



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
Biasing	+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

-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

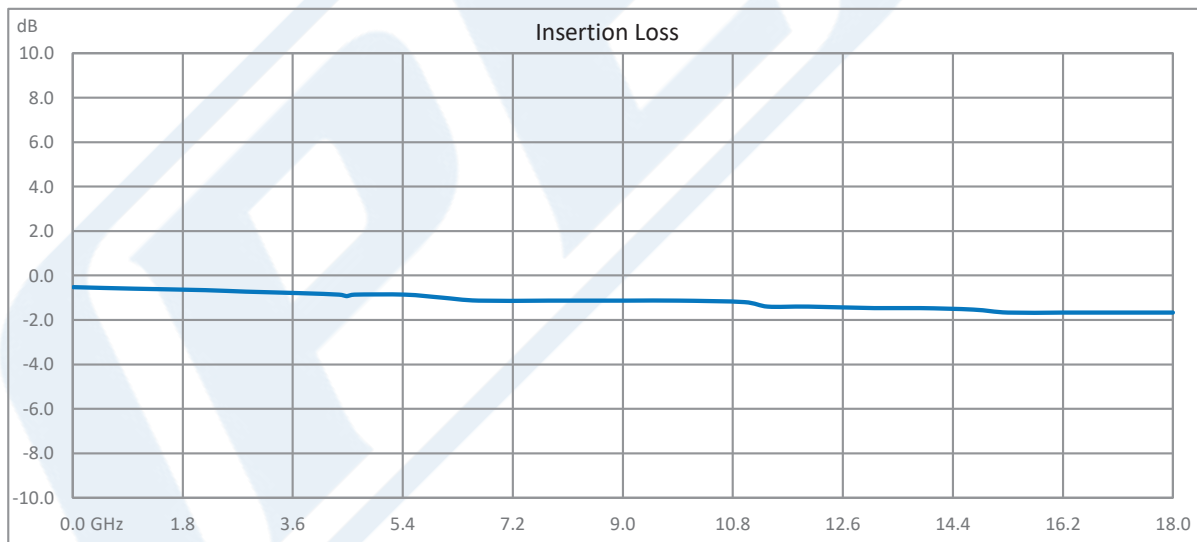
30,000 ft. (Epoxy Sealed Controlled Environment)

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

Plotted and Other Data

Notes:

Typical Performance Data



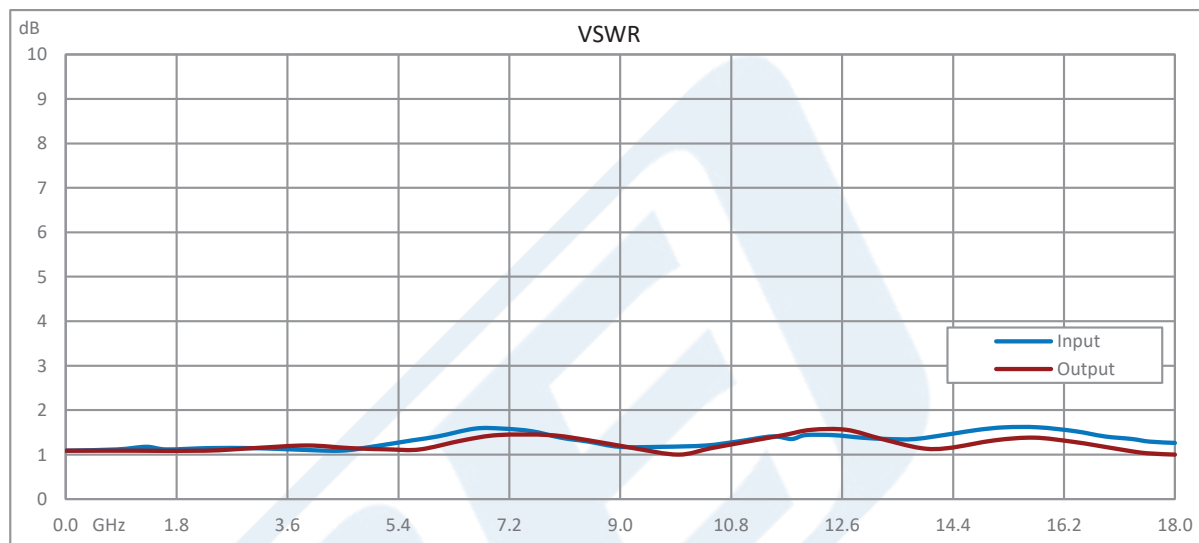
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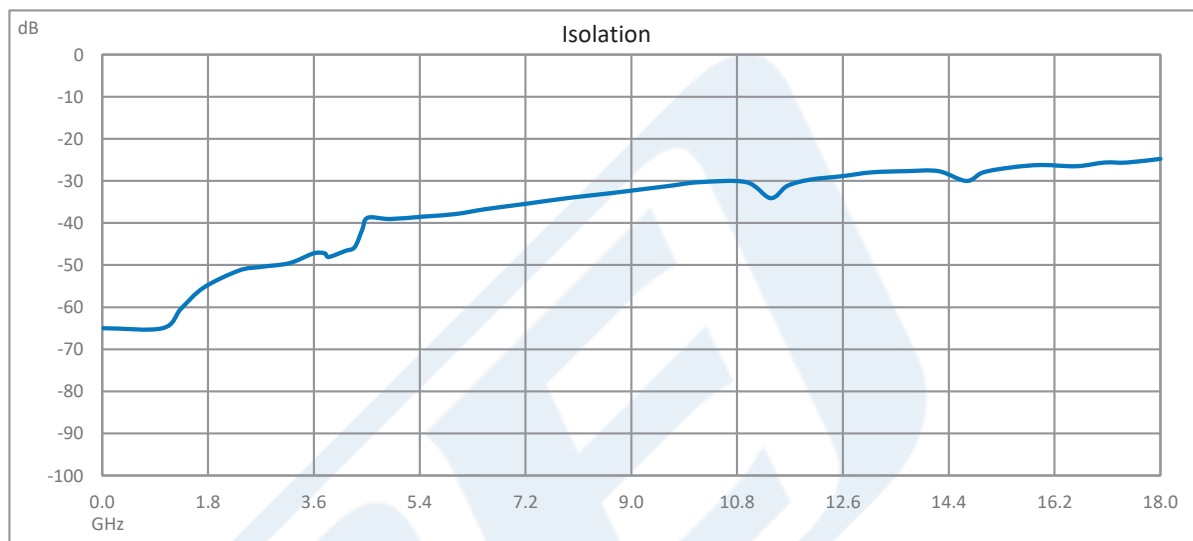
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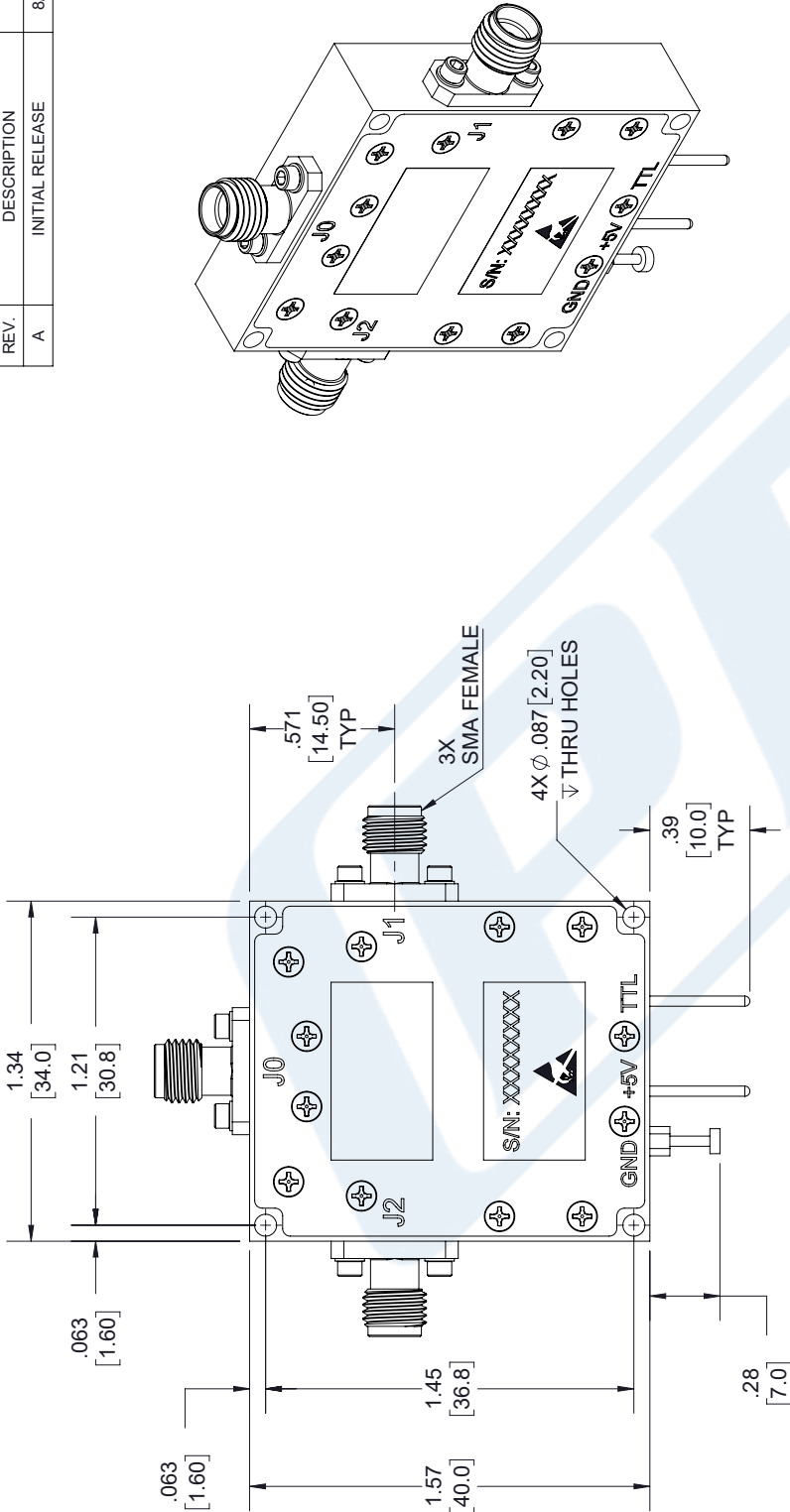
URL: <https://www.pasternack.com/spdt-pin-diode-switch-18-ghz-10-watts-sma-pe71s1102-p.aspx>

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PE71S1102 CAD Drawing

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	8/17/2020	T. GALLA



Truth Table	
Control Input TTL	Signal Path State
1	J0-J1
0	J0-J2

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

TOLERANCES:

.X = ± .2	[.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]	= +4 [51] / -0
60 [1524] < L ≤ 120 [3048]	= +6 [102] / -0
120 [3048] < L ≤ 300 [7620]	= +6 [152] / -0
300 [7620] < L	= +5% L / -0

ALL DIMENSIONS SHOWN
ARE FOR REFERENCE ONLY.

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