



## Reflective SPDT GaN High Power PIN Diode Switch Operating from DC to 18 GHz Up to 10 Watts (+40 dBm), 50ns and SMA

### PIN Diode Switches Technical Data Sheet

**PE71S1102**

#### Features

- Reflective SPDT High Power PIN Diode Switch
- GaN Semiconductor Technology
- Reflective Design
- Frequency Range: DC to 18 GHz
- Insertion Loss: 1.3 dB typ
- Isolation: 35 dB typ
- VSWR: 1.6:1 typ
- Maximum RF Input Power: +40 dBm
- Input IP3: 55 dBm typ
- Switching Speed: 50 nsec typ
- 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 PE71S1102 is a high power Reflective SPDT PIN Diode Switch that operates from DC to 18 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 +40 dBm, and incorporates TTL compatible driver circuitry for accurate logic control. Typical performance includes 1.3 dB insertion loss, 35 dB isolation, 1.6:1 VSWR, and 50 nsec switching speed. Operational temperature range is -45°C to +85°C and the bias voltage requirement is +5Vdc. 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 PE71S1107 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      |         | 18      | GHz     |
| Impedance                  |         | 50      |         | Ohms    |
| VSWR                       |         | 1.6:1   | 2:1     |         |
| Insertion Loss             |         | 1.3     | 2.3     | dB      |
| IL Temperature Coefficient |         | 0.003   |         | dB/degC |
| Isolation                  | 23      | 35      |         | dB      |
| Switching Time             |         | 50      | 100     | ns      |
| 0.1dB Compression Point    |         | +40     |         | dBm     |
| Input IP3                  |         | 55      |         | dBm     |
| RF Input Power (CW)*       |         |         | 10      | Watts   |
| DC Power Dissipation       |         | 0.5     |         | Watt    |

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Reflective SPDT GaN High Power PIN Diode Switch Operating from DC to 18 GHz Up to 10 Watts \(+40 dBm\), 50ns and SMA PE71S1102](#)



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|                            |     |           |
|----------------------------|-----|-----------|
| Positive Operating Voltage | 5   | Vdc       |
| Current @ 5 Vdc            | 100 | mA        |
| Operating Temperature      | -45 | +85 deg C |

#### Performance by Frequency

| Description         | F1      | F2      | F3       | F4 | F5 | Units |
|---------------------|---------|---------|----------|----|----|-------|
| Frequency Range     | DC to 6 | 6 to 12 | 12 to 18 |    |    | GHz   |
| VSWR, Max           | 1.3:1   | 1.8:1   | 2:1      |    |    |       |
| VSWR, Typ           | 1.15:1  | 1.6:1   | 1.6:1    |    |    |       |
| Insertion Loss, Max | 1.3     | 1.8     | 2.3      |    |    | dB    |
| Insertion Loss, Typ | 0.8     | 1.3     | 1.7      |    |    | dB    |
| Isolation, Min      | 40      | 30      | 23       |    |    | dB    |
| Isolation, Typ      | 45      | 35      | 25       |    |    | dB    |

#### Electrical Specification Notes:

Note that below 100 Mhz the power handling capability is reduced by 6 dB and the noise figure will increase above IL  
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            | +5V±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       | 1.57 in [39.88 mm] |
| Width        | 1.34 in [34.04 mm] |
| Height       | 0.37 in [9.4 mm]   |
| Weight       | 0.25 lbs [113.4 g] |
| Design       | Reflective, SPDT   |
| RF Connector | SMA Female         |

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### Environmental Specifications

#### Temperature

Operating Range  
Storage Range

-45 to +85 deg C  
-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

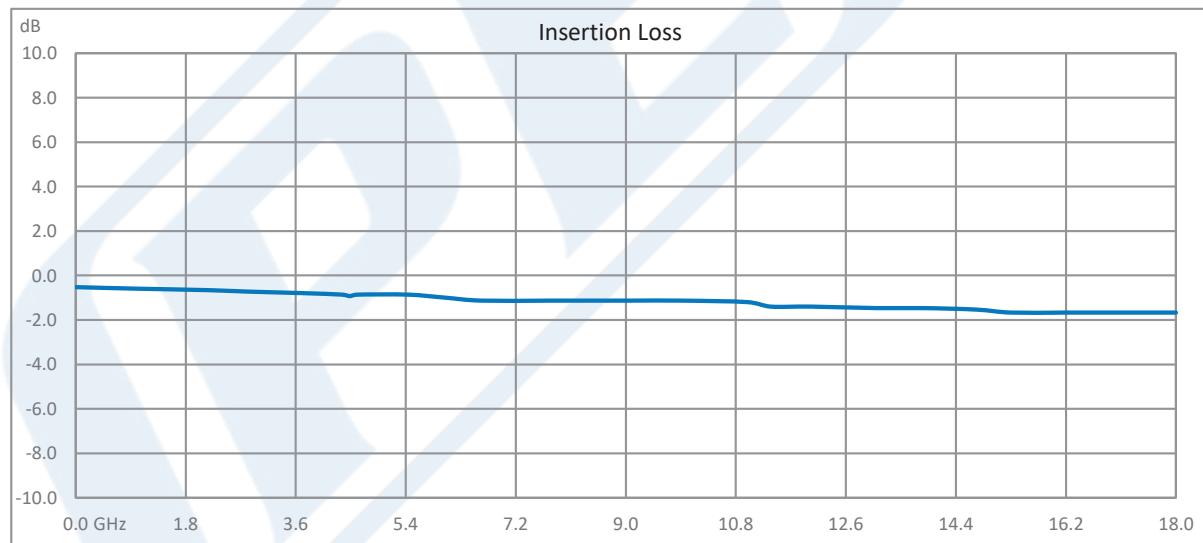
30,000 ft. (Epoxy Sealed Controlled Environment)

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

### Plotted and Other Data

Notes:

#### Typical Performance Data



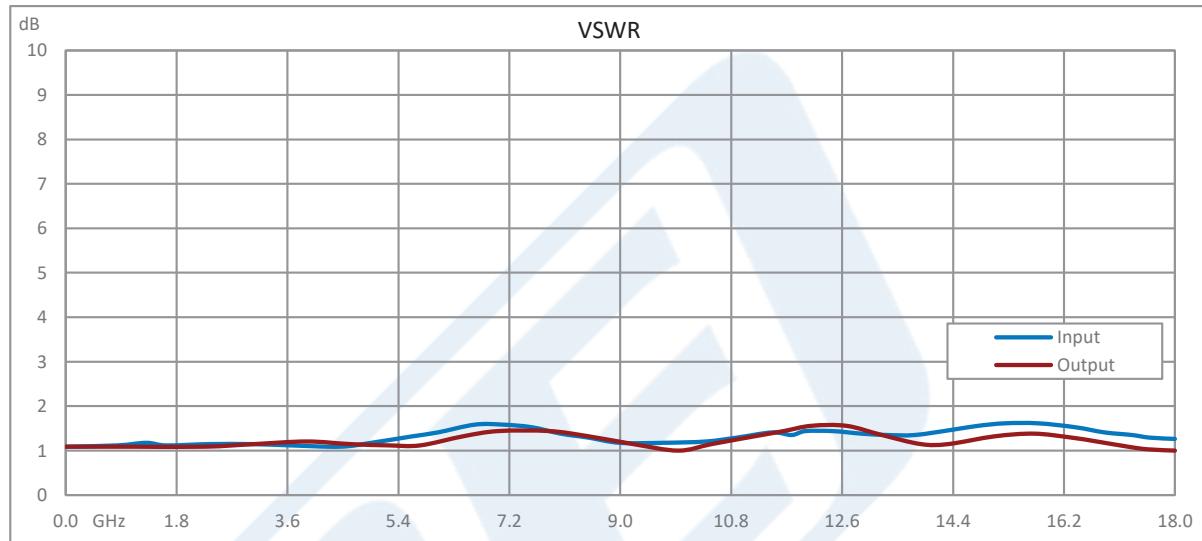
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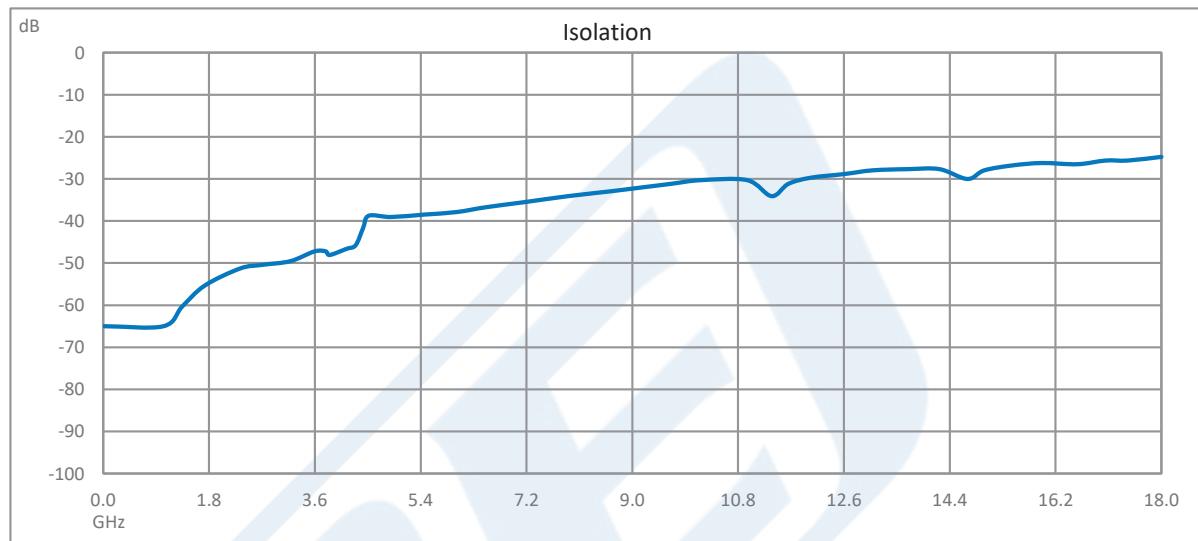
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URL: <https://www.pasternack.com/spdt-pin-diode-switch-18-ghz-10-watts-sma-pe71s1102-p.aspx>

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