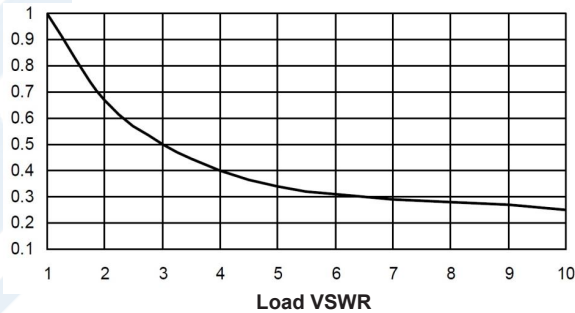
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Power Handling vs. Frequency



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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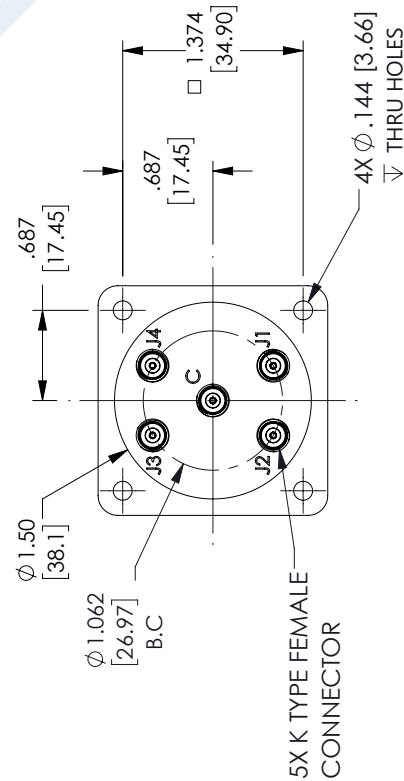
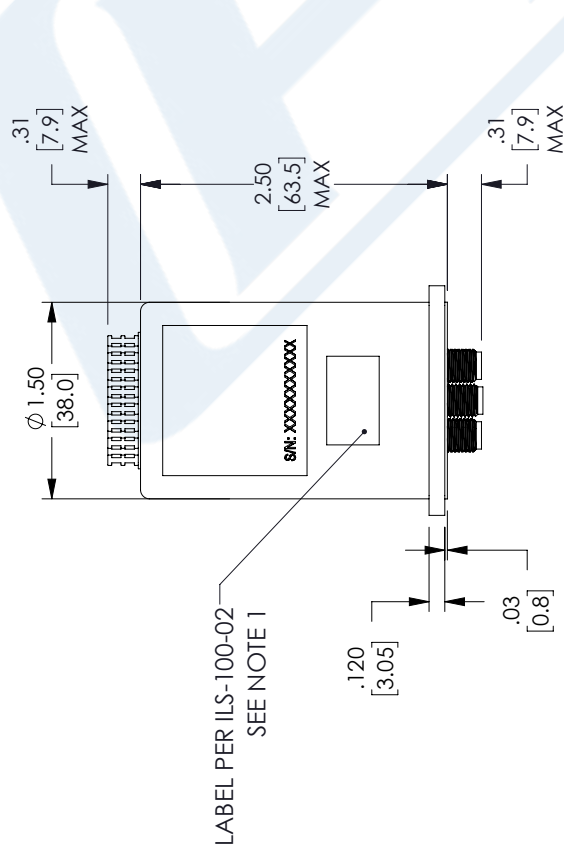
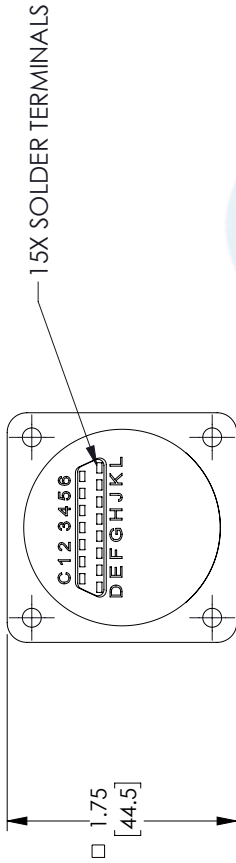
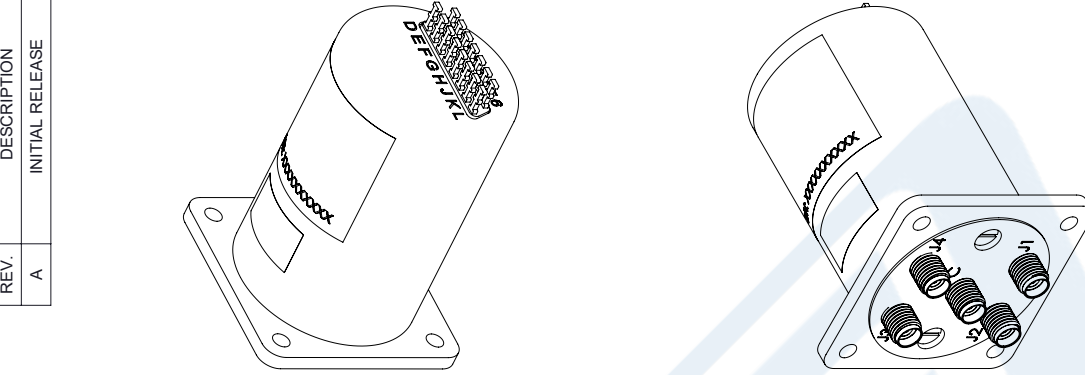
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PE71S6489 CAD Drawing

SP4T Electromechanical Relay Normally Open Switch, DC to 40 GHz, 2M Lifecycles, 3W, 28V, Indicators, TTL, Diodes, 2.92mm, Solder Pins

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



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TOLERANCES:

.X = ±.2	[5.08]	FRACTIONS
.XX = ±.02	[.51]	± 1/32
.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

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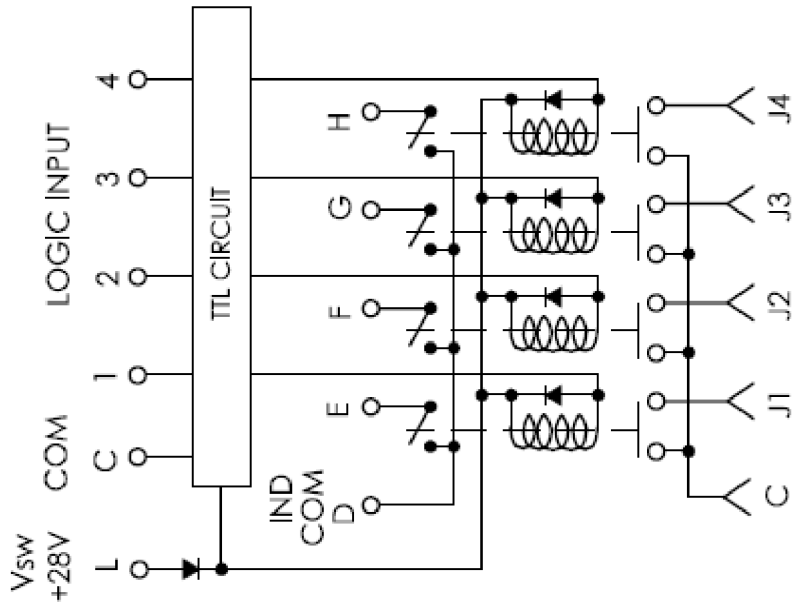
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RF POSITION
SCHEMATIC

TRUTH TABLE/PIN ASSIGNMENT :
PIN ASSIGNMENT

TERMINALS LOGIC INPUT PINS	RF PATH				INDICATOR			
	J1	J2	J3	J4	E	F	G	H
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 L. V_{SW} +28VDC
PIN D. IND COM

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120 [3048] < L ≤ 300 [7620] = +6 [152] / -0
300 [7620] < L = +6% / -0

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