



# Reflective SP4T GaN High Power PIN Diode Switch Operating from DC to 6 GHz Up to 40 Watts (+46 dBm), < 100ns and SMA

## PIN Diode Switches Technical Data Sheet

PE71S1104

### Features

- Reflective SPDT High Power PIN Diode Switch
- GaN Semiconductor Technology
- Reflective Design
- Frequency Range: 500 MHz to 18 GHz
- Insertion Loss: 1.7 dB typ
- Isolation: 40 dB typ
- VSWR: 1.35:1 typ
- Maximum RF Input Power: +46 dBm
- Input IP3: +50 dBm typ
- Switching Speed: < 100 nsec
- TTL Compatible Driver Circuitry
- 50 Ohm Design
- SMA Female Connectors
- Compact Package Design withstands up to 95% Relative Humidity
- -45°C to +85°C Operating Temperature

### Applications

- Aerospace & Defense
- Microwave Radio
- Military & Commercial
- Communication
- VSAT
- SATCOM
- Test & Measurement
- Wireless Infrastructure
- Fiber Optics

### Description

The PE71S1104 is a high power Reflective SP4T PIN Diode Switch that operates from DC to 6 GHz. The module utilizes Gallium Nitride (GaN) and chip-and-wire technology in the manufacturing process that ensures state-of-the-art power performance with excellent power-to-volume ratio that's ideal for broadband high power applications. The 50 ohm reflective design has impressive RF input power handling capability for cold switching up to +46 dBm, and incorporates TTL compatible driver circuitry for accurate logic control. Typical performance includes 1.7 dB insertion loss, 40 dB isolation, 1.35:1 VSWR, and < 100 nsec switching speed. Operational temperature range is -45°C to +85°C and the bias voltage requirement is +12 Vdc. The rugged and compact package supports SMA female connectors and is designed to meet a series of environmental conditions including Altitude, Vibration, Humidity, and Shock. Model PE71S1109 is the same switch design but includes an integrated heatsink.

### Electrical Specifications

TTL Control

Off/Isolation: 0 to 0.8 V  
On/Low Loss: 2.8 to 5 V

Description	Minimum	Typical	Maximum	Units
Frequency Range	DC		6	GHz
Impedance		50		Ohms
VSWR		1.35:1	1.5:1	
Insertion Loss		1.5	2	dB
IL Temperature Coefficient		0.003		dB/degC
Isolation	25	40		dB
Switching Time			100	ns
0.1dB Compression Point		+50		dBm
Input IP3		50		dBm
RF Input Power (CW)*			40	Watts
DC Power Dissipation		1		Watt

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Reflective SP4T GaN High Power PIN Diode Switch Operating from DC to 6 GHz Up to 40 Watts \(+46 dBm\), < 100ns and SMA PE71S1104](#)



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Positive Operating Voltage	12	Vdc
Current @ 12 Vdc	200	mA
Operating Temperature	-45	+85 deg C

### Performance by Frequency

Description	F1	F2	F3	F4	F5	Units
Frequency Range	DC to 3	3 to 6				GHz
VSWR, Max	1.3:1	1.5:1				
VSWR, Typ	1.2:1	1.35:1				
Insertion Loss, Max	1.5	2				dB
Insertion Loss, Typ	1	1.7				dB
Isolation, Min	35	25				dB
Isolation, Typ	42	30				dB

### Electrical Specification Notes:

Internal TTL Driver will become damaged if Negative Voltage is applied

\*Cold Switching: Before changing any TTL signal(s), the RF input power must be blanked or the switch could become damaged

### Absolute Maximum Rating

Parameter	Rating
Biassing	+12V±10%
TTL Control Voltage	0~0.8V/2.8~5V



ESD Sensitive Material,  
Transport material in  
Approved ESD bags.  
Handle only in approved  
ESD Workstation.

### Mechanical Specifications

#### Size

Length	1.97 in [50.04 mm]
Width	1.97 in [50.04 mm]
Height	0.37 in [9.4 mm]
Weight	0.3 lbs [136.08 g]
Design	Reflective, SP4T
RF Connector	SMA Female

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**Environmental Specifications**

**Temperature**

Operating Range -45 to +85 deg C  
Storage Range -55 to +125 deg C

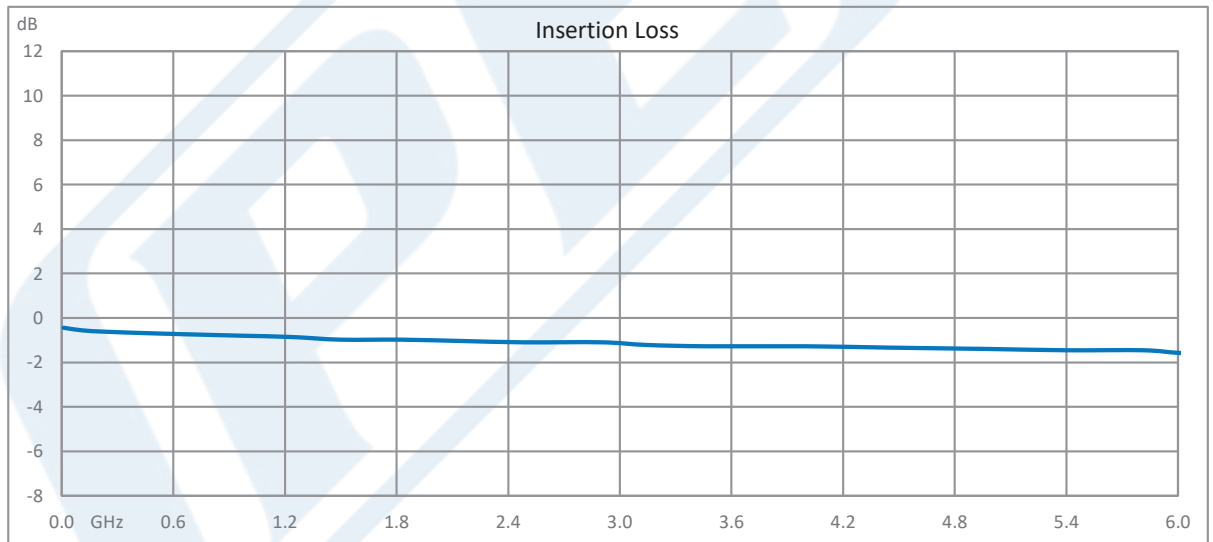
Humidity 100% RH @ 35°C, 95% RH @ 40°C  
Shock 20G for 11ms Half Sinewave, 3 axis both directions  
Vibration 25g RMS (15° 2KHz) endurance, 1 hr per axis  
Altitude 30,000 ft. (Epoxy Sealed Controlled Environment)

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

**Plotted and Other Data**

Notes:

**Typical Performance Data**



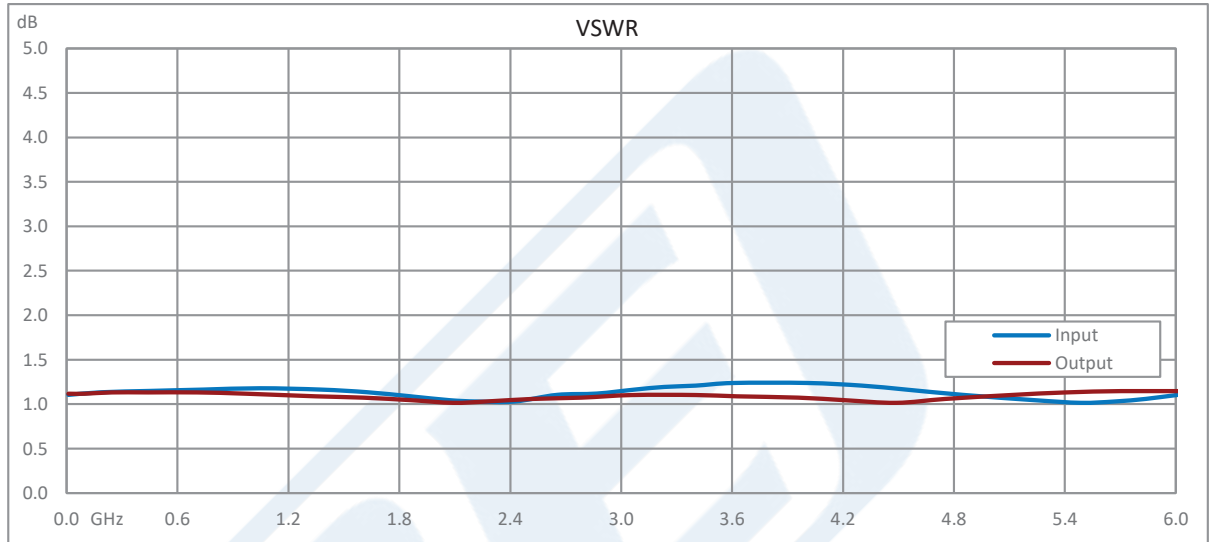
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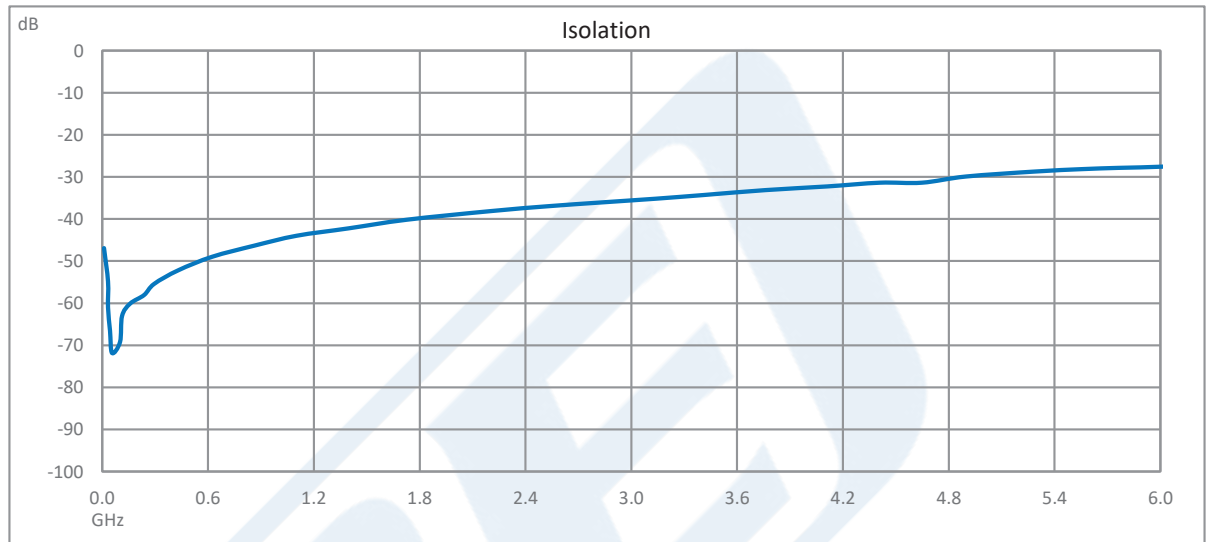
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Reflective SP4T GaN High Power PIN Diode Switch Operating from DC to 6 GHz Up to 40 Watts (+46 dBm), < 100ns and SMA from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

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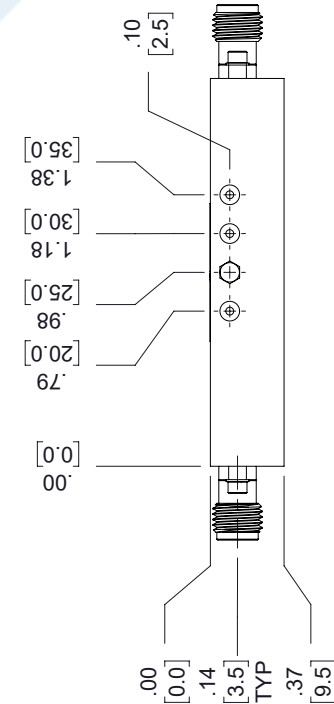
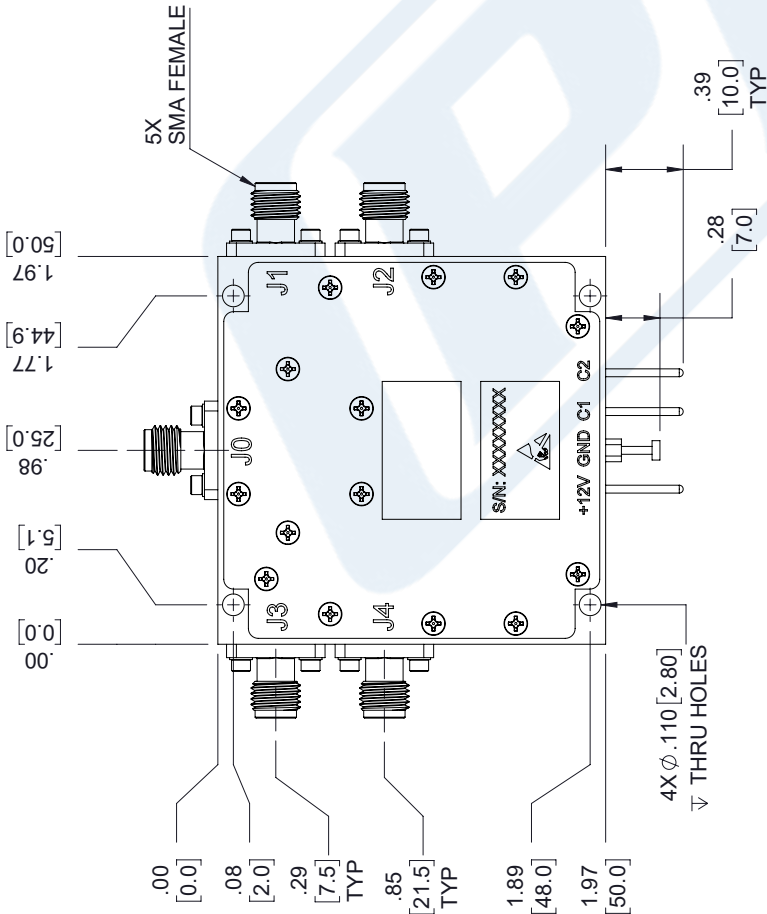
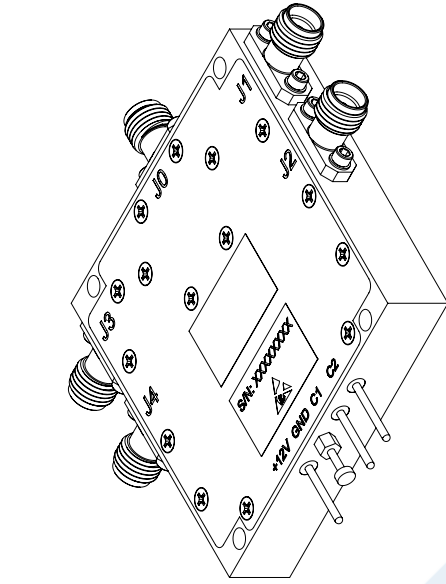
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# PE71S1104 CAD Drawing

Reflective SP4T GaN High Power PIN Diode Switch Operating from DC to 6 GHz Up to 40 Watts (+46 dBm), < 100ns and SMA

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	7/16/2020	T. GALLA



Control Input TTL		Signal Path State
C1	C2	
0	0	J0 - J1
0	1	J0 - J2
1	0	J0 - J3
1	1	J0 - J4

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

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

ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

**PE PASTERNAK**  
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Pasternack Enterprises, Inc.  
 P. O. Box 16759, Irvine, CA 92623.  
 Phone: 1.949.261.1920 | 1.866.727.8376  
 Fax: 1.949.261.7451  
 Website: www.pasternack.com  
 E-mail: sales@pasternack.com

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SHEET 1 OF 1  
 SCALE N/A

SIZE A CAGE CODE A 53919 DRAWN BY K.DANG ITEM NO. PE71S1104 REV A

LABEL

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