

Reflective SPDT Wideband PIN Diode Switch Operating from 52 GHz to 72 GHz Up to 20 dBm, 100 nsec max and 1.85mm



PIN Diode Switches Technical Data Sheet

PE71S1111

Features

- Wideband mm-Wave SPDT PIN Diode Switch
- 52 GHz to 72 GHz
- 50 Ohm Reflective Design
- Integrated TTL Driver
- Insertion Loss: 4.5 dB typ
- Isolation: 37 dB typ
- Switching Speed: < 100 nsec typ
- Maximum RF input Power: +20 dBm
- Dual Bias Voltage: +5Vdc / -5Vdc
- Field Replaceable 1.85mm Female RF Connectors
- Operational Temperature Range -40°C to +85°C
- Rugged and Compact Aluminum Gold Plated Package Design
- Guaranteed Environmental Test Conditions Altitude, Vibration, Humidity, Shock

Applications

- Test & Measurement
- 5G Communication
- Military Electronic Systems
- Wireless Infrastructure
- Fiber Optics
- Research & Development

Description

The PE71S1111 is a single pole double throw (SPDT) PIN diode switch that operates across a wide mm-Wave frequency band from 52 GHz to 72 GHz. The 50 ohm reflective design supports TTL compatible driver circuitry for accurate logic control. Impressive typical performance includes 4.5 dB insertion loss, 37 dB isolation, and < 100 nsec switching speed. The switch requires a dual bias voltage of +5Vdc / -5Vdc, and has maximum input power handling of up to +20 dBm. The rugged and compact package supports field replaceable 1.85mm female RF connectors and solder terminal pins for DC bias voltage and TTL control. The switch is designed for high reliability with a wide operational temperature range of -40°C to +85°C, and meets a series of environmental test conditions including Altitude, Vibration, Humidity, and Shock.

Electrical Specifications (@ +25°C)

TTL Control

Off/Isolation: 0 to 0.8 V

On/Low Loss: 2.8 to 5 V

| Description | Minimum | Typical | Maximum | Units |
|----------------------------|---------|---------|---------|---------|
| Frequency Range | 52 | | 72 | GHz |
| Impedance | | 50 | | Ohms |
| VSWR | | 2.2:1 | 3:1 | |
| Insertion Loss | | 4.5 | 6 | dB |
| IL Temperature Coefficient | | 0.003 | | dB/degC |
| Isolation | 30 | 37 | | dB |
| Switching Time | | | 100 | ns |
| 0.1dB Compression Point | | | +20 | dBm |
| Input IP3 | | 50 | | dBm |
| RF Input Power (CW) | | | 20 | dBm |
| DC Power Dissipation | | 0.3 | | Watt |
| Positive Operating Voltage | | 5 | | Vdc |
| Negative Operating Voltage | | -5 | | Vdc |

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Reflective SPDT Wideband PIN Diode Switch Operating from 52 GHz to 72 GHz Up to 20 dBm, 100 nsec max and 1.85mm PE71S1111](#)



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| | | | |
|-----------------------|-----|-----|-------|
| Current @ 5 Vdc | 50 | mA | |
| Current @ -5Vdc | 20 | mA | |
| Operating Temperature | -40 | +85 | deg C |

Electrical Specification Notes:

TTL pins cannot be connected to the negative voltage otherwise the internal driver will be damaged.

Absolute Maximum Ratings

| | |
|------------------|-------------------|
| Biassing Voltage | +5V±10% / -5V±10% |
|------------------|-------------------|

Mechanical Specifications

Size

Length

0.94 in [23.88 mm]

Width

0.47 in [11.94 mm]

Height

0.67 in [17.02 mm]

Weight

0.04 lbs [18.14 g]

Design

Reflective, SPDT

RF Input/Output Connector

Field Replaceable 1.85mm Female

Environmental Specifications

Temperature

Operating Range

-40 to +85 deg C

Storage Range

-50 to +105 deg C

Humidity

100% RH at 35°C, 95% RH at 40°C

Shock

20G for 11msec half sinewave, 3 axis both directions

Vibration

25g RMA (15 degrees 2KHz) endurance, 1 hour per axis

Altitude

30,000 ft

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

Plotted and Other Data

Notes:

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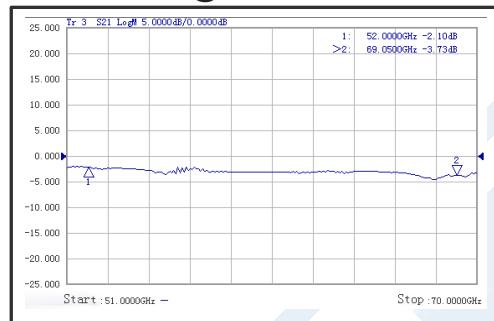


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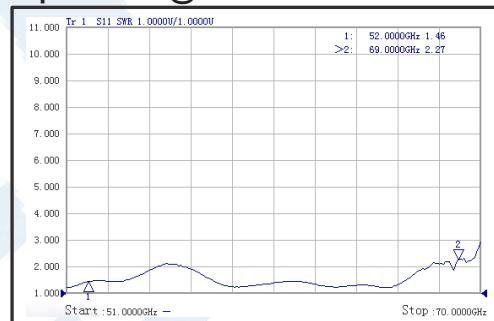
PE71S1111

Typical Performance Data

Insertion Loss@+25°C



Input VSWR@+25°C



Output VSWR@+25°C



Isolation@+25°C



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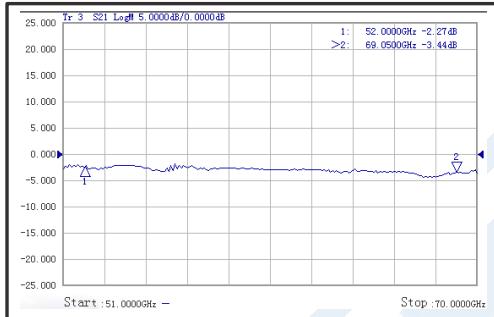
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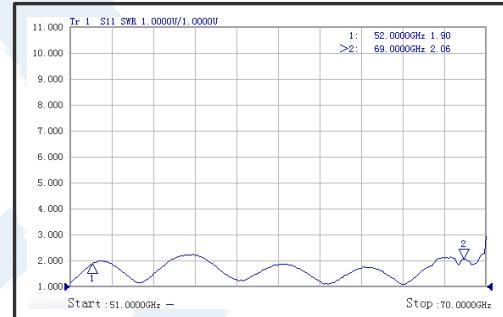
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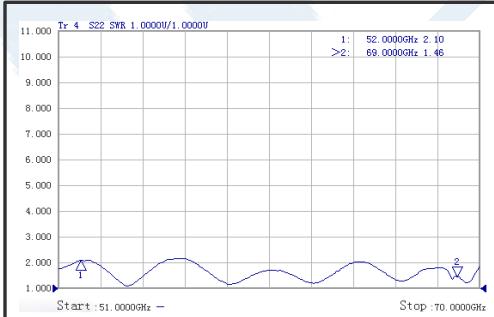
Insertion Loss@-40°C



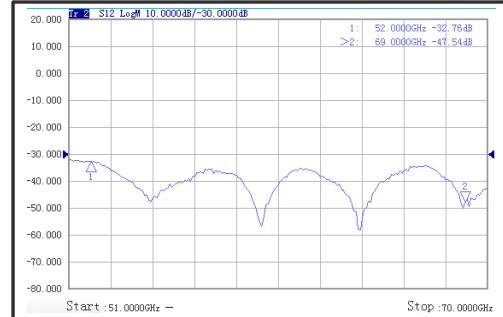
Input VSWR @-40°C



Output VSWR @-40°C



Isolation @-40°C



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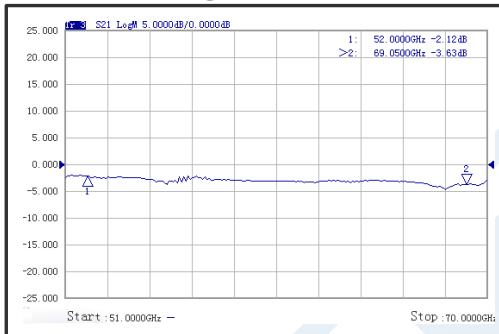
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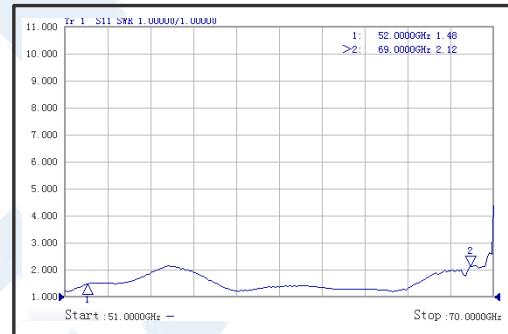
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Insertion Loss@+85°C



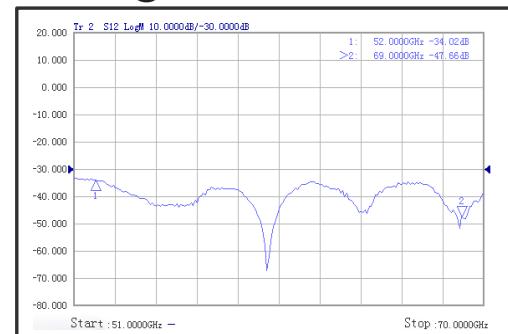
Input VSWR@+85°C



Output VSWR@+85°C



Isolation@+85°C



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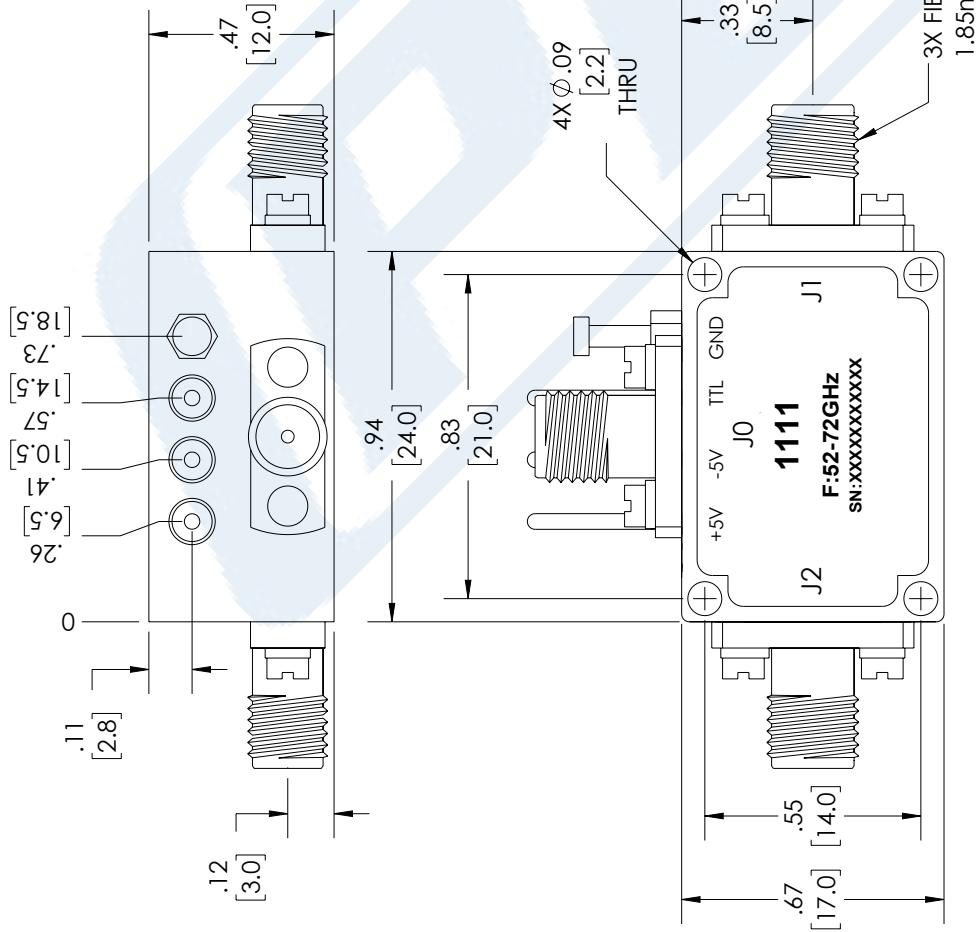
URL:

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PE71S1111 CAD Drawing

Reflective SPDT Wideband PIN Diode Switch Operating from 52 GHz to 72 GHz Up to 20 dBm, 100 nsec max and 1.85mm

| ZONE | REV. | DESCRIPTION | DATE | CHANGED BY | APPROVED BY |
|------|------|-----------------|------------|------------|-------------|
| | A | INITIAL RELEASE | 03/30/2023 | BPUCHASKI | TGALLA |



TRUTH TABLE

| | | |
|----------------------------------|---------------------------------|-------------------|
| TTL Control Voltage THRESHOLD | Low(0)=0~0.8V High(1)=2.8~5V | Signal Path State |
| Control Input TTL | 0 | J0~J1 |
| | 1 | J0~J2 |

3X FIELD REPLACEABLE
1.85mm CONNECTOR

| | |
|--|--|
| PASTERNACK an INFINITI® brand | |
|  | |
| UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES DIMENSIONS IN [] ARE MILLIMETERS | TOLERANCES: |
| $X = \pm .2$ [5] $XX = \pm .02$ [.5] $XXX = \pm .005$ [.13] | FRACTIONS $\pm 1/32$ ANGLES $\pm 1^\circ$ CABLE LENGTH TOLERANCES |
| INTERPRET ALL DIMENSIONS AND TOLERANCES PER ASME Y14.5 | |
| SCALE | SHEET |
| NONE | 1 OF 1 |

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