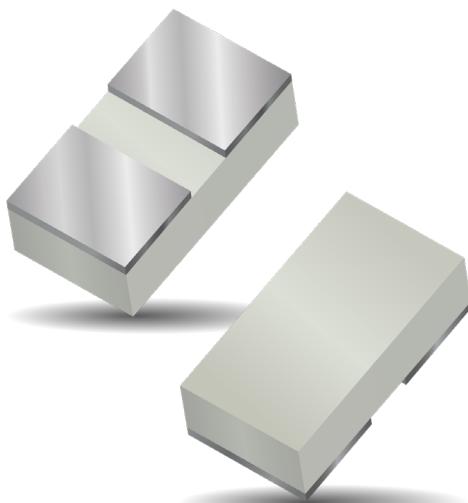


# 500 S Series BMC Broadband Microwave Millimeter-wave 0603 NPO SMT Capacitor



## General Information



### GENERAL DESCRIPTION

KYOCERA AVX introduces the new 500 S Series Broadband Microwave Capacitor (BMC). This unique, patented component greatly exceeds both multilayer and single layer capacitor performance. It delivers extremely low insertion loss with ultra-high self resonance performance, in a rugged, laser-marked package compatible with automatic SMT manufacturing.

Functional applications include Broadband (Bypass, Coupling, Feedback, Impedance Matching, D.C. Blocking) and Tuning.

### ADVANTAGES

- Low Insertion Loss
- Ultra High Self Resonance
- Surface Mountable
- Rugged Construction

### ELECTRICAL AND MECHANICAL

### SPECIFICATIONS

#### QUALITY FACTOR (Q):

Greater than 1,000 @ 1 MHz.

#### TEMPERATURE COEFFICIENT OF CAPACITANCE (T.C.):

0 ±30 PPM/°C (-55°C to +125°C) (0.1 pF to 2.2 pF)

0 ±60 PPM/°C (-55°C to +125°C) (2.4 pF to 10 pF)

#### INSULATION RESISTANCE (IR):

0.1 pF to 10 pF:

10<sup>5</sup> Megohms min. @ +25°C @ rated WVDC.

10<sup>4</sup> Megohms min. @ +125°C @ rated WVDC

#### WORKING VOLTAGE (WVDC):

100 WVDC (0.1 pF to 4.7 pF)

50 WVDC (5.1 pF to 10 pF)

#### DIELECTRIC WITHSTANDING VOLTAGE (DWV):

200% of rated WVDC for 5 secs.

#### OPERATING TEMPERATURE RANGE:

From -55°C to +125°C (No derating of working voltage).

**TERMINATION:** Chip style suitable for surface mounting. Platinum with gold flash.

Die Shear Strength Test per MIL-STD-883, Method 2019.

### ENVIRONMENTAL TESTS

KYOCERA AVX 500 S Series Broadband Microwave Capacitors are designed and manufactured to meet and exceed the applicable requirements of MIL-C-55681.

#### THERMAL SHOCK:

MIL-STD-202, Method 107, Condition A.

#### MOISTURE RESISTANCE:

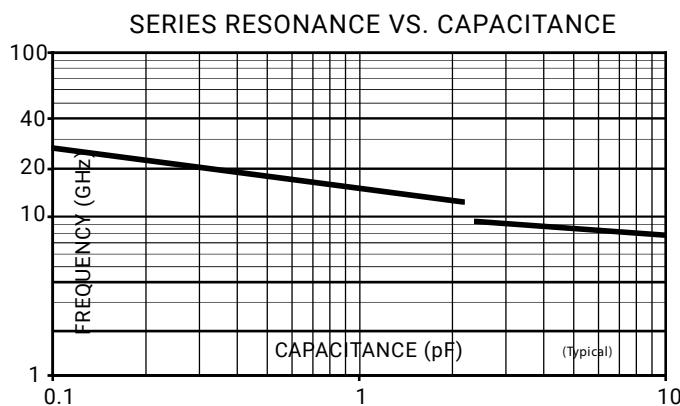
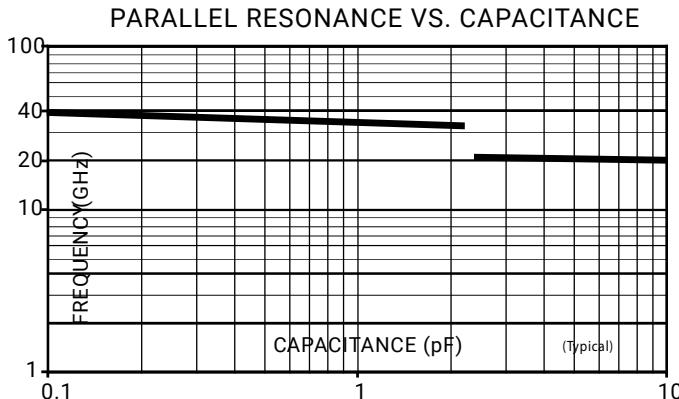
MIL-STD-202, Method 106.

#### LOW VOLTAGE HUMIDITY:

MIL-STD-202, Method 103, Condition A, with 1.5 Volts D.C. applied while subjected to an environment of 85°C with 85% relative humidity for 250 ±12 hours.

#### LIFE TEST:

MIL-STD-202, Method 108, for 2000 hours, at 125°C.  
200% WVDC applied.



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## ELECTRICAL AND MECHANICAL SPECIFICATIONS

### QUALITY FACTOR (Q):

Greater than 1,000 @ 1 MHz.

**TEMPERATURE COEFFICIENT OF CAPACITANCE (T.C.):**  $0 \pm 30 \text{ PPM/}^{\circ}\text{C}$  ( $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ ) (0.1 pF to 2.2 pF)  
 $0 \pm 60 \text{ PPM/}^{\circ}\text{C}$  ( $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ ) (2.4 pF to 10 pF)

### INSULATION RESISTANCE (IR):

0.1 pF to 10 pF:

$10^5$  Megohms min. @  $+25^{\circ}\text{C}$  @ rated WVDC.  
 $10^4$  Megohms min. @  $+125^{\circ}\text{C}$  @ rated WVDC.

### WORKING VOLTAGE (WVDC):

100 WVDC (0.1 pF to 4.7 pF)

50 WVDC (5.1 pF to 10 pF)

### DIELECTRIC WITHSTANDING VOLTAGE (DWV):

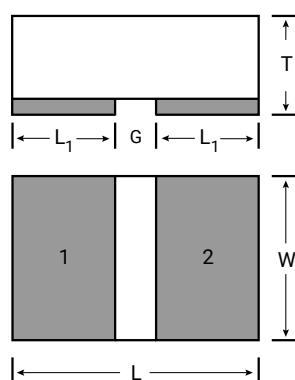
200% of rated WVDC for 5 secs.

### OPERATING TEMPERATURE RANGE:

From  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  (No derating of working voltage).

**TERMINATION:** Chip style suitable for surface mounting. Platinum with gold flash.  
Die Shear Strength Test per MIL-STD-883, Method 2019.

## MECHANICAL CONFIGURATIONS



MECHANICAL DIMENSIONS – INCHES (mm)				
Length (L)	L <sub>1</sub>	Width (W)	Thickness (T)	Gap (G)
.060 $\pm$ .005 (1.52 $\pm$ .127)	.025 (.635) nom.	.030 $\pm$ .005 (.762 $\pm$ .127)	.024 (.609) max.	.010 (.254) min.

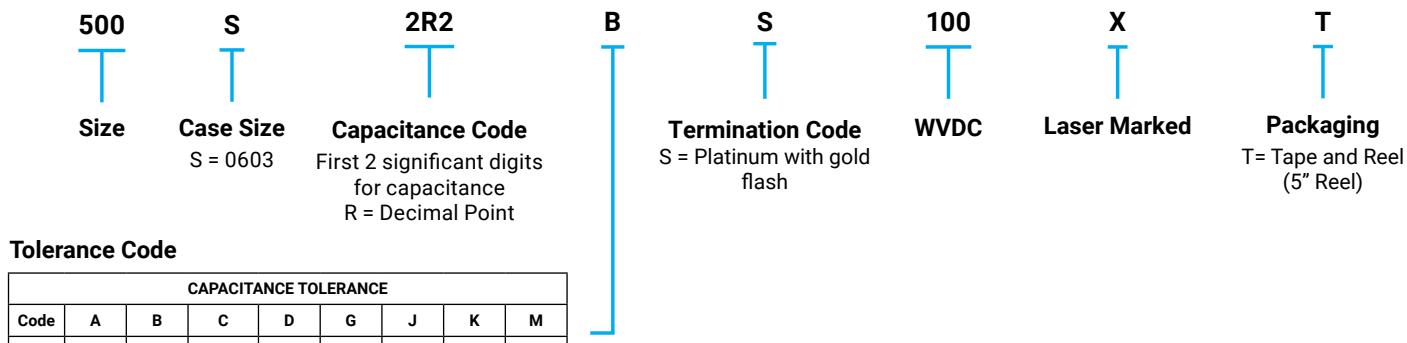
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## CAPACITANCE VALUE

CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC
0R1	0.1	A, B, C, D	100	1R1	1.1	B, C, D	100	3R0	3.0	100	100	6R8	6.8	C, J, K, M	50
0R2	0.2			1R2	1.2			3R3	3.3			7R5	7.5		
0R3	0.3			1R3	1.3			3R6	3.6			8R2	8.2		
0R4	0.4			1R5	1.5			3R9	3.9			9R1	9.1		
0R5	0.5			1R6	1.6			4R3	4.3			100	10		
0R6	0.6			1R8	1.8			4R7	4.7			50			
0R7	0.7			2R0	2.0			5R1	5.1						
0R8	0.8			2R2	2.2			5R6	5.6						
0R9	0.9			2R4	2.4			6R2	6.2						
1R0	1.0			2R7	2.7										

## HOW TO ORDER

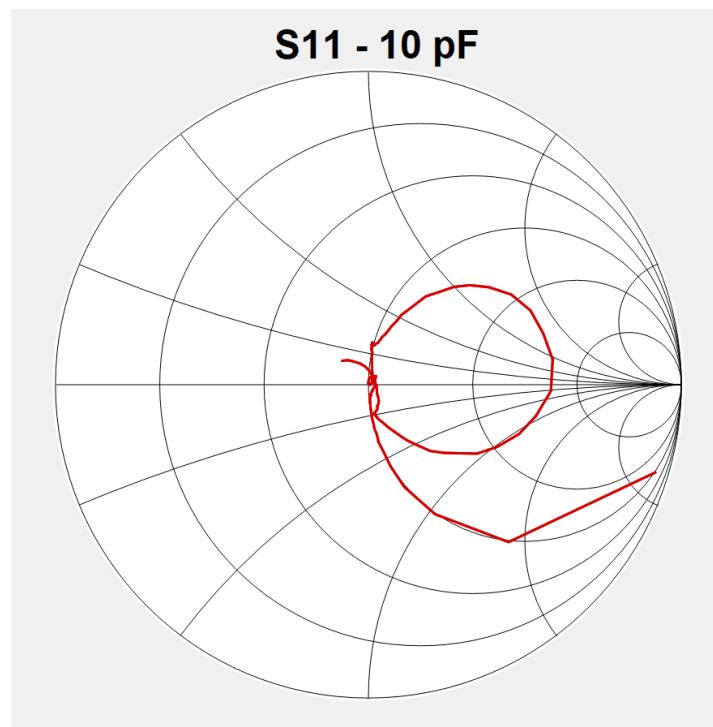


Note: The above part number refers to a 500S (case size S) 2.2 pF capacitor, B tolerance (±0.1 pF), Termination Code S (Platinum with gold flash), 100 WVDC, with marking and 5" tape and reel packaging.

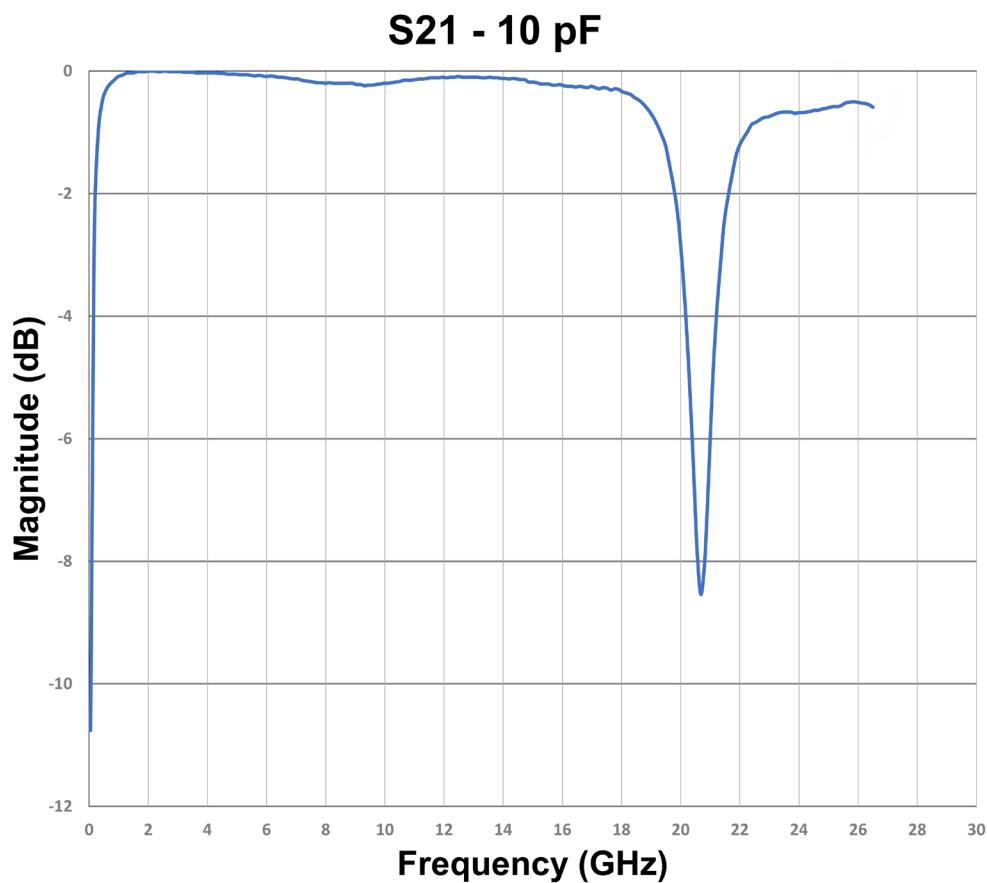


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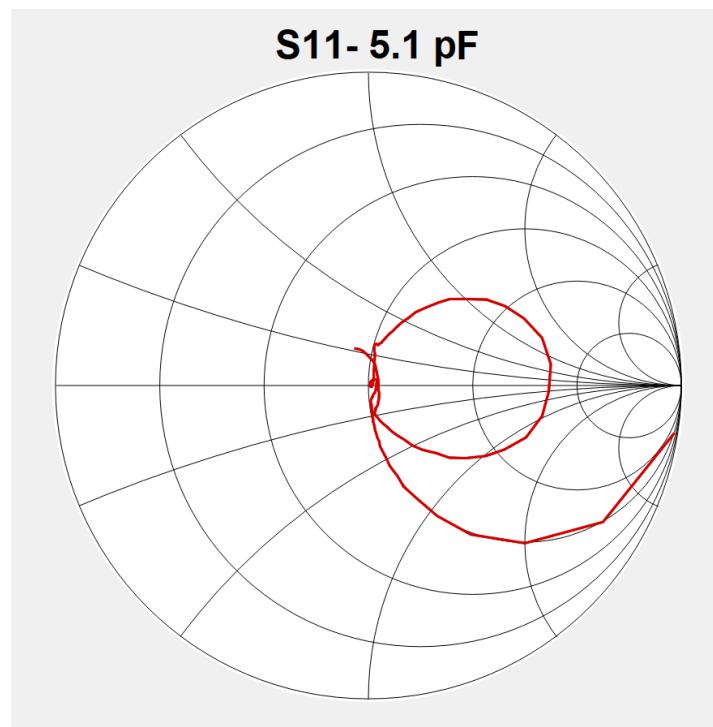
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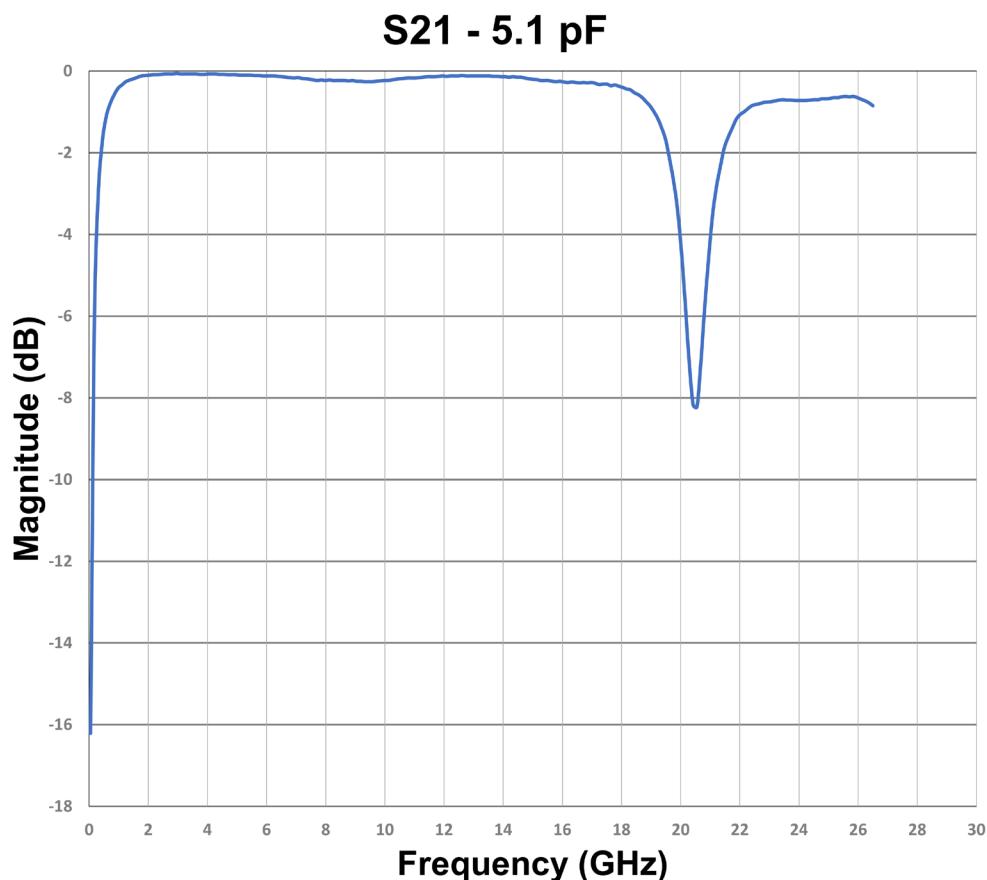
Frequency Range: 50 MHZ to 26.5 GHZ



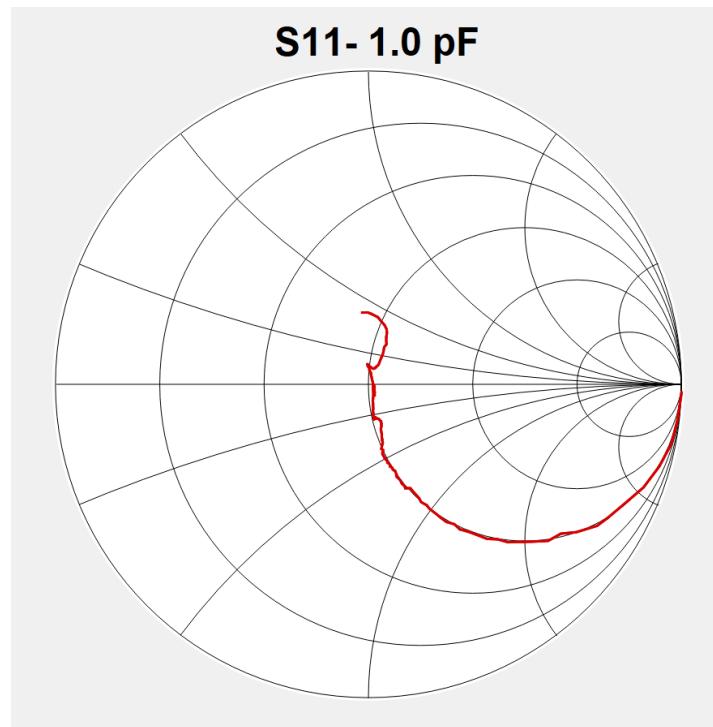
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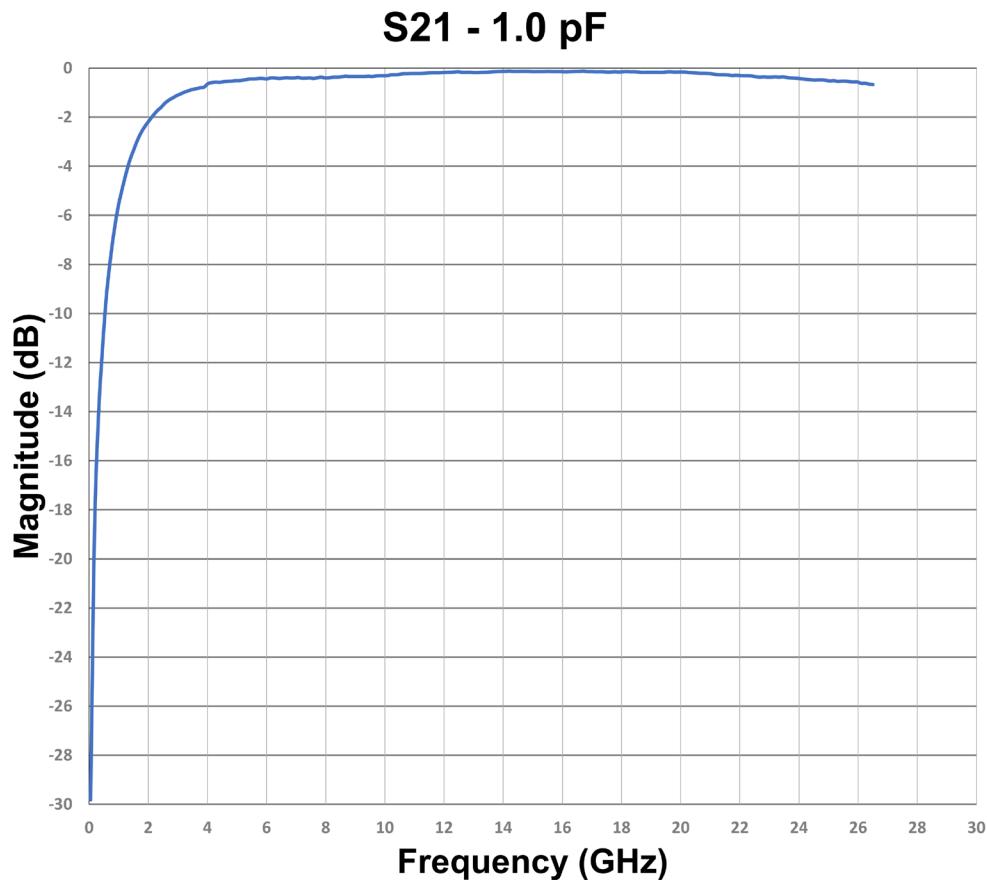
Frequency Range: 50 MHZ to 26.5 GHZ



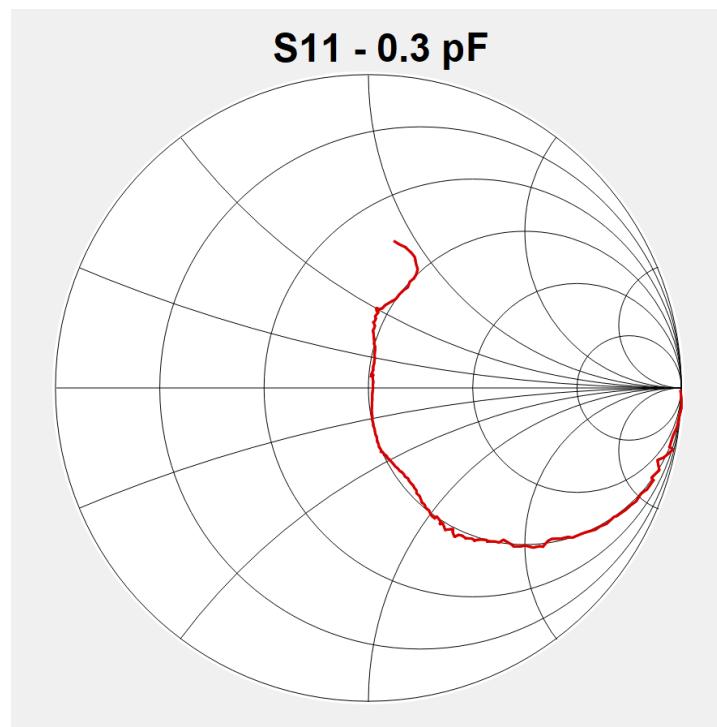
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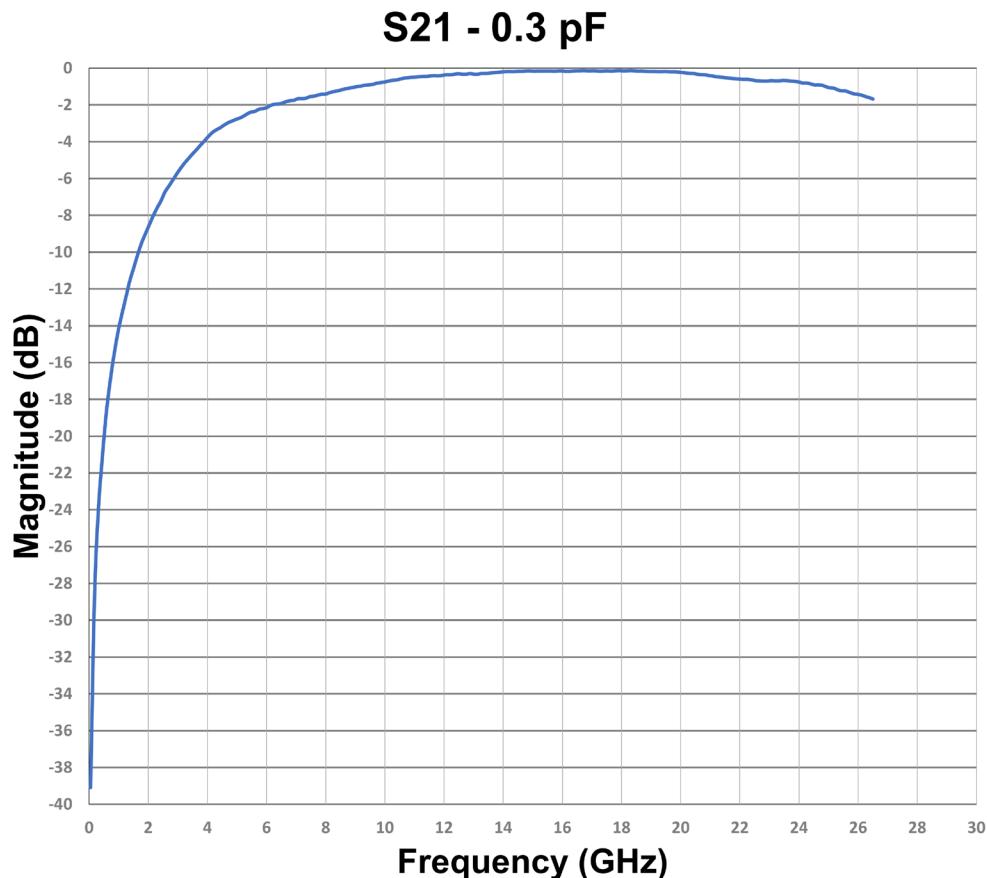
Frequency Range: 50 MHZ to 26.5 GHZ



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Frequency Range: 50 MHZ to 26.5 GHZ



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