



Reflective SPDT Ultra-Wideband PIN Diode Switch Operating 1 MHz to 60 GHz, Up to 15 dBm, 400 nsec and 1.85mm

## PIN Diode Switches Technical Data Sheet

**PE71S1112**

### Features

- Ultra-Wideband SPDT PIN Diode Switch
- 1 MHz to 60 GHz
- 50 Ohm Reflective Design
- Integrated TTL Driver
- Insertion Loss: 4.8 dB typ
- Isolation: 35 dB typ
- Switching Speed: 400 nsec typ
- Maximum RF input Power: +15 dBm
- Single Bias Voltage: +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 PE71S1112 is a single pole double throw (SPDT) PIN diode switch that operates across an ultra-wideband frequency from 1 MHz to 60 GHz. The 50 ohm reflective design supports TTL compatible driver circuitry for accurate logic control. Impressive typical performance includes 4.8 dB insertion loss, 35 dB isolation, and 400 nsec switching speed. The switch requires a +5Vdc bias voltage, and has maximum input power handling of up to +15 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	0.001		60	GHz
Impedance		50		Ohms
VSWR		2:1	2.5:1	
Insertion Loss		4.8	6	dB
IL Temperature Coefficient		0.003		dB/degC
Isolation	26	35		dB
Switching Time		400	500	ns
0.1dB Compression Point		+15		dBm
Input IP3		45		dBm
RF Input Power (CW)			15	dBm
DC Power Dissipation		0.5		Watt
Positive Operating Voltage		5		Vdc
Current @ 5 Vdc			80	mA

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Reflective SPDT Ultra-Wideband PIN Diode Switch Operating 1 MHz to 60 GHz, Up to 15 dBm, 400 nsec and 1.85mm PE71S1112](#)



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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 ± 10%
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### Mechanical Specifications

#### Size

Length	1.09 in [27.69 mm]
Width	0.37 in [9.4 mm]
Height	1.77 in [44.96 mm]
Weight	0.09 lbs [40.82 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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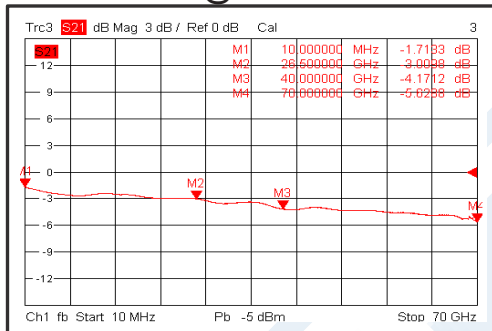
Reflective SPDT Ultra-Wideband PIN Diode Switch Operating 1 MHz to 60 GHz, Up to 15 dBm, 400 nsec and 1.85mm

**PIN Diode Switches Technical Data Sheet**

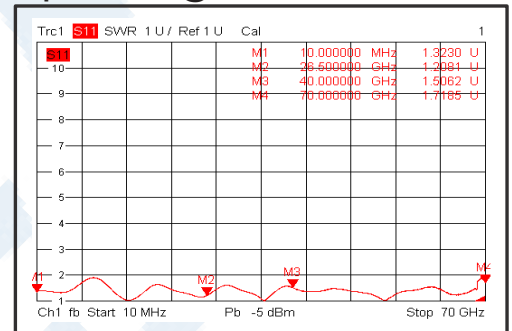
**PE71S1112**

**Typical Performance Data**

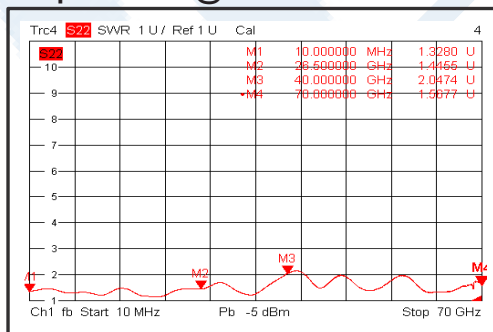
**Insertion Loss @+25°C**



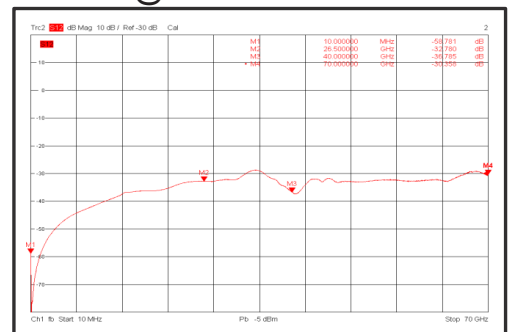
**Input VSWR @+25°C**



**Output VSWR @+25°C**



**Isolation @+25°C**



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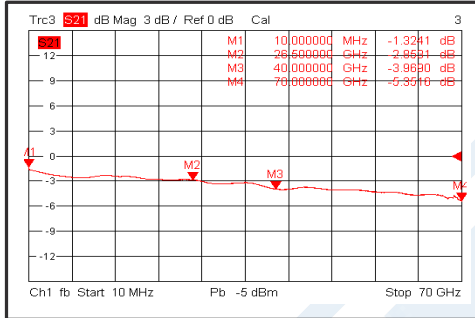


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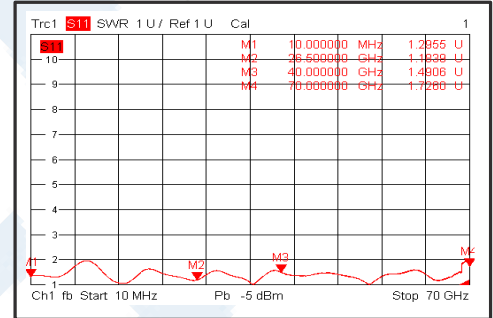
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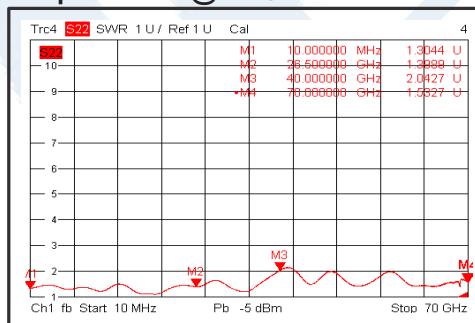
**Insertion Loss @-40°C**



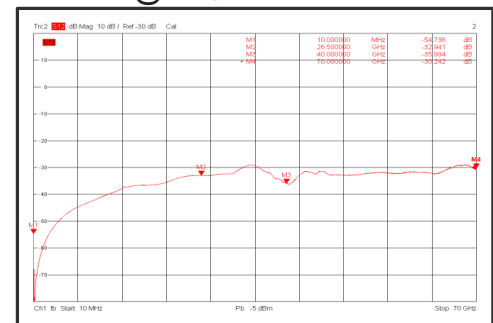
**Input VSWR @-40°C**



**Output VSWR @-40°C**



**Isolation @-40°C**



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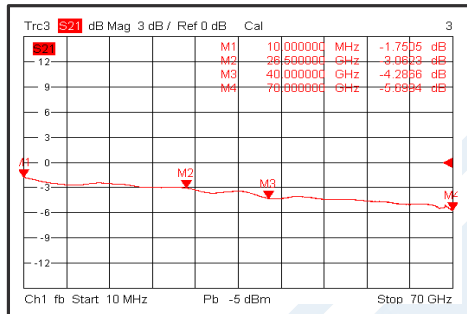


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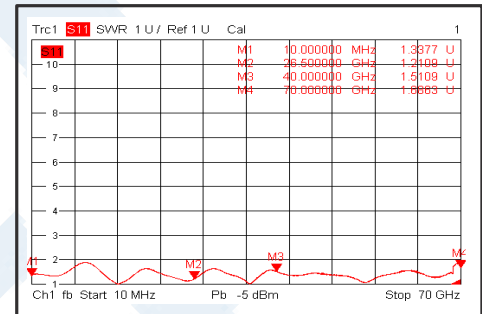
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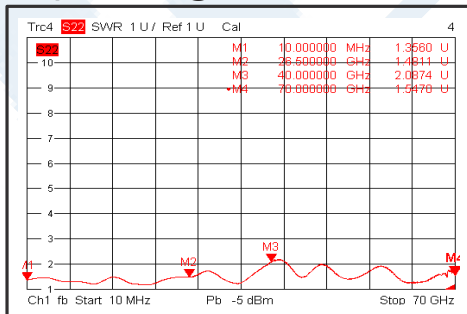
**Insertion Loss @+85°C**



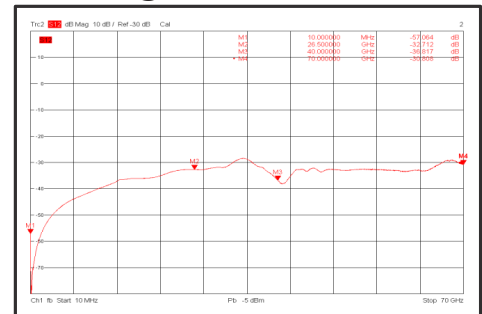
**Input VSWR @+85°C**



**Output VSWR @+85°C**



**Isolation @+85°C**



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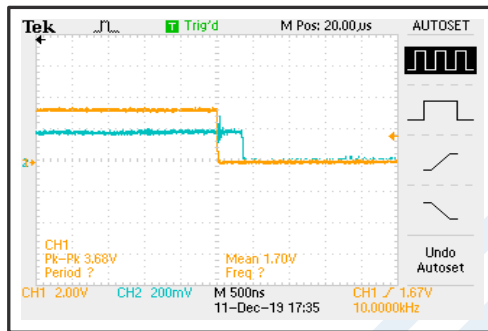


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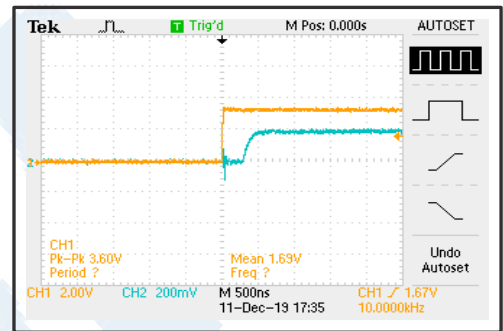
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Switching Speed



Switching Speed



Reflective SPDT Ultra-Wideband PIN Diode Switch Operating 1 MHz to 60 GHz, Up to 15 dBm, 400 nsec and 1.85mm from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

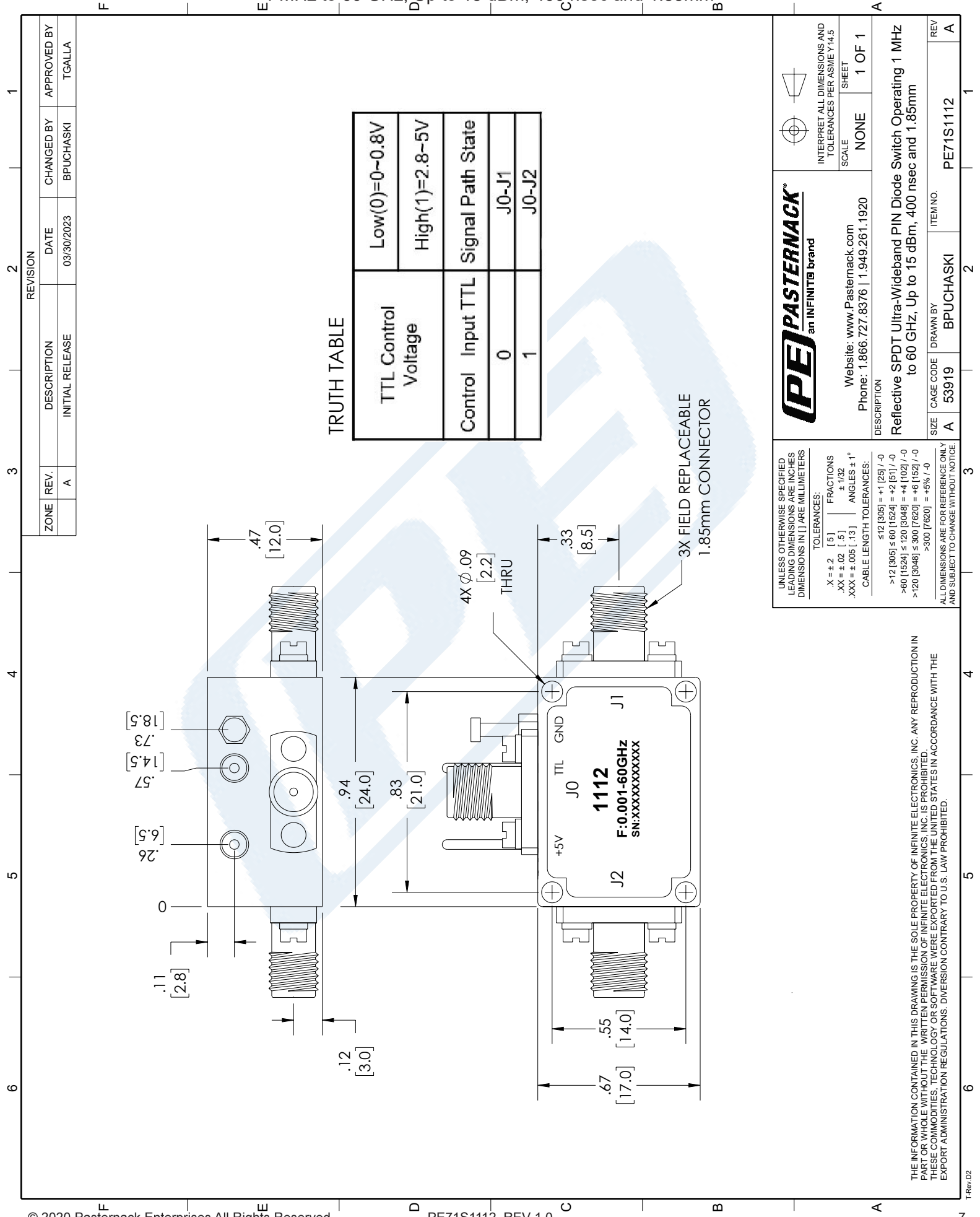
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URL:

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# PE71S1112 CAD Drawing

Reflective SPDT Ultra-Wideband PIN Diode Switch Operating  
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TRUTH TABLE

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

3X FIELD REPLACEABLE  
1.85mm CONNECTOR

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

REVISION

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

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

ALL DIMENSIONS ARE FOR REFERENCE ONLY  
AND SUBJECT TO CHANGE WITHOUT NOTICE



Website: [www.Pasternack.com](http://www.Pasternack.com)  
Phone: 1.866.727.8376 | 1.949.261.1920

DESCRIPTION  
Reflective SPDT Ultra-Wideband PIN Diode Switch Operating 1 MHz to 60 GHz, Up to 15 dBm, 400 nsec and 1.85mm

SCALE	NONE	SHEET	1 OF 1
INTERPRET ALL DIMENSIONS AND TOLERANCES PER ASME Y14.5			
SIZE	A	CAGE CODE	53919
DRAWN BY	BPUCHASKI	ITEM NO.	PE71S1112
REV	A		

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