

Absorptive SP8T Broadband PIN Diode Switch Operating from 2 GHz to 18 GHz, Up to 30 dBm, 100 nsec max and SMA



PIN Diode Switches Technical Data Sheet

PE71S1118

Features

- Broadband SP8T PIN Diode Switch
- 2 GHz to 18 GHz
- 50 Ohm Absorptive Design
- Integrated TTL Driver
- Insertion Loss: 2.5 dB typ
- Isolation: 85 dB typ
- Switching Speed: < 100 nsec typ
- Maximum RF input Power: +30 dBm
- Dual Bias Voltage: +5Vdc / -5Vdc
- Field Replaceable SMA 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 PE71S1118 is a single pole eight throw (SP8T) PIN diode switch that operates across a broadband frequency from 2 GHz to 18 GHz. The 50 ohm absorptive design is terminated in 50 ohms when switched in the isolation (off) state, and supports TTL compatible driver circuitry for accurate logic control. Impressive typical performance includes 2.5 dB insertion loss, 85 dB isolation, and < 100 nsec switching speed. The switch requires a dual bias voltage of +5Vdc / -5 Vdc, and has maximum input power handling of up to +30 dBm. The rugged and compact package supports field replaceable SMA 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	2		18	GHz
Impedance		50		Ohms
VSWR		1.5:1	2:1	
Insertion Loss		2.5	4	dB
IL Temperature Coefficient		0.003		dB/degC
Isolation	60	85		dB
Switching Time			100	ns
0.1dB Compression Point		+30		dBm
Input IP3		40		dBm
RF Input Power (CW)			30	dBm
DC Power Dissipation		1.5		Watt
Positive 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: [Absorptive SP8T Broadband PIN Diode Switch Operating from 2 GHz to 18 GHz, Up to 30 dBm, 100 nsec max and SMA PE71S1118](#)

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Negative Operating Voltage	-5	Vdc
Current @ 5 Vdc	350	mA
Current @ -5Vdc	50	mA
Operating Temperature	+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

+5V±10%/-5V±10%

Mechanical Specifications

Size

Length

1.91 in [48.51 mm]

Width

0.37 in [9.4 mm]

Height

1.58 in [40.13 mm]

Weight

0.11 lbs [49.9 g]

Design

Absorptive, SP8T

RF Input/Output Connector

Field Replaceable SMA 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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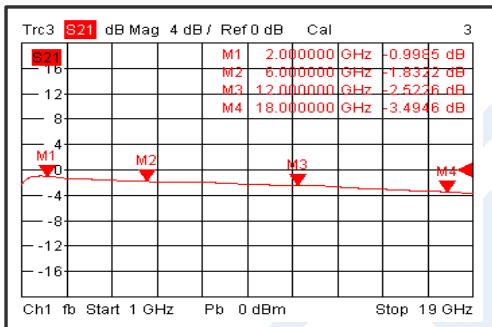


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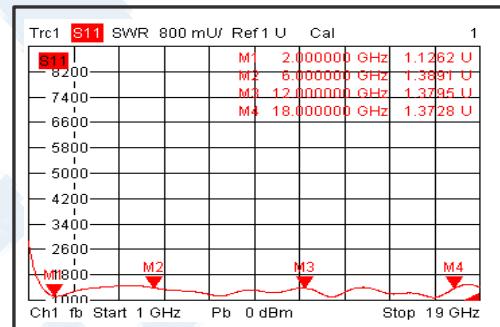
PE71S1118

Typical Performance Data

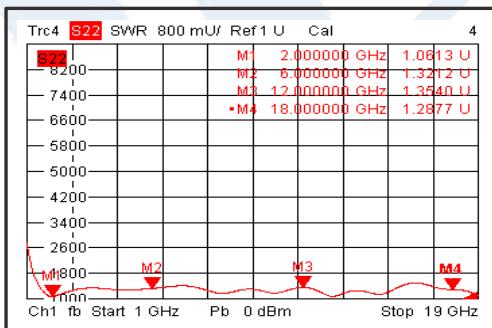
Insertion Loss @+25°C



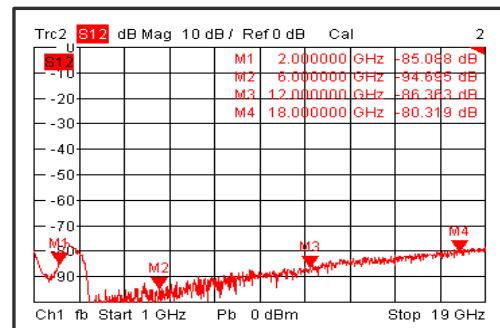
Input VSWR @+25°C



Output VSWR @+25°C



Isolation @+25°C



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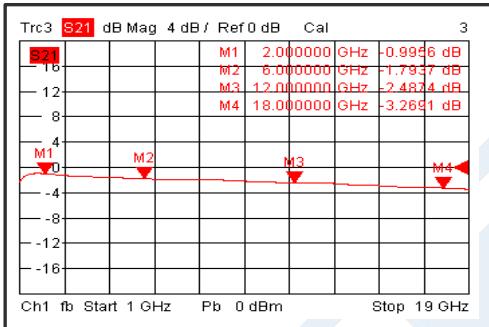
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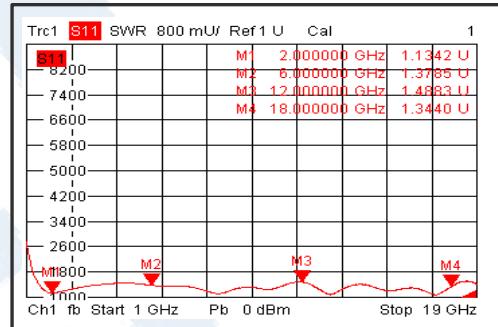
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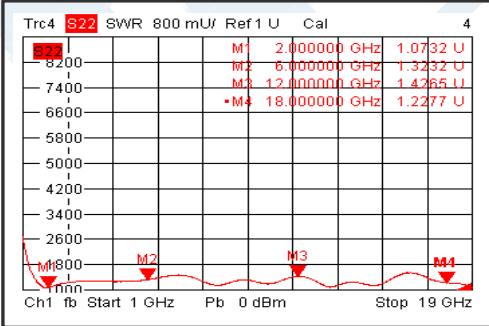
Insertion Loss @-40°C



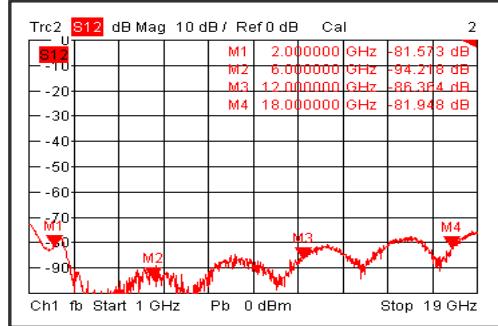
Input VSWR @-40°C



Output VSWR @-40°C



Isolation @-4°C



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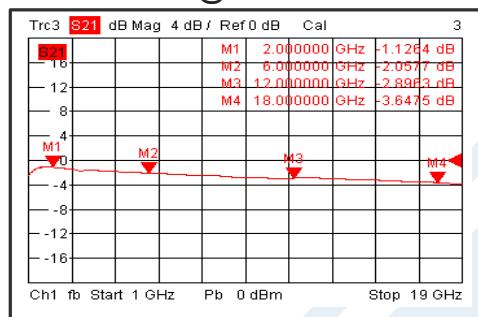
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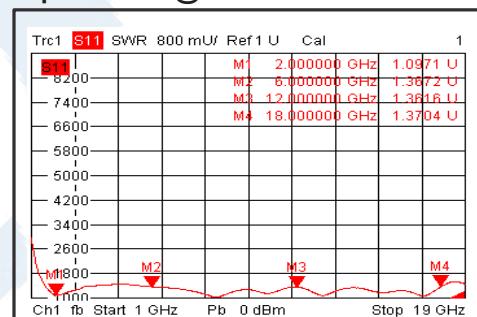
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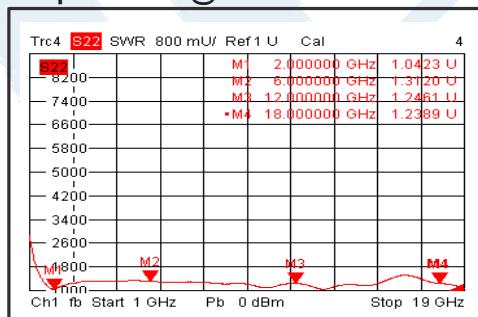
Insertion Loss @+85°C



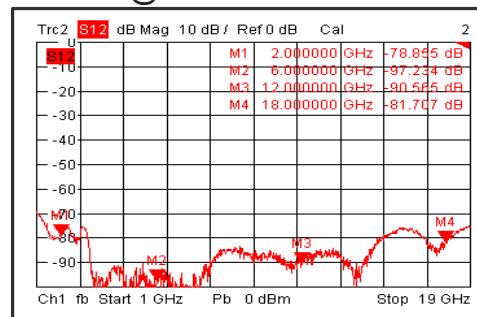
Input VSWR @+85°C



Output VSWR @+85°C



Isolation @+85°C



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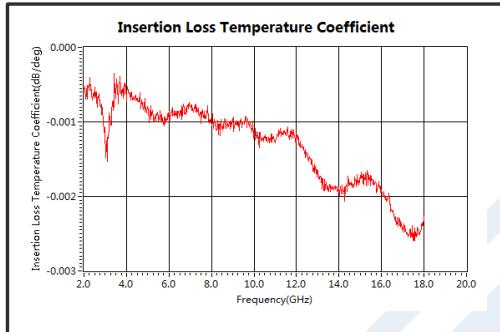
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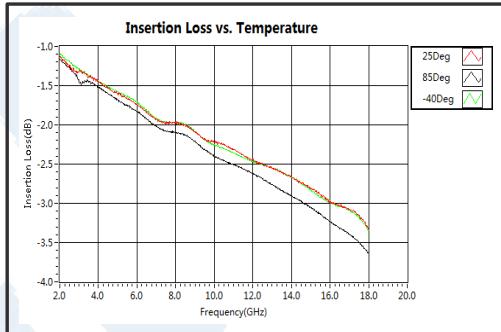
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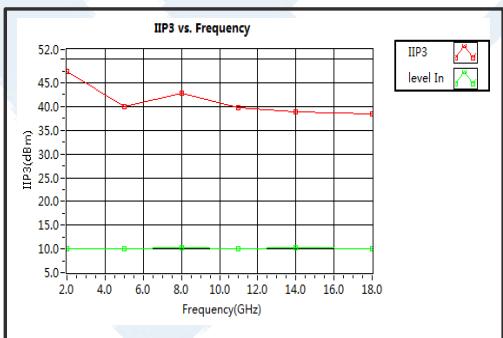
Insertion Loss Temperature Coefficient



Insertion Loss vs. Temperature



IIP3



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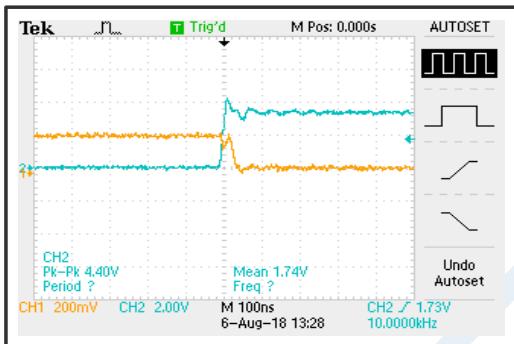
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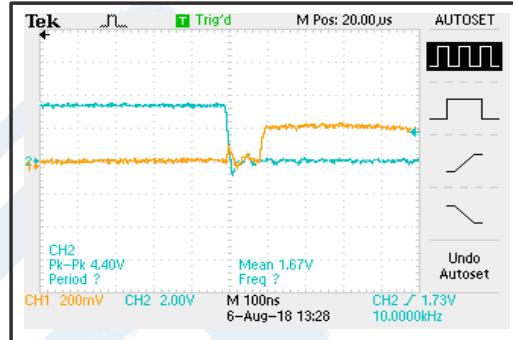
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Switching Speed



Switching Speed



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URL:

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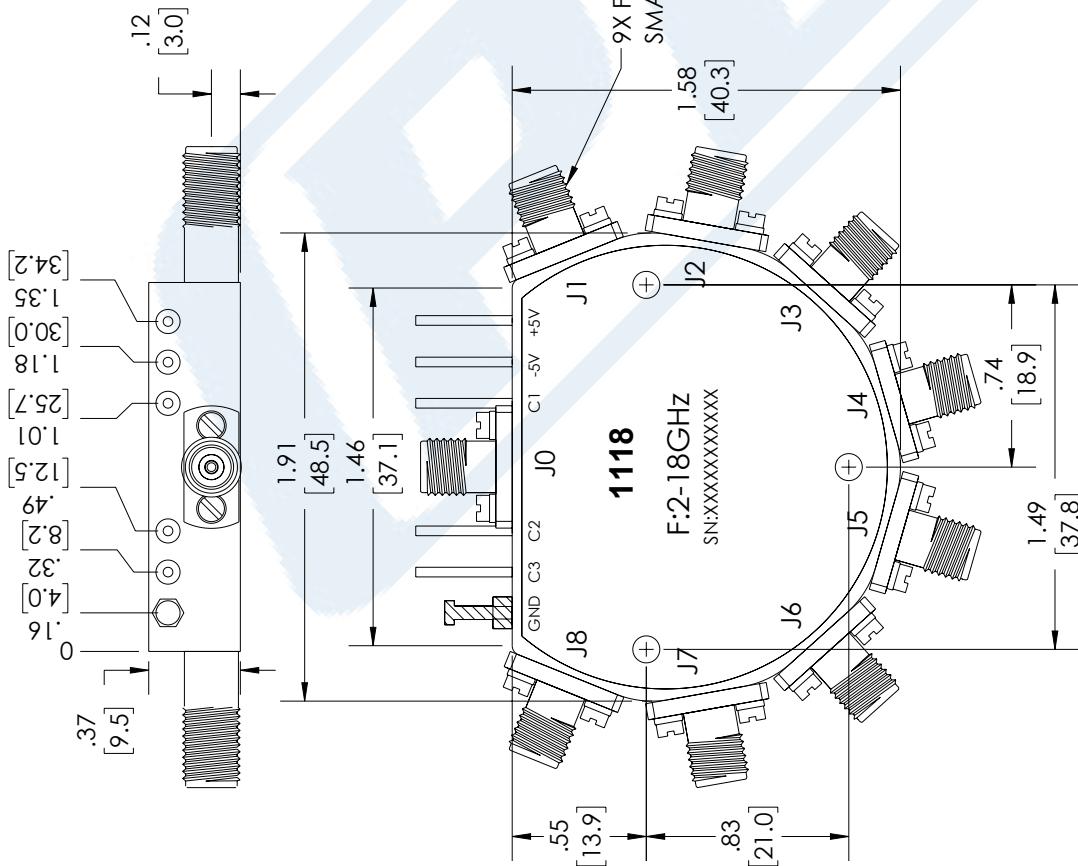
PE71S1118 CAD Drawing

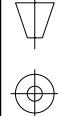
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ZONE	REV.	DESCRIPTION	DATE	CHANGED BY	APPROVED BY
	A	INITIAL RELEASE	03/30/2023	BPUCHASKI	TGALLA

TRUTH TABLE

TTL Control Voltage THRESHOLD	Low(0)=0~0.8V		
	High(1)=2.8~5V		
Control Input TTL	Signal Path State		
C3	C2	C1	
0	0	0	J0-J1
0	0	1	J0-J2
0	1	0	J0-J3
0	1	1	J0-J4
1	0	0	J0-J5
1	0	1	J0-J6
1	1	0	J0-J7
1	1	1	J0-J8



PASTERNACK an INFINITI® brand		
	INTERPRET ALL DIMENSIONS AND TOLERANCES PER ASME Y14.5 SHEET	SCALE
DESCRIPTION	None	1 OF 1

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

TOLERANCES:
 $X = \pm 2$ [5] FRACTIONS
 $.XX = \pm .02$ [5] $\pm 1/32$
 $XXX = \pm .005$ [1.3] ANGLES $\pm 1^\circ$
CABLE LENGTH TOLERANCES:
 $\pm 12.30(5) = \pm 125$ [-0
 >60 [1524] ≤ 60 [1524] = ± 2 [51] / -0
 >120 [3048] ≤ 120 [3048] = ± 4 [102] / -0
 >300 [7620] = ± 8 [152] / -0
 >300 [7620] = $\pm 3%$ / -0

ALL DIMENSIONS ARE FOR REFERENCE ONLY
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