

Ferrite Chip Beads—MMZ Series

For general signal line use in consumer & automotive applications

Consumer Datasheets: [0402_0603](#) [1005_1608](#) [2012](#)

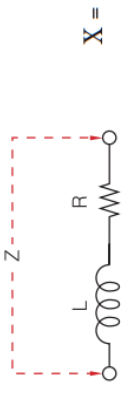
Automotive Datasheets: [1005_1608](#) [2012](#)



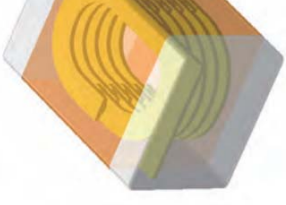
TDK's MMZ Series ferrite chip beads are used to suppress noise in both signal and power supply circuits. They are effective at being placed into the circuit in series. Multilayer chip beads consist of ferrite material and a conductive paste layered together. The equivalent circuit consists of a reactance component, X, and a resistive component, R. The combined impedance of X and R is denoted as impedance Z. The characteristics of a chip bead are typically described as the impedance value Z at a frequency of 100MHz. While several different impedance values are available at 100MHz, it is important to look at their individual frequency characteristics to determine which bead will provide the required frequency range. TDK offers up to eight material types which provide various frequency characteristics for MMZ series chip beads, each suited to different applications. Availability of materials varies with case size.

<u>Features</u>	
<ul style="list-style-type: none"> Noise reduction solution for general signal line Various frequency characteristics with 8 materials of different features Countermeasures from general signals to high-speed signals Conforms to RoHS directive, halogen free, & compatible with lead-free soldering Standard operating temperature range of -55°C to $+125^{\circ}\text{C}$ Storage temperature range of -55°C to 125°C (after PC board mounting) 	
<u>Consumer</u>	<u>Automotive</u>
<ul style="list-style-type: none"> Case sizes: 0402, 0603, 1005, 1608, & 2012 	<ul style="list-style-type: none"> Case sizes: 1005, 1608, & 2012 AEC-Q200 compliant

Equivalent Circuit Diagram



Internal Structure Diagrams of



Standard Ferrite Bead (Length)

<u>Applications</u>	
<u>Consumer</u>	<u>Automotive</u>
<ul style="list-style-type: none"> Mobile Devices, including Smartphone and Tablet PCs Recorders, Household Appliances, STBs, Industrial Equipment, and Smart Meters 	<ul style="list-style-type: none"> ECU's, Powertrain, and Body Control Car Multimedia (telematics)

MMZ Series Material Selection Guide

B material

Fast Digital Signals

This material is perfectly suited for fast digital signals. By equalizing R and X components that beads possess at a frequency of 5MHz, it is able to suppress overshooting, undershooting, and ringing of fast digital signals.

A material

This high-impedance product is based on the impedance characteristics of our Y-material. **The product offers excellent impedance values greater than 2500Ω, in the vicinity of 100MHz.**

R material

Wide Frequency & Good Waveform Integrity

For wide frequency applications calling for broad impedance characteristics. For digital signal line applications for requiring good waveform integrity. **Impedance values selected for effectiveness at 10 to 200MHz.**

Q material

For high-band applications designed for 100MHz and above. **Selected for effectiveness at 100 to 800MHz.**

S material

Signal line applications in which the blocking region is near 100MHz

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.**

D material

Low Impedance & High Frequency

For applications calling for low insertion loss at increasing impedance at high frequencies. **Desired for high frequencies (300MHz to 1GHz) for signal line applications.**

Y material

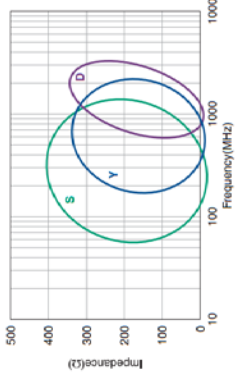
High Frequency (100MHz & Above)

High frequency range type intended for the 100MHz region and above. For single line applications in which the signal frequency is far from the cutoff frequency. **Impedance values selected for effectiveness at 80 to 400MHz.**

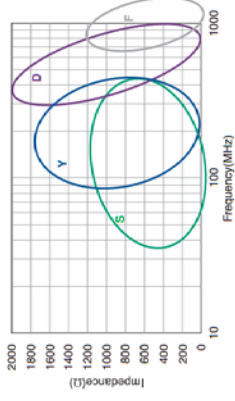
F material

This new product inherits the characteristic of our Y-material. It offers an impedance rise time, and its impedance peak frequency range, **as high as in the GHz range.**

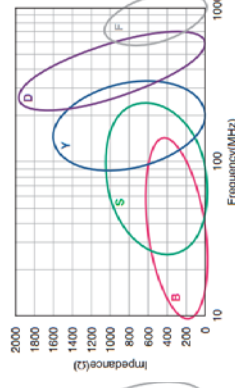
MMZ0402 Type



MMZ0603 Type



MMZ1005 Type



MMZ1608 Type



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