

## CSX SERIES

### CELLULAR/PAGER MICRO FILTER PROTECTION



PolyPhaser's revolutionary CSX unit offers the ultimate in lightning protection. The patented design was given the highest rating in RF and surge performance characteristics during recent comprehensive testing. The CSX is dc blocked and is available in various connector configurations.

Featuring an ultra compact design, the small footprint incorporates a fully integrated connector housing that is completely weatherized. The CSX is recommended for single or multi-channel transmitters as well as receivers in the Cellular/Pager Bands. It is maintenance-free.

**PolyPhaser®**  
CORPORATION

## CSX SERIES

### Features

- Industry's Best RF Performance
- Compact, Integrated Connector Housing
- Fully Weatherized
- Bellcore TA-NWT-000487  
120 mph wind driven rain
- dc Blocked
- Industry's Lowest Throughput Energy
- Maintenance Free
- Multi-Strike Capability

### Technical Specifications

(per Qualification Testing)

Surge: 20kA IEC 1000-4-5 8/20μs Waveform

VSWR:  $\leq 1.1$  to 1

Insertion Loss:  $\leq 0.1$  dB

Frequency Range: 800MHz to 1.0GHz

Power: 500W continuous

Operational Temperature Range: -40°C to +85°C

Vibration: 1G @ 5Hz to 100Hz

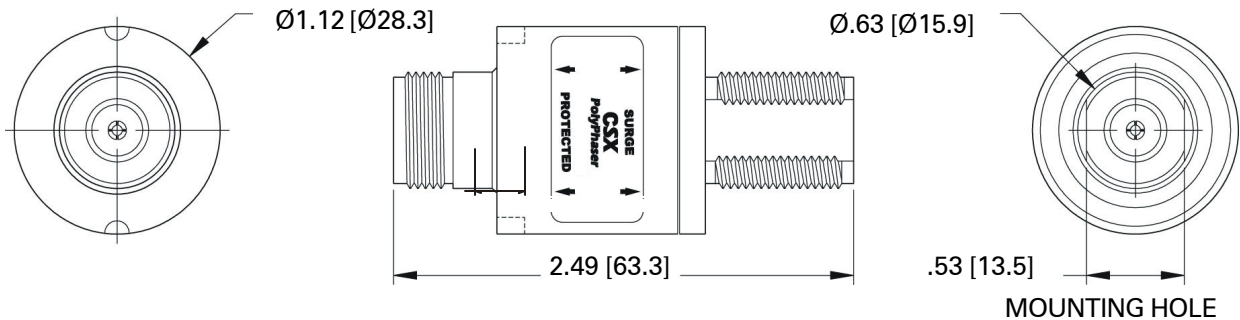
#### Throughput Energy:

$\leq 0.5 \mu\text{J}$  for 3kA @8/20μs Waveform

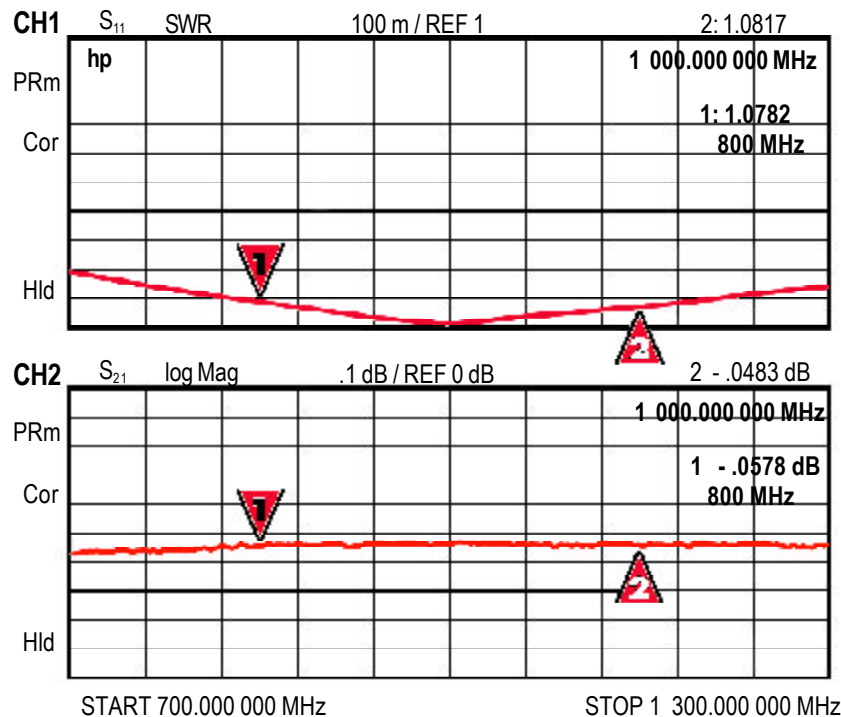
#### Let-Through Voltage:

$\leq \pm 3$  volts for 3kA @8/20μs Waveform

### Dimensional Drawing



### VSWR & Insertion Loss



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CSX-D

**CELLULAR/PAGER MICRO FILTER PROTECTION**



PolyPhaser once again leads the way in lightning protection with the revolutionary and compact CSX-D. It is a maintenance-free protector that incorporates a fully-integrated connector housing that is weatherized and is dc blocked. The patented design is available in a DIN/DIN-type connector configuration.

In recent comprehensive testing, the SX series achieved the industry's best RF and surge performance ratings. The CSX-D provides the ultimate in lightning protection for Cellular/Pager Communications, and is recommended for single or multi-channel transmitters as well as receivers.

**PolyPhaser®**  
CORPORATION

# CSX-D

## Features

- Industry's Best RF Performance
- Compact, Integrated Connector Housing
- Fully Weatherized
- Bellcore TA-NWT-000487  
120 mph wind driven rain
- dc Blocked
- Industry's Lowest Throughput Energy
- Maintenance Free
- Multi-Strike Capability

## Technical Specifications

(per Qualification Testing)

Surge: 30kA IEC 1000-4-5 8/20 $\mu$ s Waveform

VSWR:  $\leq 1.1$  to 1 Typical

Insertion Loss:  $\leq 0.1$ dB

Frequency Range: 550MHz to 1.2GHz

Power: 750W continuous (1kW @  $\leq 20^{\circ}\text{C}$ )

Operational Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$

Vibration: 1G @ 5Hz to 100Hz

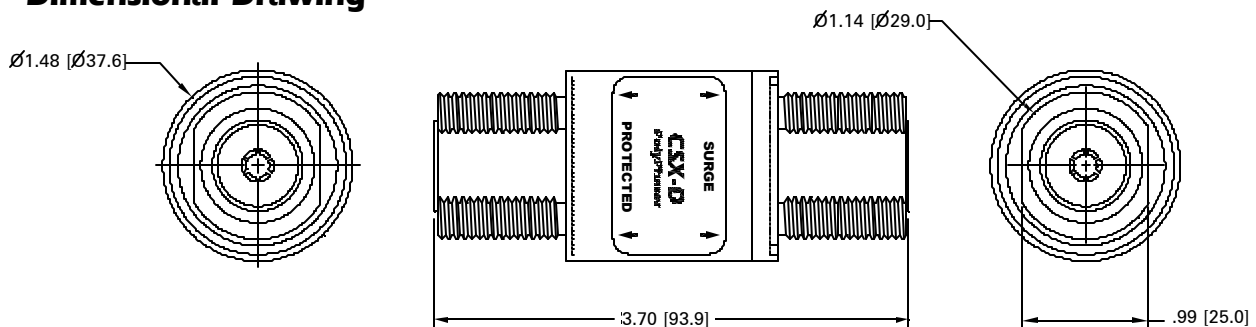
### Throughput Energy:

$\leq 0.5\mu\text{J}$  for 3kA @8/20 $\mu$ s Waveform

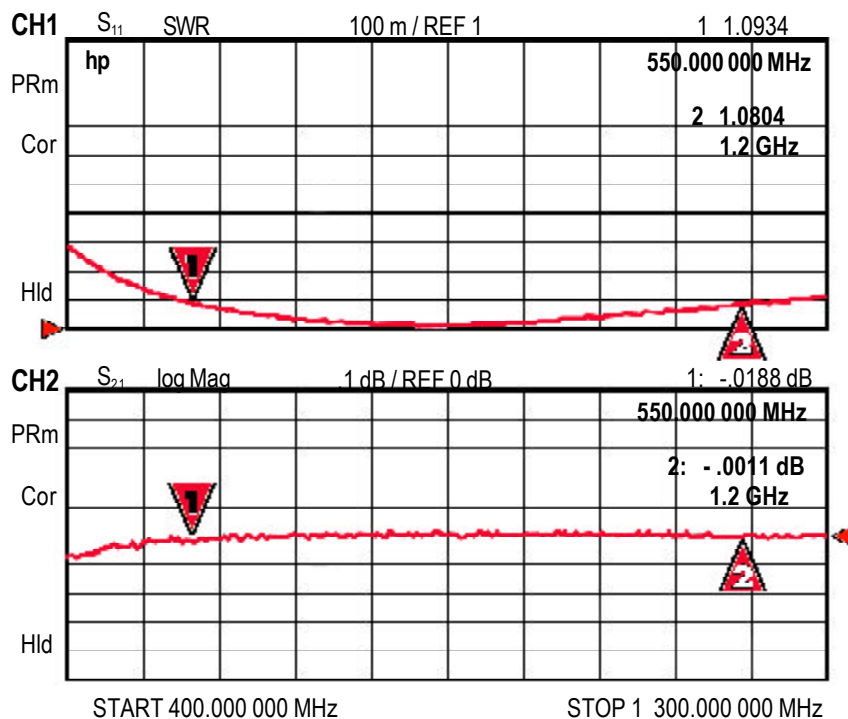
### Let-Through Voltage:

$\leq \pm 3$  volts for 3kA @8/20 $\mu$ s Waveform

## Dimensional Drawing



## VSWR & Insertion Loss



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C S X - D N

## CELLULAR/PAGER MICRO FILTER PROTECTION



PolyPhaser once again leads the way in lightning protection with the revolutionary and compact CSX-DN. It is a maintenance-free protector that incorporates a fully-integrated connector housing that is weatherized and is dc blocked. The patented design is available in a DIN/N type connector configuration.

In recent comprehensive testing, the SX series achieved the industry's best RF and surge performance ratings. The CSX-DN provides the ultimate in lightning protection for Cellular/Pager Communications, and is recommended for single or multi-channel transmitters as well as receivers.

**PolyPhaser®**  
CORPORATION

## Features

- Industry's Best RF Performance
- Compact, Integrated Connector Housing
- Fully Weatherized
- Bellcore TA-NWT-000487  
120 mph wind driven rain
- dc Blocked
- Industry's Lowest Throughput Energy
- Maintenance Free
- Multi-Strike Capability

## Technical Specifications

(per Qualification Testing)

Surge: 30kA IEC 1000-4-5 8/20 $\mu$ s Waveform

VSWR:  $\leq 1.1$  to 1 Typical

Insertion Loss:  $\leq 0.1$  dB

Frequency Range: 550MHz to 1.2GHz

Power: 500W continuous

Operational Temperature Range: -40°C to +85°C

Vibration: 1G @ 5Hz to 100Hz

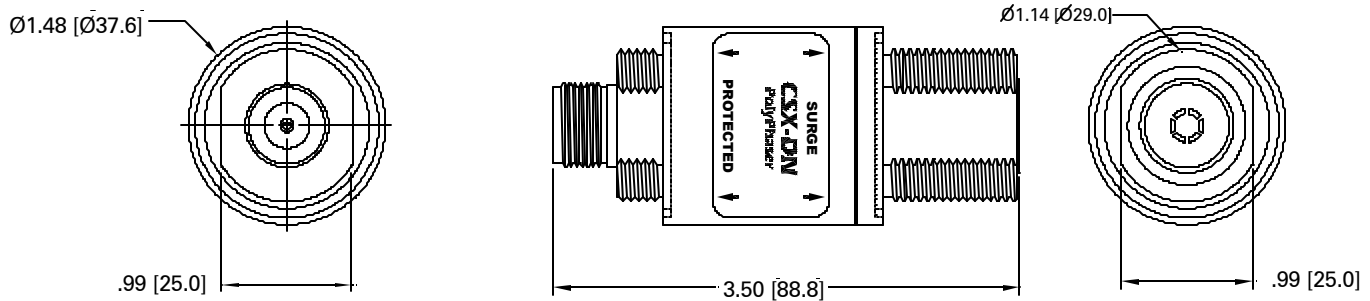
### Throughput Energy:

$\leq 0.5 \mu$ J for 3kA @ 8/20 $\mu$ s Waveform

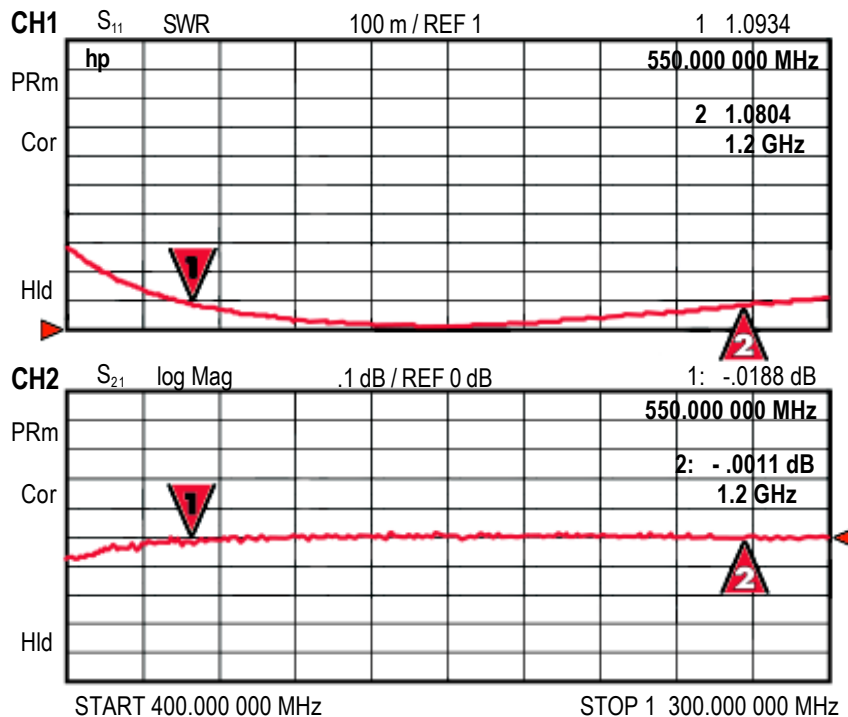
### Let-Through Voltage:

$\leq \pm 3$  volts for 3kA @ 8/20 $\mu$ s Waveform

## Dimensional Drawing



## VSWR & Insertion Loss



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## DSX SERIES

### DUAL BAND MICRO FILTER PROTECTION



PolyPhaser's newest lightning protector, the Micro DSX is dc blocked for the ultimate in equipment protection. Comprehensive testing proved the industry's finest RF and surge performance characteristics with this unique patented design. The ultra compact footprint incorporates a fully integrated connector housing that is completely weatherized and is available in various connector configurations. The DSX Series for Broadband applications is maintenance free and recommended for transmitters as well as receivers.

**PolyPhaser<sup>®</sup>**  
CORPORATION

## DSX SERIES

### Features

- Industry's Best RF Performance
- Compact, Integrated Connector Housing
- Fully Weatherized
- Bellcore TA-NWT-000487  
120 mph wind driven rain
- dc Blocked
- Industry's Lowest Throughput Energy
- Maintenance Free
- Multi-Strike Capability

### Technical Specifications

(per Qualification Testing)

**Surge:** 20kA IEC 1000-4-5 8/20μs Waveform

**VSWR:** ≤1.1:1 Typical

**Insertion Loss:** ≤0.1dB

**Frequency Range:** 700MHz to 2.7GHz @ 1.2:1 VSWR

**Power:** 300W continuous

**Operational Temperature Range:** -40°C to +85°C

**Vibration:** 1G @ 5Hz to 100Hz

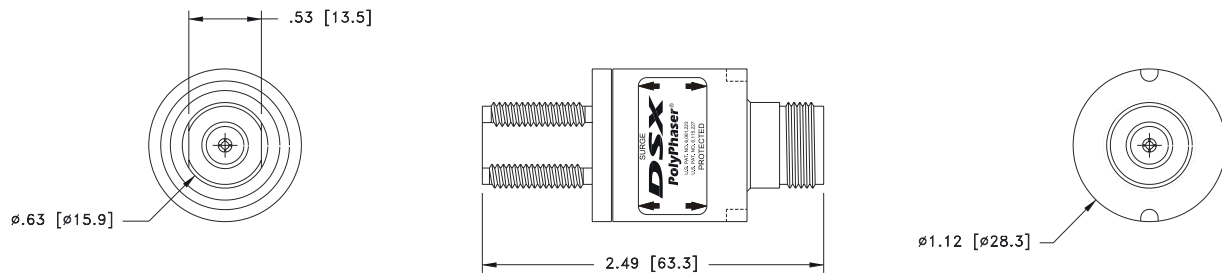
**Throughput Energy:**

≤0.5μJ for 3kA @8/20μs Waveform

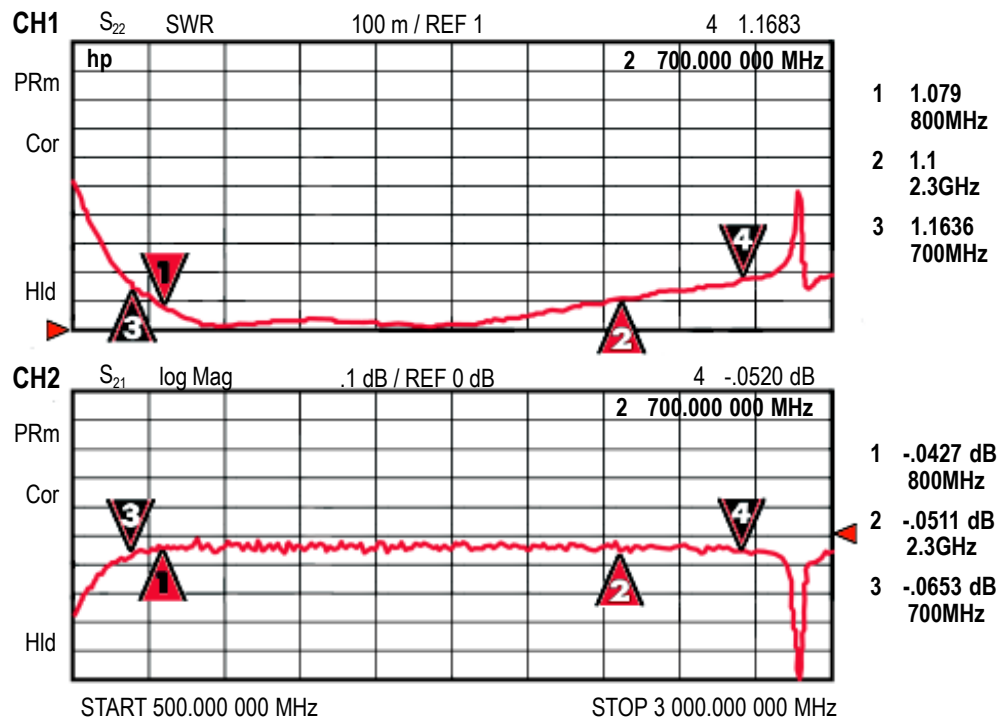
**Let-Through Voltage:**

≤ ±3 volts for 3kA @8/20μs Waveform

### Dimensional Drawing



### VSWR & Insertion Loss



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DSX-D

## DUAL BAND MICRO FILTER PROTECTION



**Cellular & PCS on ONE coaxial cable! Maintenance-free wide band protection, and the lowest let-through energy for ANY broadband protector.**

PolyPhaser once again leads the way with innovative engineering and products for the telecommunications industry. The DSX-D coaxial lightning protector is a weatherized passive filter design with dc blocking from surge side center pin to equipment side center pin. The DSX-D can directly replace any Cellular or PCS protector in an application that does not require dc on the center conductor. Additional dual band coaxial designs that isolate, protect, and re-inject dc for tower-mounted components are available.

**PolyPhaser®**  
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# DSX-D

## Features

- Industry's Best RF Performance
- Compact, Integrated Connector Housing
- Fully Weatherized
- Bellcore TA-NWT-000487  
120 mph wind driven rain
- dc Blocked
- Industry's Lowest Throughput Energy
- Maintenance Free
- Multi-Strike Capability

## Technical Specifications

(per Qualification Testing)

**Surge:** 30kA IEC 1000-4-5 8/20μs Waveform

**VSWR:** ≤1.1 to 1 Typical

**Insertion Loss:** ≤0.1dB

**Frequency Range:** 800MHz to 2.0GHz

**Power:** 750W continuous (1kW @ ≤20°C)

**Operational Temperature Range:** -40°C to +85°C

**Vibration:** 1G @ 5Hz to 100Hz

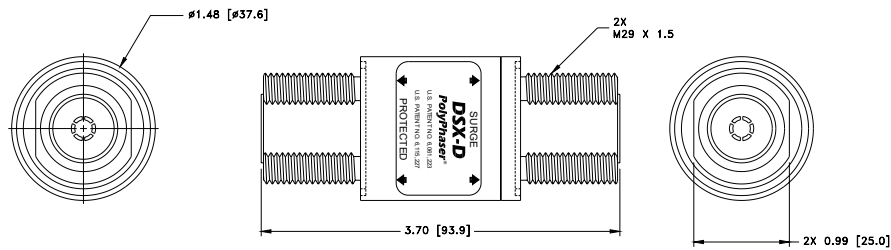
**Throughput Energy:**

≤0.5μJ for 3kA @8/20μs Waveform

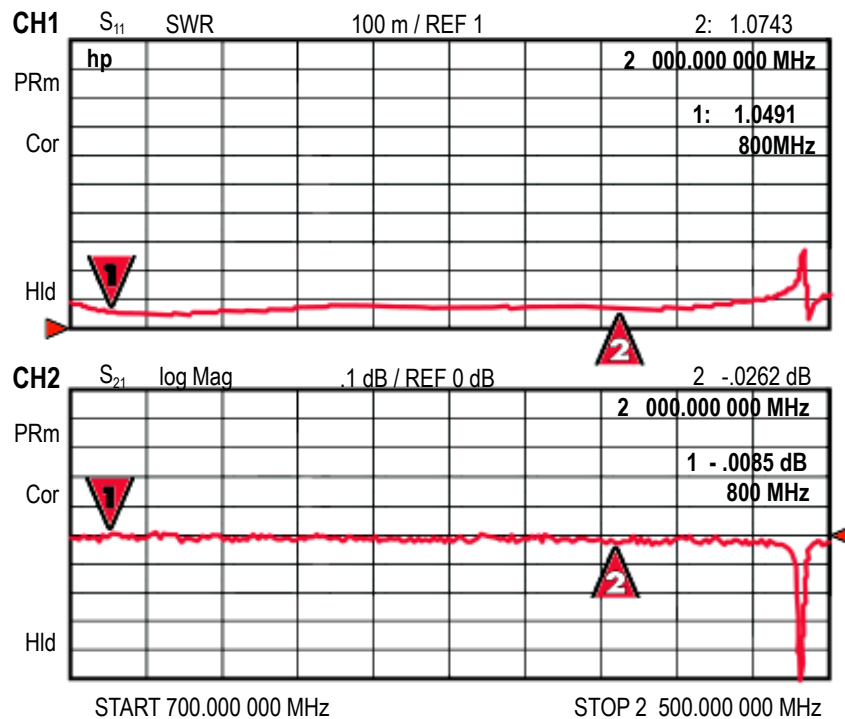
**Let-Through Voltage:**

≤ +3 volts for 3kA @8/20μs Waveform

## Dimensional Drawing



## VSWR & Insertion Loss



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CORPORATION

## LCU SERIES

### WIRELESS LOCAL LOOP FILTER PROTECTION



PolyPhaser's LCU, a value-oriented surge protector, is designed for low power, Wireless Local Loop (WLL) applications. This product line offers maximum surge protection and ultimate RF performance by utilizing PolyPhaser's proven dc-blocked concept. The LCU series is maintenance-free and is recommended for transmitters as well as receivers. The series is fully weatherized and is available in various connector configurations.

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CORPORATION

# WIRELESS LOCAL LOOP FILTER PROTECTION

## Features

- Compact, Integrated Connector Housing
- Fully Weatherized
- dc Blocked
- Industry's Lowest Throughput Energy
- Maintenance Free
- Multi-Strike Capability

## Technical Specifications

(per Qualification Testing)

Surge: 20kA IEC 1000-4-5 8/20 $\mu$ s Waveform

VSWR: 1.2 to 1 Typical

Insertion Loss: 0.2dB

Frequency Range: 2.4 to 2.5GHz

Power: 10W continuous

Operational Temperature Range: -40°C to +85°C

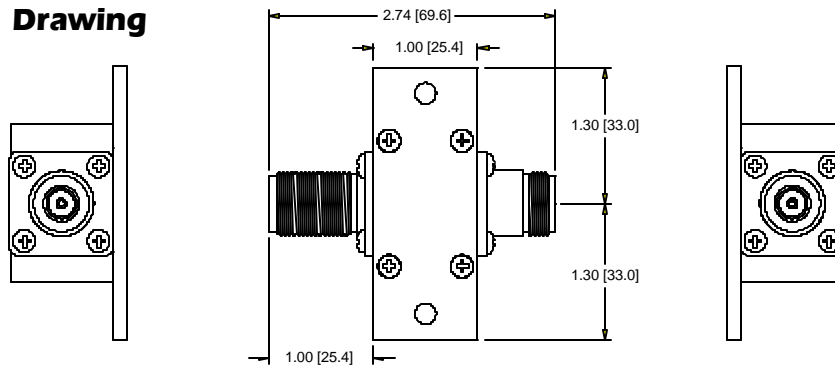
### Throughput Energy:

$\leq 0.5\mu$ J for 3kA @8/20 $\mu$ s Waveform

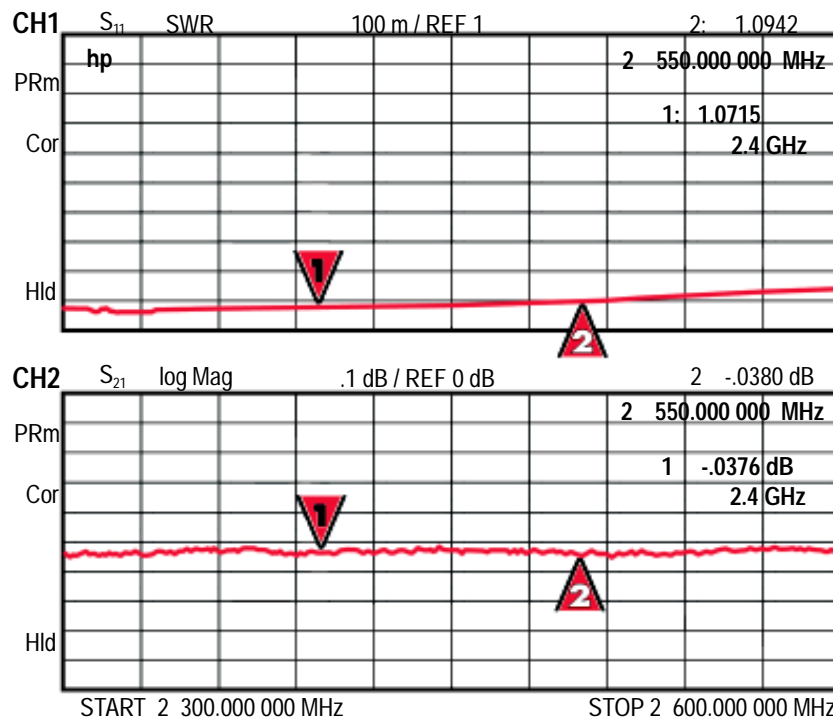
### Let-Through Voltage:

$\leq \pm 3$  volts for 3kA @8/20 $\mu$ s Waveform

## Dimensional Drawing



## VSWR & Insertion Loss



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## LSX SERIES

### WIRELESS LOCAL LOOP MICRO FILTER PROTECTION



PolyPhaser's newest lightning protector, the Micro LSX is dc blocked for the ultimate in equipment protection. Comprehensive testing proved the industry's finest RF and surge performance characteristics with this unique patented design. The ultra compact footprint incorporates a fully integrated connector housing that is completely weatherized and is available in various connector configurations. The LSX Series for Wireless Local Loop Services is maintenance free and recommended for transmitters as well as receivers.

# LSX SERIES

## Features

- Industry's Best RF Performance
- Compact, Integrated Connector Housing
- Fully Weatherized
- Bellcore TA-NWT-000487  
120 mph wind driven rain
- dc Blocked
- Industry's Lowest Throughput Energy
- Maintenance Free
- Multi-Strike Capability

## Technical Specifications

(per Qualification Testing)

Surge: 20kA IEC 1000-4-5 8/20μs Waveform

VSWR: 1.2 to 1 typical

Insertion Loss: 0.1dB typical

Frequency Range: 4.2 to 6.0 GHz

Power: 10W continuous

Operational Temperature Range: -40°C to +85°C

Vibration: 1G @ 5Hz to 100Hz

### Throughput Energy:

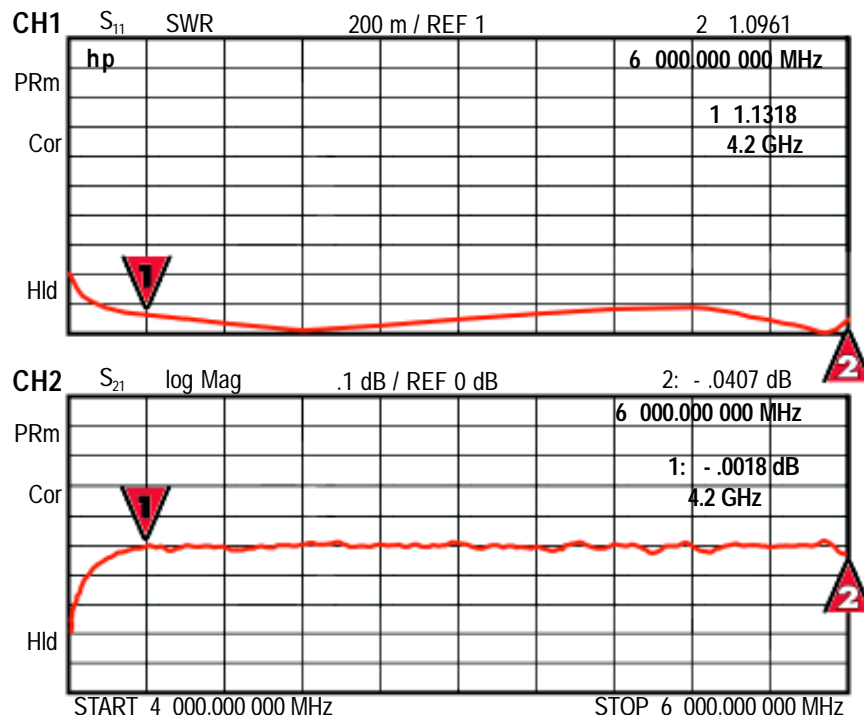
≤ 0.5μJ for 3kA @ 8/20μs Waveform

### Let-Through Voltage:

≤ ±3 volts for 3kA @ 8/20μs Waveform

## Dimensional Drawing

## VSWR & Insertion Loss



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**PolyPhaser®**  
CORPORATION

# LSX SERIES

## Features

- Industry's Best RF Performance
- Compact, Integrated Connector Housing
- Fully Weatherized
- Bellcore TA-NWT-000487  
120 mph wind driven rain
- dc Blocked
- Industry's Lowest Throughput Energy
- Maintenance Free
- Multi-Strike Capability

## Technical Specifications

(per Qualification Testing)

Surge: 20kA IEC 1000-4-5 8/20 $\mu$ s Waveform

VSWR: 1.2 to 1 typical

Insertion Loss: 0.1dB typical

Frequency Range: 4.2 to 6.0 GHz

Power: 10W continuous

Operational Temperature Range: -40°C to +85°C

Vibration: 1G @ 5Hz to 100Hz

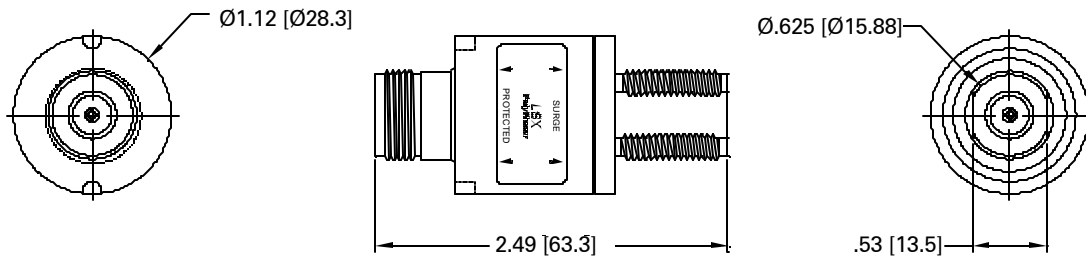
### Throughput Energy:

$\leq 0.5\mu$ J for 3kA @8/20 $\mu$ s Waveform

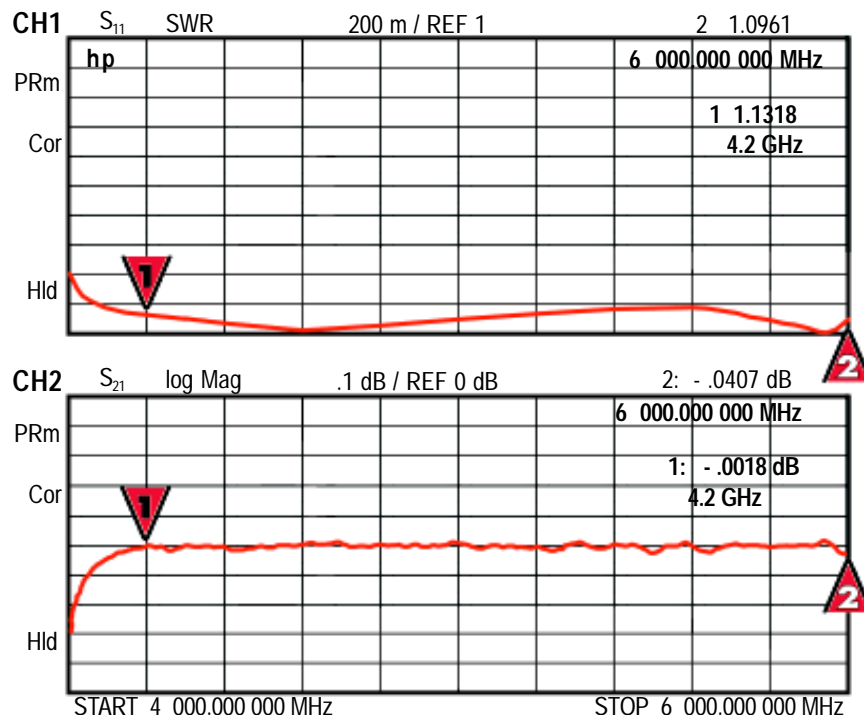
### Let-Through Voltage:

$\leq \pm 3$  volts for 3kA @8/20 $\mu$ s Waveform

## Dimensional Drawing



## VSWR & Insertion Loss



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**PolyPhaser®**  
CORPORATION

## MM SERIES

### WEATHERIZED GPS/PCS PROTECTION



Wireless communications require optimal performance. PolyPhaser offers an innovative product to protect your equipment investment from lightning surges. Our newest microwave protector series is designed for systems requiring up to 300 watts maximum continuous power including in-line amplifiers and Global Positioning Systems (GPS) receivers.

The fully tested protectors provide the industry's best VSWR and insertion loss performance in the 1.2 to 2.0GHz passband. The MM Series is fully weatherized and is available in several Bias-T pass voltages at currents to 2 amps.

**PolyPhaser®**  
CORPORATION

## MM SERIES

### Features

- Multi-Strike Capability
- Low VSWR and Insertion Loss
- Protects In-Line Amplifiers
- Industry's Lowest Throughput Energy
- Fully Weatherized Housing
- Bellcore TA-NWT-000487  
120 mph wind driven rain
- Multiple Carrier Capability
- Connectors: DIN or N

### Technical Specifications

(per Qualification Testing)

Surge: 20kA IEC 1000-4-5 8/20 $\mu$ s Waveform

Turn-On Time: 4ns for 2kV/ns

Frequency Range: 1.2GHz to 2.0GHz

VSWR:  $\leq 1.1$  to 1

Insertion Loss:  $\leq 0.1$ dB

RF Power: 300W Maximum Continuous

User Voltage: +6Vdc, +15Vdc, others available

User Current: 2.0Adc Continuous

Vibration: 1G @ 5Hz to 100Hz

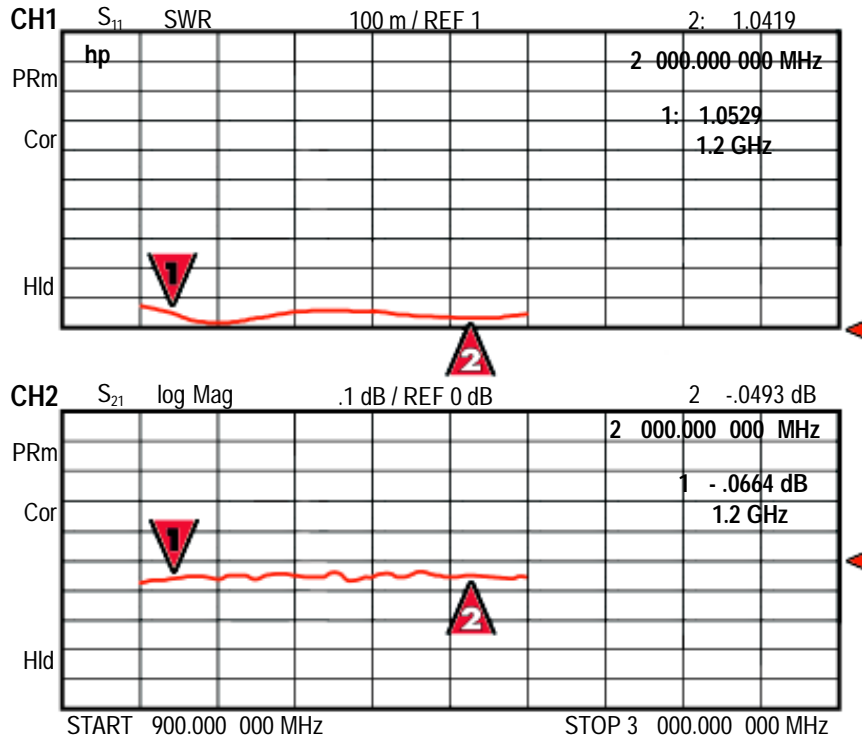
Temperature: -50°C to +65°C

Relative Humidity: Up to 95% @ 40°C

### Throughput Energy:

$\leq 350\mu$ J for 3kA @8/20 $\mu$ s Waveform

### VSWR & Insertion Loss



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**PolyPhaser®**  
CORPORATION

PSX<sup>®</sup> SERIES

**PCS MICRO FILTER PROTECTION**



Revolutionary lightning protection from PolyPhaser is now available in a unique patented design. The Micro PSX<sup>®</sup> is dc blocked for the ultimate in equipment protection. Comprehensive testing proved the industry's finest RF and surge performance characteristics. The ultra compact footprint incorporates a fully integrated connector housing that is completely weatherized, contains no gas tubes and is available in various connector configurations. The PSX<sup>®</sup> Series for Personal Communications Services is maintenance free and recommended for single or multi-channel transmitters as well as receivers.

**PolyPhaser<sup>®</sup>**  
CORPORATION

# PSX<sup>®</sup> SERIES

## Features

- Industry's Best RF Performance
- Compact, Integrated Connector Housing
- Fully Weatherized
- Bellcore TA-NWT-000487  
120 mph wind driven rain
- dc Blocked
- Industry's Lowest Throughput Energy
- Maintenance Free
- Multi-Strike Capability

## Technical Specifications

(per Qualification Testing)

Surge: 20kA IEC 1000-4-5 8/20μs Waveform

VSWR: ≤ 1.1 to 1

Insertion Loss: ≤ 0.1 dB

Frequency Range: 1.2 to 2.8GHz (950MHz to 3.5GHz  
@ 1.2:1 VSWR)

Power: 300W continuous

Operational Temperature Range: -40°C to +85°C

Vibration: 1G @ 5Hz to 100Hz

### Throughput Energy:

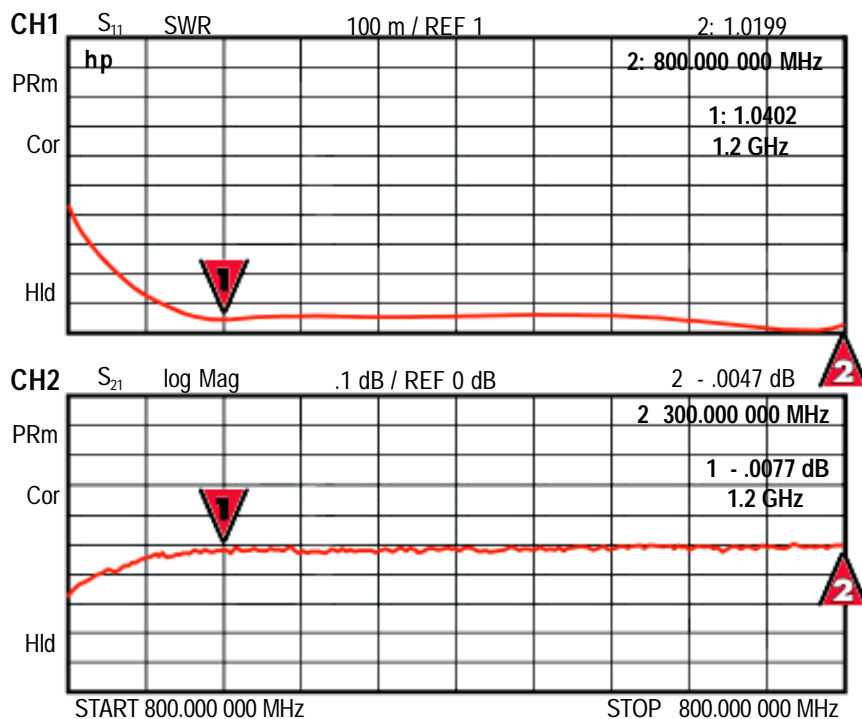
≤ 0.5μJ for 3kA @ 8/20μs Waveform

### Let-Through Voltage:

≤ ±3 volts for 3kA @ 8/20μs Waveform

## Dimensional Drawing

## VSWR & Insertion Loss



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**PolyPhaser<sup>®</sup>**  
CORPORATION

# PSX<sup>®</sup> SERIES

## Features

- Industry's Best RF Performance
- Compact, Integrated Connector Housing
- Fully Weatherized
- Bellcore TA-NWT-000487  
120 mph wind driven rain
- dc Blocked
- Industry's Lowest Throughput Energy
- Maintenance Free
- Multi-Strike Capability

## Technical Specifications

(per Qualification Testing)

Surge: 20kA IEC 1000-4-5 8/20 $\mu$ s Waveform

VSWR:  $\leq 1.1$  to 1

Insertion Loss:  $\leq 0.1$  dB

Frequency Range: 1.2 to 2.8GHz (950MHz to 3.5GHz)  
@ 1.2:1 VSWR

Power: 300W continuous

Operational Temperature Range: -40°C to +85°C

Vibration: 1G @ 5Hz to 100Hz

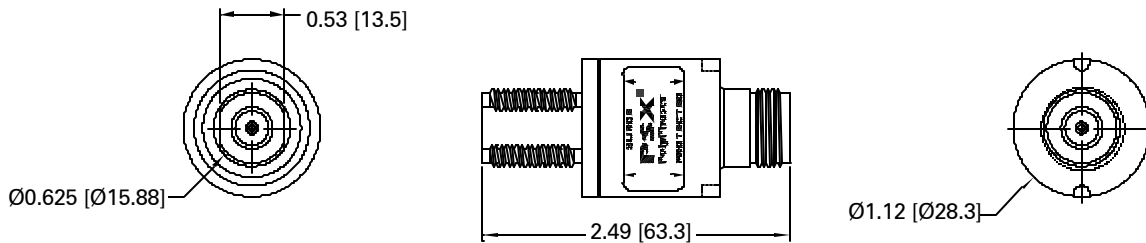
### Throughput Energy:

$\leq 0.5\mu$ J for 3kA @8/20 $\mu$ s Waveform

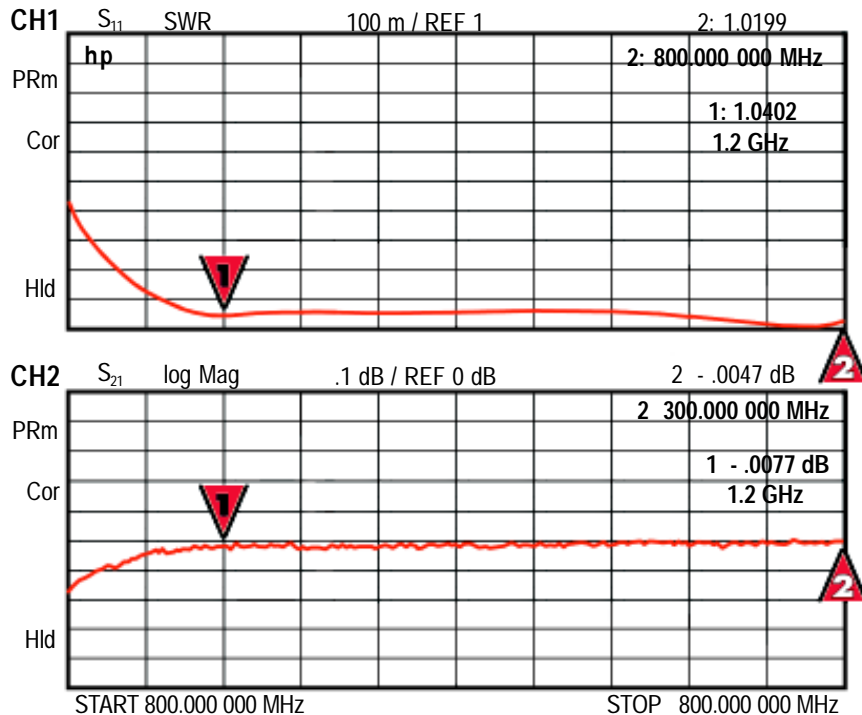
### Let-Through Voltage:

$\leq \pm 3$  volts for 3kA @8/20 $\mu$ s Waveform

## Dimensional Drawing



## VSWR & Insertion Loss



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**PolyPhaser<sup>®</sup>**  
CORPORATION

PSX®-D

**PCS MICRO FILTER PROTECTION**



A unique and compact design is only one of the features of the PSX®-D unit from PolyPhaser. It is a dc blocked maintenance-free protector that incorporates a fully integrated weatherized connector housing. The patented design is available in a DIN/ DIN-type connector configuration.

In recent comprehensive testing, the SX series achieved the industry's best RF and surge performance ratings. The PSX®-D provides the ultimate in lightning protection for Personal Communications Services and is recommended for single or multi-channel transmitters as well as receivers.

**PolyPhaser®**  
CORPORATION

## Features

- Industry's Best RF Performance
- Compact, Integrated Connector Housing
- Fully Weatherized
- Bellcore TA-NWT-000487  
120 mph wind driven rain
- dc Blocked
- Industry's Lowest Throughput Energy
- Maintenance Free
- Multi-Strike Capability

## Technical Specifications

(per Qualification Testing)

**Surge:** 30kA IEC 1000-4-5 8/20μs Waveform

**VSWR:** ≤1.1 : 1

**Insertion Loss:** ≤0.1dB

**Frequency Range:** 1.7 to 2.3GHz

**Power:** 500W continuous (1kW @ [20°C])

**Operational Temperature Range:** -40°C to +85°C

**Vibration:** 1G @ 5Hz to 100Hz

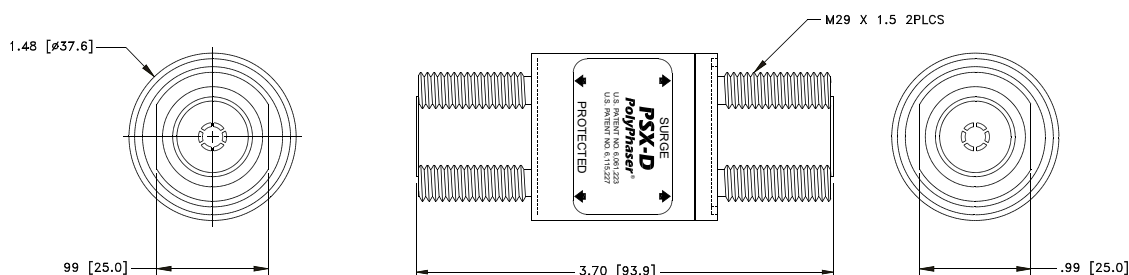
**Throughput Energy:**

≤0.5μJ for 3kA @8/20μs Waveform

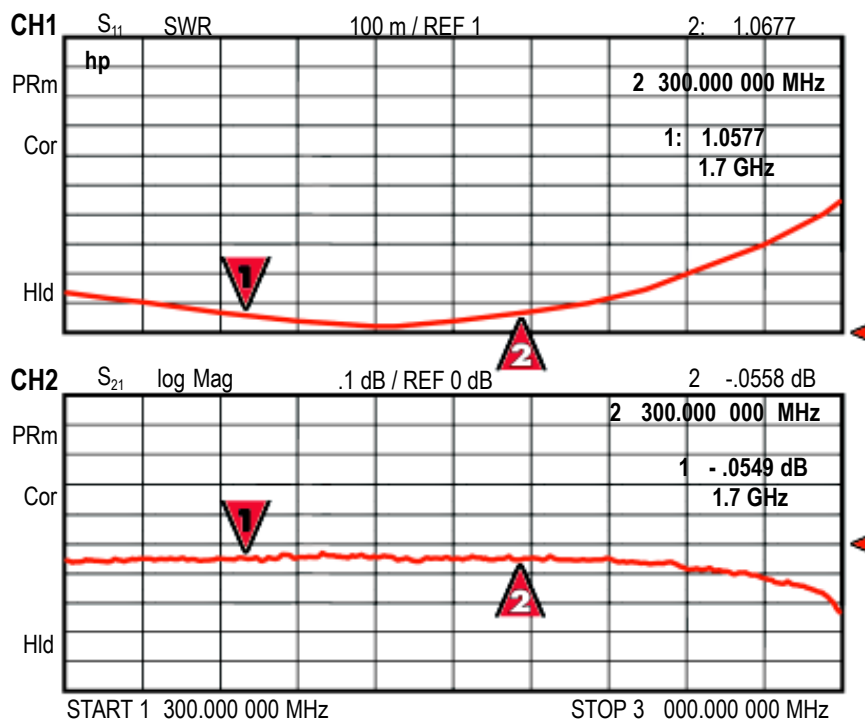
**Let-Through Voltage:**

≤ ±3 volts for 3kA @8/20μs Waveform

## Dimensional Drawing



## VSWR & Insertion Loss



PSX®-DN

**PCS MICRO FILTER PROTECTION**



A unique and compact design is only one of the features of the PSX®-DN unit from PolyPhaser. It is a maintenance-free protector that incorporates a fully integrated connector housing that is weatherized and is dc blocked. The patented design is available in a DIN/ N-type connector configuration.

In recent comprehensive testing, the SX series achieved the industry's best RF and surge performance ratings. The PSX®-DN provides the ultimate in lightning protection for Personal Communications Services and is recommended for single or multi-channel transmitters as well as receivers.

**PolyPhaser®**  
CORPORATION

## Features

- Industry's Best RF Performance
- Compact, Integrated Connector Housing
- Fully Weatherized
- Bellcore TA-NWT-000487  
120 mph wind driven rain
- dc Blocked
- Industry's Lowest Throughput Energy
- Maintenance Free
- Multi-Strike Capability

## Technical Specifications

(per Qualification Testing)

Surge: 30kA IEC 1000-4-5 8/20 $\mu$ s Waveform

VSWR:  $\leq 1.1$  to 1

Insertion Loss:  $\leq 0.1$  dB

Frequency Range: 1.7 to 2.3GHz

Power: 500W continuous (1kW @  $\leq 20^\circ\text{C}$ )

Operational Temperature Range:  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$

Vibration: 1G @ 5Hz to 100Hz

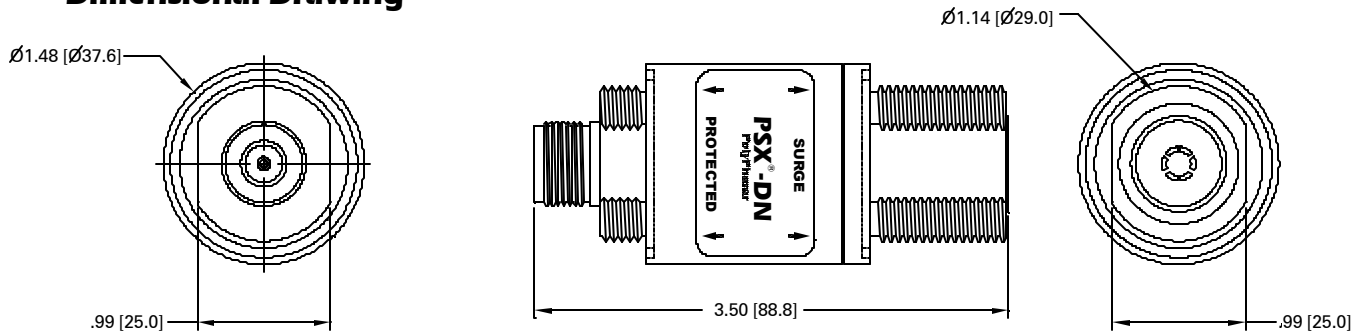
### Throughput Energy:

$\leq 0.5\mu\text{J}$  for 3kA @8/20 $\mu$ s Waveform

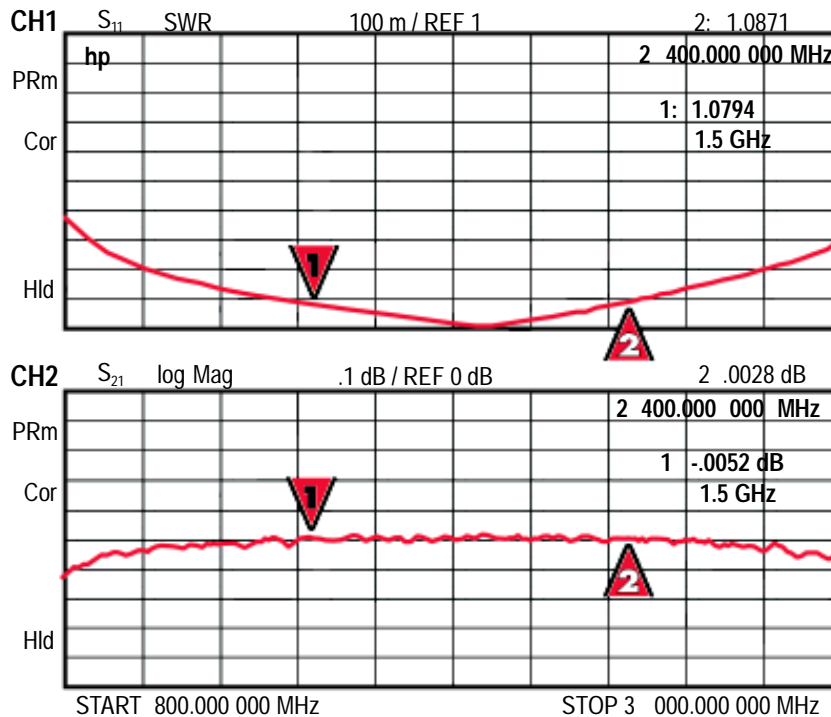
### Let-Through Voltage:

$\leq \pm 3$  volts for 3kA @8/20 $\mu$ s Waveform

## Dimensional Drawing



## VSWR & Insertion Loss



PSX-J

**PCS MICRO FILTER PROTECTION**



The PSX-J series from PolyPhaser is an integrated surge suppressor and jumper cable assembly. It utilizes the same technology as the popular SX series-type protectors. This equates to an extremely small footprint, wideband operation, ultra low surge energy throughput characteristics, and excellent RF performance.

Coupled with the flexible capabilities of Times Microwave Systems' T-Flex® 402 coaxial cable, the PSX-J provides a versatile and durable connection for a variety of PCS installations. The one-piece construction and custom lengths will provide lower insertion losses, multiple adapter configurations, and reduced costs.

**PolyPhaser®**  
CORPORATION

## Features

- Industry's Best RF Performance
- Compact, Integrated Connector Housing
- Fully Weatherized
- Bellcore TA-NWT-000487  
120 mph wind driven rain
- dc Blocked
- Industry's Lowest Throughput Energy
- Maintenance Free
- Multi-Strike Capability
- Custom Cable Lengths

*\*\*Patent Pending*

## Technical Specifications

(per Qualification Testing)

Surge: 20kA IEC 1000-4-5 8/20μs Waveform

\*VSWR: ≤ 1.1 to 1

\*Insertion Loss: ≤ 0.1 dB

Frequency Range: 1.2 to 2.8GHz (960MHz to 3.5GHz @ 1.2:1 VSWR)

Power: 300W continuous

Operational Temperature Range: -40°C to +85°C

Vibration: 1G @ 5Hz to 100Hz

### Throughput Energy:

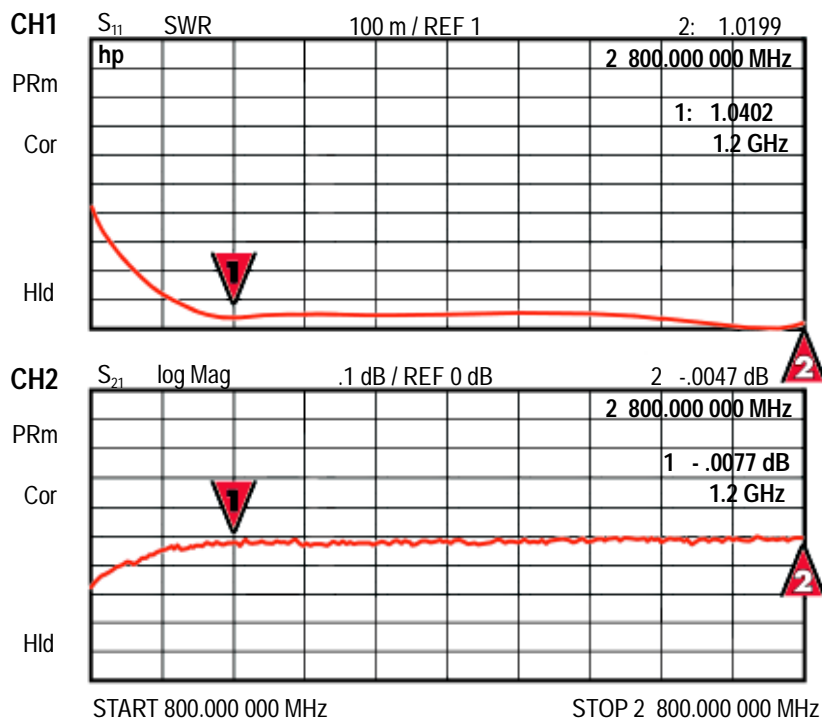
≤ 0.5μJ for 3kA @ 8/20μs Waveform

### Let-Through Voltage:

≤ ±3 volts for 3kA @ 8/20μs Waveform

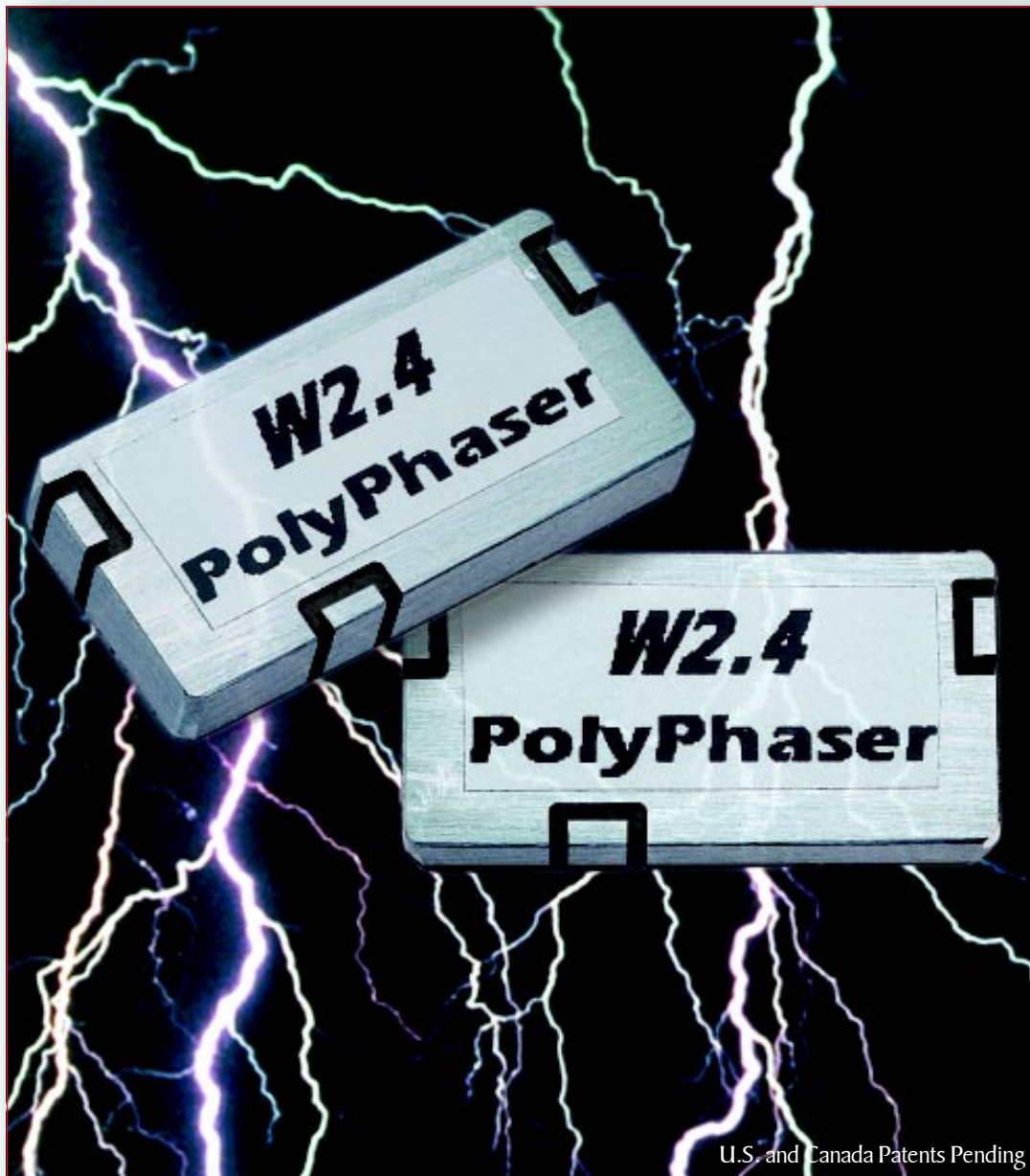
*\*The VSWR and Insertion Loss specifications reflect the performance of the surge suppressor alone. Additional losses will occur in the complete assembly depending on the length of cable and frequency of operation.*

## VSWR & Insertion Loss



W-CHIP

**SURFACE MOUNT PROTECTOR**



Surge suppression evolution continues with PolyPhaser's new surface mount protector component. The W-chip has the smallest footprint for a surge suppressor in the industry. The completely maintenance-free component utilizes filter technology, and provides protection against induced surges for sensitive RF PCB module applications. The W-chip packaging is shielded for RF emission and susceptibility, and it is provided with an isolated surge ground for optimum surge protection.

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# W-CHIP

## Features

- dc Blocked Surge Protector/Filter
- Completely Maintenance Free
- Fully Weatherized
- Surface Mount Applications
- Isolated Surge Ground
- Low Throughput Energy
- EMI Shielded Package

## Technical Specifications

Maximum Surge:

5kA IEC 1000-4-5 8/20 $\mu$ s Waveform

Return Loss:  $\leq -20$ dB

Insertion Loss:  $\leq 0.4$ dB

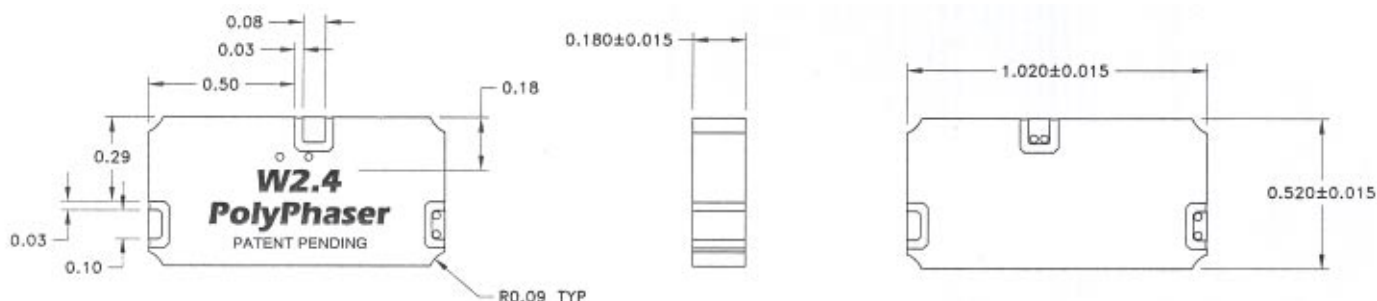
Frequency Range: 2.40 to 2.50GHz

Power: 10W continuous, maximum

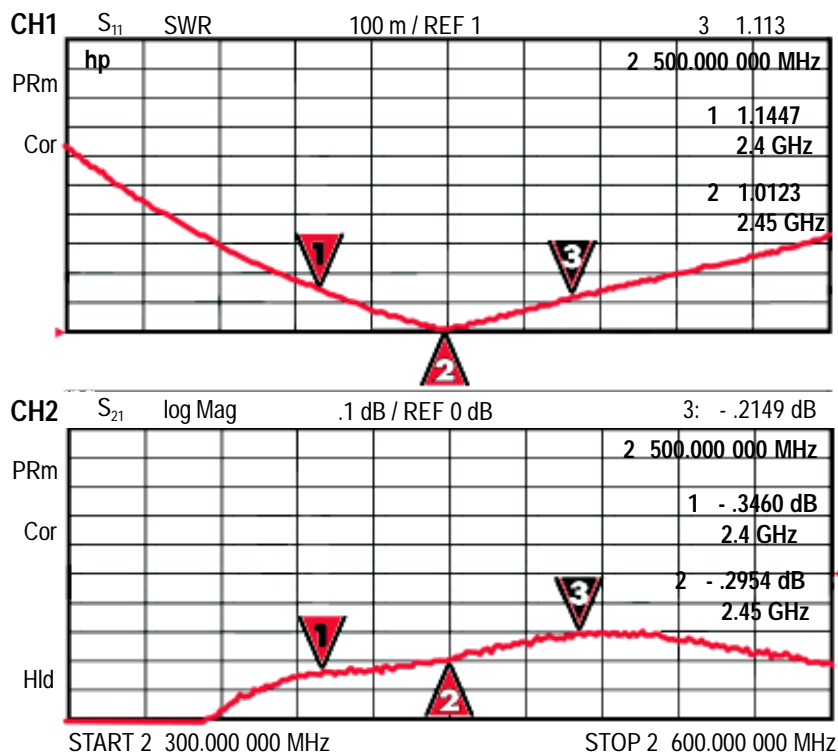
## Throughput Energy:

100 $\mu$ J typical for 3kA @8/20 $\mu$ s Waveform

## Dimensional Drawing



## VSWR & Insertion Loss



ISO 9001 CERTIFIED

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