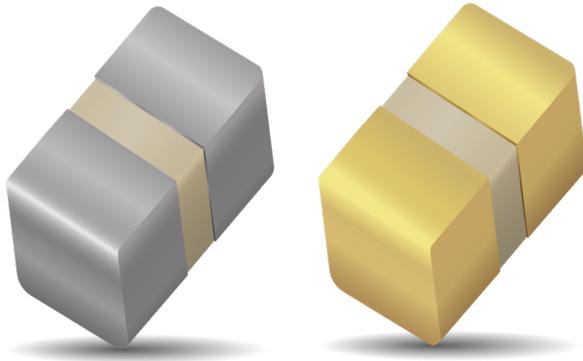


# RF/Microwave Capacitors

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



## ELECTRICAL SPECIFICATIONS

| Series   | Size (EIA) | Min Frequency | Max Frequency | Cap (nF) | WVDC (85C) | WVDC (105C) | WVDC (125C) | Finish   | Packaging          |
|----------|------------|---------------|---------------|----------|------------|-------------|-------------|----------|--------------------|
| 550W103M | 01005      | 160kHz        | 110GHz        | 10       | 35         | 25          | 16          | Tin      | T, Z               |
| 560W104M | 01005      | 16kHz         | 40GHz         | 100      | 6.3        | 4           | --          | Tin      |                    |
| 560Z104M | 0201       | 16kHz         | 40GHz         | 100      | 25         | 16          | 6.3         | Tin      |                    |
| 550Z104M | 0201       | 16kHz         | 110GHz        | 100      | 25         | 16          | 6.3         | Tin      |                    |
| 560Z224M | 0201       | 7.2kHz        | 40GHz         | 220      | 16         | 10          | --          | Tin      |                    |
| 550Z224M | 0201       | 7.2kHz        | 70GHz         | 220      | 16         | 10          | --          | Tin      |                    |
| 550Z103P | 0201       | 160kHz        | 100GHz        | 10       | 10         | 10          | 6.3         | Tin/Gold | T<br>T/500<br>T/4K |
| 560L104Y | 0402       | 16kHz         | 40GHz         | 100      | 16         | 16          | 16          | Tin      |                    |
| 550L104K | 0402       | 16kHz         | 70GHz         | 100      | 16         | 16          | 16          | Tin/Gold |                    |

Click on part number to see performance data and download files

# RF/Microwave Capacitors

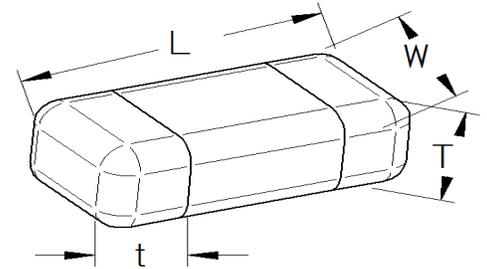
## RF/Microwave Multilayer Capacitors (MLC)

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



#### GENERAL DIMENSIONS

|                  |      | 560W104          | 560Z104         | 560Z224         | 560L104         |
|------------------|------|------------------|-----------------|-----------------|-----------------|
| L<br>(Length)    | mm   | 0.40 ± 0.02      | 0.60 ± 0.03     | 0.60 ± 0.03     | 1.0 ± 0.1       |
|                  | (in) | (0.016 ± 0.0008) | (0.024 ± 0.001) | (0.024 ± 0.001) | (0.040 ± 0.004) |
| W<br>(Width)     | mm   | 0.20 ± 0.02      | 0.30 ± 0.03     | 0.30 ± 0.03     | 0.5 ± 0.1       |
|                  | (in) | (0.008 ± 0.0008) | (0.011 ± 0.001) | (0.011 ± 0.001) | (0.020 ± 0.004) |
| T<br>(Thickness) | mm   | 0.22 Max         | 0.22 Max        | 0.33 Max        | 0.6 Max         |
|                  | (in) | 0.009 Max        | 0.009 Max       | 0.013 Max       | 0.024 Max       |
| t<br>(Terminal)  | mm   | 0.135 ± 0.035    | 0.15 ± 0.05     | 0.15 ± 0.05     | 0.36 ± 0.08     |
|                  | (in) | (0.005 ± 0.0014) | (0.006 ± 0.002) | (0.006 ± 0.002) | (0.014 ± 0.003) |

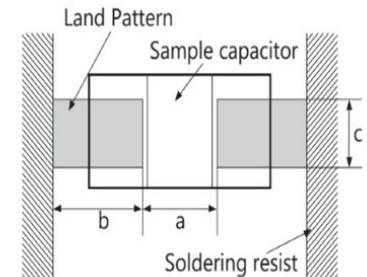


|               |      | 550W103          | 550Z103          | 550Z104         | 550Z224         | 550L104           |
|---------------|------|------------------|------------------|-----------------|-----------------|-------------------|
| L (Length)    | mm   | 0.40 ± 0.02      | 0.58 ± 0.03      | 0.60 ± 0.03     | 0.60 ± 0.03     | 1.0 ± 0.1         |
|               | (in) | (0.016 ± 0.0008) | (0.023 ± 0.001)  | (0.024 ± 0.001) | (0.024 ± 0.001) | (0.040 ± 0.004)   |
| W (Width)     | mm   | 0.20 ± 0.02      | 0.30 ± 0.03      | 0.30 ± 0.03     | 0.30 ± 0.03     | 0.5 ± 0.1         |
|               | (in) | (0.008 ± 0.0008) | (0.011 ± 0.001)  | (0.011 ± 0.001) | (0.011 ± 0.001) | (0.020 ± 0.004)   |
| T (Thickness) | mm   | 0.2 Max          | 0.33 Max         | 0.22 Max        | 0.33 Max        | 0.6 Max           |
|               | (in) | 0.008 Max        | 0.013 Max        | 0.009 Max       | 0.013 Max       | 0.024 Max         |
| t (Terminal)  | mm   | 0.135 ± 0.035    | 0.20 ± 0.04      | 0.23 ± 0.05     | 0.23 ± 0.05     | 0.42 ± 0.08       |
|               | (in) | (0.005 ± 0.0014) | (0.008 ± 0.0015) | (0.009 ± 0.002) | (0.009 ± 0.002) | (0.0165 ± 0.0030) |

#### REFLOW SOLDERING

| 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) |

| 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) |



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



| Size (EIA) | Min Frequency | Max Frequency | Cap (nF) | WVDC (85C) | WVDC (105C) | WVDC (125C) | Finish |
|------------|---------------|---------------|----------|------------|-------------|-------------|--------|
| 01005      | 160kHz        | 110GHz        | 10       | 35         | 25          | 16          | Tin    |

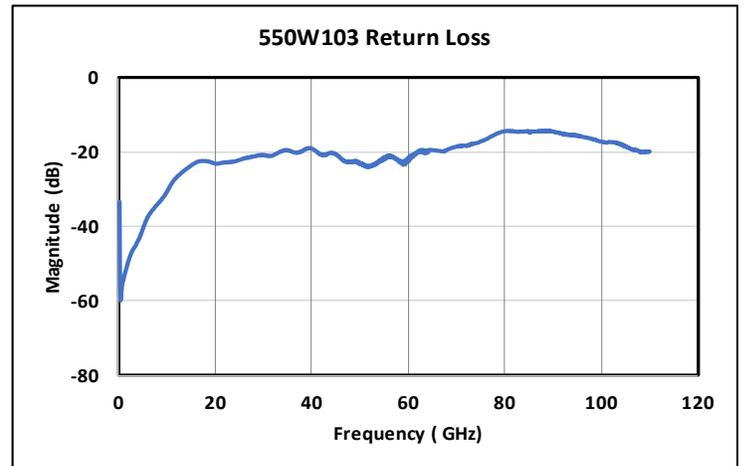


**CLICK HERE TO DOWNLOAD DATA FILES**

\*Data files contain DXF and S2P files

[Click here to return to main table](#)

## 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.

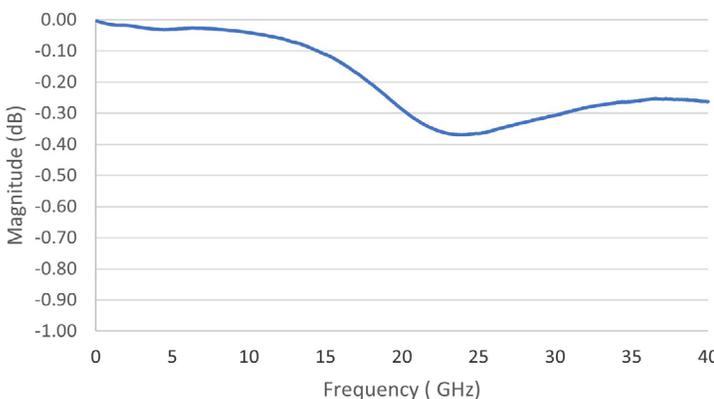
## 560W104M

| Size (EIA) | Min Frequency | Max Frequency | Cap (nF) | WVDC (85C) | WVDC (105C) | WVDC (125C) | Finish |
|------------|---------------|---------------|----------|------------|-------------|-------------|--------|
| 01005      | 16kHz         | 40GHz         | 100      | 6.3        | 4           | --          | Tin    |

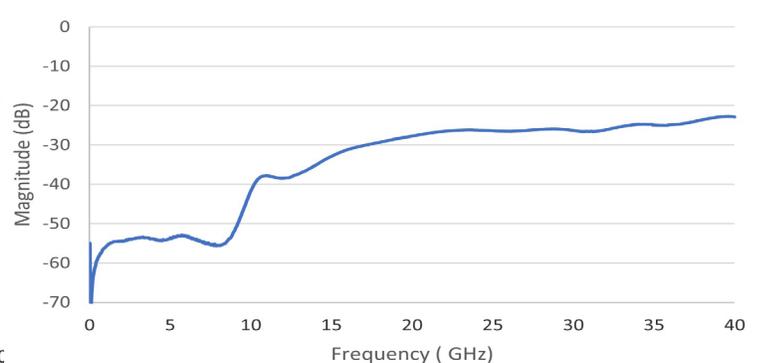
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## PERFORMANCE DATA

### Series Insertion Loss (S21)



### Series Return Loss (S11)



### 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



| Size (EIA) | Min Frequency | Max Frequency | Cap (nF) | WVDC (85C) | WVDC (105C) | WVDC (125C) | Finish |
|------------|---------------|---------------|----------|------------|-------------|-------------|--------|
| 0201       | 16kHz         | 40GHz         | 100      | 25         | 16          | 6.3         | Tin    |

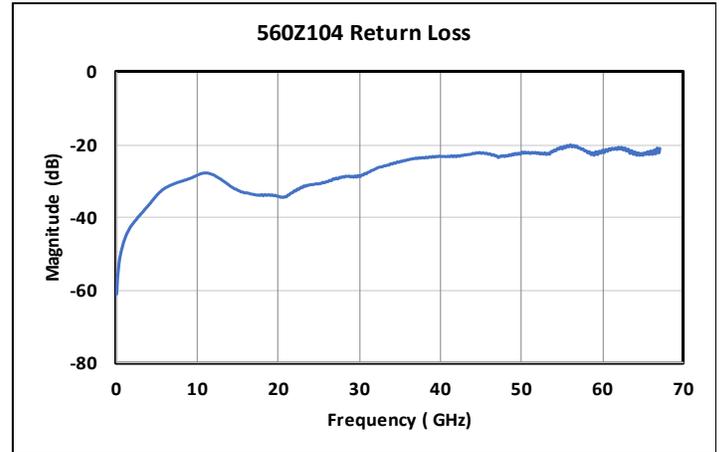


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#### PERFORMANCE DATA



#### 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.

### 550Z104M

| Size (EIA) | Min Frequency | Max Frequency | Cap (nF) | WVDC (85C) | WVDC (105C) | WVDC (125C) | Finish |
|------------|---------------|---------------|----------|------------|-------------|-------------|--------|
| 0201       | 16kHz         | 110GHz        | 100      | 25         | 16          | 6.3         | Tin    |

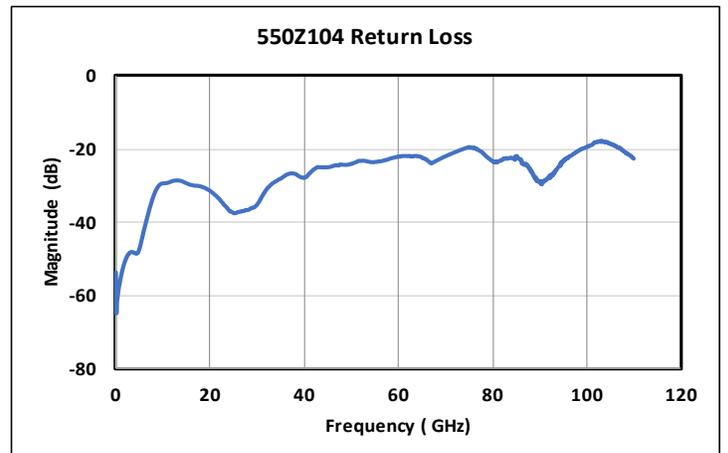
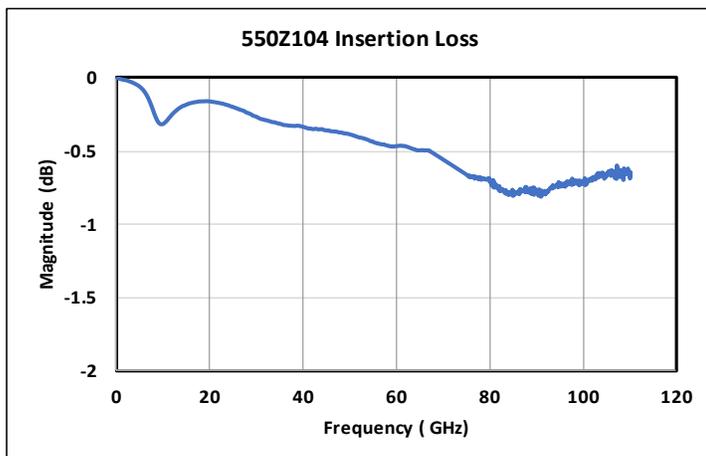


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#### PERFORMANCE DATA



#### 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



#### 560Z224M

| Size (EIA) | Min Frequency | Max Frequency | Cap (nF) | WVDC (85C) | WVDC (105C) | WVDC (125C) | Finish |
|------------|---------------|---------------|----------|------------|-------------|-------------|--------|
| 0201       | 7.2kHz        | 40GHz         | 220      | 16         | 10          | --          | Tin    |

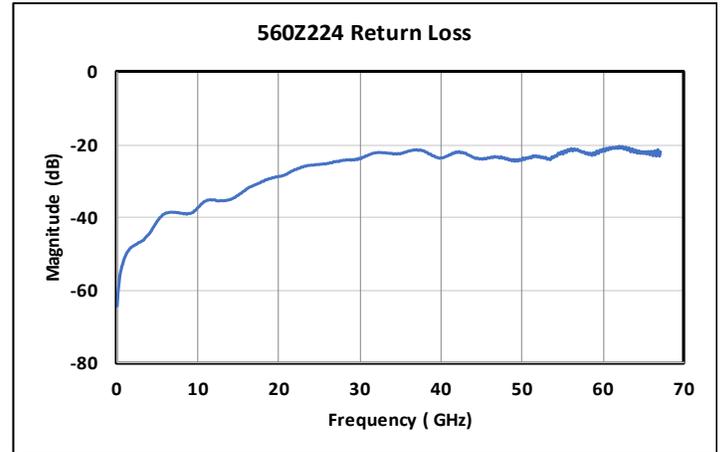
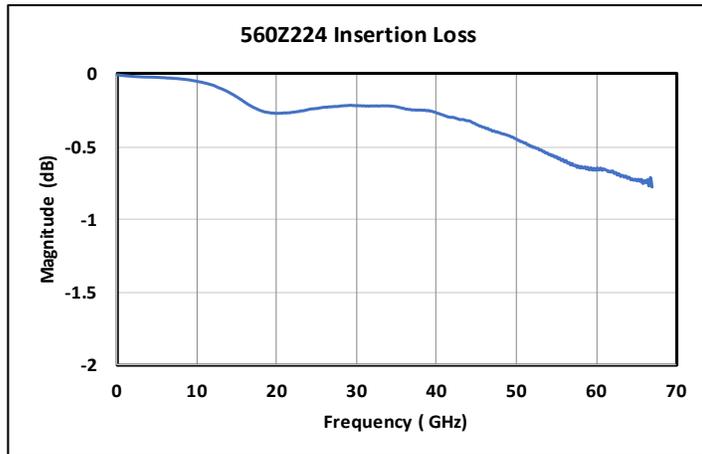


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#### PERFORMANCE DATA



#### 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.

#### 550Z224M

| Size (EIA) | Min Frequency | Max Frequency | Cap (nF) | WVDC (85C) | WVDC (105C) | WVDC (125C) | Finish |
|------------|---------------|---------------|----------|------------|-------------|-------------|--------|
| 0201       | 7.2kHz        | 70GHz         | 220      | 16         | 10          | --          | Tin    |

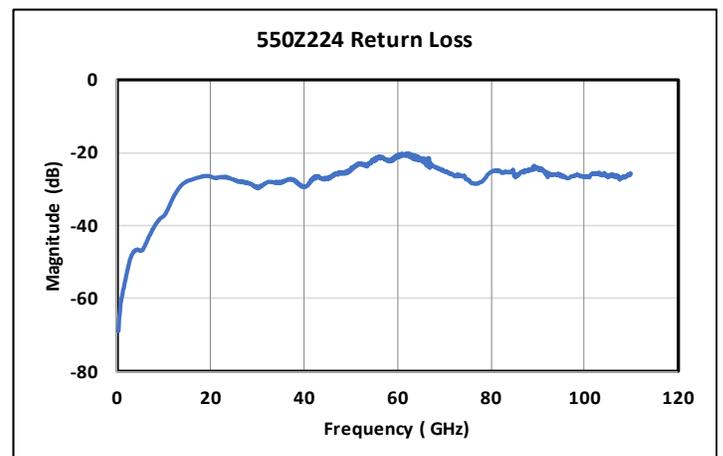


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#### PERFORMANCE DATA



#### 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



#### 550Z103P

| Size (EIA) | Min Frequency | Max Frequency | Cap (nF) | WVDC (85C) | WVDC (105C) | WVDC (125C) | Finish   |
|------------|---------------|---------------|----------|------------|-------------|-------------|----------|
| 0201       | 160kHz        | 100GHz        | 10       | 10         | 10          | 6.3         | Tin/Gold |

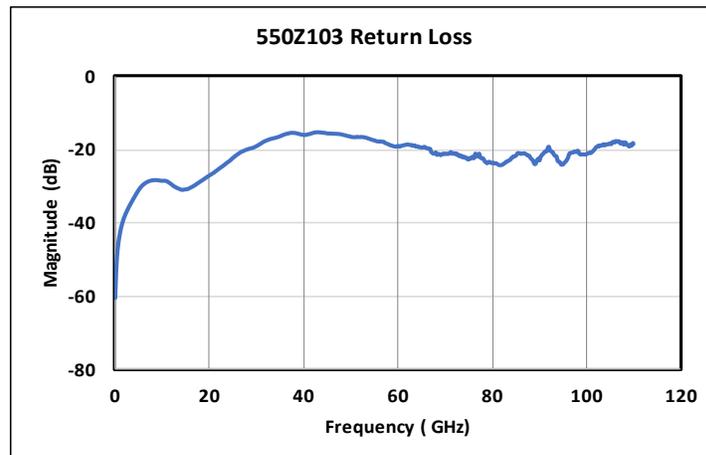


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#### PERFORMANCE DATA



#### 550Z Data Sheet Test Condition Description

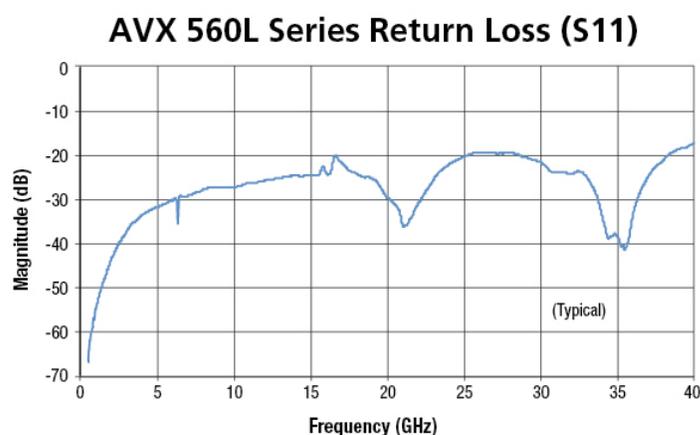
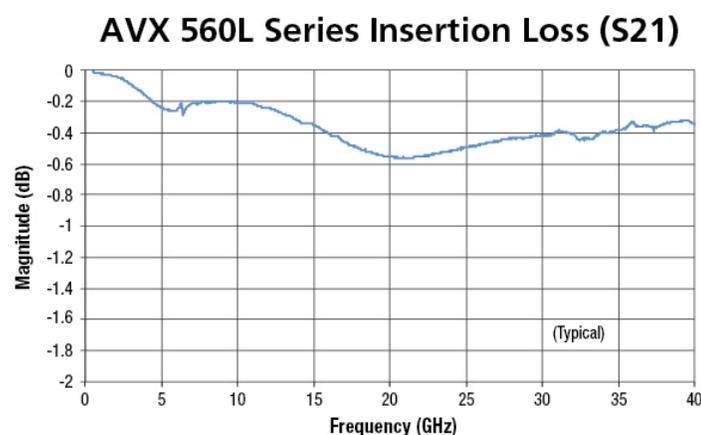
All testing performed on 5-mil-thick Rogers RO3003 board using recommended footprint. (nominal 50-ohm characteristic impedance) @ Modelithics.

#### 560L104Y

| Size (EIA) | Min Frequency | Max Frequency | Cap (nF) | WVDC (85C) | WVDC (105C) | WVDC (125C) | Finish   |
|------------|---------------|---------------|----------|------------|-------------|-------------|----------|
| 0402       | 16kHz         | 40 GHz        | 100      | 16         | 16          | 16          | Tin/Gold |

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#### PERFORMANCE DATA



#### 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).

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



**550L104K**

| Size (EIA) | Min Frequency | Max Frequency | Cap (nF) | WVDC (85C) | WVDC (105C) | WVDC (125C) | Finish   |
|------------|---------------|---------------|----------|------------|-------------|-------------|----------|
| 0402       | 16kHz         | 70GHz         | 100      | 16         | 16          | 16          | Tin/Gold |



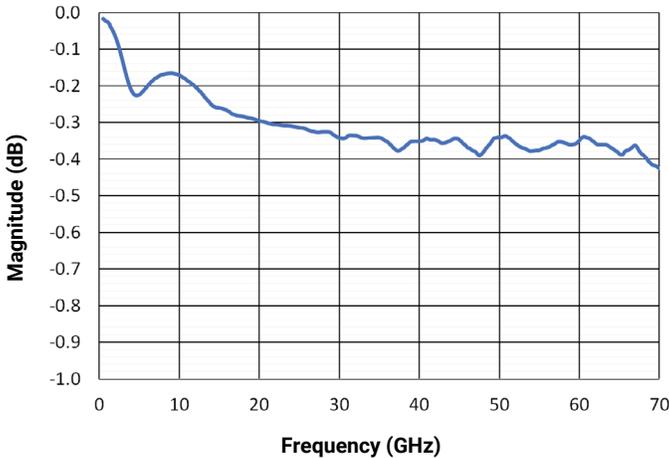
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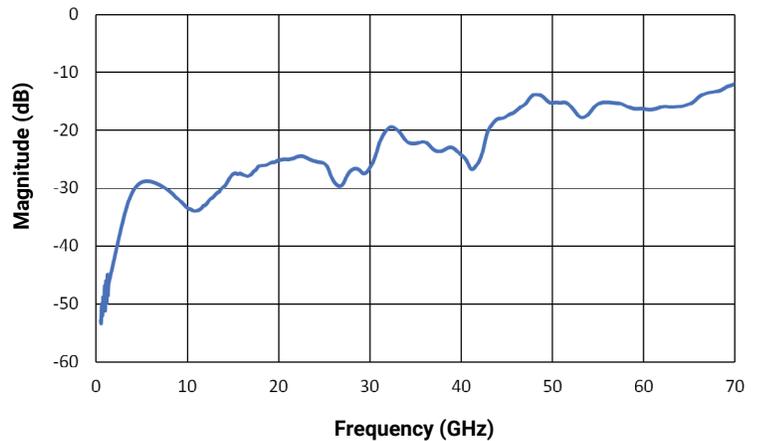
**PERFORMANCE DATA**

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**550L Series Insertion Loss (S21)**



**550L Series Return Loss (S11)**



**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.

For More Information, Please Visit: <https://www.modelithics.com/mvp/avx>  
 Use Promo Code: AVXWP