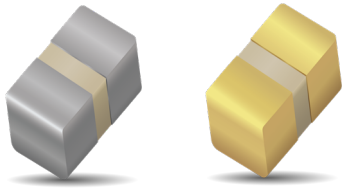


# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 550-560 Series UBC™ Ultra-Broadband Capacitor



#### GENERAL DESCRIPTION

KYOCERA AVX new Ultra-Broadband Capacitor is manufactured with highest quality materials to provide reliable and repeatable Ultra-Broadband performance from 7KHz through 110GHz. It exhibits ultra-low insertion loss, flat frequency response and excellent return loss, and is ideal for D.C. Blocking, Coupling, Bypassing and Feedback applications requiring Ultra-Broadband performance.

#### TYPICAL CIRCUIT APPLICATIONS



- Optoelectronics/High Speed Data
- Transimpedance amplifiers
- Receive and Transmit Optical Sub-Assembly (ROSA/TOSA)
- Synchronous Optical Network (SONET)
- Broadband test equipment
- Broadband Microwave/Millimeter Wave

#### ADVANTAGES

- Ultra-Broadband performance
  - Ultra-Low Insertion Loss
  - Flat Frequency Response
  - Excellent Return Loss
  - Unit-to-Unit Performance Repeatability
  - Rugged Ceramic Construction
  - Operating Temperature: -55°C to +125°C
- Note: See voltage below on the table at certain temp.*

#### HOW TO ORDER

<b>550</b> Series 550 560	<b>Z</b> Case Size W = 01005 Z = 0201 L = 0402	<b>104</b> Capacitance Code EIA Capacitance Code in pF. First two digits = significant figures or "R" for decimal place. Third digit = number of zeros or after "R" significant figures	<b>K</b> Capacitance Tolerance Code K = ±10% M = ±20% P = +100%, -0% V = +20%, -10% Y = +25%, -20%	<b>T</b> Termination Style Code T = Tin Plated over Nickel Barrier (Standard) CA = Gold Plated over Nickel Barrier	<b>T</b> Packaging T = 1000 pc qty. T\500 = 500 pc qty. T\4k = 4000 pc qty. Z = 15K pc for 0201, 20kpc for 01005
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**Tape & Reel**

#### ELECTRICAL SPECIFICATIONS

Series	Size (EIA)	Tolerance	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	TCC	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
550W103	01005	K, M	110GHz*	70GHz	10	X6S	35	25	16	Tin	Z
560W103	01005	K, M	55Ghz	40GHz	10	X6S	35	25	16	Tin	
550W104	01005	K, M	110GHz*	70GHz	100	X6S	6.3	4	-	Tin	
560W104	01005	K, M	70GHz*	40GHz	100	X6S	6.3	4	-	Tin	
560Z104	0201	K, M	70GHz*	40Ghz	100	X6S	25	16	6.3	Tin	
550Z104	0201	M	110GHz*	70Ghz	100	X6S	25	16	6.3	Tin	
560Z224	0201	M	70GHz*	40GHz	220	X6S	16	10	4	Tin	
550Z224	0201	M	90GHz	70GHz	220	X6S	16	10	4	Tin	
550Z103	0201	M, P	100GHz	70GHz	10	X7S	10	10	6.3	Tin/Gold	T T\500 T\4K
560L102	0402	M	70GHz*	40GHz	1	X7R	100	100	100	Tin/Gold	T T\4K
560L103	0402	M	70GHz*	40Ghz	10	X7R	50	50	50	Tin/Gold	
560L223	0402	M	70GHz*	40GHz	22	X7R	25	25	25	Tin/Gold	
560L473	0402	M	70GHz*	40Ghz	47	X7S	25	25	25	Tin/Gold	T T\500 T\4K
560L104	0402	Y	70GHz*	40GHz	100	X7S	16	16	16	Tin	
550L104	0402	K	70GHz*	40GHz	100	X7S	16	16	16	Tin/Gold	

\*Highest Tested Frequency

# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

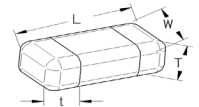
### 550-560 Series UBC™ Ultra-Broadband Capacitor



#### GENERAL DIMENSIONS

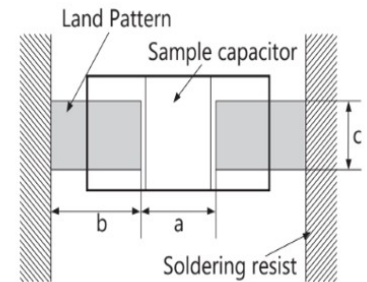
		550W104	550W103	550Z224	550Z104	550Z103	550L104
L (Length)	mm	0.40 ± 0.02	0.40 ± 0.02	0.60 ± 0.03	0.60 ± 0.03	0.58 ± 0.03	1.0 ± 0.1
	(in)	(0.016 ± 0.0008)	(0.016 ± 0.0008)	(0.024 ± 0.001)	(0.024 ± 0.001)	(0.023 ± 0.001)	(0.040 ± 0.004)
W (Width)	mm	0.20 ± 0.02	0.20 ± 0.02	0.30 ± 0.03	0.30 ± 0.03	0.32 ± 0.03	0.5 ± 0.1
	(in)	(0.008 ± 0.0008)	(0.008 ± 0.0008)	(0.012 ± 0.001)	(0.012 ± 0.001)	(0.0125 ± 0.0010)	(0.020 ± 0.004)
T (Thickness)	mm	0.22 Max	0.2 Max	0.33 Max	0.22 Max	0.35 Max	0.6 Max
	(in)	0.009 Max	0.008 Max	0.013 Max	0.009 Max	0.013 Max	0.024 Max
t (Terminal)	mm	0.135 ± 0.035	0.135 ± 0.035	0.23 ± 0.05	0.23 ± 0.05	0.20 ± 0.04	0.42 ± 0.08
	(in)	(0.005 ± 0.0014)	(0.005 ± 0.0014)	(0.009 ± 0.002)	(0.009 ± 0.002)	(0.008 ± 0.0015)	(0.0165 ± 0.0030)

		560W104	560W103	560Z224	560Z104	560L104
L (Length)	mm	0.40 ± 0.02	0.40 ± 0.02	0.60 ± 0.03	0.60 ± 0.03	1.0 ± 0.1
	(in)	(0.016 ± 0.0008)	(0.016 ± 0.0008)	(0.024 ± 0.001)	(0.024 ± 0.001)	(0.040 ± 0.004)
W (Width)	mm	0.20 ± 0.02	0.20 ± 0.02	0.30 ± 0.03	0.30 ± 0.03	0.5 ± 0.1
	(in)	(0.008 ± 0.0008)	(0.008 ± 0.0008)	(0.012 ± 0.001)	(0.012 ± 0.001)	(0.020 ± 0.004)
T (Thickness)	mm	0.22 Max	0.22 Max	0.33 Max	0.22 Max	0.6 Max
	(in)	0.009 Max	0.009 Max	0.013 Max	0.009 Max	0.024 Max
t (Terminal)	mm	0.135 ± 0.035	0.105 ± 0.035	0.15 ± 0.05	0.15 ± 0.05	0.36 ± 0.08
	(in)	(0.005 ± 0.0014)	(0.004 ± 0.0014)	(0.006 ± 0.002)	(0.006 ± 0.002)	(0.014 ± 0.003)



#### REFLOW SOLDERING

550		01005	0201	0402
a	mm	0.10 - 0.15	0.10 - 0.15	0.15 - 0.20
	(in)	(0.004 - 0.006)	(0.004 - 0.006)	(0.006 - 0.008)
b	mm	0.13 - 0.19	0.30 - 0.40	0.50 - 0.62
	(in)	(0.005 - 0.007)	(0.012 - 0.016)	(0.020 - 0.025)
c	mm	0.20 - 0.23	0.30 - 0.40	0.50 - 0.75
	(in)	(0.008 - 0.009)	(0.012 - 0.016)	(0.020 - 0.030)
560		01005	0201	0402
a	mm	0.10 - 0.15	0.20 - 0.25	0.40 - 0.60
	(in)	(0.004 - 0.006)	(0.008 - 0.010)	(0.016 - 0.024)
b	mm	0.13 - 0.19	0.25 - 0.35	0.40 - 0.50
	(in)	(0.005 - 0.007)	(0.010 - 0.014)	(0.016 - 0.020)
c	mm	0.20 - 0.23	0.30 - 0.40	0.50 - 0.75
	(in)	(0.008 - 0.009)	(0.012 - 0.016)	(0.020 - 0.030)



Parts are sensitive to orientation.  
Maintain packaging orientation  
for typical performance.

# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 550-560 Series UBC™ Ultra-Broadband Capacitor



Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
550W103M	01005	160kHz	110GHz*	70GHz	10	35	25	16	Tin	Z

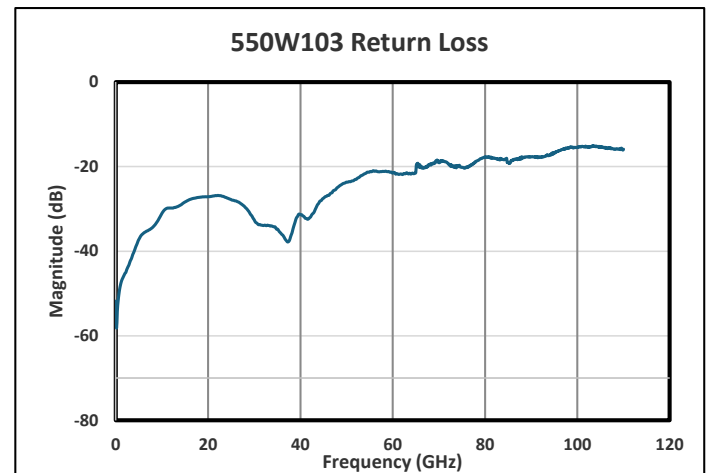
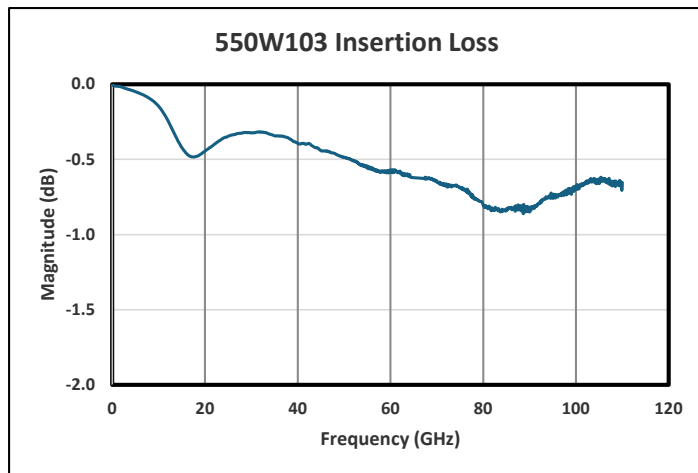


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#### PERFORMANCE DATA



550W Data Sheet Test Condition Description

All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

### 560W103

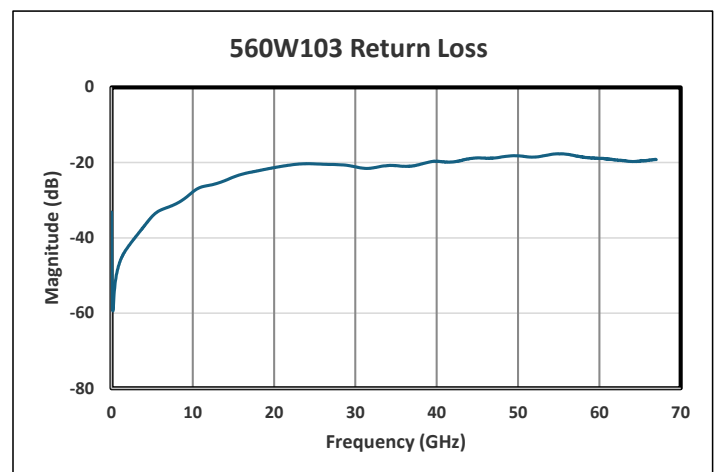
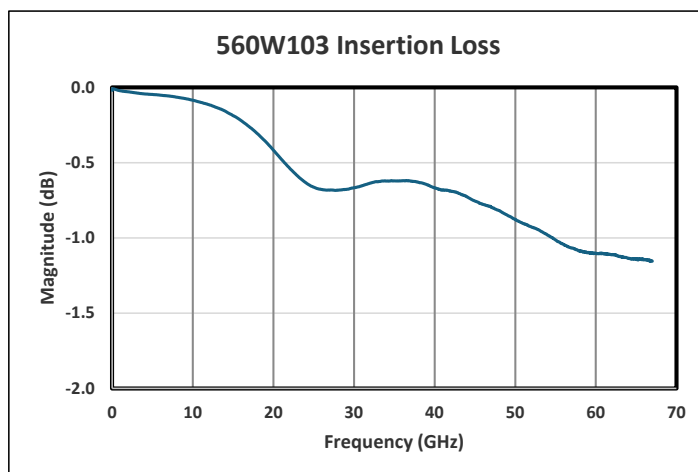
Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
560W103M	01005	160kHz	55GHz	40GHz	10	35	25	16	Tin	Z



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#### PERFORMANCE DATA



560W Data Sheet Test Condition Description

All testing performed on 10-mil-thick Rogers RO3006 microstrip board, with the device under test subtending a 4 mil gap in a 14.2-mil-wide center trace (nominal 50-ohm characteristic impedance).



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# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 550-560 Series UBC™ Ultra-Broadband Capacitor



Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
550W104M	01005	16kHz	110GHz*	70GHz	100	6.3	4	-	Tin	Z

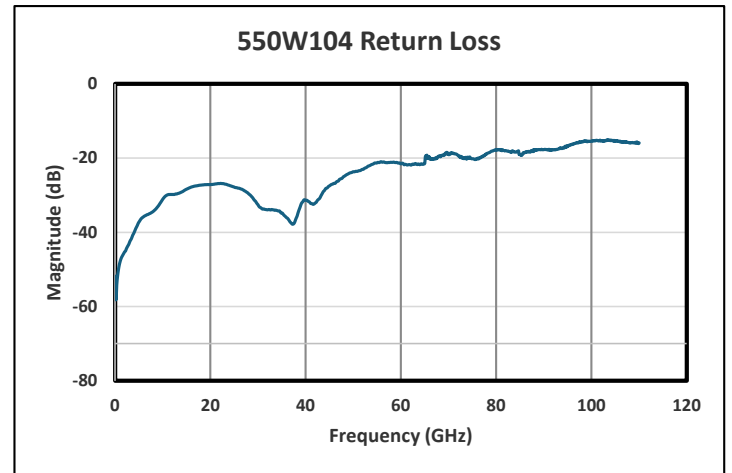


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#### PERFORMANCE DATA



#### 550W Data Sheet Test Condition Description

All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

### 560W104

Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
560W104M	01005	16kHz	70GHz*	40GHz	100	6.3	4	-	Tin	Z

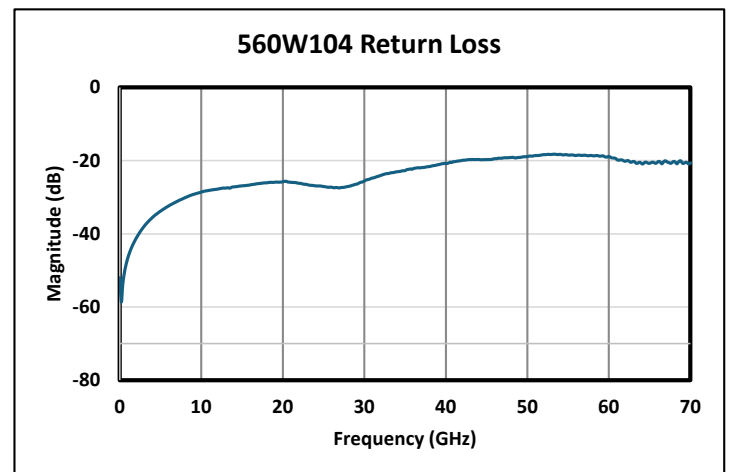
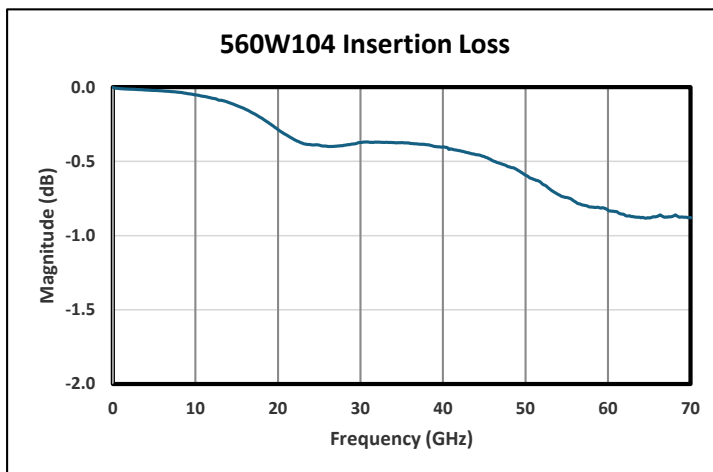


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#### PERFORMANCE DATA



#### 560W Data Sheet Test Condition Description

All testing performed on 10-mil-thick Rogers RO3006 microstrip board, with the device under test subtending a 4 mil gap in a 14.2-mil-wide center trace (nominal 50-ohm characteristic impedance).

# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 550-560 Series UBC™ Ultra-Broadband Capacitor



Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
560Z104M	0201	16kHz	70GHz*	40GHz	100	25	16	6.3	Tin	Z

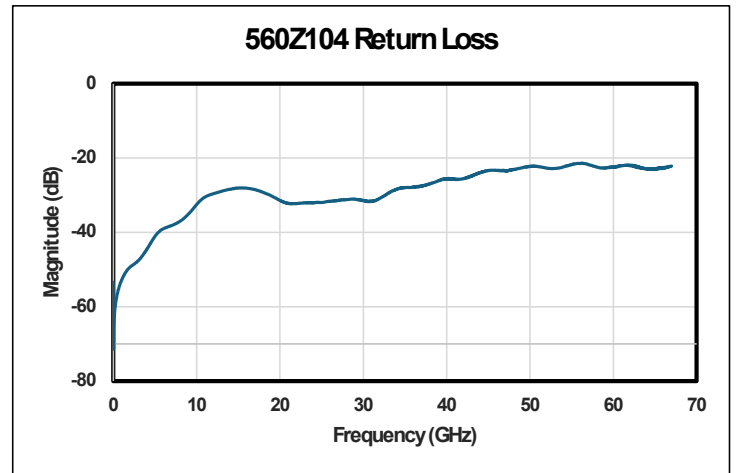
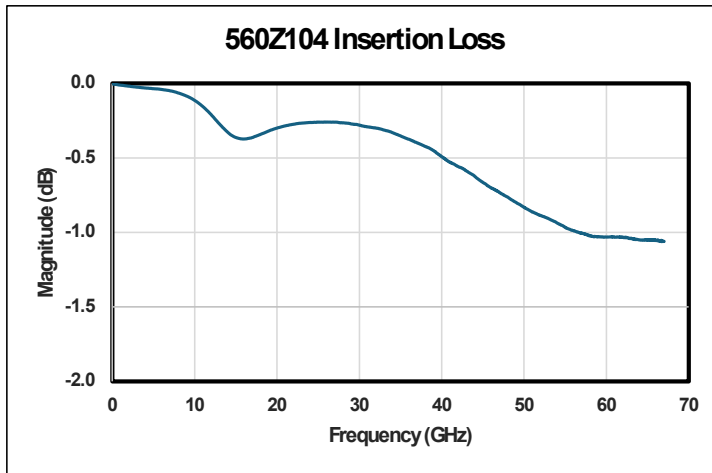


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#### PERFORMANCE DATA



#### 560Z Data Sheet Test Condition Description

All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

### 550Z104

Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
550Z104M	0201	16kHz	110GHz*	70GHz	100	25	16	6.3	Tin	Z

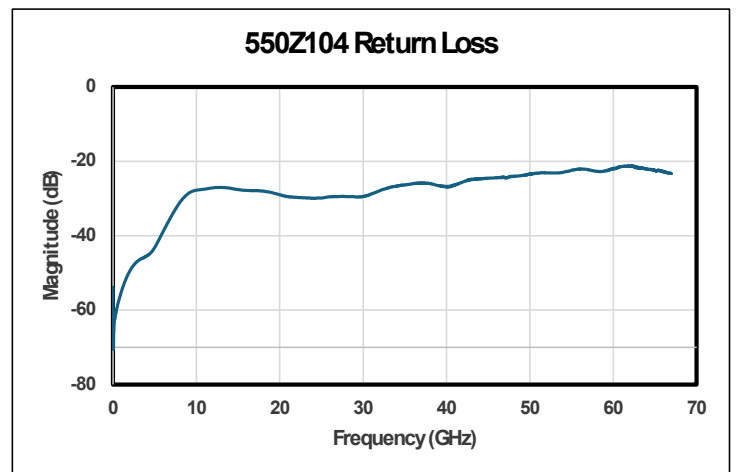
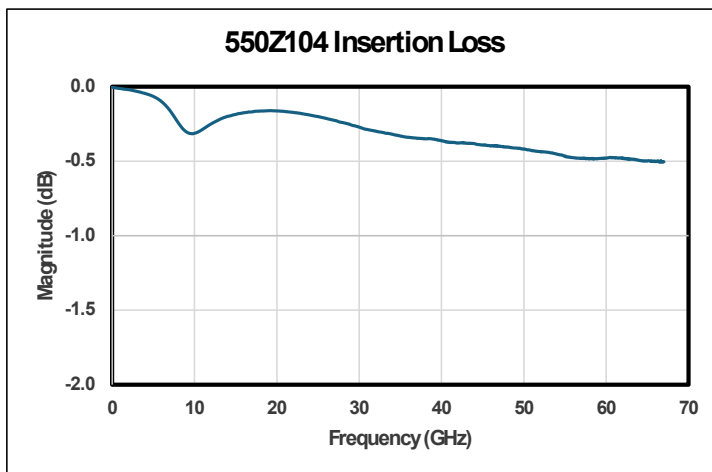


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#### PERFORMANCE DATA



#### 550Z Data Sheet Test Condition Description

All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.



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# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 550-560 Series UBC™ Ultra-Broadband Capacitor



#### 560Z224

Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
560Z224M	0201	7.2kHz	70GHz*	40GHz	220	16	10	4	Tin	Z

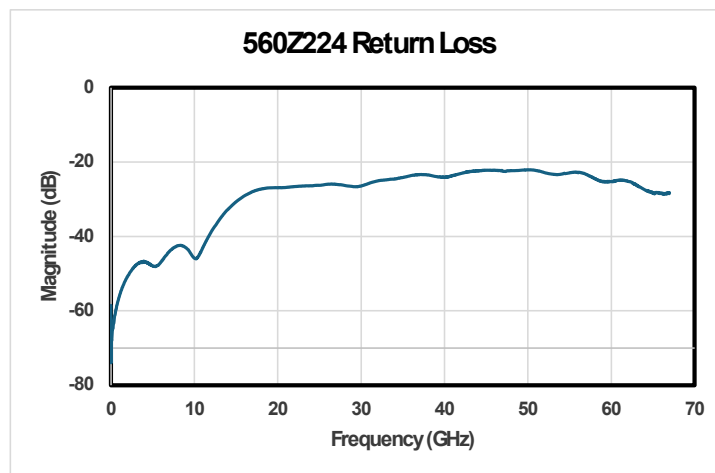
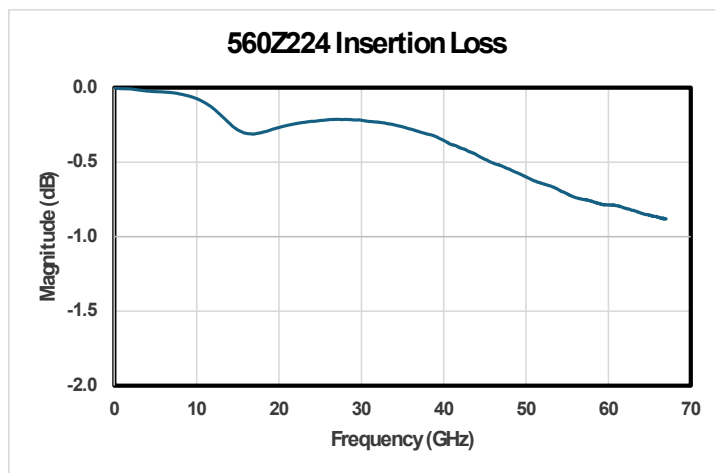


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#### PERFORMANCE DATA



#### 560Z Data Sheet Test Condition Description

All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

#### 550Z224

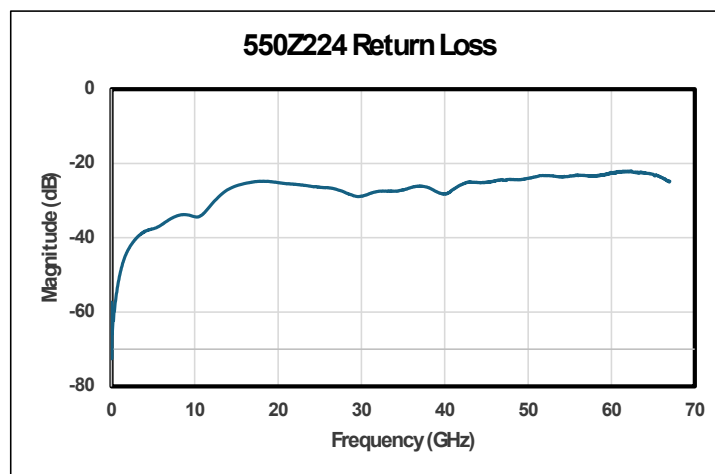
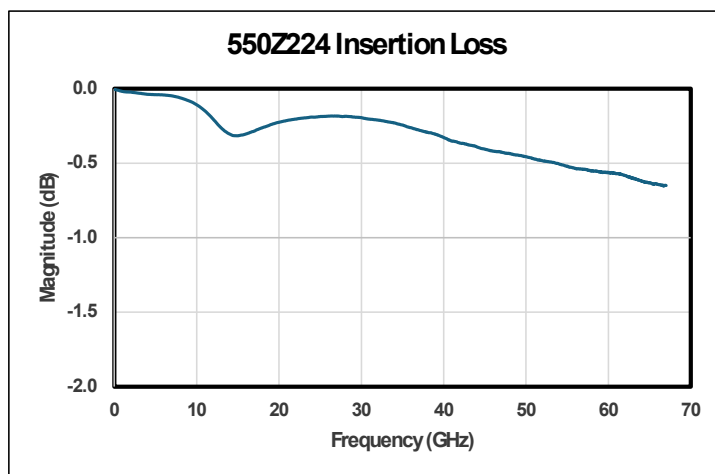
Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
550Z224M	0201	7.2kHz	90GHz	70GHz	220	16	10	4	Tin	Z



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#### PERFORMANCE DATA



#### 550Z Data Sheet Test Condition Description

All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 550-560 Series UBC™ Ultra-Broadband Capacitor



#### 550Z103

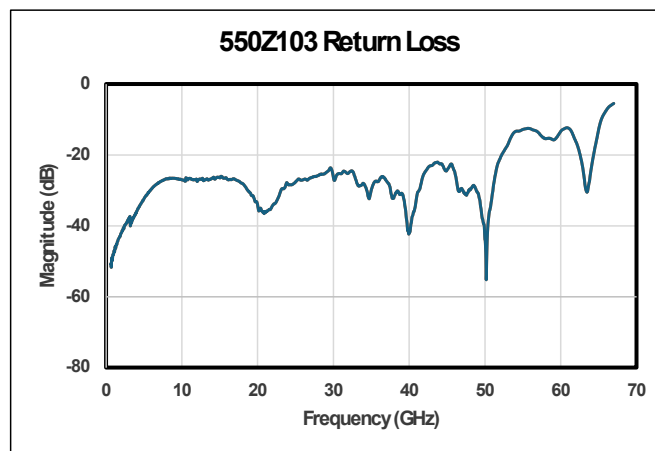
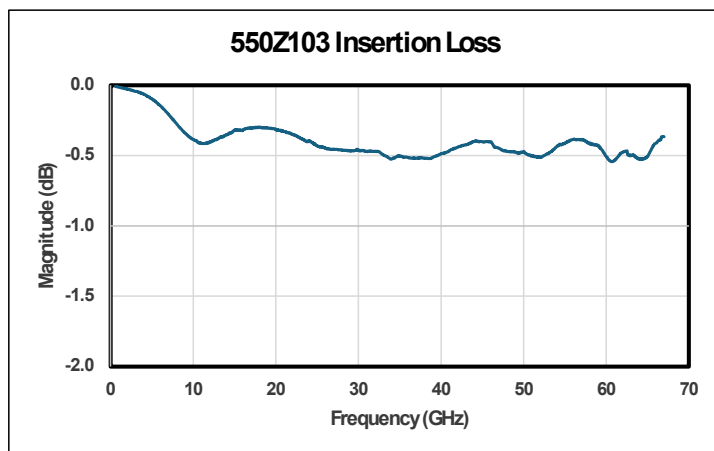
Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
550Z103P	0201	160kHz	100GHz	70GHz	10	10	10	6.3	Tin/Gold	T T\500 T\4K



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#### PERFORMANCE DATA



#### 550Z Data Sheet Test Condition Description

All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

#### 560L102

Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
560L102M	0402	1.6MHz	70GHz*	40GHz	1	100	100	100	Tin/Gold	T T\4K

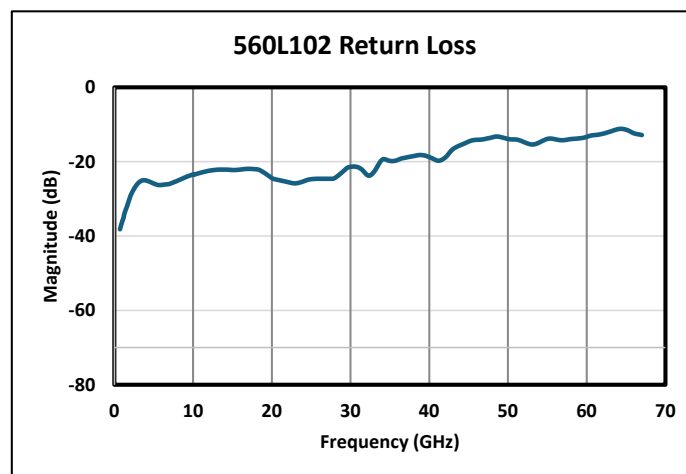


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#### PERFORMANCE DATA



#### 550Z Data Sheet Test Condition Description

All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 550-560 Series UBC™ Ultra-Broadband Capacitor



#### 560L103

Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
560L103M	0402	160kHz	70GHz*	40GHz	10	50	50	50	Tin/Gold	T T\4K

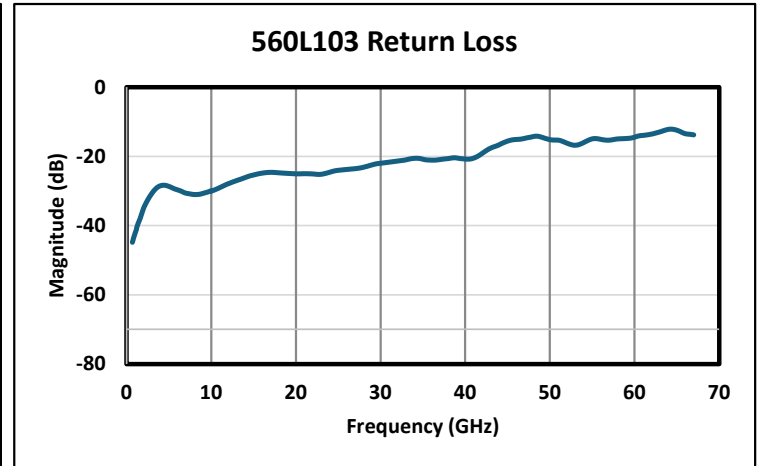
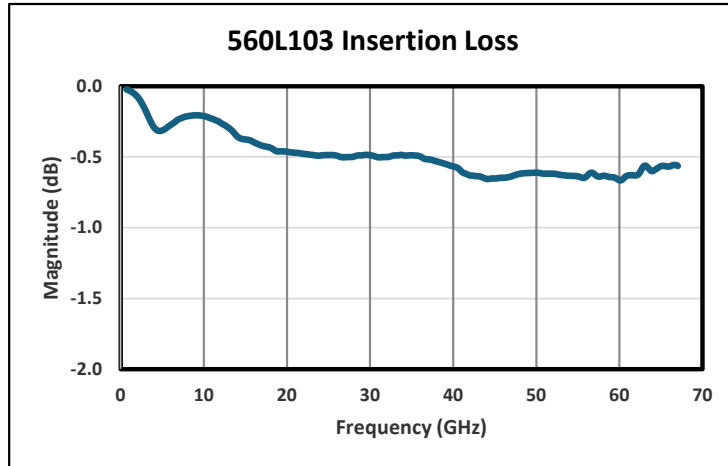


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\*Highest Tested Frequency

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#### PERFORMANCE DATA



#### 550Z Data Sheet Test Condition Description

All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

#### 560L223

Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
560L223M	0402	72kHz	70GHz*	40GHz	25	25	25	25	Tin/Gold	T T\4K

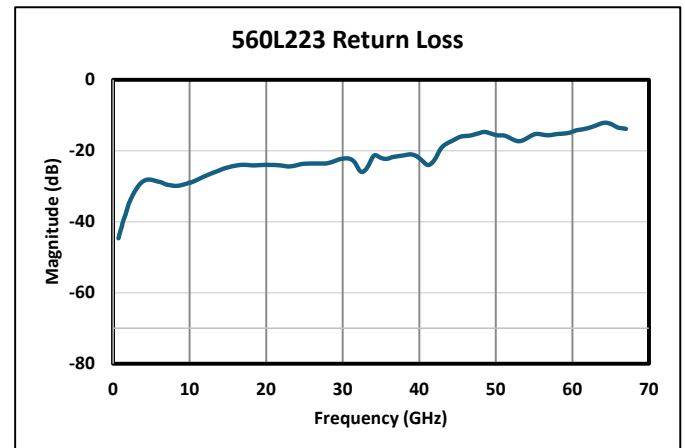
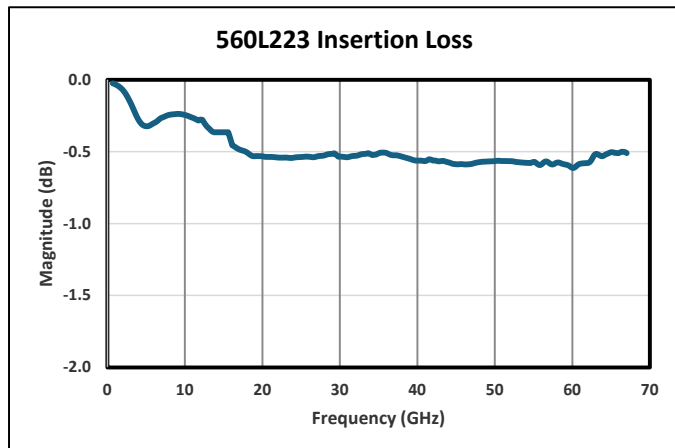


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\*Highest Tested Frequency

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#### PERFORMANCE DATA



#### 550Z Data Sheet Test Condition Description

All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 550-560 Series UBC™ Ultra-Broadband Capacitor



#### 560L473

Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
560L473M	0402	34kHz	70GHz*	40GHz	25	25	25	25	Tin/Gold	T T\4K

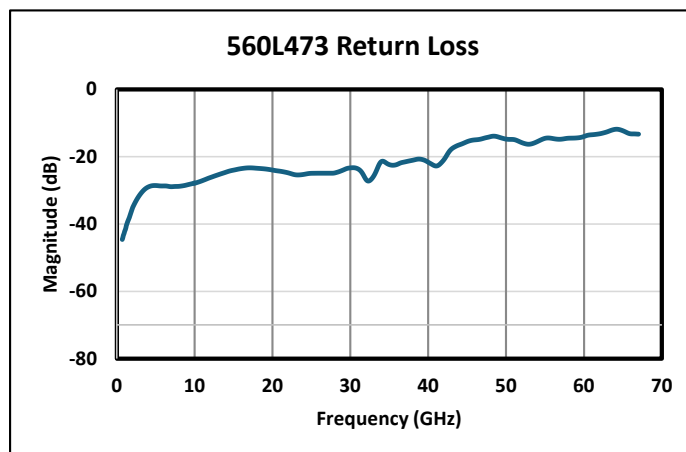
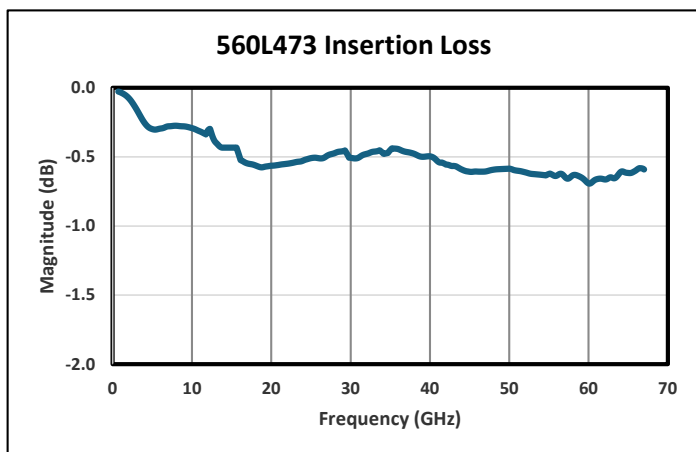


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\*Highest Tested Frequency

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#### PERFORMANCE DATA



#### 550Z Data Sheet Test Condition Description

All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

#### 560L104

Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
560L104Y	0402	16kHz	70GHz*	40GHz	100	16	16	16	Tin	T T\500 T\4K

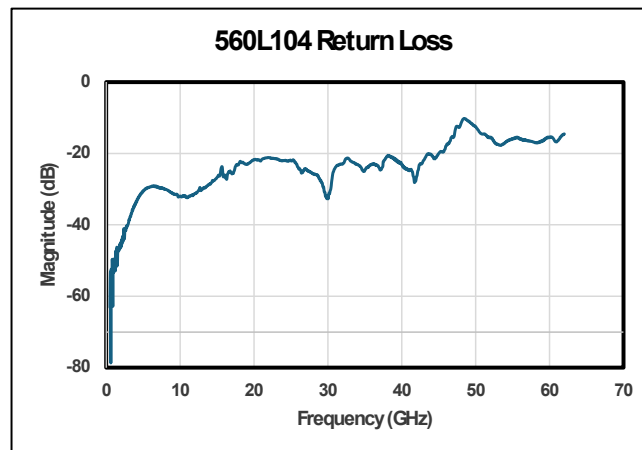
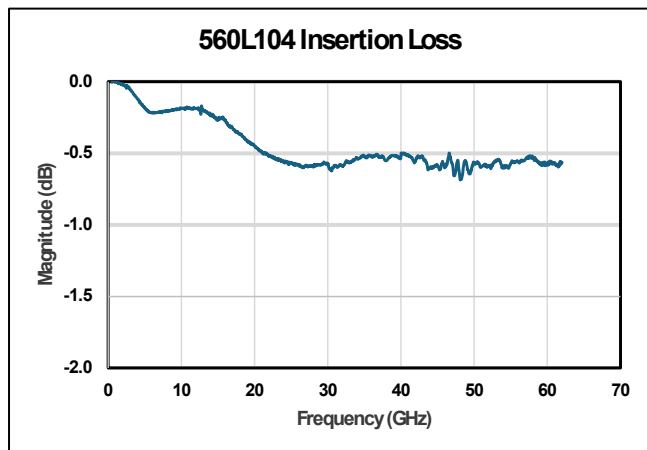


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\*Highest Tested Frequency

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#### PERFORMANCE DATA



#### 560L Data Sheet Test Condition Description

All testing performed on 10 mil-thick Rogers R04350B microstrip board, with the device under test subtending a 24 mil gap in a 22 mil-wide center trace (nominal 50 ohms characteristic impedance).

**RF/Microwave Capacitors**  
**RF/Microwave Multilayer Capacitors (MLC)**  
**550-560 Series UBC™ Ultra-Broadband Capacitor**



**550L104**

Series	Size (EIA)	Min Freq.	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.7dB (Typical)	Cap (nF)	WVDC (85C)	WVDC (105C)	WVDC (125C)	Finish	Packaging
550L104K	0402	16kHz	70GHz*	70GHz	100	16	16	16	Tin/Gold	T T\500 T\4K

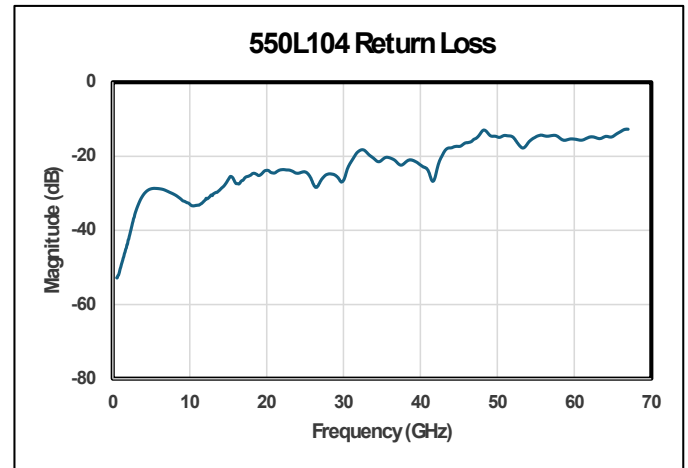
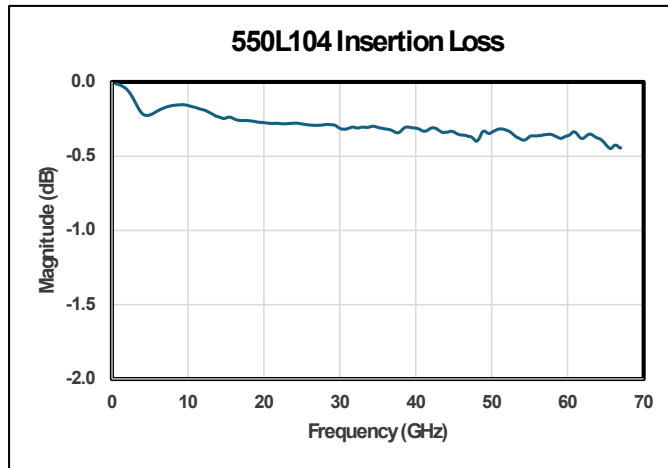


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**PERFORMANCE DATA**



**550L Data Sheet Condition Description**

All testing performed on 10 mil-thick rogers R04350B microstrip board, with the device under test subtending a 24 mil gap in a 22 mil-wide center trace (nominal 50 ohms characteristic impedance)

**SIMULATION MODELS**



KYOCERA AVX and Modelithics have partnered to offer FREE 90-Day trials of highly accurate, scalable advanced simulation models for various KYOCERA AVX parts including **THIS** part as well as Attenuators, Capacitors, Couplers, Inductors, Diplexers, Resistors.

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