



Absorptive SPDT Broadband PIN Diode Switch Operating 18 GHz to 40 GHz, Up to 23 dBm, 50 nsec max and 2.92mm

PIN Diode Switches Technical Data Sheet

PE71S1117

Features

- Broadband SPDT PIN Diode Switch
- 18 GHz to 40 GHz
- 50 Ohm Absorptive Design
- Integrated TTL Driver
- Insertion Loss: 3.5 dB typ
- Isolation: 60 dB typ
- Switching Speed: < 50 nsec typ
- Maximum RF input Power: +23 dBm
- Dual Bias Voltage: +5Vdc / -5Vdc
- Field Replaceable 2.92mm 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 PE71S1117 is a single pole double throw (SPDT) PIN diode switch that operates across a broadband frequency from 18 GHz to 40 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 3.5 dB insertion loss, 60 dB isolation, and < 50 nsec switching speed. The switch requires a dual bias voltage of +5Vdc / -5 Vdc, and has maximum input power handling of up to +23 dBm. The rugged and compact package supports field replaceable 2.92mm 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	18		40	GHz
Impedance		50		Ohms
VSWR		2.5:1	3:1	
Insertion Loss		3.5	4.5	dB
IL Temperature Coefficient		0.003		dB/degC
Isolation	45	60		dB
Switching Time			50	ns
0.1dB Compression Point		+23		dBm
Input IP3		40		dBm
RF Input Power (CW)			23	dBm
DC Power Dissipation		0.5		Watt
Positive Operating Voltage		5		Vdc

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Negative Operating Voltage	-5	Vdc
Current @ 5 Vdc	100	mA
Current @ -5Vdc	50	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

Biasing

+5V \pm 10%/-5V \pm 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	Absorptive, SPDT
RF Input/Output Connector	Field Replaceable 2.92mm 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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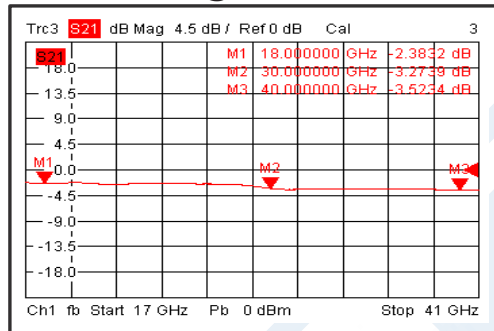
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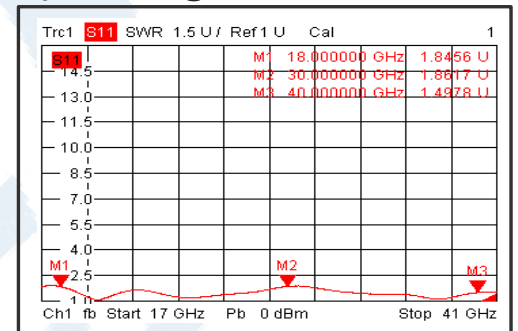
PE71S1117

Typical Performance Data

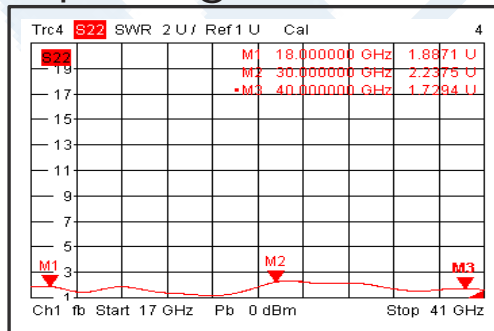
Insertion Loss @+25°C



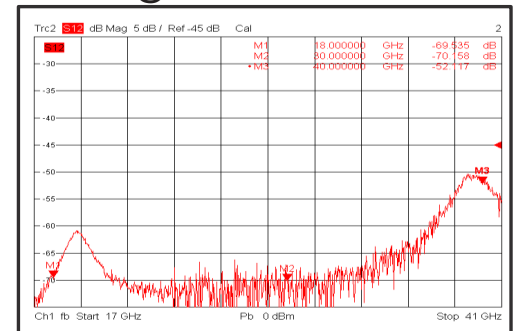
Input VSWR @+25°C



Output VSWR @+25°C



Isolation @+25°C



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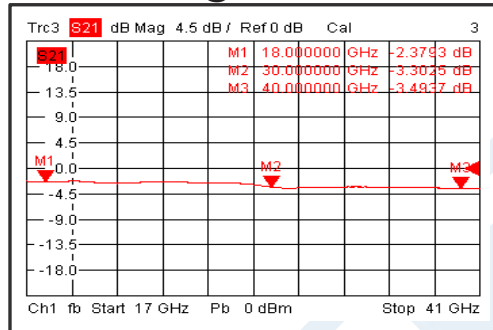
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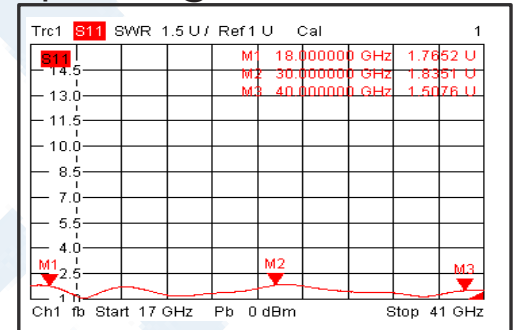
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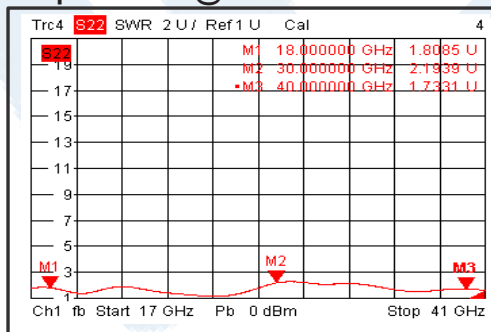
Insertion Loss @-40°C



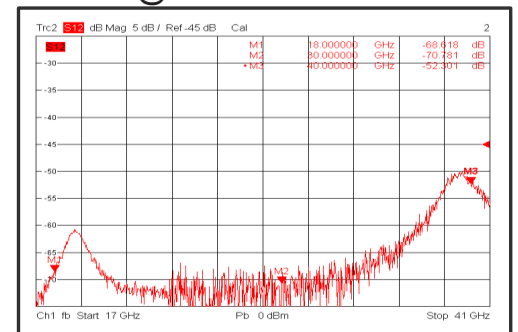
Input VSWR @-40°C



Output VSWR @-40°C



Isolation @-40°C



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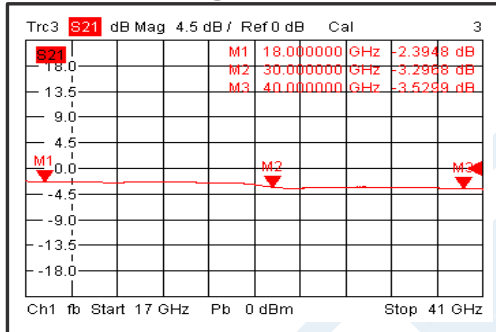
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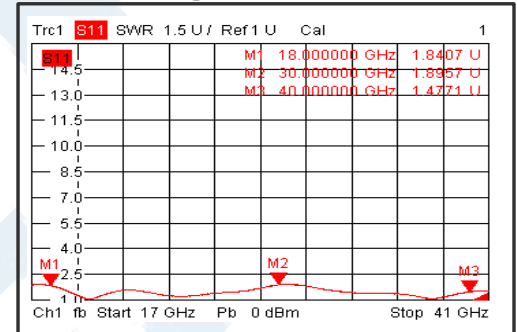
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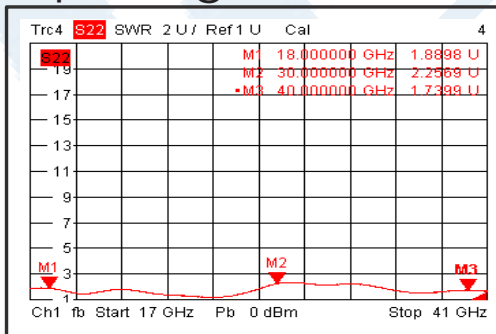
Insertion Loss @+85°C



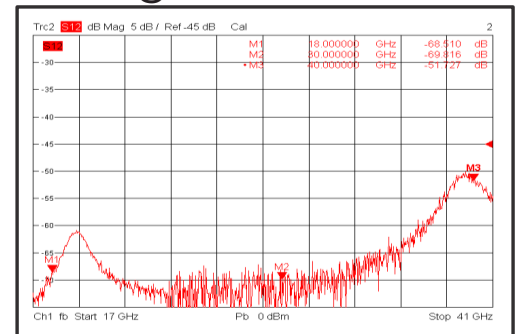
Input VSWR @+85°C



Output VSWR @+85°C



Isolation @+85°C



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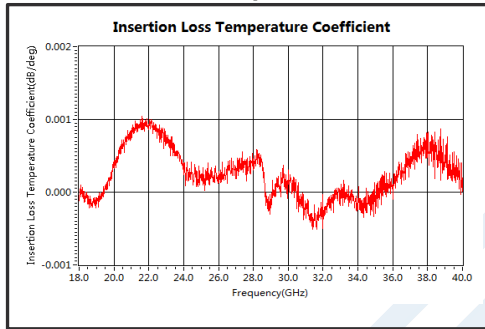


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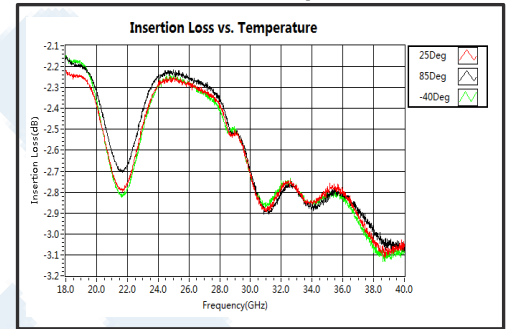
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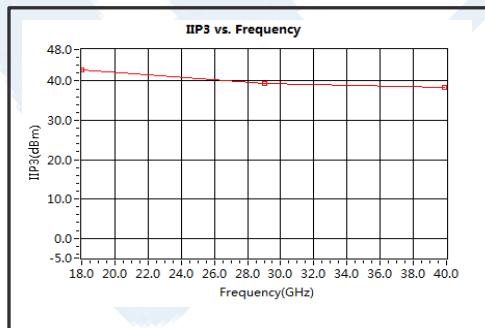
Insertion Loss Temperature Coefficient



Insertion Loss vs. Temperature



IIP3



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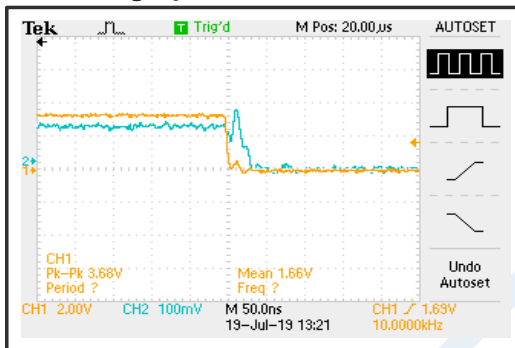


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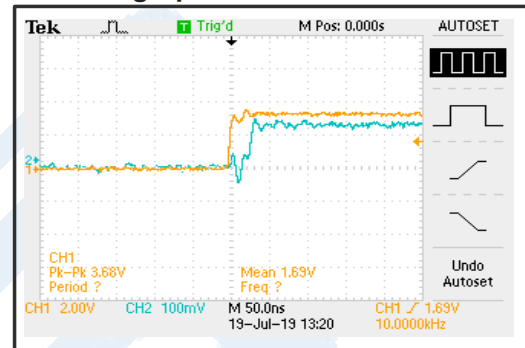
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Switching Speed



Switching Speed



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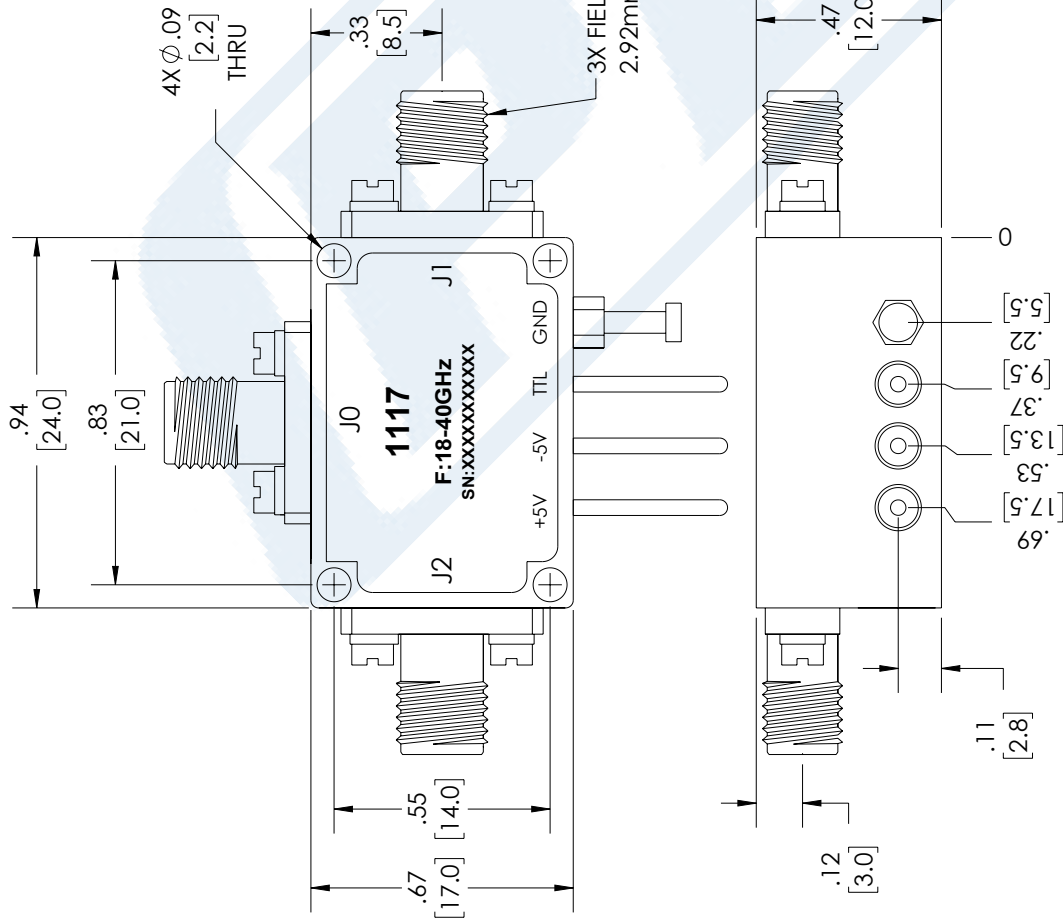
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URL:

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PE71S1117 CAD Drawing

Absorptive SPDT Broadband PIN Diode Switch Operating 18 GHz to 40 GHz, Up to 23 dBm, 50 nsec max and 2.92mm



TRUTH TABLE

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

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

TOLERANCES:

X = ±.2 [5] FRACTIONS
XX = ±.02 [.5] ± 1/32
XXX = ±.005 [.13] ANGLES ± 1°

CABLE LENGTH TOLERANCES:

≤12 [305] = ±1 [25] / -0
>12 [305] ≤ 60 [1524] = +2 [51] / -0
>60 [1524] ≤ 120 [3048] = +4 [102] / -0
>120 [3048] ≤ 300 [7620] = +6 [152] / -0
>300 [7620] = +5% / -0

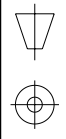
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DESCRIPTION
Absorptive SPDT Broadband PIN Diode Switch Operating 18 GHz to 40 GHz, Up to 23 dBm, 50 nsec max and 2.92mm

SIZE	CAGE CODE	DRAWN BY	ITEM NO.	REV
A	53919	BPUCHASKI	PE71S1117	A



INTERPRET ALL DIMENSIONS AND TOLERANCES PER ASME Y14.5
SCALE NONE
SHEET 1 OF 1