



# Chip Beads

For general signal line

## MMZ series

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<b>MMZ0402</b>	<b>0402[01005 inch]*</b>
<b>MMZ0603</b>	<b>0603[0201 inch]</b>
<b>MMZ1005</b>	<b>1005[0402 inch]</b>
<b>MMZ1608</b>	<b>1608[0603 inch]</b>
<b>MMZ2012</b>	<b>2012[0805 inch]</b>

\* Dimensions Code JIS[EIA]

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## REMINDERS FOR USING THESE PRODUCTS

Before using these products, be sure to request the delivery specifications.

### SAFETY REMINDERS

Please pay sufficient attention to the warnings for safe designing when using these products.

#### REMINDERS

- The storage period is less than 12 months. Be sure to follow the storage conditions (Temperature: 5 to 40°C, Humidity: 10 to 75% RH or less).  
If the storage period elapses, the soldering of the terminal electrodes may deteriorate.
- Do not use or store in locations where there are conditions such as gas corrosion (salt, acid, alkali, etc.).
- Before soldering, be sure to preheat components.  
The preheating temperature should be set so that the temperature difference between the solder temperature and chip temperature does not exceed 150°C.
- Soldering corrections after mounting should be within the range of the conditions determined in the specifications.  
If overheated, a short circuit, performance deterioration, or lifespan shortening may occur.
- When embedding a printed circuit board where a chip is mounted to a set, be sure that residual stress is not given to the chip due to the overall distortion of the printed circuit board and partial distortion such as at screw tightening portions.
- Self heating (temperature increase) occurs when the power is turned ON, so the tolerance should be sufficient for the set thermal design.
- Carefully lay out the coil for the circuit board design of the non-magnetic shield type.  
A malfunction may occur due to magnetic interference.
- Use a wrist band to discharge static electricity in your body through the grounding wire.
- Do not expose the products to magnets or magnetic fields.
- Do not use for a purpose outside of the contents regulated in the delivery specifications.
- The products listed on this catalog are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.  
The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property.  
If you intend to use the products in the applications listed below or if you have special requirements exceeding the range or conditions set forth in the each catalog, please contact us.

- (1) Aerospace/Aviation equipment
- (2) Transportation equipment (cars, electric trains, ships, etc.)
- (3) Medical equipment
- (4) Power-generation control equipment
- (5) Atomic energy-related equipment
- (6) Seabed equipment
- (7) Transportation control equipment

- (8) Public information-processing equipment
- (9) Military equipment
- (10) Electric heating apparatus, burning equipment
- (11) Disaster prevention/crime prevention equipment
- (12) Safety equipment
- (13) Other applications that are not considered general-purpose applications

When designing your equipment even for general-purpose applications, you are kindly requested to take into consideration securing protection circuit/device or providing backup circuits in your equipment.

# Chip Beads

## For general signal line

Product compatible with RoHS directive  
Halogen-free  
Compatible with lead-free solders

# Overview of the MMZ Series

## FEATURES

- Noise reduction solution for general signal line.
- Lineup includes 5 sizes from 0402 to 2012.
- Various frequency characteristics with 8 materials of different features for countermeasures against everything from general signals to high-speed signals.

## APPLICATION

- Noise removal for mobile devices such as smartphones and tablet terminals, and various modules.
- Noise removal for PCs and recorders, household appliances such as STBs, smart grids, and industrial equipment.

## PART NUMBER CONSTRUCTION

MMZ	0402	S	121	C	T	000		
Series name	LxWxT Dimensions (mm)		Material name	Impedance ( $\Omega$ ) at 100MHz		Characteristic type	Packaging style	Internal code
	0402	0.4x0.2x0.2		A	121			
0603	0.6x0.3x0.3	B			A		A00	
1005	1.0x0.5x0.5	D			B		AH0	
1608	1.6x0.8x0.6	F			H			
	1.6x0.8x0.8	Q						
2012	2.0x1.25x0.85	R						
		S						
		Y						

## OPERATING TEMPERATURE RANGE, PACKAGE QUANTITY, PRODUCT WEIGHT

Type	Temperature range		Package quantity (pieces/reel)	Individual weight (mg)	
	Operating temperature (°C)	Storage temperature* (°C)			
	MMZ0402	-55 to +125			-55 to +125
MMZ0603	-55 to +125	-55 to +125	15,000	0.3	
MMZ1005	-55 to +125	-55 to +125	10,000	1	
MMZ1608	t=0.6mm	-55 to +125	-55 to +125	4,000	3
	t=0.8mm	-55 to +125	-55 to +125	4,000	4
MMZ2012	-55 to +125	-55 to +125	4,000	8	

\* The Storage temperature range is for after the circuit board is mounted.

- RoHS Directive Compliant Product: See the following for more details related to RoHS Directive compliant products. <http://www.tdk.co.jp/rohs/>
- Halogen-free: Indicates that Cl content is less than 900ppm, Br content is less than 900ppm, and that the total Cl and Br content is less than 1500ppm.

• All specifications are subject to change without notice.

# Overview of the MMZ Series

## RECOMMENDED REFLOW PROFILE



Preheating			Soldering		Peak	
Temp.	Temp.	Time	Temp.	Time	Temp.	Time
T1	T2	t1	T3	t2	T4	t3
150°C	180°C	60 to 120s	230°C	30 to 60s	250 to 260°C	10s

# Overview of the MMZ Series

## MATERIAL CHARACTERISTICS

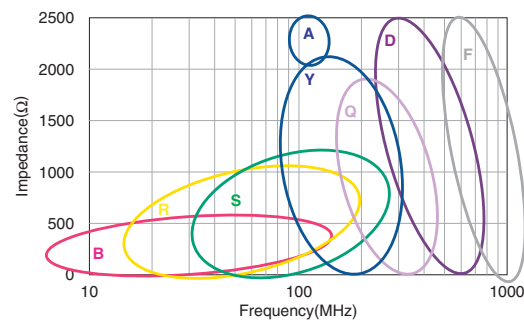
- B material:** This type is perfectly suited for fast digital signals. By equalizing R components and X components that beads possess at a frequency of 5MHz, it is able to suppress overshooting, undershooting and ringing of fast digital signals.
- R material:** For wide frequency applications calling for broad impedance characteristics. For digital signal line applications calling requiring good waveform integrity. Impedance values selected for effectiveness at 10 to 200MHz.
- S material:** Standard type that features impedance characteristics similar to those of a typical ferrite core. For signal line applications in which the blocking region is near 100MHz. Impedance values selected for effectiveness at 40 to 300MHz.
- Y material:** High frequency range type intended for the 100MHz region and above.  
For signal line applications in which the signal frequency is far from the cutoff frequency. Impedance values selected for effectiveness at 80 to 400MHz.
- A material:** This high-impedance product is based on the impedance frequency characteristics of our Y-material. The product offers excellent impedance characteristics, which is greater than 2500Ω, in the vicinity of 100MHz range (MMZ1608A252B).
- Q material:** For high-band applications designed for 100MHz and above. Impedance values selected for effectiveness at 100 to 800MHz.
- D material:** For applications calling for low insertion loss at low frequencies and sharply increasing impedance at high frequencies. Designed for high impedance at high frequencies (300MHz to 1GHz) for signal line applications.
- F material:** This new product inherits the characteristic of our D-material, namely its sharp impedance rise time, and its impedance peak frequency has been shifted higher into range. The product offers excellent noise suppression from 600MHz to as high as in the GHz range.

## TYPICAL MATERIAL IMPEDANCE CHARACTERISTICS

MMZ0402 Type



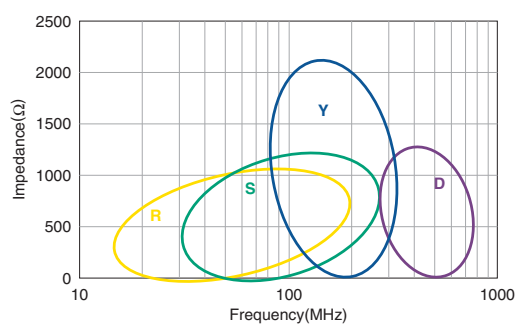
MMZ1608 Type



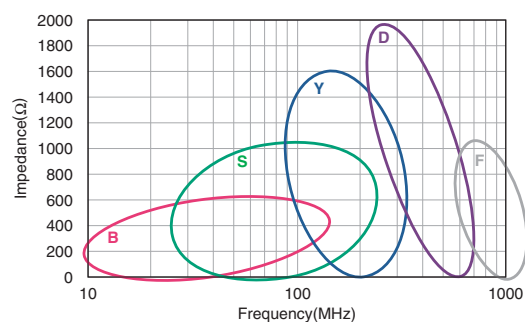
MMZ0603 Type



MMZ2012 Type



MMZ1005 Type



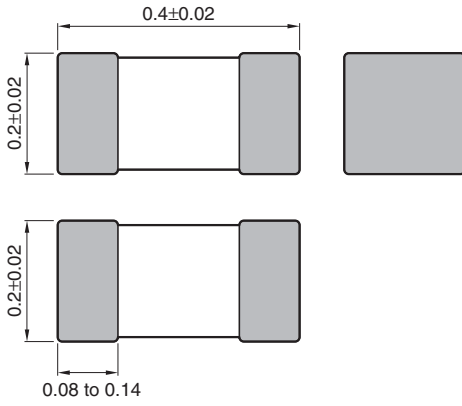
• All specifications are subject to change without notice.

MMZ series

# MMZ0402 Type

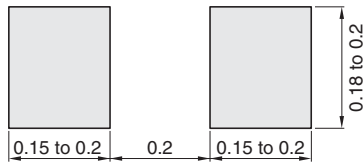


## ■ SHAPE & DIMENSIONS



Dimensions in mm

## ■ RECOMMENDED LAND PATTERN



Dimensions in mm

• All specifications are subject to change without notice.

# MMZ series **MMZ0402 Type**

## ■ ELECTRICAL CHARACTERISTICS

### □ CHARACTERISTICS SPECIFICATION TABLE

Impedance [100MHz] ( $\Omega$ )	Tolerance	DC resistance ( $\Omega$ )max.	Rated current (mA)max.	Part No.
10	$\pm 5\Omega$	0.07	750	MMZ0402S100CT000
70	$\pm 25\%$	0.36	300	MMZ0402S700CT000
120	$\pm 25\%$	0.70	210	MMZ0402S121CT000
150	$\pm 25\%$	0.70	200	MMZ0402S151CT000

### ○ Measurement equipment

Measurement item	Product No.	Manufacturer
Impedance	E4991A+16196D	Agilent Technologies
DC resistance	Type-7556	Yokogawa

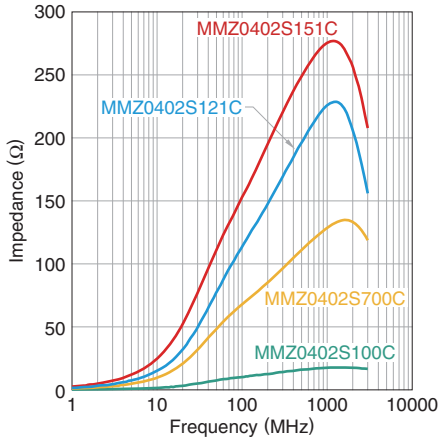
\* Equivalent measurement equipment may be used.

# MMZ series **MMZ0402 Type**

## ■ ELECTRICAL CHARACTERISTICS

### □ Z VS. FREQUENCY CHARACTERISTICS (BY SERIES)

#### MMZ0402S SERIES



• All specifications are subject to change without notice.

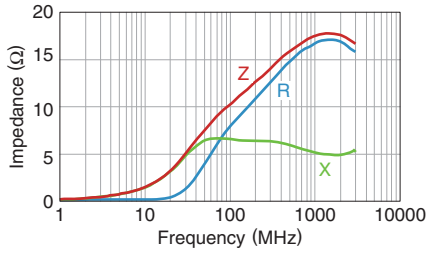


# MMZ series **MMZ0402 Type**

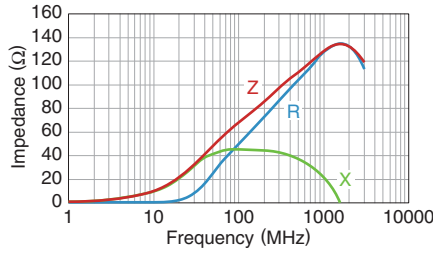
## ■ ELECTRICAL CHARACTERISTICS

### □ Z, X, R VS. FREQUENCY CHARACTERISTICS

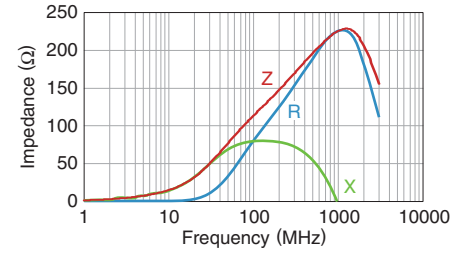
**MMZ0402S100CT000**



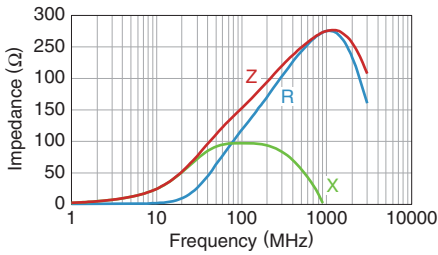
**MMZ0402S700CT000**



**MMZ0402S121CT000**



**MMZ0402S151CT000**



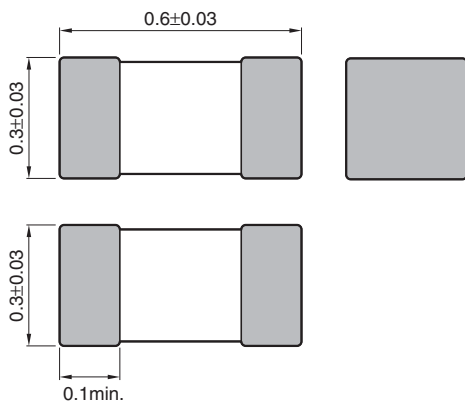
• All specifications are subject to change without notice.

MMZ series

# MMZ0603 Type

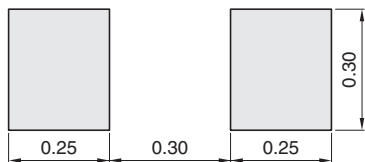


## SHAPE & DIMENSIONS



Dimensions in mm

## RECOMMENDED LAND PATTERN



Dimensions in mm

• All specifications are subject to change without notice.

# MMZ series MMZ0603 Type

## ELECTRICAL CHARACTERISTICS

### CHARACTERISTICS SPECIFICATION TABLE

Impedance [100MHz] ( $\Omega$ )	Tolerance	DC resistance ( $\Omega$ )max.	Rated current (mA)max.	Part No.
10	$\pm 5\Omega$	0.05	1000	MMZ0603S100CT000
80	$\pm 25\%$	0.30	200	MMZ0603S800CT000
120	$\pm 25\%$	0.45	200	MMZ0603S121CT000
240	$\pm 25\%$	0.57	200	MMZ0603S241CT000
470	$\pm 25\%$	1.30	100	MMZ0603S471CT000
600	$\pm 25\%$	1.45	100	MMZ0603S601CT000
80	$\pm 25\%$	0.18	520	MMZ0603S800HT000
120	$\pm 25\%$	0.22	480	MMZ0603S121HT000
240	$\pm 25\%$	0.32	420	MMZ0603S241HT000
470	$\pm 25\%$	0.65	310	MMZ0603S471HT000
600	$\pm 25\%$	0.75	280	MMZ0603S601HT000
1000	$\pm 25\%$	1.25	200	MMZ0603S102HT000
75	$\pm 25\%$	0.35	300	MMZ0603Y750CT000
120	$\pm 25\%$	0.39	200	MMZ0603Y121CT000
240	$\pm 25\%$	0.80	200	MMZ0603Y241CT000
470	$\pm 25\%$	1.40	200	MMZ0603Y471CT000
600	$\pm 25\%$	1.50	200	MMZ0603Y601CT000
33	$\pm 25\%$	0.70	200	MMZ0603D330CT000
47	$\pm 25\%$	0.70	200	MMZ0603D470CT000
56	$\pm 25\%$	0.95	100	MMZ0603D560CT000
80	$\pm 25\%$	1.25	100	MMZ0603D800CT000
120	$\pm 25\%$	1.40	100	MMZ0603D121CT000
10	$\pm 5\Omega$	0.50	200	MMZ0603F100CT000
22	$\pm 25\%$	1.00	200	MMZ0603F220CT000
33	$\pm 25\%$	1.30	150	MMZ0603F330CT000

#### ○ Measurement equipment

Measurement item	Product No.	Manufacturer
Impedance	E4991A+16197	Agilent Technologies
DC resistance	Type-7556	Yokogawa

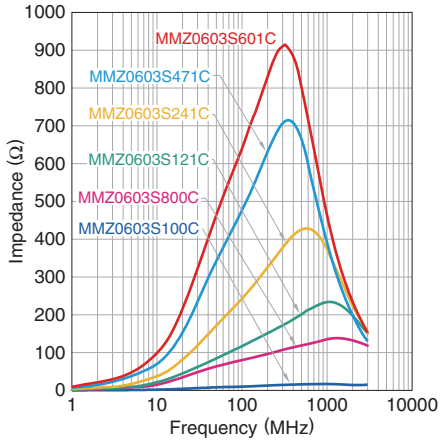
\* Equivalent measurement equipment may be used.

# MMZ series **MMZ0603 Type**

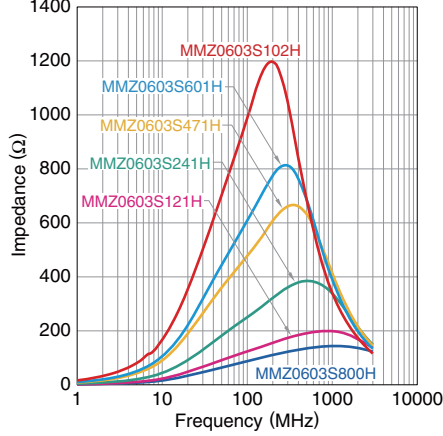
## ■ ELECTRICAL CHARACTERISTICS

### □ Z VS. FREQUENCY CHARACTERISTICS (BY SERIES)

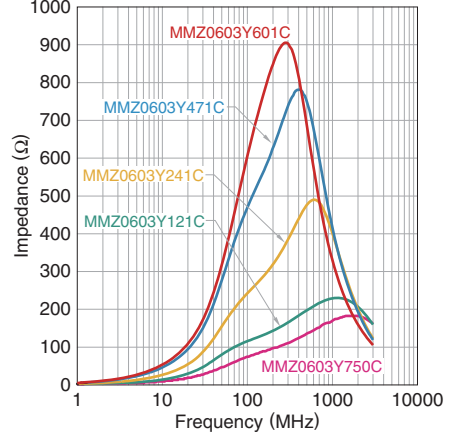
**MMZ0603S-C SERIES**



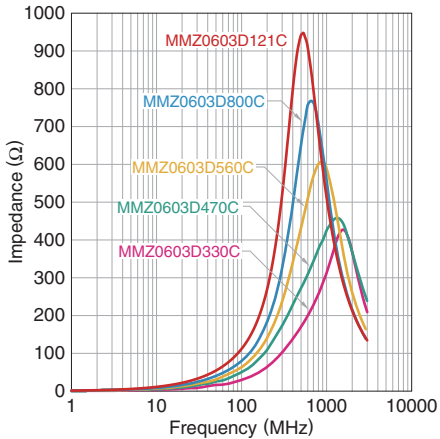
**MMZ0603S-H SERIES**



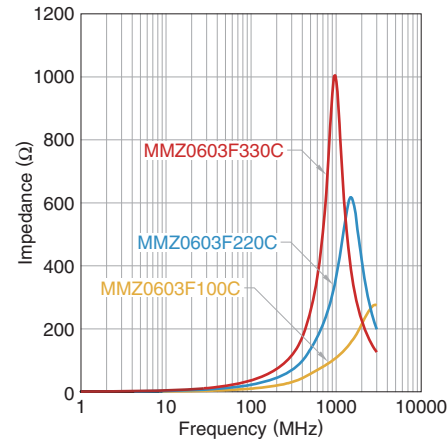
**MMZ0603Y SERIES**



**MMZ0603D SERIES**



**MMZ0603F SERIES**



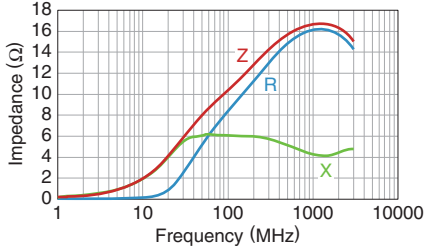
• All specifications are subject to change without notice.

# MMZ series MMZ0603 Type

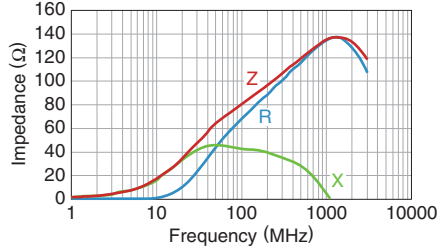
## ELECTRICAL CHARACTERISTICS

### Z, X, R VS. FREQUENCY CHARACTERISTICS

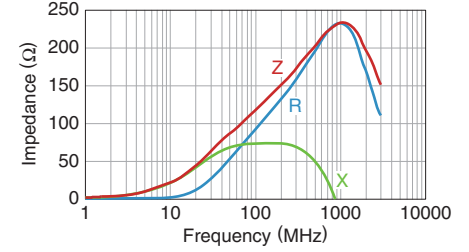
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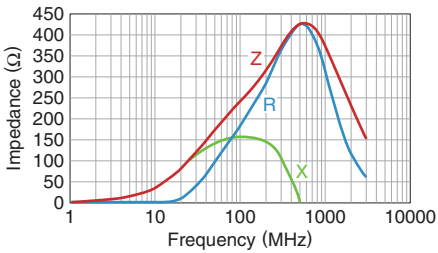
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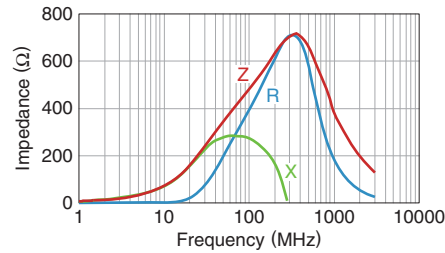
MMZ0603S121CT000



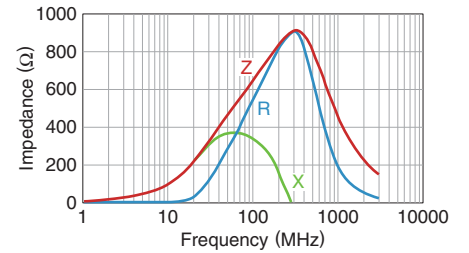
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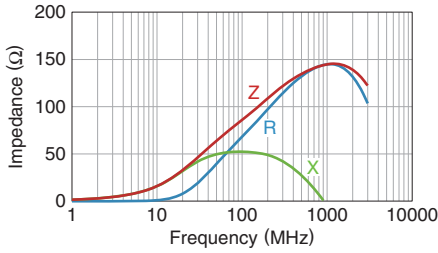
MMZ0603S471CT000



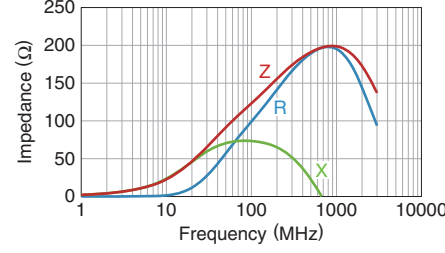
MMZ0603S601CT000



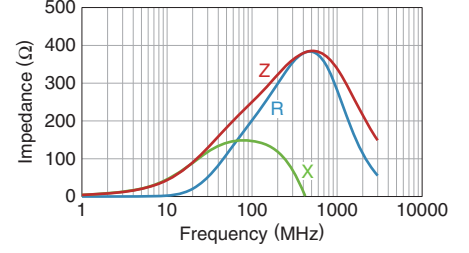
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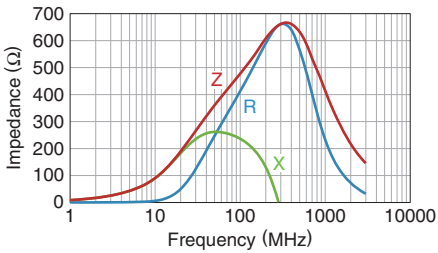
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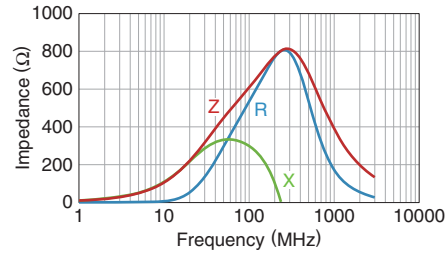
MMZ0603S241HT000



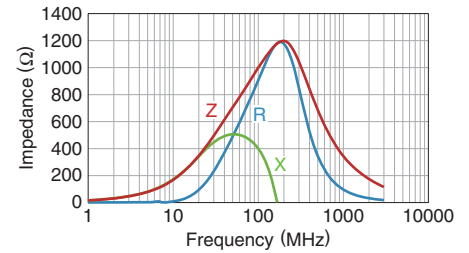
MMZ0603S471HT000



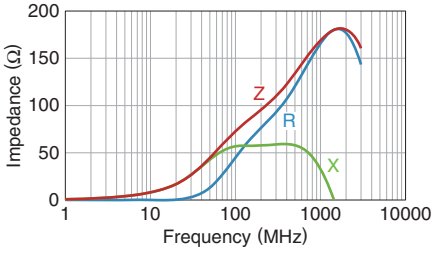
MMZ0603S601HT000



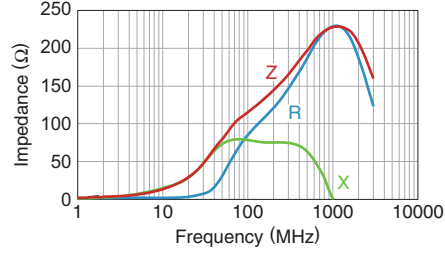
MMZ0603S102HT000



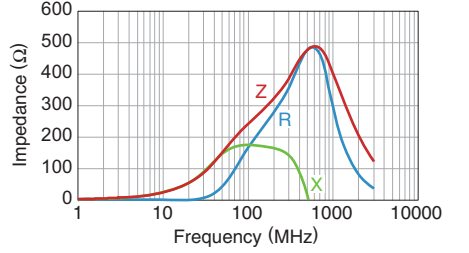
MMZ0603Y750CT000



MMZ0603Y121CT000



MMZ0603Y241CT000



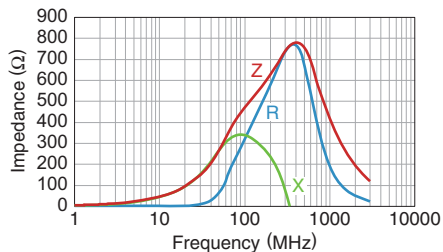
• All specifications are subject to change without notice.

# MMZ series **MMZ0603 Type**

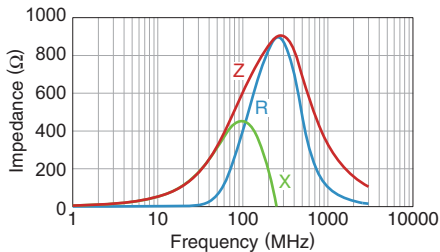
## ■ ELECTRICAL CHARACTERISTICS

### □ Z, X, R VS. FREQUENCY CHARACTERISTICS

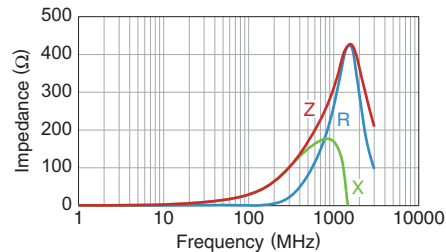
**MMZ0603Y471CT000**



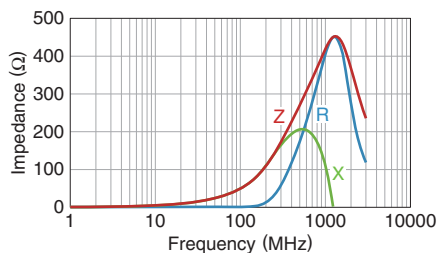
**MMZ0603Y601CT000**



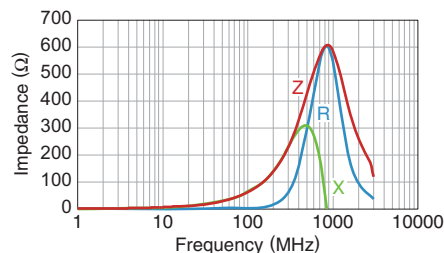
**MMZ0603D330CT000**



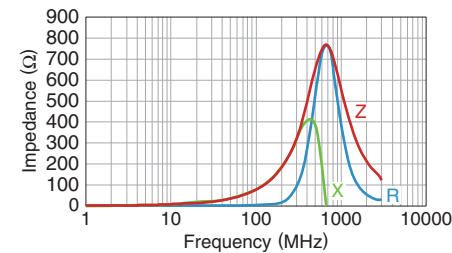
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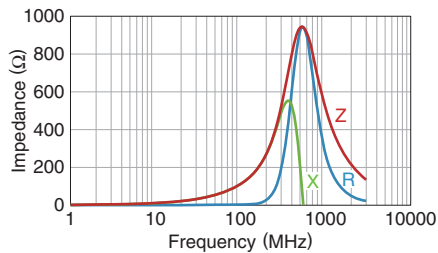
**MMZ0603D560CT000**



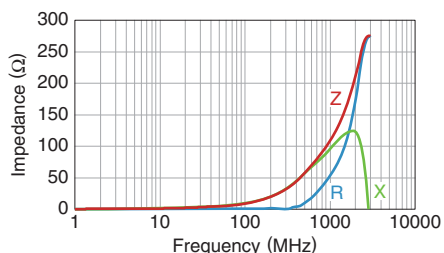
**MMZ0603D800CT000**



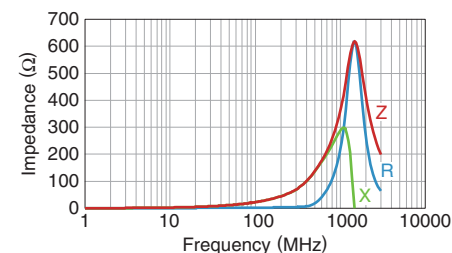
**MMZ0603D121CT000**



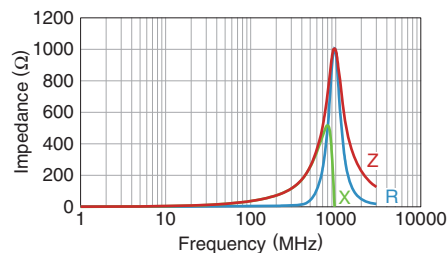
**MMZ0603F100CT000**



**MMZ0603F220CT000**



**MMZ0603F330CT000**



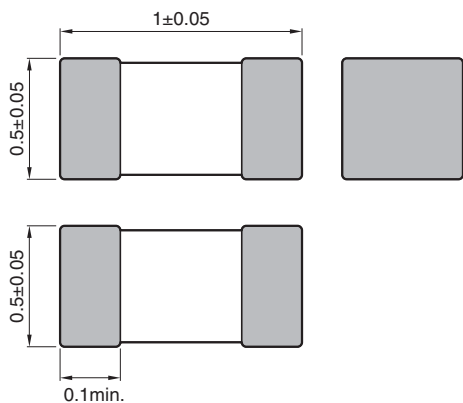
• All specifications are subject to change without notice.

MMZ series

# MMZ1005 Type

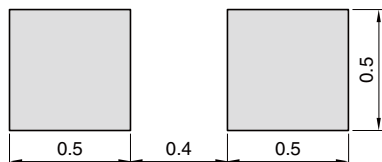


## SHAPE & DIMENSIONS



Dimensions in mm

## RECOMMENDED LAND PATTERN



Dimensions in mm

• All specifications are subject to change without notice.

# MMZ series MMZ1005 Type

## ELECTRICAL CHARACTERISTICS

### CHARACTERISTICS SPECIFICATION TABLE

Impedance [100MHz] ( $\Omega$ )	Tolerance	DC resistance ( $\Omega$ )max.	Rated current (mA)max.	Part No.
80	$\pm 25\%$	0.19	450	MMZ1005B800CT000
120	$\pm 25\%$	0.25	400	MMZ1005B121CT000
600	$\pm 25\%$	0.85	200	MMZ1005B601CT000
80	$\pm 25\%$	0.12	500	MMZ1005S800CT000
120	$\pm 25\%$	0.22	500	MMZ1005S121CT000
240	$\pm 25\%$	0.28	400	MMZ1005S241CT000
600	$\pm 25\%$	0.52	300	MMZ1005S601CT000
1000	$\pm 25\%$	0.75	200	MMZ1005S102CT000
40	$\pm 25\%$	0.10	550	MMZ1005Y400CT000
80	$\pm 25\%$	0.17	450	MMZ1005Y800CT000
120	$\pm 25\%$	0.18	400	MMZ1005Y121CT000
240	$\pm 25\%$	0.26	300	MMZ1005Y241CT000
300	$\pm 25\%$	0.38	250	MMZ1005Y301CT000
470	$\pm 25\%$	0.47	250	MMZ1005Y471CT000
600	$\pm 25\%$	0.54	250	MMZ1005Y601CT000
1000	$\pm 25\%$	0.70	200	MMZ1005Y102CT000
1500	$\pm 25\%$	1.00	100	MMZ1005Y152CT000
1800	$\pm 25\%$	0.85	150	MMZ1005Y182CT000
10	$\pm 5\Omega$	0.10	500	MMZ1005D100CT000
22	$\pm 25\%$	0.17	400	MMZ1005D220CT000
33	$\pm 25\%$	0.24	400	MMZ1005D330CT000
68	$\pm 25\%$	0.38	400	MMZ1005D680CT000
120	$\pm 25\%$	0.60	350	MMZ1005D121CT000
240	$\pm 25\%$	0.90	200	MMZ1005D241CT000
33	$\pm 25\%$	0.50	200	MMZ1005F330CT000
47	$\pm 25\%$	0.60	100	MMZ1005F470CT000
56	$\pm 25\%$	0.70	100	MMZ1005F560CT000

### Measurement equipment

Measurement item	Product No.	Manufacturer
Impedance	E4991A+16192A	Agilent Technologies
DC resistance	Type-7556	Yokogawa

\* Equivalent measurement equipment may be used.

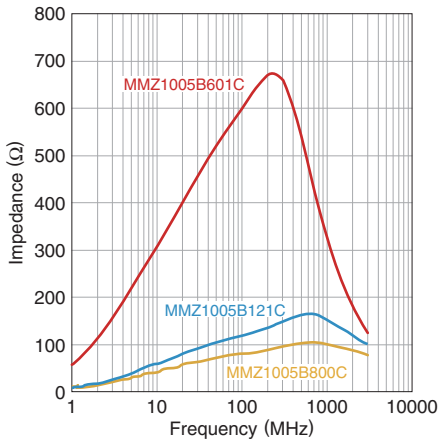


# MMZ series **MMZ1005 Type**

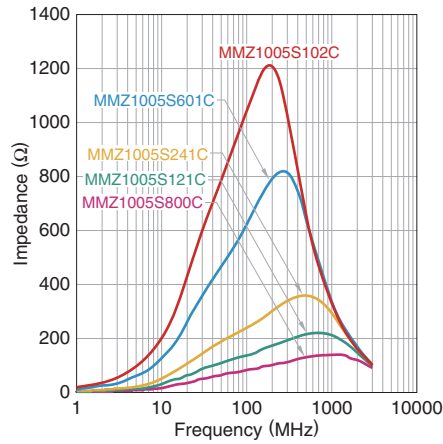
## ■ ELECTRICAL CHARACTERISTICS

### □ Z VS. FREQUENCY CHARACTERISTICS (BY SERIES)

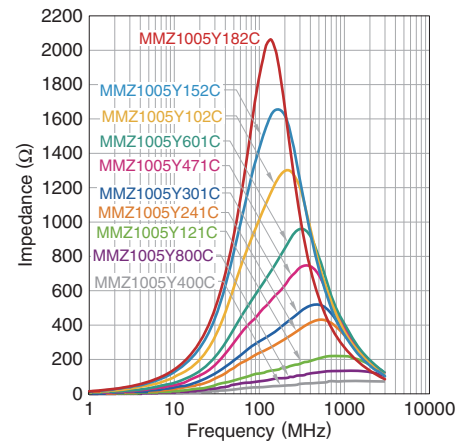
**MMZ1005B SERIES**



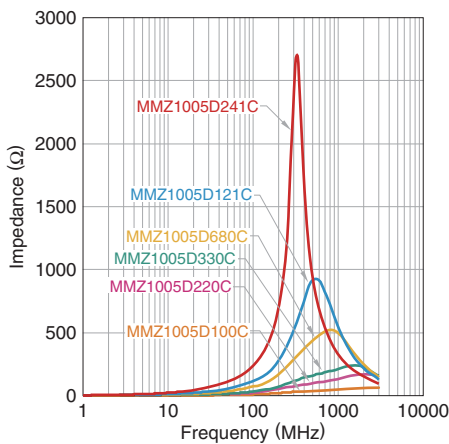
**MMZ1005S SERIES**



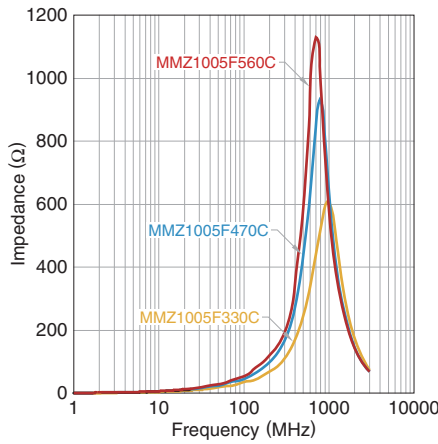
**MMZ1005Y SERIES**



**MMZ1005D SERIES**



**MMZ1005F SERIES**



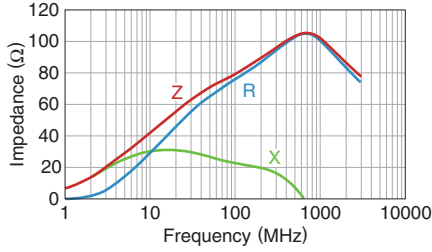
• All specifications are subject to change without notice.

# MMZ series MMZ1005 Type

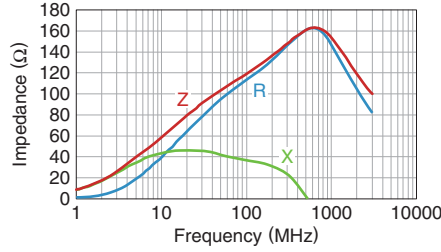
## ELECTRICAL CHARACTERISTICS

### Z, X, R VS. FREQUENCY CHARACTERISTICS

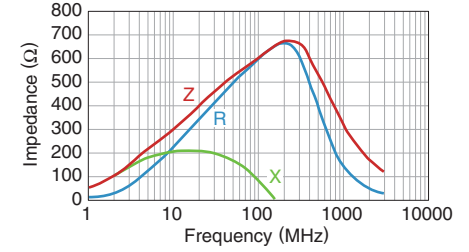
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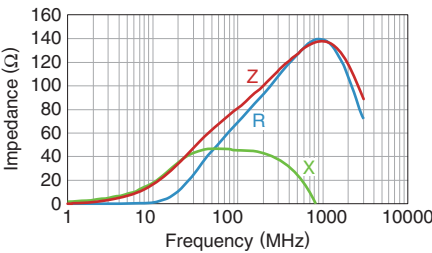
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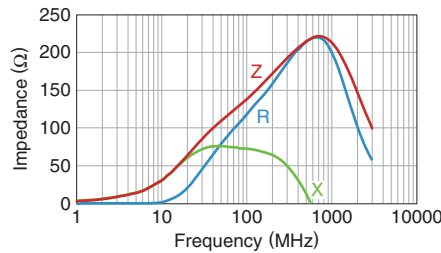
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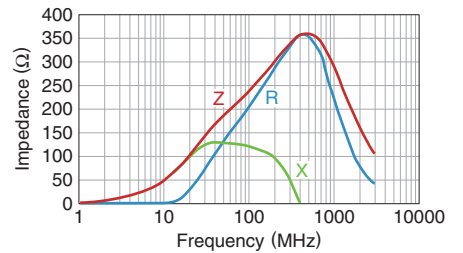
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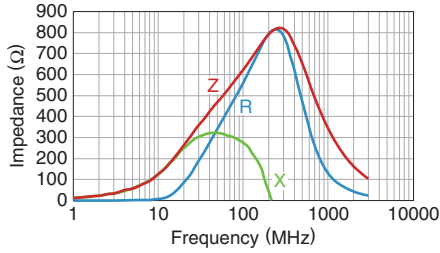
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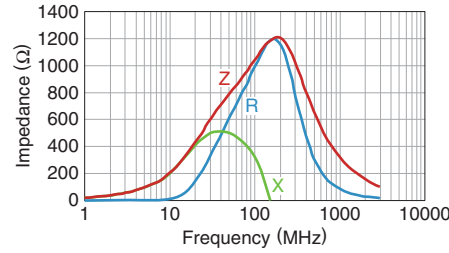
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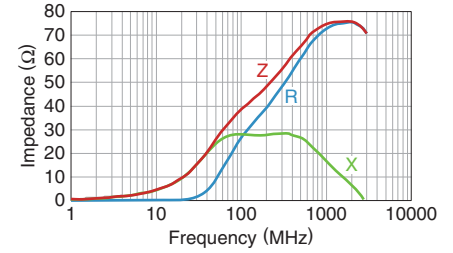
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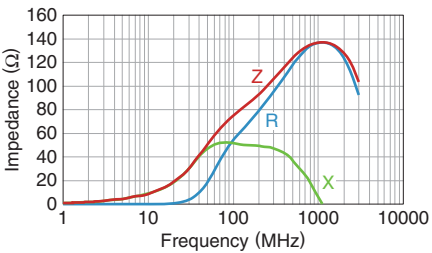
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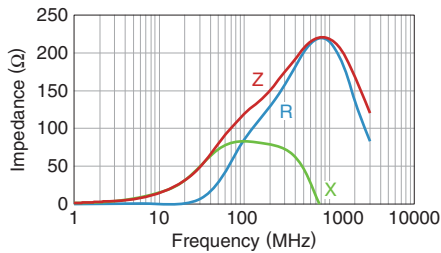
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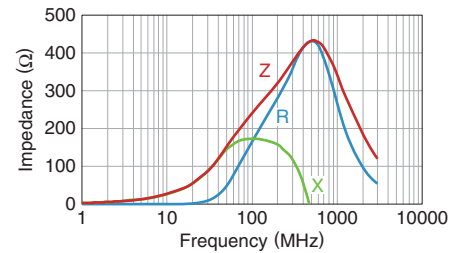
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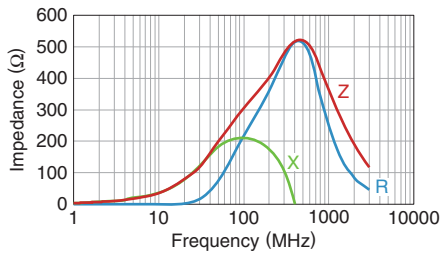
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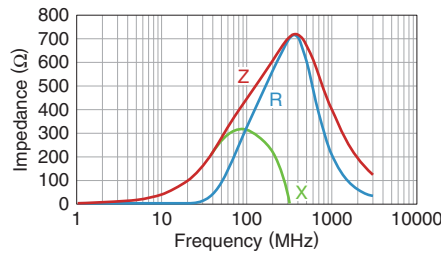
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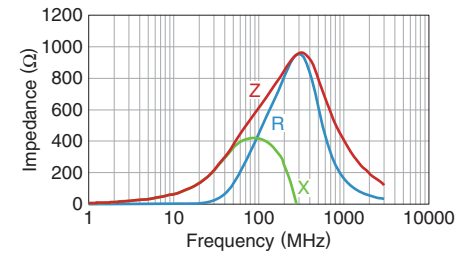
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MMZ1005Y601CT000



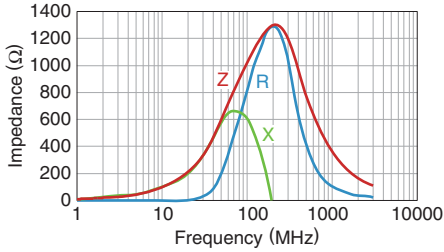
• All specifications are subject to change without notice.

# MMZ series MMZ1005 Type

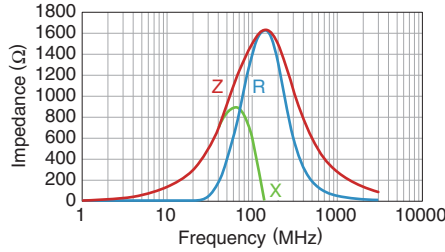
## ELECTRICAL CHARACTERISTICS

### Z, X, R VS. FREQUENCY CHARACTERISTICS

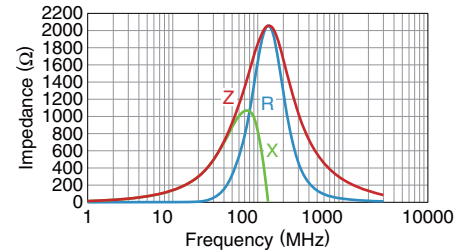
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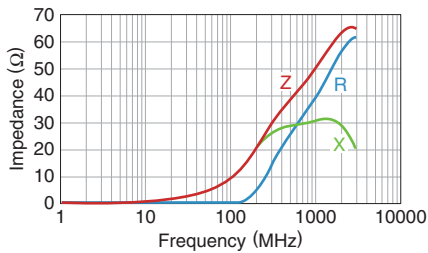
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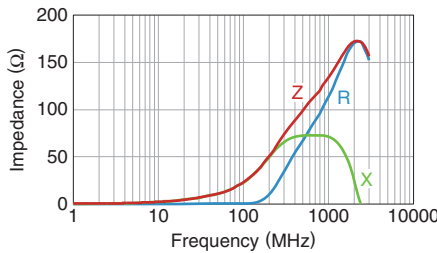
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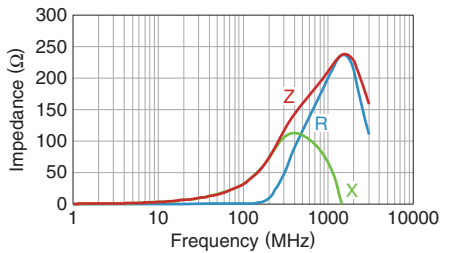
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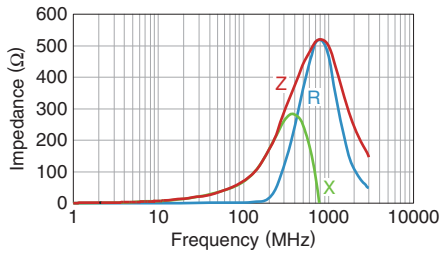
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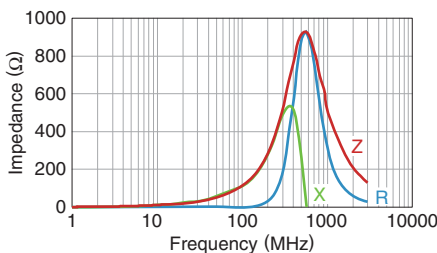
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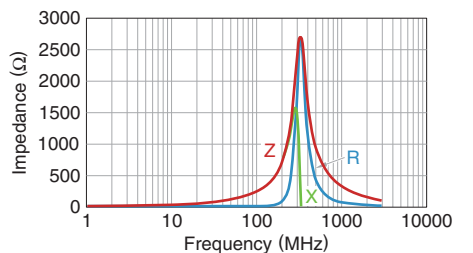
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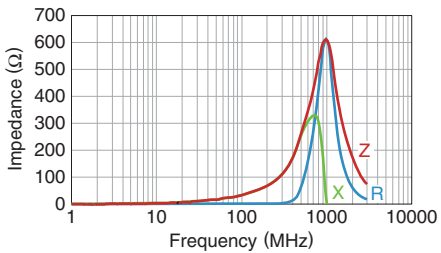
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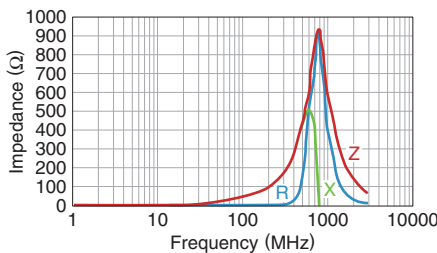
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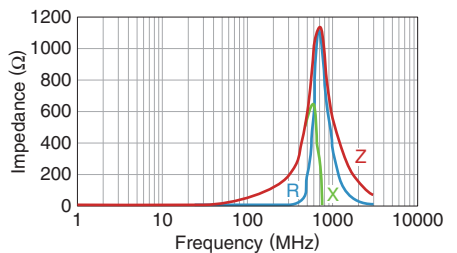
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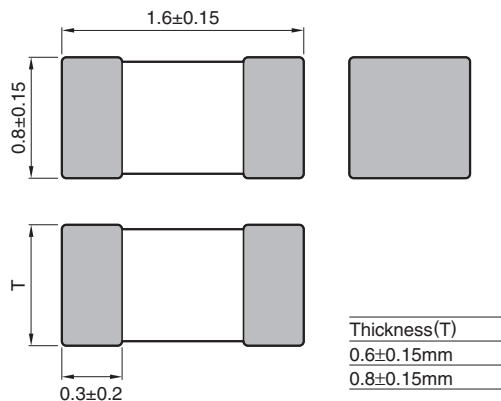
• All specifications are subject to change without notice.

MMZ series

# MMZ1608 Type

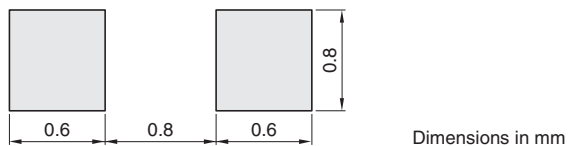


## SHAPE & DIMENSIONS



Dimensions in mm

## RECOMMENDED LAND PATTERN



Dimensions in mm

• All specifications are subject to change without notice.

# MMZ series MMZ1608 Type

## ELECTRICAL CHARACTERISTICS

### CHARACTERISTICS SPECIFICATION TABLE

Impedance [100MHz] ( $\Omega$ )	Tolerance	DC resistance ( $\Omega$ )max.	Rated current (mA)max.	Thickness T (mm)	Part No.
120	$\pm 25\%$	0.15	600	0.6	MMZ1608B121CTAH0
220	$\pm 25\%$	0.25	500	0.6	MMZ1608B221CTAH0
300	$\pm 25\%$	0.25	500	0.6	MMZ1608B301CTAH0
470	$\pm 25\%$	0.30	500	0.6	MMZ1608B471CTAH0
600	$\pm 25\%$	0.40	500	0.6	MMZ1608B601CTAH0
1000	$\pm 25\%$	0.60	300	0.8	MMZ1608B102CTA00
15	$\pm 25\%$	0.05	1500	0.8	MMZ1608R150ATA00
30	$\pm 25\%$	0.05	1500	0.8	MMZ1608R300ATA00
60	$\pm 25\%$	0.10	800	0.8	MMZ1608R600ATA00
120	$\pm 25\%$	0.18	500	0.8	MMZ1608R121ATA00
300	$\pm 25\%$	0.25	500	0.8	MMZ1608R301ATA00
470	$\pm 25\%$	0.30	500	0.8	MMZ1608R471ATA00
600	$\pm 25\%$	0.40	500	0.8	MMZ1608R601ATA00
1000	$\pm 25\%$	0.50	400	0.8	MMZ1608R102ATA00
40	$\pm 25\%$	0.10	600	0.8	MMZ1608S400ATA00
80	$\pm 25\%$	0.15	500	0.8	MMZ1608S800ATA00
120	$\pm 25\%$	0.15	500	0.8	MMZ1608S121ATA00
180	$\pm 25\%$	0.20	500	0.8	MMZ1608S181ATA00
220	$\pm 25\%$	0.20	500	0.8	MMZ1608S221ATA00
300	$\pm 25\%$	0.30	500	0.8	MMZ1608S301ATA00
470	$\pm 25\%$	0.30	500	0.8	MMZ1608S471ATA00
600	$\pm 25\%$	0.35	500	0.8	MMZ1608S601ATA00
1000	$\pm 25\%$	0.50	400	0.8	MMZ1608S102ATA00
2000	$\pm 25\%$	0.90	200	0.8	MMZ1608S202ATA00
15	$\pm 25\%$	0.05	1500	0.8	MMZ1608Y150BTA00
30	$\pm 25\%$	0.05	1500	0.8	MMZ1608Y300BTA00
60	$\pm 25\%$	0.15	500	0.8	MMZ1608Y600BTA00
120	$\pm 25\%$	0.20	500	0.8	MMZ1608Y121BTA00
220	$\pm 25\%$	0.30	500	0.8	MMZ1608Y221BTA00
300	$\pm 25\%$	0.30	500	0.8	MMZ1608Y301BTA00
470	$\pm 25\%$	0.35	500	0.8	MMZ1608Y471BTA00
600	$\pm 25\%$	0.40	500	0.8	MMZ1608Y601BTA00
750	$\pm 25\%$	0.45	500	0.8	MMZ1608Y751BTA00
1000	$\pm 25\%$	0.50	400	0.8	MMZ1608Y102BTA00
1500	$\pm 25\%$	0.60	300	0.8	MMZ1608Y152BTA00
1800	$\pm 25\%$	0.80	200	0.8	MMZ1608A182BTA00
2200	$\pm 25\%$	0.80	200	0.8	MMZ1608A222BTA00
2500	$\pm 25\%$	0.80	200	0.8	MMZ1608A252BTA00
120	$\pm 25\%$	0.30	500	0.8	MMZ1608Q121BTA00
220	$\pm 25\%$	0.40	500	0.8	MMZ1608Q221BTA00
330	$\pm 25\%$	0.50	400	0.8	MMZ1608Q331BTA00
470	$\pm 25\%$	0.70	300	0.8	MMZ1608Q471BTA00
600	$\pm 25\%$	0.80	200	0.8	MMZ1608Q601BTA00
1000	$\pm 25\%$	1.00	200	0.8	MMZ1608Q102BTA00

#### ○ Measurement equipment

Measurement item	Product No.	Manufacturer
Impedance	E4991A+16192A	Agilent Technologies
DC resistance	Type-7556	Yokogawa

\* Equivalent measurement equipment may be used.

# MMZ series MMZ1608 Type

## ■ ELECTRICAL CHARACTERISTICS

### □ CHARACTERISTICS SPECIFICATION TABLE

Impedance [100MHz] ( $\Omega$ )	Tolerance	DC resistance ( $\Omega$ )max.	Rated current (mA)max.	Thickness T (mm)	Part No.
5	$\pm 2\Omega$	0.05	700	0.8	MMZ1608D050CTA00
10	$\pm 5\Omega$	0.10	500	0.6	MMZ1608D100CTAH0
22	$\pm 25\%$	0.20	500	0.6	MMZ1608D220CTAH0
50	$\pm 25\%$	0.25	500	0.6	MMZ1608D500CTAH0
80	$\pm 25\%$	0.30	500	0.6	MMZ1608D800CTAH0
80	$\pm 25\%$	0.30	500	0.8	MMZ1608D800BTA00
120	$\pm 25\%$	0.30	400	0.6	MMZ1608D121CTAH0
120	$\pm 25\%$	0.30	400	0.8	MMZ1608D121BTA00
240	$\pm 25\%$	0.60	300	0.8	MMZ1608D241CTA00
300	$\pm 25\%$	0.70	300	0.8	MMZ1608D301BTA00
3typ.		0.05	700	0.8	MMZ1608F030BTA00
47	$\pm 25\%$	0.40	500	0.8	MMZ1608F470BTA00
75	$\pm 25\%$	0.55	300	0.8	MMZ1608F750BTA00
120	$\pm 25\%$	0.75	200	0.8	MMZ1608F121BTA00

### ○ Measurement equipment

Measurement item	Product No.	Manufacturer
Impedance	E4991A+16192A	Agilent Technologies
DC resistance	Type-7556	Yokogawa

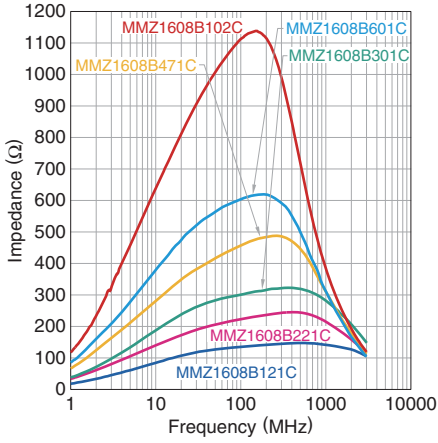
\* Equivalent measurement equipment may be used.

# MMZ series MMZ1608 Type

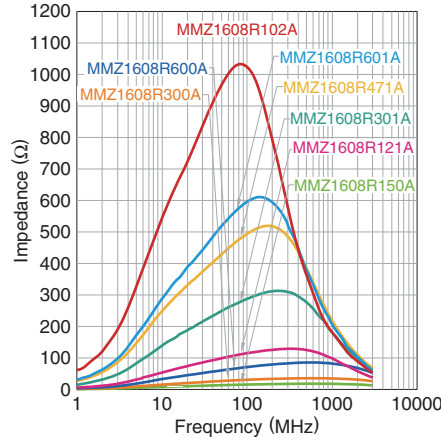
## ELECTRICAL CHARACTERISTICS

### Z VS. FREQUENCY CHARACTERISTICS (BY SERIES)

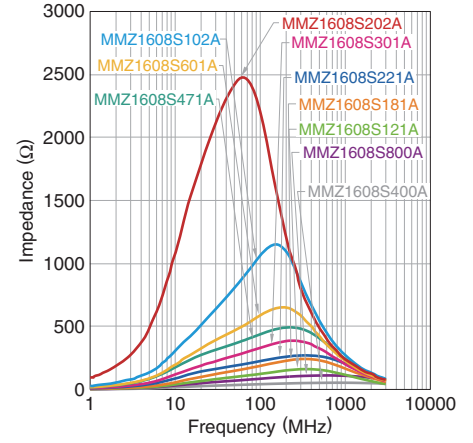
MMZ1608B SERIES



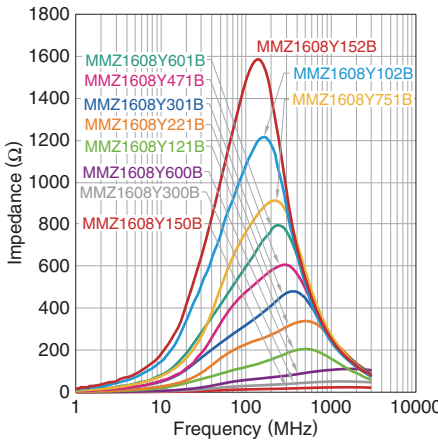
MMZ1608R SERIES



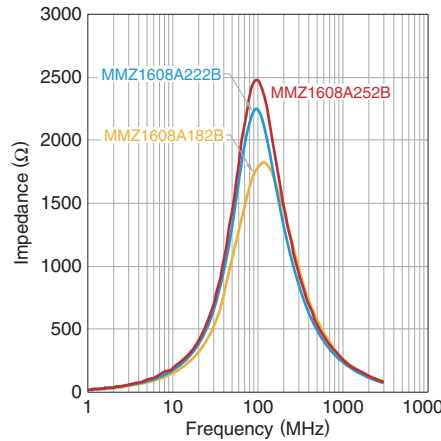
MMZ1608S SERIES



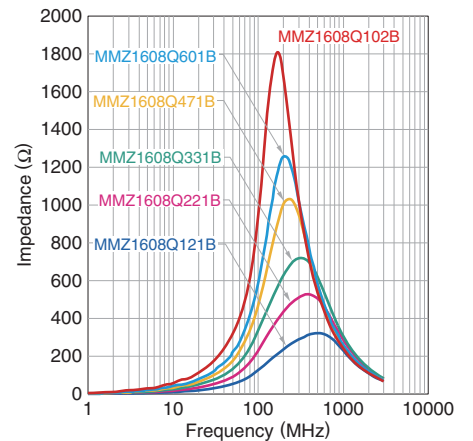
MMZ1608Y SERIES



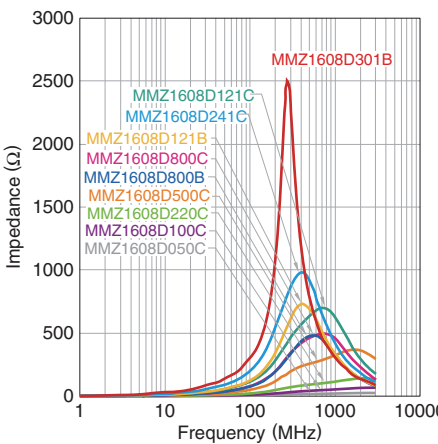
MMZ1608A SERIES



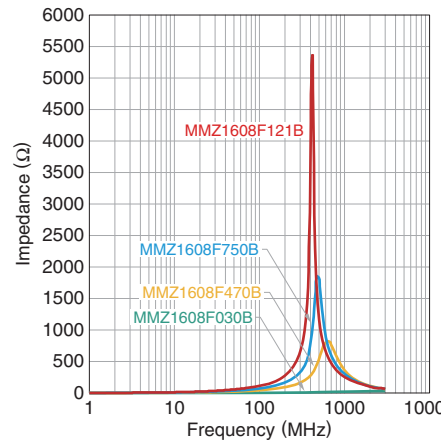
MMZ1608Q SERIES



MMZ1608D SERIES



MMZ1608F SERIES



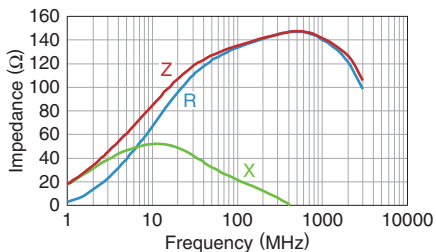
• All specifications are subject to change without notice.

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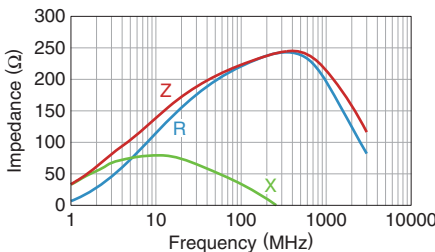
## ELECTRICAL CHARACTERISTICS

### Z, X, R VS. FREQUENCY CHARACTERISTICS

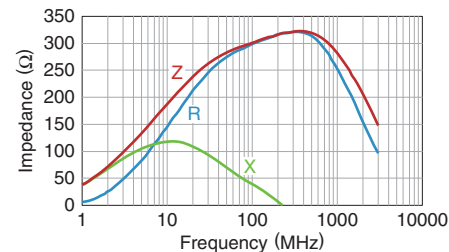
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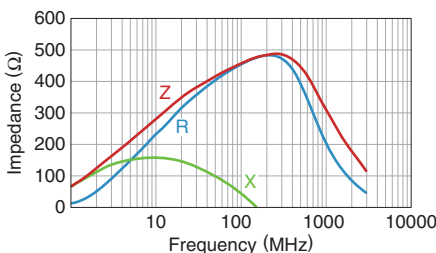
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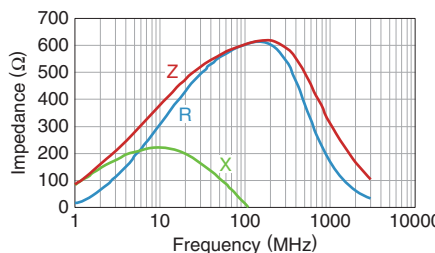
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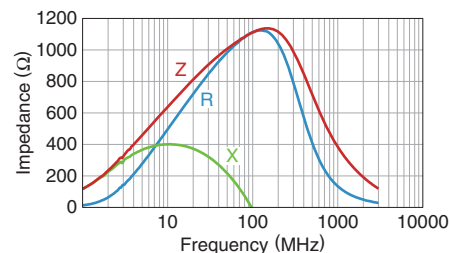
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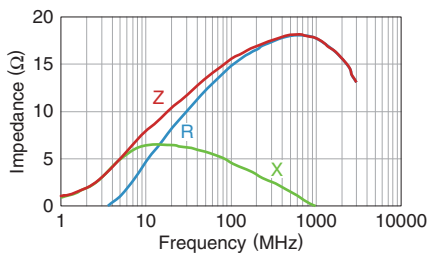
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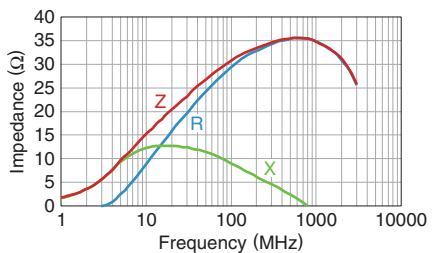
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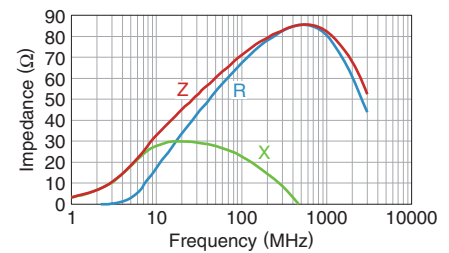
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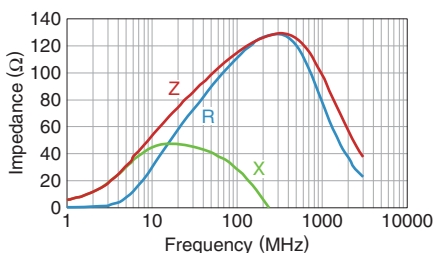
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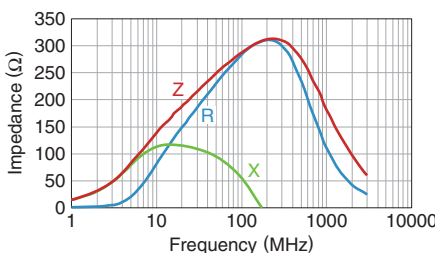
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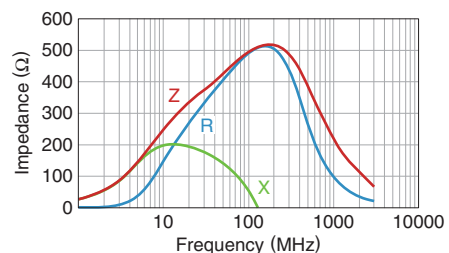
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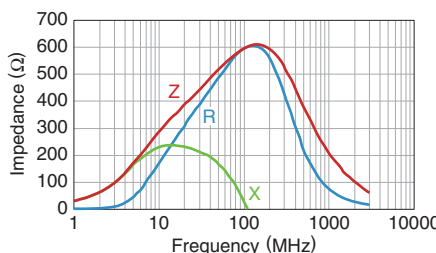
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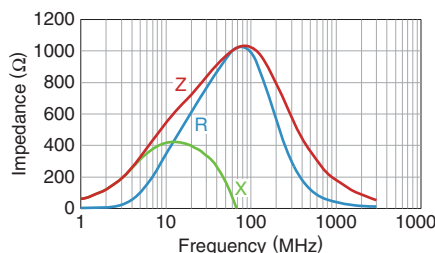
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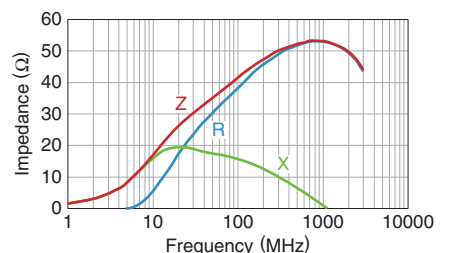
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MMZ1608R102ATA00



MMZ1608S400ATA00



• All specifications are subject to change without notice.

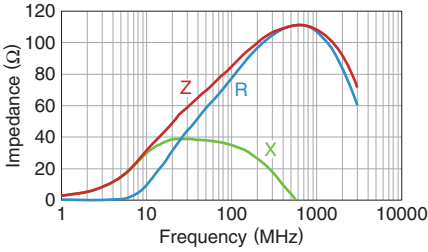


# MMZ series **MMZ1608 Type**

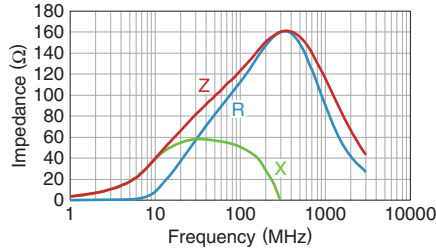
## ELECTRICAL CHARACTERISTICS

### Z, X, R VS. FREQUENCY CHARACTERISTICS

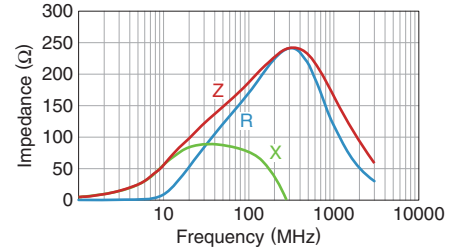
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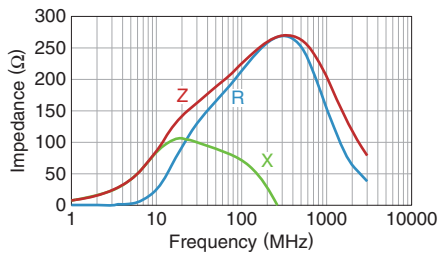
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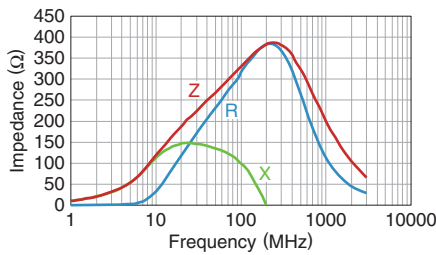
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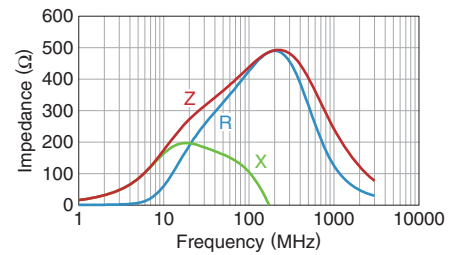
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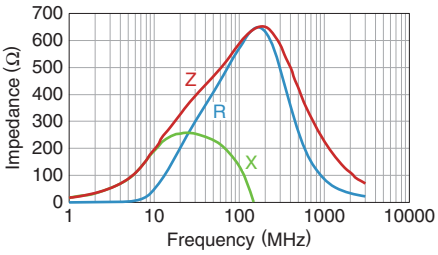
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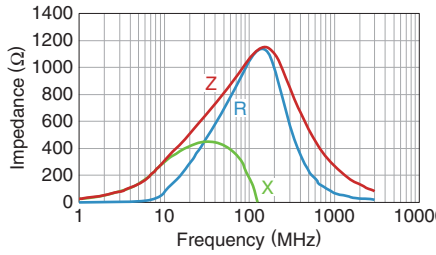
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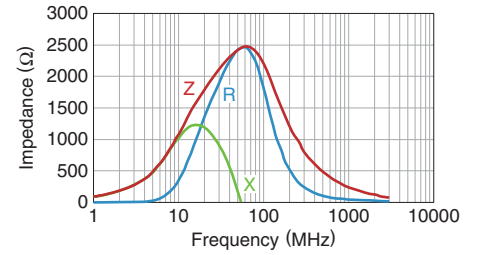
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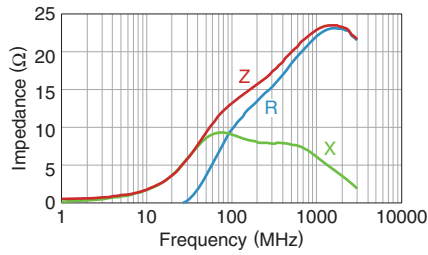
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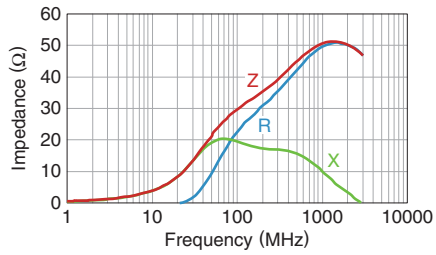
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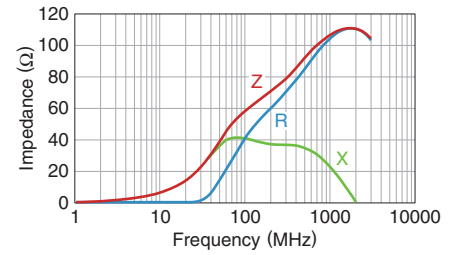
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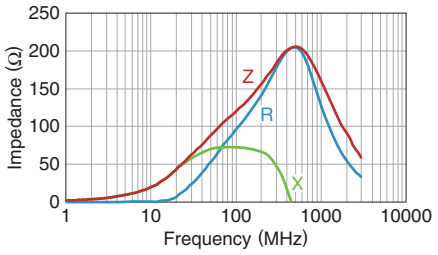
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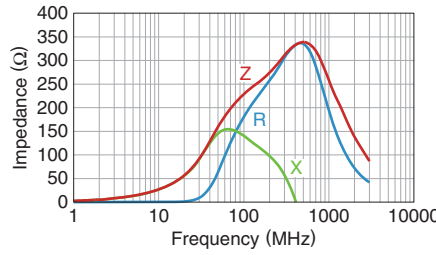
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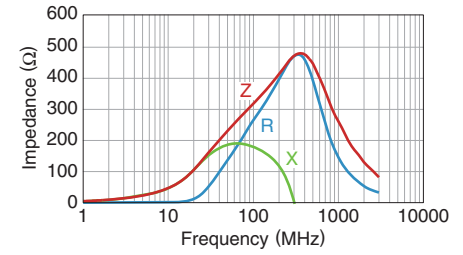
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**MMZ1608Y221BTA00**



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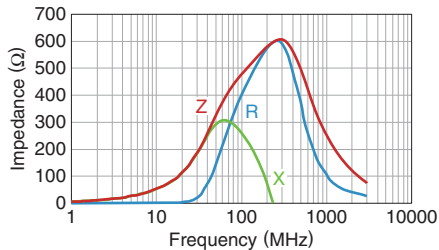
• All specifications are subject to change without notice.

# MMZ series MMZ1608 Type

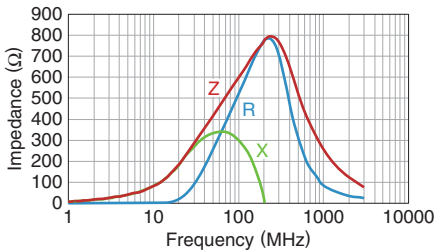
## ELECTRICAL CHARACTERISTICS

### Z, X, R VS. FREQUENCY CHARACTERISTICS

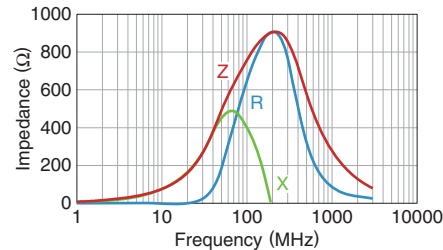
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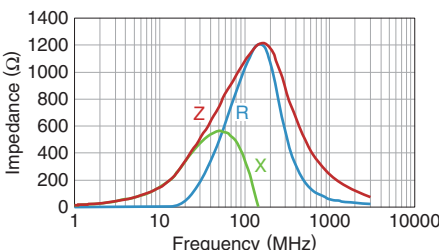
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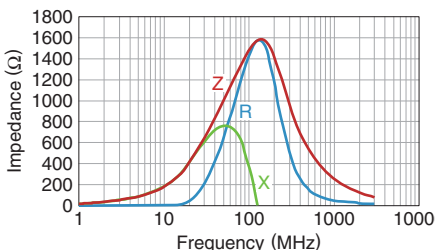
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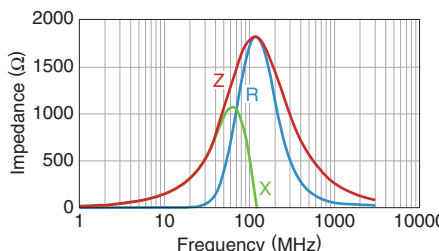
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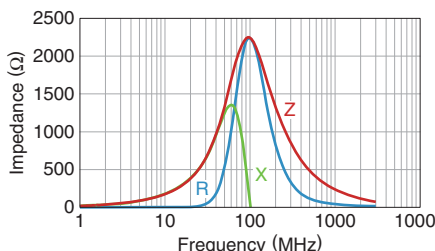
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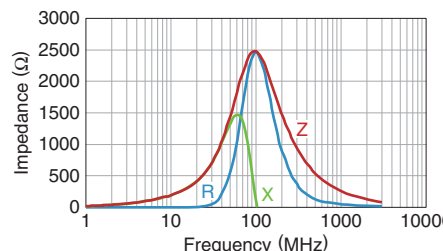
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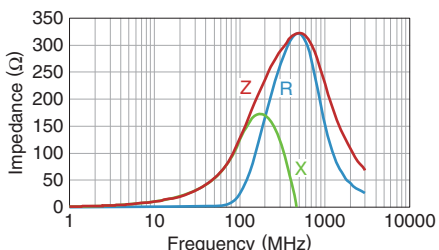
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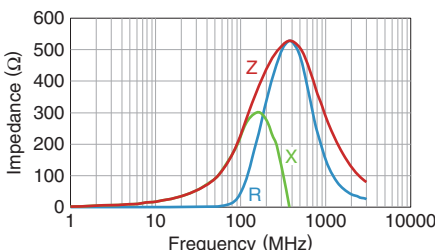
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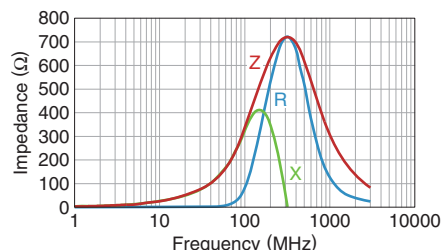
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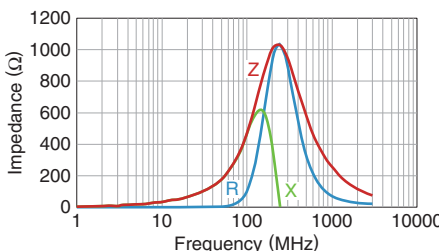
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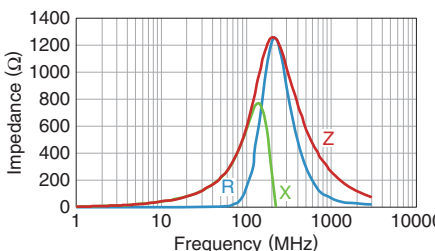
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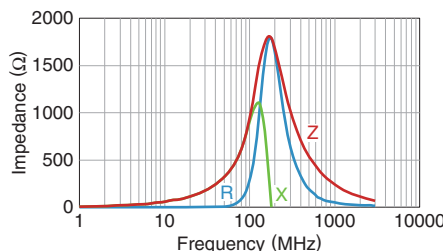
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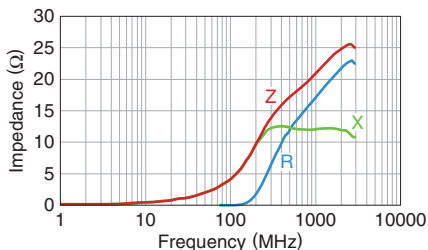
• All specifications are subject to change without notice.

# MMZ series MMZ1608 Type

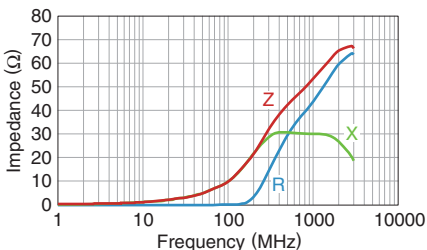
## ELECTRICAL CHARACTERISTICS

### Z, X, R VS. FREQUENCY CHARACTERISTICS

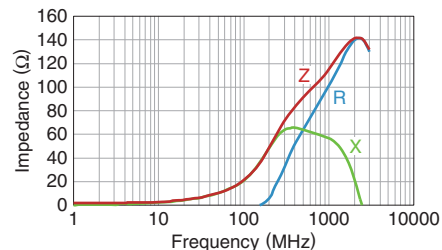
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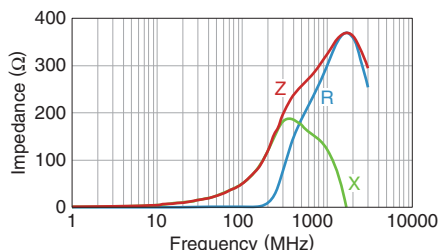
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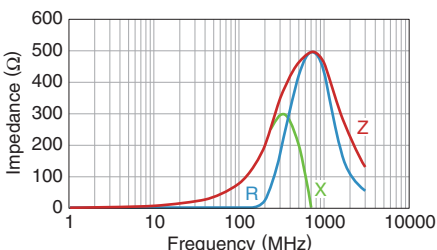
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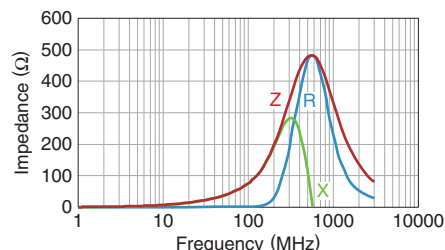
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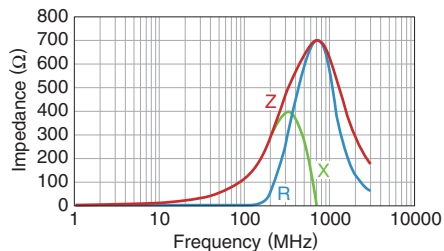
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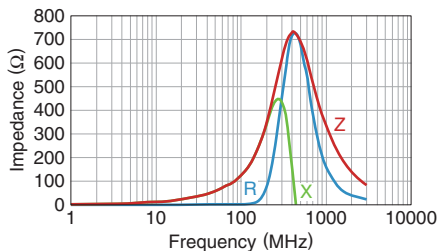
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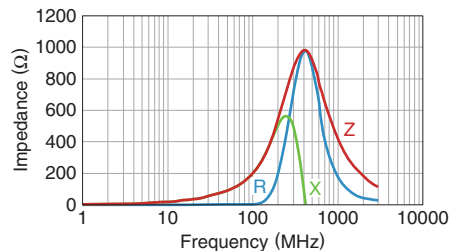
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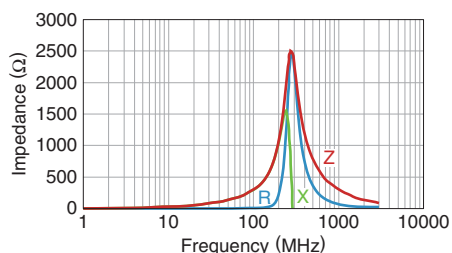
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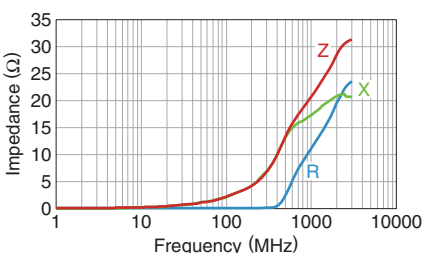
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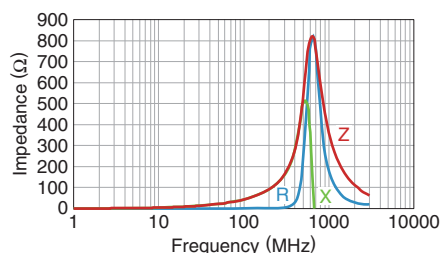
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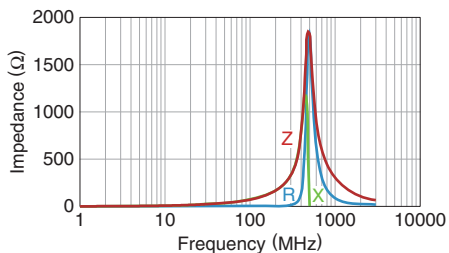
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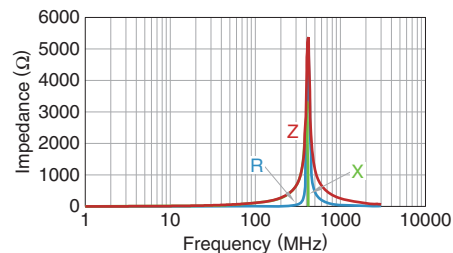
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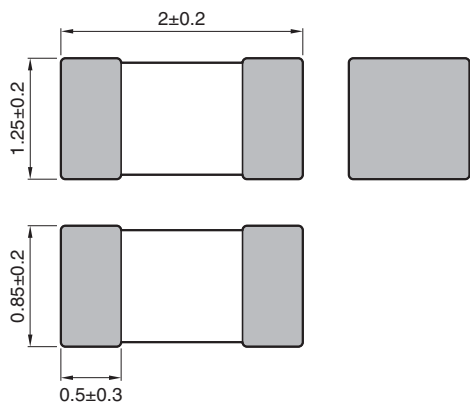
• All specifications are subject to change without notice.

MMZ series

# MMZ2012 Type

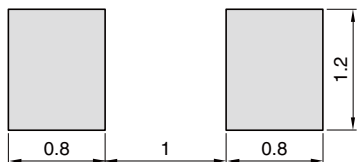


## SHAPE & DIMENSIONS



Dimensions in mm

## RECOMMENDED LAND PATTERN



Dimensions in mm

• All specifications are subject to change without notice.

# MMZ series MMZ2012 Type

## ELECTRICAL CHARACTERISTICS

### CHARACTERISTICS SPECIFICATION TABLE

Impedance [100MHz] ( $\Omega$ )	Tolerance	DC resistance ( $\Omega$ )max.	Rated current (mA)max.	Part No.
15	±25%	0.05	1500	MMZ2012R150AT000
30	±25%	0.05	1500	MMZ2012R300AT000
60	±25%	0.10	1000	MMZ2012R600AT000
120	±25%	0.12	800	MMZ2012R121AT000
300	±25%	0.15	600	MMZ2012R301AT000
600	±25%	0.20	500	MMZ2012R601AT000
1000	±25%	0.30	500	MMZ2012R102AT000
40	±25%	0.10	1000	MMZ2012S400AT000
80	±25%	0.10	800	MMZ2012S800AT000
120	±25%	0.15	800	MMZ2012S121AT000
180	±25%	0.15	600	MMZ2012S181AT000
300	±25%	0.20	600	MMZ2012S301AT000
600	±25%	0.30	500	MMZ2012S601AT000
1000	±25%	0.35	500	MMZ2012S102AT000
15	±25%	0.05	1500	MMZ2012Y150BT000
30	±25%	0.05	1500	MMZ2012Y300BT000
60	±25%	0.10	1000	MMZ2012Y600BT000
120	±25%	0.12	800	MMZ2012Y121BT000
300	±25%	0.15	600	MMZ2012Y301BT000
600	±25%	0.20	500	MMZ2012Y601BT000
1000	±25%	0.30	500	MMZ2012Y102BT000
1500	±25%	0.40	500	MMZ2012Y152BT000
2000	±25%	0.50	400	MMZ2012Y202BT000
80	±25%	0.30	500	MMZ2012D800BT000
120	±25%	0.30	500	MMZ2012D121BT000
300	±25%	0.50	400	MMZ2012D301BT000

### Measurement equipment

Measurement item	Product No.	Manufacturer
Impedance	E4991A+16192A	Agilent Technologies
DC resistance	Type-7556	Yokogawa

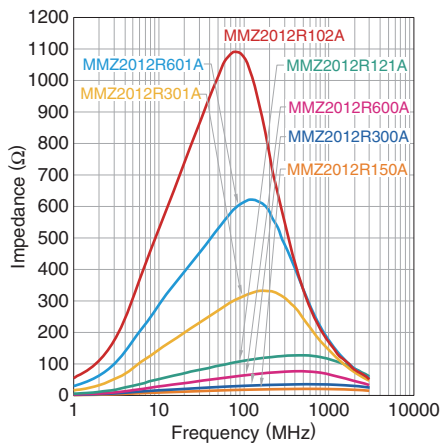
\* Equivalent measurement equipment may be used.

# MMZ series MMZ2012 Type

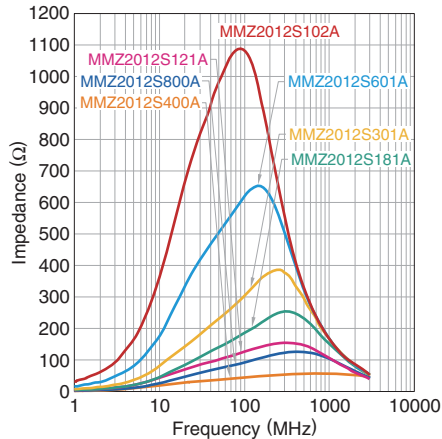
## ELECTRICAL CHARACTERISTICS

### Z VS. FREQUENCY CHARACTERISTICS (BY SERIES)

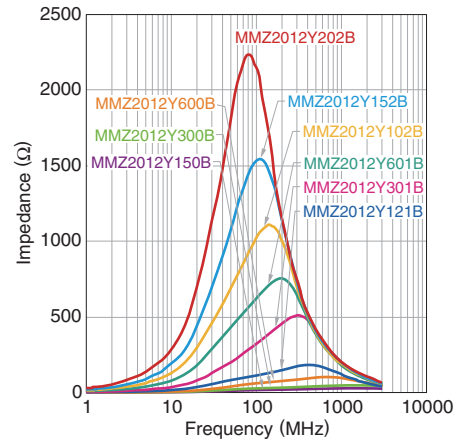
MMZ2012R SERIES



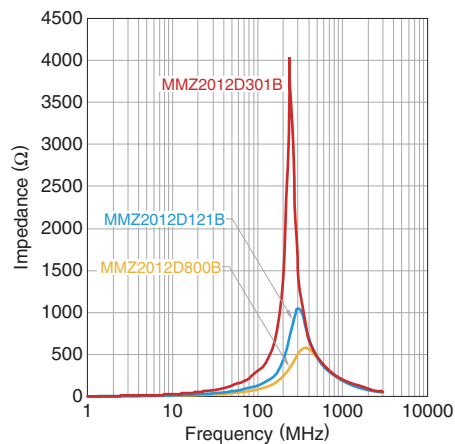
MMZ2012S SERIES



MMZ2012Y SERIES



MMZ2012D SERIES



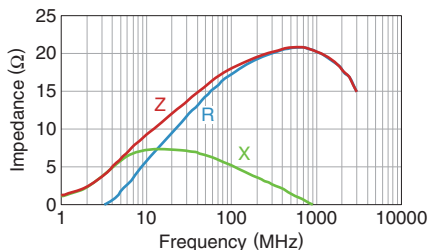
• All specifications are subject to change without notice.

# MMZ series MMZ2012 Type

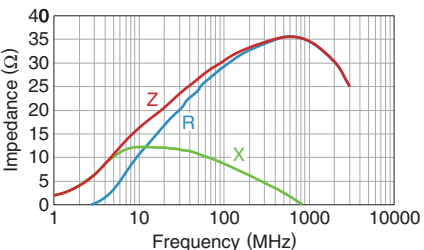
## ELECTRICAL CHARACTERISTICS

### Z, X, R VS. FREQUENCY CHARACTERISTICS

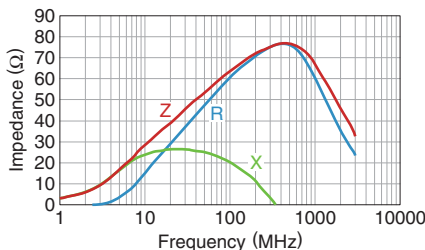
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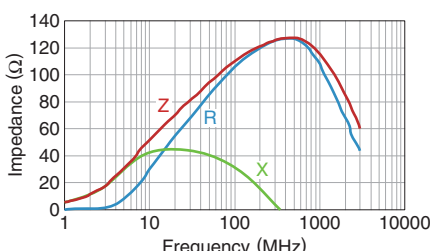
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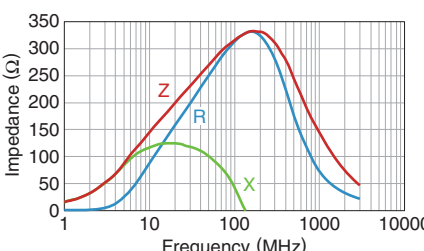
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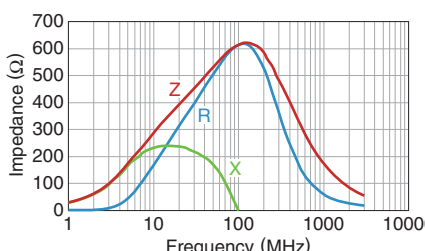
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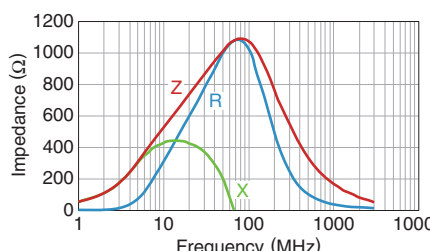
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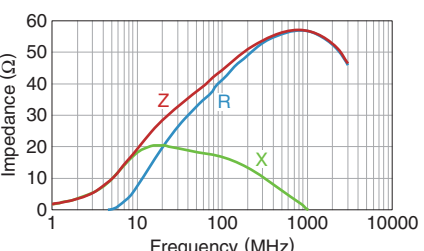
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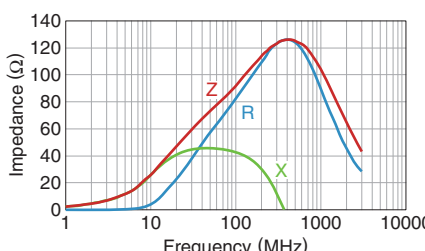
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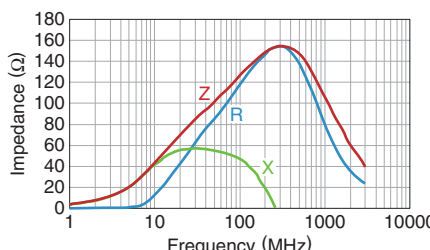
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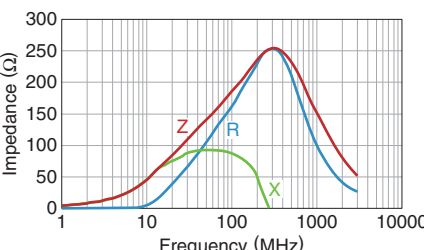
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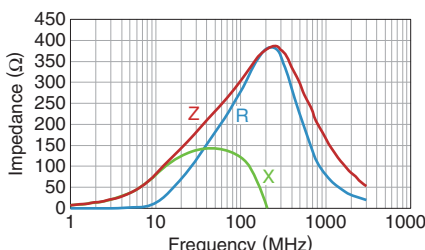
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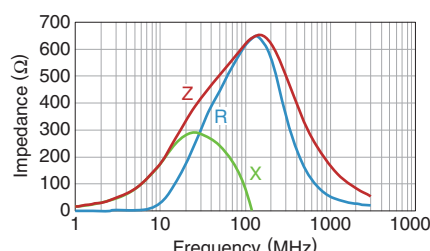
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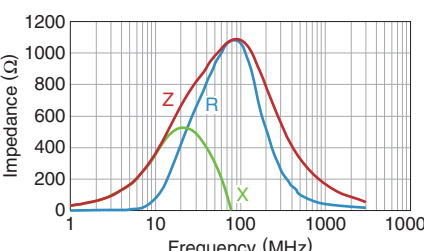
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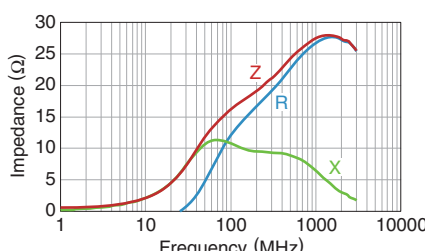
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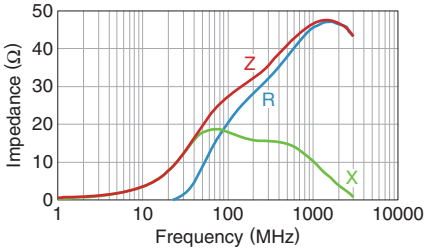
• All specifications are subject to change without notice.

# MMZ series **MMZ2012 Type**

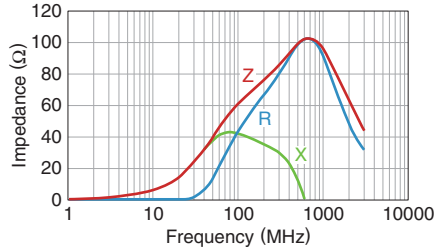
## ■ ELECTRICAL CHARACTERISTICS

### □ Z, X, R VS. FREQUENCY CHARACTERISTICS

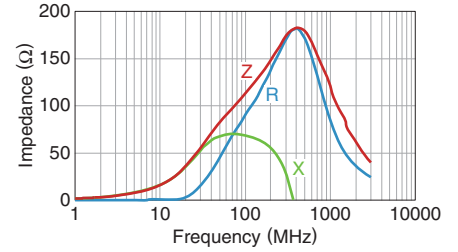
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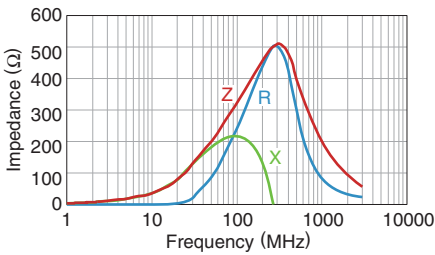
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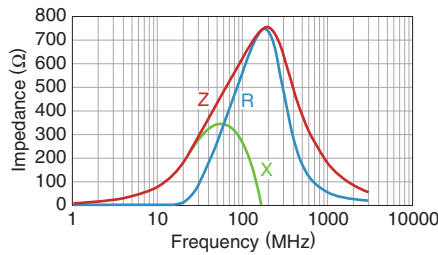
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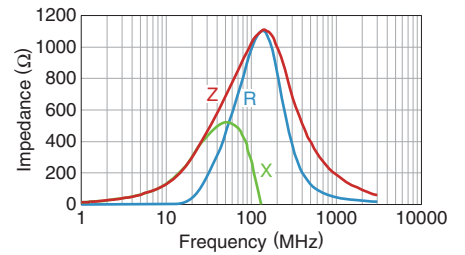
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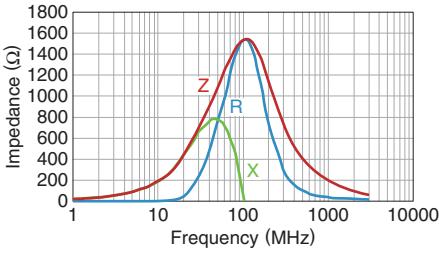
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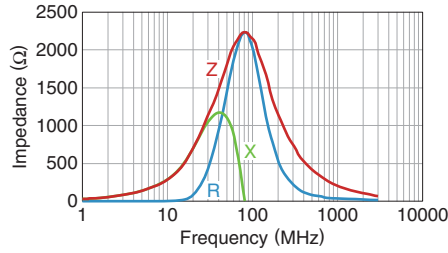
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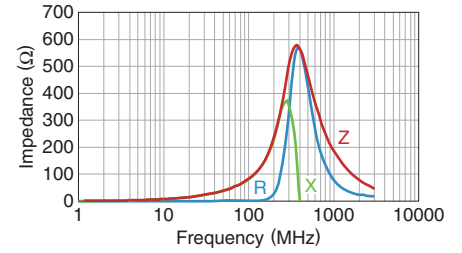
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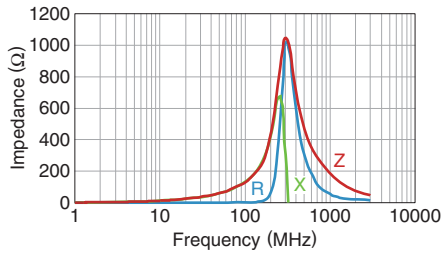
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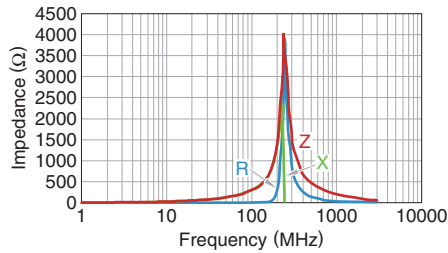
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**MMZ2012D301BT000**



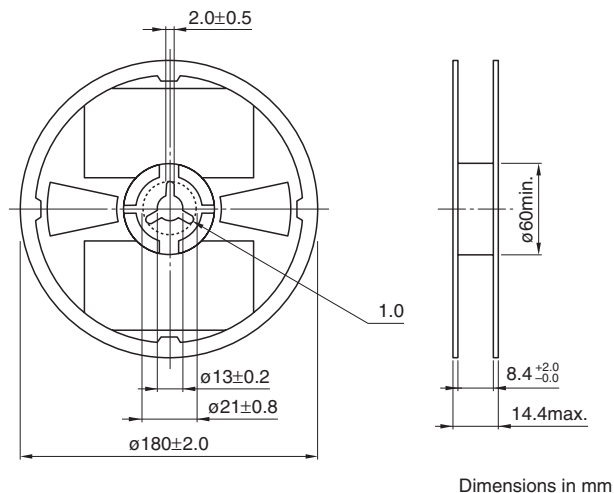
• All specifications are subject to change without notice.



# MMZ series

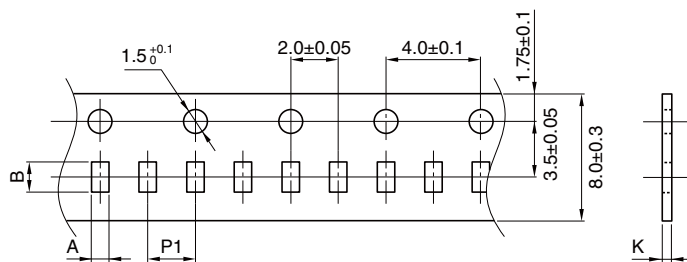
# Packaging style

## REEL DIMENSIONS



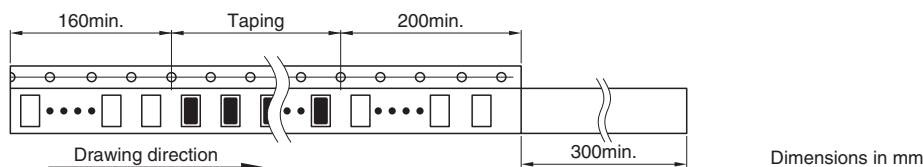
Dimensions in mm

## TAPE DIMENSIONS



Dimensions in mm

Type	A	B	P1	K
MMZ0402	$0.26 \pm 0.04$	$0.46 \pm 0.04$	$2.0 \pm 0.05$	0.4max.
MMZ0603	$0.38 \pm 0.05$	$0.68 \pm 0.05$	$2.0 \pm 0.05$	0.5max.
MMZ1005	$0.65 \pm 0.1$	$1.15 \pm 0.1$	$2.0 \pm 0.05$	0.8max.
MMZ1608	$1.1 \pm 0.2$	$1.9 \pm 0.2$	$4.0 \pm 0.1$	1.1max.
MMZ2012	$1.5 \pm 0.2$	$2.3 \pm 0.2$	$4.0 \pm 0.1$	1.1max.



Dimensions in mm

• All specifications are subject to change without notice.