



SP4T, IP64 Rated Electromechanical Relay Latching Switch, Terminated, DC to 18 GHz, 90W, 12VDC, SMA

Electromechanical Relay Switches Technical Data Sheet

PE71S6531

Features

- SP4T Electromechanical Relay Switch
- IP64 Level 1 Rated
- DC to 18 GHz Frequency Range
- Latching Actuator
- Internal 50 Ohm Terminations
- 5M Lifecycle Rating
- Insertion Loss 0.2 dB typ
- Isolation > 80 dB typ
- VSWR as low as 1.25:1 max
- SMA Female Connectors
- +12 Volt DC Bias
- 15 Pin D-Sub Connector for DC Control
- -54°C to +85°C Operating Temperature
- Up to 90 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
- Actuating Set/Reset Feature

Applications

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

Description

The PE71S6531 is a Ruggedized SP4T electromechanical relay switch that operates across a broadband frequency range from DC to 18 GHz and can handle up to 90W of average power in a break before make condition. The 50 Ohm design is IP64 compliant with a Level 1 moisture seal and specially designed to operate reliably in harsh usage environments and conditions, such as over extreme temperatures and wet or dusty environments. Intrusion protection offers full protection against dust and other particulates. Moisture protection enables resistance to splashes in all directions. The switch has a Latching Actuator that magnetically latches in place after the control voltage is removed. For power sensitive applications, this is the best actuator option. The output ports are terminated in 50 ohms when switched in the isolation (off) state. Impressive typical performance includes 0.2 dB insertion loss and isolation greater than 80 dB. This switch requires +12Vdc bias voltage, operates over a temperature range of -54°C to +85°C, and is rated for 5 million lifecycles. The rugged and compact package assembly supports SMA female connectors and a 15 pin D-Sub connector 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 = 12 Vdc)

Switch Type
Actuator Type

SP4T
Latching

Description	Minimum	Typical	Maximum	Units
Frequency Range	DC		18	GHz
Impedance		50		Ohms
Operating Voltage	11	12	13	Volts
Actuating Set Current			280	mA
Actuating Reset Current			1.12	A
VSWR		1.2:1	1.5:1	

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [SP4T, IP64 Rated Electromechanical Relay Latching Switch, Terminated, DC to 18 GHz, 90W, 12VDC, SMA PE71S6531](#)



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Insertion Loss		0.2	0.5	dB
Isolation	80	90		dB
Switching Time		<20		ms Typ

Performance by Frequency

Description	F1	F2	F3	F4	F5	Units
Frequency Range	DC to 6	6 to 12	12 to 18			GHz
VSWR, Max	1.25:1	1.4:1	1.5:1			
Insertion Loss, Max	0.2	0.4	0.5			dB
Isolation, Min	80	80	80			dB

Mechanical Specifications

Size

Length	1.95 in [49.53 mm]
Width/Diameter	2.75 in [69.85 mm]
Height	0.92 in [23.37 mm]
Weight	0.164 lbs [74.39 g]

Connectors

RF Connector Type	SMA Female
Control Connector	D-Subminiature

Environmental Specifications

Temperature

Operating Range	-54 to +85 deg C
Storage Range	-55 to +100 deg C

Ingress Protection (IP) Rating	IP64
Shock	MIL-STD-202 Method 213, Condition D, 500 G (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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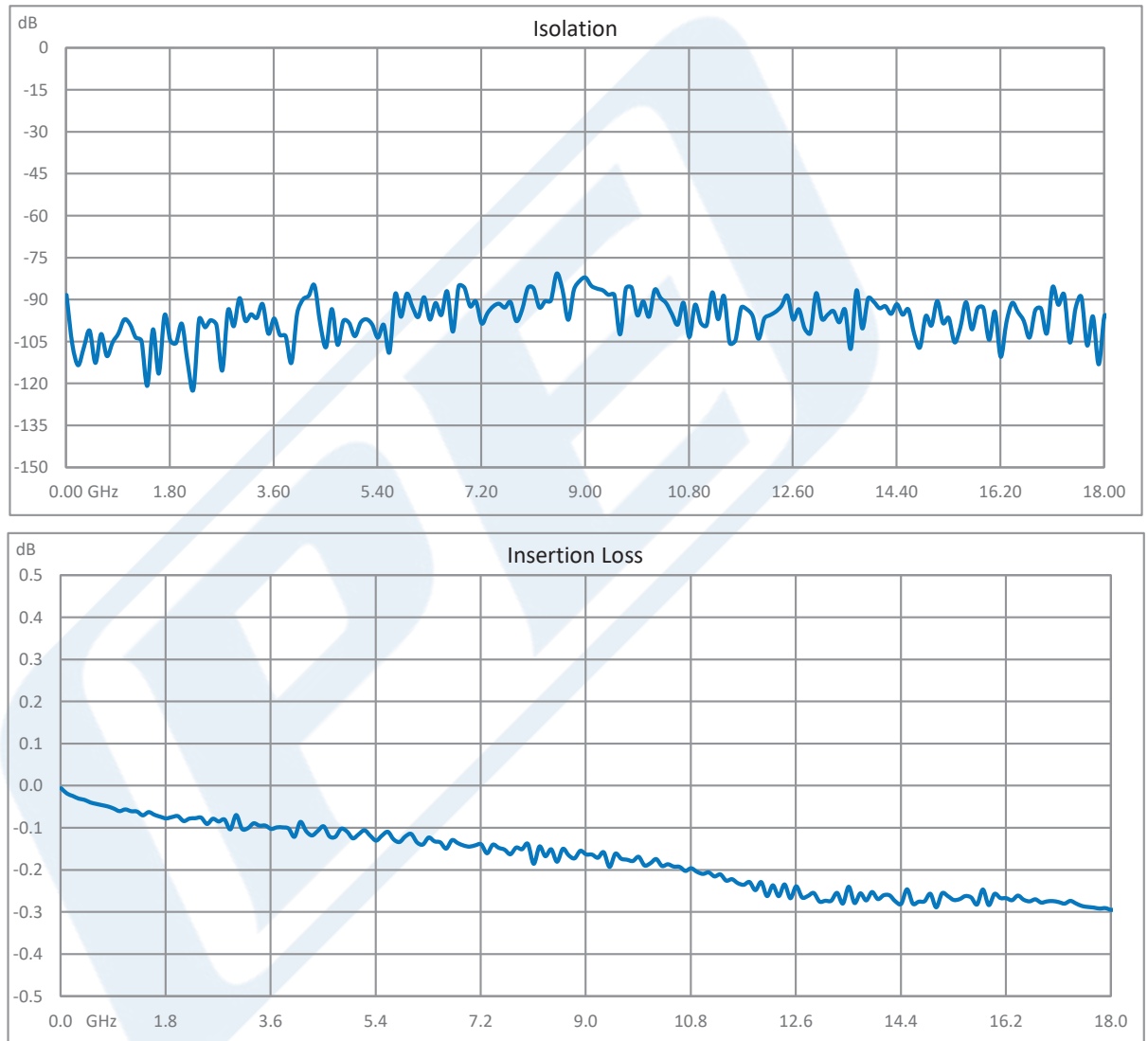


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Typical Performance Data



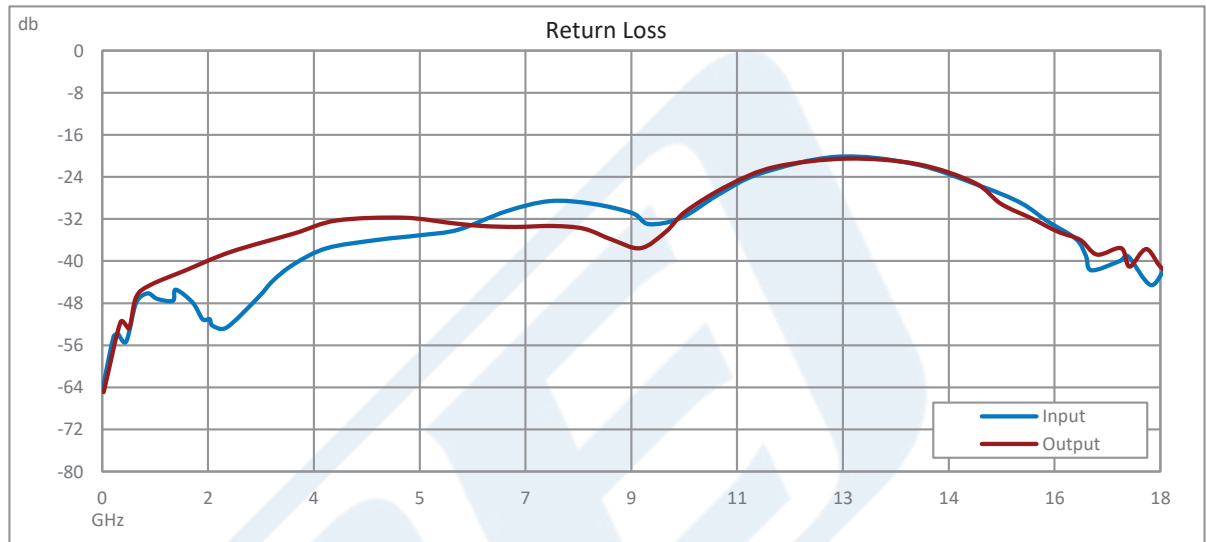
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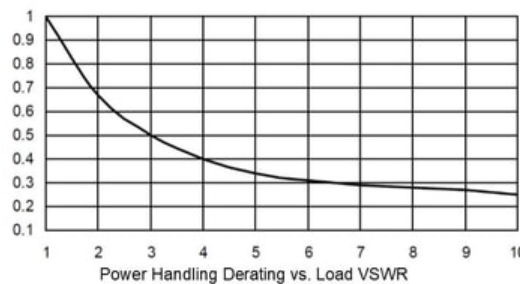
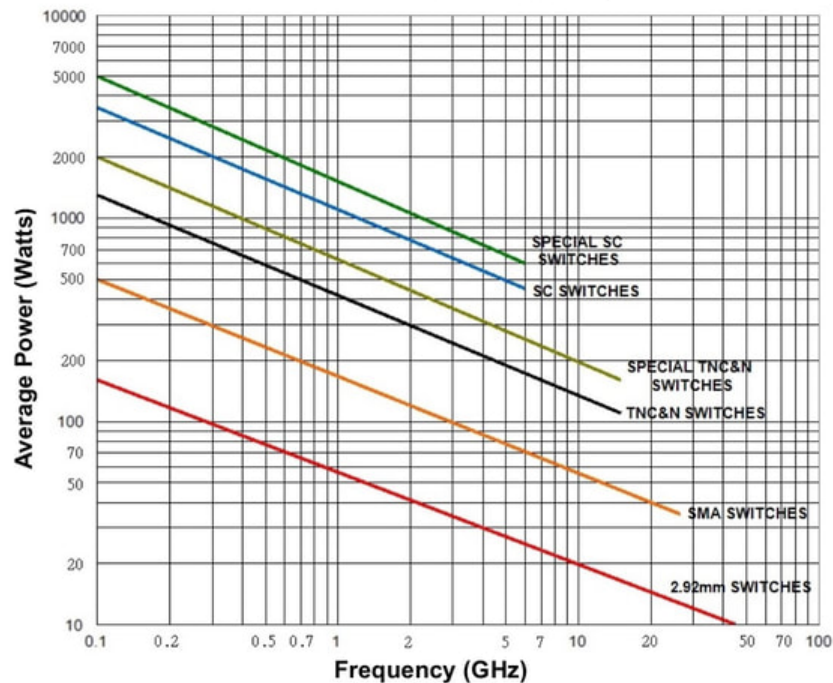


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Power Handling vs. Frequency



Power handling chart and derating curves based on the following conditions:

- Ambient temperature: 40°C or less
- Altitude: Sea level
- Load VSWR: 1.20:1 Maximum
- Relative Humidity: 40-50%
- Cold switching: RF signal off

Note: specifications subject to change without notice

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SP4T, IP64 Rated Electromechanical Relay Latching Switch, Terminated, DC to 18 GHz, 90W, 12VDC, SMA 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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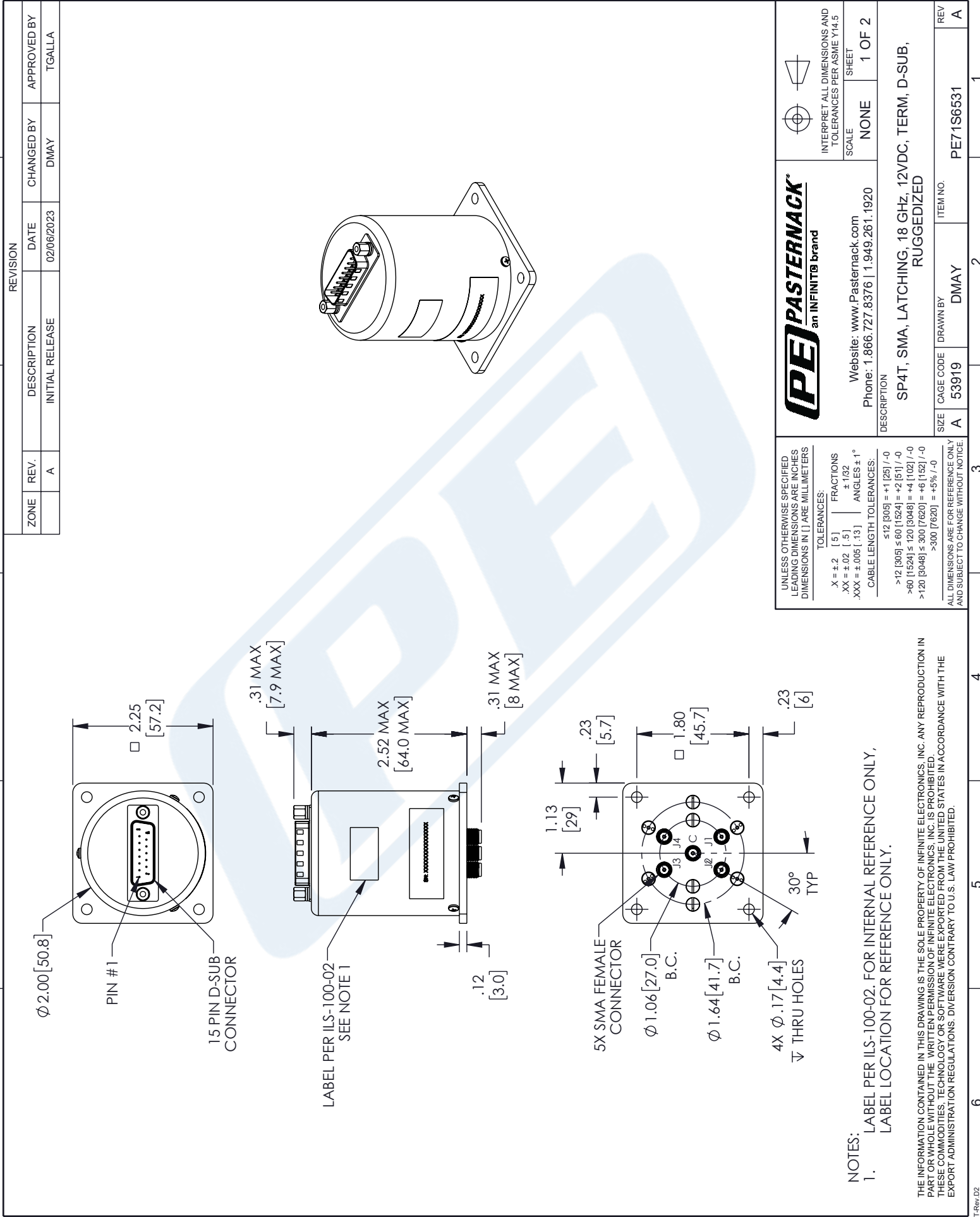
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The information contained in this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part, in order to implement improvements. Pasternack reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Pasternack does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Pasternack does not assume any liability arising out of the use of any part or documentation.

PE71S6531 CAD Drawing

SP4T, IP64 Rated Electromechanical Relay Latching Switch, Terminated, DC to 18 GHz, 90W, 12VDC, SMA

ZONE	REV.	DESCRIPTION	DATE	CHANGED BY	APPROVED BY
	A	INITIAL RELEASE	02/06/2023	DMAY	TGALLA

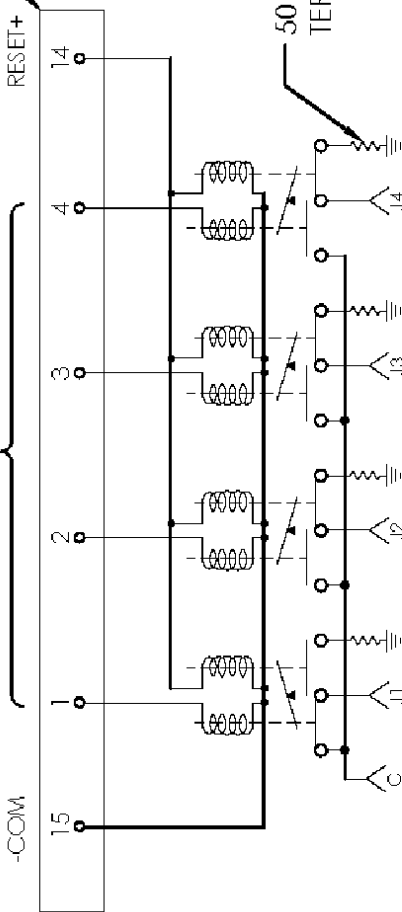


PE PASTERNAK® an INFINIT® brand Website: www.Pasternack.com Phone: 1.866.727.8376 1.949.261.1920		INTERPRET ALL DIMENSIONS AND TOLERANCES PER ASME Y14.5 SCALE: NONE SHEET: 1 OF 2
DESCRIPTION SP4T, SMA, LATCHING, 18 GHz, 12VDC, TERM, D-SUB, RUGGEDIZED		SIZE: A CAGE CODE: 53919 DRAWN BY: DMAY ITEM NO.: PE71S6531 REV: A

15-PIN D-SUB CONNECTOR

SET +

-COM



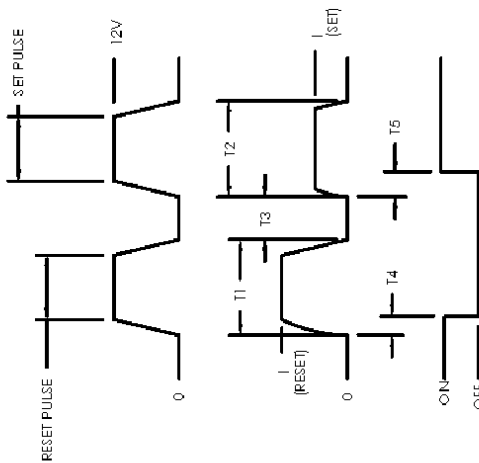
SCHEMATIC

(COIL 1 SHOWN LAST ENERGIZED)

ACTUATION

CHARACTERISTICS:

- REQUIRES TWO (2) SEQUENTIAL PULSES (RESET & SET)
- T1 & T2 = 30mSEC MIN
- T3 = 10mSEC MIN
- T4 & T5 = 20mSEC MAX



TRUTH TABLE/PIN ASSIGNMENT :
PIN ASSIGNMENT

TERMINALS	RF PATH			
	J1	J2	J3	J4
D-SUB PIN ASSIGNMENT				
1 (SET+)	ON	OFF	OFF	OFF
2 (SET+)	OFF	ON	OFF	OFF
3 (SET+)	OFF	OFF	ON	OFF
4 (SET+)	OFF	OFF	OFF	ON
14 (RESET+)	ALL OFF			

PIN 15, -COM

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

TOLERANCES:

X = ±.2 [.5] FRACTIONS
.XX = ±.02 [.5] ±.132
.XXX = ±.005 [.13] ANGLES ± 1°

CABLE LENGTH TOLERANCES:

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

ALL DIMENSIONS ARE FOR REFERENCE ONLY
AND SUBJECT TO CHANGE WITHOUT NOTICE

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DESCRIPTION

SP4T, SMA, LATCHING, 18 GHz, 12VDC, TERM, D-SUB,
RUGGEDIZED

SIZE A CASE CODE 53919 DRAWN BY DMAY ITEM NO. PE71S6531 REV A

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