Automotive Multilayer Chip Ferrite Beads



FEATURES

- 1.0 mm x 0.5 mm x 0.5 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)

LINKS TO ADDITIONAL RESOURCES

White Paper

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)
ILHB0402ER100VHC11	10	18	3100	19	1211	10	10 000	125
ILHB0402ER300VGP11	30	200	300	39	581	30	4500	36
ILHB0402ER300VHC41	30	50	1700	58	174	30	> 10 000	138
ILHB0402ER300VHC42	30	35	2200	57	1103	30	> 10 000	130
ILHB0402ER300VSS11	30	150	600	177	1329	30	5000	422
ILHB0402ER310VGP11	31	200	300	54	1118	30	> 10 000	125
ILHB0402ER330VSS11	33	400	300	759	811	31	5000	710
ILHB0402ER600VGP11	60	300	200	103	879	60	5500	116
ILHB0402ER600VHC41	60	75	1500	103	952	61	9000	107
ILHB0402ER700VGP11	70	300	200	91	515	68	2921	43
ILHB0402ER700VHC31	70	100	800	111	700	70	3200	82
ILHB0402ER700VHC32	70	100	1200	85	495	66	2297	31
ILHB0402ER750VSS11	75	300	600	433	664	75	3500	360
ILHB0402ER750VSS12	75	300	600	193	939	73	3200	208
ILHB0402ER800VHC11	80	38	2300	128	597	79	1984	110
ILHB0402ER800VGP11	80	350	200	136	759	80	4000	107
ILHB0402ER800VGP12	80	350	200	120	630	75	2359	78
ILHB0402ER800VHC41	80	70	1500	144	790	80	3800	122
ILHB0402ER121VHC11	120	50	2000	186	551	110	1581	116
ILHB0402ER121VHF11	120	700	300	855	1018	128	5500	416
ILHB0402ER121VGP11	120	400	200	200	558	121	1905	111
ILHB0402ER121VGP13	120	400	200	154	451	122	1602	37
ILHB0402ER121VGP12	120	400	200	178	558	120	1957	76
ILHB0402ER121VHC31	120	130	700	184	566	120	1905	78
ILHB0402ER121VHC32	120	120	1000	153	445	120	1783	38
ILHB0402ER121VHC41	120	90	1300	206	664	116	2456	122
ILHB0402ER121VSS11	120	400	400	673	463	120	2100	302
ILHB0402ER121VSS12	120	400	400	317	700	120	2300	197
ILHB0402ER181VHF11	180	1000	100	540	891	160	3800	254

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)
ILHB0402ER221VHF11	220	1000	250	1348	800	214	4200	390
ILHB0402ER221VHF12	220	500	300	431	811	195	2920	149
ILHB0402ER221VGP11	220	450	150	352	433	227	1175	104
ILHB0402ER221VGP12	220	500	100	261	350	210	729	32
ILHB0402ER221VHC31	220	180	600	304	379	220	890	66
ILHB0402ER221VHC32	220	180	800	272	327	217	790	36
ILHB0402ER221VHC41	220	160	900	362	451	225	1260	104
ILHB0402ER221VSS11	220	700	200	1066	323	211	1163	231
ILHB0402ER221VSS12	220	700	200	536	522	222	1581	185
ILHB0402ER241VGP11	240	500	200	358	410	244	1075	78
ILHB0402ER301VHF11	300	1000	100	566	581	307	2178	122
ILHB0402ER301VHF12	300	1100	100	868	811	300	2960	208
ILHB0402ER301VGP11	300	500	100	479	359	300	903	108
ILHB0402ER301VGP12	300	600	100	356	287	300	589	34
ILHB0402ER301VSS11	300	800	200	345	422	300	1178	159
ILHB0402ER421VGP11	420	600	100	585	271	420	580	91
ILHB0402ER421VGP12	420	800	100	486	241	417	476	32
ILHB0402ER421VSS11	420	1000	150	849	294	420	738	149
ILHB0402ER471VHF11	470	1300	100	1357	621	470	2237	219
ILHB0402ER501VGP11	500	800	100	712	254	521	551	90
ILHB0402ER601VHF11	600	1500	100	1122	589	615	1880	124
ILHB0402ER601VHF12	600	1600	100	1571	581	600	2037	211
ILHB0402ER601VHF13	600	1200	100	869	509	580	1856	40
ILHB0402ER601VGP11	600	900	100	818	211	614	400	90
ILHB0402ER601VGP12	600	900	100	867	235	626	463	83
ILHB0402ER601VGP13	600	900	100	707	203	616	374	34
ILHB0402ER601VHC31	600	340	450	709	192	595	327	60
ILHB0402ER601VHC32	600	340	450	671	185	614	298	29
ILHB0402ER601VSS11	600	1100	100	1202	258	595	597	145
ILHB0402ER751VGP11	750	1000	100	1066	192	775	379	96
ILHB0402ER102VHF11	1000	1800	50	1886	589	1000	1713	124
ILHB0402ER102VHF12	1000	1800	50	1369	374	1000	1059	37
ILHB0402ER102VGP11	1000	1200	100	1187	153	1000	228	80
ILHB0402ER102VGP12	1000	1200	100	1034	120	1000	157	32
ILHB0402ER102VSS11	1000	1200	100	1714	177	1025	302	119
ILHB0402ER152VHF11	1500	2200	50	3728	509	1550	1479	182
ILHB0402ER152VGP11	1500	1600	100	1745	139	1550	190	80
ILHB0402ER152VSS11	1500	1400	100	2235	149	1550	231	107
ILHB0402ER182VHF11	1800	2400	50	3738	350	1800	1018	153
ILHB0402ER182VGP11	1800	2000	50	2033	97	2038	125	65
ILHB0402ER182VSS11	1800	1800	50	2372	143	1768	197	96

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

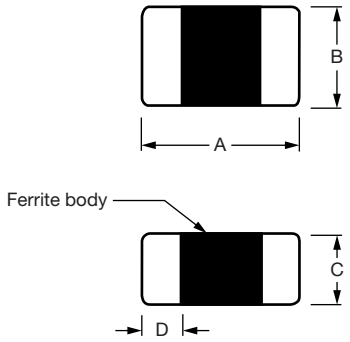
(1) Rated current is the DC current that causes a 40 °C temperature rise at 20 °C ambient
(2) Z_{pk} = peak of impedance curve
(3) F at Z_{pk} = frequency of Z_{pk}
(4) F at Z_{DO} = frequency above 100 MHz where Z drops to nominal Z
(5) XL / XR x over = crossover point for inductive reactance and resistance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

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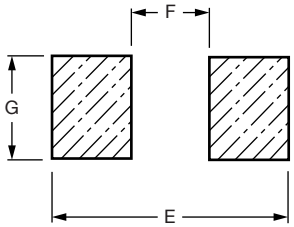
GLOBAL PART NUMBER

I L H B	0 4 0 2	E R	3 0 1	V	H C 1
PRODUCT FAMILY	SIZE	PACKAGE CODE	INDUCTANCE VALUE	IMPEDANCE TOLERANCE	APPLICATION
		ER = tape and reel	**121** = 120 Ω	**V** = ± 25 %	**HCxx** = high current **HFxx** = high frequency **GPxx** = general purpose **SSxx** = signal specific

DIMENSIONS in inches [millimeters]



Dimensional outline



Typical pad layout

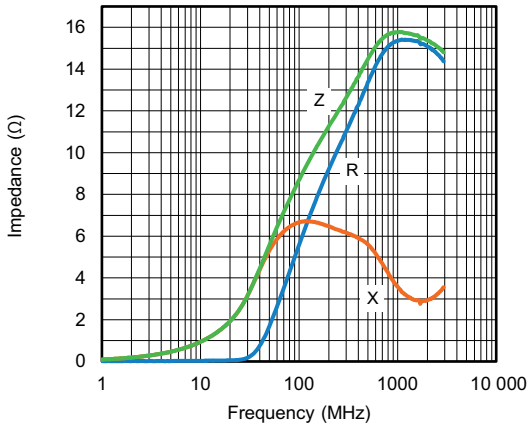
SIZE	A	B	C	D	E	F	G
0402	0.039 ± 0.006 [1.0 ± 0.15]	0.020 ± 0.006 [0.5 ± 0.15]	0.020 ± 0.006 [0.5 ± 0.15]	0.010 ± 0.004 [0.25 ± 0.10]	0.055 [1.4]	0.020 [0.5]	0.020 [0.5]

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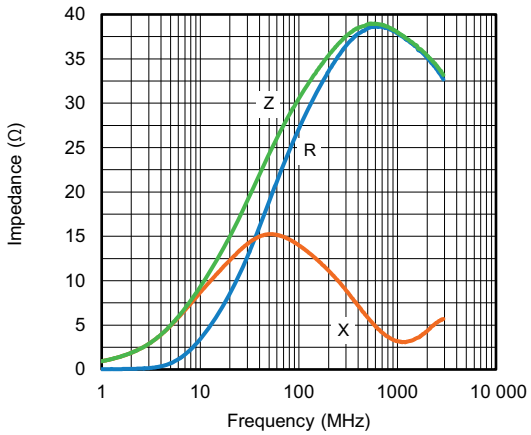
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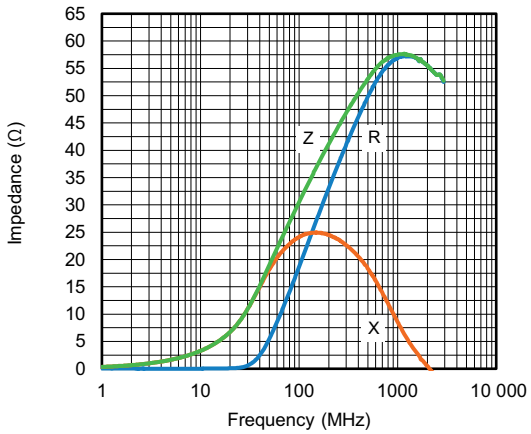
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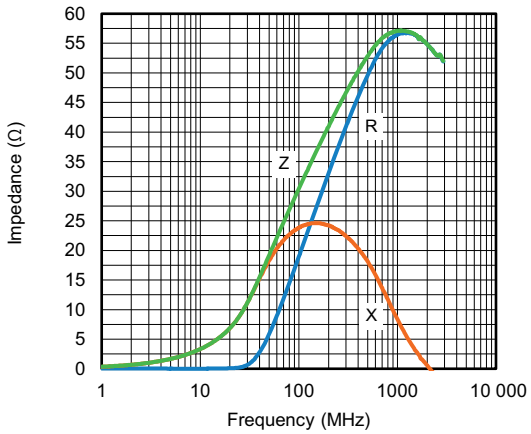
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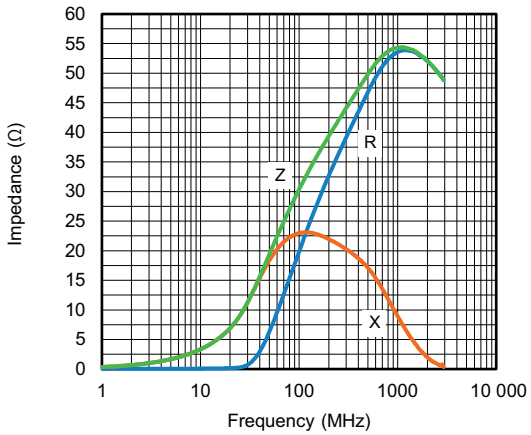
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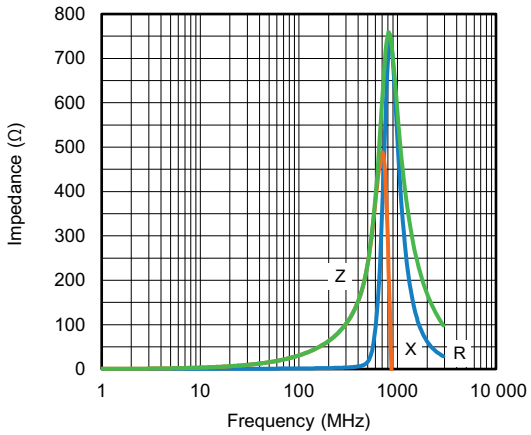
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ILHB0402ER310VGP11



ILHB0402ER330VSS11

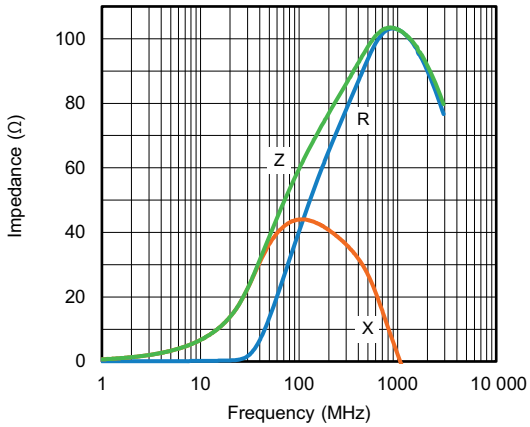


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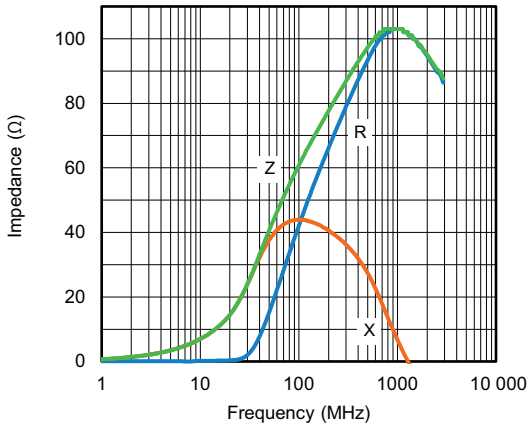
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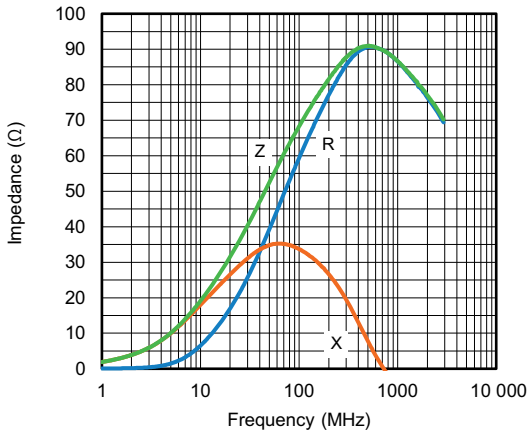
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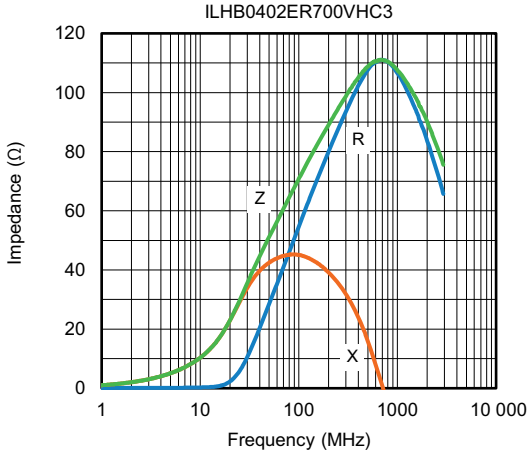
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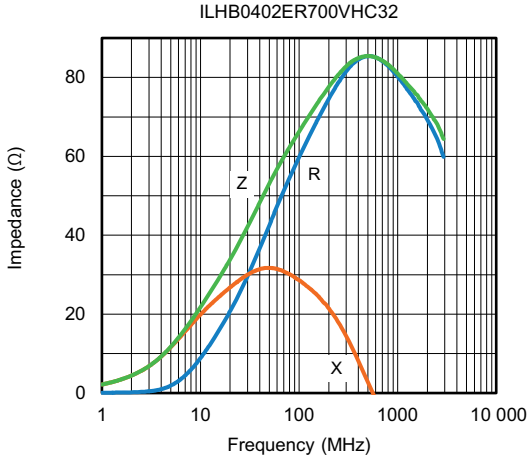
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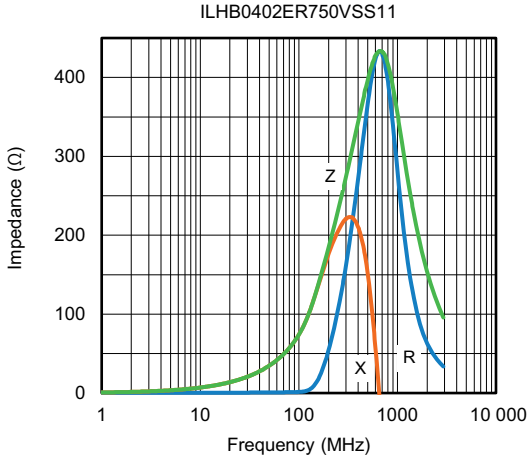
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ILHB0402ER700VHC32



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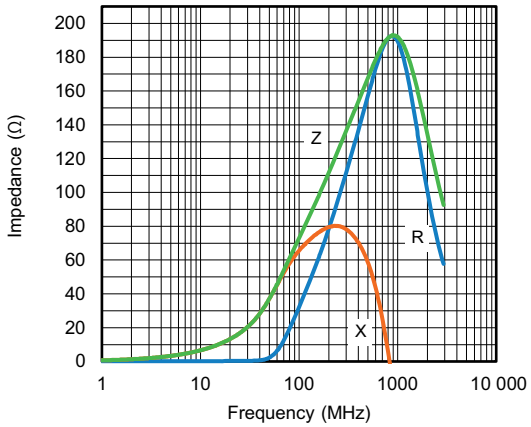


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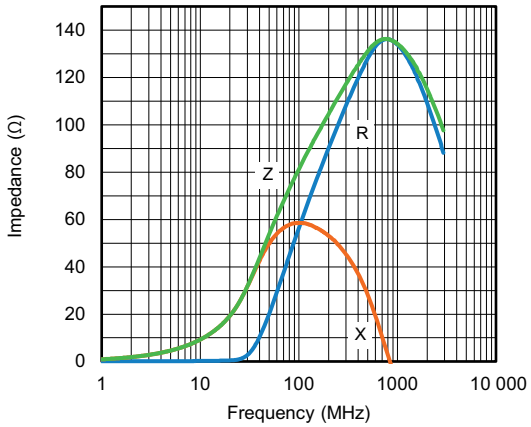
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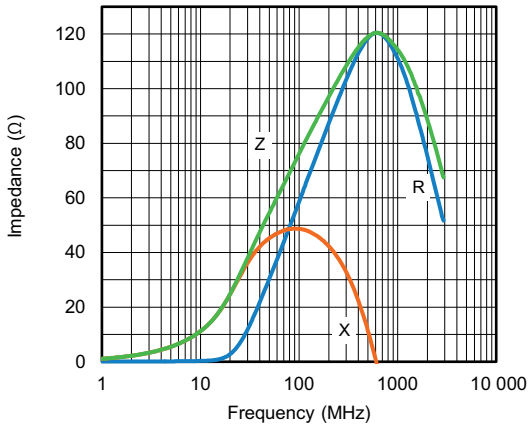
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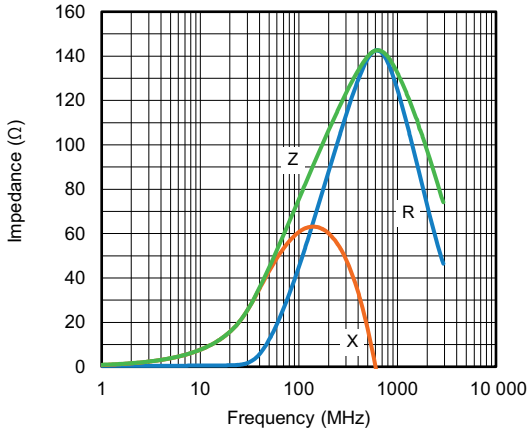
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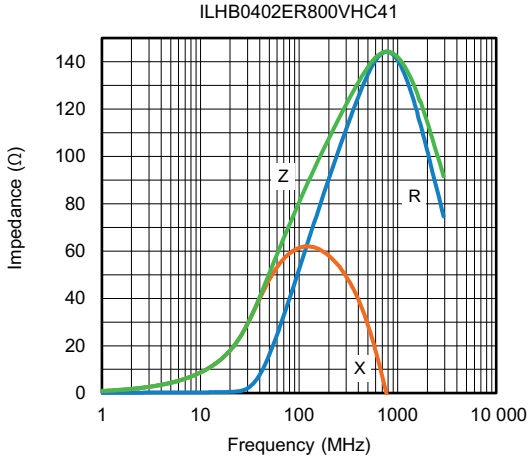
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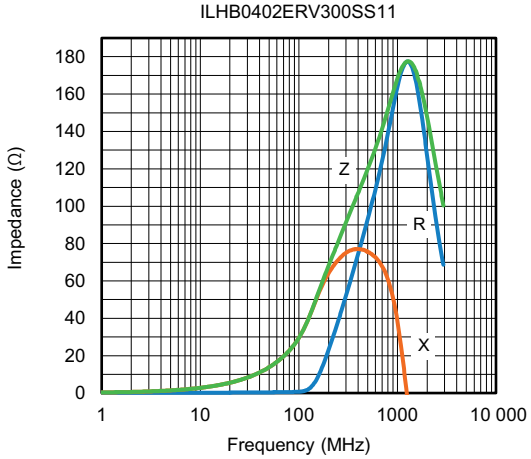
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ILHB0402ER800VHC41



ILHB0402ERV300SS11

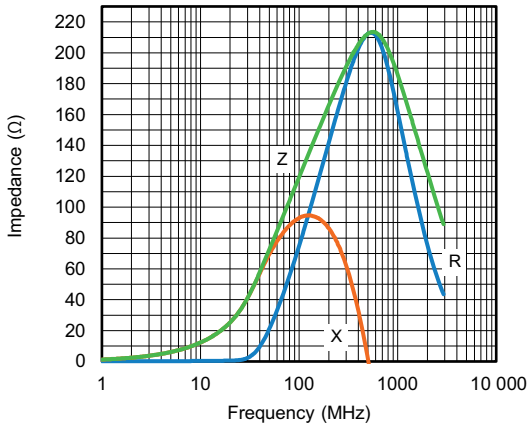


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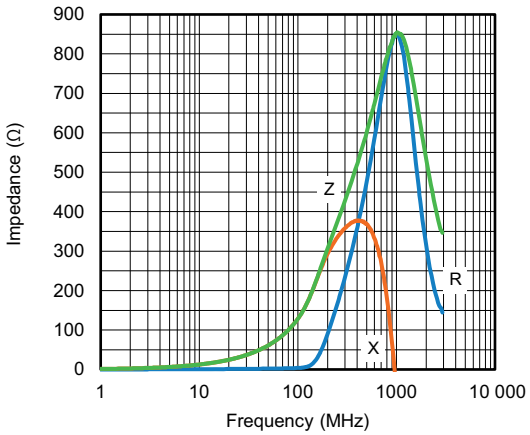
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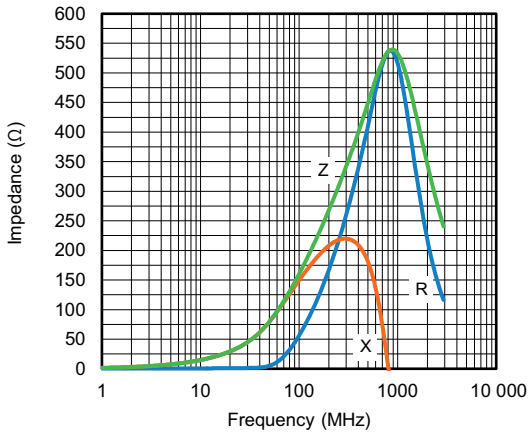
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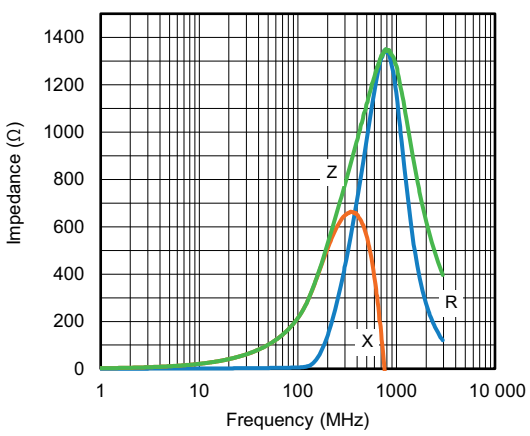
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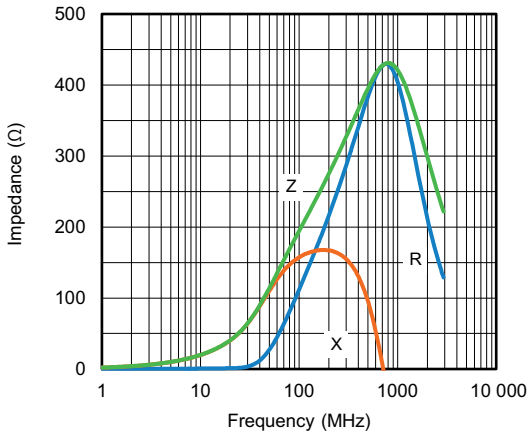
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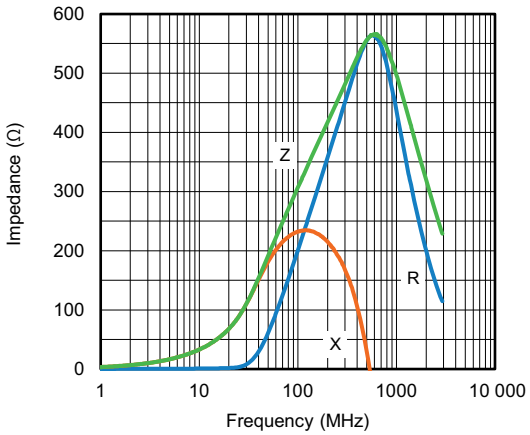
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ILHB0402ER221VHF12



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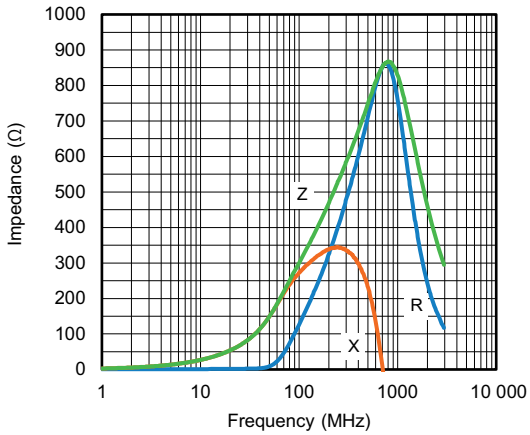


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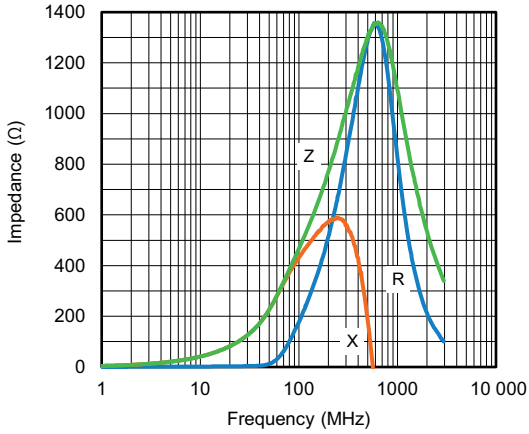
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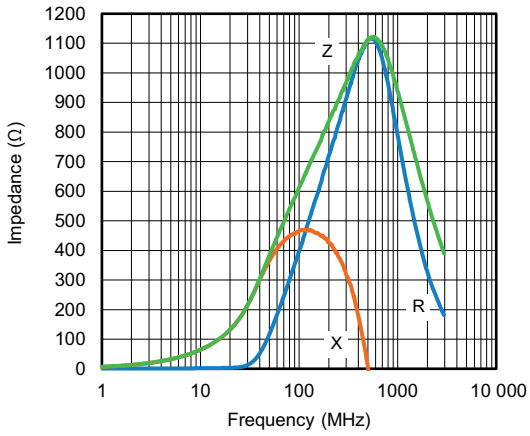
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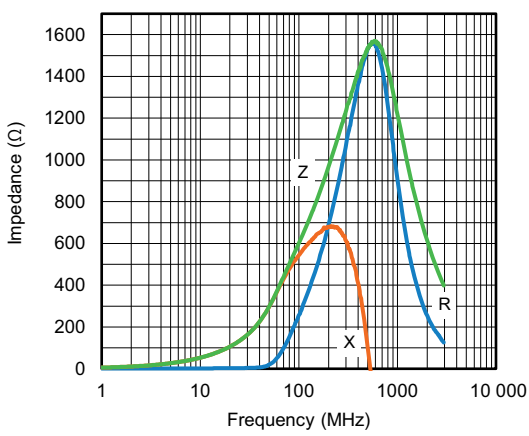
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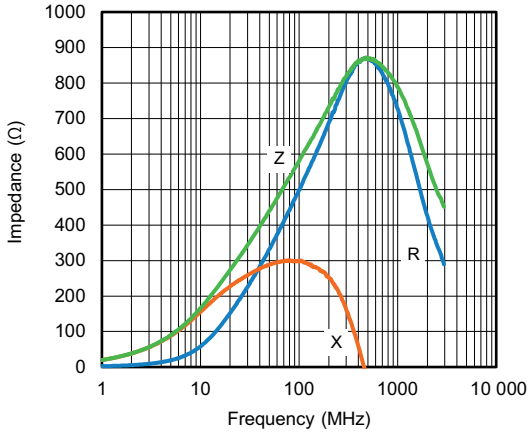
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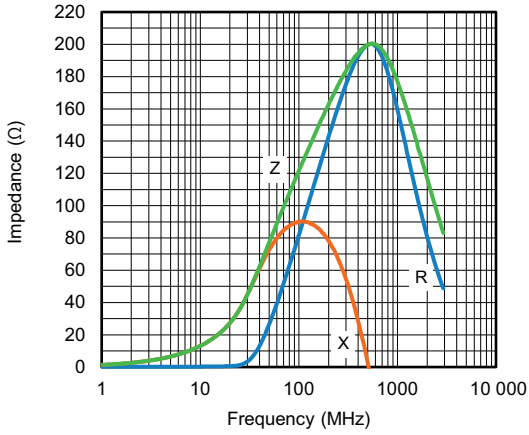
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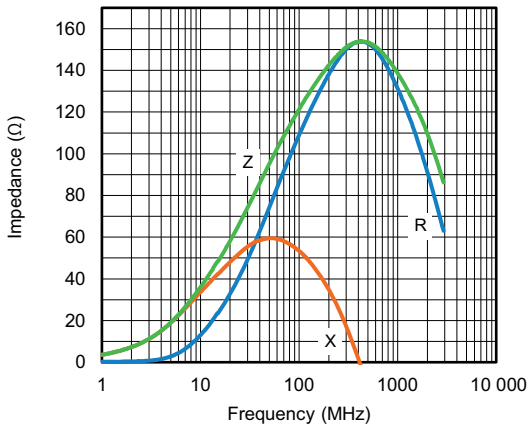


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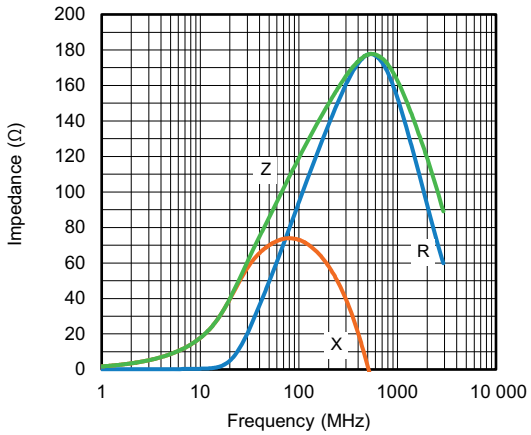
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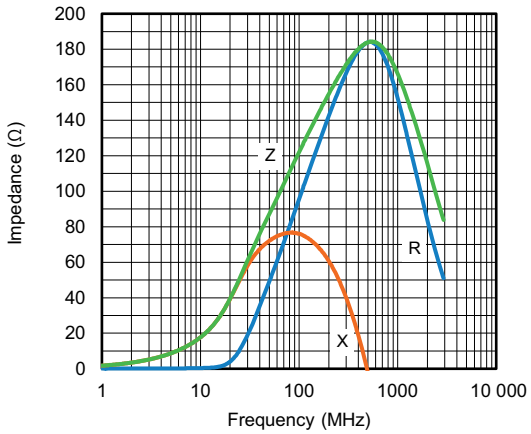
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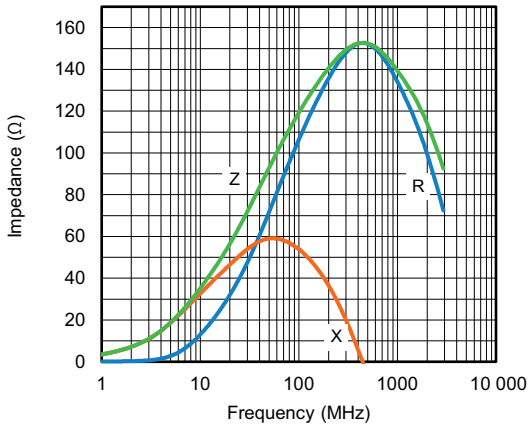
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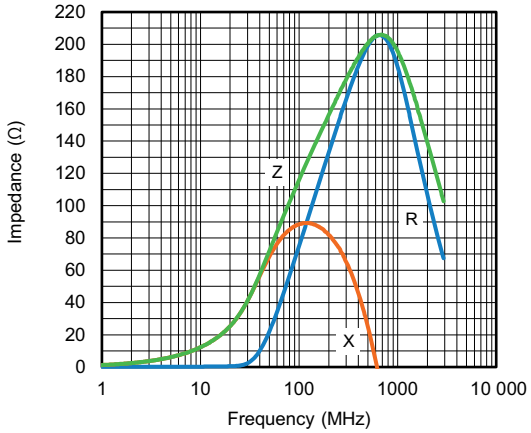
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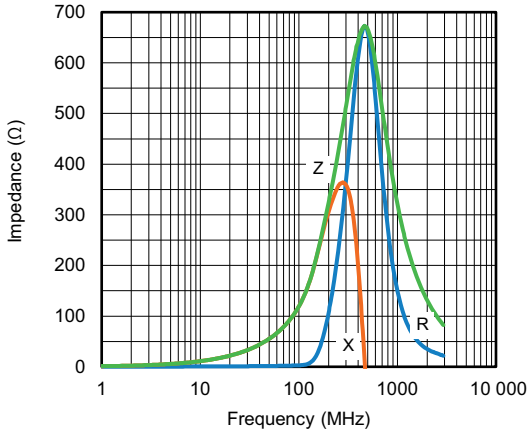
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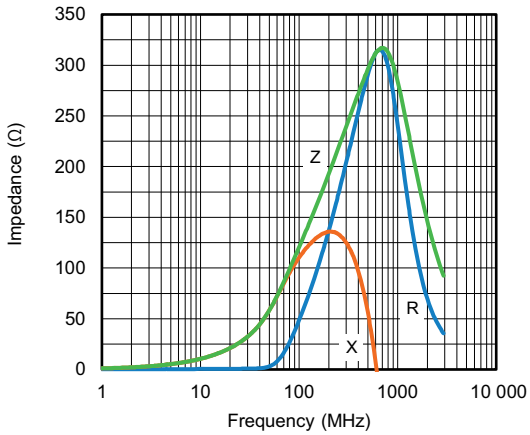


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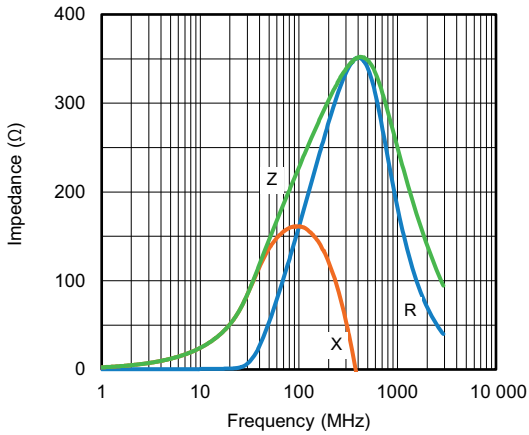
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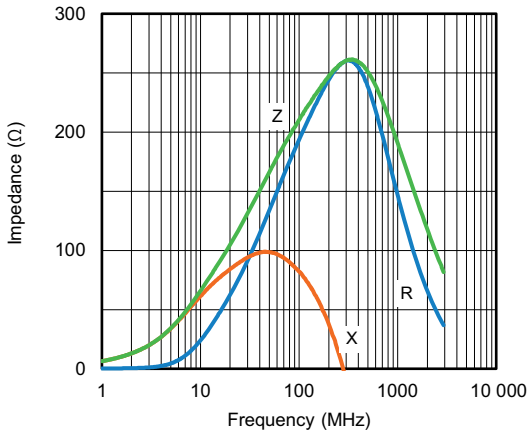
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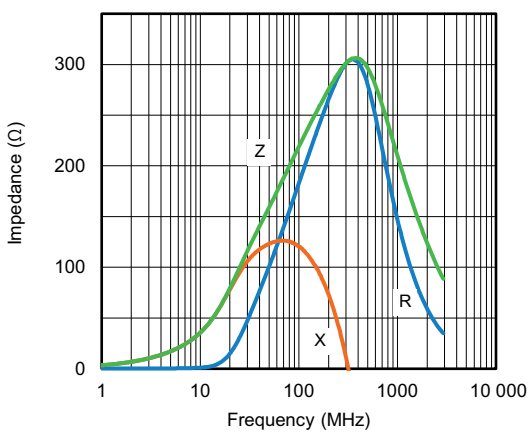
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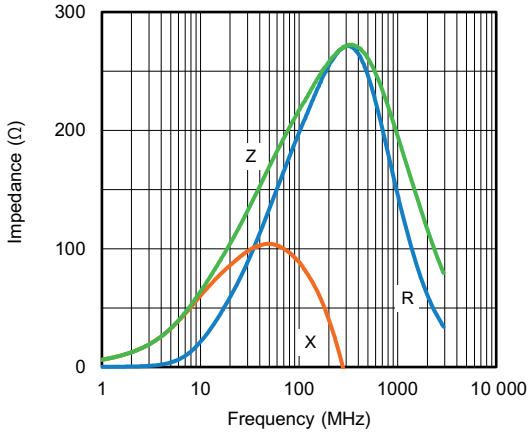
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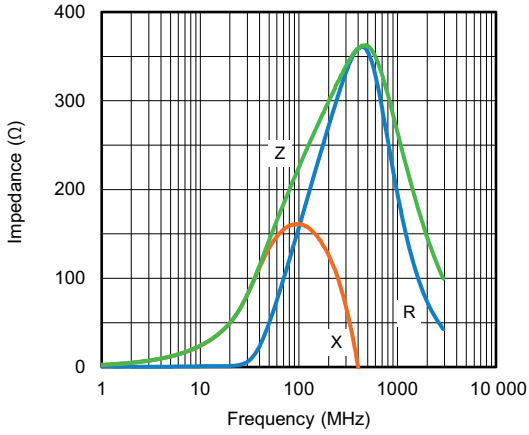
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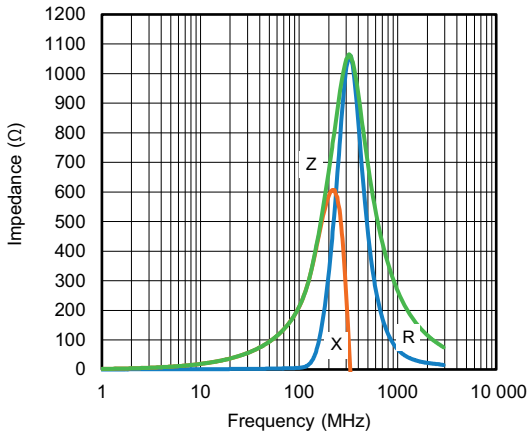


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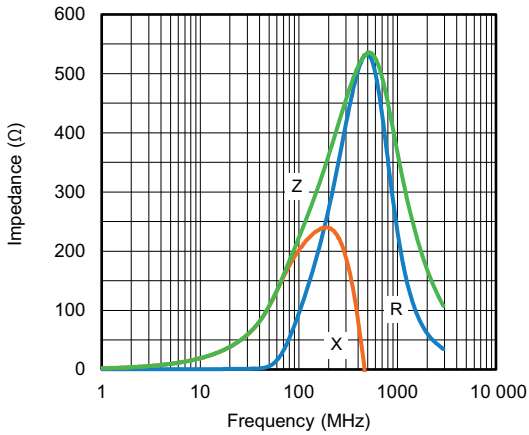
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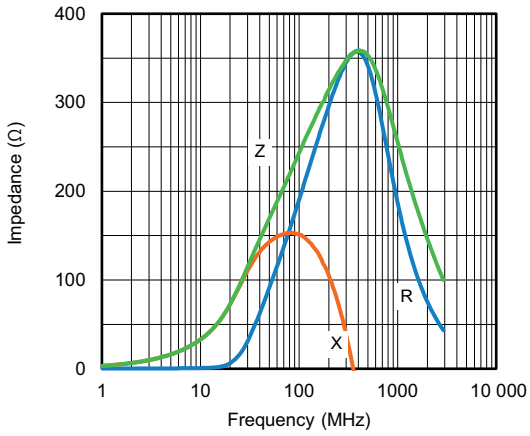
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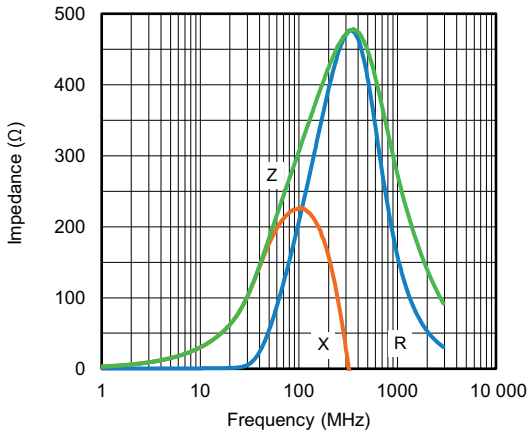
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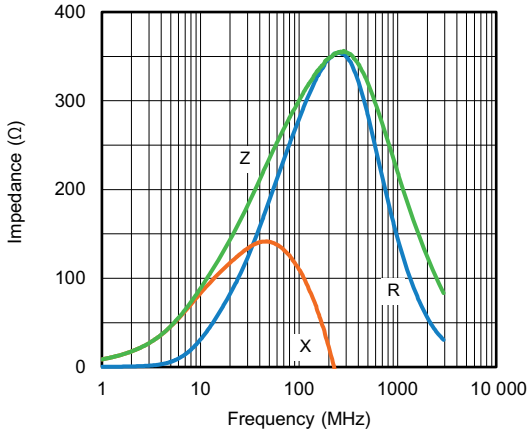
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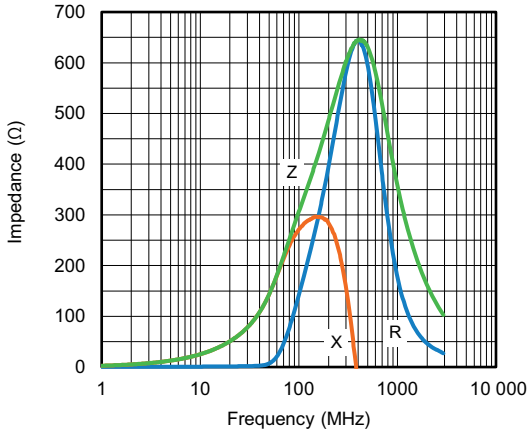
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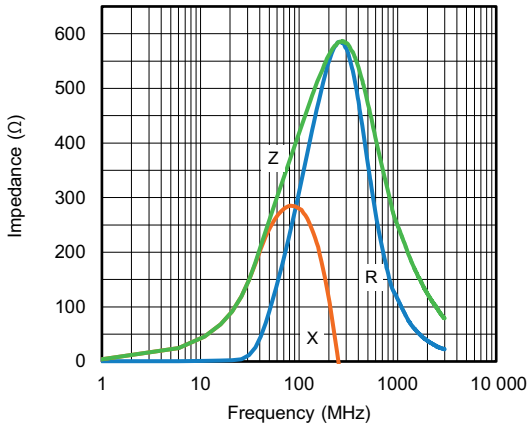


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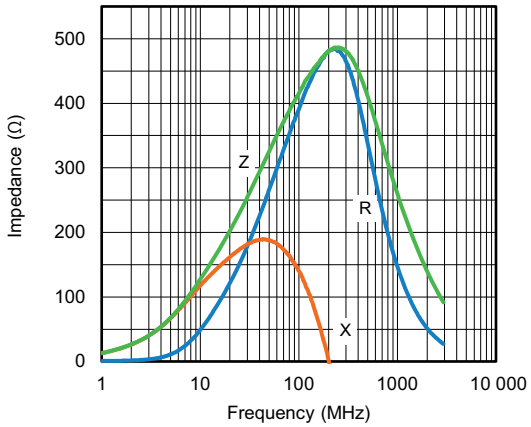
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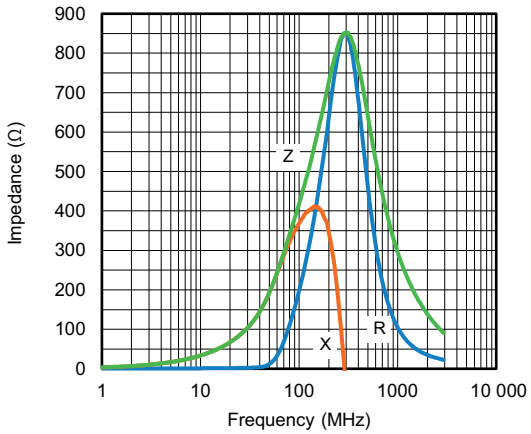
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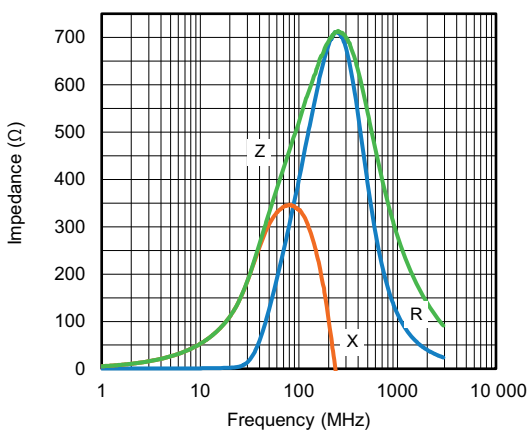
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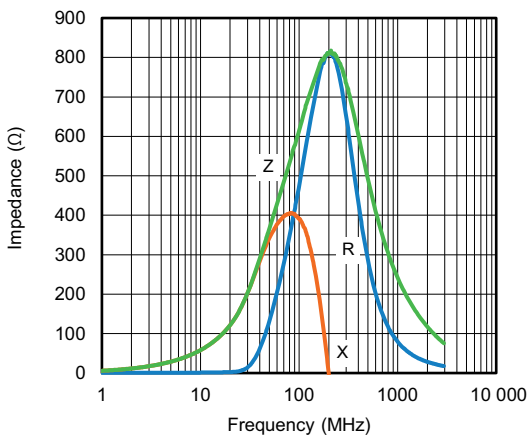
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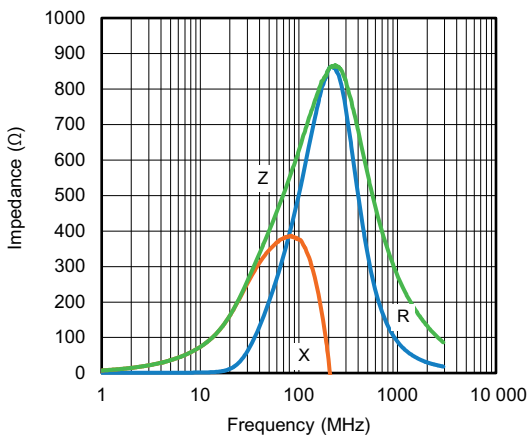
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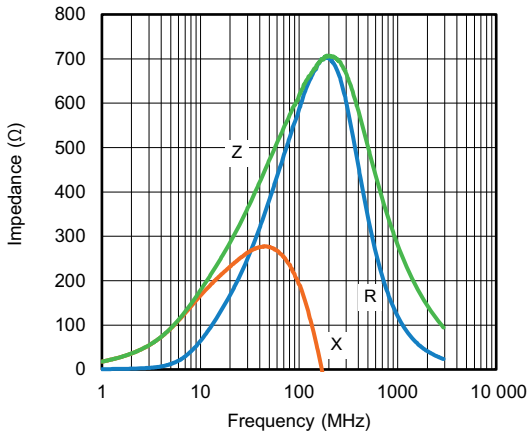


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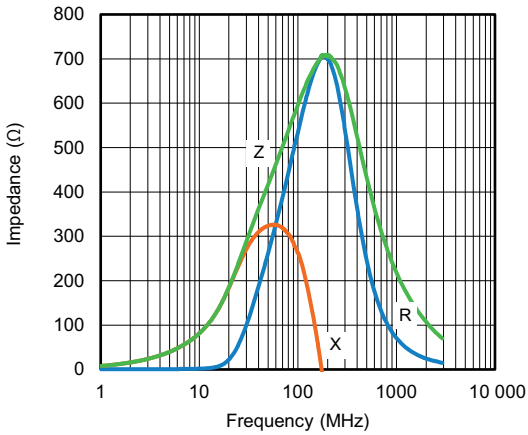
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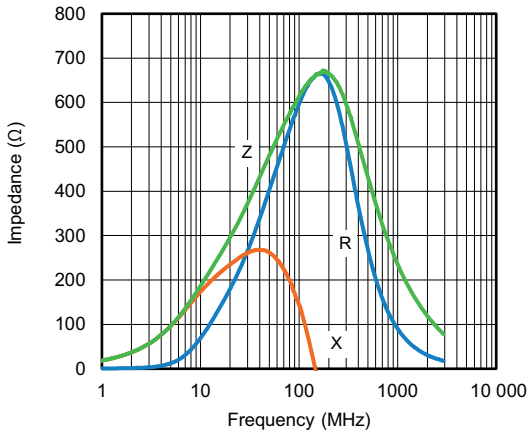
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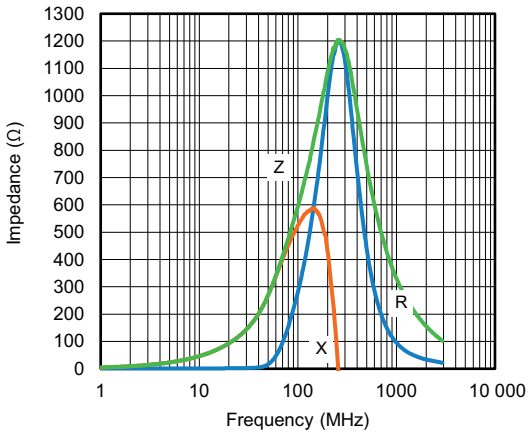
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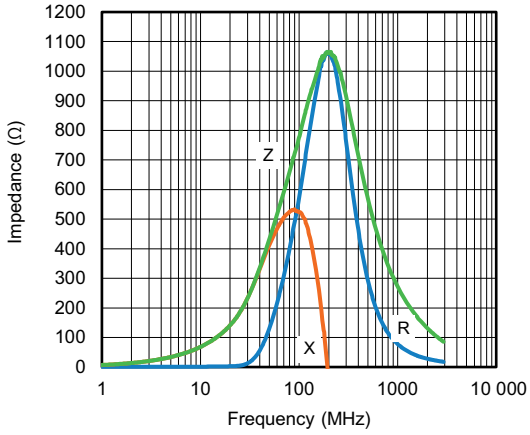
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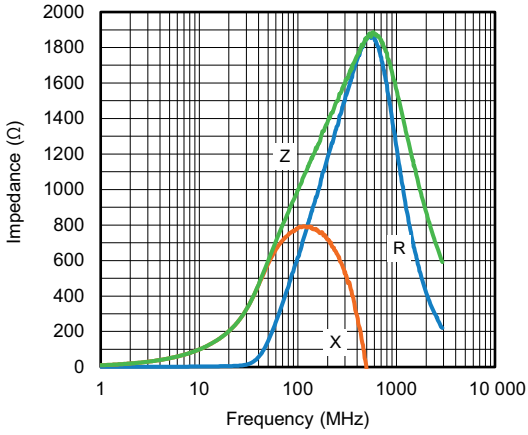
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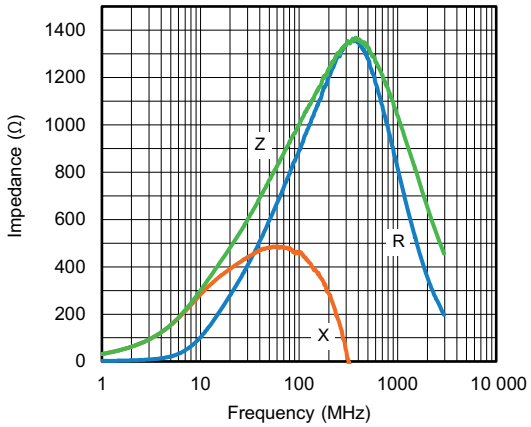


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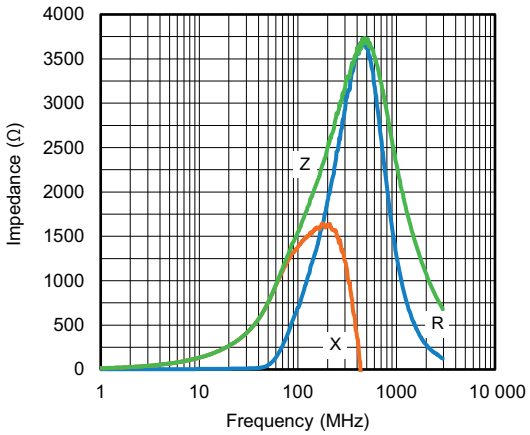
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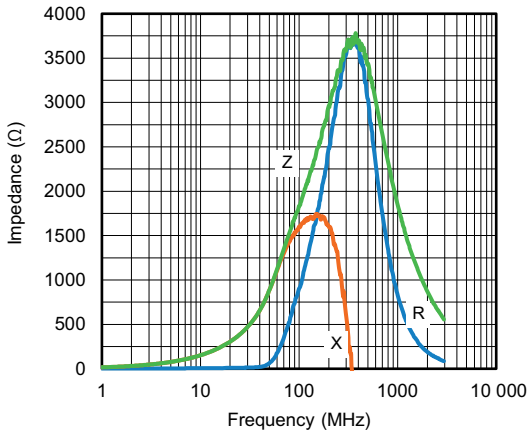
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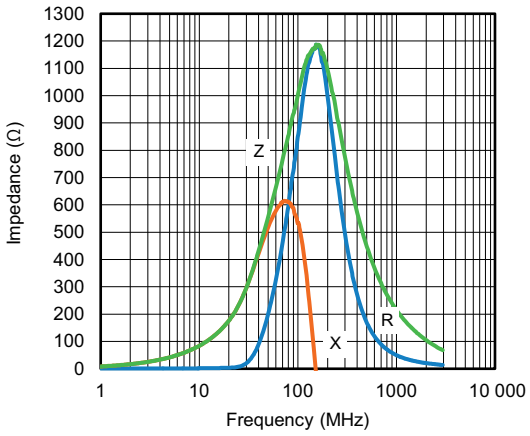
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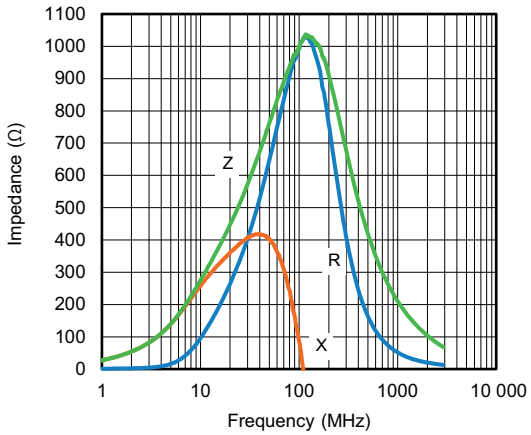
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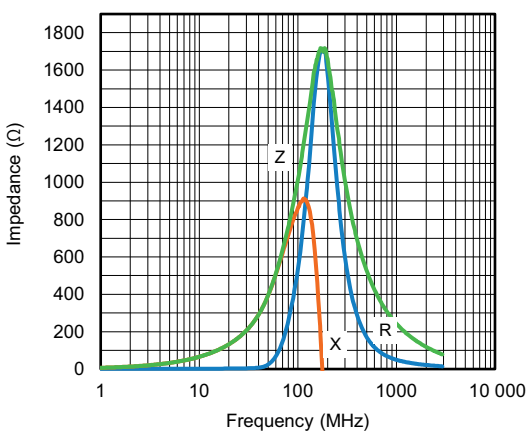
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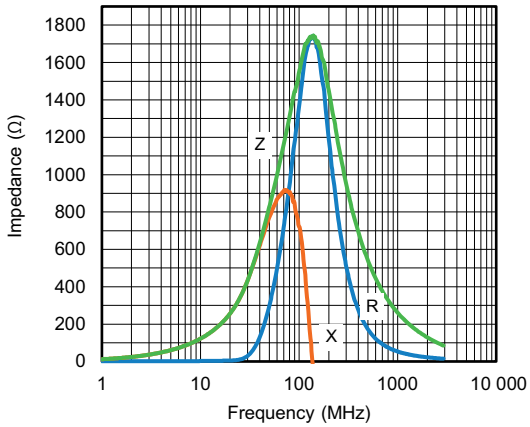


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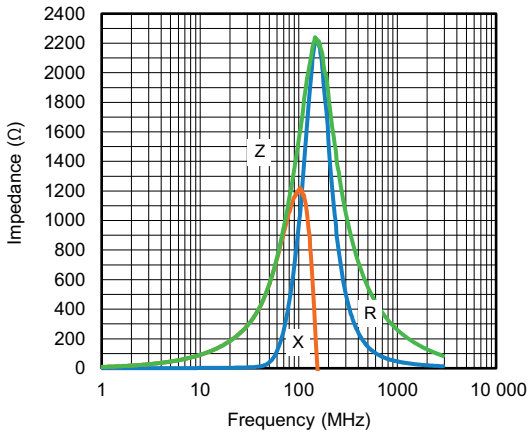
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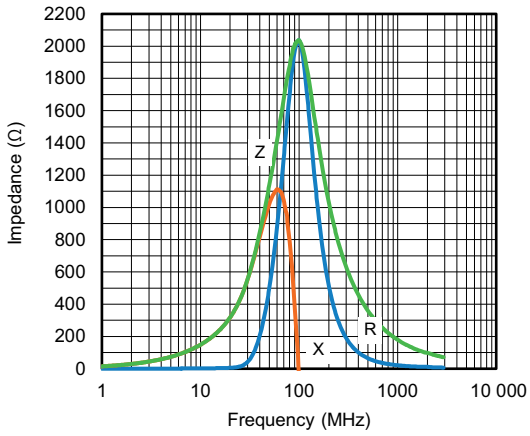
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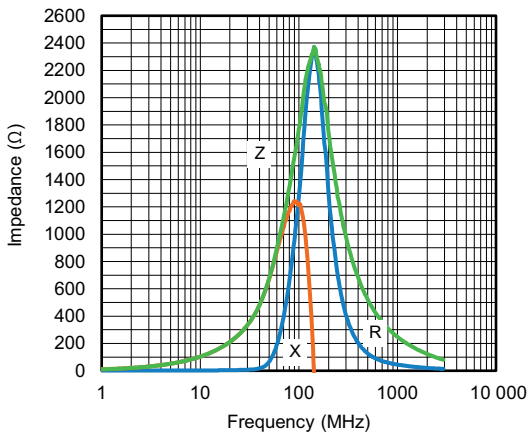
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