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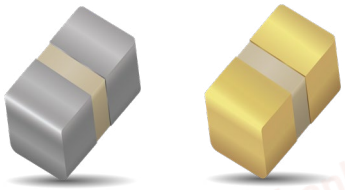
RF/Microwave Capacitors

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

550
Series
550
560

Z
Case Size
W = 01005
Z = 0201
L = 0402

104
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

K
Capacitance Tolerance Code
K = ±10%
M = ±20%
P = +100%, -0%
Y = +25%, -20%

T
Termination Style Code
T = Tin Plated over Nickel Barrier (Standard)
CA = Gold Plated over Nickel Barrier
Tape & Reel

T
Packaging
T = 1000 pc qty.
T\500 = 500 pc qty.
T\4k = 4000 pc qty.
Z = 15K pc for 0201, 20kpc for 01005

ELECTRICAL SPECIFICATIONS

Series	Size (EIA)	Tolerance	Max Freq. for IL <1dB (Typical)	Max Freq. for IL <0.5dB (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	
560W224	01005	M	70GHz*	40GHz	220	X6T	-	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	
560L104	0402	Y	70GHz*	40GHz	100	X7S	16	16	16	Tin	T T\500 T\4K
550L104	0402	K	70GHz*	40GHz	100	X7S	16	16	16	Tin/Gold	

*Highest Tested Frequency

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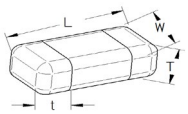
550-560 Series UBC™ Ultra-Broadband Capacitor

GENERAL DIMENSIONS



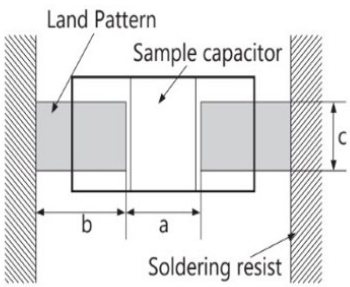
		550W104	550W103	550Z224	550Z104	550Z103	550L104
L (Length)	mm	0.40 ± 0.02	0.40 ± 0.02	0.60 ± 0.03	0.60 ± 0.03	0.58 ± 0.03	1.0 ± 0.1
	(in)	(0.016 ± 0.0008)	(0.016 ± 0.0008)	(0.024 ± 0.001)	(0.024 ± 0.001)	(0.023 ± 0.001)	(0.040 ± 0.004)
W (Width)	mm	0.20 ± 0.02	0.20 ± 0.02	0.30 ± 0.03	0.30 ± 0.03	0.32 ± 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	560W224	560Z224	560Z104	560L104
L (Length)	mm	0.40 ± 0.02	0.40 ± 0.02	0.4 ± 0.02	0.60 ± 0.03	0.60 ± 0.03	1.0 ± 0.1
	(in)	(0.016 ± 0.0008)	(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	0.20 ± 0.02	0.30 ± 0.03	0.30 ± 0.03	0.5 ± 0.1
	(in)	(0.008 ± 0.0008)	(0.008 ± 0.0008)	(0.008 ± 0.0008)	(0.012 ± 0.001)	(0.012 ± 0.001)	(0.020 ± 0.004)
T(Thickness)	mm	0.22 Max	0.22 Max	0.22 Max	0.33 Max	0.22 Max	0.6 Max
	(in)	0.009 Max	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	0.135 ± 0.035	0.15 ± 0.05	0.15 ± 0.05	0.36 ± 0.08
	(in)	(0.005 ± 0.0014)	(0.004 ± 0.0014)	(0.005 ± 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 (0.004 - 0.006)	0.10 - 0.15 (0.004 - 0.006)	0.15 - 0.20 (0.006 - 0.008)
	(in)			
b	mm	0.13 - 0.19 (0.005 - 0.007)	0.30 - 0.40 (0.012 - 0.016)	0.50 - 0.62 (0.020 - 0.025)
	(in)			
c	mm	0.20 - 0.23 (0.008 - 0.009)	0.30 - 0.40 (0.012 - 0.016)	0.50 - 0.75 (0.020 - 0.030)
	(in)			

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



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

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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
550W103M	01005	160kHz	110GHz*	70GHz	10	35	25	16	Tin	Z

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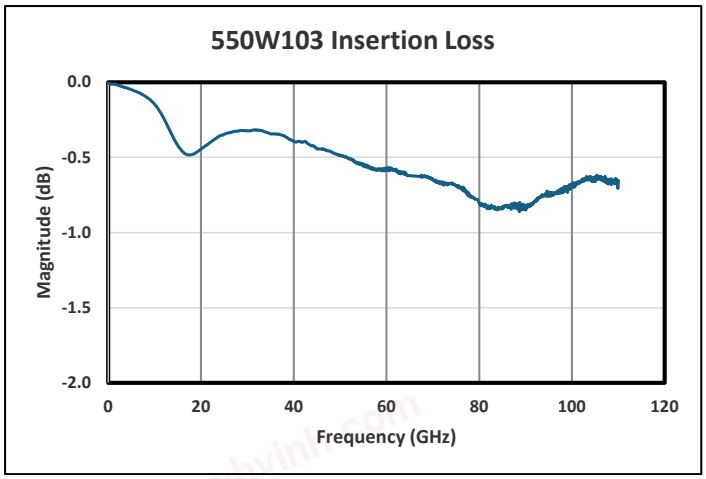

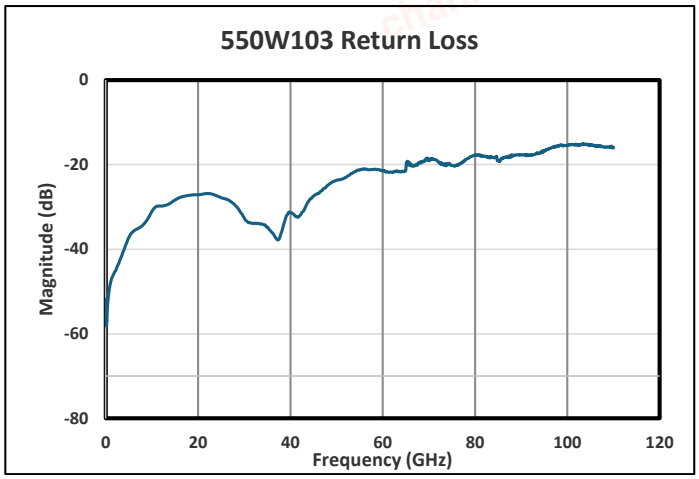

550W Data Sheet Test Condition Description
All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

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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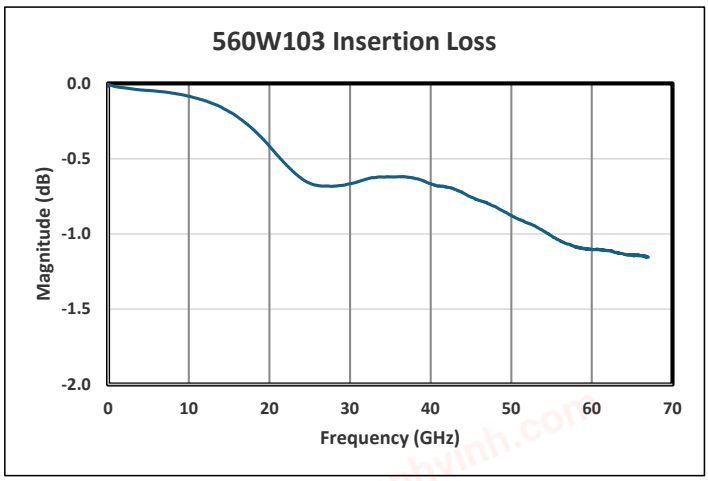

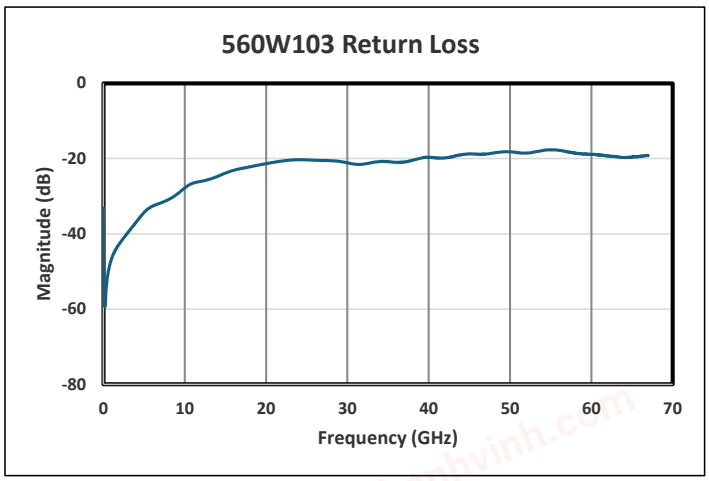

560W Data Sheet Test Condition Description
All testing performed on 10-mil-thick Rogers RO3006 microstrip board, with the device under test subtending a 4 mil gap in a 14.2-mil-wide center trace (nominal 50-ohm characteristic impedance).

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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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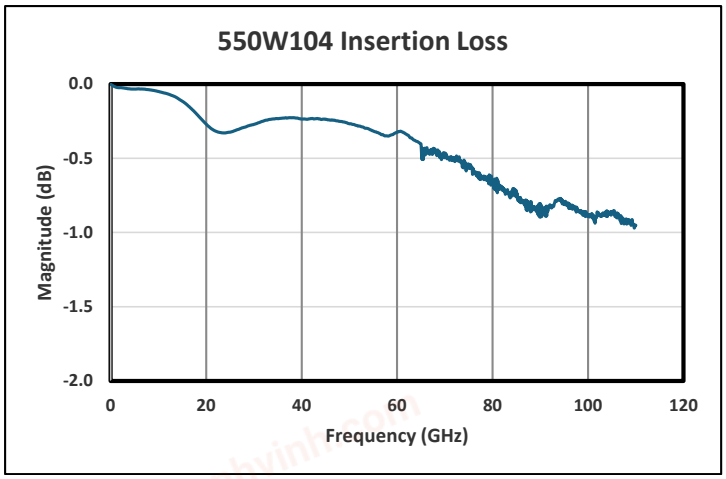

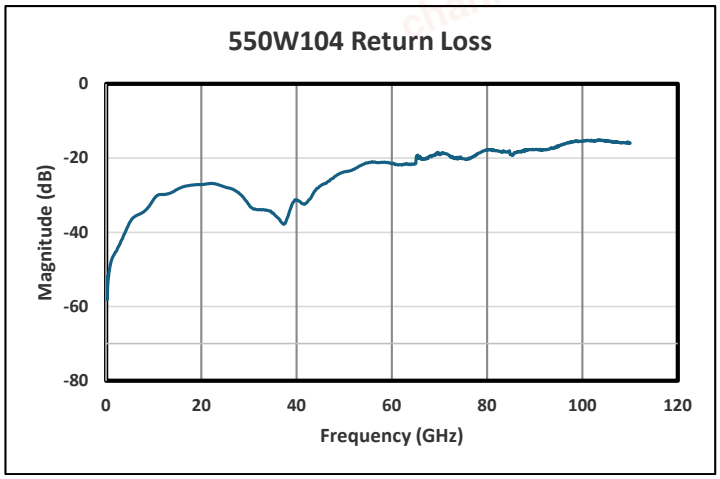

550W Data Sheet Test Condition Description
All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

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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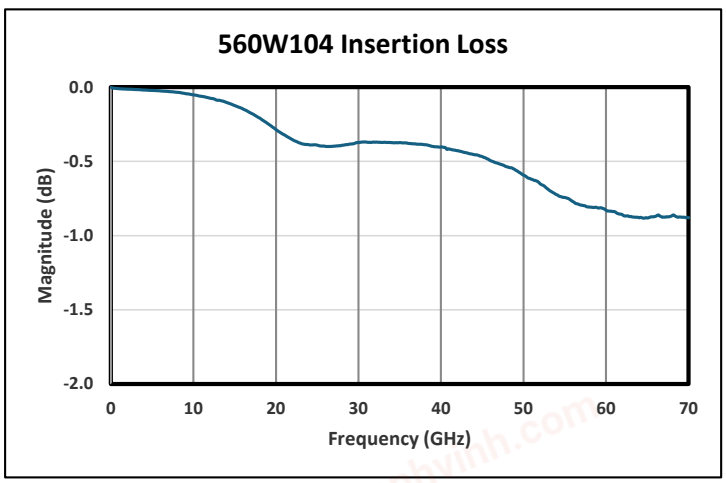

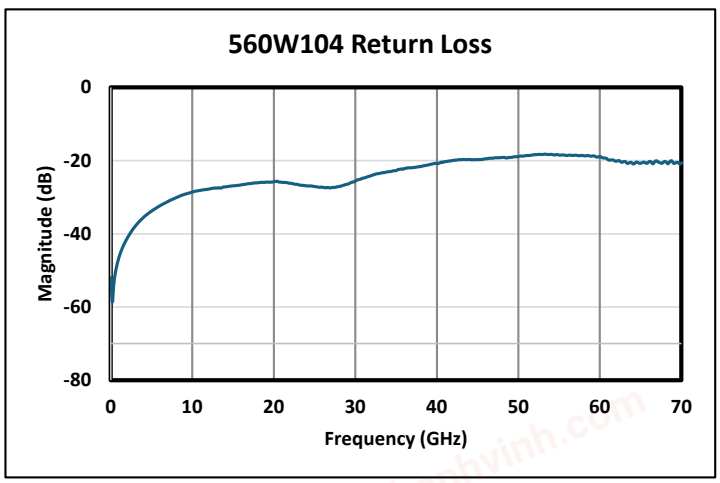

560W Data Sheet Test Condition Description
All testing performed on 10-mil-thick Rogers RO3006 microstrip board, with the device under test subtending a 4 mil gap in a 14.2-mil-wide center trace (nominal 50-ohm characteristic impedance).

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RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

550-560 Series UBC™ Ultra-Broadband Capacitor

560W224

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
560W224	01005	7.2kHz	70GHz*	40GHz	X6T	-	4	-	Tin	Z

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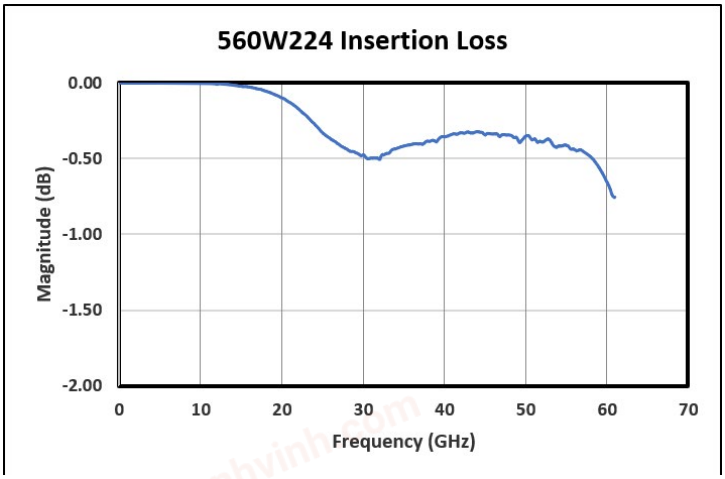

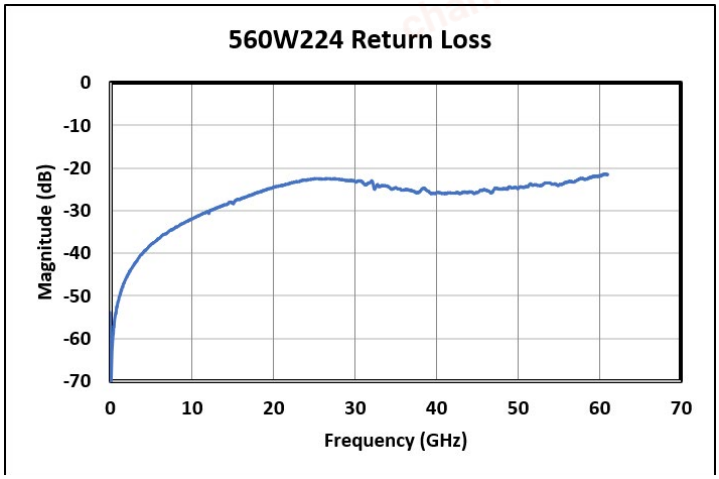

560W Data Sheet Test Condition Description
All testing performed on 10-mil-thick Rogers RO3006 microstrip board, with the device under test subtending a 4 mil gap in a 14.2-mil-wide center trace (nominal 50-ohm characteristic impedance).

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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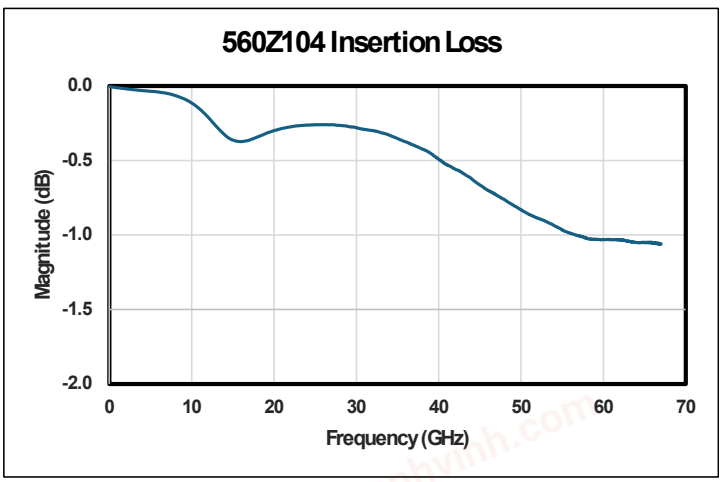

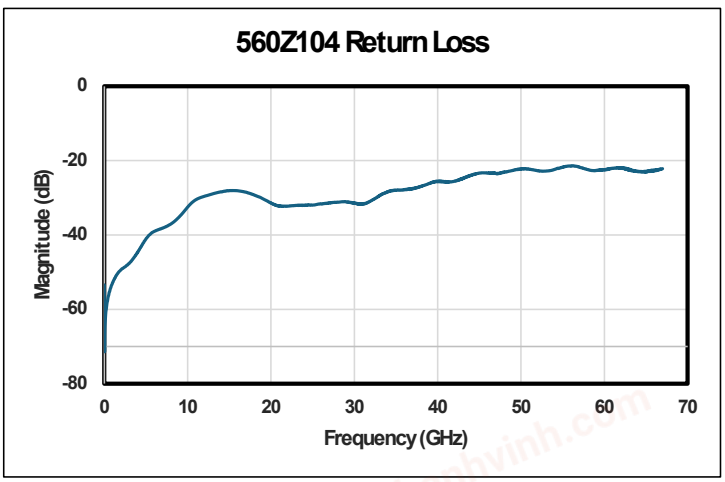

560Z Data Sheet Test Condition Description
All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

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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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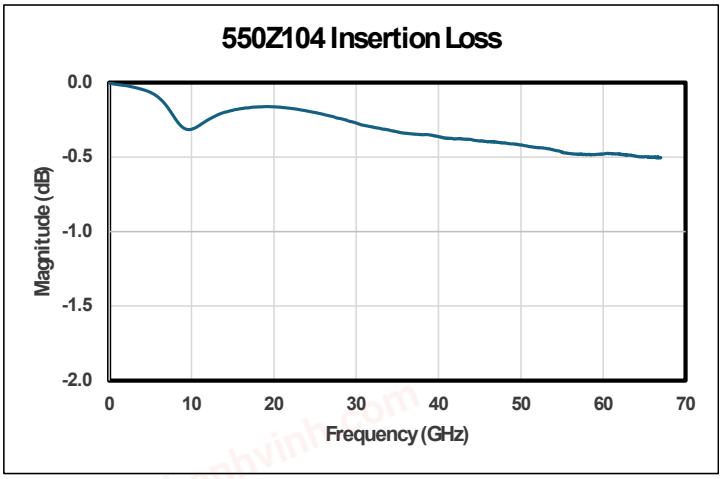

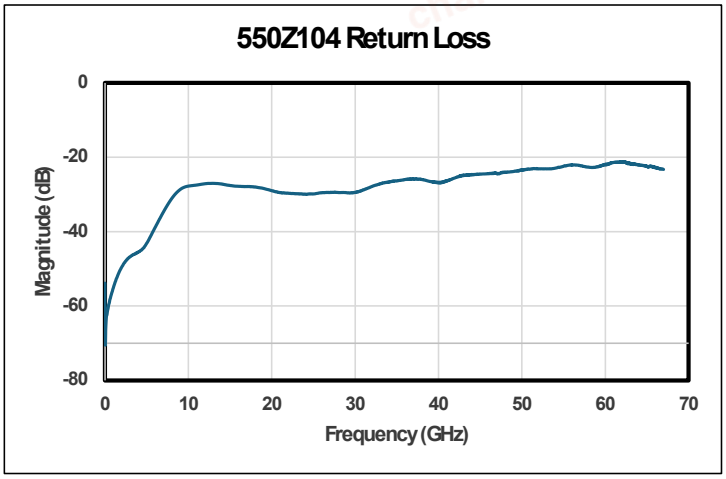

550Z Data Sheet Test Condition Description
All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

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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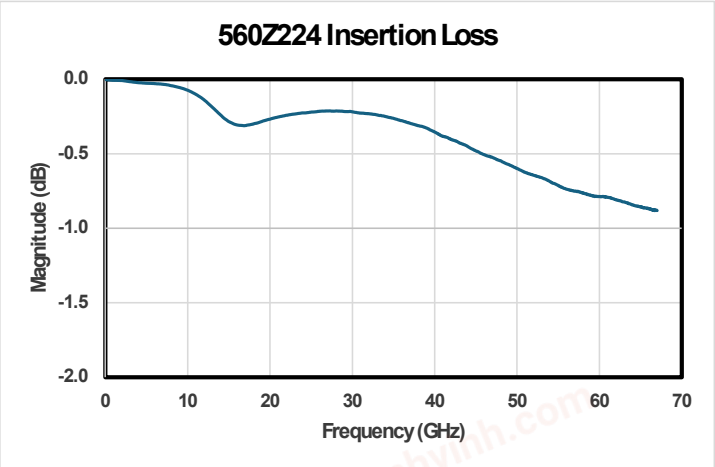

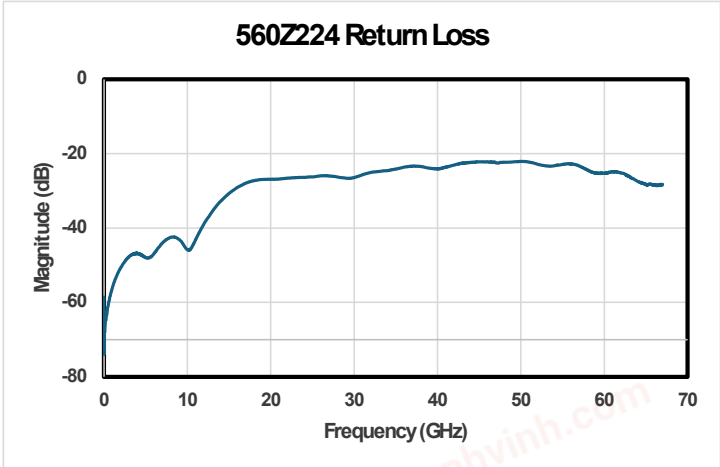

560Z Data Sheet Test Condition Description
All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

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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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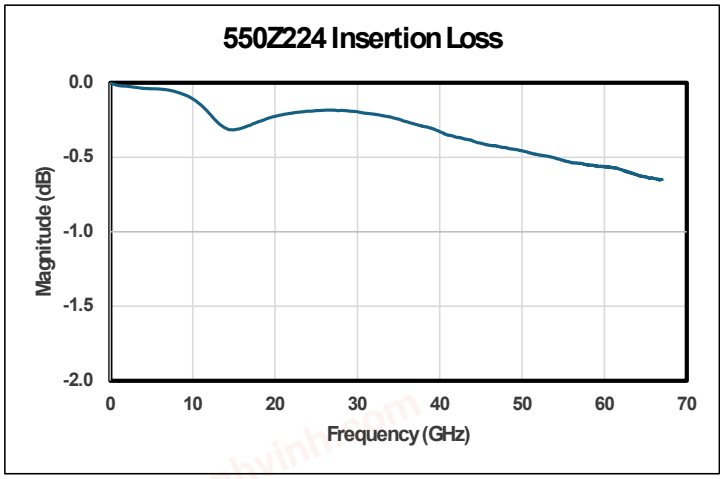

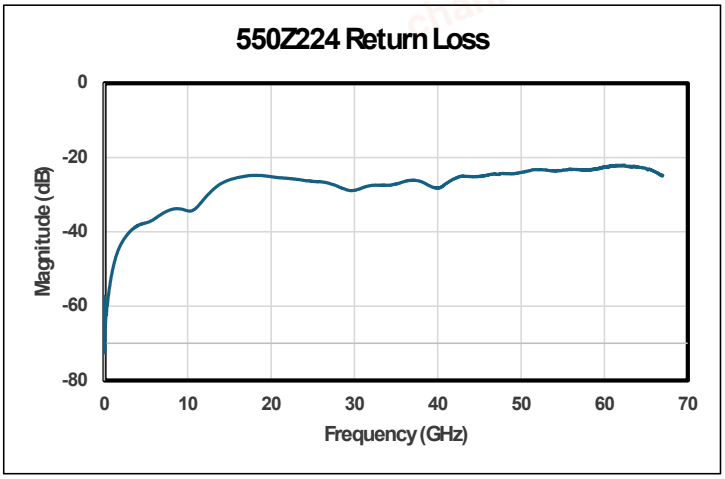

550Z Data Sheet Test Condition Description
All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

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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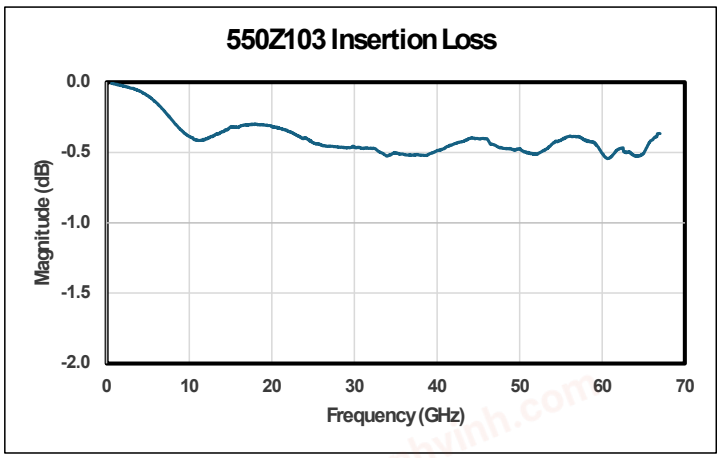

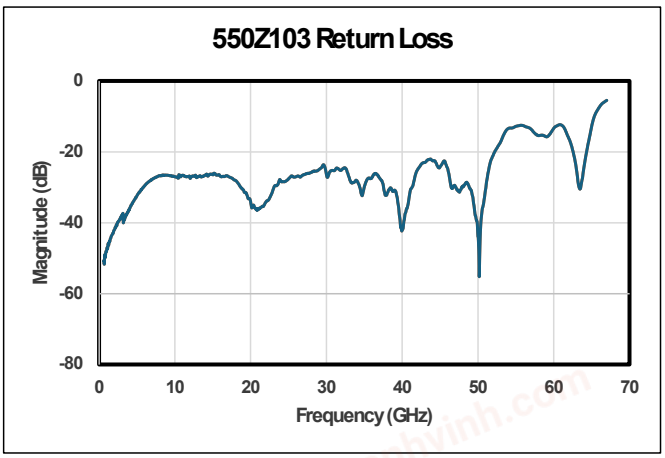

550Z Data Sheet Test Condition Description
All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

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RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

550-560 Series UBC™ Ultra-Broadband Capacitor

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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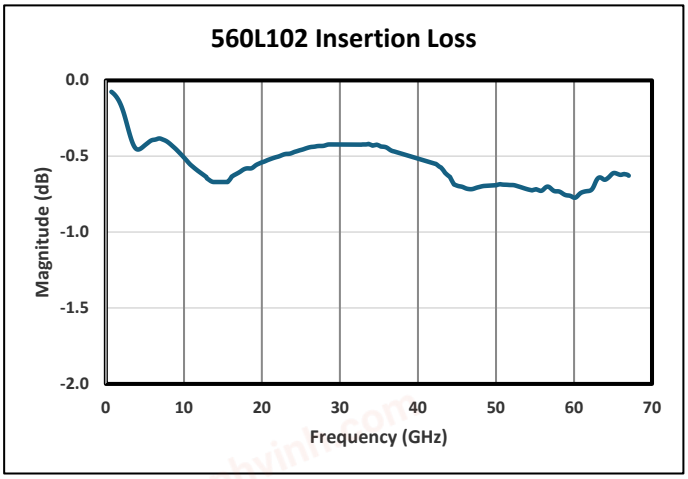

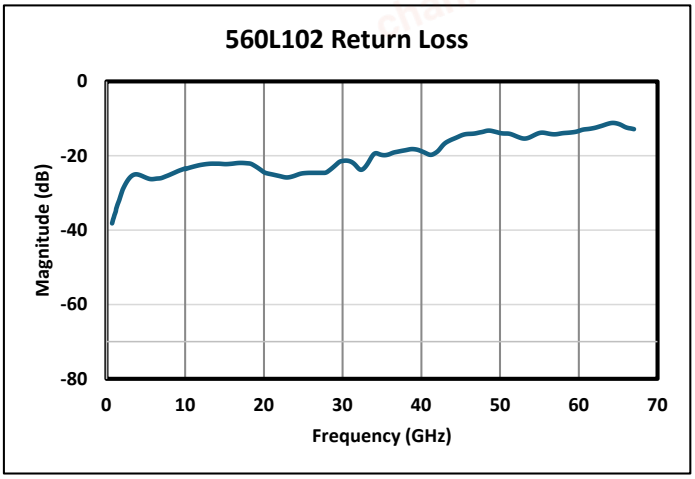

550Z Data Sheet Test Condition Description
All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

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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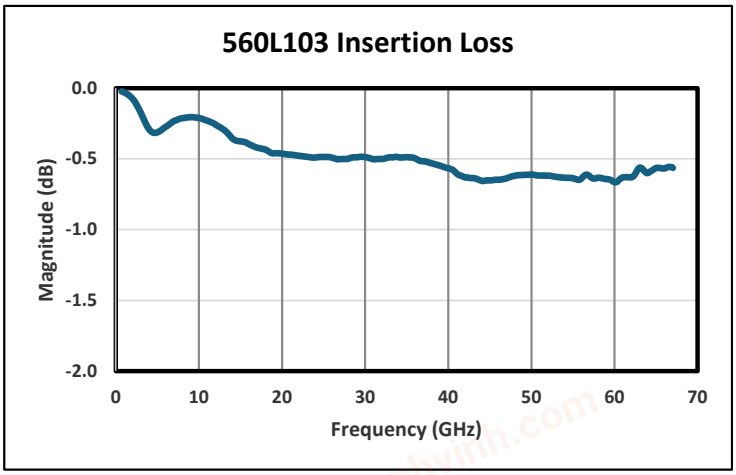

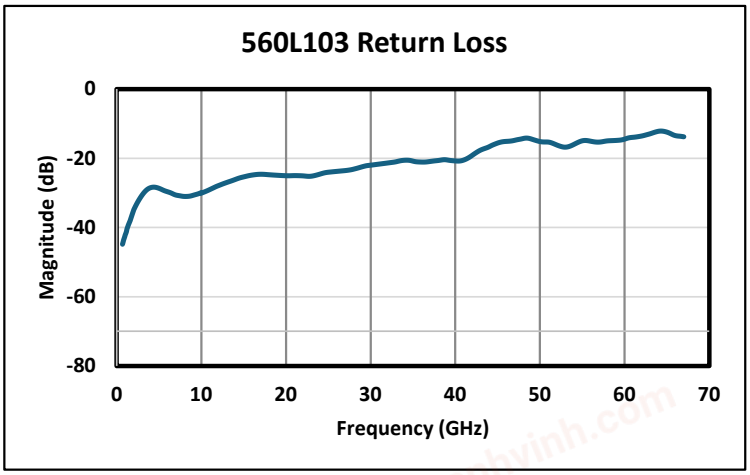

550Z Data Sheet Test Condition Description
All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

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RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

550-560 Series UBC™ Ultra-Broadband Capacitor

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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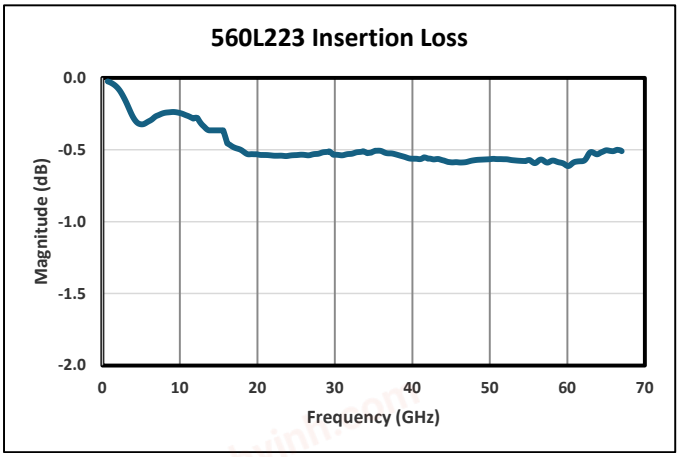

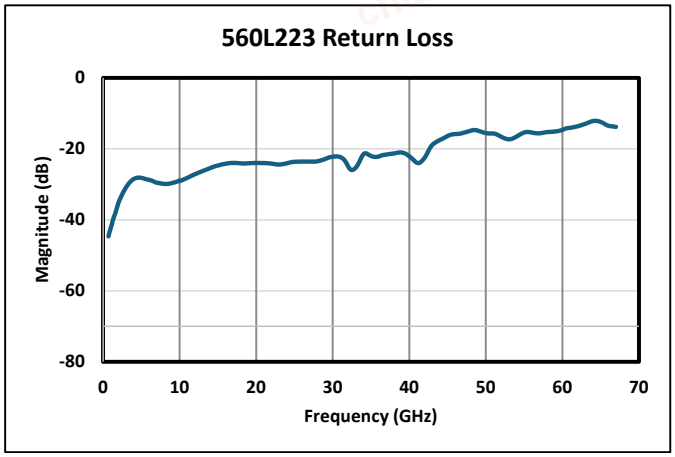

550Z Data Sheet Test Condition Description
All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

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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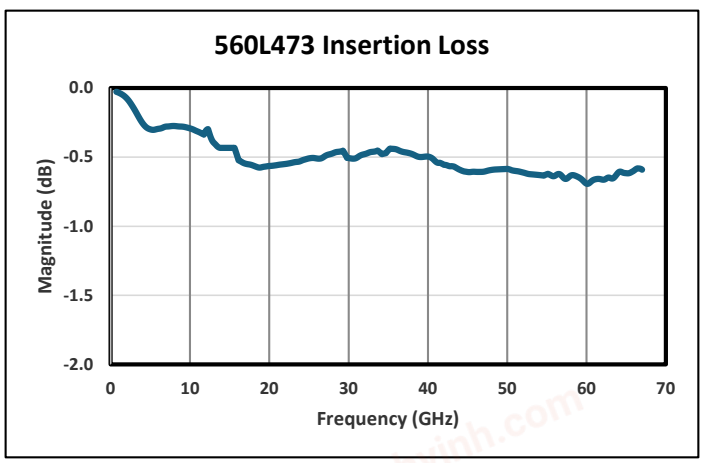

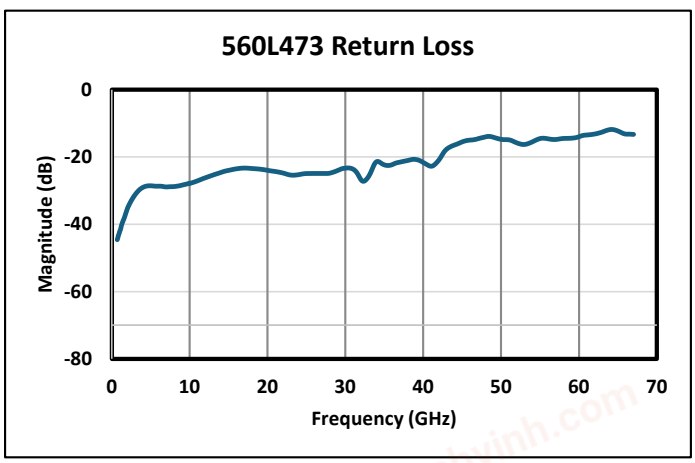

550Z Data Sheet Test Condition Description
All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint (nominal 50-ohm characteristic impedance) @ Modelithics.

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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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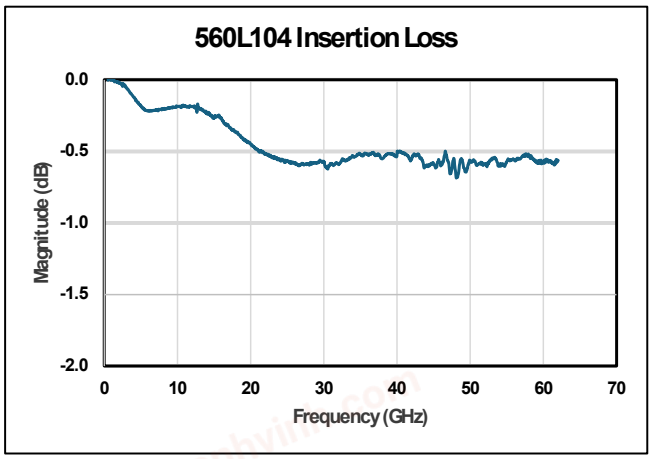

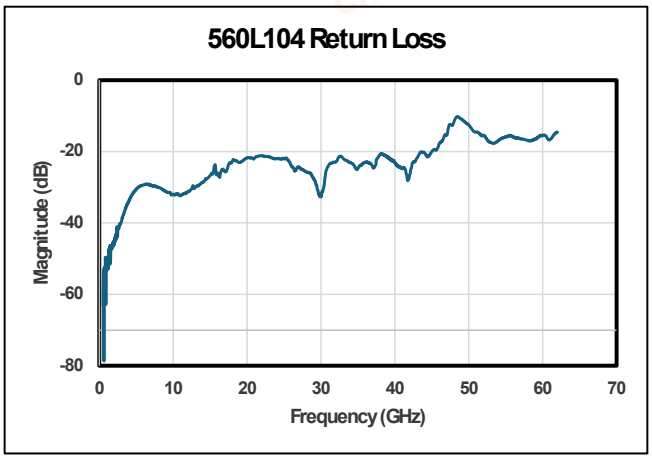

560L Data Sheet Test Condition Description
All testing performed on 10 mil-thick rogers RO4350B microstrip board, with the device under test subtending a 24 mil gap in a 22 mil-wide center trace (nominal 50 ohms characteristic impedance).

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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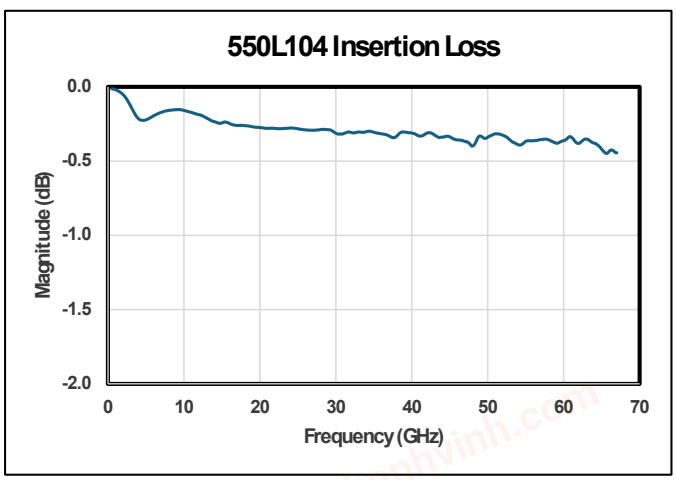

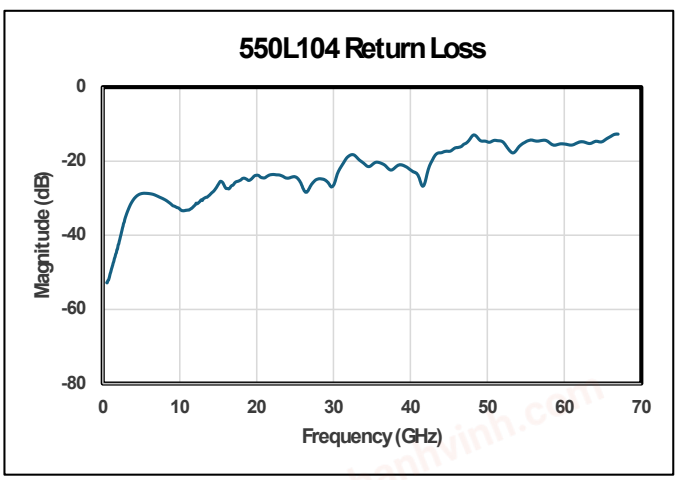

550L Data Sheet Condition Description
All testing performed on 10 mil-thick rogers RO4350B microstrip board, with the device under test subtending a 24 mil gap in a 22 mil-wide center trace (nominal 50 ohms characteristic impedance)

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