Automotive Multilayer Chip Ferrite Beads



LINKS TO ADDITIONAL RESOURCES

White Paper

FEATURES

- 1.6 mm x 0.8 mm x 0.8 mm package
- Multilayer chip ferrite bead for high current filtering
- Wide variety of impedance values
- Extended current rating
- Multiple performance curves to target specific frequencies
- Silver (Ag) inner conductor with Cu / Ni / Sn electrode plating
- AEC-Q200 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE

Pb-free

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

MECHANICAL SPECIFICATIONS

Solderability: per J-STD-002

Resistance to Solder Heat: 255 °C, 30 s max., 3x max. through reflow

Terminal Strength: 17.7 N force for 60 s

Flex: 0.079" [2 mm] mounted on 0.063" [1.6 mm] thick PC board

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature: -55 °C to +125 °C

Thermal Shock: 1000 cycles, -55 °C (for 30 min ± 3 min) to +125 °C (for 30 min ± 3 min) with 20 s max. transition interval

Biased Humidity: 85 % RH at 85 °C, 1000 h at full rated current

STANDARD ELECTRICAL SPECIFICATIONS

PART NUMBER	Z ± 25 % AT 100 MHz (Ω)	DCR MAX. AT 25 °C (mΩ)	RATED DC CURRENT TYP. AT 85 °C (1) (mA)	Z_{pk} (2) (Ω)	F AT Z_{pk} (3) (MHz)	Z TYP. AT 100 MHz (Ω)	F AT Z_{DO} (4) (MHz)	XL / XR x OVER (5) (MHz)
ILHB0603ER220VHC41	22	10	6000	28	522	22	2921	32.5
ILHB0603ER260VHC41	26	7	6000	32.6	710	26.5	2806	33
ILHB0603ER280VHC41	28	10	6000	38	475	28	2297	27.7
ILHB0603ER300VHC42	30	10	5000	48	691	30	2920	83
ILHB0603ER300VHC31	30	30	3000	50	1000	30	8000	108
ILHB0603ER300VHC32	30	30	3000	38	489	30	2921	26
ILHB0603ER300VGP11	30	50	2000	52	890	30	7000	111
ILHB0603ER300VGP12	30	50	2000	38	489	30	2920	31
ILHB0603ER300VHC41	30	60	1800	238	638	28	4000	439
ILHB0603ER600VHC42	60	20	3500	89	710	60	2921	76
ILHB0603ER600VHC33	60	40	2500	78	475	60	1957	30
ILHB0603ER600VHC31	60	80	2000	104	867	60	5000	114
ILHB0603ER600VGP11	60	100	500	110	1000	60	4000	114
ILHB0603ER600VGP12	60	100	500	76	522	60	4000	36
ILHB0603ER600VHC41	60	100	1200	489	558	60	4000	400
ILHB0603ER600VHC32	60	100	1400	100	769	65	4000	75
ILHB0603ER700VHC41	70	20	4000	87	457	70	1560	37
ILHB0603ER750VHC31	75	150	1000	142	903	75	5000	134
ILHB0603ER800VGP11	80	150	400	313	759	80	3000	110
ILHB0603ER101VHC42	100	30	3000	144	495	100	1459	69
ILHB0603ER101VHC41	100	150	1000	1250	390	100	1960	350
ILHB0603ER101VGP11	100	200	300	158	566	100	1831	105
ILHB0603ER121VHC32	120	50	2000	148	416	120	1277	32
ILHB0603ER121VGP11	120	200	300	200	673	120	2423	108
ILHB0603ER121VGP12	120	200	300	185	457	128	1581	65
ILHB0603ER121VGP13	120	200	300	155	482	120	1880	33
ILHB0603ER121VHC31	120	200	1000	200	613	120	2360	111
ILHB0603ER181VHC41	180	50	2200	254	340	180	880	73

For technical questions, contact: magnetics@vishay.com

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STANDARD ELECTRICAL SPECIFICATIONS

PART NUMBER	Z ± 25 % AT 100 MHz (Ω)	DCR MAX. AT 25 °C (mΩ)	RATED DC CURRENT TYP. AT 85 °C (1) (mA)	Z_{pk} (2) (Ω)	F AT Z_{pk} (3) (MHz)	Z TYP. AT 100 MHz (Ω)	F AT Z_{DO} (4) (MHz)	XL / XR x OVER (5) (MHz)
ILHB0603ER181VGP12	180	300	300	244	336	180	770	70
ILHB0603ER181VHF11	180	550	200	242	428	180	1580	32
ILHB0603ER221VHC41	220	50	2200	255	235	220	445	35
ILHB0603ER221VHC42	220	50	2200	300	302	220	691	72
ILHB0603ER221VHC32	220	100	1400	259	234	220	515	34
ILHB0603ER221VHC31	220	200	1000	310	323	220	750	89
ILHB0603ER221VGP11	220	300	300	325	360	220	879	99
ILHB0603ER221VGP12	220	300	300	254	244	220	489	32
ILHB0603ER301VGP11	300	350	200	390	231	300	428	86
ILHB0603ER301VGP12	300	350	200	358	251	300	495	30
ILHB0603ER301VHF11	300	750	200	434	395	314	1500	53
ILHB0603ER331VHC41	330	70	1500	383	208	330	390	34
ILHB0603ER331VHC42	330	80	1700	429	265	330	544	64
ILHB0603ER331VHC31	330	140	1200	381	205	330	395	34
ILHB0603ER391VHC41	390	120	1500	383	203	400	244	32
ILHB0603ER391VHC21	390	140	1000	432	173	390	283	32
ILHB0603ER471VHC41	470	120	1500	524	173	470	295	31
ILHB0603ER471VHC31	470	200	1000	512	168	470	251	32
ILHB0603ER471VGP12	470	400	200	513	168	470	283	31
ILHB0603ER471VGP11	470	450	200	580	185	470	310	83
ILHB0603ER471VHF12	470	850	200	624	395	460	1195	26
ILHB0603ER471VHF11	470	1200	100	1233	682	470	2390	205
ILHB0603ER601VHC42	600	150	1000	677	173	600	268	55
ILHB0603ER601VHC41	600	150	1300	630	141	600	202	31
ILHB0603ER601VHC31	600	350	500	805	219	600	400	86
ILHB0603ER601VGP11	600	450	200	714	159	600	247	82
ILHB0603ER601VGP12	600	450	200	725	197	600	345	62
ILHB0603ER601VGP13	600	500	200	640	157	600	231	30
ILHB0603ER601VHF12	600	1000	200	806	389	585	1080	32
ILHB0603ER601VHF11	600	1500	100	1567	551	600	1906	200
ILHB0603ER751VGP11	750	500	200	893	155	750	225	80
ILHB0603ER102VGP11	1000	600	200	1100	130	1000	182	75
ILHB0603ER102VGP12	1000	600	200	1060	134	1000	185	54
ILHB0603ER102VGP13	1000	600	200	1003	100	1000	1000	27
ILHB0603ER102VHF12	1000	1600	100	1367	350	1000	940	31
ILHB0603ER102VHF11	1000	1800	50	2526	439	1000	1384	187
ILHB0603ER152VGP11	1500	700	150	1516	113	1500	125	68
ILHB0603ER182VGP11	1800	900	100	1952	124	1800	157	75
ILHB0603ER202VGP11	2000	1200	100	2045	105	2000	116	65
ILHB0603ER222VGP11	2200	1200	100	2200	100	2200	100	65
ILHB0603ER252VGP11	2500	1200	100	2300	78	2000	n/a	59

Notes

- All test data is referenced to 25 °C ambient (unless otherwise indicated)
- Operating temperature range: -55 °C to +125 °C
- Storage condition: < 40 °C and < 70 % RH (in packaging)
- The part temperature (ambient + temp. rise) should not exceed the maximum rating under worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application

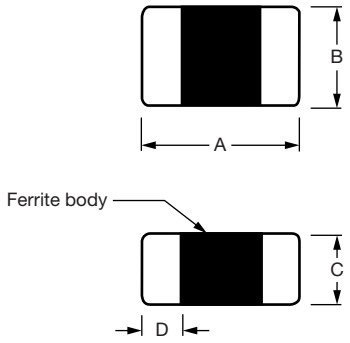
(1) Rated current is the DC current that causes a 40 °C temperature rise at 20 °C ambient
(2) Z_{pk} = peak of impedance curve
(3) F at Z_{pk} = frequency of Z_{pk}
(4) F at Z_{DO} = frequency above 100 MHz where Z drops to nominal Z
(5) XL / XR x over = crossover point for inductive reactance and resistance impedance

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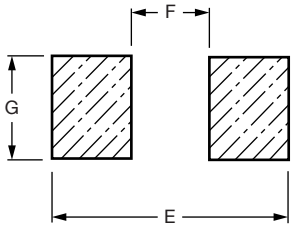
GLOBAL PART NUMBER

I L H B	0 6 0 3	E R	3 0 1	V	H C 1
PRODUCT FAMILY	SIZE	PACKAGE CODE	INDUCTANCE VALUE	IMPEDANCE TOLERANCE	APPLICATION
		ER = tape and reel	**301** = Ω	**V** = ± 25 %	**HCxx** = high current **HFxx** = high frequency **GPxx** = general purpose

DIMENSIONS in inches [millimeters]



Dimensional outline



Typical pad layout

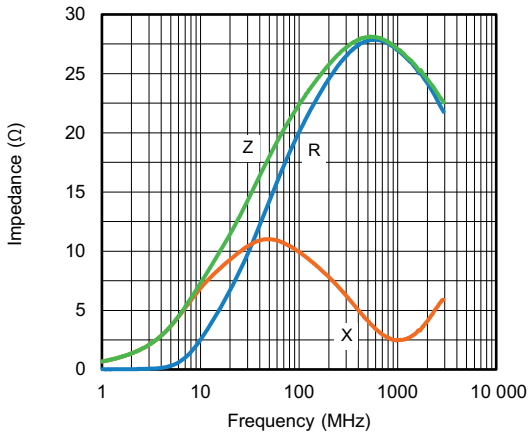
SIZE	A	B	C	D	E	F	G
0603	0.063 ± 0.006 [1.6 ± 0.15]	0.031 ± 0.006 [0.8 ± 0.15]	0.031 ± 0.006 [0.8 ± 0.15]	0.016 ± 0.008 [0.4 ± 0.20]	0.085 [2.15]	0.025 [0.63]	0.041 [1.05]

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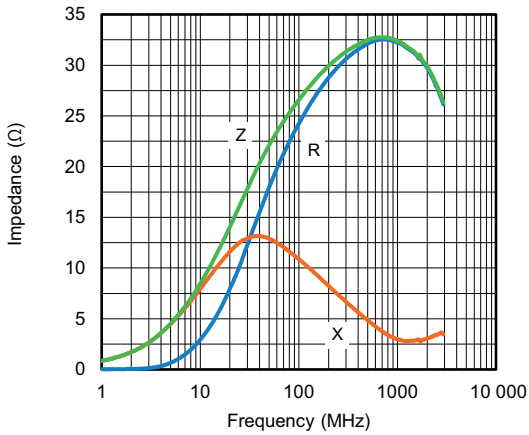
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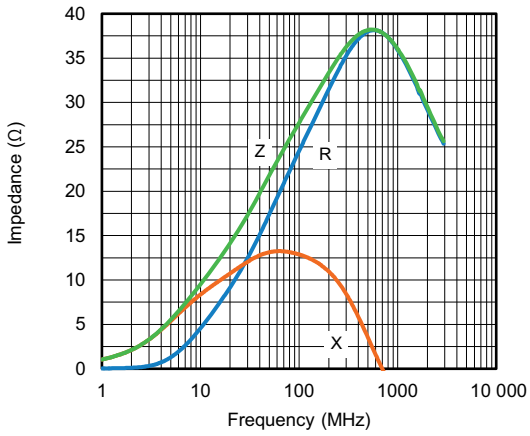
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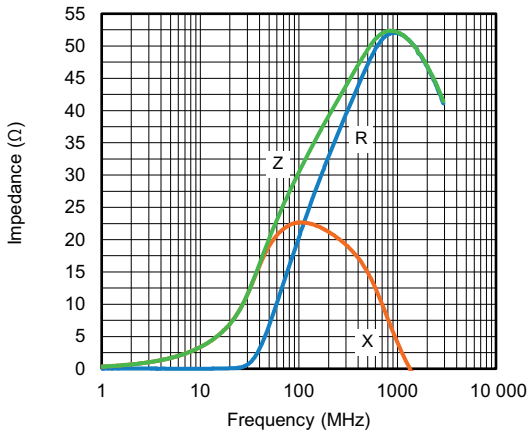
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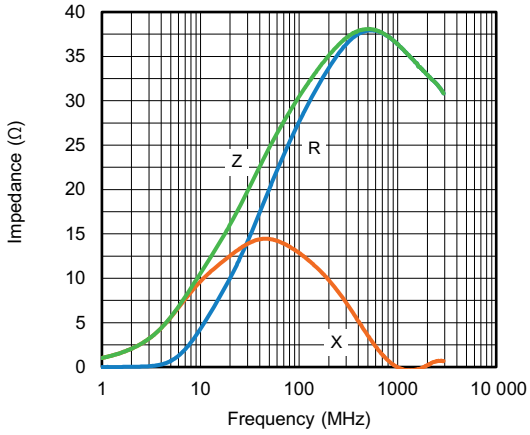
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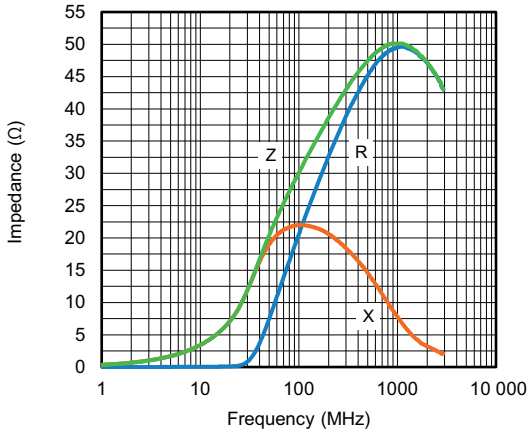
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ILHB0603ER300VGP12



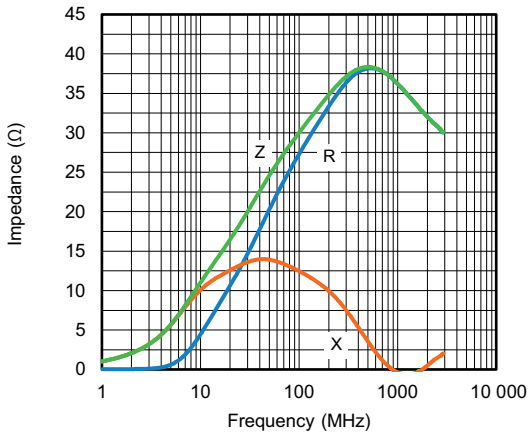
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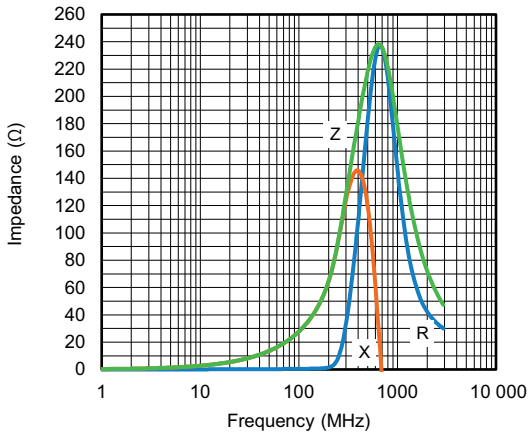
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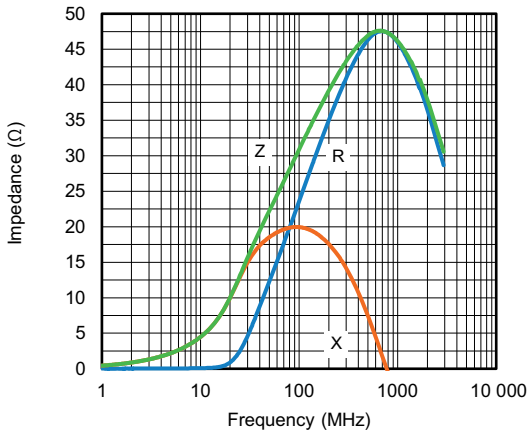
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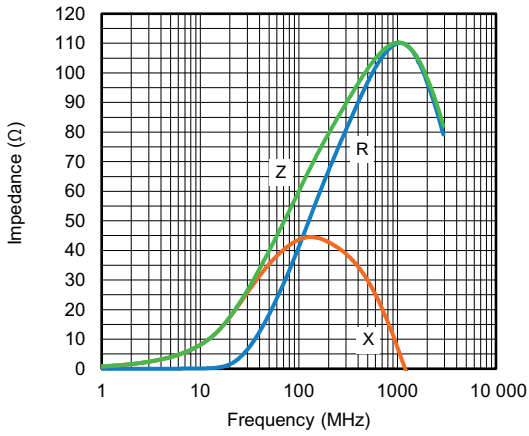
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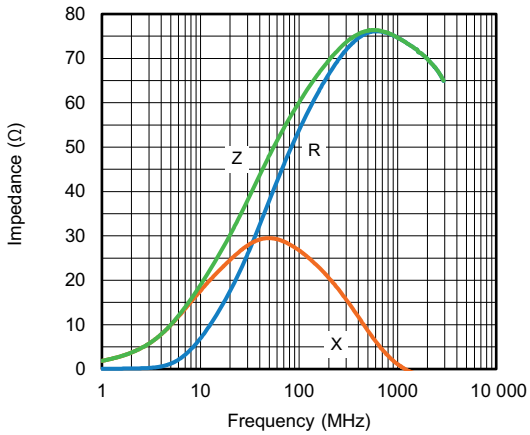
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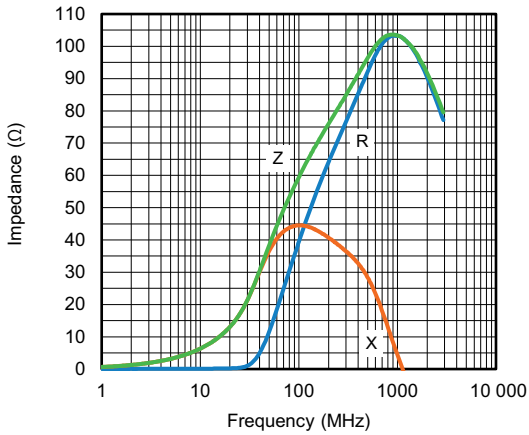
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ILHB0603ER600VGP12



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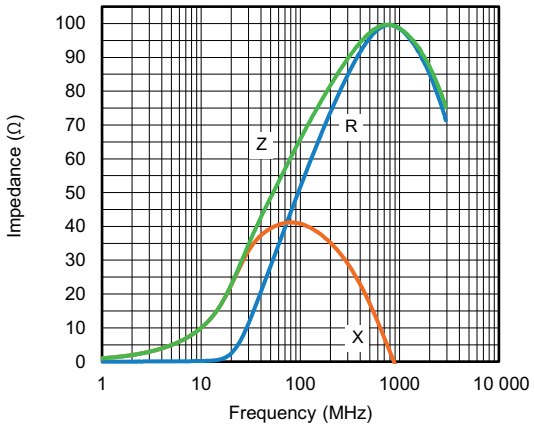


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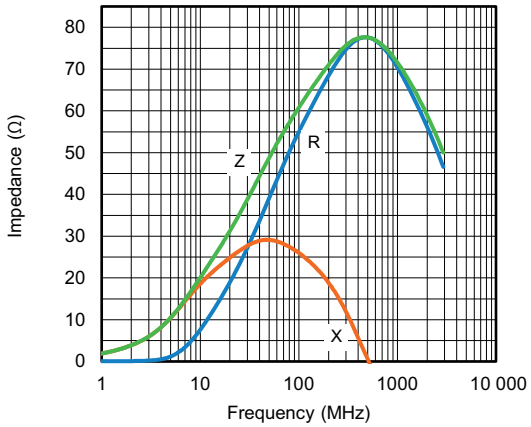
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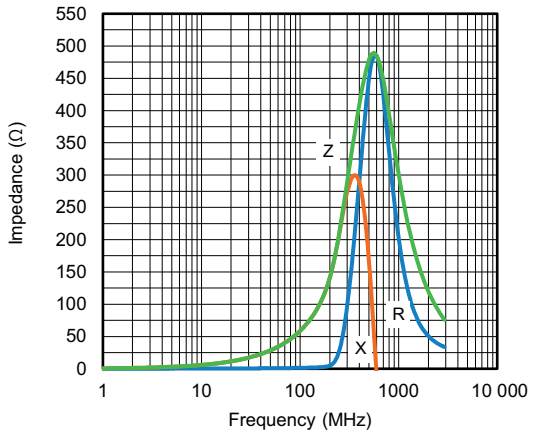
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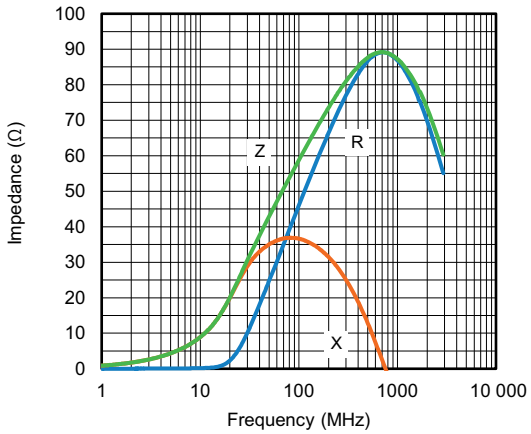
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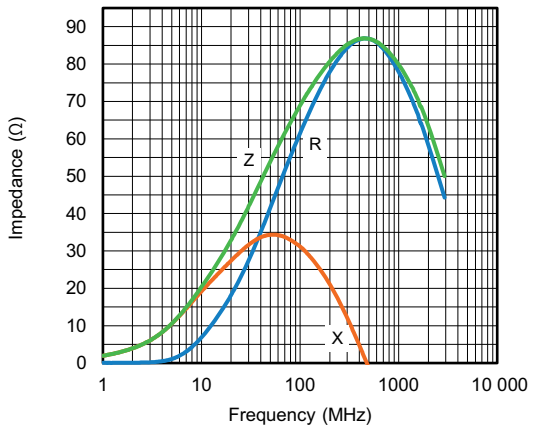
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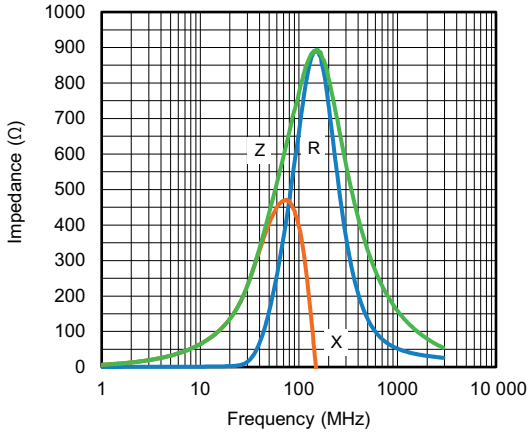
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ILHB0603ER700VHC41



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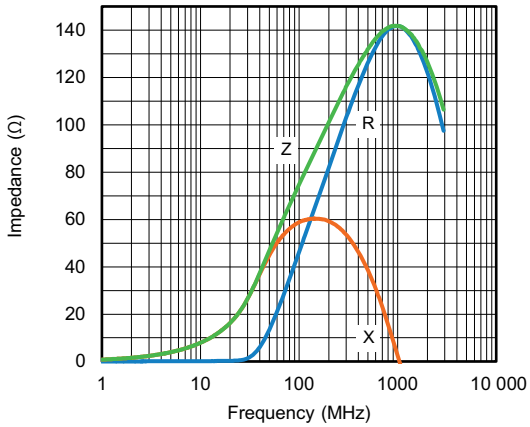


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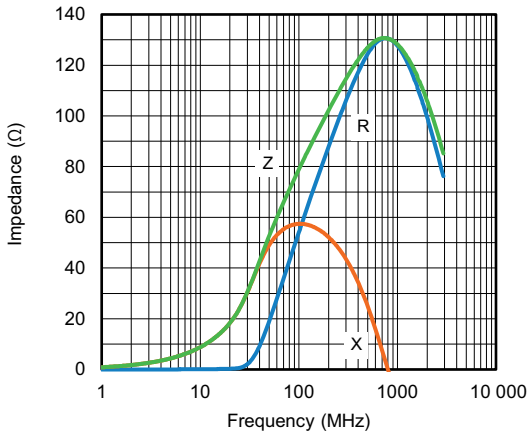
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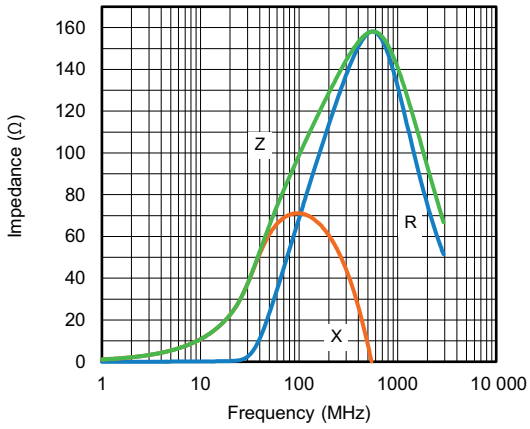
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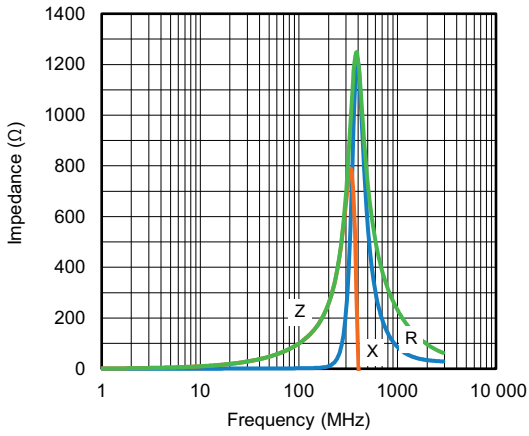
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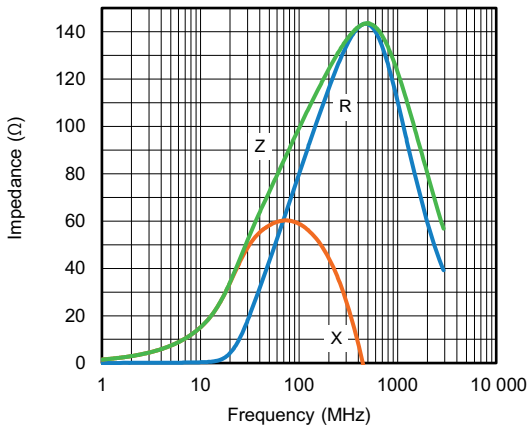
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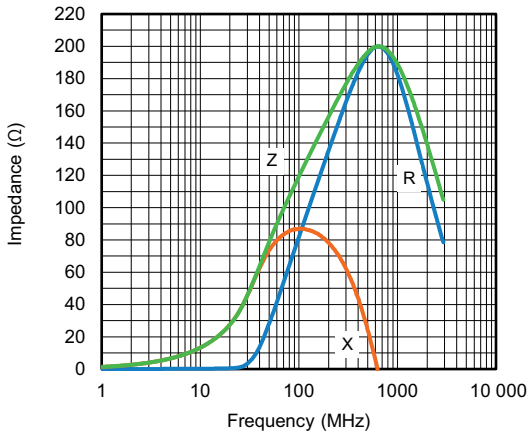
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ILHB0603ER101VHC42



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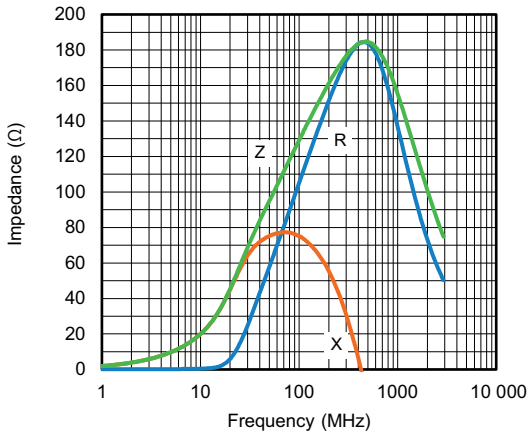


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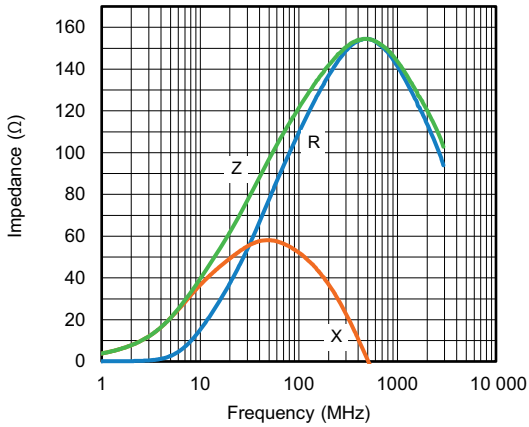
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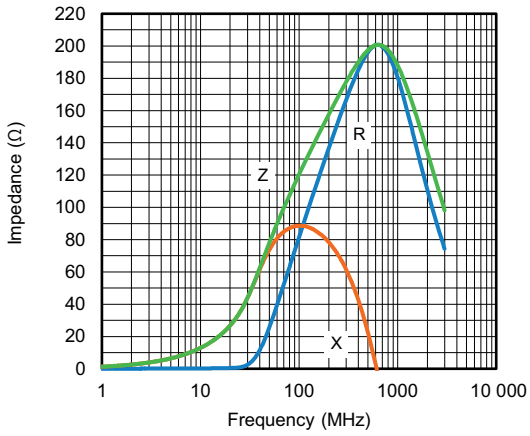
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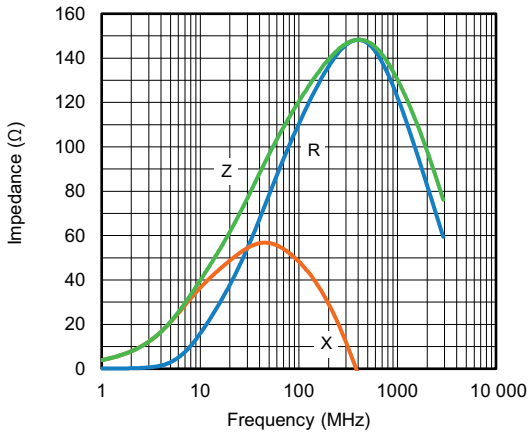
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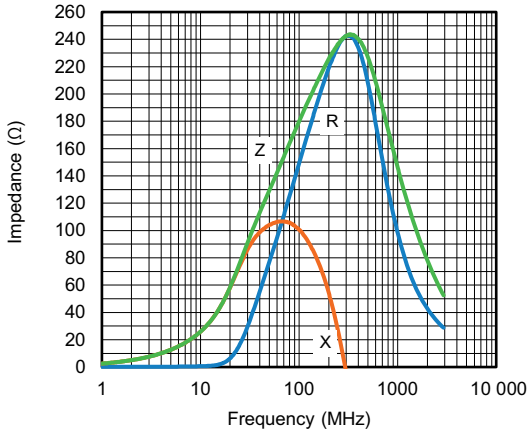
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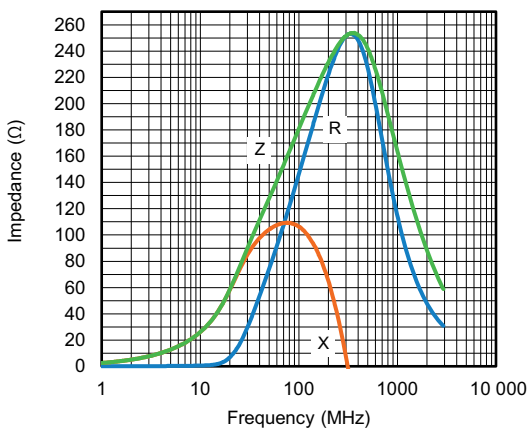
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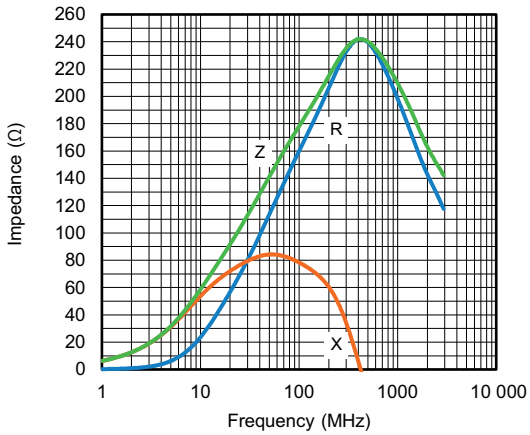


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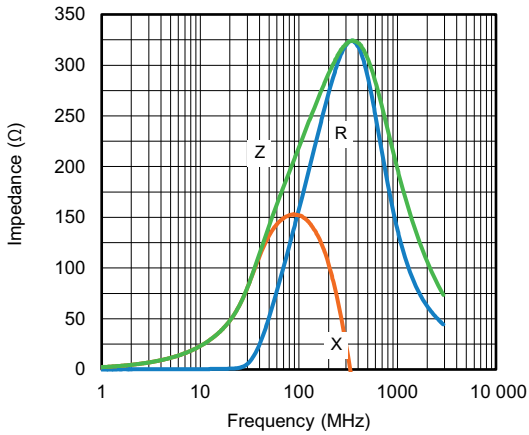
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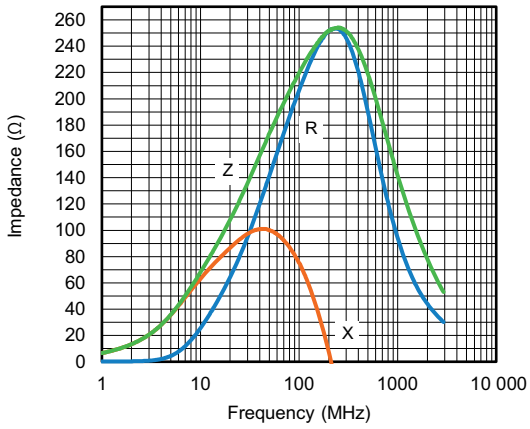
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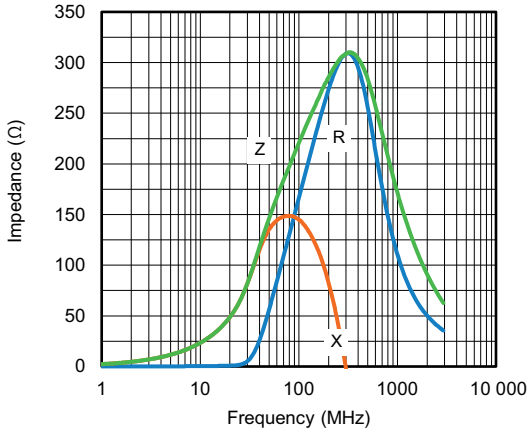
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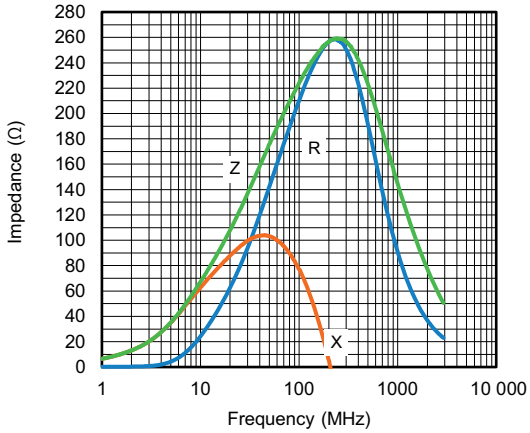
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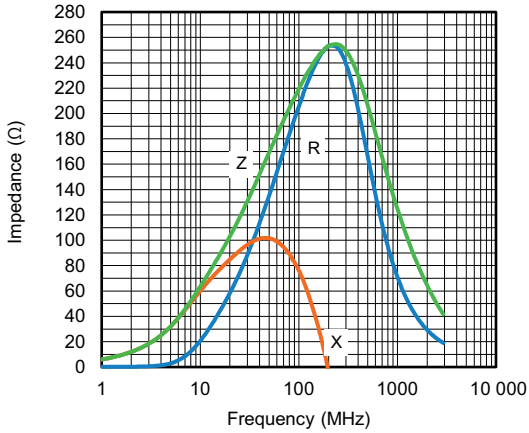
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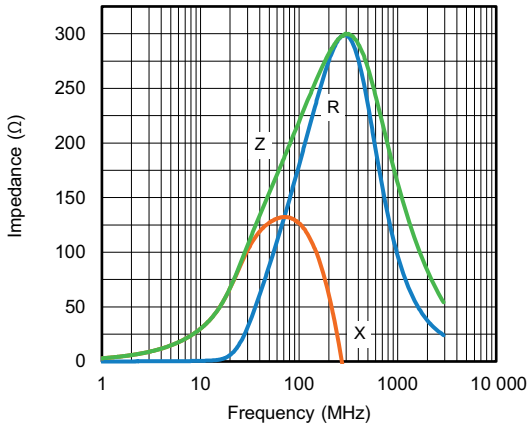


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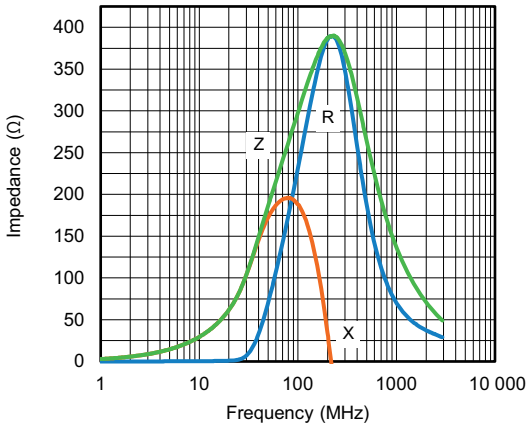
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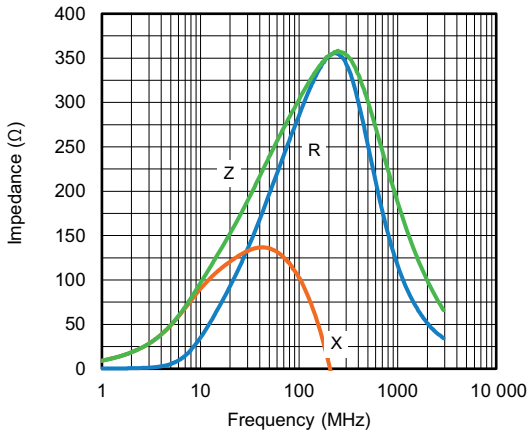
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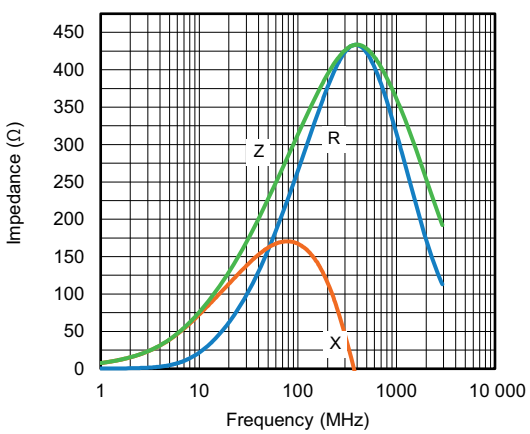
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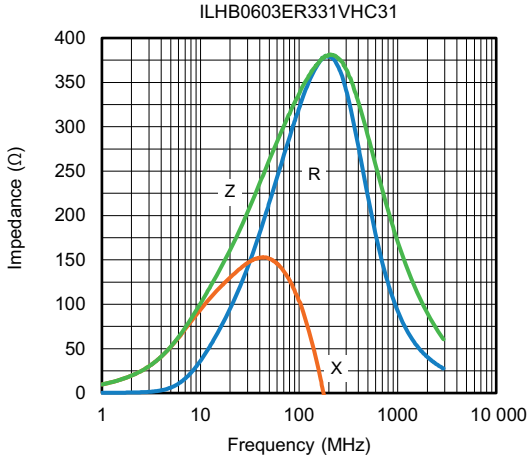
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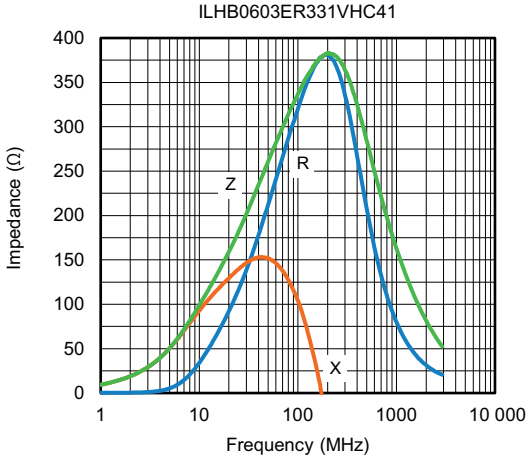
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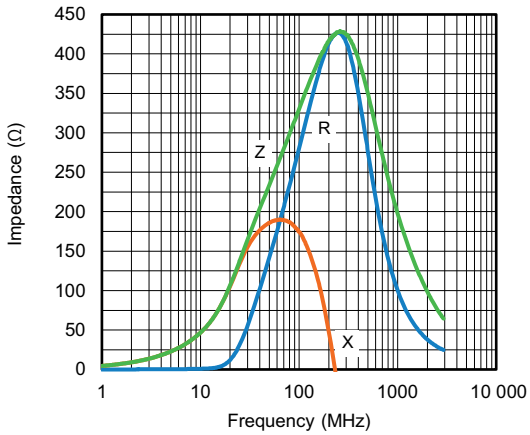


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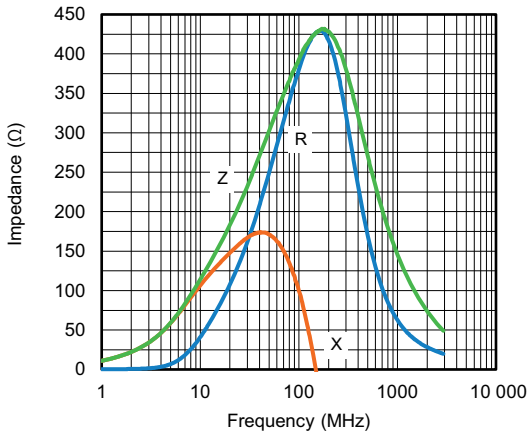
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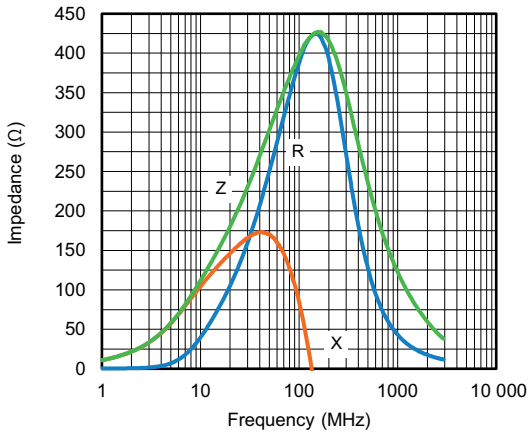
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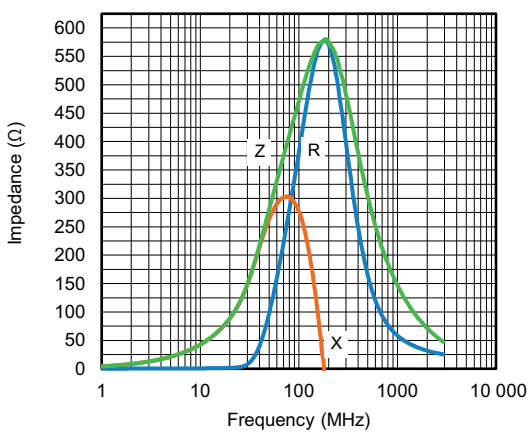
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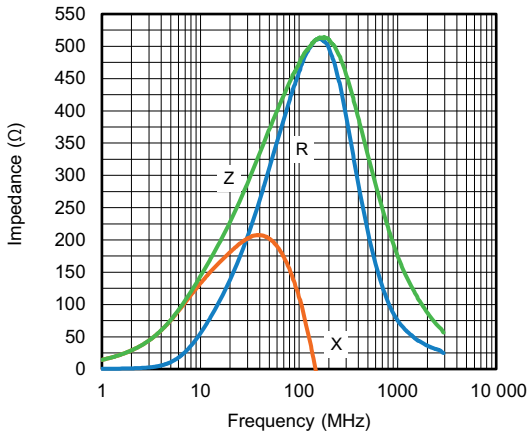
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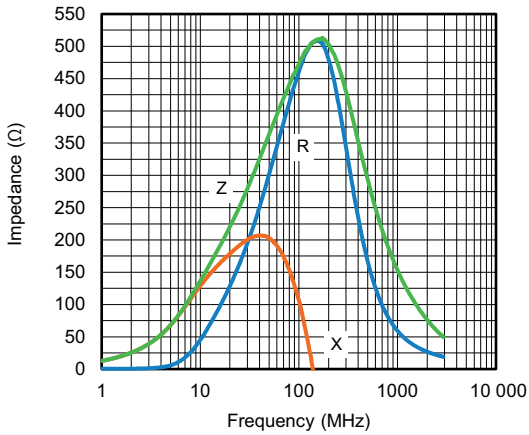
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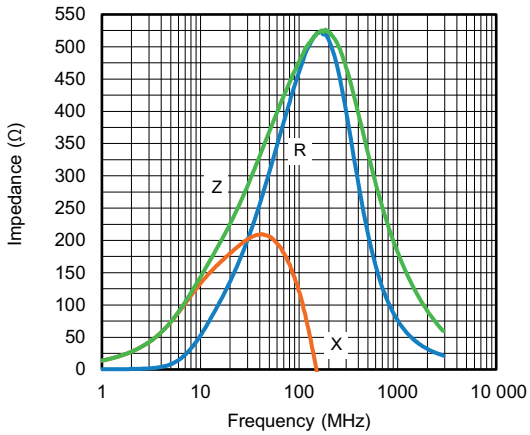


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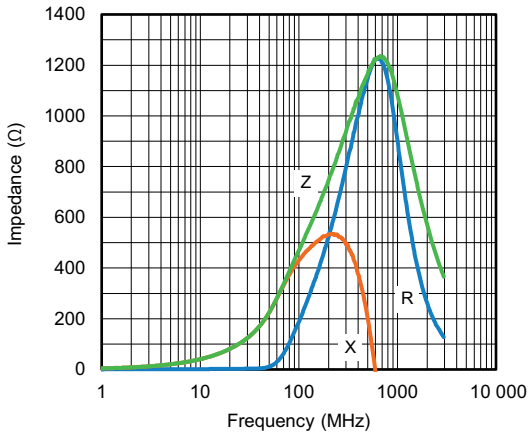
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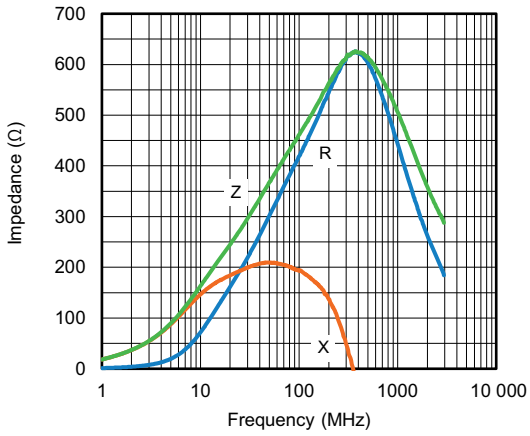
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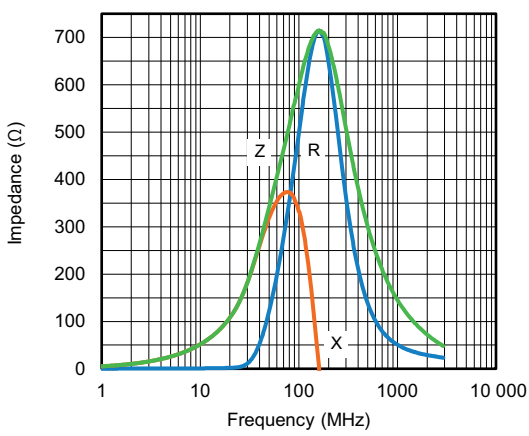
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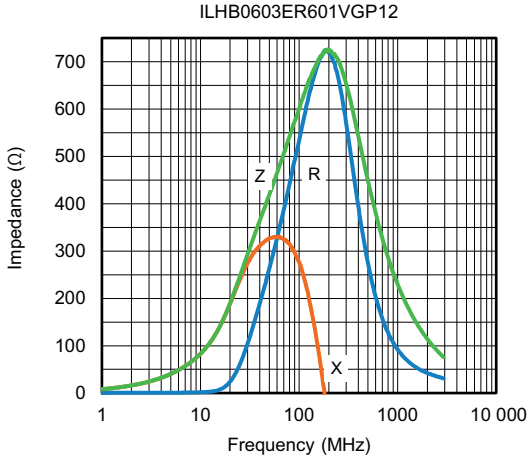
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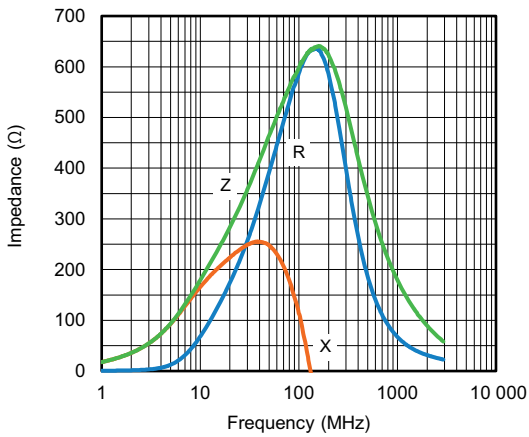
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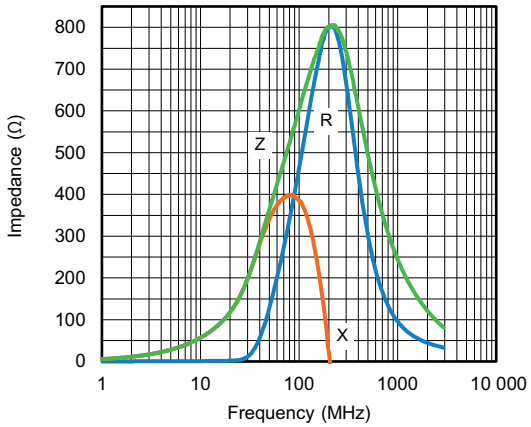


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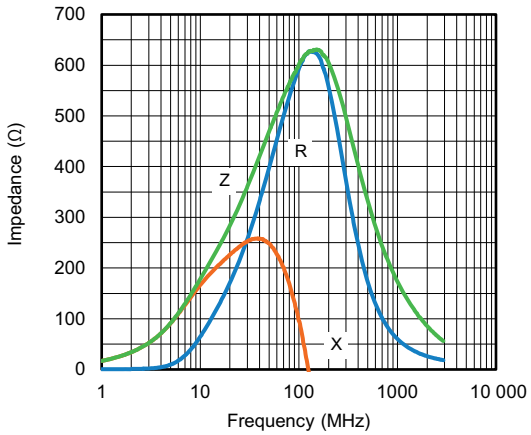
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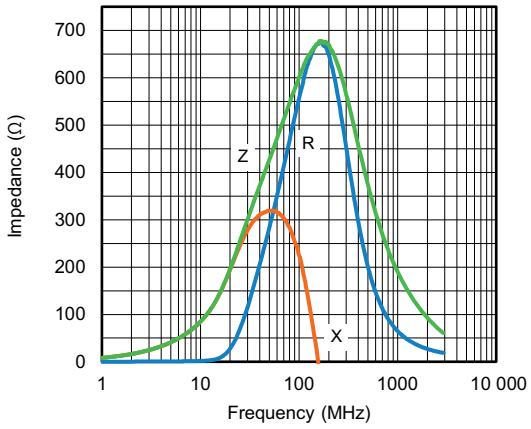
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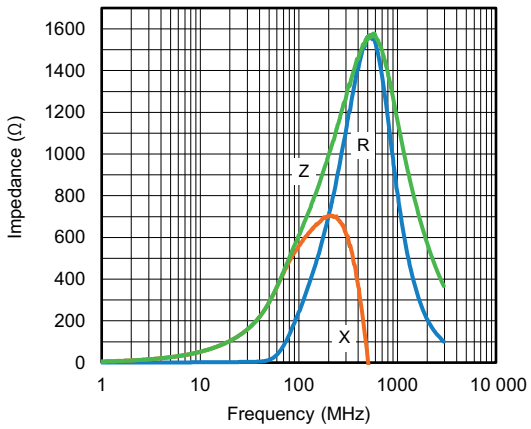
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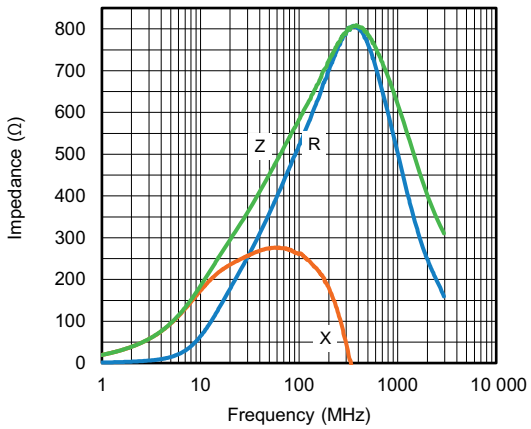
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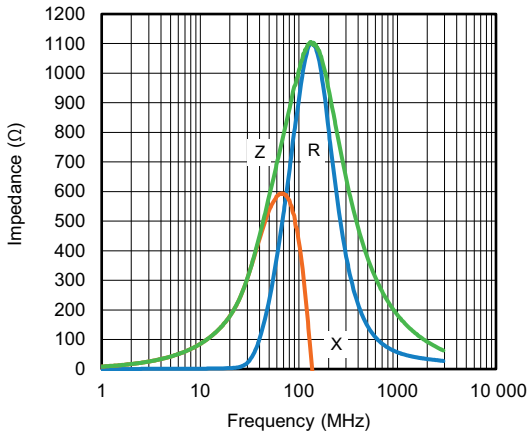
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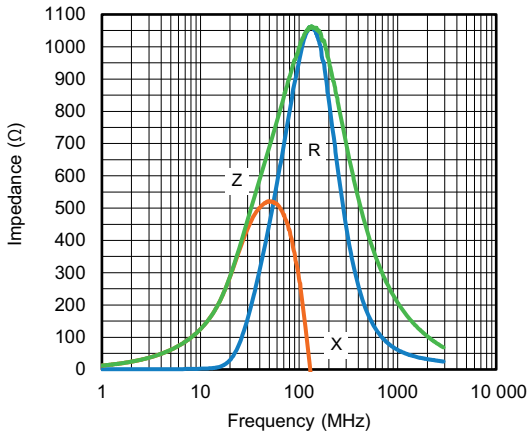


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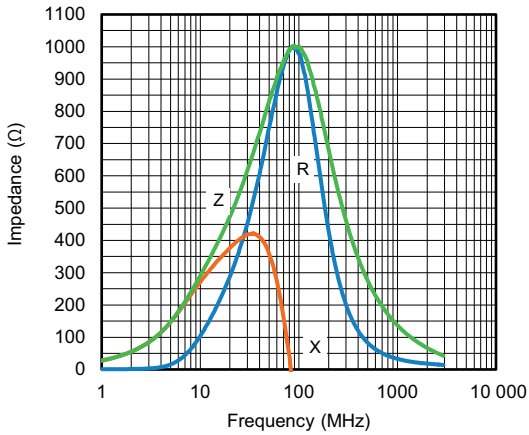
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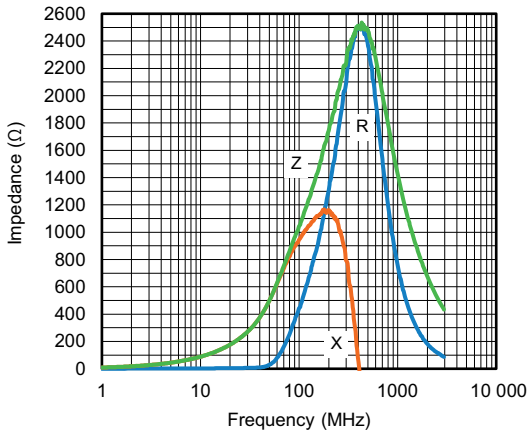
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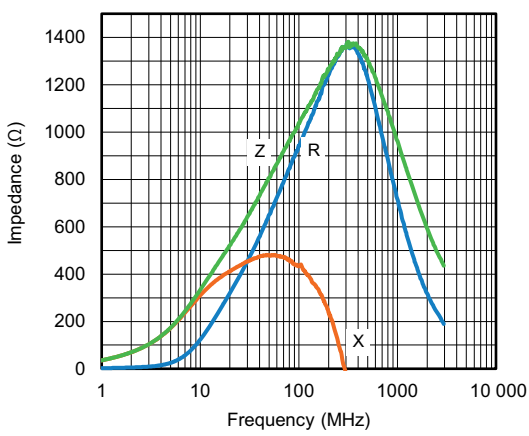
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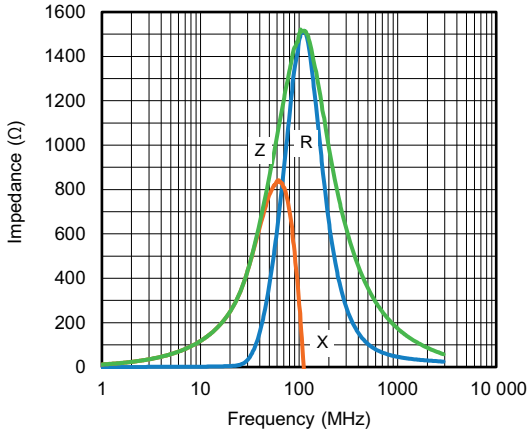
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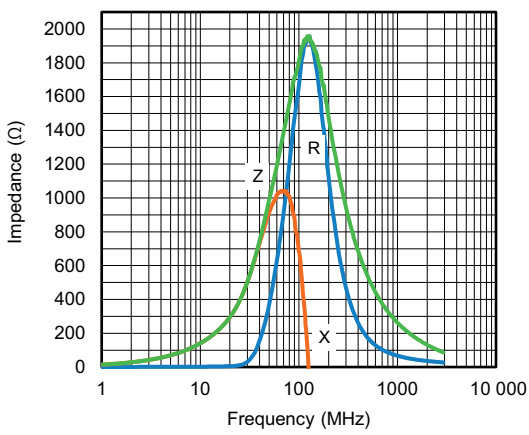
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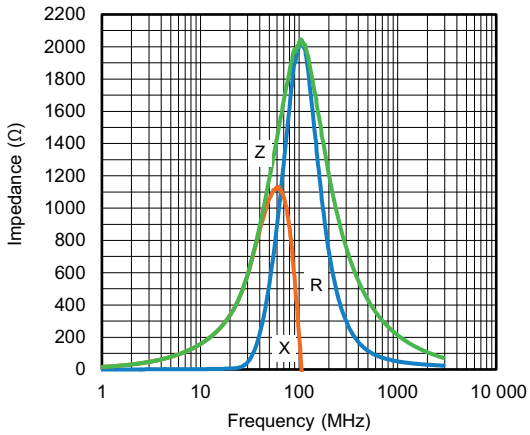


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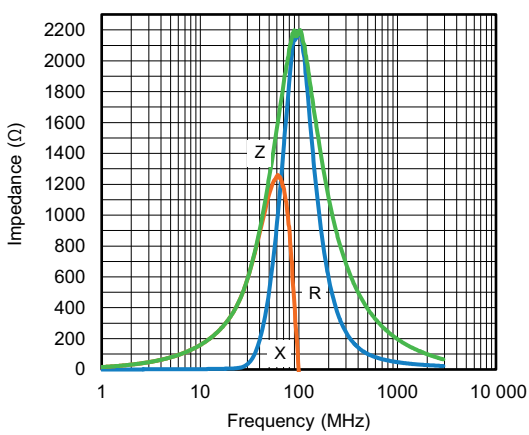
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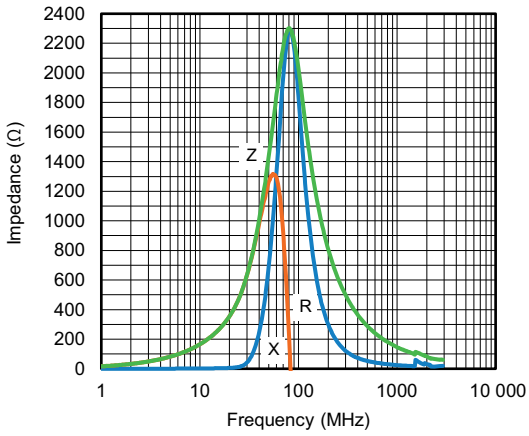
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