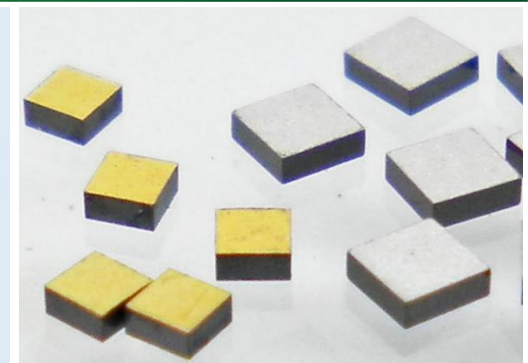
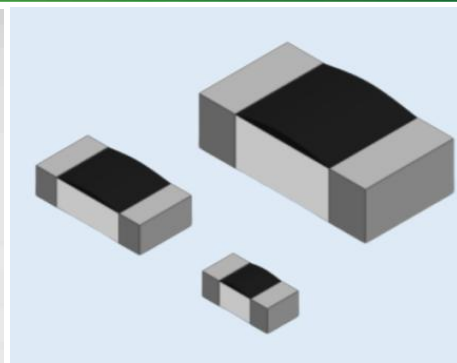


GRACE

产品手册 CATALOG



东莞可锐电子科技有限公司

Dongguan GRACE electronic Technology Co., LTD

www.gracevn.com

公司简介

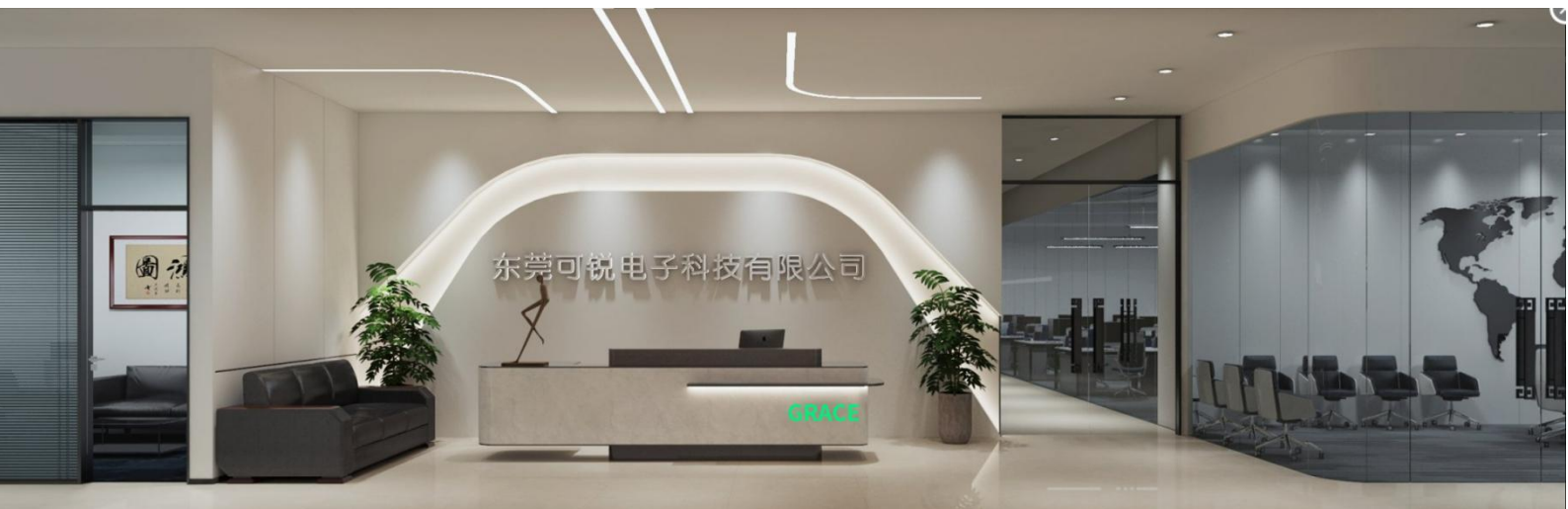
INTRODUCE



可锐 GRACE 品牌创建于2007年,在中国香港注册成立香港可锐电子科技有限公司,随后更新为香港可锐电子科技集团有限公司。在发展过程中,公司在中国台湾、中国香港、深圳和东莞等地设立了分支机构及子公司,为客户提供系统的解决方案和定制化服务。作为一家专注于敏感元器件及陶瓷材料研发、生产和销售为一体的高科技企业,GRACE 可锐同时为行业提供系统化的应用解决方案。

GRACE 可锐创始团队作为国内电子信息产业早期开拓者之一,因持续看好基础元器件产业在中国内地的发展,自进入敏感元器件行业以来潜心深耕,18年来为行业带来了一系列创新的应用解决方案,并打造出了一支专业成熟的技术研发和运营管理团队。

基于对行业的深入认识和持续信心,为客户提供更加优质的产品和服务,2022年4月,东莞可锐电子科技有限公司在东莞市茶山镇莞民投松湖信息产业园成立。公司投资2500万元用于布局数字化智能生产车间,引进国内外先进设备以及行业尖端人才和技术管理平台等优势资源,致力于打造属于中国、面向全球的新时代高端电子元器件产品线。并致力成为全球中高端电路保护产品及应用解决方案提供商。



MISSION VISION VALUES

使命 愿景 价值观

使命 Mission

科技提升创新动力 / 让电路更安全。

愿景 Vision

以价值客户为中心，保持产品先进性，力争成为新型电子元器件行业先导型企业。

价值观 Values

客户第一 / 务实创新 / 诚信正直 / 合作共赢

Main production and testing equipment

主要生产及检测设备



陶瓷薄膜流延机



全自动印刷机



全自动封端机



高精度叠层机



高低温（湿热）试验箱



高温试验箱

Contents

Chip PTC Thermistor

Product Image	Series	Features	application	Dimensions EIA[JIS]	Product Characteristic			Page
					Resistance at 25 °C	Hold Current at 25°C (mA)	Sensing Temp. (°C)	
	KPTC-P	High Reliability	Over Current Protection	0603[1608]-1210[3225]	15 Ω - 1500 Ω	10 - 90	/	4
	KPTC-S	Quick response	Overheat Sensing	0402[1005]-0805[2012]	15 Ω - 47000 Ω	/	65 - 150	10

Chip NTC Thermistor

Product Image	Series	Features	application	Dimensions EIA[JIS]	Product Characteristic		Page
					Resistance at 25 °C	B constant	
	KNTC-N	Blocky structure	Temperature Sensing	0402[1005]-1206[3216]	15 Ω - 2M Ω	2750 - 4500	20
	KNTC-E	Multilayer Internal structure	Temperature Sensing	01005[0402]-0603[1608]	10 Ω - 1M Ω	3000 - 4750	28
	KNTC-T	Thick Film	Temperature Sensing	0603[1608]-0805[2012]	15 Ω - 2M Ω	2650 - 4350	34
	KNTC-S	Single Layer	Temperature Sensing	Customization	4.7K Ω - 100K Ω	3435 - 4400	38
	KM52-B	Red enameled wire	Temperature Sensing	Customizable	10K Ω - 100K Ω	3435-3950	42
	KM52C	Irradiation wiring	Temperature Sensing	Customizable	10K Ω - 100K Ω	3435-3950	44

Multilayer chip varistors / Ceramic Transient Voltage Suppressors

Product Image	Series	Features	application	Dimensions EIA[JIS]	Product Characteristic			Page
					Varistor Voltage(V)	Capacitance (pF)	Peak Current 8/20us (A)	
	KRMV-G	General	For ESD / Surge protection	0201[0603]-3220[8050]	6.8 - 150	60 - 18000 @1KHZ	5 - 1500	46
	KRMV-S	low capacitance	For ESD protection	0201[0603]-0603[1608]	8 - 160	0.5 - 100 @1MHZ	1 - 10	53

	KRMV-H	High voltage	For Surge protection	0604[1610]-4840[12CL]	120 - 680	30 - 500 @1KHZ	40 - 2000	56
	KRMV-E	High energy	For Surge protection	0805[2012]-3220[8050]	5 - 150	120 - 21000 @1KHZ	80 - 8000	61

Polymer ESD Suppressors

Product Image	Series	Features	application	Dimensions EIA[JIS]	Product Characteristic		Page
					Continuous Max Operating Voltage (V)	Capacitance (pF)	
	KESD-U	Ultra-low capacitance	For ESD protection	0402[1005]-0603[1608]	5 - 30	0.15 @1MHZ	66
	KESD-E	Extra-low capacitance	For ESD protection	0201[0603]-0603[1608]	5 - 30	0.05pF @1MHZ	69

Multilayer Chip Ferrite Beads

Product Image	Series	Features	application	Dimensions EIA[JIS]	Product Characteristic		Page
					Impedance Range(Ω)	Rated Current(mA)	
	KRFB-G	General	Signal lines	0201[0603]-1206[3216]	0 - 2500	50 - 2200	72
	KRFB-S	High speed	Signal lines	0201[0603]-0805[2012]	0 - 2700	50 - 1000	87
	KRFB-L	large current	Signal and power lines	0201[0603]-1806[4516]	0 - 1000	450 - 6000	98
	KRFB-UL	Ultra large current	power lines	0201[0603]-0805[2012]	0 - 1000	900 - 6000	108
	KRFB-EL	Extra large current	power lines	0402[1005]-1612[4030]	10 - 220	2000 - 10000	115
	KRFB-F	High frequency noise	Signal lines	0402[1005]-0603[1608]	120 - 1800	50 - 300	119
	KRFB-FL	High frequency and Large current	Signal and power lines	0402[1005]-0603[1608]	120 - 1500	150 - 2000	124
	KRFB-AS	High speed	audio lines	0402[1005]-1210[3225]	30 - 1000	230 - 10000	129
	KRFB-AF	High frequency noise	audio lines	0402[1005]-0603[1608]	100 - 4600	270 - 1600	133

REMINDERS FOR USING THESE PRODUCTS

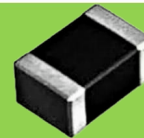
Before using these products, be sure to request the delivery specifications.

NOTICE

-  All information and data presented in this Catalog are for information only. Please contact us for detail product specification. You are requested to approve our product specification before your ordering.
-  This catalog contains the typical product due to the limitation of space. Please contact our sales representatives or product engineer when you didn't find the suitable product in this catalogue.
-  Please contact our sales offices when considering the use of the products listed on this catalog for applications, 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 (\qspecific uses\q such as automobiles, airplanes, medical instruments, nuclear devices, etc.) as well as when considering the use for applications that exceed the range and conditions of this catalog.
-  As range of catalog, conditions are transcended, or for damage that generated by was used in application specific, etc, accept no the responsibility, wish.

Chip PTC Thermistor — KPTC - P series

For **Over Current Protection**



Features

- Suitable for miniaturizing circuits due to small size SMD type
- Accurate temperature measurement from -40 °C to 125°C
- Short response time and Excellent long-term aging stability
- 100% Pb free, RoHS

Applications

- Over current protection for electric equipment such as tablet and notebook PCs, Computer peripherals and LCD TVs.

Part Numbering

KPTC	0603	P	470	M	101	K	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

①	Series
	GRACE Chip CPTC Thermistor

②	Chip size (EIA)
	0603
	0805
	1210

③	Series code
P	Over Current Protection
S	Overheat Sensing

④	Nominal resistance R ₂₅ (Ω)
470	47
471	470
152	1500

⑤	Resistance tolerance
M	±20%
H	±25%
S	±35%

⑥	Switch temperature (°C)
101	100

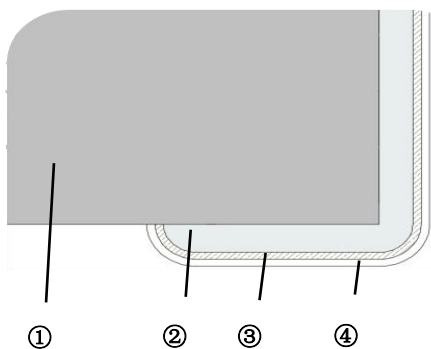
⑦	Temperature tolerance
K	±10%

⑧	internal code
	A

⑨	Customer identification code
	A001

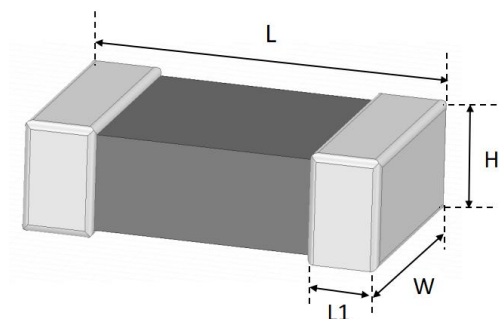
⑩	Packaging style
T	Tape
B	Bulk

Construction



No.	Name	
①	PTC Semiconductive Ceramics	
②	Terminal electrode	Ag
③		Ni
④		Sn

Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0603/1608	1.60 ± 0.20	0.80 ± 0.20	0.80 ± 0.20	0.30 ± 0.20
0805/2012	2.00 ± 0.20	1.25 ± 0.20	1.45 max.	0.40 ± 0.20
1210/3225	3.20 ± 0.30	2.50 ± 0.30	1.80 max.	0.40 ± 0.30

Electrical Characteristics

0603 Type

Part Number	Switch temperature	Resistance @25℃	Hold Current		Trip Current		Voltage Max	Current Max	Working temperature	
			@ +25℃	@ +60℃	@ -10℃	@ +25℃			@ Vmax	@ V=0
	Tc (℃)	R25 (Ω)	In (mA)		It (mA)		Vdc (V)	I _{max} (mA)	TL~TU(℃)	
KPTC0603P330M101K□□T	100 ± 10	33	36	25	85	71	24	900	-10~+60	-40~+125
KPTC0603P470M101K□□T		47	29	20	75	61		630		
KPTC0603P600M101K□□T		60	29	20	75	61		500		
KPTC0603P101M101K□□T		100	21	15	55	45		300		
KPTC0603P221M101K□□T		220	14	10	35	29		130		
KPTC0603P471M101K□□T		470	10	7	25	21		60		

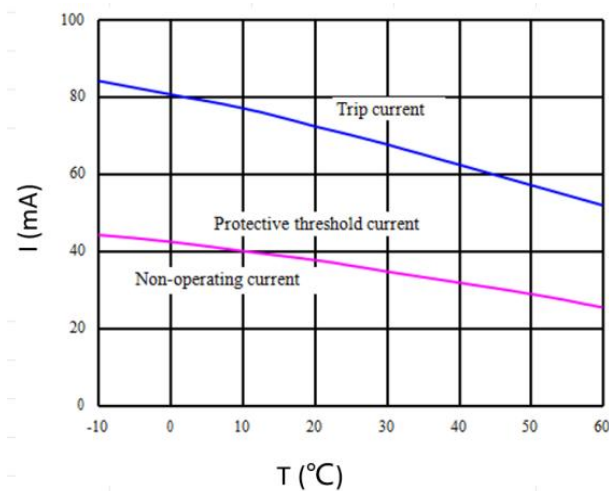
0805 Type

Part Number	Switch temperature	Resistance @25℃	Hold Current		Trip Current		Voltage Max	Current Max	Working temperature	
			@ +25℃	@ +60℃	@ -10℃	@+25℃			@ Vmax	@V=0
	Tc (℃)	R25 (Ω)	In (mA)		It (mA)		Vdc (V)	I _{max} (mA)	TL~TU(℃)	
KPTC0805P150M101K□□T	100±10	15	59	40	140	116	20	1600	-10~+60	-40~+125
KPTC0805P220M101K□□T		22	44	30	110	91		1100		
KPTC0805P221M101K□□T		220	14	10	35	29	24	130		

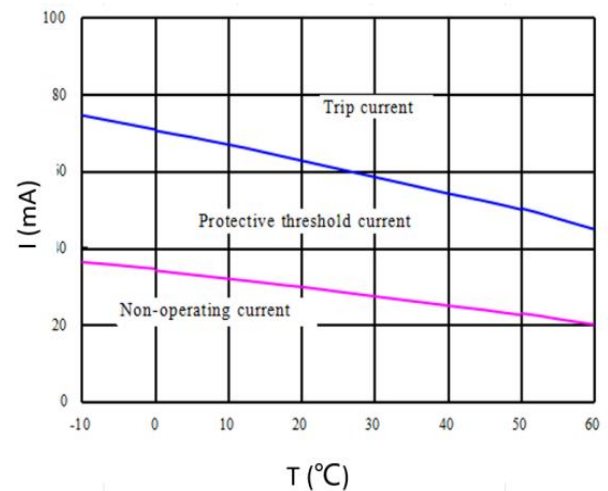
1210 Type

Part Number	Switch temperature	Resistance @25℃	Hold Current		Trip Current		Voltage Max	Current Max	Working temperature	
			@ +25℃	@ +60℃	@ -10℃	@+25℃			@ Vmax	@V=0
	Tc (℃)	R25 (Ω)	In (mA)		It (mA)		Vdc (V)	I _{max} (mA)	TL~TU(℃)	
KPTC1210P270□111K□□T	110±10	27	90	40	263	180	30	500	-40~+85	-40~+125
KPTC1210P550□121K□□T	120±10	55	60	34	190	130	30	400		
KPTC1210P121□121K□□T	120±10	120	40	23	132	90	80	300		
KPTC1210P401□900K□□T	90±10	400	15	6	59	40	265	200		
KPTC1210P152□121K□□T	120±10	1500	12	4	32	22	400	150		

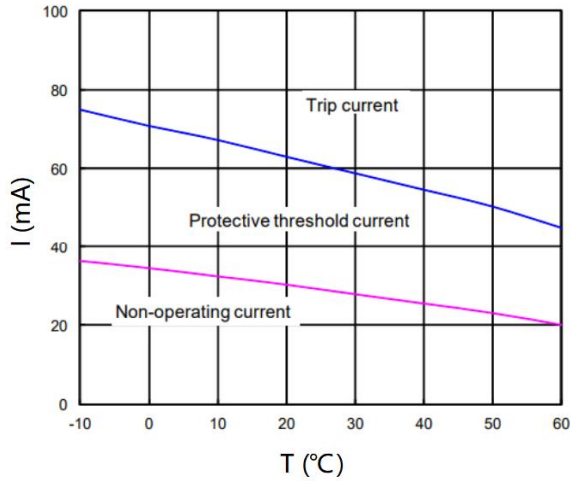
Current protection range



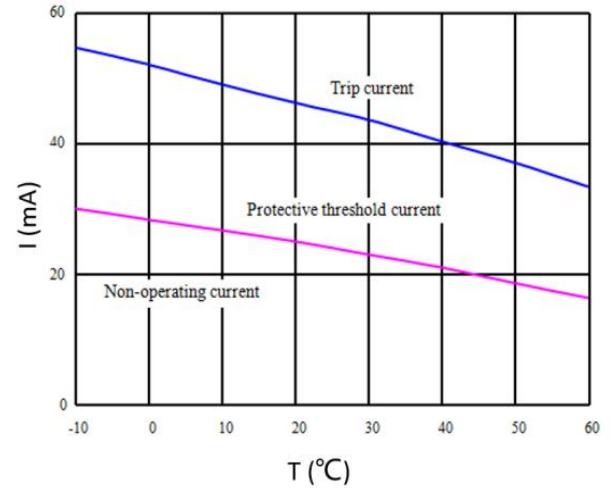
KPTC0603P330M101K□□T



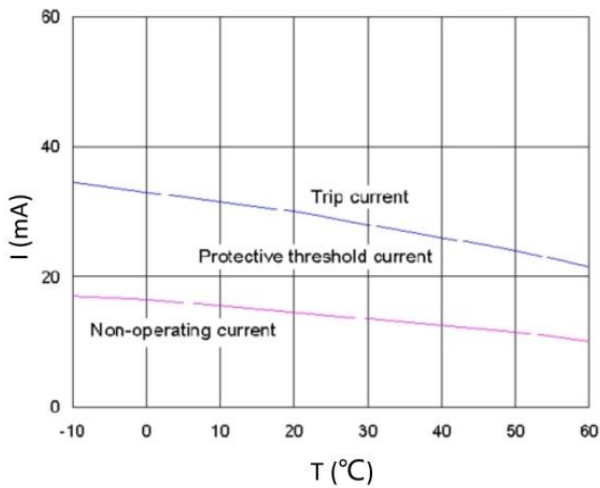
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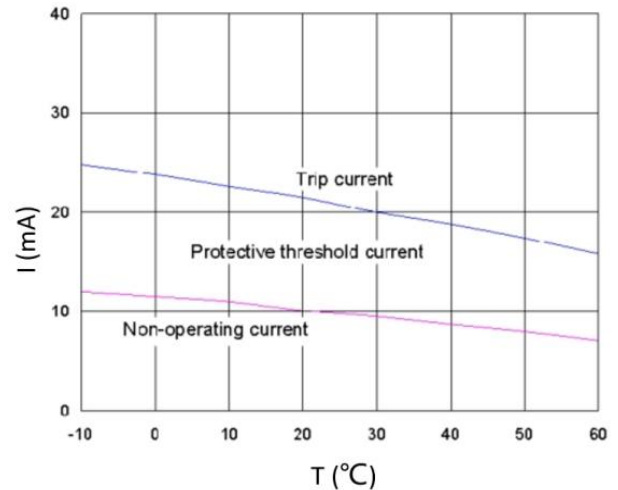
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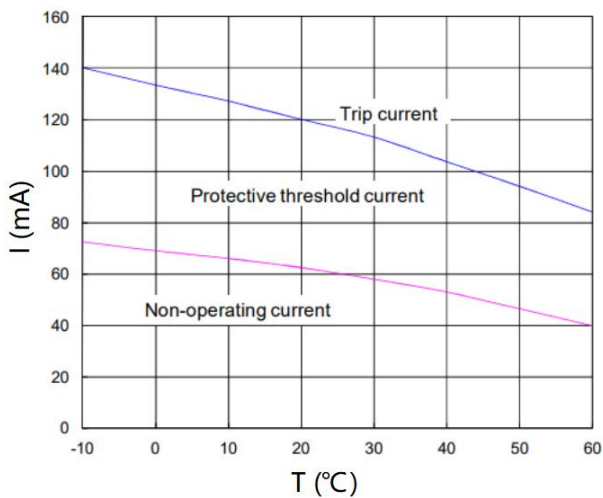
KPTC0603P101M101K□□T



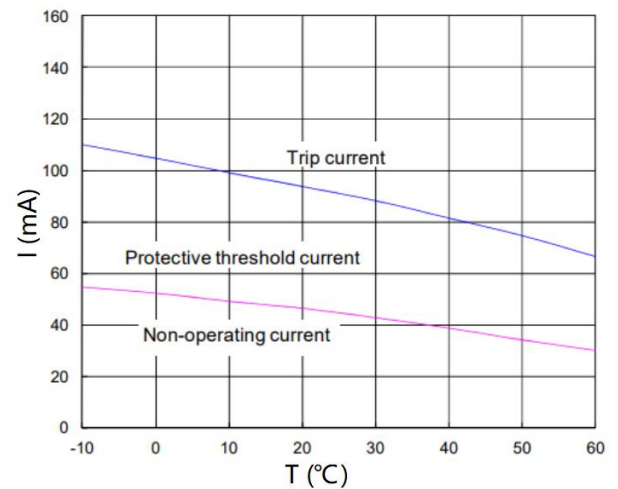
KPTC0603P221M101K□□T



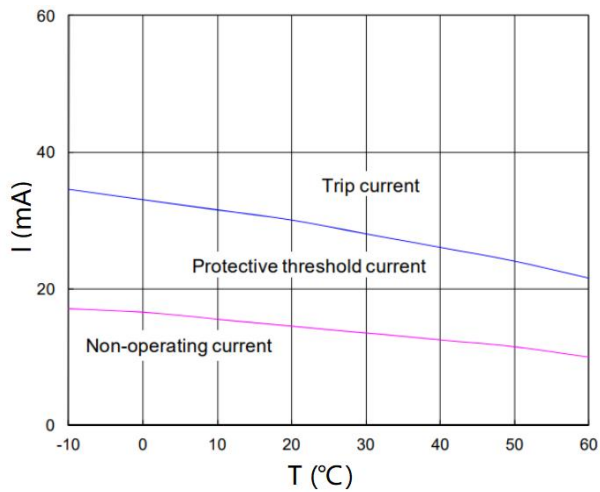
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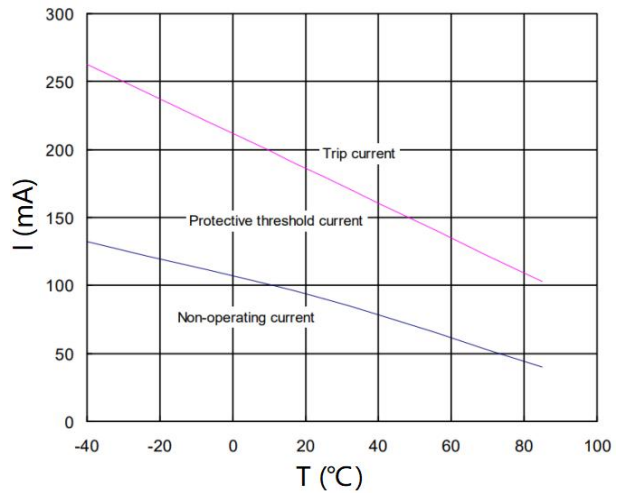
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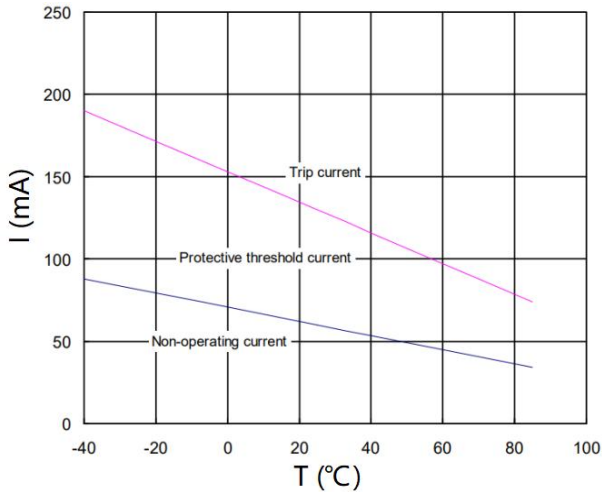
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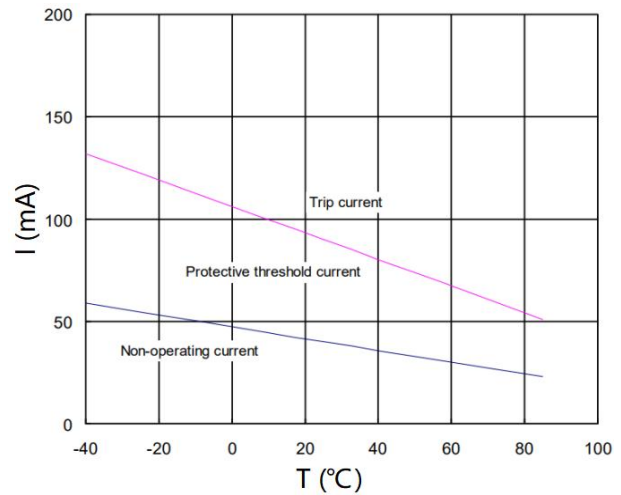
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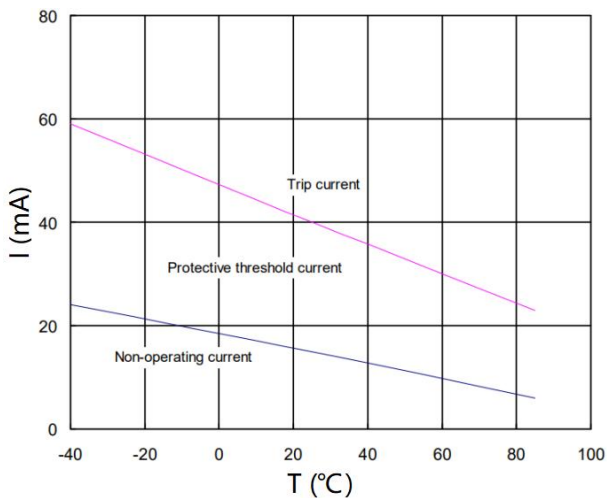
KPTC1210P270□111K□□T



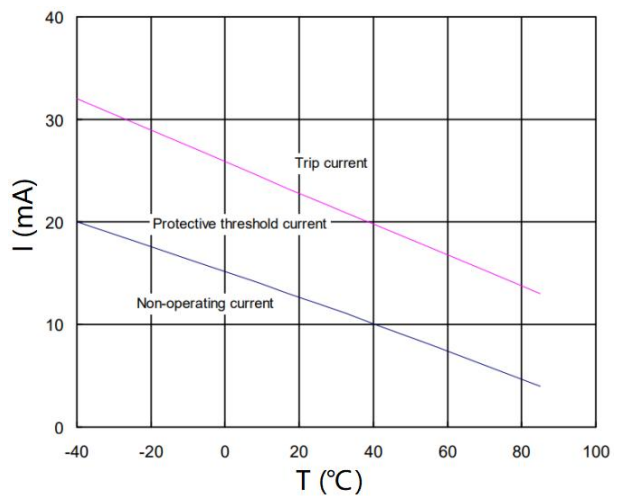
KPTC1210P550□121K□□T



KPTC1210P121□121K□□T



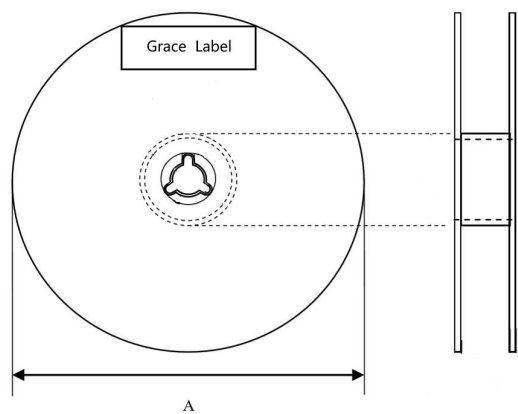
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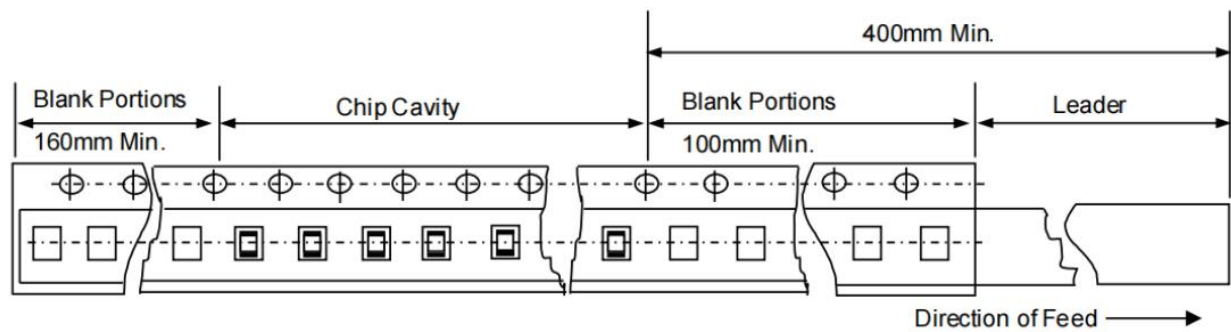
KPTC1210P152□121K□□T

Taping and Packing

Tape and reel packing according to IEC 60286-3.

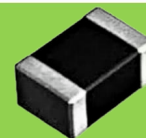


Size (EIA/JIS)	A	Quantity(Pcs)
		Tape & reel
0603/1608	178±2mm	4000
0805/2012		3500/3000
1210/3225		2500



Chip PTC Thermistor — KPTC - S series

For **Overheat Sensing**



Features

- Suitable for miniaturizing circuits due to small size SMD type
- Accurate temperature measurement from -40 °C to 125°C
- Fast response for overheating sensing with an accuracy of $\pm 5^{\circ}\text{C}$
- 100% Pb free, RoHS

Applications

- For overheating detection in FET, power IC, and other heating areas.

Part Numbering

KPTC	0603	S	471	L	135	S	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

①	Series
	GRACE Chip CPTC Thermistor

②	Chip size (EIA)
	0402
	0603
	0805

③	Series code
P	Over Current Protection
S	Overheat Sensing

④	Nominal resistance $R_{25}(\Omega)$
471	470
102	1,000
103	10,000

⑤	Resistance tolerance
M	$\pm 20\%$
N	$\pm 30\%$
L	$\pm 50\%$

⑥	Sensing Temperature (°C)
075	75
135	135

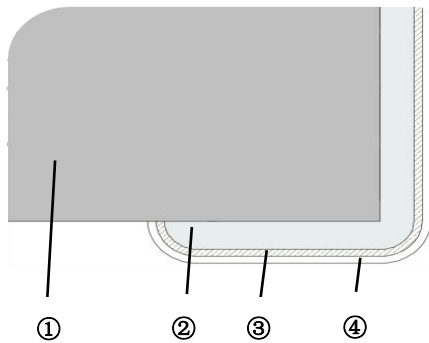
⑦	Sensing Temperature (°C)
S	Single sensing product
D	Dual sensing product

⑧	internal code
	A

⑨	Customer identification code
	A001

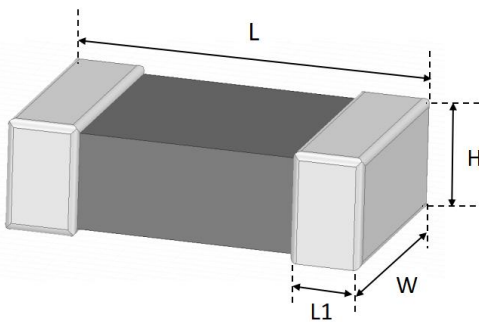
⑩	Packaging style
T	Tape
B	Bulk

Construction



No.	Name	
①	PTC Semiconductive Ceramics	
②	Terminal electrode	Ag
③		Ni
④		Sn

Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0402/1005	1.00 ± 0.20	0.50 ± 0.20	0.50 ± 0.20	0.30 ± 0.20
0603/1608	1.60 ± 0.20	0.80 ± 0.20	0.80 ± 0.20	0.30 ± 0.20
0805/2012	2.00 ± 0.20	1.20 ± 0.20	0.85 ± 0.20	0.40 ± 0.20

Electrical Characteristics

Single sensing temperature 0402 Type

Part Number	Resistance @25℃	Sensing Temp.		Max. Voltage	Operating Temp.
	R ₂₅ (Ω)	Ts (℃)		V _{max} (V)	T _L ~T _U (℃)
KPTC0402S471□095S□□T	470	95 ± 5	@4.7k Ω	32	-25 ~ 110
KPTC0402S471□105S□□T		105 ± 5			-25 ~ 120
KPTC0402S471□115S□□T		115 ± 5			-25 ~ 130
KPTC0402S471□125S□□T		125 ± 5			-25 ~ 140
KPTC0402S102□085S□□T	1,000	85 ± 5	@10k Ω		-25 ~ 100
KPTC0402S102□125S□□T		125 ± 5			-25 ~ 140
KPTC0402S103□080S□□T	10,000	80 ± 5	@4.7M Ω		-25 ~ 95
KPTC0402S103□095S□□T		95 ± 5			-25 ~ 110
KPTC0402S103□100S□□T		100 ± 5			-25 ~ 115
KPTC0402S103□110S□□T		110 ± 5			-25 ~ 125
KPTC0402S103□120S□□T		120 ± 5			-25 ~ 135
KPTC0402S103□130S□□T		130 ± 5			-25 ~ 145
KPTC0402S473□130S□□T	47,000	130 ± 5	@4.7M Ω		-25 ~ 145

Single sensing temperature 0603 Type

Part Number	Resistance @25℃	Sensing Temp.		Max. Voltage	Operating Temp.
	R ₂₅ (Ω)	T _s (℃)		V _{max} (V)	T _L ~T _U (℃)
KPTC0603S101□115S□□T	100	115 ± 7	@1K Ω	24	-25 ~ 130
KPTC0603S101□130S□□T		130 ± 7			-25 ~ 145
KPTC0603S221□090S□□T	220	90 ± 7	@2.2K Ω		-25 ~ 105
KPTC0603S221□105S□□T		105 ± 7			-25 ~ 120
KPTC0603S471□065S□□T	470	65 ± 5	@4.7K Ω	32	-25 ~ 80
KPTC0603S471□075S□□T		75 ± 5			-25 ~ 90
KPTC0603S471□080S□□T		80 ± 5			-25 ~ 95
KPTC0603S471□085S□□T		85 ± 5			-25 ~ 100
KPTC0603S471□095S□□T		95 ± 5			-25 ~ 110
KPTC0603S471□100S□□T		100 ± 5			-25 ~ 115
KPTC0603S471□105S□□T		105 ± 5			-25 ~ 120
KPTC0603S471□110S□□T		110 ± 5			-25 ~ 125
KPTC0603S471□115S□□T		115 ± 5			-25 ~ 130
KPTC0603S471□125S□□T		125 ± 5			-25 ~ 140
KPTC0603S471□135S□□T		135 ± 5			-25 ~ 150
KPTC0603S102□095S□□T	1,000	95±5	@4.7M Ω	32	-25 ~ 110
KPTC0603S102□105S□□T		105±5			-25 ~ 120
KPTC0603S102□115S□□T		115±5			-25 ~ 130
KPTC0603S103□075S□□T	10,000	75±5	@4.7M Ω	32	-25 ~ 90
KPTC0603S103□080S□□T		80±5			-25 ~ 95
KPTC0603S103□110S□□T		110±5			-25 ~ 125
KPTC0603S103□120S□□T		120±5			-25 ~ 135
KPTC0603S103□130S□□T		130±5			-25 ~ 145
KPTC0603S473□130S□□T	47,000	130±5	@4.7M Ω	32	-25 ~ 145

Single sensing temperature 0805 Type

Part Number	Resistance @25℃	Sensing Temp.		Max. Voltage	Operating Temp.
	R ₂₅ (Ω)	T _s (℃)		V _{max} (V)	T _L ~T _U (℃)
KPTC0805S150□130S□□T	15	130±7	@1KΩ	32	-25 ~ 145
KPTC0805S101□110S□□T	100	110±7	@1KΩ	24	-25 ~ 125
KPTC0805S101□115S□□T		115±7			-25 ~ 130
KPTC0805S101□130S□□T		130±7			-25 ~ 145
KPTC0805S471□065S□□T	470	65±5	@4.7KΩ	32	-25 ~ 80
KPTC0805S471□075S□□T		75±5			-25 ~ 90
KPTC0805S471□085S□□T		85±5			-25 ~ 100
KPTC0805S471□090S□□T		90±5			-25 ~ 105
KPTC0805S471□095S□□T		95±5			-25 ~ 110
KPTC0805S471□100S□□T		100±5			-25 ~ 115
KPTC0805S471□105S□□T		105±5			-25 ~ 120
KPTC0805S471□115S□□T		115±5			-25 ~ 130
KPTC0805S471□120S□□T		120±5			-25 ~ 135
KPTC0805S471□125S□□T		125±5			-25 ~ 140
KPTC0805S471□135S□□T		135±5			-25 ~ 150
KPTC0805S103□110S□□T	10,000	110±5	@4.7MΩ	32	-25 ~ 125
KPTC0805S103□130S□□T		130±5			-25 ~ 145

Dual sensing temperature 0402 Type

Part Number	Resistance @25℃	Sensing Temp.1		Sensing Temp.2		Max. Voltage	Operating Temp.
	R ₂₅ (Ω)	T _{s1} (℃)		T _{s2} (℃)		V _{max} (V)	T _L ~T _U (℃)
KPTC0402S471□115D□□T	470	115±5	@4.7KΩ	130±7	@47KΩ	32	-25 ~ 140
KPTC0402S541□115D□□T	540	115±5		135±7			-25 ~ 150
KPTC0402S102□065D□□T	1,000	65±5	@10KΩ	80±5	@100KΩ	32	-40 ~ 90
KPTC0402S102□075D□□T		75±5		90±5			-40 ~ 100
KPTC0402S102□085D□□T		85±5		100±5			-40 ~ 110
KPTC0402S102□095D□□T		95±5		110±5			-40 ~ 120
KPTC0402S102□105D□□T		105±5		120±3			-40 ~ 130

Design and specifications are each subject to change without notice.

Ask factory for the current technical specifications before purchase and/or use.

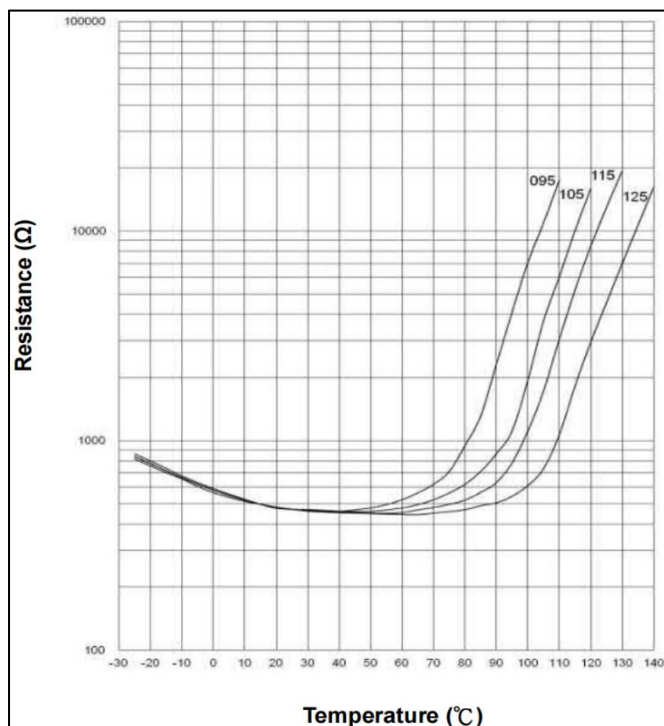
Please contact our sales representatives or product engineer when you didn't find the suitable product in this catalogue.

KPTC0402S102□115D□□T		115±5		130±5		-40 ~ 140
KPTC0402S102□125D□□T		125±5		140±5		-40 ~ 150

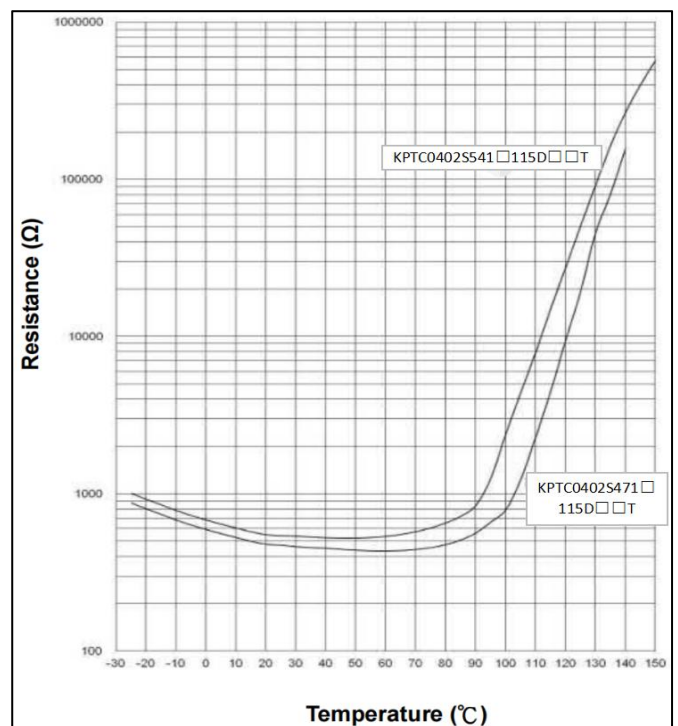
Dual sensing temperature 0603 Type

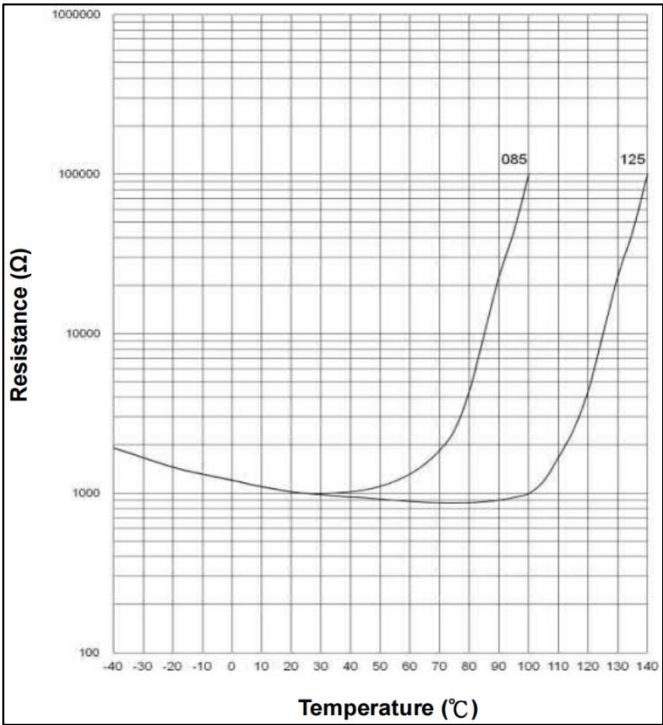
Part Number	Resistance @25℃	Sensing Temp.1		Sensing Temp.2		Max. Voltage	Operating Temp.
	R ₂₅ (Ω)	Ts1 (℃)		Ts2 (℃)		V _{max} (V)	T _L ~T _U (℃)
KPTC0603S471□065D□□T	470	65±5	@4.7K Ω	80±7	@47K Ω	32	-25 ~ 90
KPTC0603S471□075D□□T		75±5		90±7			-25 ~ 100
KPTC0603S471□085D□□T		85±5		100±7			-25 ~ 110
KPTC0603S471□095D□□T		95±5		110±7			-25 ~ 120
KPTC0603S471□105D□□T		105±5		120±7			-25 ~ 130
KPTC0603S471□115D□□T		115±5		130±7			-25 ~ 140
KPTC0603S471□125D□□T		125±5		140±7			-25 ~ 150
KPTC0603S471□130D□□T		130±5		145±5			-25 ~ 155
KPTC0603S471□135D□□T		135±5		150±7			-25 ~ 160

Resistance-Temperature Characteristics (Typical)

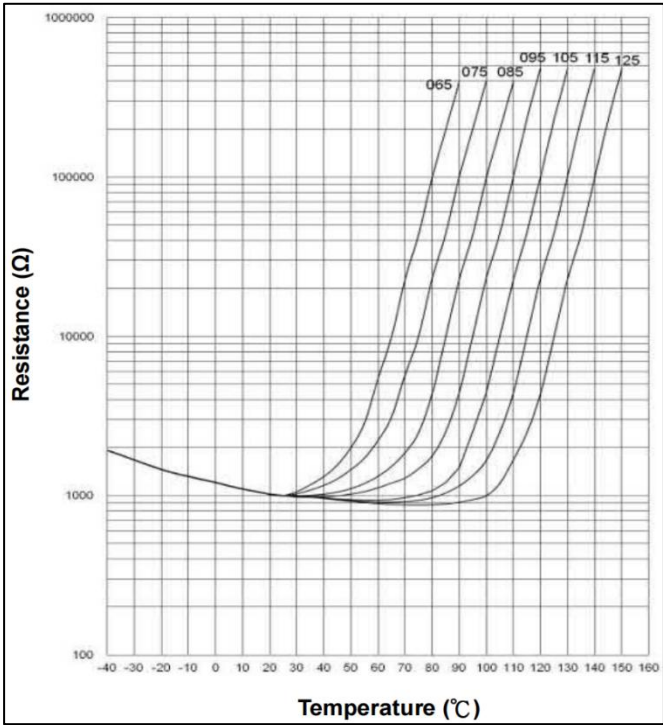


KPTC0402S471□***S□□T

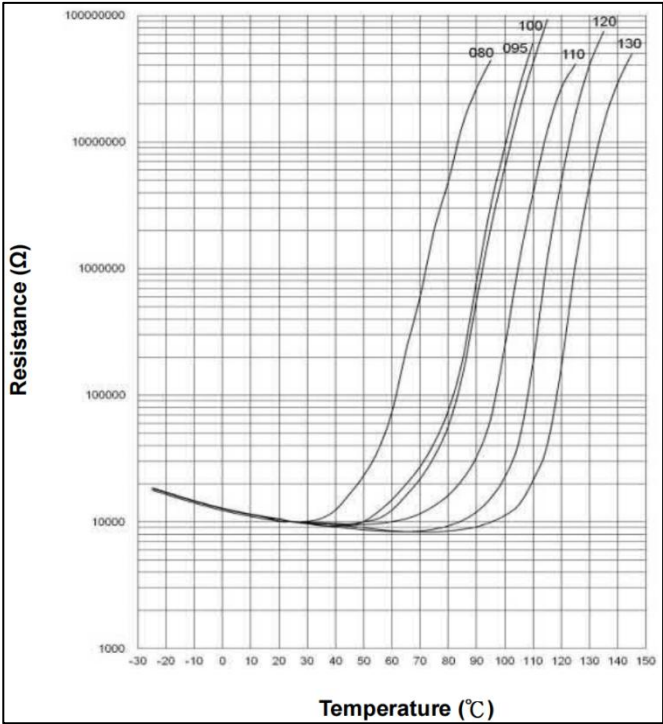
KPTC0402S471□115D□□T and
KPTC0402S541□115D□□T



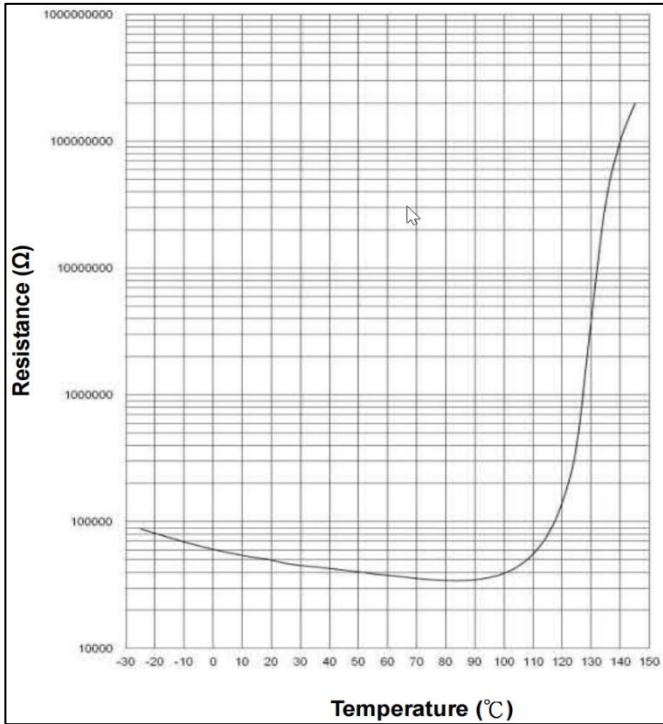
KPTC0402S102***S□□T



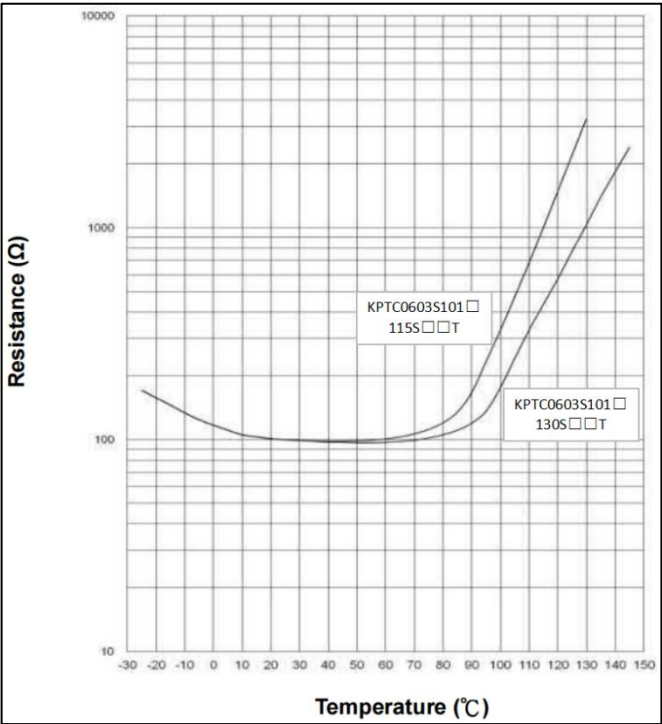
KPTC0402S102***D□□T



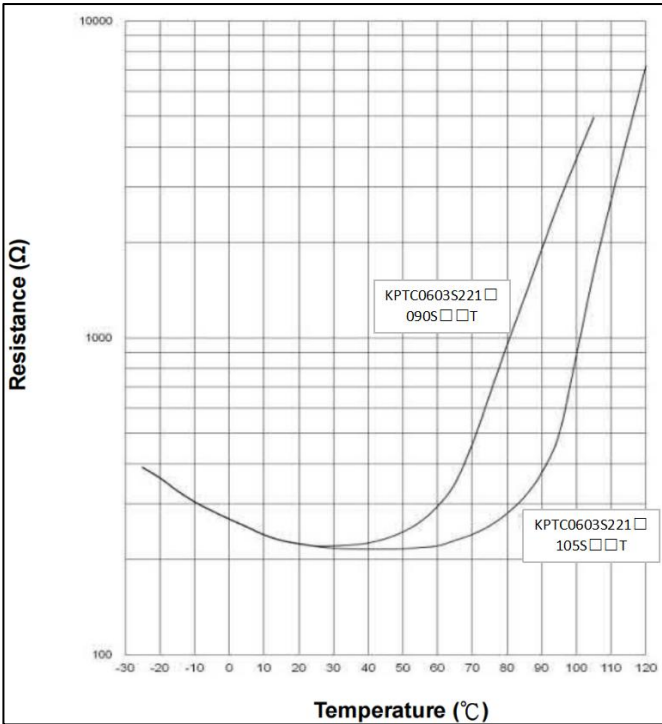
KPTC0402S103***S□□T



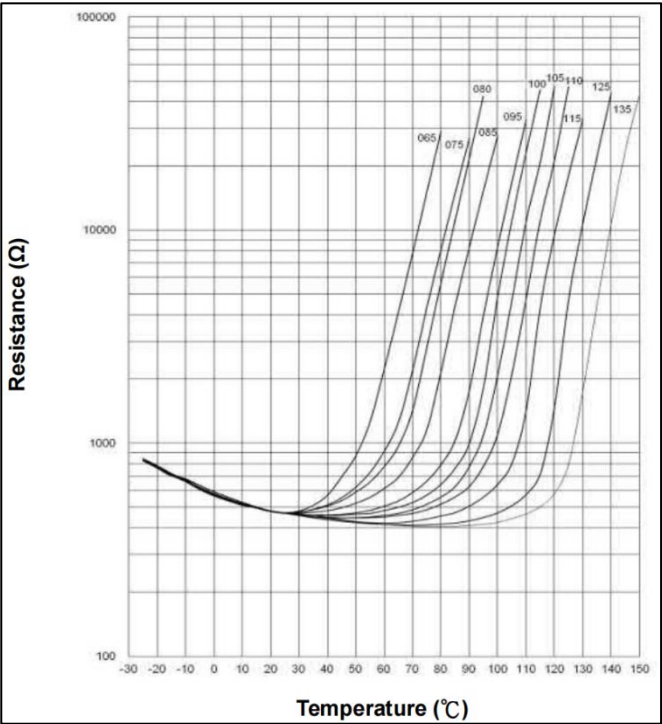
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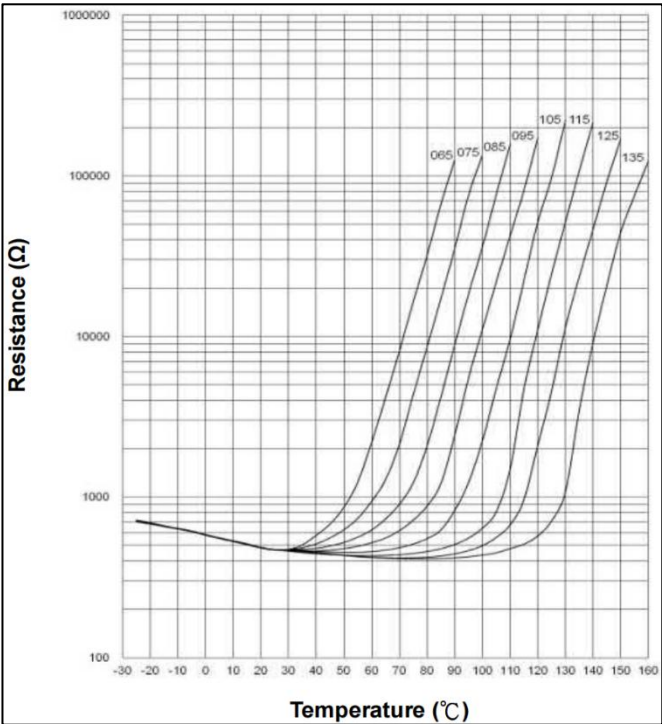
KPTC0603S101□***S□□T



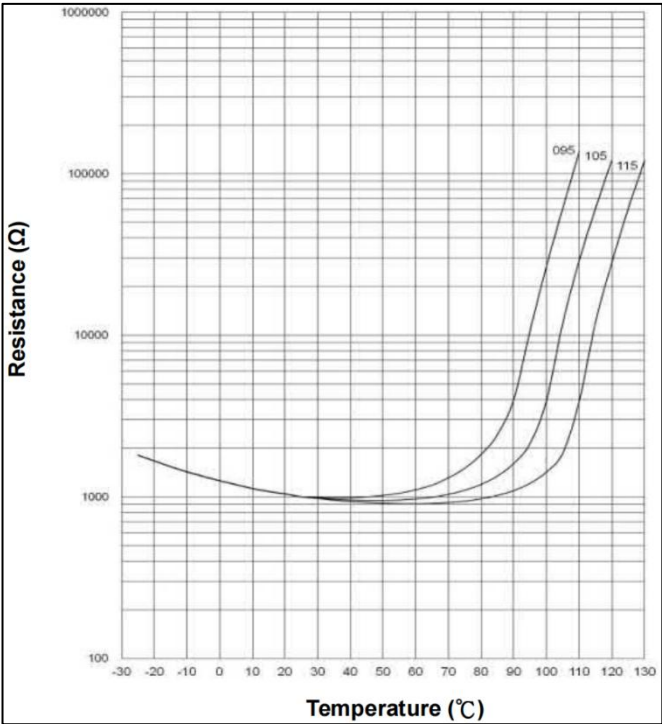
KPTC0603S221□***S□□T



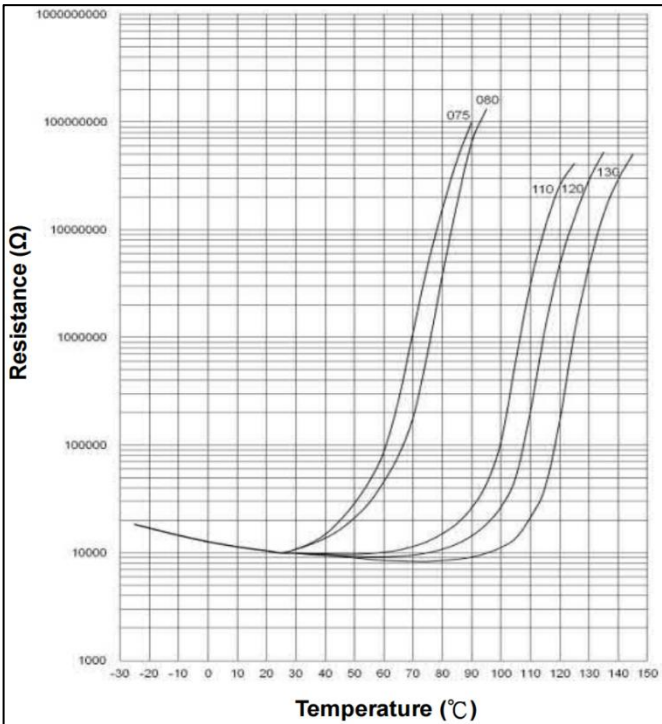
KPTC0603S471□***S□□T



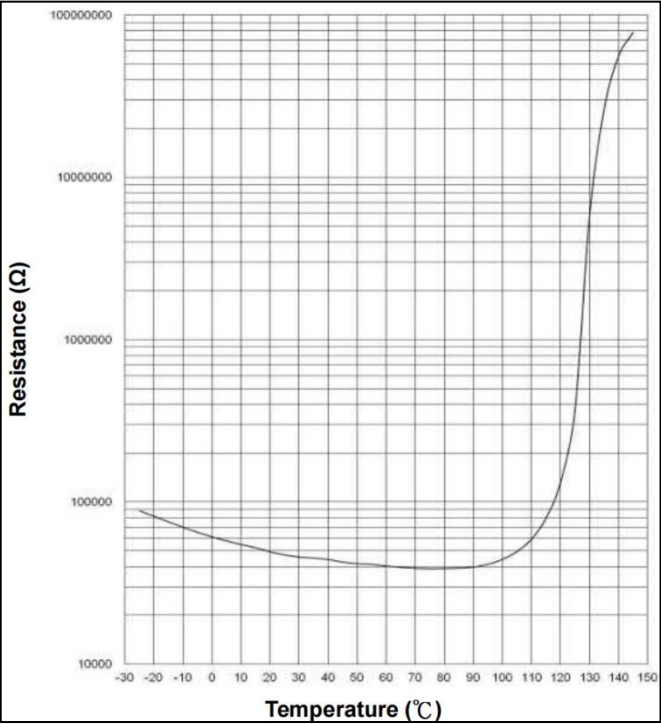
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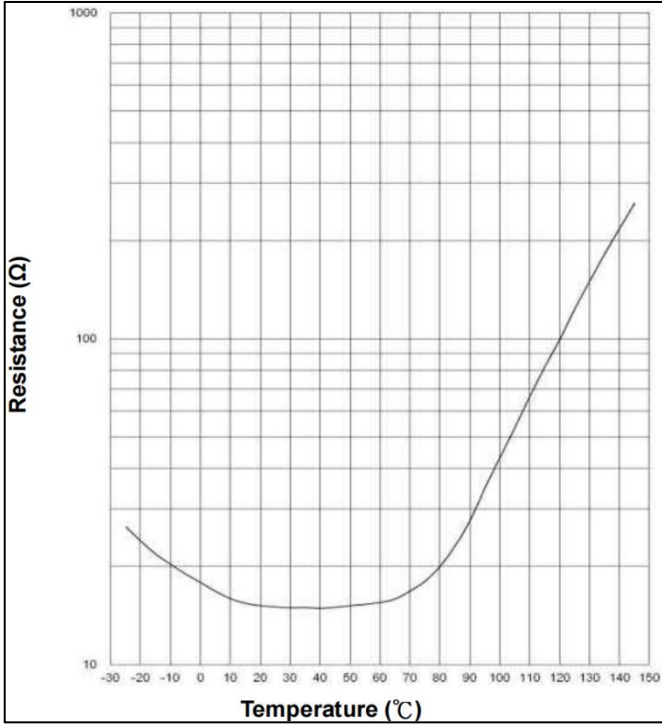
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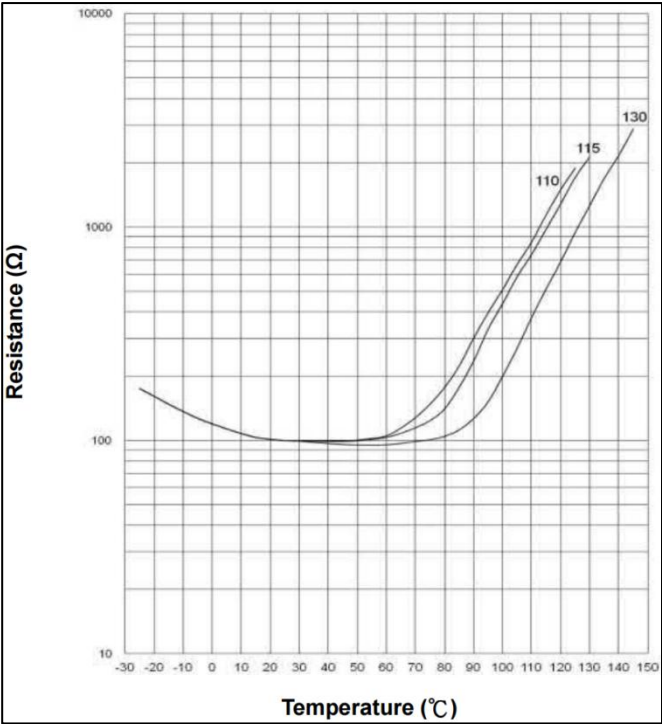
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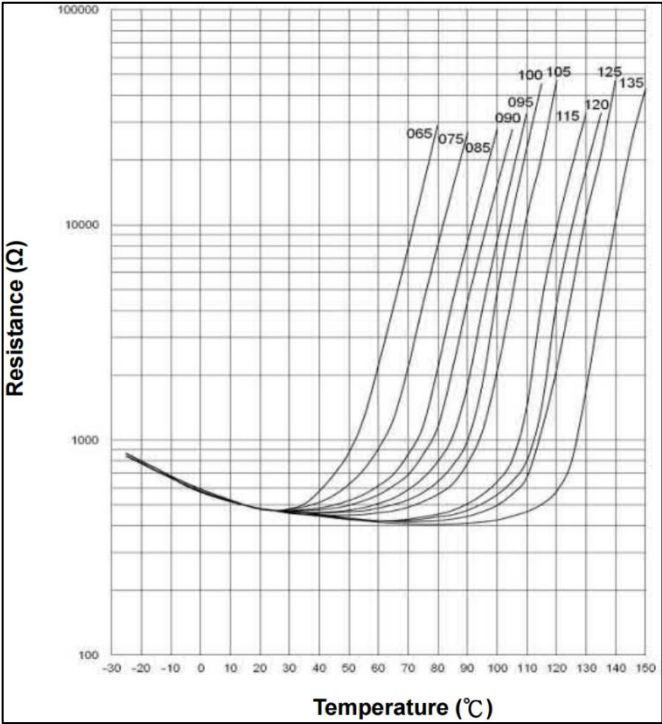
KPTC0603S473□130S□□T



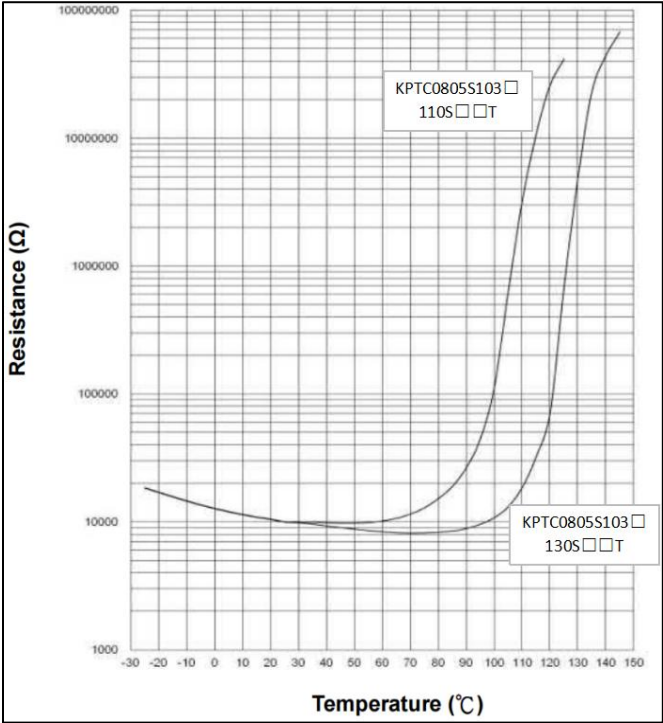
KPTC0805S150□130S□□T



KPTC0805S101□***S□□T



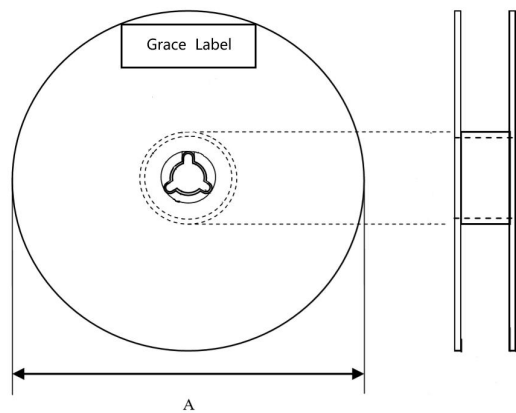
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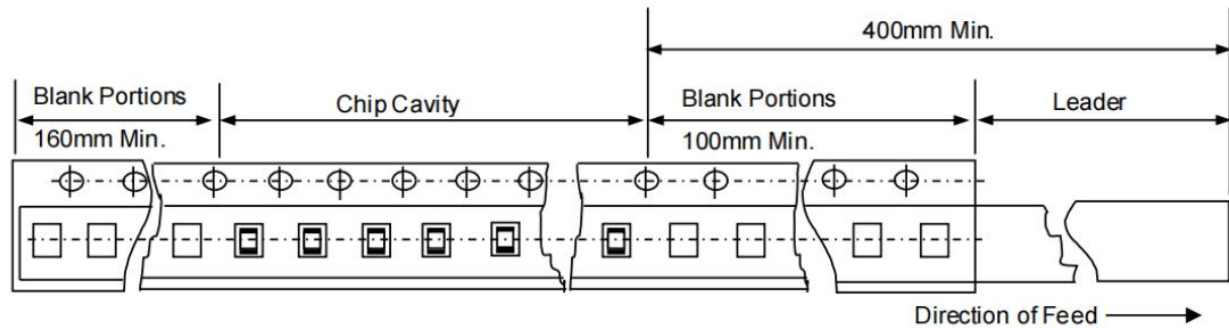
KPTC0805S103□***

Taping and Packing

Tape and reel packing according to IEC 60286-3.



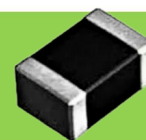
Size (EIA/JIS)	A	Quantity(Pcs)
		Tape & reel
0402/1005	178±2mm	10000
0603/1608		4000
0805/2012		3500



Chip NTC Thermistor — KNTC - N series

For **Temperature Sensing**

- **Blocky structure**



Features

- Accurate temperature measurement from -40 °C to 125°C
- Excellent long-term aging stability in high temperature and high humidity environment
- Tight R- and B- tolerances
- Short response time
- 100% Pb free, RoHS

Applications

- Temperature compensation for transistors, ICs, and crystal oscillators in mobile communications
- Temperature sensor for rechargeable batteries
- Temperature compensation of LCD
- Temperature measurement and compensation in general use of electric circuits

Part Numbering

KNTC	0603	N	103	F	3950	F	A	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪

①	Series
	GRACE Chip NTC Thermistor

②	Chip size (EIA)
	0402
	0603
	0805
	1206

③	Internal structure
N	Blocky

④	Nominal resistance R ₂₅ (Ω)
300	30
101	100
102	1000 (1KΩ)
103	10000 (10KΩ)

⑤	Resistance tolerance
F	±1%
G	±2%
H	±3%
J	±5%
K	±10%

⑥	B Constant
3950	3950K

⑦	B Constant tolerance
F	±1%
H	±3%

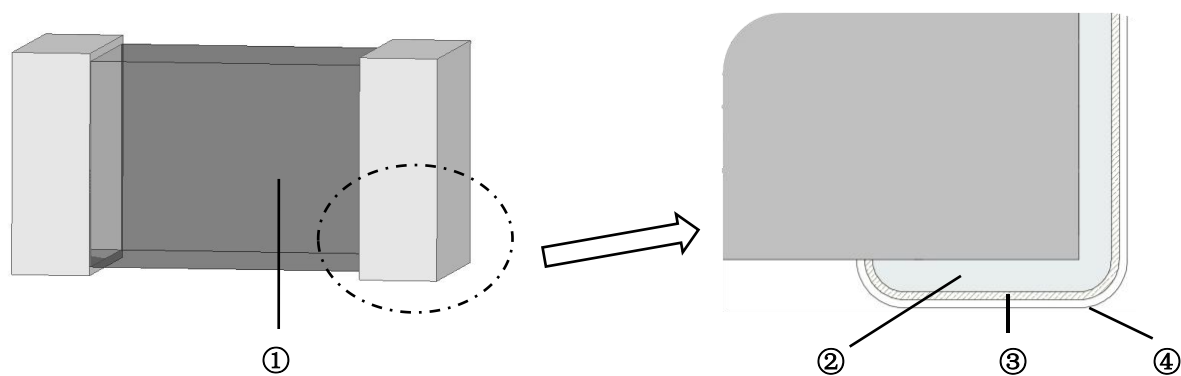
⑧	Definition of B Value
A	25/50
B	25/85
C	25/100

⑨	internal code
	A

⑩	Customer identification code
	A001

⑪	Packaging style
T	Tape
B	Bulk

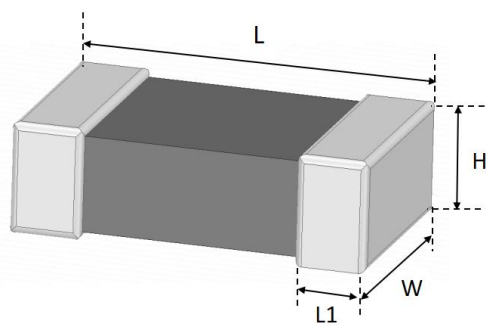
Construction



Blocky structure

No.	Name	
①	Semiconductive Ceramics	
②	Terminal electrode	Ag
③		Ni
④		Sn

Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0402/1005	1.00±0.05	0.50±0.05	0.50±0.05	0.30±0.10
0603/1608	1.60±0.20	0.80±0.20	0.80±0.20	0.30±0.20
0805/2012	2.00±0.20	1.20±0.20	0.80±0.20	0.40±0.20
1206/3216	3.20±0.20	1.60±0.20	1.20±0.20	0.40±0.30

Parameter definition and specification

Size(inch)	0402	0603	0805	1206
Max. Rated power at 25℃(mW) *1	100	100	200	300
Dissipation factors at 25℃ (mW /℃) *2	1	1	2	3
Thermal Time Constant (Sec.)	Approx 3	Approx 4.5	Approx 5	Approx 9

1* Max.Rated power: at rated temperature (25℃), maximum power that can be applied continuously.
2* Dissipation factors: powered that it is equivalent that be increased in self-heating by load power thermistor at 1℃ temperature.

Electrical Characteristics

0402 Type

Part Number	Zero Power Resistance at 25℃	Tolerance of R25	B constant	Tolerance of B constant	Max.Permissible Operating Current at 25℃
	(KΩ)	(±%)	(K)	(±%)	(mA)
KNTC0402N332□3500□A□□T	3.3	1, 2, 3, 5, 10	3500	1, 3	0.55
KNTC0402N682□3500□A□□T	6.8	1, 2, 3, 5, 10	3500	1, 3	0.38
KNTC0402N103□3380□A□□T	10	1, 2, 3, 5, 10	3380	1, 3	0.32
KNTC0402N103□3435□B□□T	10	1, 2, 3, 5, 10	3450	1, 3	0.32
KNTC0402N103□3950□A□□T	10	1, 2, 3, 5, 10	3950	1, 3	0.32
KNTC0402N103□4050□A□□T	10	1, 2, 3, 5, 10	4050	1, 3	0.32
KNTC0402N223□3950□A□□T	22	1, 2, 3, 5, 10	3950	1, 3	0.21
KNTC0402N333□3950□A□□T	33	1, 2, 3, 5, 10	3950	1, 3	0.17
KNTC0402N473□4100□A□□T	47	1, 2, 3, 5, 10	4100	1, 3	0.15
KNTC0402N503□3950□A□□T	50	1, 2, 3, 5, 10	3950	1, 3	0.14
KNTC0402N683□4150□A□□T	68	1, 2, 3, 5, 10	4150	1, 3	0.12
KNTC0402N104□3950□A□□T	100	1, 2, 3, 5, 10	3950	1, 3	0.10
KNTC0402N104□4150□A□□T	100	1, 2, 3, 5, 10	4150	1, 3	0.10
KNTC0402N104□4250□A□□T	100	1, 2, 3, 5, 10	4250	1, 3	0.10
KNTC0402N154□4150□A□□T	150	1, 2, 3, 5, 10	4150	1, 3	0.08
KNTC0402N224□3950□A□□T	220	1, 2, 3, 5, 10	3950	1, 3	0.07
KNTC0402N334□4050□A□□T	330	1, 2, 3, 5, 10	4050	1, 3	0.06
KNTC0402N474□4050□A□□T	470	1, 2, 3, 5, 10	4050	1, 3	0.05

0603 Type

Part Number	Zero Power Resistance at 25℃	Tolerance of R25	B constant	Tolerance of B constant	Max.Permissible Operating Current at 25℃
	(KΩ)	(±%)	(K)	(±%)	(mA)
KNTC0603N221□2750□B□□T	0.22	1, 2, 3, 5, 10	2750	1, 3	2.13
KNTC0603N331□3000□B□□T	0.33	1, 2, 3, 5, 10	3000	1, 3	1.74
KNTC0603N471□3000□B□□T	0.47	1, 2, 3, 5, 10	3000	1, 3	1.46
KNTC0603N681□3000□B□□T	0.68	1, 2, 3, 5, 10	3000	1, 3	1.21
KNTC0603N102□2950□B□□T	1	1, 2, 3, 5, 10	2950	1, 3	1
KNTC0603N102□3200□A□□T	1	1, 2, 3, 5, 10	3200	1, 3	1
KNTC0603N102□3500□A□□T	1	1, 2, 3, 5, 10	3500	1, 3	1
KNTC0603N152□3200□A□□T	1.5	1, 2, 3, 5, 10	3200	1, 3	0.82
KNTC0603N202□3400□A□□T	2	1, 2, 3, 5, 10	3400	1, 3	0.71
KNTC0603N202□4050□A□□T	2	1, 2, 3, 5, 10	4050	1, 3	0.71
KNTC0603N222□3450□A□□T	2.2	1, 2, 3, 5, 10	3450	1, 3	0.67

KNTC0603N222□3500□A□□T	2.2	1, 2, 3, 5, 10	3500	1, 3	0.67
KNTC0603N222□3950□A□□T	2.2	1, 2, 3, 5, 10	3950	1, 3	0.67
KNTC0603N302□3500□A□□T	3	1, 2, 3, 5, 10	3500	1, 3	0.58
KNTC0603N332□3200□A□□T	3.3	1, 2, 3, 5, 10	3200	1, 3	0.55
KNTC0603N332□3300□A□□T	3.3	1, 2, 3, 5, 10	3300	1, 3	0.55
KNTC0603N332□3500□A□□T	3.3	1, 2, 3, 5, 10	3500	1, 3	0.55
KNTC0603N332□3950□A□□T	3.3	1, 2, 3, 5, 10	3950	1, 3	0.55
KNTC0603N472□3340□B□□T	4.7	1, 2, 3, 5, 10	3340	1, 3	0.46
KNTC0603N472□3500□A□□T	4.7	1, 2, 3, 5, 10	3500	1, 3	0.46
KNTC0603N472□3950□A□□T	4.7	1, 2, 3, 5, 10	3950	1, 3	0.46
KNTC0603N502□3340□B□□T	5	1, 2, 3, 5, 10	3340	1, 3	0.45
KNTC0603N502□3435□B□□T	5	1, 2, 3, 5, 10	3435	1, 3	0.45
KNTC0603N502□3950□A□□T	5	1, 2, 3, 5, 10	3950	1, 3	0.45
KNTC0603N682□3950□A□□T	6.8	1, 2, 3, 5, 10	3950	1, 3	0.38
KNTC0603N822□3600□A□□T	8.2	1, 2, 3, 5, 10	3600	1, 3	0.35
KNTC0603N103□3380□A□□T	10	1, 2, 3, 5, 10	3380	1, 3	0.32
KNTC0603N103□3435□B□□T	10	1, 2, 3, 5, 10	3435	1, 3	0.32
KNTC0603N103□3450□A□□T	10	1, 2, 3, 5, 10	3450	1, 3	0.32
KNTC0603N103□3500□A□□T	10	1, 2, 3, 5, 10	3500	1, 3	0.32
KNTC0603N103□3600□A□□T	10	1, 2, 3, 5, 10	3600	1, 3	0.32
KNTC0603N103□3900□A□□T	10	1, 2, 3, 5, 10	3900	1, 3	0.32
KNTC0603N103□3950□A□□T	10	1, 2, 3, 5, 10	3950	1, 3	0.32
KNTC0603N123□3500□A□□T	12	1, 2, 3, 5, 10	3500	1, 3	0.29
KNTC0603N153□3500□A□□T	15	1, 2, 3, 5, 10	3500	1, 3	0.26
KNTC0603N153□3950□A□□T	15	1, 2, 3, 5, 10	3950	1, 3	0.26
KNTC0603N203□3300□A□□T	20	1, 2, 3, 5, 10	3300	1, 3	0.22
KNTC0603N223□3300□A□□T	22	1, 2, 3, 5, 10	3300	1, 3	0.21
KNTC0603N223□3500□A□□T	22	1, 2, 3, 5, 10	3500	1, 3	0.21
KNTC0603N223□3950□A□□T	22	1, 2, 3, 5, 10	3950	1, 3	0.21
KNTC0603N223□4050□A□□T	22	1, 2, 3, 5, 10	4050	1, 3	0.21
KNTC0603N223□4150□A□□T	22	1, 2, 3, 5, 10	4150	1, 3	0.21
KNTC0603N303□3950□A□□T	30	1, 2, 3, 5, 10	3950	1, 3	0.18
KNTC0603N333□3950□A□□T	33	1, 2, 3, 5, 10	3950	1, 3	0.17
KNTC0603N333□4050□A□□T	33	1, 2, 3, 5, 10	4050	1, 3	0.17
KNTC0603N333□4150□A□□T	33	1, 2, 3, 5, 10	4150	1, 3	0.17
KNTC0603N473□3950□A□□T	47	1, 2, 3, 5, 10	3950	1, 3	0.15
KNTC0603N473□4050□A□□T	47	1, 2, 3, 5, 10	4050	1, 3	0.15
KNTC0603N473□4150□A□□T	47	1, 2, 3, 5, 10	4150	1, 3	0.15
KNTC0603N503□3950□A□□T	50	1, 2, 3, 5, 10	3950	1, 3	0.14
KNTC0603N683□4050□A□□T	68	1, 2, 3, 5, 10	4050	1, 3	0.12
KNTC0603N683□4150□A□□T	68	1, 2, 3, 5, 10	4150	1, 3	0.12

KNTC0603N753□3900□A□□T	75	1, 2, 3, 5, 10	3900	1, 3	0.12
KNTC0603N104□3950□A□□T	100	1, 2, 3, 5, 10	3950	1, 3	0.1
KNTC0603N104□4150□A□□T	100	1, 2, 3, 5, 10	4150	1, 3	0.1
KNTC0603N104□4250□A□□T	100	1, 2, 3, 5, 10	4250	1, 3	0.1
KNTC0603N124□3950□A□□T	120	1, 2, 3, 5, 10	3950	1, 3	0.09
KNTC0603N154□3950□A□□T	150	1, 2, 3, 5, 10	3950	1, 3	0.08
KNTC0603N154□4200□A□□T	150	1, 2, 3, 5, 10	4200	1, 3	0.08
KNTC0603N154□4300□A□□T	150	1, 2, 3, 5, 10	4300	1, 3	0.08
KNTC0603N204□3950□A□□T	200	1, 2, 3, 5, 10	3950	1, 3	0.07
KNTC0603N224□3950□A□□T	220	1, 2, 3, 5, 10	3950	1, 3	0.07
KNTC0603N224□4200□A□□T	220	1, 2, 3, 5, 10	4200	1, 3	0.07
KNTC0603N224□4350□A□□T	220	1, 2, 3, 5, 10	4350	1, 3	0.07
KNTC0603N334□4200□A□□T	330	1, 2, 3, 5, 10	4200	1, 3	0.06
KNTC0603N474□4000□A□□T	470	1, 2, 3, 5, 10	4000	1, 3	0.05
KNTC0603N474□4200□A□□T	470	1, 2, 3, 5, 10	4200	1, 3	0.05
KNTC0603N564□4300□A□□T	560	1, 2, 3, 5, 10	4300	1, 3	0.04
KNTC0603N684□4100□B□□T	680	1, 2, 3, 5, 10	4100	1, 3	0.04
KNTC0603N684□4150□A□□T	680	1, 2, 3, 5, 10	4150	1, 3	0.04
KNTC0603N105□4200□B□□T	1000	1, 2, 3, 5, 10	4200	1, 3	0.03
KNTC0603N105□4300□A□□T	1000	1, 2, 3, 5, 10	4300	1, 3	0.03
KNTC0603N205□4300□B□□T	2000	1, 2, 3, 5, 10	4300	1, 3	0.02

0805 Type

Part Number	Zero Power Resistance at 25℃	Tolerance of R25	B constant	Tolerance of B constant	Max.Permissible Operating Current at 25℃
	(KΩ)	(±%)	(K)	(±%)	(mA)
KNTC0805N150□2800□B□□T	0.015	1, 2, 3, 5, 10	2800	1, 3	11.54
KNTC0805N220□2800□B□□T	0.022	1, 2, 3, 5, 10	2800	1, 3	9.53
KNTC0805N330□2800□B□□T	0.033	1, 2, 3, 5, 10	2800	1, 3	7.78
KNTC0805N470□2800□B□□T	0.047	1, 2, 3, 5, 10	2800	1, 3	6.52
KNTC0805N500□2800□B□□T	0.050	1, 2, 3, 5, 10	2800	1, 3	6.32
KNTC0805N680□2800□B□□T	0.068	1, 2, 3, 5, 10	2800	1, 3	5.42
KNTC0805N800□2800□B□□T	0.080	1, 2, 3, 5, 10	2800	1, 3	5.00
KNTC0805N101□3000□B□□T	0.100	1, 2, 3, 5, 10	3000	1, 3	4.47
KNTC0805N121□3000□B□□T	0.120	1, 2, 3, 5, 10	3000	1, 3	4.08
KNTC0805N151□3000□B□□T	0.150	1, 2, 3, 5, 10	3000	1, 3	3.65
KNTC0805N181□3000□B□□T	0.180	1, 2, 3, 5, 10	3000	1, 3	3.33
KNTC0805N221□3000□B□□T	0.220	1, 2, 3, 5, 10	3000	1, 3	3.02
KNTC0805N331□3000□B□□T	0.330	1, 2, 3, 5, 10	3000	1, 3	2.46
KNTC0805N431□3000□B□□T	0.430	1, 2, 3, 5, 10	3000	1, 3	2.16

KNTC0805N471□3000□B□□T	0.470	1, 2, 3, 5, 10	3000	1, 3	2.06
KNTC0805N681□3000□B□□T	0.680	1, 2, 3, 5, 10	3000	1, 3	1.71
KNTC0805N102□3200□A□□T	1	1, 2, 3, 5, 10	3200	1, 3	1.41
KNTC0805N102□3500□A□□T	1	1, 2, 3, 5, 10	3500	1, 3	1.41
KNTC0805N102□3950□A□□T	1	1, 2, 3, 5, 10	3950	1, 3	1.41
KNTC0805N152□3400□A□□T	1.5	1, 2, 3, 5, 10	3400	1, 3	1.15
KNTC0805N202□3200□B□□T	2.0	1, 2, 3, 5, 10	3200	1, 3	1.00
KNTC0805N202□3400□A□□T	2.0	1, 2, 3, 5, 10	3400	1, 3	1.00
KNTC0805N222□3200□B□□T	2.2	1, 2, 3, 5, 10	3200	1, 3	0.95
KNTC0805N222□3500□A□□T	2.2	1, 2, 3, 5, 10	3500	1, 3	0.95
KNTC0805N222□3950□A□□T	2.2	1, 2, 3, 5, 10	3500	1, 3	0.95
KNTC0805N302□3450□A□□T	3	1, 2, 3, 5, 10	3450	1, 3	0.82
KNTC0805N332□3300□A□□T	3.3	1, 2, 3, 5, 10	3300	1, 3	0.78
KNTC0805N332□3500□A□□T	3.3	1, 2, 3, 5, 10	3500	1, 3	0.78
KNTC0805N332□3950□A□□T	3.3	1, 2, 3, 5, 10	3950	1, 3	0.78
KNTC0805N472□3500□A□□T	4.7	1, 2, 3, 5, 10	3500	1, 3	0.65
KNTC0805N472□3950□A□□T	4.7	1, 2, 3, 5, 10	3950	1, 3	0.65
KNTC0805N502□3435□B□□T	5	1, 2, 3, 5, 10	3435	1, 3	0.63
KNTC0805N502□3950□A□□T	5	1, 2, 3, 5, 10	3950	1, 3	0.63
KNTC0805N682□3500□A□□T	6.8	1, 2, 3, 5, 10	3500	1, 3	0.54
KNTC0805N682□3650□A□□T	6.8	1, 2, 3, 5, 10	3650	1, 3	0.54
KNTC0805N682□3950□A□□T	6.8	1, 2, 3, 5, 10	3950	1, 3	0.54
KNTC0805N822□3500□A□□T	8.2	1, 2, 3, 5, 10	3500	1, 3	0.49
KNTC0805N822□3950□A□□T	8.2	1, 2, 3, 5, 10	3950	1, 3	0.49
KNTC0805N103□3380□A□□T	10	1, 2, 3, 5, 10	3380	1, 3	0.45
KNTC0805N103□3435□B□□T	10	1, 2, 3, 5, 10	3435	1, 3	0.45
KNTC0805N103□3450□A□□T	10	1, 2, 3, 5, 10	3450	1, 3	0.45
KNTC0805N103□3500□A□□T	10	1, 2, 3, 5, 10	3500	1, 3	0.45
KNTC0805N103□3950□A□□T	10	1, 2, 3, 5, 10	3950	1, 3	0.45
KNTC0805N153□3500□A□□T	15	1, 2, 3, 5, 10	3500	1, 3	0.37
KNTC0805N153□3900□A□□T	15	1, 2, 3, 5, 10	3900	1, 3	0.37
KNTC0805N153□4100□A□□T	15	1, 2, 3, 5, 10	4100	1, 3	0.37
KNTC0805N203□3950□A□□T	20	1, 2, 3, 5, 10	3950	1, 3	0.32
KNTC0805N223□3950□A□□T	22	1, 2, 3, 5, 10	3950	1, 3	0.30
KNTC0805N223□4050□A□□T	22	1, 2, 3, 5, 10	4050	1, 3	0.30
KNTC0805N223□4150□A□□T	22	1, 2, 3, 5, 10	4150	1, 3	0.30
KNTC0805N303□3950□A□□T	30	1, 2, 3, 5, 10	3950	1, 3	0.26
KNTC0805N303□4050□A□□T	30	1, 2, 3, 5, 10	4050	1, 3	0.26
KNTC0805N333□3950□A□□T	33	1, 2, 3, 5, 10	3950	1, 3	0.25
KNTC0805N333□4050□A□□T	33	1, 2, 3, 5, 10	4050	1, 3	0.25
KNTC0805N333□4150□A□□T	33	1, 2, 3, 5, 10	4150	1, 3	0.25

KNTC0805N473□3950□A□□T	47	1, 2, 3, 5, 10	3950	1, 3	0.21
KNTC0805N473□4050□A□□T	47	1, 2, 3, 5, 10	4050	1, 3	0.21
KNTC0805N473□4150□A□□T	47	1, 2, 3, 5, 10	4150	1, 3	0.21
KNTC0805N503□3950□A□□T	50	1, 2, 3, 5, 10	3950	1, 3	0.20
KNTC0805N503□4150□A□□T	50	1, 2, 3, 5, 10	4150	1, 3	0.20
KNTC0805N683□4050□A□□T	68	1, 2, 3, 5, 10	4050	1, 3	0.17
KNTC0805N683□4150□A□□T	68	1, 2, 3, 5, 10	4150	1, 3	0.17
KNTC0805N753□3900□A□□T	75	1, 2, 3, 5, 10	3900	1, 3	0.16
KNTC0805N823□3950□A□□T	82	1, 2, 3, 5, 10	3950	1, 3	0.16
KNTC0805N104□3950□A□□T	100	1, 2, 3, 5, 10	3950	1, 3	0.14
KNTC0805N104□4250□A□□T	100	1, 2, 3, 5, 10	4250	1, 3	0.14
KNTC0805N154□4050□A□□T	150	1, 2, 3, 5, 10	4050	1, 3	0.12
KNTC0805N154□4300□A□□T	150	1, 2, 3, 5, 10	4300	1, 3	0.12
KNTC0805N204□4050□A□□T	200	1, 2, 3, 5, 10	4050	1, 3	0.10
KNTC0805N224□3900□A□□T	220	1, 2, 3, 5, 10	3900	1, 3	0.10
KNTC0805N224□4050□A□□T	220	1, 2, 3, 5, 10	4050	1, 3	0.10
KNTC0805N224□4350□A□□T	220	1, 2, 3, 5, 10	4350	1, 3	0.10
KNTC0805N334□4200□A□□T	330	1, 2, 3, 5, 10	4200	1, 3	0.08
KNTC0805N474□4200□A□□T	470	1, 2, 3, 5, 10	4200	1, 3	0.07
KNTC0805N504□4100□B□□T	500	1, 2, 3, 5, 10	4100	1, 3	0.06
KNTC0805N564□4300□A□□T	560	1, 2, 3, 5, 10	4300	1, 3	0.06
KNTC0805N664□4150□A□□T	660	1, 2, 3, 5, 10	4150	1, 3	0.06
KNTC0805N684□4100□B□□T	680	1, 2, 3, 5, 10	4100	1, 3	0.05
KNTC0805N684□4200□A□□T	680	1, 2, 3, 5, 10	4200	1, 3	0.05
KNTC0805N105□4250□B□□T	1000	1, 2, 3, 5, 10	4250	1, 3	0.04
KNTC0805N105□4500□A□□T	1000	1, 2, 3, 5, 10	4500	1, 3	0.04

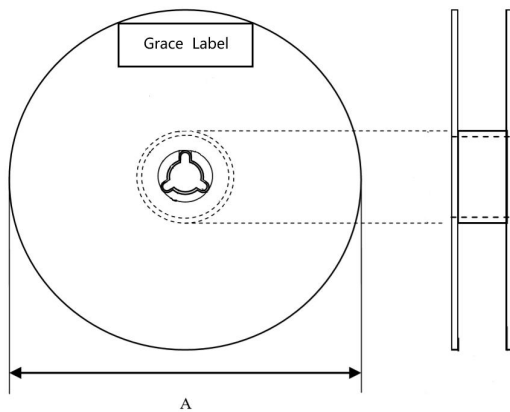
1206 Type

Part Number	Zero Power Resistance at 25℃	Tolerance of R25	B constant	Tolerance of B constant	Max.Permissible Operating Current at 25℃
	(KΩ)	(±%)	(K)	(±%)	(mA)
KNTC1206N102□3200□A□□T	1	1, 2, 3, 5, 10	3200	1, 3	1.73
KNTC1206N222□3450□A□□T	2.2	1, 2, 3, 5, 10	3450	1, 3	1.16
KNTC1206N332□3450□A□□T	3.3	1, 2, 3, 5, 10	3450	1, 3	0.95
KNTC1206N472□3500□A□□T	4.7	1, 2, 3, 5, 10	3500	1, 3	0.80
KNTC1206N472□3950□A□□T	4.7	1, 2, 3, 5, 10	3950	1, 3	0.80
KNTC1206N502□3800□A□□T	5	1, 2, 3, 5, 10	3800	1, 3	0.77
KNTC1206N502□3950□A□□T	5	1, 2, 3, 5, 10	3950	1, 3	0.77
KNTC1206N103□3500□A□□T	10	1, 2, 3, 5, 10	3500	1, 3	0.55
KNTC1206N103□3950□A□□T	10	1, 2, 3, 5, 10	3950	1, 3	0.55

KNTC1206N223□3950□A□□T	22	1, 2, 3, 5, 10	3950	1, 3	0.37
KNTC1206N223□4150□A□□T	22	1, 2, 3, 5, 10	4150	1, 3	0.37
KNTC1206N333□3950□A□□T	33	1, 2, 3, 5, 10	3950	1, 3	0.30
KNTC1206N473□3950□A□□T	47	1, 2, 3, 5, 10	3950	1, 3	0.25
KNTC1206N473□4050□A□□T	47	1, 2, 3, 5, 10	4050	1, 3	0.25
KNTC1206N473□4150□A□□T	47	1, 2, 3, 5, 10	4150	1, 3	0.25
KNTC1206N503□3800□A□□T	50	1, 2, 3, 5, 10	3800	1, 3	0.24
KNTC1206N503□3950□A□□T	50	1, 2, 3, 5, 10	3950	1, 3	0.24
KNTC1206N683□3800□A□□T	68	1, 2, 3, 5, 10	3800	1, 3	0.21
KNTC1206N683□4150□A□□T	68	1, 2, 3, 5, 10	4150	1, 3	0.21
KNTC1206N104□3950□A□□T	100	1, 2, 3, 5, 10	3950	1, 3	0.17
KNTC1206N104□4150□A□□T	100	1, 2, 3, 5, 10	4150	1, 3	0.17
KNTC1206N224□4050□A□□T	220	1, 2, 3, 5, 10	4050	1, 3	0.12
KNTC1206N334□4050□A□□T	330	1, 2, 3, 5, 10	4050	1, 3	0.10
KNTC1206N474□4200□A□□T	470	1, 2, 3, 5, 10	4200	1, 3	0.08

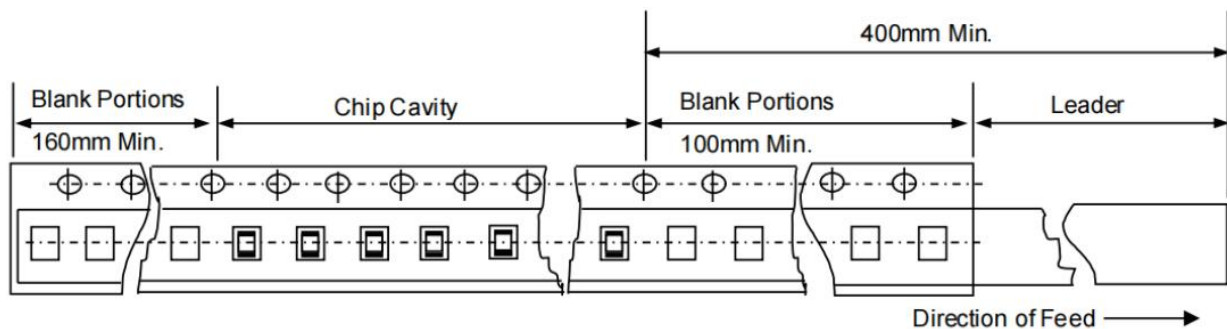
Taping and Packing

Tape and reel packing according to IEC 60286-3.



Size (EIA/JIS)	A	Quantity(Pcs)	
		Tape & reel	Bulk
0402/1005	178±2mm	10000	200000
0603/1608		4000	20000
0805/2012		4000	20000
1206/3216		4000/3000	20000

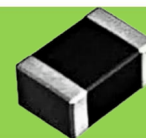
※bulk packaging: The number of pieces can be determined according to customer demand.



Chip NTC Thermistor — KNTC - E series

For **Temperature Sensing**

- **Multilayer Internal structure**



Features

- Multilayer SMD NTC thermistor with nickel barrier termination (AgNiSn)
- Accurate temperature measurement from -40 °C to 125°C
- Excellent long-term aging stability in high temperature and high humidity environment
- Tight R- and B- tolerances
- Short response time
- 100% Pb free, RoHS

Applications

- Temperature compensation for transistors, ICs, and crystal oscillators in mobile communications
- Temperature sensor for rechargeable batteries
- Temperature compensation of LCD
- Temperature measurement and compensation in general use of electric circuits

Part Numbering

KNTC	0402	E	102	F	4100	F	B	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪

①	Series
	GRACE Chip NTC Thermistor

②	Chip size (EIA)
	01005
	0402
	0603
	0805

③	Internal structure
E	Multilayer Inner Electrode

④	Nominal resistance R ₂₅ (Ω)
300	30
101	100
102	1000 (1KΩ)
103	10000 (10KΩ)

⑤	Resistance tolerance
D	±0.5%
F	±1%
G	±2%
H	±3%
J	±5%
K	±10%

⑥	B Constant
4100	4100K

⑦	B Constant tolerance
D	±0.5%
X	±0.7%
F	±1%
H	±3%

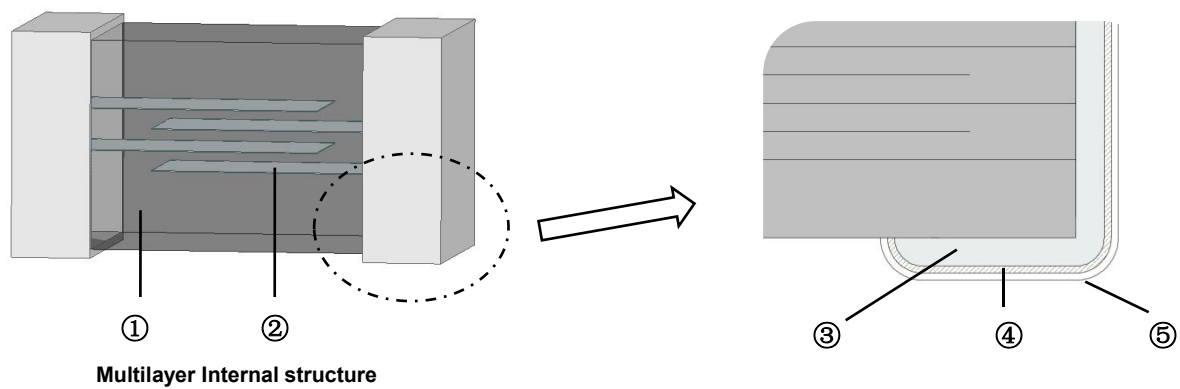
⑧	Definition of B Value
A	25/50
B	25/85
C	25/100

⑨	internal code
	A

⑩	Customer identification code
	A001

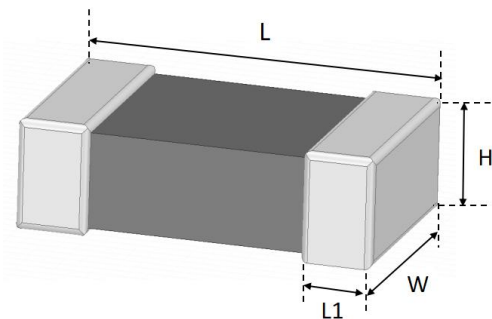
⑪	Packaging style
T	Tape
B	Bulk

Construction



No.	Name	
①	Semiconductive Ceramics	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
01005/0402	0.40±0.02	0.20±0.02	0.20±0.02	0.07±0.02
0201/0603	0.60±0.03	0.30±0.03	0.30±0.05	0.15±0.05
0402/1005	1.00±0.05	0.50±0.05	0.50±0.05	0.30±0.10
0603/1608	1.60±0.20	0.80±0.20	0.80±0.20	0.30±0.20

Parameter definition and specification

Size(inch)	01005	0201	0402	0603	0805	1206
Max. Rated power at 25℃(mW) *1	60	100	100	100	200	300
Dissipation factors at 25℃ (mW /℃) *2	0.6	1	1	1	2	3
Thermal Time Constant (Sec.)	Approx 2	Approx 3	Approx 3	Approx 4.5	Approx 5	Approx 9

1* Max.Rated power: at rated temperature (25℃), maximum power that can be applied continuously.
2* Dissipation factors: powered that it is equivalent that be increased in self-heating by load power thermistor at 1℃ temperature.

Electrical Characteristics

01005 Type

Part Number	Zero Power Resistance at 25℃	Tolerance of R25	B constant	Tolerance of B constant	Max.Permissible Operating Current at 25℃
	(KΩ)	(±%)	(K)	(±%)	(mA)
KNTC01005E103□3380□A□□T	10	0.5, 1, 2, 3, 5, 10	3380	0.5, 1, 3	0.24
KNTC01005E103□3435□B□□T	10	1, 2, 3, 5, 10	3435	1, 3	0.31
KNTC01005E103□3950□A□□T	10	1, 2, 3, 5, 10	3950	1, 3	0.31
KNTC01005E104□3950□A□□T	100	1, 2, 3, 5, 10	3950	1, 3	0.10
KNTC01005E104□4250□A□□T	100	1, 2, 3, 5, 10	4250	1, 3	0.10

0201 Type

Part Number	Zero Power Resistance at 25℃	Tolerance of R25	B constant	Tolerance of B constant	Max.Permissible Operating Current at 25℃
	(KΩ)	(±%)	(K)	(±%)	(mA)
KNTC0201E100□3250□A□□T	0.010	1, 2, 3, 5, 10	3000	1, 3	0.31
KNTC0201E220□3250□A□□T	0.022	1, 2, 3, 5, 10	3250	1, 3	0.21
KNTC0201E300□3250□A□□T	0.03	1, 2, 3, 5, 10	3250	1, 3	0.18
KNTC0201E400□3250□A□□T	0.04	1, 2, 3, 5, 10	3250	1, 3	0.15
KNTC0201E101□3250□B□□T	0.10	1, 2, 3, 5, 10	3250	1, 3	0.10
KNTC0201E131□3250□B□□T	0.13	1, 2, 3, 5, 10	3250	1, 3	0.08
KNTC0201E151□3250□B□□T	0.15	1, 2, 3, 5, 10	3250	1, 3	0.08
KNTC0201E221□3650□B□□T	0.22	1, 2, 3, 5, 10	3650	1, 3	0.06
KNTC0201E331□3650□B□□T	0.33	1, 2, 3, 5, 10	3650	1, 3	0.05
KNTC0201E471□3650□B□□T	0.47	1, 2, 3, 5, 10	3650	1, 3	0.04
KNTC0201E681□3650□B□□T	0.68	1, 2, 3, 5, 10	3650	1, 3	0.03
KNTC0201E102□3650□B□□T	1	1, 2, 3, 5, 10	3650	1, 3	0.03
KNTC0201E102□4100□B□□T	1	1, 2, 3, 5, 10	4100	1, 3	0.03
KNTC0201E152□3650□B□□T	1.5	1, 2, 3, 5, 10	3650	1, 3	0.02
KNTC0201E152□4100□B□□T	1.5	1, 2, 3, 5, 10	4100	1, 3	0.02
KNTC0201E182□4100□B□□T	1.8	1, 2, 3, 5, 10	4100	1, 3	0.02
KNTC0201E202□4100□B□□T	2	1, 2, 3, 5, 10	4100	1, 3	0.02
KNTC0201E222□4100□B□□T	2.2	1, 2, 3, 5, 10	4100	1, 3	0.02
KNTC0201E302□4100□B□□T	3	1, 2, 3, 5, 10	4100	1, 3	0.01
KNTC0201E332□4100□B□□T	3.3	1, 2, 3, 5, 10	4100	1, 3	0.01
KNTC0201E472□4100□B□□T	4.7	1, 2, 3, 5, 10	4100	1, 3	0.01

KNTC0201E682□4100□B□□T	6.8	1, 2, 3, 5, 10	4100	1, 3	0.01
KNTC0201E103□3380□A□□T	10	0.5, 1, 2, 3, 5, 10	3380	0.5, 1, 3	0.01
KNTC0201E103□3435□B□□T	10	1, 2, 3, 5, 10	3435	1, 3	0.01
KNTC0201E103□3950□A□□T	10	1, 2, 3, 5, 10	3950	1, 3	0.01
KNTC0201E223□3950□A□□T	22	1, 2, 3, 5, 10	3950	1, 3	0.006
KNTC0201E333□3950□A□□T	33	1, 2, 3, 5, 10	3950	1, 3	0.005
KNTC0201E473□4150□A□□T	47	1, 2, 3, 5, 10	4150	1, 3	0.004
KNTC0201E683□4150□A□□T	68	1, 2, 3, 5, 10	4150	1, 3	0.003
KNTC0201E104□3950□A□□T	100	1, 2, 3, 5, 10	3950	1, 3	0.003
KNTC0201E104□4150□A□□T	100	1, 2, 3, 5, 10	4150	1, 3	0.003
KNTC0201E104□4250□A□□T	100	1, 2, 3, 5, 10	4250	1, 3	0.003
KNTC0201E154□4550□A□□T	150	1, 2, 3, 5, 10	4550	1, 3	0.002
KNTC0201E224□3950□A□□T	220	1, 2, 3, 5, 10	3950	1, 3	0.002
KNTC0201E334□4250□A□□T	330	1, 2, 3, 5, 10	4250	1, 3	0.001
KNTC0201E474□3950□A□□T	470	1, 2, 3, 5, 10	3950	1, 3	0.001
KNTC0201E474□4250□A□□T	470	1, 2, 3, 5, 10	4250	1, 3	0.001
KNTC0201E684□4250□A□□T	680	1, 2, 3, 5, 10	4250	1, 3	0.001
KNTC0201E684□4550□A□□T	680	1, 2, 3, 5, 10	4550	1, 3	0.001

0402 Type

Part Number	Zero Power Resistance at 25℃	Tolerance of R25	B constant	Tolerance of B constant	Max. Permissible Operating Current at 25℃
	(KΩ)	(±%)	(K)	(±%)	(mA)
KNTC0402E220□3250□B□□T	0.022	1, 2, 3, 5, 10	3250	1, 3	6.74
KNTC0402E300□3250□B□□T	0.030	1, 2, 3, 5, 10	3250	1, 3	5.77
KNTC0402E330□3250□B□□T	0.033	1, 2, 3, 5, 10	3250	1, 3	5.50
KNTC0402E400□3250□B□□T	0.040	1, 2, 3, 5, 10	3250	1, 3	5.00
KNTC0402E470□3250□B□□T	0.047	1, 2, 3, 5, 10	3250	1, 3	4.61
KNTC0402E680□3250□B□□T	0.068	1, 2, 3, 5, 10	3250	1, 3	3.83
KNTC0402E101□3250□B□□T	0.1	1, 2, 3, 5, 10	3250	1, 3	3.16
KNTC0402E221□3250□B□□T	0.22	1, 2, 3, 5, 10	3250	1, 3	2.13
KNTC0402E331□3250□B□□T	0.33	1, 2, 3, 5, 10	3250	1, 3	1.74
KNTC0402E471□3250□B□□T	0.47	1, 2, 3, 5, 10	3250	1, 3	1.46
KNTC0402E471□3650□B□□T	0.47	1, 2, 3, 5, 10	3650	1, 3	1.46
KNTC0402E681□3650□B□□T	0.68	1, 2, 3, 5, 10	3650	1, 3	1.21
KNTC0402E102□4100□B□□T	1	1, 2, 3, 5, 10	4100	1, 3	1.00
KNTC0402E152□4100□B□□T	1.5	1, 2, 3, 5, 10	4100	1, 3	0.82
KNTC0402E222□4100□B□□T	2.2	1, 2, 3, 5, 10	4100	1, 3	0.67

KNTC0402E332□4100□B□□T	3.3	1, 2, 3, 5, 10	4100	1, 3	0.55
KNTC0402E472□3500□B□□T	4.7	1, 2, 3, 5, 10	3500	1, 3	0.46
KNTC0402E472□4100□B□□T	4.7	1, 2, 3, 5, 10	4100	1, 3	0.46
KNTC0402E682□4100□B□□T	6.8	1, 2, 3, 5, 10	4100	1, 3	0.38
KNTC0402E103□3380□A□□T	10	0.5, 1, 2, 3, 5, 10	3380	0.7, 1, 3	0.32
KNTC0402E103□3435□B□□T	10	1, 2, 3, 5, 10	3435	1, 3	0.32
KNTC0402E103□3940□A□□T	10	1, 2, 3, 5, 10	3950	1, 3	0.32
KNTC0402E153□3450□A□□T	15	1, 2, 3, 5, 10	3450	1, 3	0.26
KNTC0402E153□4100□B□□T	15	1, 2, 3, 5, 10	4100	1, 3	0.26
KNTC0402E473□4050□A□□T	47	0.5, 1, 2, 3, 5, 10	4050	0.5, 1, 3	0.15
KNTC0402E104□4250□A□□T	100	0.5, 1, 2, 3, 5, 10	4250	0.5, 1, 3	0.10
KNTC0402E154□4550□B□□T	150	1, 2, 3, 5, 10	4550	1, 3	0.08
KNTC0402E474□3950□A□□T	470	1, 2, 3, 5, 10	3950	1, 3	0.05
KNTC0402E474□4050□B□□T	470	1, 2, 3, 5, 10	4050	1, 3	0.05
KNTC0402E684□4250□A□□T	680	1, 2, 3, 5, 10	4250	1, 3	0.04
KNTC0402E684□4550□A□□T	680	1, 2, 3, 5, 10	4550	1, 3	0.04
KNTC0402E105□4750□B□□T	1000	1, 2, 3, 5, 10	4750	1, 3	0.03

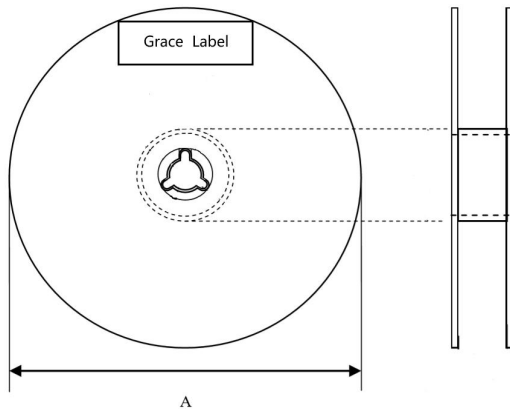
0603 Type

Part Number	Zero Power Resistance at 25℃	Tolerance of R25	B constant	Tolerance of B constant	Max. Permissible Operating Current at 25℃
	(KΩ)	(±%)	(K)	(±%)	(mA)
KNTC0603E220□3250□B□□T	0.022	1, 2, 3, 5, 10	3250	1, 3	6.74
KNTC0603E300□3150□B□□T	0.030	1, 2, 3, 5, 10	3150	1, 3	5.77
KNTC0603E330□3150□B□□T	0.033	1, 2, 3, 5, 10	3150	1, 3	5.50
KNTC0603E400□3250□B□□T	0.040	1, 2, 3, 5, 10	3250	1, 3	5.00
KNTC0603E470□3150□B□□T	0.047	1, 2, 3, 5, 10	3150	1, 3	4.61
KNTC0603E680□3150□B□□T	0.068	1, 2, 3, 5, 10	3150	1, 3	3.83
KNTC0603E101□2750□B□□T	0.100	1, 2, 3, 5, 10	2750	1, 3	3.16
KNTC0603E101□3250□B□□T	0.100	1, 2, 3, 5, 10	3250	1, 3	3.16
KNTC0603E151□2750□B□□T	0.150	1, 2, 3, 5, 10	2750	1, 3	2.58
KNTC0603E102□3950□A□□T	1	1, 2, 3, 5, 10	3950	1, 3	1.00
KNTC0603E102□4100□B□□T	1	1, 2, 3, 5, 10	4100	1, 3	1.00
KNTC0603E103□3380□A□□T	10	0.5, 1, 2, 3, 5, 10	3380	0.7, 1, 3	0.32
KNTC0603E103□3435□B□□T	10	1, 2, 3, 5, 10	3435	1, 3	0.32
KNTC0603E473□4030□A□□T	47	0.5, 1, 2, 3, 5, 10	4030	0.5, 1, 3	0.15
KNTC0603E503□4150□A□□T	50	1, 2, 3, 5, 10	4150	1, 3	0.14
KNTC0603E823□3950□A□□T	82	1, 2, 3, 5, 10	3950	1, 3	0.11
KNTC0603E104□4200□A□□T	100	0.5, 1, 2, 3, 5, 10	4200	0.5, 1, 3	0.10

KNTC0603E334□4050□B□□T	330	1, 2, 3, 5, 10	4050	1, 3	0.06
KNTC0603E474□4050□B□□T	470	1, 2, 3, 5, 10	4050	1, 3	0.05
KNTC0603E105□4750□B□□T	1000	1, 2, 3, 5, 10	4750	1, 3	0.03

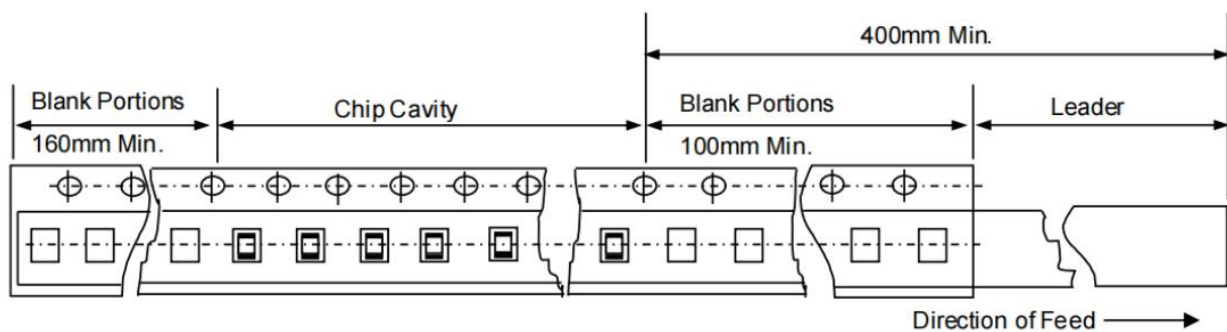
Taping and Packing

Tape and reel packing according to IEC 60286-3.



Size (EIA/JIS)	A	Quantity(Pcs)	
		Tape & reel	Bulk
01005/0402	178±2mm	20000	100000
0201/0603		15000	30000
0402/1005		10000	20000
0603/1608		4000	20000

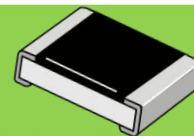
※bulk packaging: The number of pieces can be determined according to customer demand.



Chip NTC Thermistor — KNTC - T series

For **Temperature Sensing**

- **Thick Film**



Features

- High mechanical strength and reliability are available due to thermistor film and glass-coated on alumina substrate
- Accurate temperature measurement from -40 °C to 125°C
- Tight R- and B- tolerances
- Short response time
- 100% Pb free, RoHS

Applications

- Temperature compensation for transistors, ICs, and crystal oscillators in mobile communications
- Temperature sensor for rechargeable batteries
- Temperature compensation of LCD
- Temperature measurement and compensation in general use of electric circuits

Part Numbering

KNTC	0603	T	101	J	2750	H	B	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪

①	Series
	GRACE Chip NTC Thermistor

②	Chip size (EIA)
	0603
	0805
	1206

③	Internal structure
T	Thick Film

④	Nominal resistance R ₂₅ (Ω)
300	30
101	100
102	1000 (1K Ω)
103	10000 (10K Ω)

⑤	Resistance tolerance
F	±1%
G	±2%
H	±3%
J	±5%
K	±10%

⑥	B Constant
2750	2750K

⑦	B Constant tolerance
F	±1%
H	±3%

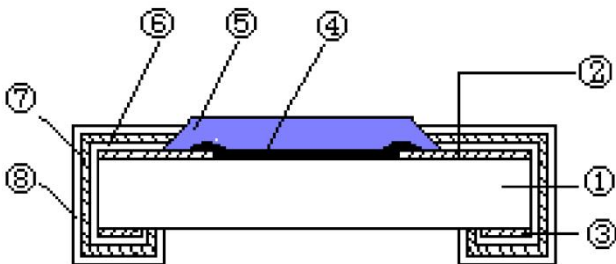
⑧	Definition of B Value
A	25/50
B	25/85
C	25/100

⑨	internal code
	A

⑩	Customer identification code
	A001

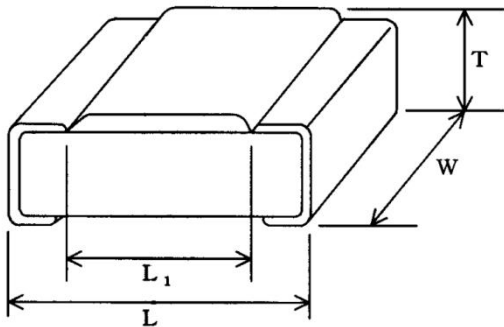
⑪	Packaging style
T	Tape
B	Bulk

Construction



No.	Name	
①	Substrate	
②	Face Electrode	
③	Reverse Electrode	
④	semiconductor	
⑤	Protection Coating	
⑥	Terminal electrode	Ag
⑦		Ni
⑧		Sn

Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	T (mm)
0603/1608	1.60±0.20	0.80±0.15	0.50±0.10
0805/2012	2.00±0.20	0.80±0.15	0.50±0.10
1206/3216	3.20±0.20	1.60±0.15	0.55±0.10

Parameter definition and specification

Size(inch)	0603	0805	1206
Max. Rated power at 25℃(mW) *1	120	130	150
Dissipation factors at 25℃ (mW /℃) *2	1.0	1.3	1.5
Thermal Time Constant (Sec.)	≤5	≤5	≤8

¹* Max.Rated power: at rated temperature (25℃), maximum power that can be applied continuously.
²* Dissipation factors: powered that it is equivalent that be increased in self-heating by load power thermistor at 1℃ temperature.

Electrical Characteristics

0603 Type

Part Number	Zero Power Resistance at 25℃	Tolerance of R25	B constant	Tolerance of B constant	Max.Permissible Operating Current at 25℃
	(KΩ)	(±%)	(K)	(±%)	(mA)
KNTC0603T101□2750□B□□T	0.10	1, 2, 3, 5, 10	2750	1, 3	3.16
KNTC0603T151□2750□B□□T	0.15	1, 2, 3, 5, 10	2750	1, 3	2.58
KNTC0603T221□2750□B□□T	0.22	1, 2, 3, 5, 10	2750	1, 3	2.13
KNTC0603T331□3000□B□□T	0.33	1, 2, 3, 5, 10	3000	1, 3	1.74
KNTC0603T471□3000□B□□T	0.47	1, 2, 3, 5, 10	3000	1, 3	1.45
KNTC0603T471□3650□B□□T	0.47	1, 2, 3, 5, 10	3650	1, 3	1.45
KNTC0603T681□3000□B□□T	0.68	1, 2, 3, 5, 10	3000	1, 3	1.21
KNTC0603T105□4200□B□□T	1000	1, 2, 3, 5, 10	4200	1, 3	0.03
KNTC0603T205□4300□B□□T	2000	1, 2, 3, 5, 10	4300	1, 3	0.005

0805 Type

Part Number	Zero Power Resistance at 25℃	Tolerance of R25	B constant	Tolerance of B constant	Max.Permissible Operating Current at 25℃
	(KΩ)	(±%)	(K)	(±%)	(mA)
KNTC0805T150□2650□B□□T	0.015	1, 2, 3, 5, 10	2650	1, 3	9.30
KNTC0805T150□2800□B□□T	0.015	1, 2, 3, 5, 10	2800	1, 3	9.30
KNTC0805T220□2650□B□□T	0.022	1, 2, 3, 5, 10	2650	1, 3	7.68
KNTC0805T220□2800□B□□T	0.022	1, 2, 3, 5, 10	2800	1, 3	7.68
KNTC0805T220□3000□B□□T	0.022	1, 2, 3, 5, 10	3000	1, 3	7.68
KNTC0805T330□2800□B□□T	0.033	1, 2, 3, 5, 10	2800	1, 3	6.27
KNTC0805T470□2800□B□□T	0.047	1, 2, 3, 5, 10	2800	1, 3	5.25
KNTC0805T500□2800□B□□T	0.050	1, 2, 3, 5, 10	2800	1, 3	5.09
KNTC0805T680□2800□B□□T	0.068	1, 2, 3, 5, 10	2800	1, 3	4.37
KNTC0805T680□3000□B□□T	0.068	1, 2, 3, 5, 10	3000	1, 3	4.37
KNTC0805T800□2800□B□□T	0.080	1, 2, 3, 5, 10	2800	1, 3	4.03
KNTC0805T101□3000□B□□T	0.100	1, 2, 3, 5, 10	3000	1, 3	3.60
KNTC0805T121□3000□B□□T	0.120	1, 2, 3, 5, 10	3000	1, 3	3.29

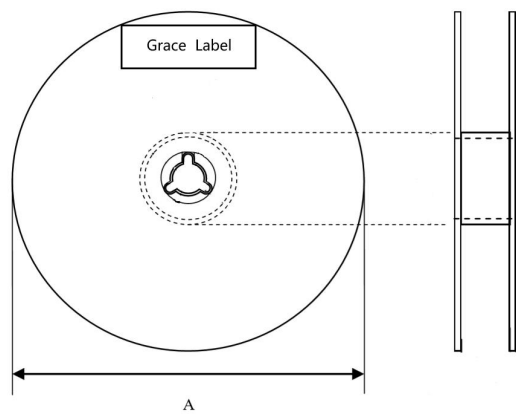
KNTC0805T151□3000□B□□T	0.150	1, 2, 3, 5, 10	3000	1, 3	2.94
KNTC0805T181□3000□B□□T	0.180	1, 2, 3, 5, 10	3000	1, 3	2.68
KNTC0805T221□3000□B□□T	0.220	1, 2, 3, 5, 10	3000	1, 3	2.43
KNTC0805T331□3000□B□□T	0.330	1, 2, 3, 5, 10	3000	1, 3	1.98
KNTC0805T431□3000□B□□T	0.430	1, 2, 3, 5, 10	3000	1, 3	1.73
KNTC0805T471□3000□B□□T	0.470	1, 2, 3, 5, 10	3000	1, 3	1.66
KNTC0805T681□3000□B□□T	0.680	1, 2, 3, 5, 10	3000	1, 3	1.38
KNTC0805T105□4100□B□□T	1000	1, 2, 3, 5, 10	4100	1, 3	0.005
KNTC0805T205□4350□B□□T	2000	1, 2, 3, 5, 10	4350	1, 3	0.002

1206 Type

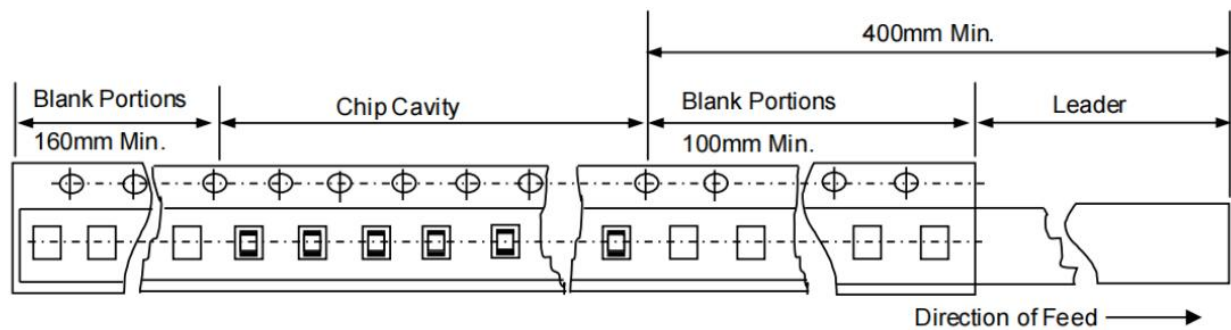
Part Number	Zero Power Resistance at 25℃	Tolerance of R25	B constant	Tolerance of B constant	Max.Permissible Operating Current at 25℃
	(KΩ)	(±%)	(K)	(±%)	(mA)
KNTC1206T102□3700□B□□T	1	1, 2, 3, 5, 10	3700	1, 3	1.22
KNTC1206T472□3545□B□□T	4.7	1, 2, 3, 5, 10	3545	1, 3	0.56
KNTC1206T682□3545□B□□T	6.8	1, 2, 3, 5, 10	3545	1, 3	0.46
KNTC1206T103□3450□B□□T	10	1, 2, 3, 5, 10	3450	1, 3	0.38
KNTC1206T333□3435□B□□T	33	1, 2, 3, 5, 10	3435	1, 3	0.21
KNTC1206T473□3900□B□□T	47	1, 2, 3, 5, 10	3900	1, 3	0.17
KNTC1206T683□4000□B□□T	68	1, 2, 3, 5, 10	4000	1, 3	0.14
KNTC1206T104□3987□B□□T	100	1, 2, 3, 5, 10	3987	1, 3	0.12
KNTC1206T224□4100□B□□T	220	1, 2, 3, 5, 10	4100	1, 3	0.08
KNTC1206T334□3987□B□□T	330	1, 2, 3, 5, 10	3987	1, 3	0.06
KNTC1206T474□4100□B□□T	470	1, 2, 3, 5, 10	4100	1, 3	0.05
KNTC1206T105□4200□B□□T	1000	1, 2, 3, 5, 10	4200	1, 3	0.03
KNTC1206T105□4350□B□□T	2000	1, 2, 3, 5, 10	4350	1, 3	0.02

Taping and Packing

Tape and reel packing according to IEC 60286-3.



Size (EIA/JIS)	A	Quantity(Pcs)
		Tape & reel
0603/1608	178±2mm	4,000
0805/2012		4,000
1206/3216		4,000



Chip NTC Thermistor — KNTC - S series

For Temperature Sensing

- Single Layer



Features

- High reliability and stability
- Accurate temperature measurement from -40 °C to 125°C
- Tight R- and B- tolerances
- Short response time
- 100% Pb free, RoHS

Applications

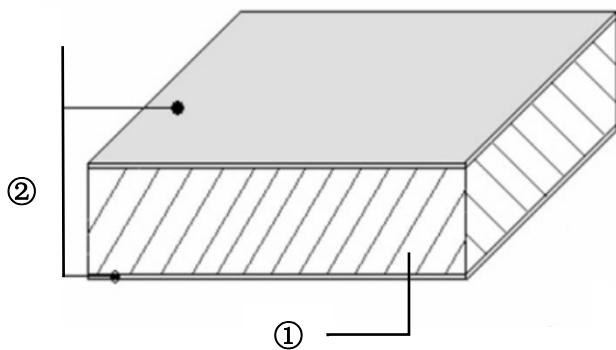
- For bonding (optical module, IGBT, Power Module, etc)
- Making temperature sensors

Part Numbering

KNTC	05	S	103	F	3950	F	A	G	A	A001	A
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫

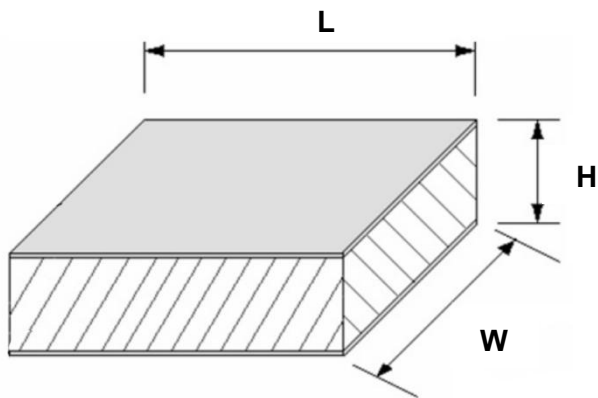
①	Series	②	Chip size (L*W) mm	③	Internal structure	④	Nominal resistance R ₂₅ (Ω)
GRACE Chip NTC Thermistor		03	0.3*0.3	S	Single Layer	472	4700 (4.7KΩ)
		05	0.5*0.5			103	10000 (10KΩ)
						104	100000 (100KΩ)
⑤	Resistance tolerance	⑥	B Constant	⑦	B Constant tolerance	⑧	Definition of B Value
F	±1%	3950	3950K	F	±1%	A	25/50
G	±2%			H	±3%	B	25/85
H	±3%					C	25/100
J	±5%						
K	±10%						
⑨	electrode material	⑩	internal code	⑪	Customer identification code	⑫	Packaging style
G	Gold	A		A001		A	Blue Film Arrangement
S	Silver					B	Bulk

Construction



No.	Name
①	NTC Ceramics
②	Face Electrode

Dimensions



※ Customized sizes and parameters are available

※ Small size, can be 0.3*0.3mm

General Parameter and Part No.

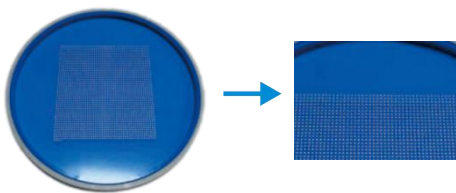
Part Number	Zero Power Resistance at 25℃	B constant	Rated power @25° ℃	Dissipation factor	Thermal time constance
	(K Ω)	(K)	(mV)	(mW/C)	(s)
KNTC□S472□3435□A□□□□	4.7	3435	15	2.5	≤15
KNTC□S502□3274□A□□□□	5	3274	15	2.5	≤15
KNTC□S502□3435□A□□□□	5	3435	15	2.5	≤15
KNTC□S502□3977□A□□□□	5	3977	15	2.5	≤15
KNTC□S103□3274□A□□□□	10	3274	15	2.5	≤15
KNTC□S103□3435□A□□□□	10	3435	15	2.5	≤15
KNTC□S103□3470□A□□□□	10	3470	15	2.5	≤15
KNTC□S103□3950□A□□□□	10	3950	15	2.5	≤15
KNTC□S103□4100□A□□□□	10	4100	15	2.5	≤15
KNTC□S153□3950□A□□□□	15	3950	15	2.5	≤15
KNTC□S153□3435□A□□□□	15	3435	15	2.5	≤15
KNTC□S203□3950□A□□□□	20	3950	15	2.5	≤15

KNTC□S203□4100□A□□□□	20	4100	15	2.5	≤15
KNTC□S203□3435□A□□□□	20	3435	15	2.5	≤15
KNTC□S303□3435□A□□□□	30	3435	15	2.5	≤15
KNTC□S303□3950□A□□□□	30	3950	15	2.5	≤15
KNTC□S473□3950□A□□□□	47	3950	15	2.5	≤15
KNTC□S473□3435□A□□□□	47	3435	15	2.5	≤15
KNTC□S503□3950□A□□□□	50	3950	15	2.5	≤15
KNTC□S503□4100□A□□□□	50	4100	15	2.5	≤15
KNTC□S503□3435□A□□□□	50	3435	15	2.5	≤15
KNTC□S104□3950□A□□□□	100	3950	15	2.5	≤15
KNTC□S104□4100□A□□□□	100	4100	15	2.5	≤15
KNTC□S104□4400□A□□□□	100	4400	15	2.5	≤15

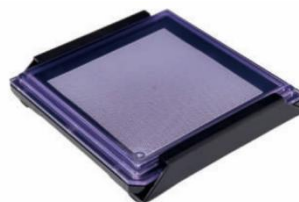
※ The B-tolerance is $\pm 1\%$ when R-tolerance within $\pm 3\%$, others are $\pm 2\%$

※ Special part number could be custom designed

Packing



Blue film packing for bonding



Waffle pack



glass bottle



Vacuum packaging

Bead type temperature measuring NTC Thermistor — KM52-B series

For **Temperature Sensing**

- Red enameled wire



Features

- Lead length can be customized
- Excellent long-term aging stability in high temperature and high humidity environment
- Tight R- and B- tolerances
- Short response time
- 100% Pb free, RoHS

Applications

- Temperature sensor for Medical equipment
- Temperature sensor for wearable computer
- Temperature sensor for Battery pack

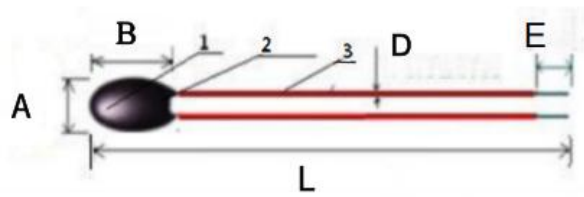
Part Numbering

KM52B	1R6	N	103	F	3435	F	A	050	S	A001	B
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫

①	Series	②	Head diameter	③	Internal structure	④	Nominal resistance R ₂₅ (Ω)
GRACE Bead type temperature measuring NTC Thermistor		1R3	1.3mm	N	Blocky	103	10000 (10K Ω)
		1R6	1.6mm			104	100000 (100K Ω)
		1R8	1.8mm				
⑤	Resistance tolerance	⑥	B Constant	⑦	B Constant tolerance	⑧	Definition of B Value
F	±1%	3435	3435K	F	±1%	A	25/50
G	±2%			H	±3%	B	25/85
H	±3%					C	25/100
J	±5%						
K	±10%						
⑨	lead length	⑩	internal code	⑪	Customer identification code	⑫	Packaging style
025	25mm	S		A001		B	Bulk
050	50mm						

Shape and Dimensions

Dimensions:



material:

No.	Name	Material Specifications	remark
①	Component	NTC Thermistors	
②	Epoxy Resin	Encapsulated Epoxy Resin	Black
③	Conducting Wire	Red Enamelled Wire	Red

Size	A	B	L	D	E
MF52B	Max1.8	Max5.5	Customizable	0.28±0.02	2±1

Electrical Characteristics

Part Number	Zero Power Resistance at 25℃	Tolerance of R25	B constant	Tolerance of B constant	Max.Permissible Operating Current at 25℃
	(KΩ)	(±%)	(K)	(±%)	(mA)
KN52B□□□N103□3435□B□□□T	10	1, 2, 3, 5, 10	3435	1, 3	0.71
KN52B□□□N103□3950□B□□□T	10	1, 2, 3, 5, 10	3950	1, 3	0.71
KN52B□□□N104□3950□B□□□T	100	1, 2, 3, 5, 10	3950	1, 3	0.22

※ The above data were tested in stationary air at 25℃ with unmounted independent units.

Bead type temperature measuring NTC Thermistor — KM52-C series

For **Temperature Sensing**

- **Irradiation wiring**



Features

- Lead length can be customized
- Excellent long-term aging stability in high temperature and high humidity environment
- Tight R- and B- tolerances
- Short response time
- 100% Pb free, RoHS

Applications

- Temperature sensor for Medical equipment
- Temperature sensor for wearable computer
- Temperature sensor for Battery pack

Part Numbering

KM52C	2R5	N	103	F	3435	F	A	050	S	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫

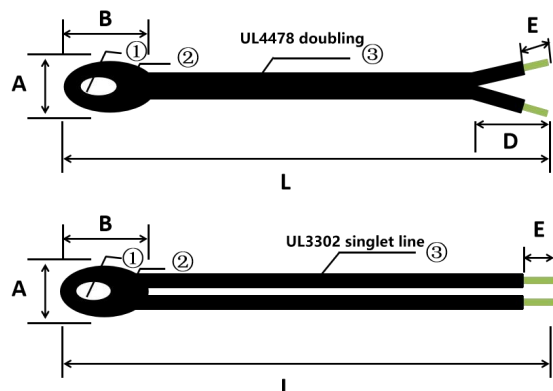
①	Series	②	Head diameter	③	Internal structure	④	Nominal resistance R ₂₅ (Ω)
GRACE Bead type temperature measuring NTC Thermistor		2R5	2.5mm	N	Blocky	103	10000 (10KΩ)
		3R0	3.0mm			104	100000 (100KΩ)

⑤	Resistance tolerance	⑥	B Constant	⑦	B Constant tolerance	⑧	Definition of B Value
F	±1%	3435	3435K	F	±1%	A	25/50
G	±2%			H	±3%	B	25/85
H	±3%					C	25/100
J	±5%						
K	±10%						

⑨	lead length	⑩	internal code	⑪	Customer identification code	⑫	Packaging style
025	25mm	S		A001		B	Bulk
050	50mm						

Shape and Dimensions

Dimensions:



Unit: mm

material:

No.	Name	Material Specifications	remark
①	Component	NTC Thermistors	
②	Epoxy Resin	Encapsulated Epoxy Resin	Black
③	Conducting Wire	UL4478 or UL3302 OD:0.7mm	Black

Size	A	B	L	D	E
MF52C of doubling	Max3	Max7.5	Customizable	15±10	3±1
MF52C of singlet line	Max3	Max7.5	Customizable	/	3±1

Electrical Characteristics

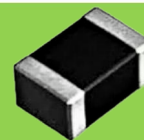
Part Number	Zero Power Resistance at 25℃	Tolerance of R25	B constant	Tolerance of B constant	Max.Permissible Operating Current at 25℃
	(KΩ)	(±%)	(K)	(±%)	(mA)
KN52C□□□N103□3435□B□□□T	10	1, 2, 3, 5, 10	3435	1, 3	0.71
KN52C□□□N103□3950□B□□□T	10	1, 2, 3, 5, 10	3950	1, 3	0.71
KN52C□□□N104□3950□B□□□T	100	1, 2, 3, 5, 10	3950	1, 3	0.22

※ The above data were tested in stationary air at 25℃ with unmounted independent units.

Multilayer chip varistors — KRMV - G series

For **ESD / Surge protection**

- **General**



Features

- Suitable for miniaturizing circuits due to small size SMD type
- Operating temperature from -55 °C to 125°C
- Excellent clamping ratio and quick response time(<1ns)
- 100% Pb free, RoHS

Applications

- Suppression of inductive switching or other transient events such as surge voltage
- ESD protection for components sensitive
- Replacement of larger surface mount TVS Zeners in many applications

Part Numbering

KRMV	2220	G	D	380	C252	A122	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

①	Series
	GRACE Multilayer Chip Varistors

②	Chip size (EIA)
	0201、0402、0603、0805、1206、 1210、1812、2220、3220

③	Series code
G	General

④	Type of voltage
D	DC working voltage
A	AC working voltage
B	Breakdown voltage

⑤	Voltage values
5R6	5.6V
380	38V
101	100V

⑥	Typical Capacitance @1KHZ
C600	60pF
C601	600pF
C252	2500pF

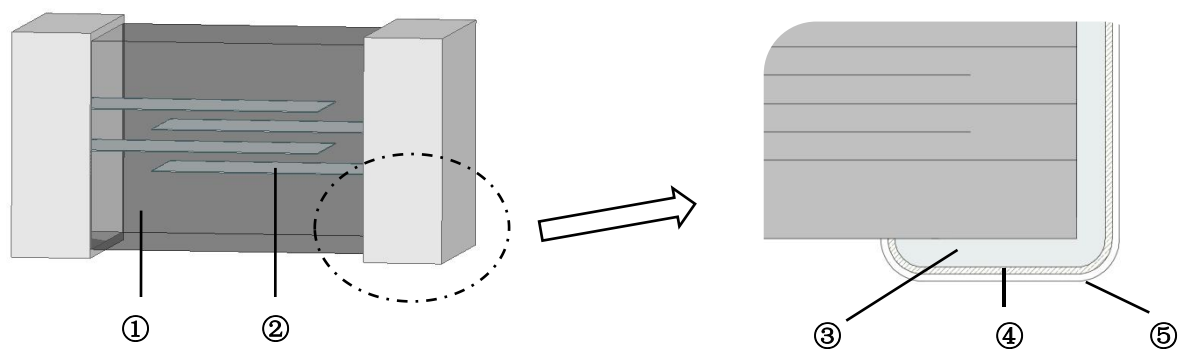
⑦	Peak surge current
A1R0	1A
A100	10A
A151	150A
A122	1200A

⑧	internal code
	A

⑨	Customer identification code
	A001

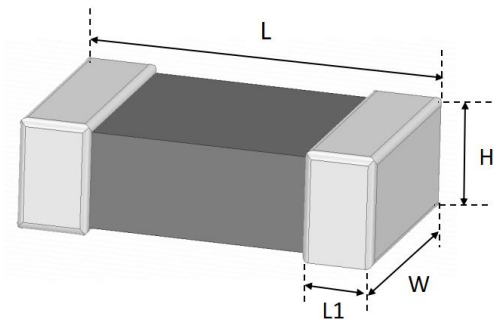
⑩	Packaging style
T	Tape
B	Bulk

Construction



No.	Name	
①	Semiconductive ceramics	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0201/0603	0.60±0.15	0.30±0.15	0.30±0.15	0.2±0.10
0402/1005	1.00±0.20	0.50±0.20	0.50±0.20	0.30±0.20
0603/1608	1.60±0.20	0.80±0.20	0.80±0.20	0.30±0.20
0805/2012	2.00±0.20	1.20±0.20	0.85±0.20	0.40±0.20
1206/3216	3.20±0.20	1.60±0.20	1.60 Max.	0.40±0.30
1210/3225	3.20±0.20	2.50±0.20	3.20 Max.	0.40±0.30
1812/4532	4.50±0.20	3.20±0.20	3.20 Max.	0.50±0.30
2220/5650	5.60±0.20	5.00±0.20	3.50 Max.	0.80±0.30
3220/8050	8.00±0.30	5.00±0.20	3.60 Max.	0.80±0.30

Electrical Characteristics

0201-0603 Type

Part Number	Max.Working voltage		Breakdown voltage		Clamping voltage	Transient energy	Peak current	Typical capacitance
Test Condition	AC	DC	@1mA DC		8/20 μ s @1A	10/1000 μ s	8/20 μ s	@ 1kHz
Units	V _{RMS}	V _{DC}	V _B		V _c	E _T	I _p	C
Symbol	Volts	Volts	Volts		Volts	Joules	Amps	pF
KRMV0201GD4R0C101A5R0□□T	3	4.0	6.8	±15%	10	0.01	5	100
KRMV0201GD5R0C101A5R0□□T	3.3	5.0	8	±15%	10	0.01	5	100
KRMV0201GD5R6C101A8R0□□T	4	5.6	12	±15%	20	0.01	8	100
KRMV0402GD3R3C361A100□□T	2.5	3.3	5	±15%	10	0.02	10	360
KRMV0402GD5R0C161A100□□T	4	5.0	8	±15%	20	0.05	10	160
KRMV0402GD5R0C481A100□□T	4	5.0	8	±15%	20	0.05	10	480
KRMV0402GD5R0C651A100□□T	4	5.0	8	±15%	20	0.05	10	650
KRMV0402GD5R6C121A100□□T	4	5.6	12	±15%	20	0.05	10	120
KRMV0403GD5R6C231A100□□T	4	5.6	12	±15%	20	0.03	10	230
KRMV0402GD5R6C361A100□□T	4	5.6	12	±15%	20	0.05	10	360
KRMV0403GD5R6C481A100□□T	4	5.6	12	±15%	20	0.03	10	480
KRMV0603GD3R3C361A300□□T	2.5	3.3	5	±15%	10	0.10	30	360
KRMV0603GD5R5C361A300□□T	3.5	5.5	8	±15%	15	0.10	30	360
KRMV0603GD5R5C271A300□□T	3.5	5.5	8	±15%	15	0.10	30	270
KRMV0603GD5R5C481A300□□T	3.5	5.5	8	±15%	15	0.10	30	480
KRMV0603GD5R5C801A300□□T	3.5	5.5	8	±15%	15	0.10	30	800
KRMV0603GD5R5C222A300□□T	3.5	5.5	8	±15%	15	0.10	30	2200
KRMV0603GD5R6C271A300□□T	4	5.6	9	±15%	15	0.10	30	270
KRMV0603GD5R6C121A300□□T	4	5.6	12	±15%	20	0.10	30	120
KRMV0603GD5R6C361A300□□T	4	5.6	12	±15%	20	0.10	30	360
KRMV0603GD5R6C481A300□□T	4	5.6	12	±15%	20	0.10	30	480
KRMV0603GD9R0C551A300□□T	6.4	9	12	±15%	26	0.20	30	550
KRMV0603GD9R0C821A300□□T	6.4	9	12	±15%	26	0.20	30	820
KRMV0603GD120C251A300□□T	8	12	16	±15%	28	0.20	30	250
KRMV0603GD140C351A300□□T	11	14	19	±15%	30	0.20	30	350
KRMV0603GD180C251A300□□T	14	18	24	±15%	39	0.20	30	250
KRMV0603GD220C181A300□□T	17	22	27	±10%	45	0.20	30	180
KRMV0603GD260C121A300□□T	18	26	33	±10%	54	0.10	30	120
KRMV0603GD300C161A300□□T	25	30	39	±10%	65	0.20	30	160
KRMV0603GD380C131A300□□T	30	38	47	±10%	77	0.20	30	130
KRMV0603GD450C111A300□□T	35	45	56	±10%	90	0.20	30	110
KRMV0603GD560C800A300□□T	40	56	68	±10%	110	0.20	30	80
KRMV0603GD650C600A300□□T	50	65	82	±10%	135	0.20	30	60

0805-1206 Type

Part Number	Max.Working voltage		Breakdown voltage		Clamping voltage	Transient energy	Peak current	Typical capacitance
Test Condition	AC	DC	@1mA DC		8/20 μ s @1A	10/1000 μ s	8/20 μ s	@ 1kHz
Units	V _{RMS}	V _{DC}	V _B		V _c	E _T	I _p	C
Symbol	Volts	Volts	Volts		Volts	Joules	Amps	pF
KRMV0805GD3R3C162A400□□T	2.5	3.3	5	±15%	10	0.10	40	1600
KRMV0805GD5R6C122A400□□T	4	5.6	8	±15%	15	0.10	40	1200
KRMV0805GD8R0C901A400□□T	6	8	12	±15%	20	0.10	40	900
KRMV0805GD140C801A400□□T	11	14	19	±15%	30	0.10	40	800
KRMV0805GD180C601A400□□T	14	18	24	±15%	33	0.20	40	600
KRMV0805GD220C521A400□□T	17	22	27	±10%	44	0.20	40	520
KRMV0805GD260C451A400□□T	20	26	33	±10%	54	0.20	40	450
KRMV0805GD300C441A400□□T	25	30	39	±10%	65	0.20	40	440
KRMV0805GD380C431A400□□T	30	38	47	±10%	77	0.20	40	430
KRMV0805GD450C381A400□□T	35	45	56	±10%	90	0.20	40	380
KRMV0805GD560C361A400□□T	40	56	68	±10%	110	0.20	40	360
KRMV0805GD650C331A400□□T	50	65	82	±10%	135	0.20	40	330
KRMV0805GD850C321A400□□T	60	85	100	±10%	165	0.20	40	320
KRMV0805GD101C221A400□□T	75	100	120	±10%	250	0.20	40	220
KRMV1206GD3R3C192A151□□T	2.5	3.3	5	±15%	10	0.40	150	1900
KRMV1206GD5R6C162A151□□T	4	5.6	8	±15%	15	0.40	150	1600
KRMV1206GD8R0C132A151□□T	6	8	12	±15%	20	0.40	150	1300
KRMV1206GD120C122A151□□T	9	12	15	±15%	26	0.40	150	1200
KRMV1206GD140C122A151□□T	11	14	19	±15%	30	0.40	150	1200
KRMV1206GD180C102A151□□T	14	18	24	±15%	39	0.40	150	1000
KRMV1206GD220C991A151□□T	17	22	27	±10%	45	0.40	150	990
KRMV1206GD260C851A151□□T	20	26	33	±10%	54	0.40	150	850
KRMV1206GD300C751A151□□T	25	30	39	±10%	65	0.40	150	750
KRMV1206GD330C721A151□□T	28	33	45	±10%	72	0.40	150	720
KRMV1206GD380C681A151□□T	30	38	47	±10%	77	0.40	150	680
KRMV1206GD450C581A151□□T	35	45	56	±10%	90	0.40	150	580
KRMV1206GD560C421A151□□T	40	56	68	±10%	110	0.40	150	420
KRMV1206GD650C401A151□□T	50	65	82	±10%	135	0.40	150	400
KRMV1206GD850C321A151□□T	60	85	100	±10%	165	0.40	150	320
KRMV1206GD101C221A151□□T	75	100	120	±10%	250	0.40	150	220
KRMV1206GD3R3C192A201□□T	2.5	3.3	5	±15%	10	0.40	200	1900
KRMV1206GD5R6C162A201□□T	4	5.6	8	±15%	15	0.40	200	1600
KRMV1206GD8R0C132A201□□T	6	8	12	±15%	20	0.40	200	1300
KRMV1206GD120C122A201□□T	9	12	15	±15%	26	0.40	200	1200

KRMV1206GD140C122A201□□T	11	14	19	±15%	30	0.40	200	1200
KRMV1206GD180C102A201□□T	14	18	24	±15%	39	0.40	200	1000
KRMV1206GD220C991A201□□T	17	22	27	±10%	45	0.40	200	990
KRMV1206GD260C851A201□□T	20	26	33	±10%	54	0.40	200	850
KRMV1206GD300C751A201□□T	25	30	39	±10%	65	0.40	200	750
KRMV1206GD330C721A201□□T	28	33	45	±10%	72	0.40	200	720
KRMV1206GD380C681A201□□T	30	38	47	±10%	77	0.40	200	680
KRMV1206GD450C581A201□□T	35	45	56	±10%	90	0.40	200	580
KRMV1206GD560C421A201□□T	40	56	68	±10%	110	0.40	200	420
KRMV1206GD650C401A201□□T	50	65	82	±10%	135	0.40	200	400

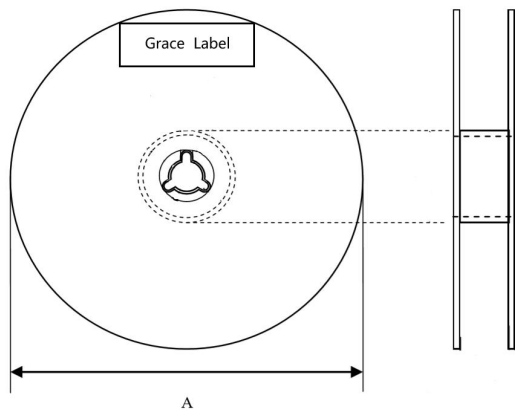
1210-3220 Type

Part Number	Max.Working voltage		Breakdown voltage		Clamping voltage	Transient energy	Peak current	Typical capacitance
Test Condition	AC	DC	@1mA DC		8/20 μ s @1A	10/1000 μ s	8/20 μ s	@ 1kHz
Units	V _{RMS}	V _{DC}	V _B		V _c	E _T	I _p	C
Symbol	Volts	Volts	Volts		Volts	Joules	Amps	pF
KRMV1210GD5R6C162A301□□T	4	5.6	8	±15%	15.5	1.50	300	1600
KRMV1210GD8R0C162A301□□T	6	8	12	±15%	25	1.50	300	1600
KRMV1210GD140C152A301□□T	11	14	19	±15%	35	1.50	300	1500
KRMV1210GD180C152A301□□T	14	18	24	±15%	39	1.50	300	1500
KRMV1210GD220C152A301□□T	17	22	27	±10%	45	1.50	300	1500
KRMV1210GD260C142A301□□T	20	26	33	±10%	54	1.50	300	1400
KRMV1210GD300C132A301□□T	25	30	39	±10%	65	1.50	300	1300
KRMV1210GD330C901A301□□T	28	33	45	±10%	72	1.50	300	900
KRMV1210GD380C601A301□□T	30	38	47	±10%	77	1.50	300	600
KRMV1210GD450C501A301□□T	35	45	56	±10%	90	1.50	300	500
KRMV1210GD560C451A301□□T	40	56	68	±10%	110	1.50	300	450
KRMV1210GD650C401A301□□T	50	65	82	±10%	135	1.50	300	400
KRMV1210GD850C301A301□□T	60	85	100	±10%	165	1.50	300	300
KRMV1210GD101C221A301□□T	75	100	120	±10%	250	1.50	300	220
KRMV1210GD121C221A301□□T	95	120	150	±10%	290	1.50	300	220
KRMV1812GD5R6C152A501□□T	4	5.6	8	±15%	15	2.50	500	1500
KRMV1812GD8R0C132A501□□T	6	8	12	±15%	20	2.50	500	1300
KRMV1812GD120C122A501□□T	9	12	15	±15%	26	2.50	500	1200
KRMV1812GD140C122A501□□T	11	14	19	±15%	30	2.50	500	1200
KRMV1812GD180C162A501□□T	14	18	24	±15%	35	2.50	500	1600
KRMV1812GD220C152A501□□T	17	22	27	±10%	45	1.50	500	1500
KRMV1812GD260C152A501□□T	20	26	33	±10%	45	1.00	500	1500
KRMV1812GD300C142A501□□T	25	30	39	±10%	65	1.00	500	1400

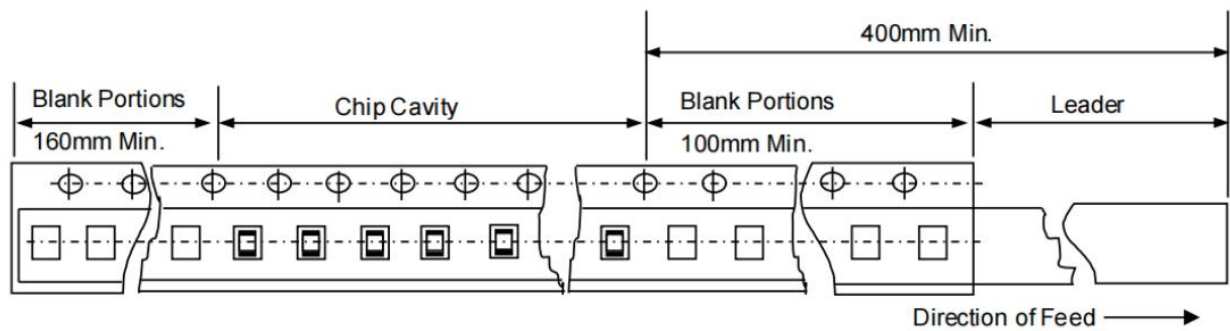
KRMV1812GD380C132A501□□T	30	38	47	±10%	77	1.00	500	1300
KRMV1812GD450C122A501□□T	35	45	56	±10%	90	1.00	500	1200
KRMV1812GD560C112A501□□T	40	56	68	±10%	110	2.00	500	1100
KRMV1812GD650C102A501□□T	50	65	82	±10%	135	2.00	500	1000
KRMV1812GD850C901A501□□T	60	85	100	±10%	160	2.00	500	900
KRMV1812GD101C801A501□□T	75	100	120	±10%	250	2.50	500	800
KRMV2220GD5R6C183A122□□T	4	5.6	8	±15%	15.5	2.00	1200	18000
KRMV2220GD140C402A122□□T	11	14	19	±15%	30	5.40	1200	4000
KRMV2220GD180C402A122□□T	13	18	24	±15%	39	5.80	1200	4000
KRMV2220GD220C352A122□□T	18	22	27	±10%	45	7.20	1200	3500
KRMV2220GD260C352A122□□T	20	26	33	±10%	54	7.80	1200	3500
KRMV2220GD300C302A122□□T	25	30	39	±10%	65	9.60	1200	3000
KRMV2220GD380C252A122□□T	30	38	47	±10%	77	12.0	1200	2500
KRMV2220GD450C202A122□□T	35	45	56	±10%	85	12.0	1200	2000
KRMV2220GD560C202A102□□T	40	56	68	±10%	110	8.80	1000	2000
KRMV2220GD650C202A801□□T	50	65	82	±10%	135	5.60	800	2000
KRMV2220GD850C102A801□□T	60	85	100	±10%	160	5.00	800	1000
KRMV2220GD101C102A801□□T	75	100	120	±10%	200	4.50	800	1000
KRMV3220GD180C143A152□□T	13	18	24	±15%	58	4.0	1500	14000
KRMV3220GD200C133A152□□T	14	20	27	±10%	65	4.0	1500	13000
KRMV3220GD240C123A152□□T	17	24	33	±10%	79	4.0	1500	12000
KRMV3220GD280C103A152□□T	20	28	39	±10%	94	4.0	1500	10000
KRMV3220GD300C802A152□□T	21	30	40	±10%	97	4.0	1500	8000
KRMV3220GD350C702A152□□T	25	35	47	±10%	113	4.0	1500	7000
KRMV3220GD380C602A152□□T	27	38	52	±10%	125	4.0	1500	6000
KRMV3220GD420C552A152□□T	30	42	56	±10%	135	4.0	1500	5500
KRMV3220GD500C502A152□□T	35	50	68	±10%	165	4.0	1500	5000
KRMV3220GD560C502A152□□T	40	56	75	±10%	181	4.0	1500	5000
KRMV3220GD600C452A152□□T	42	60	82	±10%	198	4.0	1500	4500
KRMV3220GD680C402A152□□T	48	68	90	±10%	218	4.0	1500	4000
KRMV3220GD750C382A152□□T	53	75	100	±10%	242	4.0	1500	3800

Taping and Packing

Tape and reel packing according to IEC 60286-3.



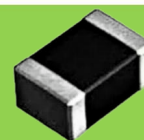
Size (EIA/JIS)	A	Quantity(Pcs)
		Tape & reel
0201/0603	178±2mm	15,000
0402/1005		10,000
0603/1608		4,000
0805/2012		4,000/3,000
1206/3216		3,000/2,000
1210/3225		3,000/1,500
1812/4532		3,000/1,000/500
2220/5650		1,000/500



Multilayer chip varistors — KRMV - S series

For **ESD protection**

- Low Capacitance



Features

- Low capacitance, can be used for high-speed transmission lines
- Operating temperature from -55 °C to 125°C
- Excellent clamping ratio and quick response time(<1ns)
- 100% Pb free, RoHS

Applications

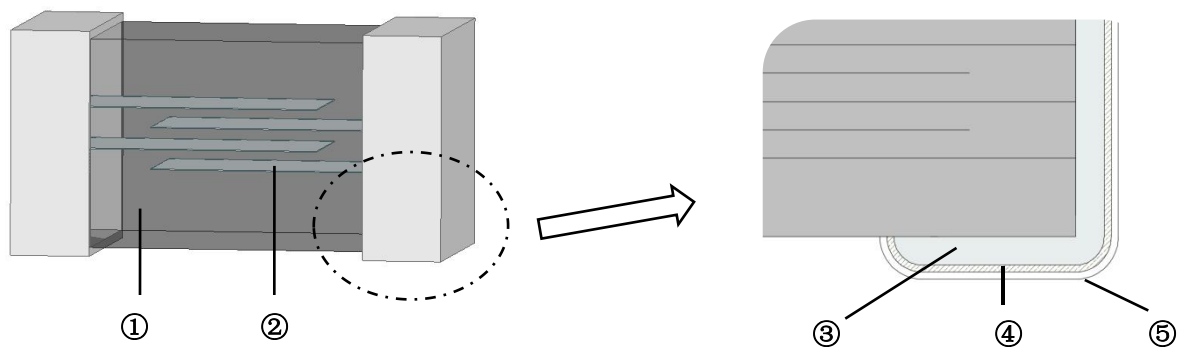
- ESD protection for components sensitive
- Normal capacitance product applications for I/O Port such as RS232, USB, PS2, VGA, Audio on Mother Board and Notebook, Set-Top Box, MP3 Players, DVD Players, and Docking System etc.

Part Numbering

KRMV	0402	S	D	180	C1R0	N	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

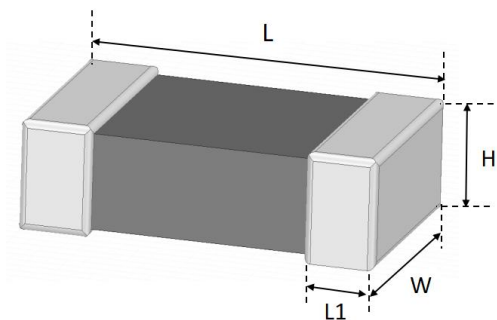
①	Series	②	Chip size (EIA)	③	Series code	④	Type of voltage
GRACE Multilayer Chip Varistors		0201		S	Low Capacitance	D	DC working voltage
		0402				A	AC working voltage
		0603				B	Breakdown voltage
⑤	Voltage values	⑥	Capacitance @1MHZ	⑦	Tolerance of Capacitance	⑧	internal code
5R5	5.5V	C0R5	0.5 pF	N	±30%	A	
180	18V	C1R0	1.0 pF	Y	+100%~ -50%		
240	24V	C100	10pF	G	Maximum		
⑨	Customer identification code	⑩	Packaging style				
A001		T	Tape				
		B	Bulk				

Construction



No.	Name	
①	Semiconductive ceramics	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0201/0603	0.60±0.15	0.30±0.15	0.30±0.15	0.2±0.10
0402/1005	1.00±0.20	0.50±0.20	0.50±0.20	0.30±0.20
0603/1608	1.60±0.20	0.80±0.20	0.80±0.20	0.30±0.20

Electrical Characteristics

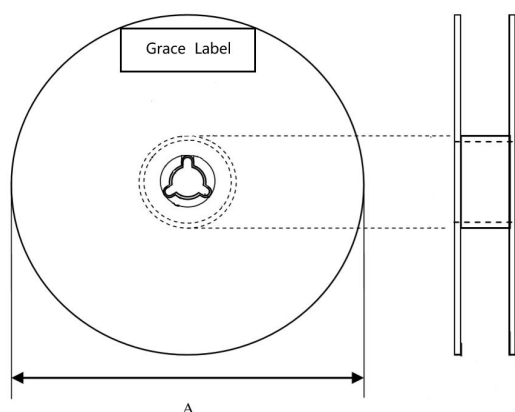
0201-0603 Type

Part Number	Max.Working voltage		Breakdown voltage		Clamping voltage	Transient energy	Peak current	capacitance
Test Condition	AC	DC	@1mA DC		8/20 μs @1A	10/1000 μs	8/20 μs	@ 1MHz
Units	V _{RMS}	V _{DC}	V _B		V _c	E _T	I _p	C
Symbol	Volts	Volts	Volts		Volts	Joules	Amps	pF
KRMV0201SD5R0C150□□□T	3.3	5.0	8	±15%	15	0.01	5	15
KRMV0201SD5R0C330□□□T	3.3	5.0	8	±15%	15	0.01	5	33
KRMV0201SD5R5C150□□□T	4	5.5	12	±15%	20	0.01	5	15

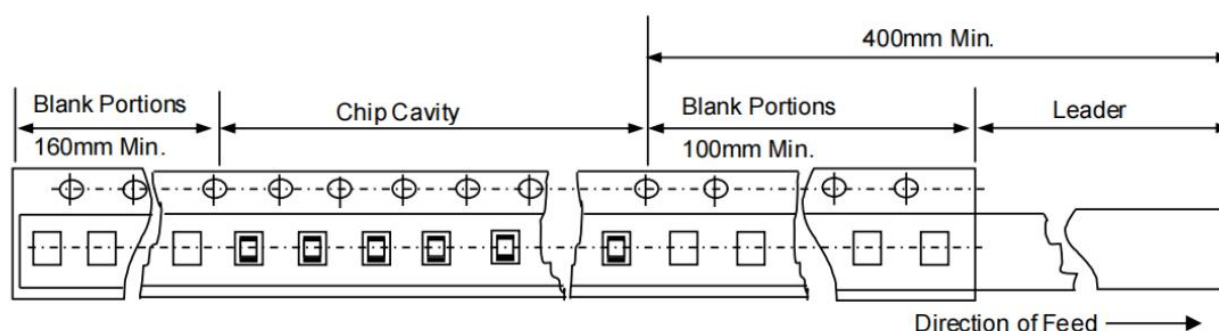
KRMV0201SD5R5C330□□□T	4	5.5	12	±15%	20	0.01	5	33
KRMV0201SD5R5C500□□□T	4	5.5	12	±15%	20	0.01	5	50
KRMV0201SD5R5C101□□□T	4	5.5	12	±15%	20	0.01	5	100
KRMV0201SD180C150□□□T	12.8	18	27	±10%	50	0.01	5	15
KRMV0201SD180C5R0□□□T	12.8	18	30	±10%	50	0.01	5	5
KRMV0201SD240C2R5□□□T	17.1	24	120	±20%	200	0.01	3	2.5
KRMV0402SD5R5C330□□□T	4	5.5	12	±10%	20	0.02	10	33
KRMV0402SD5R5C500□□□T	4	5.5	12	±10%	20	0.02	10	50
KRMV0402SD5R5C800□□□T	4	5.5	12	±10%	20	0.02	10	80
KRMV0402SD5R5C101□□□T	4	5.5	12	±10%	20	0.02	10	100
KRMV0402SD120C100□□□T	8.5	12	14	±15%	55	0.05	10	10
KRMV0402SD140C500□□□T	10	14	19	±15%	55	0.05	10	50
KRMV0402SD180C150□□□T	12.8	18	27	±15%	55	0.05	10	15
KRMV0402SD240C2R5□□□T	17.1	24	100	±20%	198	0.05	10	2.5
KRMV0603SD5R0C500□□□T	3.3	5	12	±10%	18	0.20	10	50
KRMV0603SD180C100□□□T	12.8	18	27	±10%	50	0.20	10	10
KRMV0603SD240C2R5□□□T	17.1	24	100	±20%	198	0.20	10	2.5
KRMV0402SD180C1R0□□□T	12.8	18	80	±20%	240	0.01	/	1
KRMV0402SD240C0R5□□□T	17.1	24	130	±30V	300	0.01	/	0.5
KRMV0603SD180C1R0□□□T	12.8	18	80	±20%	240	0.01	/	1
KRMV0603SD240C0R5□□□T	17.1	24	130	±30V	300	0.01	/	0.5

Taping and Packing

Tape and reel packing according to IEC 60286-3.



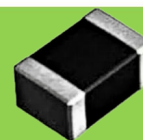
Size (EIA/JIS)	A	Quantity(Pcs)
		Tape&reel
0201/0603	178±2mm	15,000
0402/1005		10,000
0603/1608		4,000



Multilayer chip varistors — KRMV - H series

For **Surge protection**

- High voltage



Features

- High voltage varistor, suitable for AC circuit
- Operating temperature from -55 °C to 125 °C
- Excellent clamping ratio and quick response time (<1ns)
- 100% Pb free, RoHS

Applications

- Suppression of inductive switching or other transient events such as surge voltage
- Able to replace part of leaded Varistor in situations with limited height
- Replacement of larger surface mount TVS Zeners in many applications

Part Numbering

KRMV	1206	H	B	271	A201	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨

①	Series
	GRACE Multilayer Chip Varistors

②	Chip size (EIA)
	0604、0806、1206、1210、1812、 2220、3220、4032、4840

③	Series code
H	High voltage

④	Type of voltage
D	DC working voltage
A	AC working voltage
B	Breakdown voltage / Varistor Voltage

⑤	Voltage values
151	150V
271	270V

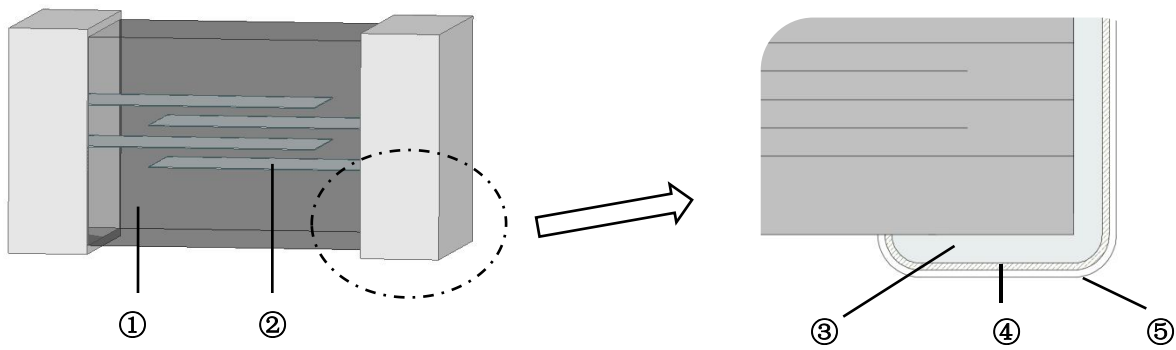
⑥	Peak surge current / Surge voltage
A101	100A
A201	200A
A351	350V

⑦	internal code
	A

⑧	Customer identification code
	A001

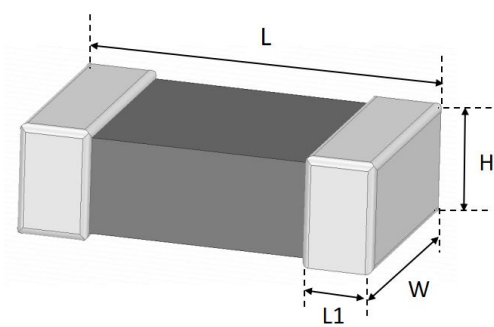
⑨	Packaging style
T	Tape
B	Bulk

Construction



No.	Name	
①	Semiconductive ceramics	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0604/1610	1.60±0.15	1.00±0.15	1.15 Max.	0.25±0.15
0806/2016	2.20±0.20	1.70±0.20	1.80 Max.	0.3±0.20
1206/3216	3.20±0.20	1.60±0.20	1.60 Max.	0.40±0.30
1210/3225	3.20±0.20	2.50±0.20	3.20 Max.	0.40±0.30
1812/4532	4.50±0.20	3.20±0.20	3.20 Max.	0.50±0.30
2220/5650	5.60±0.20	5.00±0.20	3.50 Max.	0.80±0.30
3220/08CL	8.00±0.30	5.00±0.20	2.00±0.30	0.80±0.30
4032/10CL	10.00±0.30	8.00±0.30	2.00±0.30	0.80±0.30
4840/12CL	12.00±0.30	10.00±0.30	2.50±0.30	0.80±0.30

Electrical Characteristics

0604-1210 Type

Part Number	Max.Working voltage		Breakdown voltage		Clamping voltage	Transient energy	Peak current/ Surge voltage	Typical capacitance
Test Condition	AC	DC	@1mA DC		8/20 μ s @1A	10/1000 μ s	8/20 μ s/ (1.2/50 μ s, 2 Ω)	@ 1KHz
Units	V _{RMS}	V _{DC}	V _B		V _c	E _T	I _p	C
Symbol	Volts	Volts	Volts		Volts	Joules	Amps	pF
KRMV0604HB271A400□□T	175	225	270	±10%	450	0.10	40	30
KRMV0806HB241A101□□T	150	200	240	±10%	390	0.30	100	100
KRMV0806HB241A201□□T	150	200	240	±10%	390	0.30	200	100
KRMV0806HB271A101□□T	175	225	270	±10%	450	0.30	100	60
KRMV0806HB271A201□□T	175	225	270	±10%	450	0.30	200	60
KRMV0806HB431A400□□T	275	350	430	±10%	705	0.30	40	40
KRMV0806HB431A101□□T	275	350	430	±10%	705	0.30	100	40
KRMV0806HB471A400□□T	300	380	470	±10%	775	0.30	40	40
KRMV0806HB471A101□□T	300	380	470	±10%	775	0.30	100	40
KRMV1206HB221A800□□T	140	180	220	±10%	380	0.60	80	100
KRMV1206HB221A151□□T	140	180	220	±10%	380	0.60	150	100
KRMV1206HB241A151□□T	150	200	240	±10%	415	0.60	150	100
KRMV1206HB241A351□□T	150	200	240	±10%	415	0.60	350	100
KRMV1206HB271A151□□T	175	225	270	±10%	450	0.60	150	60
KRMV1206HB271A351□□T	175	225	270	±10%	450	0.60	350	60
KRMV1206HB301A101□□T	190	240	300	±10%	495	0.60	100	50
KRMV1206HB331A400□□T	200	260	330	±10%	545	0.60	40	50
KRMV1206HB331A101□□T	200	260	330	±10%	545	0.60	100	50
KRMV1206HB361A400□□T	230	280	360	±10%	595	0.60	40	50
KRMV1206HB391A400□□T	250	300	390	±10%	650	0.60	40	50
KRMV1206HB431A101□□T	275	350	430	±10%	705	0.60	100	50
KRMV1206HB431A201□□T	275	350	430	±10%	705	0.60	200	50
KRMV1206HB431A101□□T	275	350	430	±10%	705	0.60	100	50
KRMV1206HB471A101□□T	300	380	470	±10%	775	0.60	100	50
KRMV1206HB471A201□□T	300	380	470	±10%	775	0.60	200	50
KRMV1206HB471A101□□T	300	380	470	±10%	775	0.60	100	50
KRMV1206HB511A400□□T	320	420	510	±10%	850	0.60	40	50
KRMV1206HB511A700□□T	320	420	510	±10%	850	0.60	70	50
KRMV1206HB561A500□□T	350	460	560	±10%	925	0.60	50	40
KRMV1210HB221A201□□T	140	180	220	±10%	380	0.60	200	100
KRMV1210HB221A351□□T	140	180	220	±10%	380	0.60	350	100
KRMV1210HB241A201□□T	150	200	240	±10%	415	0.60	200	100
KRMV1210HB241A351□□T	150	200	240	±10%	415	0.60	350	100
KRMV1210HB271A251□□T	175	225	270	±10%	450	0.80	250	100
KRMV1210HB271A401□□T	175	225	270	±10%	450	0.80	400	100

KRMV1210HB271A801□□T	175	225	270	±10%	450	0.80	800	100
KRMV1210HB331A101□□T	200	260	330	±10%	705	0.60	100	50
KRMV1210HB331A201□□T	200	260	330	±10%	705	0.60	200	50
KRMV1210HB361A101□□T	230	280	360	±10%	595	0.60	100	50
KRMV1210HB391A101□□T	250	300	390	±10%	650	0.60	100	50
KRMV1210HB391A201□□T	250	310	390	±10%	650	0.80	200	90
KRMV1210HB431A101□□T	275	350	430	±10%	705	0.80	100	80
KRMV1210HB431A201□□T	275	350	430	±10%	705	0.80	200	80
KRMV1210HB431A501□□T	275	350	430	±10%	705	0.80	500	80
KRMV1210HB471A151□□T	300	380	470	±10%	775	0.80	150	80
KRMV1210HB471A201□□T	300	380	470	±10%	775	0.80	200	80
KRMV1210HB471A501□□T	300	380	470	±10%	775	0.80	500	80
KRMV1210HB511A101□□T	320	420	510	±10%	850	0.80	100	70
KRMV1210HB511A351□□T	320	420	510	±10%	850	0.80	350	70
KRMV1210HB561A500□□T	350	460	560	±10%	925	0.80	50	60
KRMV1210HB561A101□□T	350	460	560	±10%	925	0.80	100	60

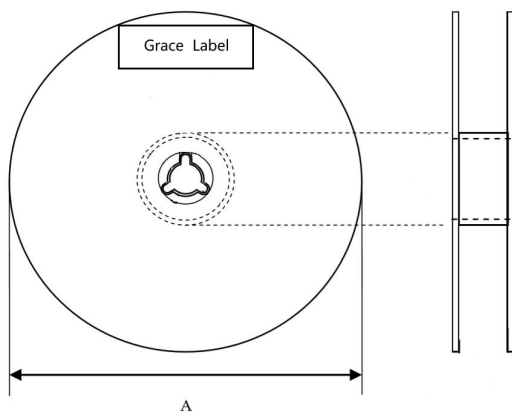
1812-4840 Type

Part Number	Max.Working voltage		Breakdown voltage		Clamping voltage	Transient energy	Peak current/ Surge voltage	Typical capacitance
Test Condition	AC	DC	@1mA DC		8/20 μ s @1A	10/1000 μ s	8/20 μ s/ (1.2/50 μ s, 2 Ω)	@ 1KHz
Units	V _{RMS}	V _{DC}	V _B		V _c	E _T	I _p /V _P	C
Symbol	Volts	Volts	Volts		Volts	Joules	Amps /Volts	pF
KRMV1812HB271A401□□T	175	225	270	±10%	450	0.90	400	100
KRMV1812HB271A102□□T	175	225	270	±10%	450	0.90	1000	100
KRMV1812HB271A202□□T	175	225	270	±10%	450	0.90	2000	100
KRMV1812HB431A401□□T	275	350	430	±10%	705	0.90	400	80
KRMV1812HB431A801□□T	275	350	430	±10%	705	0.90	800	80
KRMV1812HB431A102□□T	275	350	430	±10%	705	0.90	1000	80
KRMV1812HB471A401□□T	300	380	470	±10%	775	0.90	400	60
KRMV1812HB471A801□□T	300	380	470	±10%	775	0.90	800	60
KRMV1812HB471A102□□T	300	380	470	±10%	775	0.90	1000	60
KRMV1812HB511A401□□T	320	420	510	±10%	850	0.90	400	50
KRMV1812HB511A801□□T	320	420	510	±10%	850	0.90	800	50
KRMV1812HB561A401□□T	350	460	560	±10%	925	0.90	400	50
KRMV1812HB561A801□□T	350	460	560	±10%	925	0.90	800	50
KRMV2220HB431A701□□T	275	350	430	±10%	710	2.00	700	380
KRMV2220HB431A801□□T	275	350	430	±10%	710	2.00	800	380
KRMV2220HB431A102□□T	275	350	430	±10%	710	2.00	1000	380
KRMV2220HB471A701□□T	300	380	470	±10%	775	2.00	700	250
KRMV2220HB471A801□□T	300	380	470	±10%	775	2.00	800	250

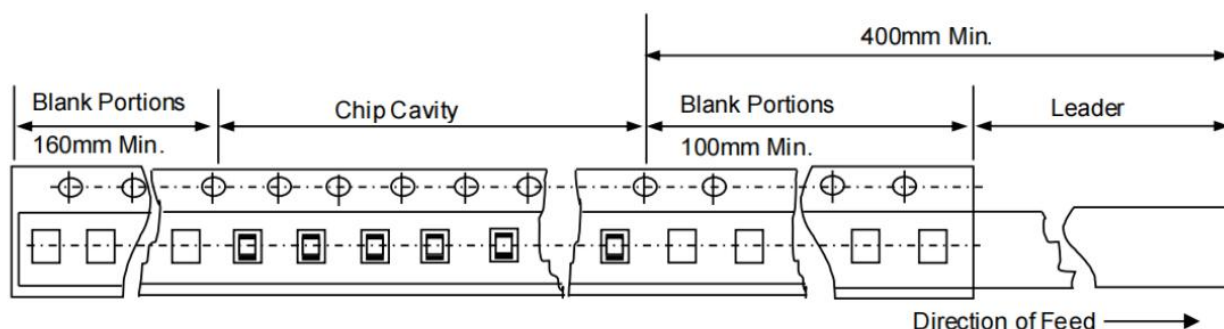
KRMV2220HB471A102□□T	300	380	470	±10%	775	2.00	1000	250
KRMV2220HB471A182□□T	300	380	470	±10%	775	2.00	1800	250
KRMV2220HB511A801□□T	320	420	510	±10%	850	1.00	800	180
KRMV2220HB561A801□□T	350	460	560	±10%	925	1.00	800	120
KRMV2220HB681A501□□T	420	560	680	±10%	1120	1.00	500	160
KRMV3220HB121A501□□T	75	100	120	±10%	200	3.00	500	450
KRMV3220HB241A501□□T	150	200	240	±10%	360	3.00	500	300
KRMV3220HB271A501□□T	175	225	270	±10%	380	3.00	500	250
KRMV3220HB391A501□□T	250	300	390	±10%	650	3.00	500	120
KRMV3220HB431A502□□T	275	350	430	±10%	710	4.50	500	100
KRMV3220HB471A501□□T	300	380	470	±10%	775	5.00	500	80
KRMV3225HB431A502□□T	275	350	430	±10%	710	4.50	500	100
KRMV3225HB471A501□□T	300	380	470	±10%	775	5.00	500	80
KRMV4032HB121A501□□T	75	100	120	±10%	200	5.00	500	500
KRMV4032HB391A501□□T	250	300	390	±10%	650	5.00	500	200
KRMV4032HB431A501□□T	275	350	430	±10%	710	5.00	500	160
KRMV4032HB471A501□□T	300	380	470	±10%	775	5.00	500	135
KRMV4840HB121A501□□T	75	100	120	±10%	200	5.00	500	350
KRMV4840HB391A501□□T	250	300	390	±10%	650	5.00	500	320
KRMV4840HB431A451□□T	275	350	430	±10%	710	5.00	450	180
KRMV4840HB471A451□□T	300	380	470	±10%	775	5.00	450	150

Taping and Packing

Tape and reel packing according to IEC 60286-3.



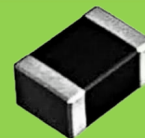
Size (EIA/JIS)	A	Quantity(Pcs)
		Tape & reel
0604/1610	178±2mm	3,000
0806/2016		2,000
1206/3216		2,000
1210/3225		1,500
1812/4532		1,000/500
2220/5650		1,000/500



Multilayer chip varistors — KRMV - E series

For **Surge protection**

- High Energy



Features

- High energy and strong capability of voltage surge suppression
- Operating temperature from -55 °C to 125°C
- Excellent clamping ratio and quick response time(<1ns)
- 100% Pb free, RoHS

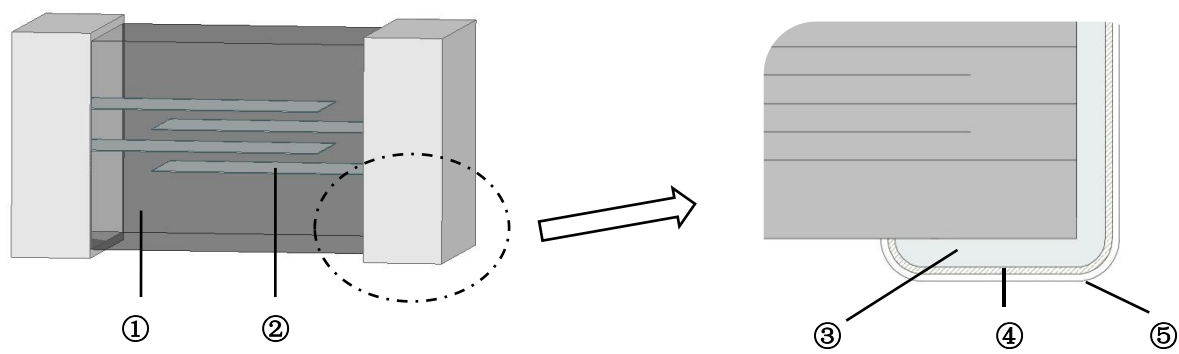
Applications

- Suppression of inductive switching or other transient events such as surge voltage
- Lightning protection and voltage surge suppression for security system, base station
- Replacement of larger surface mount TVS Zeners in many applications

Part Numbering

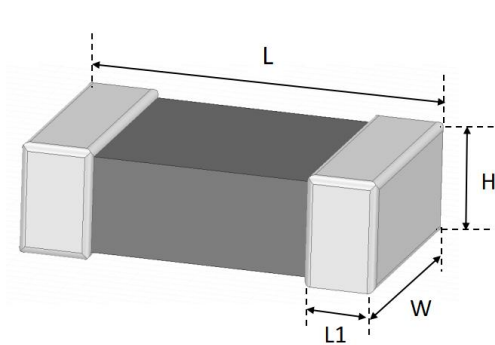
KRMV	1812	E	D	650	A202	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨
①Series GRACE Multilayer Chip Varistors		②Chip size (EIA) 0805、1206、1210、1812、2220		③Series code EHigh Energy		④Type of voltage D DC working voltage A AC working voltage B Breakdown voltage		
⑤Voltage values 5R55.5V 65065V 101100V		⑥Peak surge current A80080A A151150A A2022000A		⑦internal code A		⑧Customer identification code A001		
⑨Packaging style T Tape B Bulk								

Construction



No.	Name	
①	Semiconductive ceramics	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0805/2012	2.00±0.20	1.20±0.20	0.85±0.20	0.40±0.20
1206/3216	3.20±0.20	1.60±0.20	1.60 Max.	0.40±0.30
1210/3225	3.20±0.20	2.50±0.20	3.20 Max.	0.40±0.30
1812/4532	4.50±0.20	3.20±0.20	3.20 Max.	0.50±0.30
2220/5650	5.60±0.20	5.00±0.20	3.50 Max.	0.80±0.30
3220/8050	8.00±0.30	5.00±0.20	3.60 Max.	0.80±0.30

Electrical Characteristics

0805-1206 Type

Part Number	Max.Working voltage		Breakdown voltage		Clamping voltage	Transient energy	Peak current	Typical capacitance
Test Condition	AC	DC	@1mA DC		8/20 μs @1A	10/1000 μs	8/20 μs	@ 1KHz
Units	V _{RMS}	V _{DC}	V _B		V _c	E _T	I _p	C
Symbol	Volts	Volts	Volts		Volts	Joules	Amps	pF
KRMV0805ED3R3A121□□T	2.5	3.3	5	±15%	12	0.10	120	800

KRMV0805ED5R5A121□□T	4	5.5	8	±15%	18	0.10	120	850
KRMV0805ED9R0A101□□T	6	9	12	±15%	20	0.10	100	900
KRMV0805ED140A101□□T	11	14	19	±15%	30	0.10	100	800
KRMV0805ED180A101□□T	14	18	24	±15%	39	0.20	100	600
KRMV0805ED220A101□□T	17	22	27	±10%	44	0.20	100	520
KRMV0805ED260A101□□T	20	26	33	±10%	54	0.20	100	450
KRMV0805ED300A101□□T	25	30	39	±10%	65	0.20	100	400
KRMV0805ED380A101□□T	30	38	47	±10%	77	0.20	100	330
KRMV0805ED450A101□□T	35	45	56	±10%	90	0.20	100	230
KRMV0805ED560A101□□T	40	56	68	±10%	120	0.20	100	120
KRMV0805ED650A101□□T	50	65	82	±10%	135	0.20	100	350
KRMV0805ED850A800□□T	60	85	100	±10%	165	0.20	80	300
KRMV0805ED101A800□□T	75	100	120	±10%	250	0.20	80	250
KRMV1206ED3R3A501□□T	2.5	3.3	5	±15%	12	0.20	500	900
KRMV1206ED5R5A501□□T	4	5.5	8	±15%	18	0.20	500	1500
KRMV1206ED9R0A501□□T	6	9	12	±15%	20	0.30	500	1300
KRMV1206ED140A501□□T	11	14	19	±15%	30	0.40	500	1200
KRMV1206ED180A501□□T	14	18	24	±15%	39	0.40	500	1000
KRMV1206ED220A501□□T	17	22	27	±10%	44	0.40	500	1000
KRMV1206ED260A501□□T	20	26	33	±10%	54	0.50	500	990
KRMV1206ED300A501□□T	25	30	39	±10%	65	0.50	500	950
KRMV1206ED380A501□□T	30	38	47	±10%	77	0.50	500	880
KRMV1206ED450A501□□T	35	45	56	±10%	90	0.50	500	500
KRMV1206ED560A501□□T	40	56	68	±10%	120	0.50	500	400
KRMV1206ED650A501□□T	50	65	82	±10%	135	0.50	500	350
KRMV1206ED850A501□□T	60	85	100	±10%	165	0.50	500	300
KRMV1206ED101A501□□T	75	100	120	±10%	250	0.50	500	250

1210-3220 Type

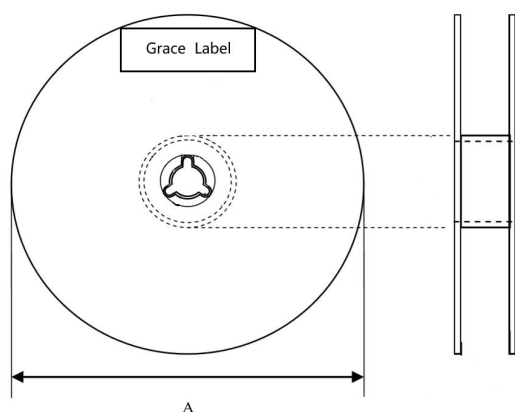
Part Number	Max.Working voltage		Breakdown voltage		Clamping voltage	Transient energy	Peak current	Typical capacitance
Test Condition	AC	DC	@1mA DC		8/20 μs @1A	10/1000 μs	8/20 μs	@ 1KHz
Units	V _{RMS}	V _{DC}	V _B		V _c	E _T	I _p	C
Symbol	Volts	Volts	Volts		Volts	Joules	Amps	pF
KRMV1210ED5R6A152□□T	4	5.6	8	±15%	15.5	1.50	1500	1600
KRMV1210ED8R0A152□□T	6	8	12	±15%	25	1.50	1500	1600
KRMV1210ED140A152□□T	11	14	19	±15%	35	1.50	1500	1500
KRMV1210ED180A152□□T	14	18	24	±15%	39	1.50	1500	1500
KRMV1210ED220A152□□T	17	22	27	±10%	45	1.50	1500	1500
KRMV1210ED260A152□□T	20	26	33	±10%	54	1.50	1500	1400

KRMV1210ED300A152□□T	25	30	39	±10%	65	1.50	1500	1300
KRMV1210ED330A152□□T	28	33	45	±10%	72	1.50	1500	900
KRMV1210ED380A152□□T	30	38	47	±10%	77	1.50	1500	600
KRMV1210ED450A152□□T	35	45	56	±10%	90	1.50	1500	500
KRMV1210ED560A152□□T	40	56	68	±10%	110	1.50	1500	450
KRMV1210ED650A152□□T	50	65	82	±10%	135	1.50	1500	400
KRMV1210ED850A102□□T	60	85	100	±10%	165	1.50	1000	300
KRMV1210ED101A102□□T	75	100	120	±10%	250	1.50	1000	220
KRMV1210ED121A102□□T	95	120	150	±10%	290	1.50	1000	220
KRMV1812ED5R6A252□□T	4	5.6	8	±15%	15	2.50	2500	1500
KRMV1812ED8R0A252□□T	6	8	12	±15%	20	2.50	2500	1300
KRMV1812ED120A252□□T	9	12	15	±15%	26	2.50	2500	1200
KRMV1812ED140A252□□T	11	14	19	±15%	30	2.50	2500	1200
KRMV1812ED180A252□□T	14	18	24	±15%	35	2.50	2500	1600
KRMV1812ED220A252□□T	17	22	27	±10%	45	1.50	2500	1550
KRMV1812ED260A252□□T	20	26	33	±10%	45	1.00	2500	1500
KRMV1812ED300A222□□T	25	30	39	±10%	65	1.00	2200	1400
KRMV1812ED380A222□□T	30	38	47	±10%	77	1.00	2200	1300
KRMV1812ED450A202□□T	35	45	56	±10%	90	1.00	2000	1200
KRMV1812ED560A202□□T	40	56	68	±10%	110	2.00	2000	1100
KRMV1812ED650A202□□T	50	65	82	±10%	135	2.00	2000	1000
KRMV1812ED850A152□□T	60	85	100	±10%	160	2.00	1500	900
KRMV1812ED101A152□□T	75	100	120	±10%	250	2.50	1500	800
KRMV2220ED5R6A802□□T	4	5.6	8	±15%	15.5	2.00	8000	18000
KRMV2220ED140A802□□T	11	14	19	±15%	30	5.40	8000	4000
KRMV2220ED180A802□□T	14	18	24	±15%	39	5.80	8000	4000
KRMV2220ED220A802□□T	18	22	27	±10%	45	7.20	8000	3500
KRMV2220ED260A802□□T	20	26	33	±10%	54	7.80	8000	3500
KRMV2220ED300A802□□T	25	30	39	±10%	65	9.60	8000	3000
KRMV2220ED380A802□□T	30	38	47	±10%	77	12.0	8000	2500
KRMV2220ED450A802□□T	35	45	56	±10%	85	12.0	8000	2000
KRMV2220ED560A802□□T	40	56	68	±10%	110	8.80	8000	2000
KRMV2220ED650A602□□T	50	65	82	±10%	135	5.60	6000	2000
KRMV2220ED850A602□□T	60	85	100	±10%	160	5.00	6000	1000
KRMV2220ED101A452□□T	75	100	120	±10%	200	4.50	4500	1000
KRMV3220ED180A202□□T	13	18	24	±15%	58	5.5	2000	21000
KRMV3220ED200A202□□T	14	20	27	±10%	65	5.5	2000	19500
KRMV3220ED240A202□□T	17	24	33	±10%	79	5.5	2000	18000
KRMV3220ED280A202□□T	20	28	39	±10%	94	5.5	2000	15000
KRMV3220ED300A202□□T	21	30	40	±10%	97	5.5	2000	12000
KRMV3220ED350A202□□T	25	35	47	±10%	113	5.5	2000	10500

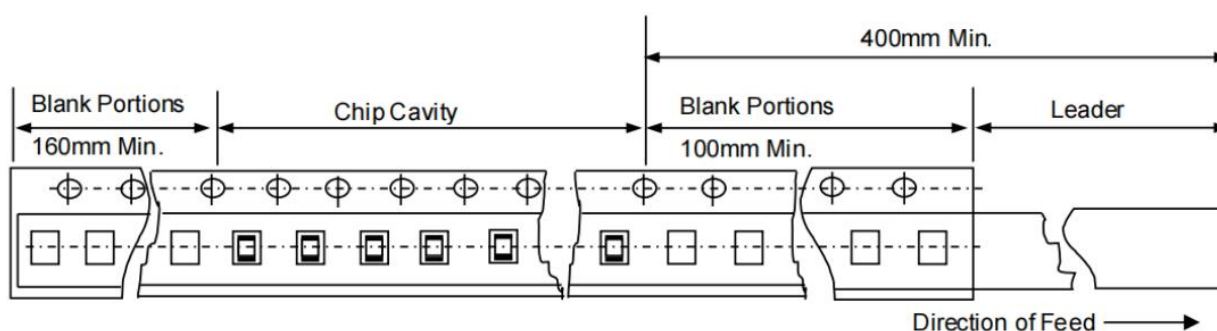
KRMV3220ED380A202□□T	27	38	52	±10%	125	5.5	2000	9000
KRMV3220ED420A202□□T	30	42	56	±10%	135	5.5	2000	8250
KRMV3220ED500A202□□T	35	50	68	±10%	165	5.5	2000	7500
KRMV3220ED560A202□□T	40	56	75	±10%	181	5.5	2000	7500
KRMV3220ED600A202□□T	42	60	82	±10%	198	5.5	2000	6750
KRMV3220ED680A202□□T	48	68	90	±10%	218	5.5	2000	6000
KRMV3220ED750A202□□T	53	75	100	±10%	242	5.5	2000	5700

Taping and Packing

Tape and reel packing according to IEC 60286-3.



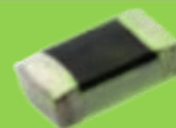
Size (EIA/JIS)	A	Quantity(Pcs)
		Tape & reel
0805/2012	178±2mm	4,000/3,000
1206/3216		3,000/2,000
1210/3225		3,000/1,500
1812/4532		3,000/1,000/500
2220/5650		1,000/500



Polymer ESD Suppressors — KESD - U series

For **ESD protection**

- **Ultra-low capacitance**



Features

- Excellent ESD clamping & Small Insertion Loss
- Operating temperature from -55 °C to 125°C
- High transient current capability, Fastest response time
- Capacitance is designed to ultra-low value, which can be efficiently suitable to high speed data line
- 100% Pb free, RoHS

Applications

- CMOS and MOSFET protection from ESD
- Computer ESD and I/O protection
- Telecommunication transient protection- USB2.0、3.0 port, IEEE-1394, RF module, Antenna circuit, high speed Protocol Etc.

Part Numbering

KESD	0603	U	D	5R0	C0R15	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨

①	Series
	GRACE Polymer ESD Suppressors

②	Chip size (EIA)
	0402
	0603

③	Series code
U	Ultra-low capacitance

④	Type of voltage
D	DC working voltage

⑤	Voltage values
5R0	5.0V
300	30V

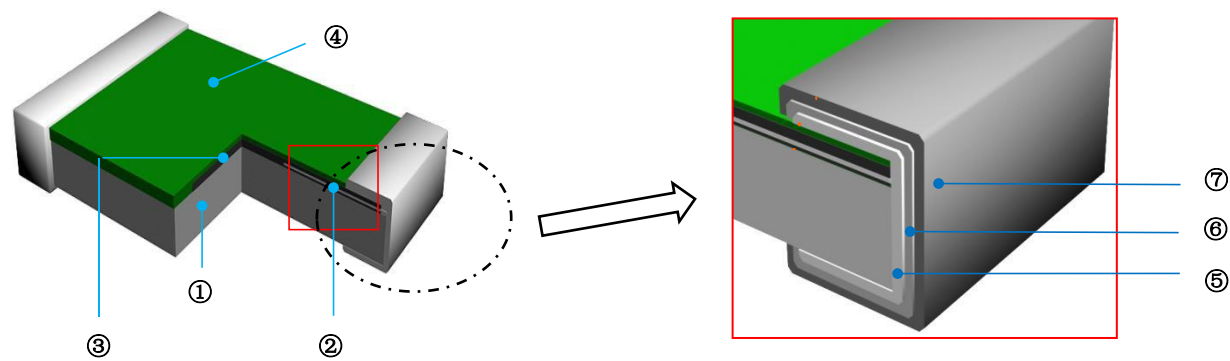
⑥	Typical Capacitance @1MHZ
C0R15	0.15 pF

⑦	internal code
	A

⑧	Customer identification code
	A001

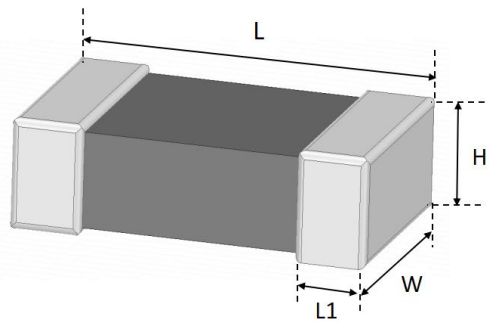
⑨	Packaging style
T	Tape
B	Bulk

Construction



No.	Name	
①	Alumina plate	
②	Internal electrode	
③	ESD absorbent	
④	Protective coating	
⑤	Terminal electrode	Ag
⑥		Ni
⑦		Sn

Dimensions



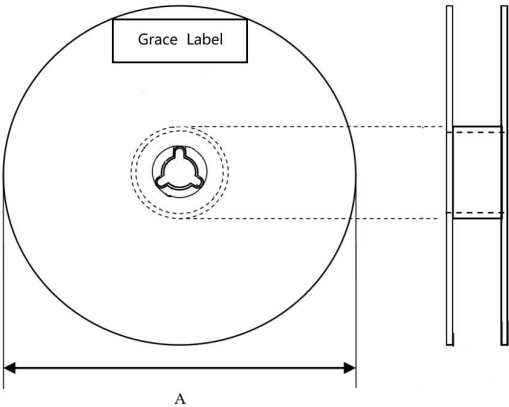
Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0402/1005	1.00±0.10	0.50±0.10	0.40±0.10	0.20±0.10
0603/1608	1.60±0.20	0.80±0.20	0.55±0.10	0.40±0.20

Electrical Characteristics

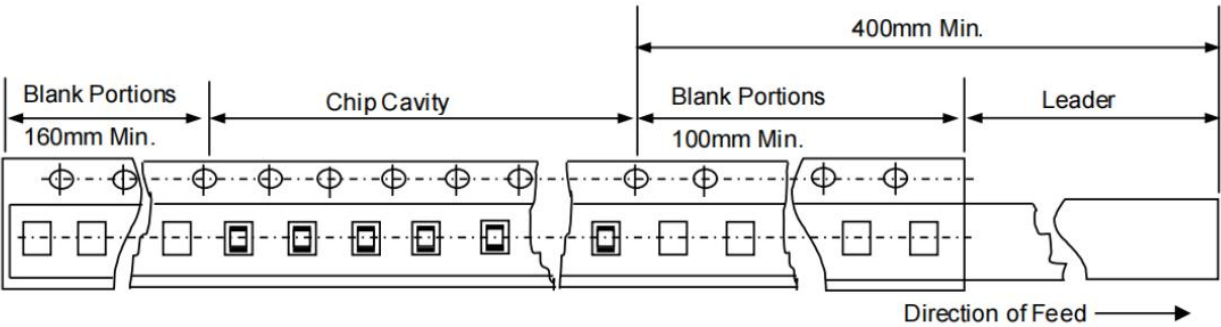
Part Number	Max.Working voltage	Trigger voltage	Clamping voltage	capacitance	Attenuation	ESD Capability
Test Condition	DC	ESD	ESD	@ 1MHz	@ 10GHz	Direct Discharge
Units	V _{DC}	V _T	V _c	C	dB	
Symbol	Volts	Volts	Volts	pF	IL	
KESD0402UD5R0C0R15□□T	5V	200V	86V	0.15pf	-0.3dB	8kV, contact
KESD0402UD120C0R15□□T	12V	300V	100V	0.15pf	-0.3dB	8kV, contact
KESD0603UD5R0C0R15□□T	5V	200V	86V	0.15pf	-0.3dB	8kV, contact
KESD0603UD300C0R15□□T	30V	300V	100V	0.15pf	-0.3dB	8kV, contact

Taping and Packing

Tape and reel packing according to IEC 60286-3.



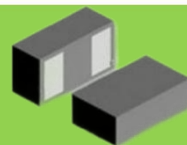
Size (EIA/JIS)	A	Quantity(Pcs)
		Tape & reel
0402/1005	178±2mm	10,000
0603/1608		5,000



Polymer ESD Suppressors — KESD - E series

For **ESD protection**

- **Extra-low capacitance**



Features

- Excellent ESD clamping & Small Insertion Loss
- Operating temperature from -55 °C to 125°C
- Very low leakage current, Fastest response time
- Capacitance is designed to Extra-low value, which can be efficiently suitable to high speed data line
- 100% Pb free, RoHS

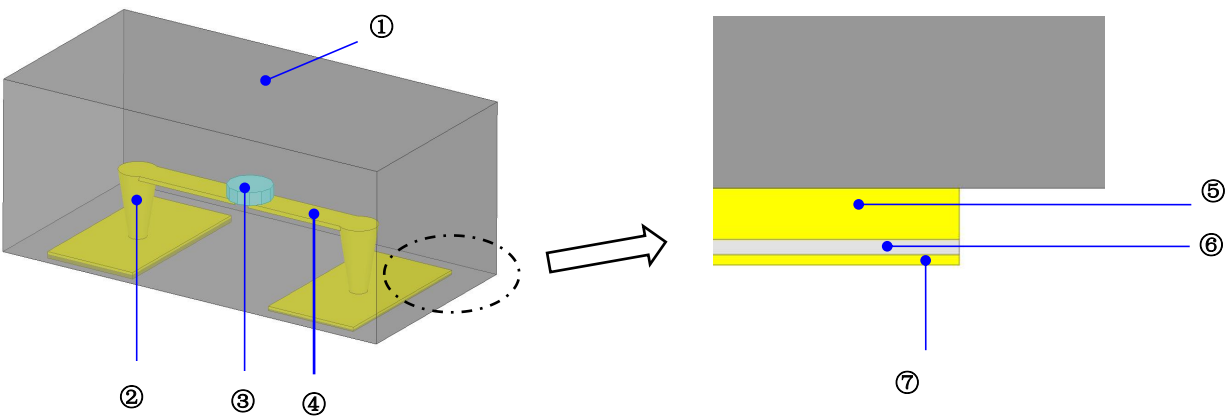
Applications

- CMOS and MOSFET protection from ESD
- Computer ESD and I/O protection
- Telecommunication transient protection- USB2.0、3.0 port, IEEE-1394, RF module, Antenna circuit, high speed Protocol Etc.

Part Numbering

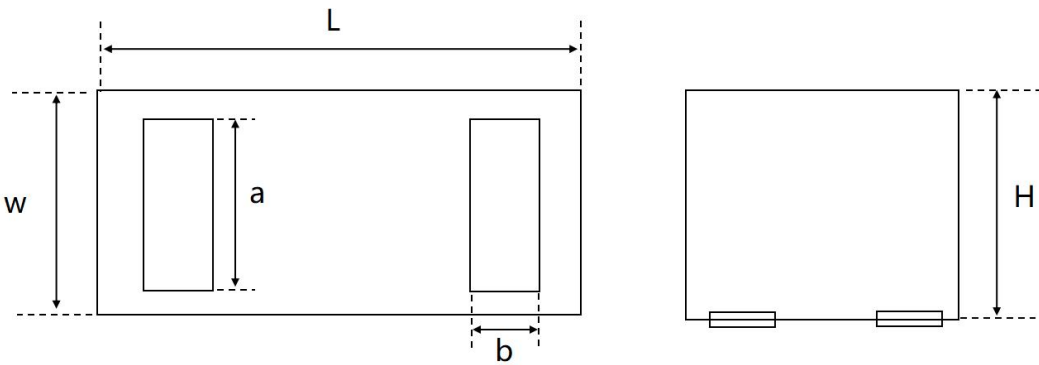
KESD	0603	E	D	5R0	C0R15	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨
①	Series	②	Chip size (EIA)	③	Series code	④	Type of voltage	
	GRACE Polymer ESD Suppressors		0201 0402 0603	E	Extra-low capacitance	D	DC working voltage	
⑤	Voltage values	⑥	Typical Capacitance @1MHZ	⑦	internal code	⑧	Customer identification code	
5R0	5.0V				A		A001	
300	30V	C0R15	0.15 pF					
⑨	Packaging style							
T	Tape							
B	Bulk							

Construction



No.	Name	
①	Epoxy resin composite	
②	Connecting electrode (Cu)	
③	ESD absorbent	
④	Internal electrode(Cu)	
⑤	Terminal electrode	Cu
⑥		Ni
⑦		Sn/Au

Dimensions



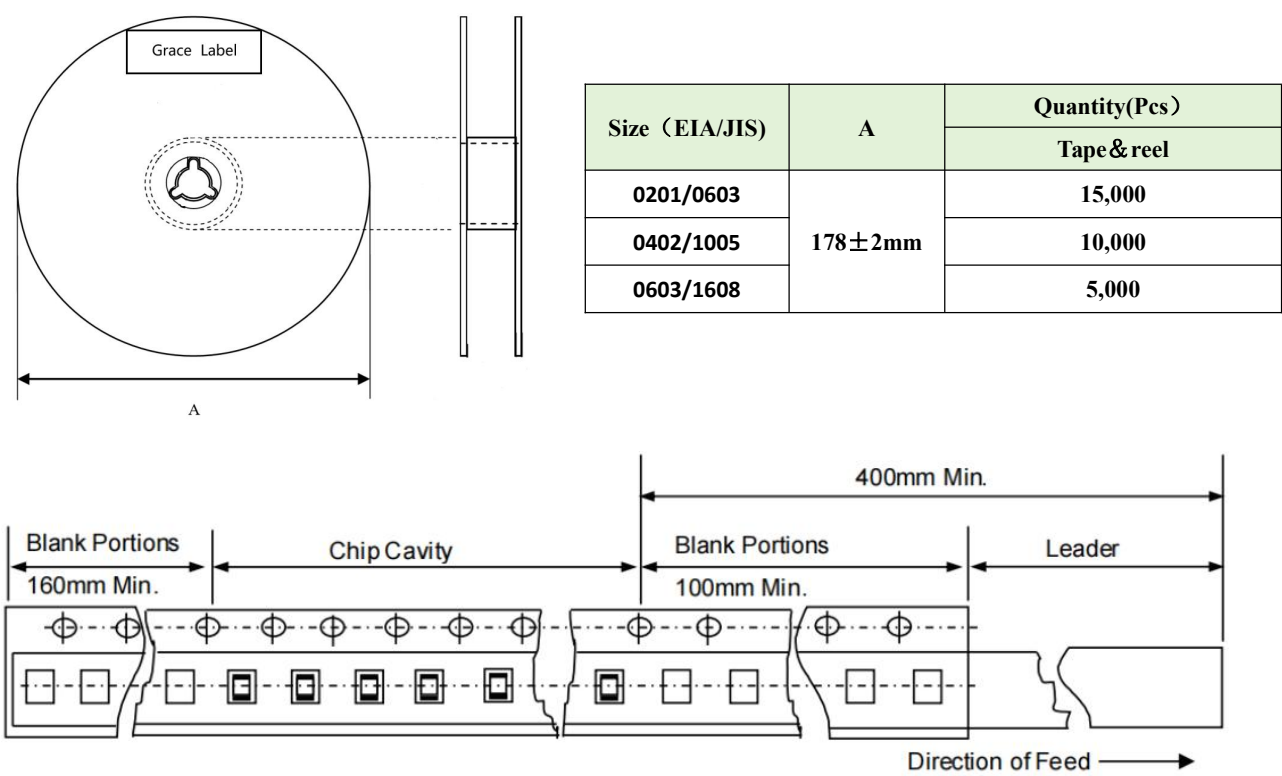
Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	a (mm)	b (mm)
0201/0603	0.60±0.10	0.30±0.05	0.30±0.05	0.27±0.05	0.2±0.05
0402/1005	1.10±0.10	0.55±0.10	0.35±0.10	0.45±0.05	0.3±0.05
0603/1608	1.60±0.15	0.80±0.15	0.50±0.10	0.75±0.05	0.5±0.05

Electrical Characteristics

Part Number	Max.Working voltage	Trigger voltage	Clamping voltage	capacitance	ESD Capability
Test Condition	DC	ESD	ESD	@ 1MHz	Direct Discharge
Units	V _{DC}	V _T	V _c	C	
Symbol	Volts	Volts	Volts	pF	
KESD0201ED5R0C0R05□□T	5V	350V	35V	0.05pf	8kV, contact
KESD0201ED120C0R05□□T	12V	350V	35V	0.05pf	8kV, contact
KESD0201ED300C0R05□□T	30V	350V	35V	0.05pf	8kV, contact
KESD0402ED5R0C0R05□□T	5V	350V	35V	0.05pf	8kV, contact
KESD0402ED120C0R05□□T	12V	350V	35V	0.05pf	8kV, contact
KESD0402ED300C0R05□□T	30V	350V	35V	0.05pf	8kV, contact
KESD0603ED5R0C0R05□□T	5V	350V	35V	0.05pf	8kV, contact
KESD0603ED120C0R05□□T	12V	350V	35V	0.05pf	8kV, contact
KESD0603ED300C0R05□□T	30V	350V	35V	0.05pf	8kV, contact

Taping and Packing

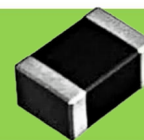
Tape and reel packing according to IEC 60286-3.



Multilayer Chip Ferrite Beads —KRFB-G series

For **Signal lines**

- **General Use**



Features

- Multilayer Chip Ferrite Beads with nickel barrier termination (AgNiSn)
- Operating temperature from -55 °C to 125°C
- Suitable reflow and wave soldering
- 100% Pb free, RoHS

Applications

- 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 Numbering

KRFB	0402	G	102	A	R10	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨

①	Product Code
	GRACE Multilayer Chip Ferrite Beads

②	Dimensions (EIA)
	0201、0402、0603、0805、 1206

③	Series Code
G	General Use

④	Nominal Impedance (Ω)
300	30
101	100
102	1000

⑤	Material Code
	A、B、C、D

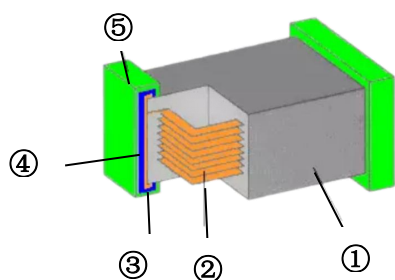
⑥	Rated Current (A)
R05	0.05
R10	0.10
1R5	1.5

⑦	internal code
	A

⑧	Customer identification code
	A001

⑨	Packaging style
T	Tape
B	Bulk

Construction



No.	Name	
①	Body	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

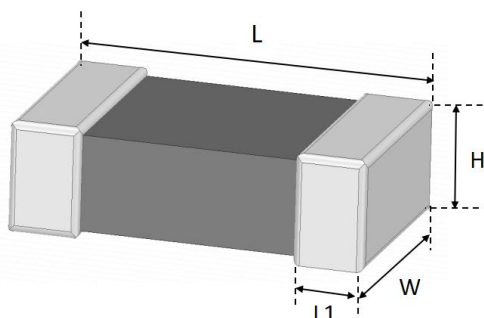
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Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0201/0603	0.60 ± 0.05	0.30 ± 0.05	0.30 ± 0.05	0.15 ± 0.05
0402/1005	1.00 ± 0.15	0.50 ± 0.15	0.50 ± 0.15	0.25 ± 0.10
0603/1608	1.60 ± 0.15	0.80 ± 0.15	0.80 ± 0.15	0.30 ± 0.20
0805/2012	2.00 ± 0.20	1.20 ± 0.20	0.85 ± 0.20	0.50 ± 0.30
1206/3216	3.20 ± 0.20	1.60 ± 0.20	1.20 ± 0.20	0.50 ± 0.30

Electrical Characteristics

0201 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHz)	RDC (Ω) max	Rated current (mA) Max
KRFB0201G600AR20□□T	60	$\pm 25\%$	100	0.40	200
KRFB0201G750AR20□□T	75	$\pm 25\%$	100	0.40	200
KRFB0201G800AR20□□T	80	$\pm 25\%$	100	0.60	200
KRFB0201G121AR20□□T	120	$\pm 25\%$	100	0.80	200
KRFB0201G241AR20□□T	240	$\pm 25\%$	100	1.00	200
KRFB0201G471AR20□□T	470	$\pm 25\%$	100	1.40	200
KRFB0201G601AR20□□T	600	$\pm 25\%$	100	1.70	200
KRFB0201G102AR10□□T	1000	$\pm 25\%$	100	2.50	100
KRFB0201G100CR50□□T	10	$\pm 5\%$	100	0.10	500
KRFB0201G700CR20□□T	70	$\pm 25\%$	100	0.40	200
KRFB0201G800CR20□□T	80	$\pm 25\%$	100	0.40	200
KRFB0201G121CR20□□T	120	$\pm 25\%$	100	0.50	200
KRFB0201G241CR20□□T	240	$\pm 25\%$	100	0.80	200
KRFB0201G601CR10□□T	600	$\pm 25\%$	100	1.50	100
KRFB0201G102CR10□□T	1000	$\pm 25\%$	100	2.50	100

0402 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHz)	RDC (Ω) max	Rated current (mA) Max
KRFB0402G100AR50□□T	10	$\pm 5\%$	100	0.05	500
KRFB0402G310AR30□□T	31	$\pm 25\%$	100	0.20	300
KRFB0402G600AR20□□T	60	$\pm 25\%$	100	0.30	200
KRFB0402G800AR20□□T	80	$\pm 25\%$	100	0.35	200
KRFB0402G121AR20□□T	120	$\pm 25\%$	100	0.40	200

KRFB0402G221AR15□□T	220	±25%	100	0.45	150
KRFB0402G301AR10□□T	300	±25%	100	0.50	100
KRFB0402G421AR10□□T	420	±25%	100	0.60	100
KRFB0402G501AR10□□T	500	±25%	100	0.80	100
KRFB0402G601AR10□□T	600	±25%	100	0.90	100
KRFB0402G751AR10□□T	750	±25%	100	1.00	100
KRFB0402G102AR10□□T	1000	±25%	100	1.20	100
KRFB0402G152AR10□□T	1500	±25%	100	1.60	100
KRFB0402G182AR05□□T	1800	±25%	100	2.00	50
KRFB0402G800BR20□□T	80	±25%	100	0.35	200
KRFB0402G121BR20□□T	120	±25%	100	0.40	200
KRFB0402G241BR20□□T	240	±25%	100	0.50	200
KRFB0402G601BR20□□T	600	±25%	100	0.90	100
KRFB0402G100CR50□□T	10	-10Ω $+5$	100	0.05	500
KRFB0402G300CR30□□T	30	±25%	100	0.20	300
KRFB0402G700CR20□□T	70	±25%	100	0.30	200
KRFB0402G121CR20□□T	120	±25%	100	0.40	200
KRFB0402G221CR10□□T	220	±25%	100	0.50	100
KRFB0402G301CR10□□T	300	±25%	100	0.60	100
KRFB0402G421CR10□□T	420	±25%	100	0.80	100
KRFB0402G601CR10□□T	600	±25%	100	0.90	100
KRFB0402G102CR10□□T	1000	±25%	100	1.20	100

0603 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (Ω) max	Rated current (mA) Max
KRFB0603G100A2R0□□T	10	-10Ω $+5$	100	0.05	2000
KRFB0603G300A2R0□□T	30	±25%	100	0.05	2000
KRFB0603G600AR50□□T	60	±25%	100	0.10	500
KRFB0603G800AR40□□T	80	±25%	100	0.15	400
KRFB0603G101AR30□□T	100	±25%	100	0.20	300
KRFB0603G121AR30□□T	120	±25%	100	0.20	300
KRFB0603G221AR30□□T	220	±25%	100	0.30	300
KRFB0603G301AR20□□T	300	±25%	100	0.35	200
KRFB0603G471AR20□□T	470	±25%	100	0.45	200
KRFB0603G601AR20□□T	600	±25%	100	0.45	200
KRFB0603G751AR20□□T	750	±25%	100	0.50	200
KRFB0603G102AR20□□T	1000	±25%	100	0.60	200

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KRFB0603G152AR15□□T	1500	±25%	100	0.70	150
KRFB0603G182AR10□□T	1800	±25%	100	0.90	100
KRFB0603G202AR10□□T	2000	±25%	100	1.20	100
KRFB0603G222AR10□□T	2200	±25%	100	1.20	100
KRFB0603G252AR10□□T	2500	±25%	100	1.20	100
KRFB0603G121BR30□□T	120	±25%	100	0.20	300
KRFB0603G181BR30□□T	180	±25%	100	0.30	300
KRFB0603G601BR30□□T	600	±25%	100	0.45	200
KRFB0603G102BR30□□T	1000	±25%	100	0.60	200
KRFB0603G100C2R0□□T	10	±5 Ω	100	0.05	2000
KRFB0603G300C2R0□□T	30	±25%	100	0.05	2000
KRFB0603G600CR50□□T	60	±25%	100	0.10	500
KRFB0603G121CR30□□T	120	±25%	100	0.20	300
KRFB0603G221CR30□□T	220	±25%	100	0.30	300
KRFB0603G301CR20□□T	300	±25%	100	0.35	200
KRFB0603G471CR20□□T	470	±25%	100	0.40	200
KRFB0603G601CR20□□T	600	±25%	100	0.50	200
KRFB0603G102CR20□□T	1000	±25%	100	0.60	200

0805 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (Ω) max	Rated current (mA) Max
KRFB0805G070A2R0□□T	7	-7 +8 Ω	100	0.04	2000
KRFB0805G190A2R0□□T	19	±25%	100	0.04	2000
KRFB0805G300A1R5□□T	30	±25%	100	0.05	1500
KRFB0805G800A1R0□□T	80	±25%	100	0.10	1000
KRFB0805G121AR80□□T	120	±25%	100	0.15	800
KRFB0805G181AR70□□T	180	±25%	100	0.18	700
KRFB0805G221AR60□□T	220	±25%	100	0.20	600
KRFB0805G301AR50□□T	300	±25%	100	0.20	500
KRFB0805G421AR50□□T	420	±25%	100	0.30	500
KRFB0805G501AR50□□T	500	±25%	100	0.30	500
KRFB0805G601AR50□□T	600	±25%	100	0.30	500
KRFB0805G751AR50□□T	750	±25%	100	0.35	500
KRFB0805G102AR50□□T	1000	±25%	100	0.35	500
KRFB0805G152AR50□□T	1500	±25%	100	0.40	500
KRFB0805G202AR50□□T	2000	±25%	100	0.50	500
KRFB0805G252AR20□□T	2500	±25%	100	0.70	200

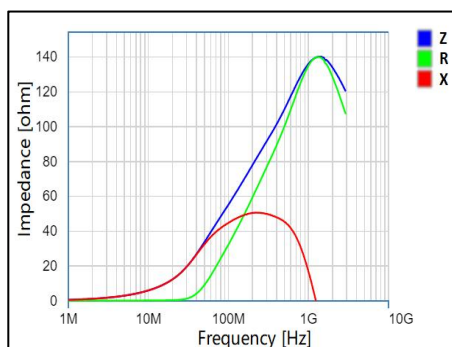
KRFB0805G800B1R0□□T	80	±25%	100	0.10	1000
KRFB0805G181BR60□□T	180	±25%	100	0.20	600
KRFB0805G301BR50□□T	300	±25%	100	0.20	500
KRFB0805G501BR50□□T	500	±25%	100	0.30	500
KRFB0805G601BR50□□T	600	±25%	100	0.30	500
KRFB0805G102BR50□□T	1000	±25%	100	0.35	500
KRFB0805G100C2R2□□T	10	±5 Ω	100	0.04	2200
KRFB0805G170C2R0□□T	17	±25%	100	0.04	2000
KRFB0805G300C1R5□□T	30	±25%	100	0.05	1500
KRFB0805G700C1R0□□T	70	±25%	100	0.10	1000
KRFB0805G121CR80□□T	120	±25%	100	0.15	800
KRFB0805G221CR60□□T	220	±25%	100	0.20	600
KRFB0805G301CR50□□T	300	±25%	100	0.20	500
KRFB0805G421CR50□□T	420	±25%	100	0.25	500
KRFB0805G601CR50□□T	600	±25%	100	0.30	500
KRFB0805G102CR50□□T	1000	±25%	100	0.40	500

1206 Type

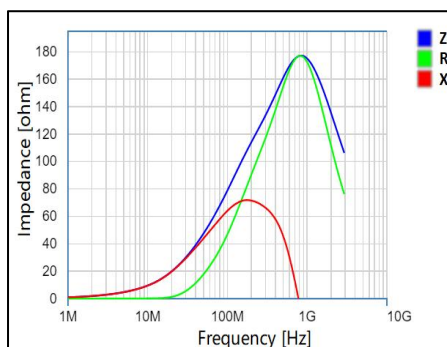
Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (Ω) max	Rated current (mA) Max
KRFB1206G000A2R2□□T	0	+15 Ω	100	0.03	2200
KRFB1206G310A2R0□□T	31	±25%	100	0.05	2000
KRFB1206G600A1R0□□T	60	±25%	100	0.10	1000
KRFB1206G301AR60□□T	300	±25%	100	0.20	600

Typical Characteristic Curve

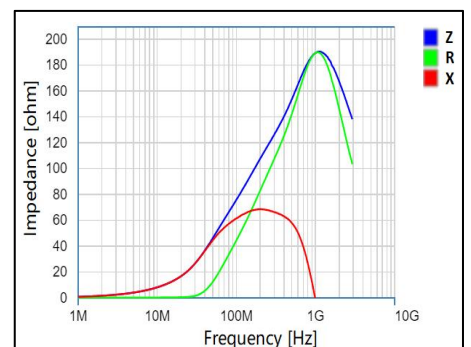
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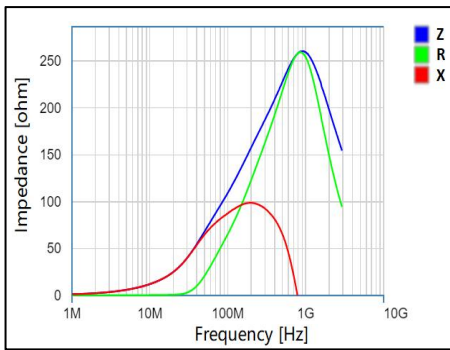
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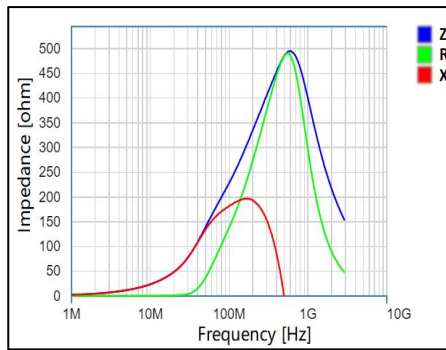
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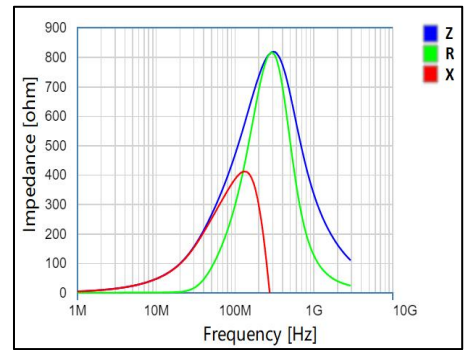
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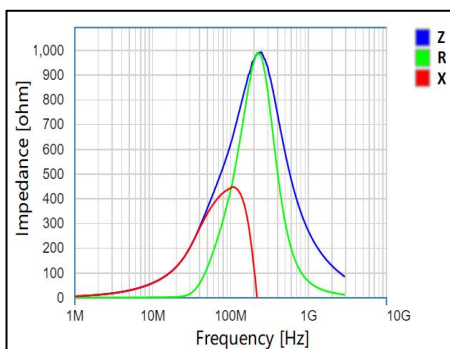
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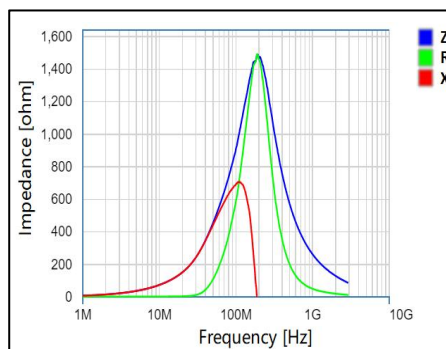
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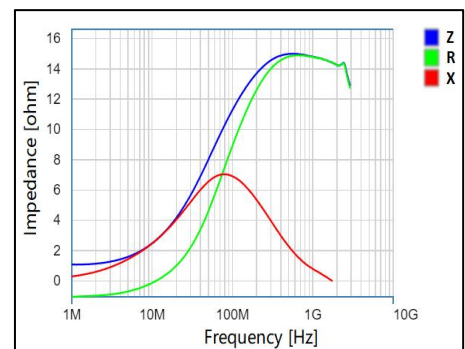
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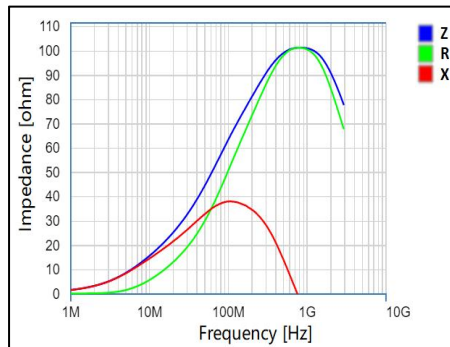
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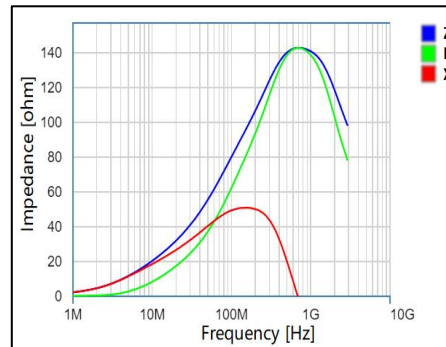
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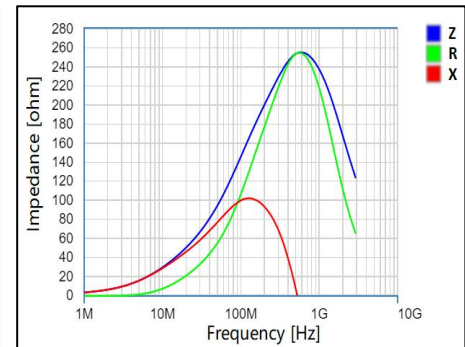
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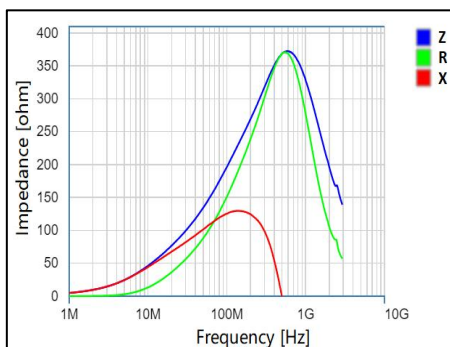
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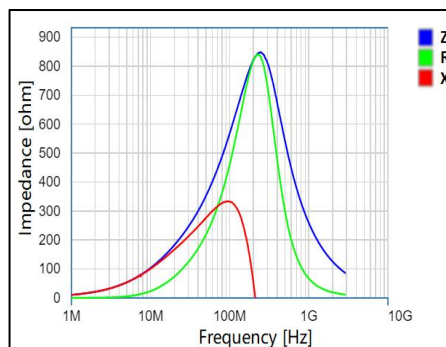
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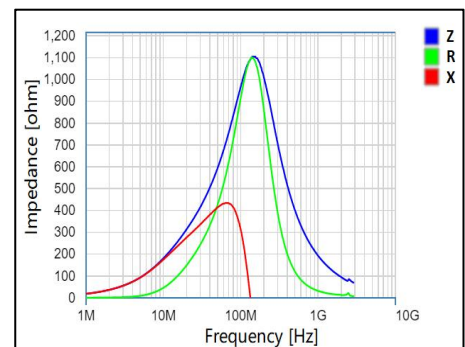
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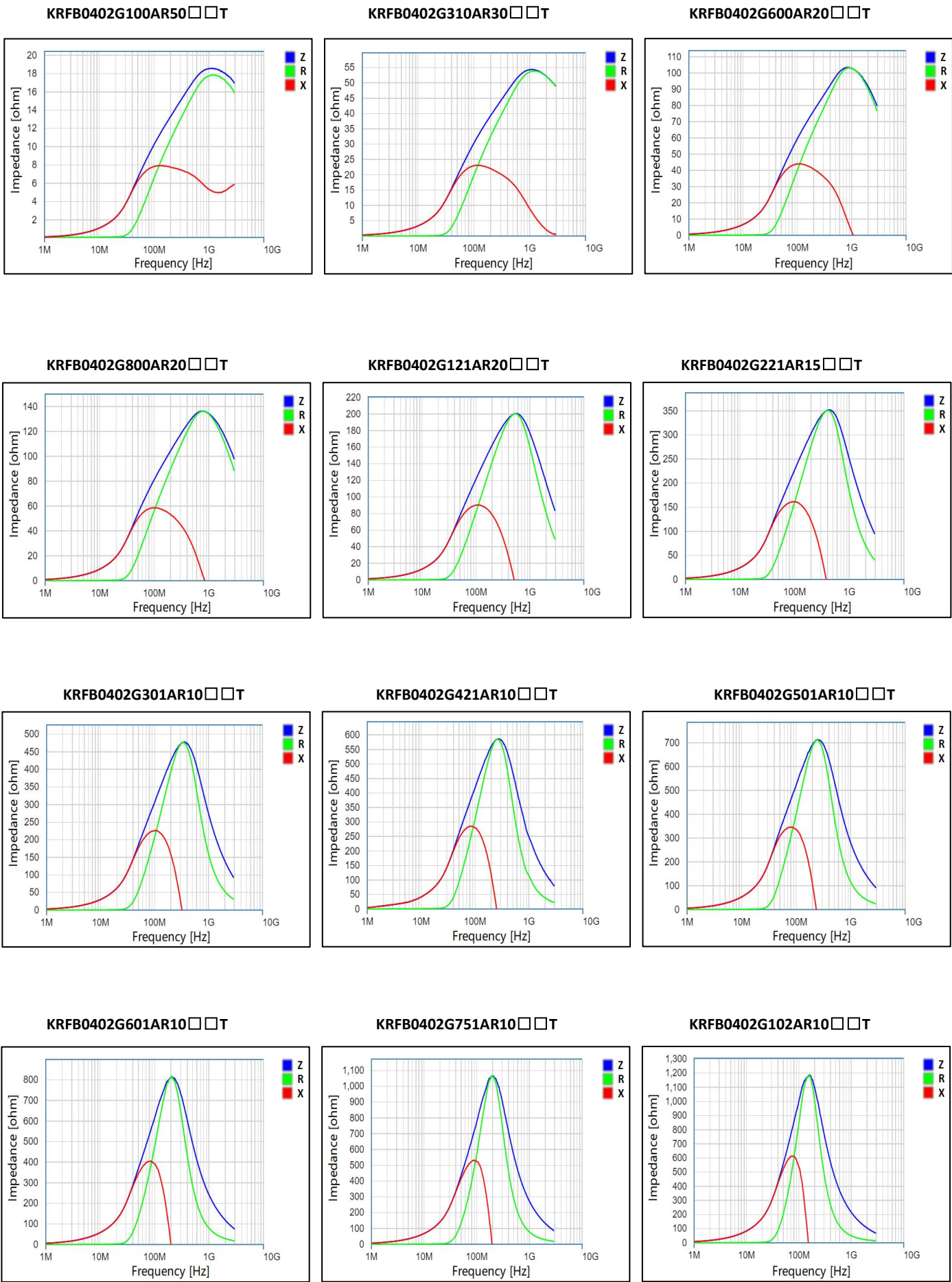


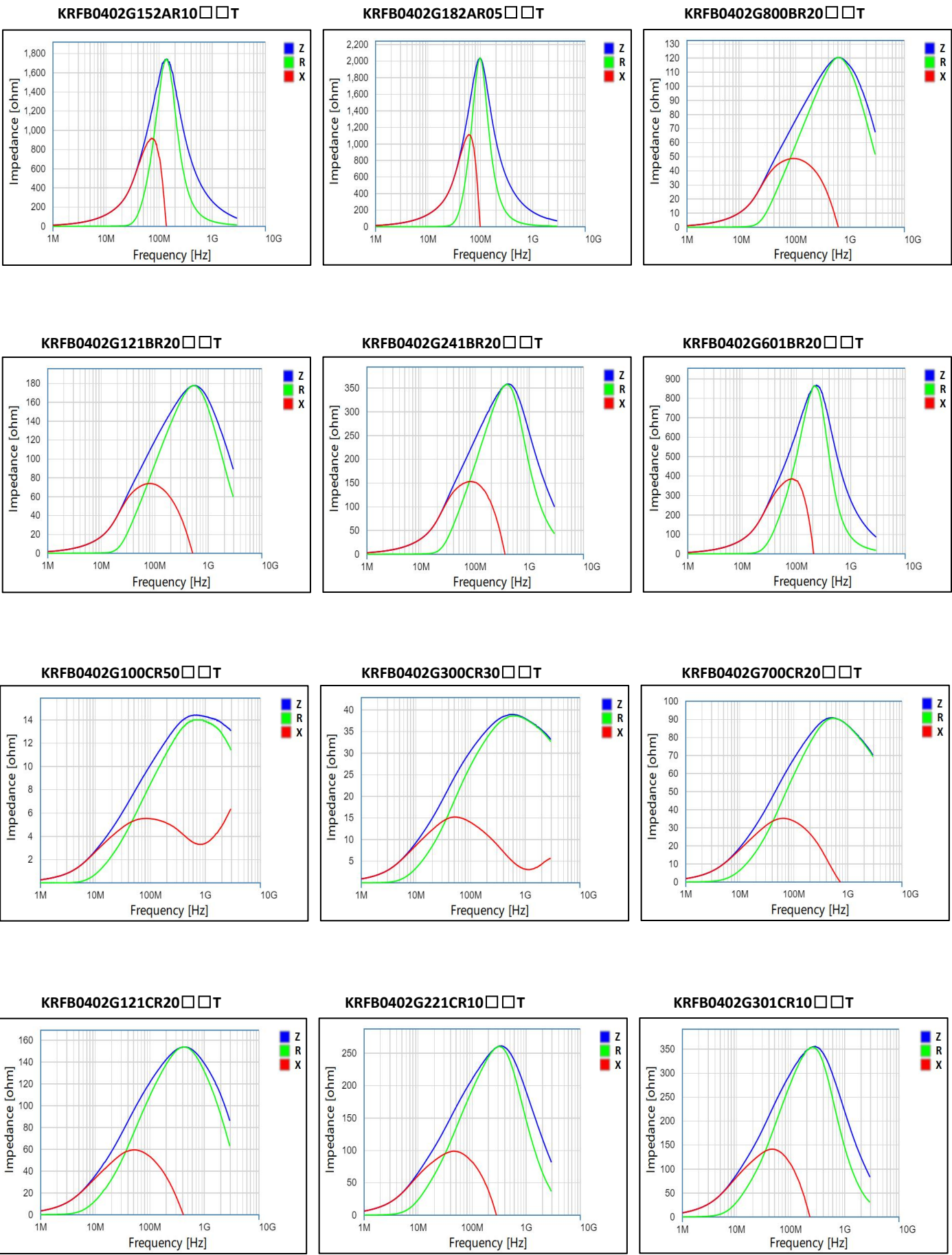
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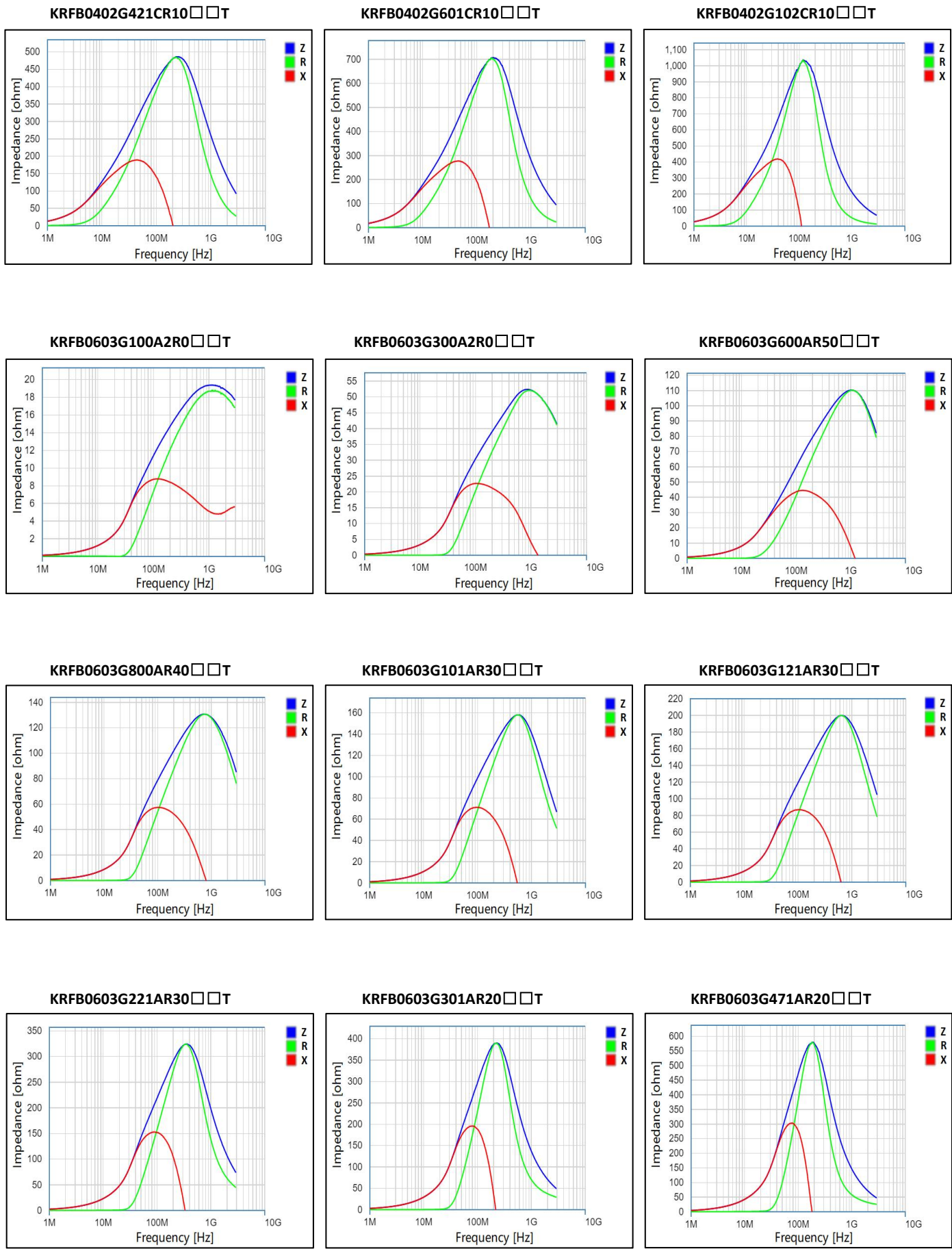


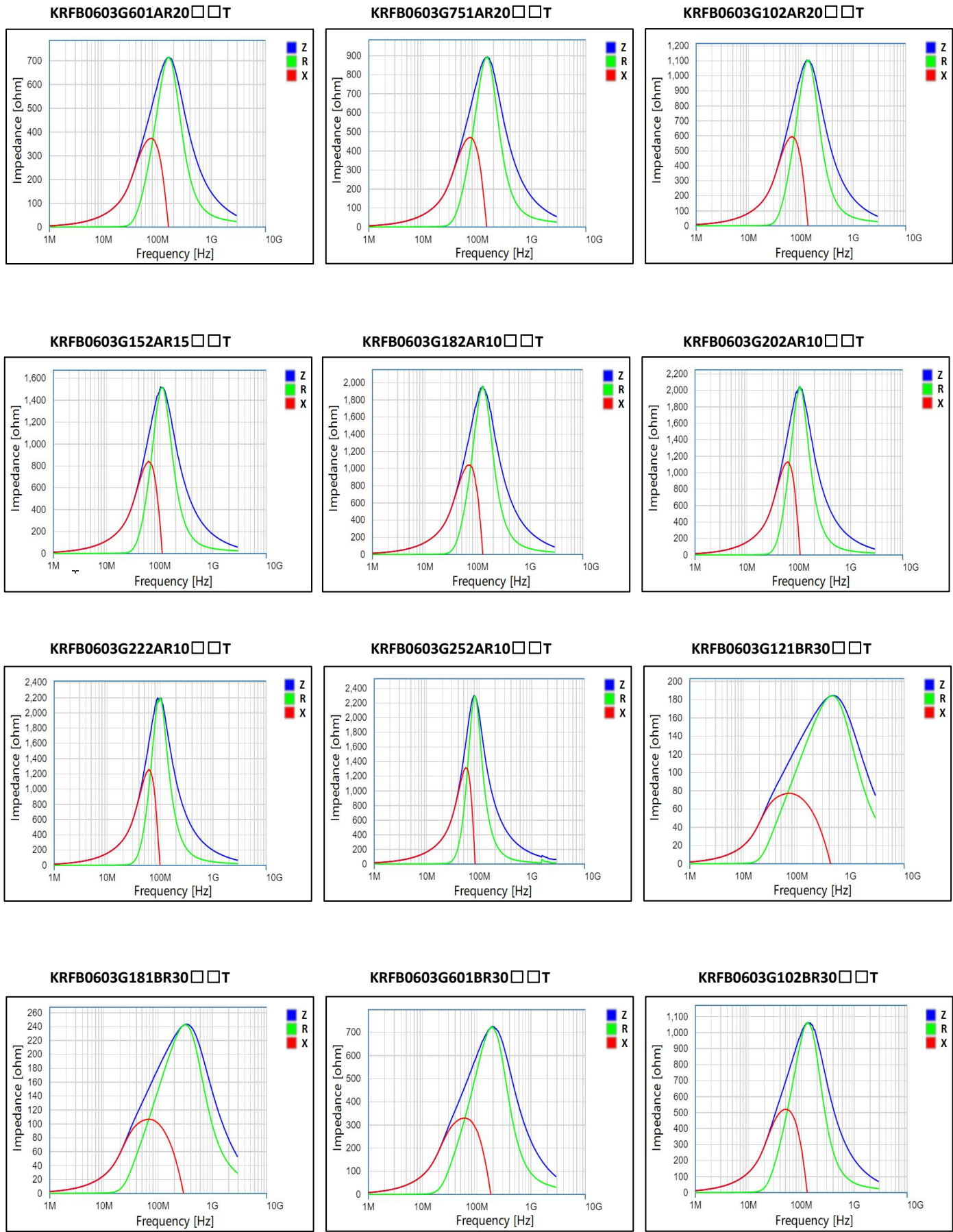
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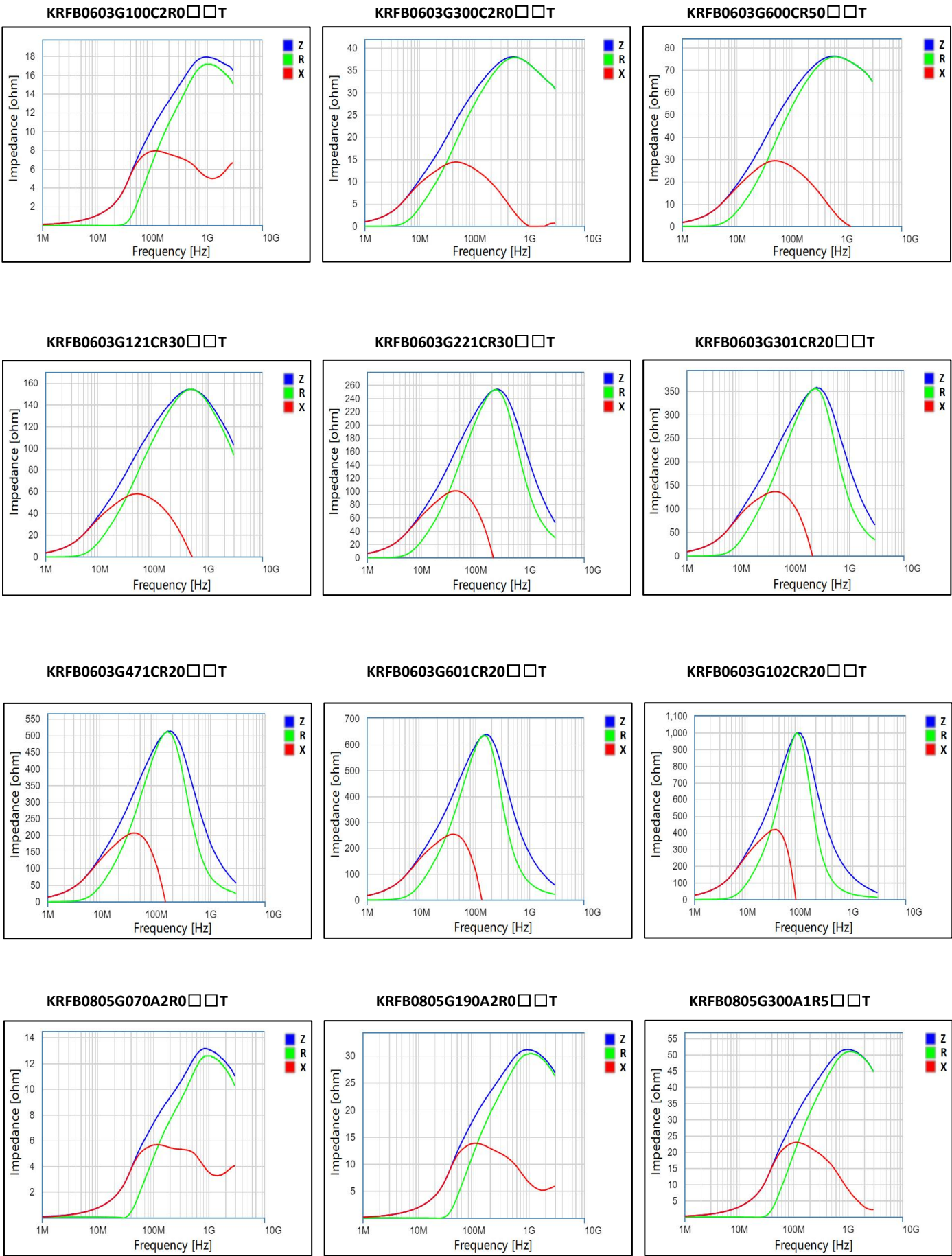


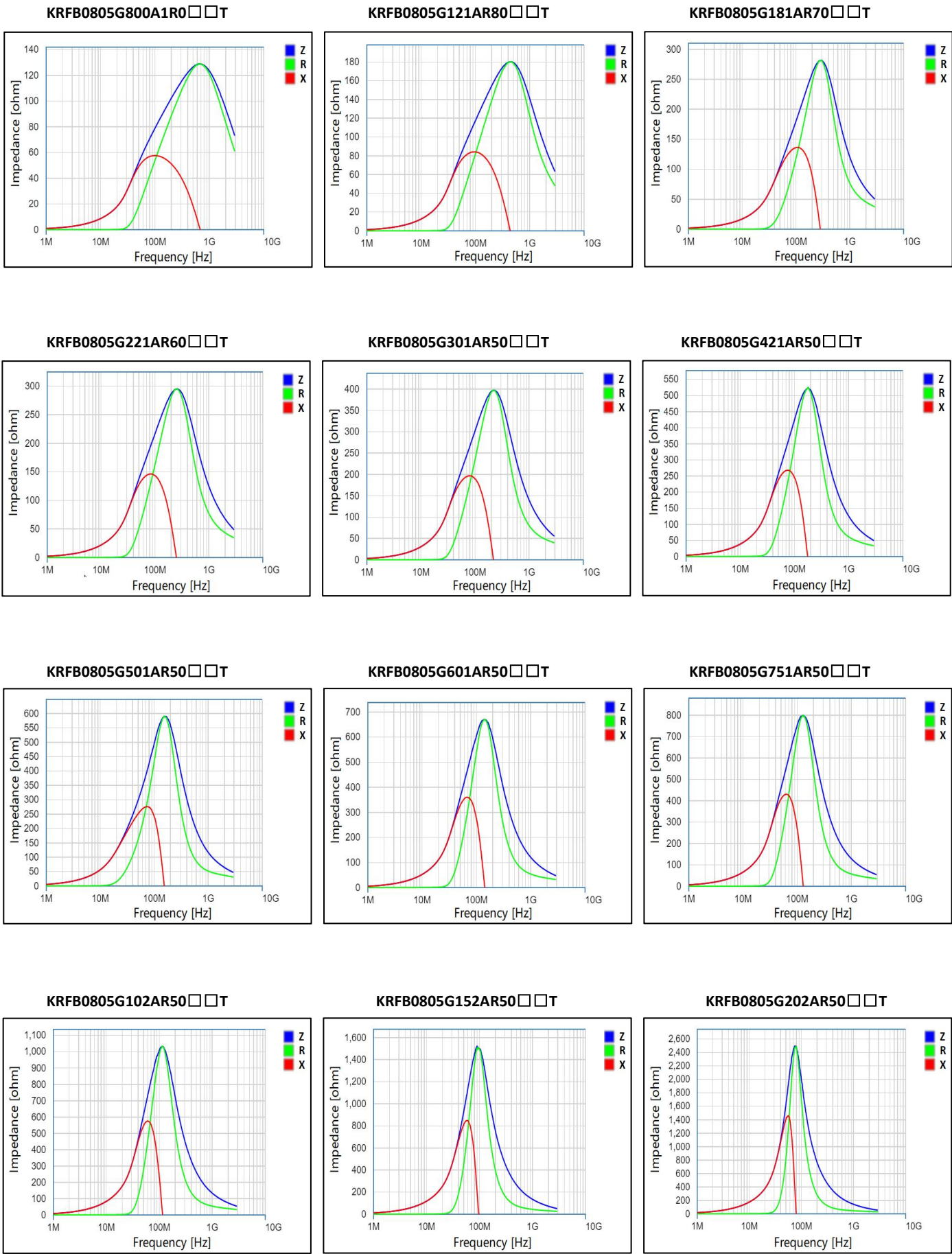




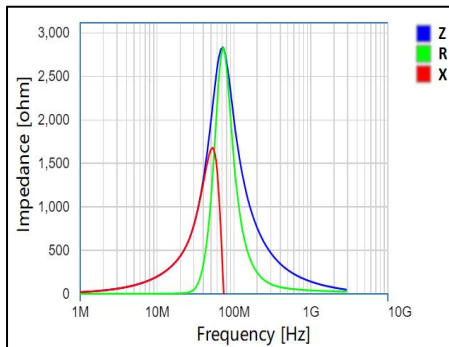




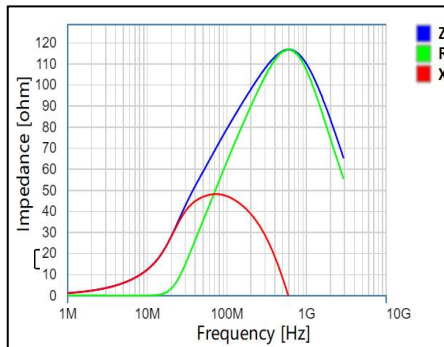




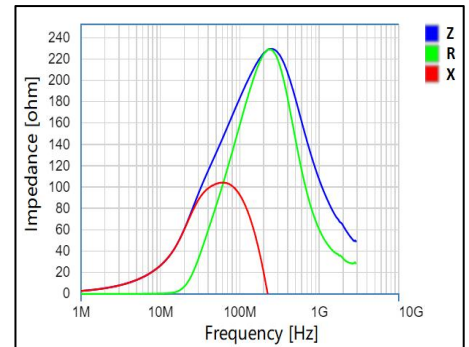
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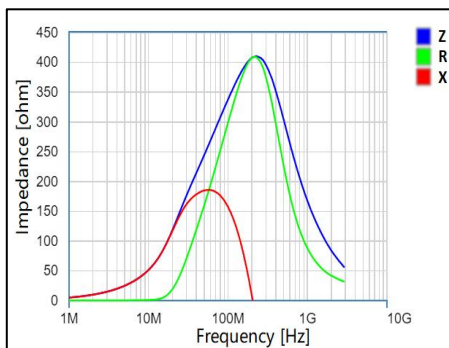
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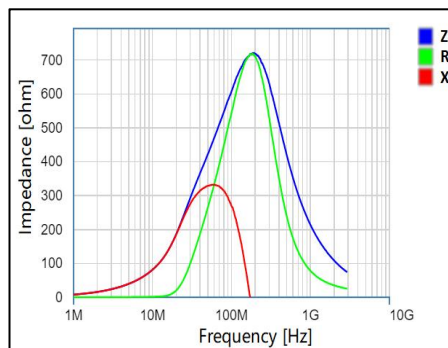
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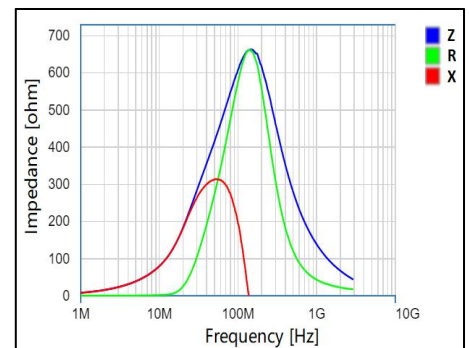
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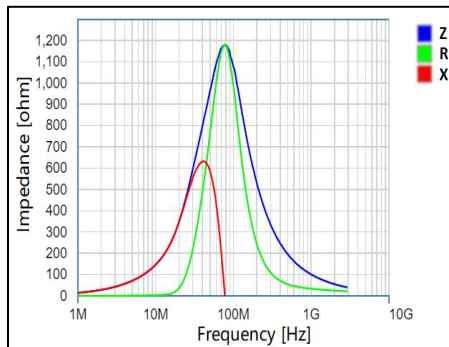
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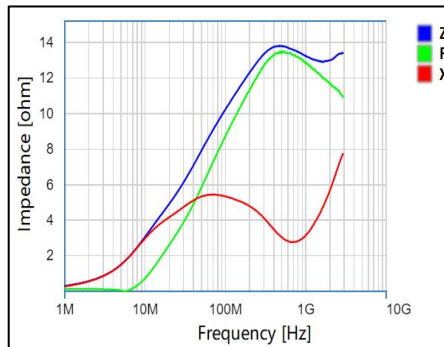
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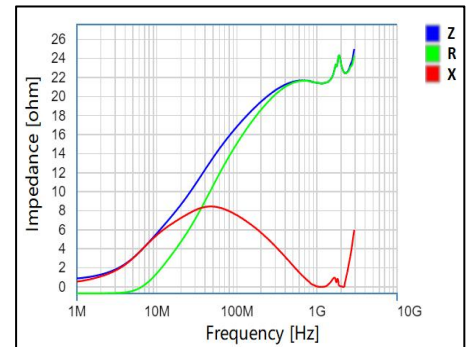
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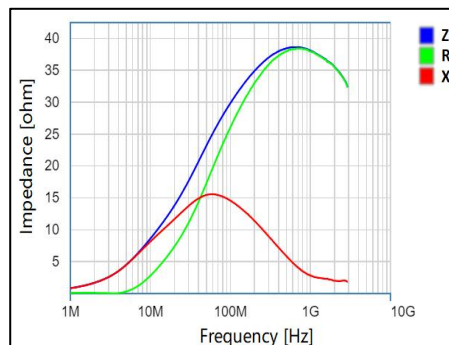
KRFB0805G100C2R2□□T



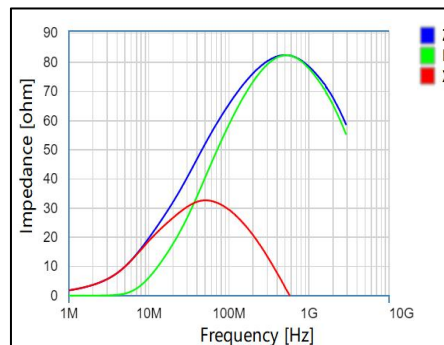
KRFB0805G170C2R0□□T



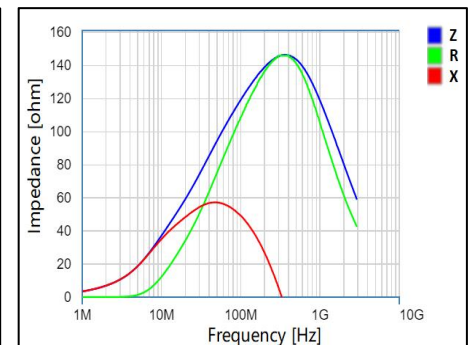
KRFB0805G300C1R5□□T

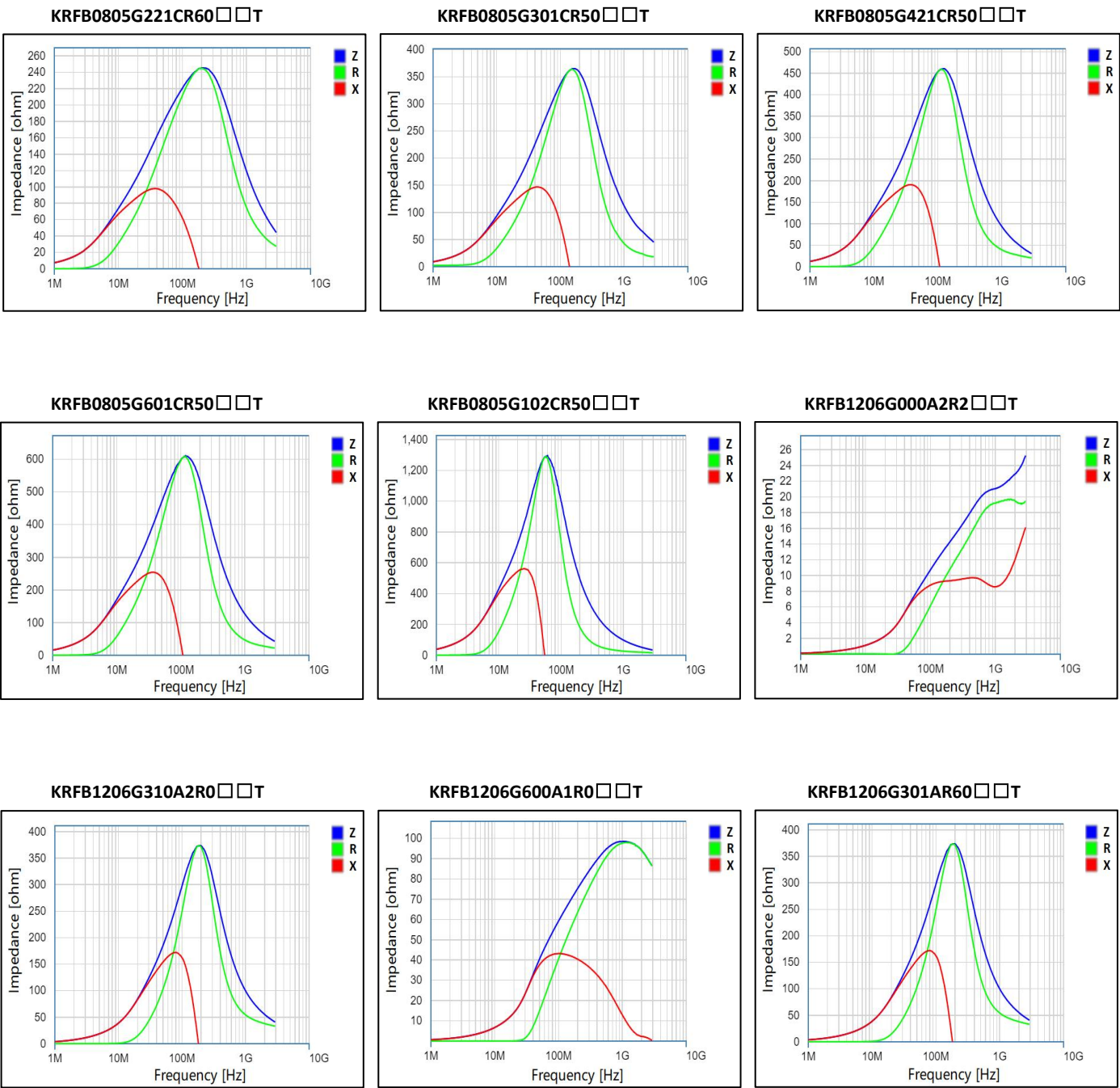


KRFB0805G700C1R0□□T



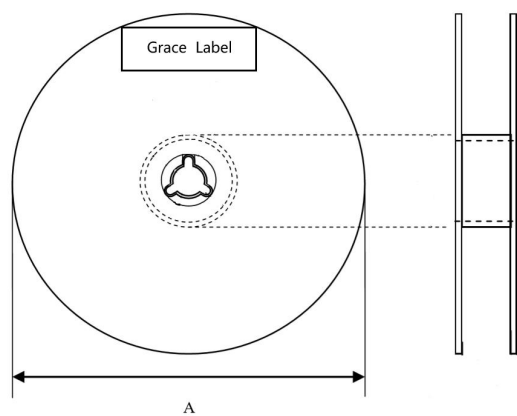
KRFB0805G121CR80□□T



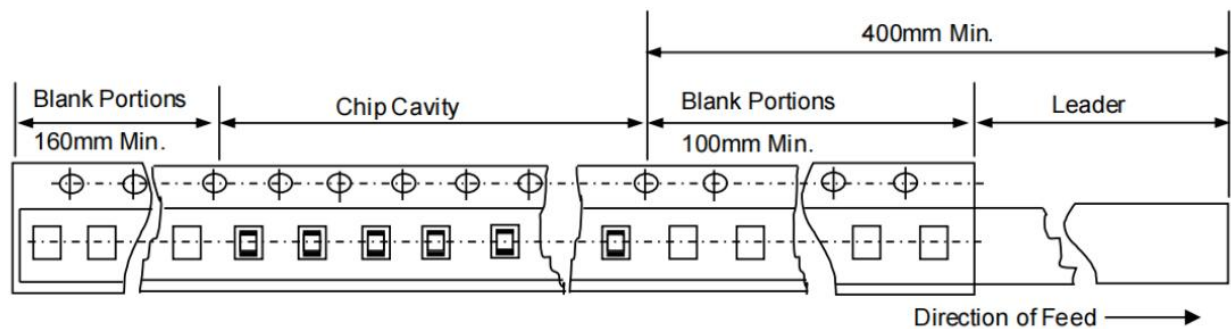


Taping and Packing

Tape and reel packing according to IEC 60286-3.



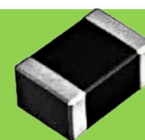
Size (EIA/JIS)	A	Quantity(Pcs)
		Tape & reel
0201/0603	178±2mm	15,000
0402/1005		10,000
0603/1608		4,000
0805/2012		4,000
1206/3216		3,000



Multilayer Chip Ferrite Audio Beads —KRFB-S series

For **Signal lines**

- **High speed**



Features

- Various frequency characteristics with 4 materials of different features for countermeasures against everything from general signals to high-speed signals.
- Multilayer Chip Ferrite Beads with nickel barrier termination (AgNiSn) .
- Operating temperature from -55 °C to 125°C .
- 100% Pb free, RoHS .

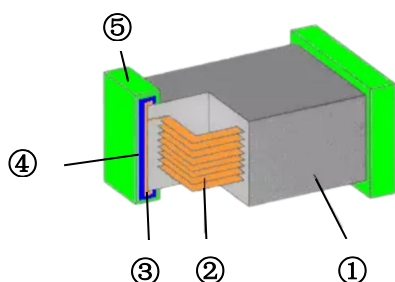
Applications

- 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 Numbering

KRFB	0402	S	100	D	R30	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨
①	Product Code	②	Dimensions (L×W) (mm)	③	Series Code	④	Nominal Impedance (Ω)	
	GRACE Multilayer Chip Ferrite Beads		0201、0402、0603、0805	S	High speed	100	10	
						121	120	
⑤	Material Code	⑥	Rated Current (A)	⑦	internal code	⑧	Customer identification code	
	D、E、F	R30	0.3		A		A001	
		1R0	1.0					
⑨	Packaging style							
T	Tape							
B	Bulk							

Construction



No.	Name	
①	Body	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

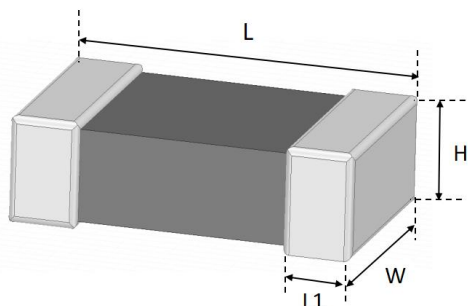
Design and specifications are each subject to change without notice.

Ask factory for the current technical specifications before purchase and/or use.

Please contact our sales representatives or product engineer when you didn't find the suitable product in this catalogue.

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Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0201/0603	0.60 ± 0.05	0.30 ± 0.05	0.30 ± 0.05	0.15 ± 0.05
0402/1005	1.00 ± 0.15	0.50 ± 0.15	0.50 ± 0.15	0.25 ± 0.10
0603/1608	1.60 ± 0.15	0.80 ± 0.15	0.80 ± 0.15	0.30 ± 0.20
0805/2012	2.00 ± 0.20	1.20 ± 0.20	0.85 ± 0.20	0.50 ± 0.30

Electrical Characteristics

0201 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB0201S330DR15□□T	33	$\pm 25\%$	100	0.85	150
KRFB0201S560DR10□□T	56	$\pm 25\%$	100	1.05	100
KRFB0201S800DR10□□T	80	$\pm 25\%$	100	1.40	100
KRFB0201S100ER20□□T	10	$\pm 25\%$	100	0.25	200
KRFB0201S220ER20□□T	22	$\pm 25\%$	100	0.45	200
KRFB0201S330ER15□□T	33	$\pm 25\%$	100	0.55	150
KRFB0201S470ER15□□T	47	$\pm 25\%$	100	0.70	150
KRFB0201S560ER10□□T	56	$\pm 25\%$	100	1.00	100
KRFB0201S800ER10□□T	80	$\pm 25\%$	100	1.30	100
KRFB0201S121ER10□□T	120	$\pm 25\%$	100	1.50	100
KRFB0201S100FR30□□T	10	$\pm 5 \Omega$	100	0.40	300
KRFB0201S220FR20□□T	22	$\pm 25\%$	100	0.50	200
KRFB0201S470FR20□□T	47	$\pm 25\%$	100	0.70	200
KRFB0201S750FR20□□T	75	$\pm 25\%$	100	1.00	200
KRFB0201S121FR10□□T	120	$\pm 25\%$	100	1.50	100

0402 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB0402S050DR30□□T	5	$\pm 5 \Omega$	100	0.10	300
KRFB0402S100DR30□□T	10	$\pm 5 \Omega$	100	0.20	300
KRFB0402S330DR30□□T	33	$\pm 25\%$	100	0.40	300
KRFB0402S050ER60□□T	5	-5 $+10 \Omega$	100	0.15	600

KRFB0402S300ER60□□T	30	±25%	100	0.15	600
KRFB0402S750ER60□□T	75	±25%	100	0.30	600
KRFB0402S121ER40□□T	120	±25%	100	0.40	400
KRFB0402S221ER20□□T	220	±25%	100	0.70	200
KRFB0402S750FR60□□T	75	±25%	100	0.30	600
KRFB0402S121FR40□□T	120	±25%	100	0.40	400
KRFB0402S221FR20□□T	220	±25%	100	0.70	200
KRFB0402S301FR20□□T	300	±25%	100	0.80	200
KRFB0402S421FR15□□T	420	±25%	100	1.00	150
KRFB0402S601FR10□□T	600	±25%	100	1.10	100
KRFB0402S102FR10□□T	1000	±25%	100	1.20	100
KRFB0402S152FR10□□T	1500	±25%	100	1.40	100
KRFB0402S182FR05□□T	1800	±25%	100	1.80	50

0603 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB0603S050DR50□□T	5	±5 Ω	100	0.20	500
KRFB0603S100DR50□□T	10	±5 Ω	100	0.25	500
KRFB0603S220DR50□□T	22	±25%	100	0.35	500
KRFB0603S470DR30□□T	47	±25%	100	0.55	300
KRFB0603S750DR30□□T	75	±25%	100	0.70	300
KRFB0603S121DR20□□T	120	±25%	100	0.90	200
KRFB0603S050ER80□□T	5	-5 +10 Ω	100	0.10	800
KRFB0603S220ER80□□T	22	±25%	100	0.20	800
KRFB0603S600ER60□□T	60	±25%	100	0.30	600
KRFB0603S121ER60□□T	120	±25%	100	0.45	600
KRFB0603S221ER50□□T	220	±25%	100	0.55	500
KRFB0603S331ER50□□T	330	±25%	100	0.70	500
KRFB0603S471ER40□□T	470	±25%	100	0.80	400
KRFB0603S601ER20□□T	600	±25%	100	1.10	200
KRFB0603S102ER15□□T	1000	±25%	100	1.20	150
KRFB0603S121FR60□□T	120	±25%	100	0.40	600
KRFB0603S221FR50□□T	220	±25%	100	0.45	500
KRFB0603S331FR50□□T	330	±25%	100	0.50	500
KRFB0603S421FR40□□T	420	±25%	100	0.55	400
KRFB0603S471FR40□□T	470	±25%	100	0.55	400
KRFB0603S601FR20□□T	600	±25%	100	0.60	200
KRFB0603S102FR20□□T	1000	±25%	100	0.80	200
KRFB0603S152FR20□□T	1500	±25%	100	0.80	200

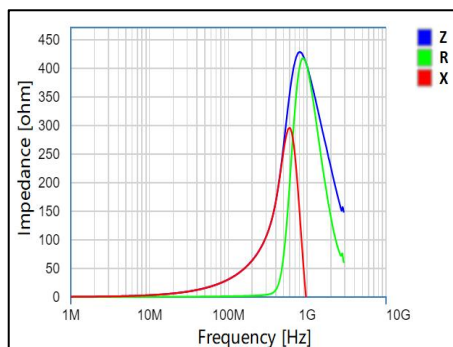
KRFB0603S202FR20□□T	2000	±25%	100	1.00	200
KRFB0603S222FR20□□T	2200	±25%	100	1.00	200
KRFB0603S252FR20□□T	2500	±25%	100	1.20	200
KRFB0603S272FR20□□T	2700	±25%	100	1.40	200

0805 Type

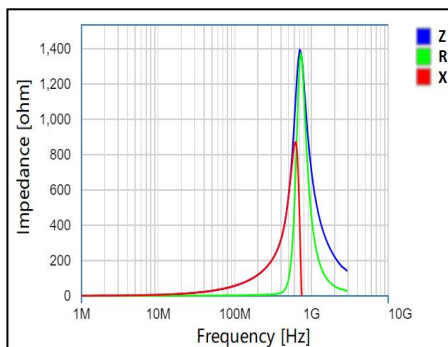
Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB0805S050E1R0□□T	5	-5 $+10$ Ω	100	0.07	1000
KRFB0805S600ER80□□T	60	±25%	100	0.20	800
KRFB0805S121ER60□□T	120	±25%	100	0.25	600
KRFB0805S221ER60□□T	220	±25%	100	0.30	600
KRFB0805S421ER60□□T	420	±25%	100	0.40	600
KRFB0805S601ER60□□T	600	±25%	100	0.45	600
KRFB0805S102ER50□□T	1000	±25%	100	0.50	500
KRFB0805S121FR60□□T	120	±25%	100	0.20	600
KRFB0805S221FR60□□T	220	±25%	100	0.25	600
KRFB0805S301FR60□□T	300	±25%	100	0.30	600
KRFB0805S601FR60□□T	600	±25%	100	0.35	600
KRFB0805S102FR50□□T	1000	±25%	100	0.40	500
KRFB0805S152FR20□□T	1500	±25%	100	0.45	200
KRFB0805S222FR20□□T	2200	±25%	100	0.60	200
KRFB0805S252FR20□□T	2500	±25%	100	0.70	200
KRFB0805S272FR20□□T	2700	±25%	100	0.80	200

Typical Characteristic Curve

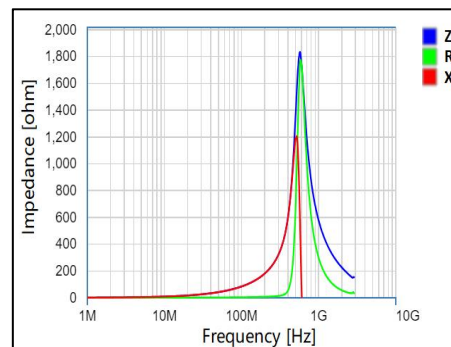
KRFB0201S330DR15□□T

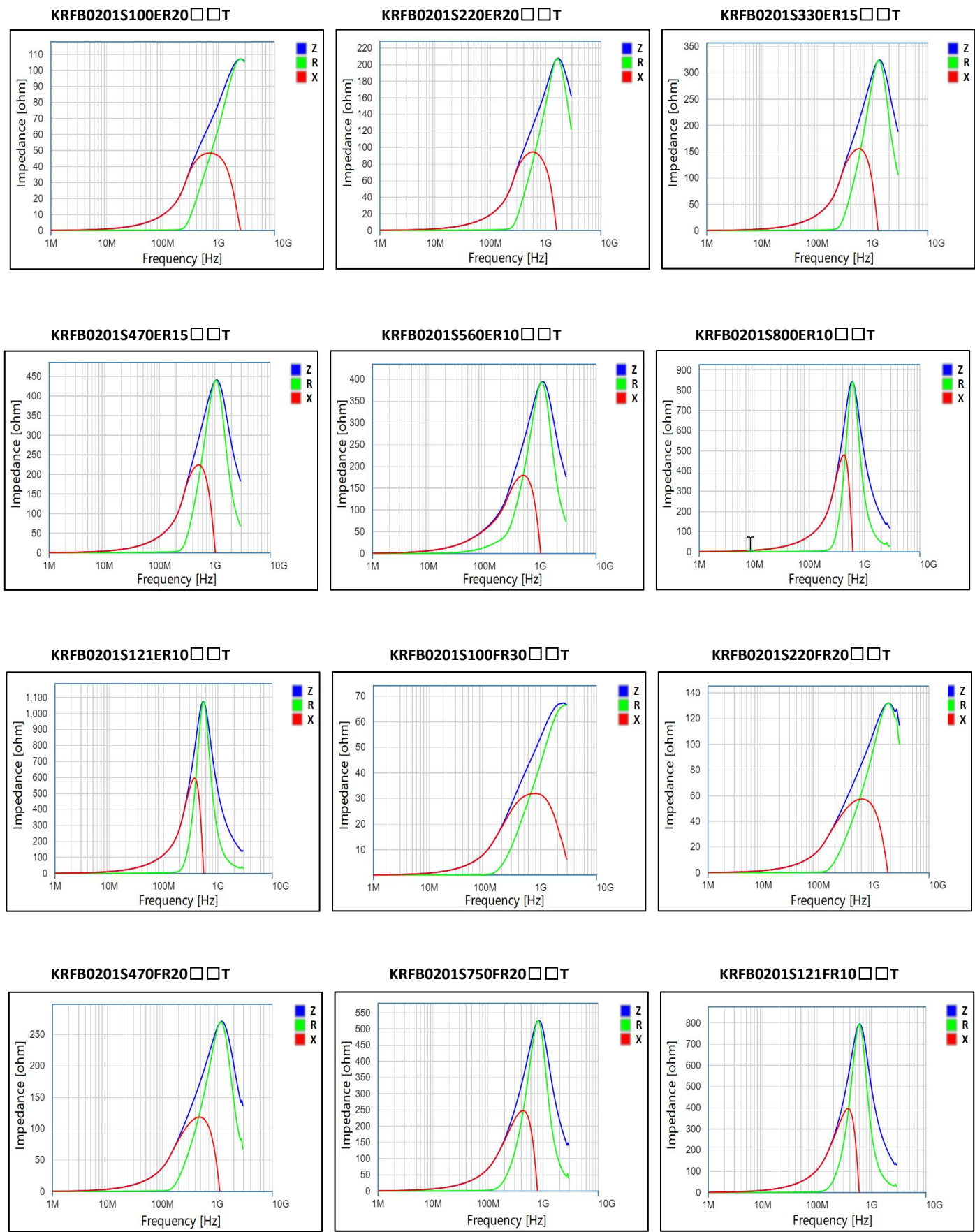


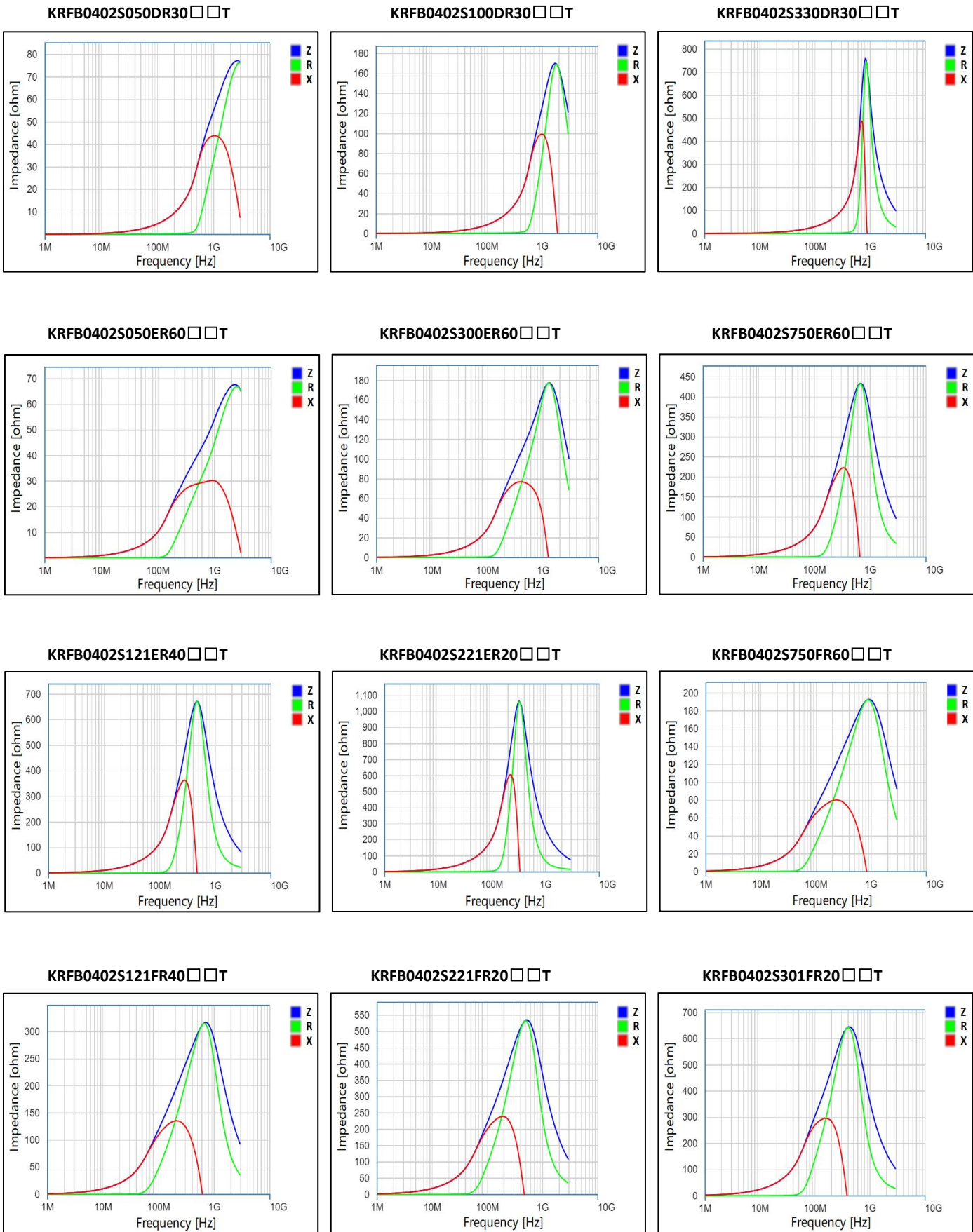
KRFB0201S560DR10□□T



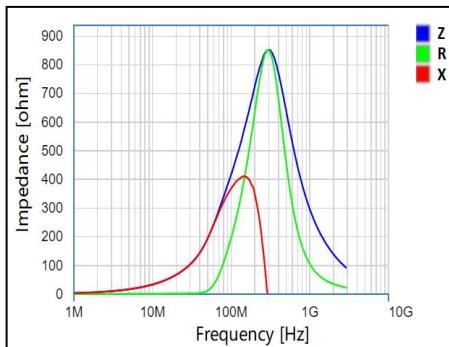
KRFB0201S800DR10□□T



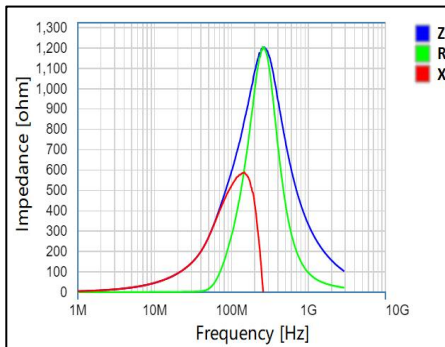




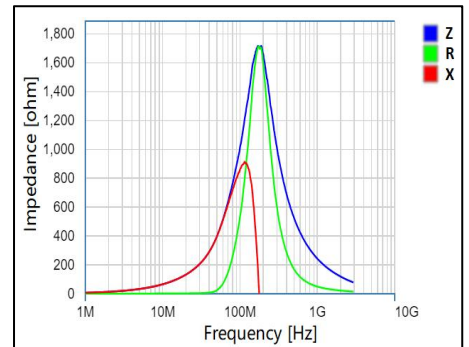
KRFB0402S421FR15□□T



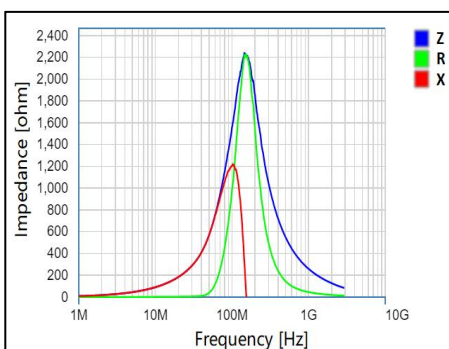
KRFB0402S601FR10□□T



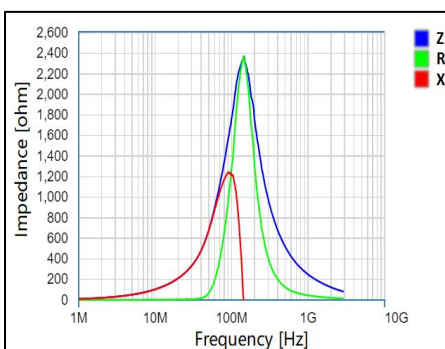
KRFB0402S102FR10□□T



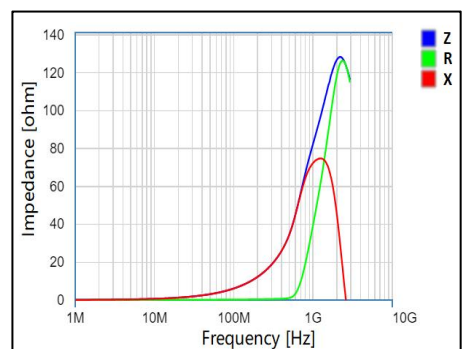
KRFB0402S152FR10□□T



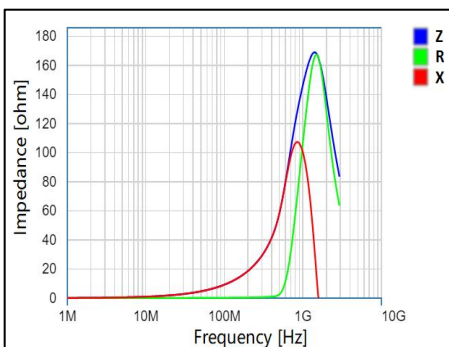
KRFB0402S182FR05□□T



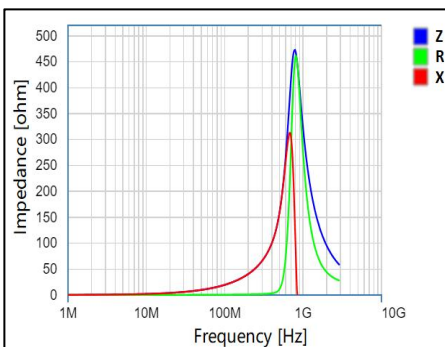
KRFB0603S050DR50□□T



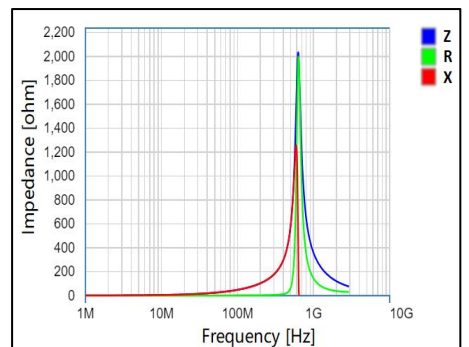
KRFB0603S100DR50□□T



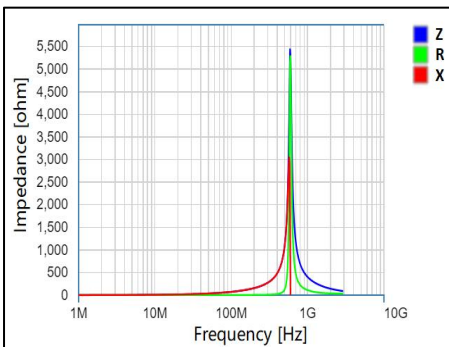
KRFB0603S220DR50□□T



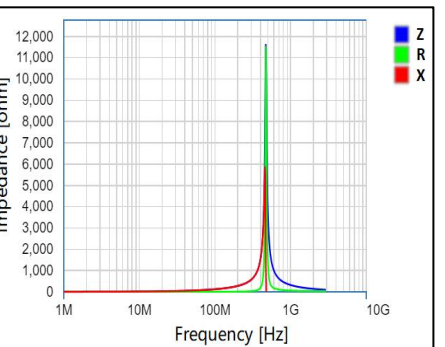
KRFB0603S470DR30□□T



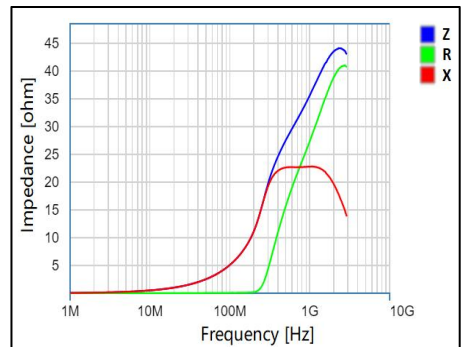
KRFB0603S750DR30□□T

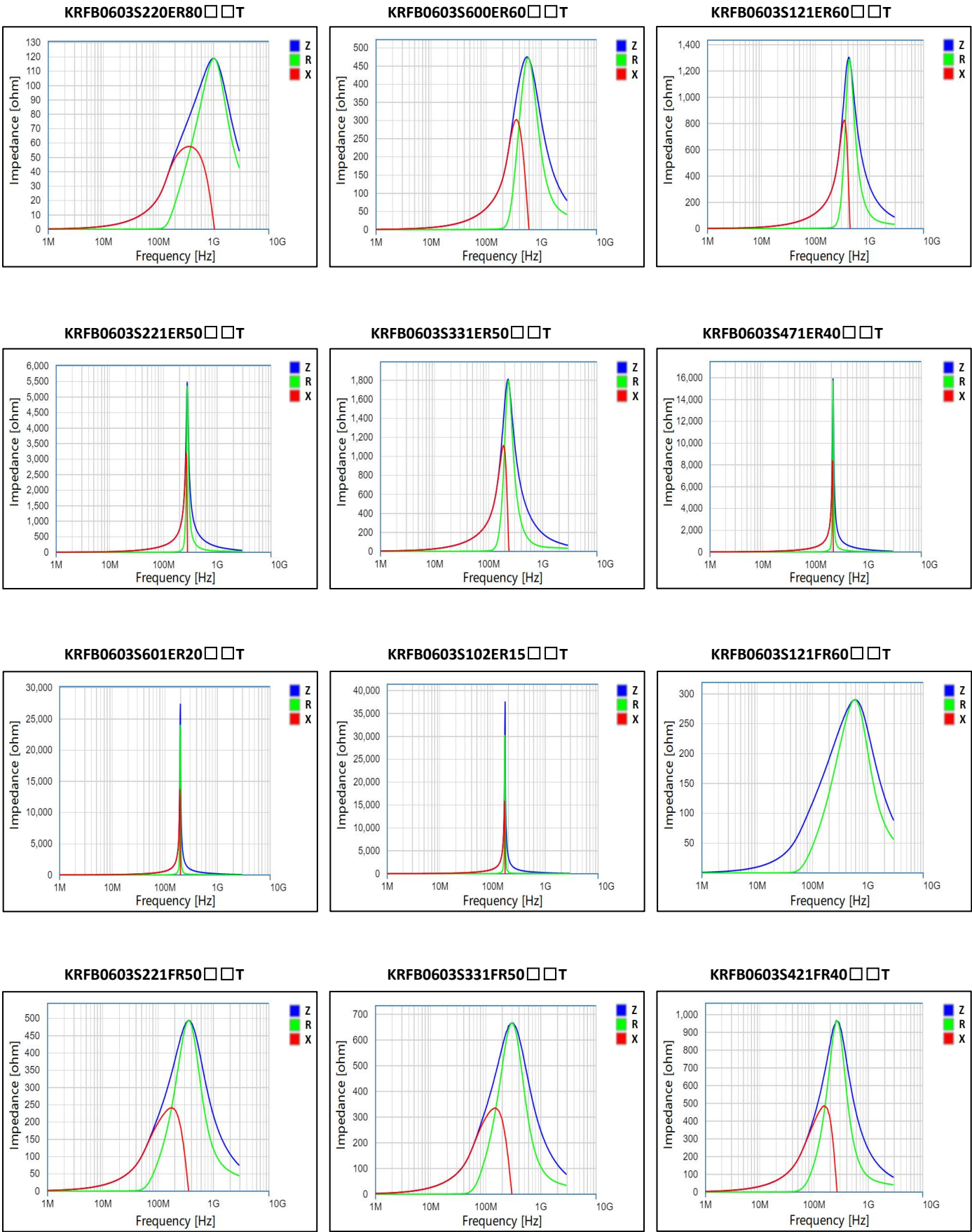


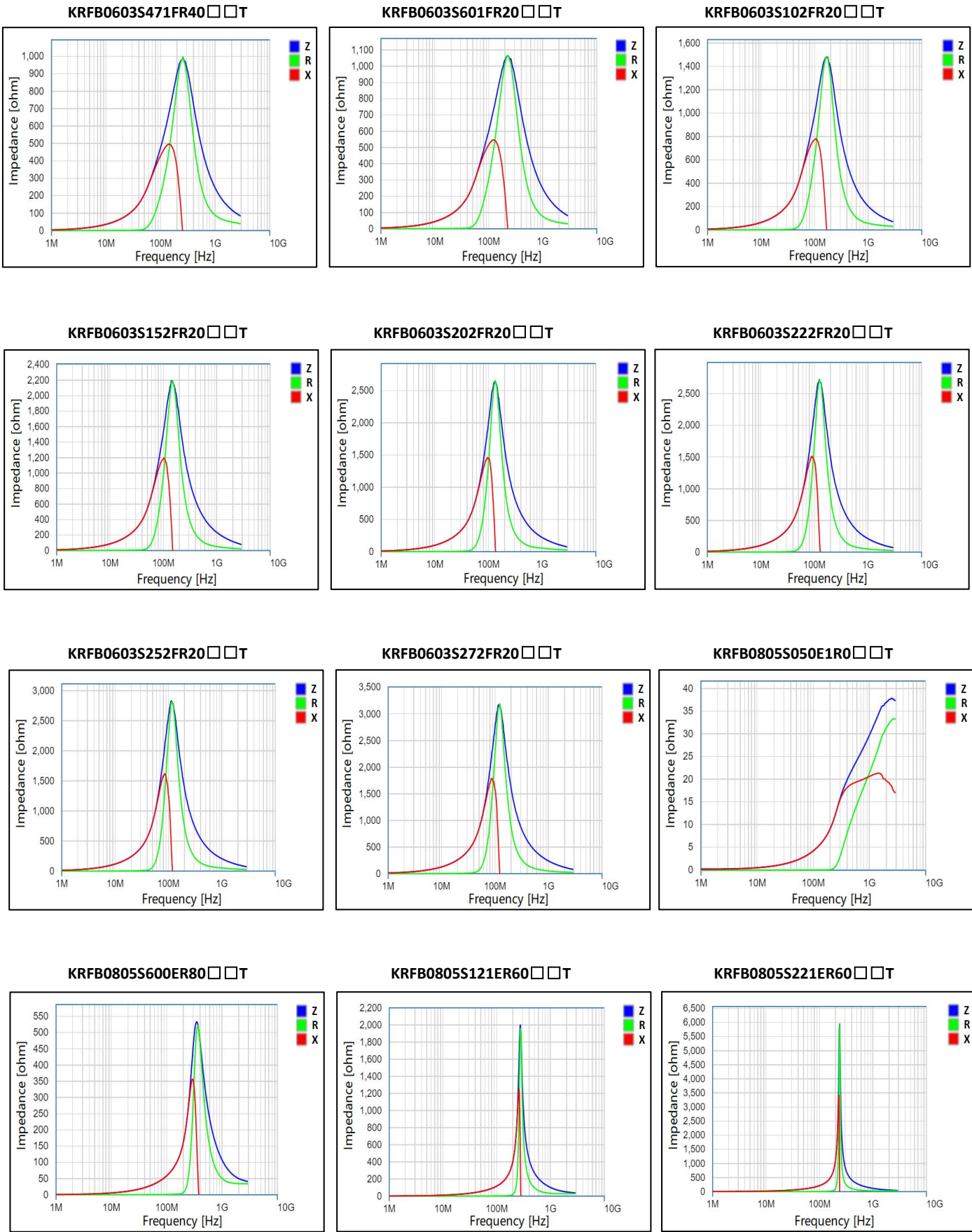
KRFB0603S121DR20□□T

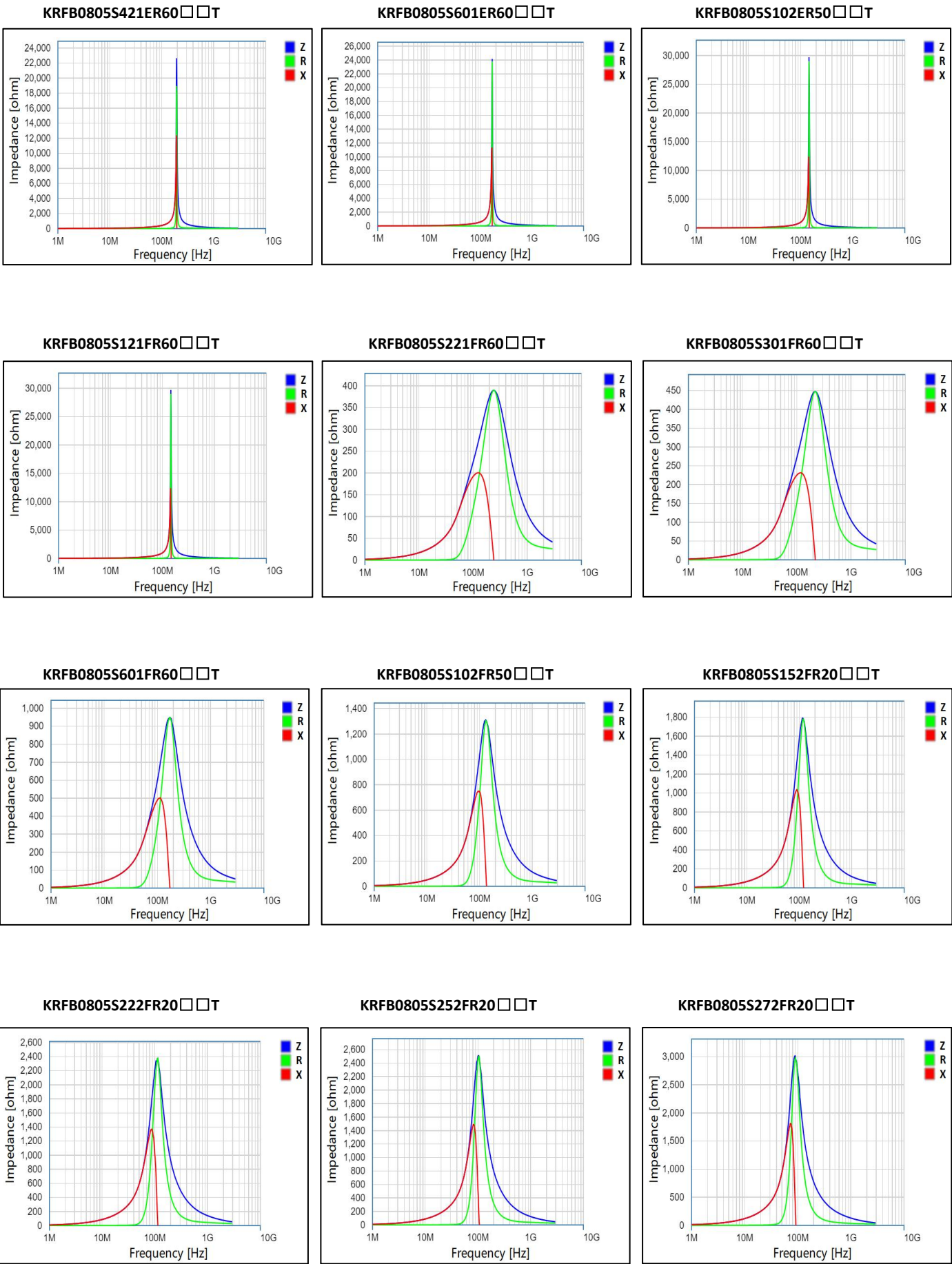


KRFB0603S050ER80□□T



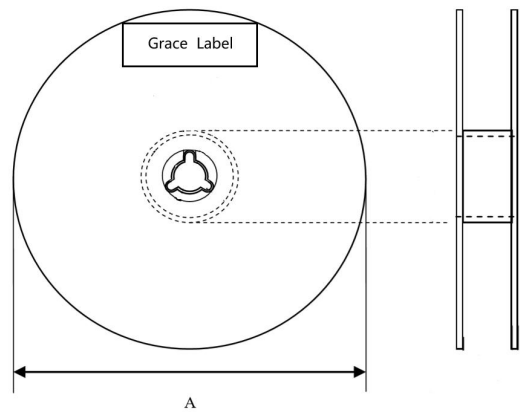




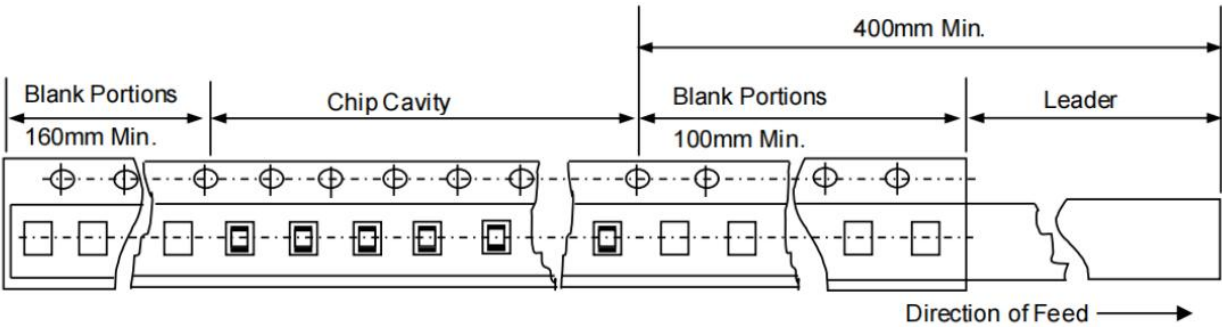


Taping and Packing

Tape and reel packing according to IEC 60286-3.



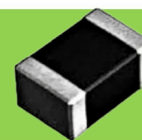
Size (EIA/JIS)	A	Quantity(Pcs)
		Tape & reel
0201/0603	178±2mm	15,000
0402/1005		10,000
0603/1608		4,000
0805/2012		4,000



Multilayer Chip Ferrite Audio Beads —KRFB-L series

For **Signal and power lines**

- **Large current**



Features

- Excellent direct current characteristics and Large withstand current .
- Multilayer Chip Ferrite Beads with nickel barrier termination (AgNiSn) .
- Operating temperature from -55 °C to 125°C.
- Suitable reflow and wave soldering.
- 100% Pb free, RoHS .

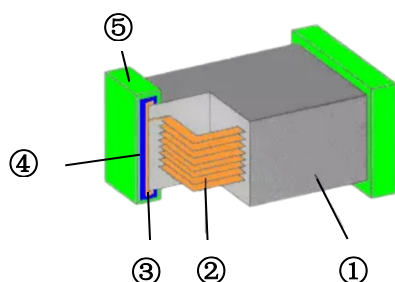
Applications

- Noise suppression for power line or large current signal of electric equipment such as communication equipment, computers and LCD TVs.

Part Numbering

KRFB		0402		L		100		A		1R0		A		A001		T	
①		②		③		④		⑤		⑥		⑦		⑧		⑨	
①		Product Code		②		Dimensions (EIA)		③		Series Code		④		Nominal Impedance (Ω)			
GRACE Multilayer Chip Ferrite Beads				0201、0402、0603、0805、 1206、1806				L		Large current		100		10			
												121		120			
⑤		Material Code		⑥		Rated Curent (A)		⑦		internal code		⑧		Customer identification code			
A、B、C				R50		0.5		A				A001					
				1R0		1.0											
				2R5		2.5											
⑨		Packaging style															
T		Tape															
B		Bulk															

Construction



No.	Name	
①	Body	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

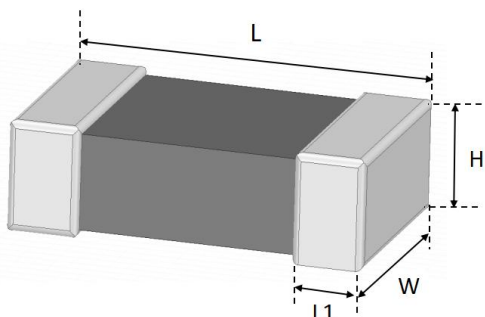
Design and specifications are each subject to change without notice.

Ask factory for the current technical specifications before purchase and/or use.

Please contact our sales representatives or product engineer when you didn't find the suitable product in this catalogue.

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Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0201/0603	0.60 ± 0.05	0.30 ± 0.05	0.30 ± 0.05	0.15 ± 0.05
0402/1005	1.00 ± 0.15	0.50 ± 0.15	0.50 ± 0.15	0.25 ± 0.10
0603/1608	1.60 ± 0.15	0.80 ± 0.15	0.80 ± 0.15	0.30 ± 0.20
0805/2012	2.00 ± 0.20	1.20 ± 0.20	0.85 ± 0.20	0.50 ± 0.30
1206/3216	3.20 ± 0.20	1.60 ± 0.20	0.85 ± 0.20	0.50 ± 0.30
1806/4516	4.50 ± 0.20	1.60 ± 0.20	1.60 ± 0.20	0.50 ± 0.30

Electrical Characteristics

0201 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB0201L600AR50□□T	60	$\pm 25\%$	100	0.18	500
KRFB0201L800AR50□□T	80	$\pm 25\%$	100	0.20	500
KRFB0201L121AR45□□T	120	$\pm 25\%$	100	0.25	450
KRFB0201L241AR35□□T	240	$\pm 25\%$	100	0.41	350
KRFB0201L601AR25□□T	600	$\pm 25\%$	100	1.00	250
KRFB0201L102AR20□□T	1000	$\pm 25\%$	100	1.40	200
KRFB0201L100C1RO□□T	10	-10Ω $+5$	100	0.05	1000
KRFB0201L800CR50□□T	80	$\pm 25\%$	100	0.18	500
KRFB0201L121CR45□□T	120	$\pm 25\%$	100	0.23	450
KRFB0201L241CR35□□T	240	$\pm 25\%$	100	0.38	350

0402 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB0402L100A1RO□□T	10	-10Ω $+20$	100	0.05	1000
KRFB0402L100B1R8□□T	10	-10Ω $+5$	100	0.02	1800
KRFB0402L700BR80□□T	70	$\pm 25\%$	100	0.10	800
KRFB0402L121BR70□□T	120	$\pm 25\%$	100	0.13	700
KRFB0402L221BR60□□T	220	$\pm 25\%$	100	0.18	600
KRFB0402L601BR45□□T	600	$\pm 25\%$	100	0.34	450

KRFB0402L700C1R2□□T	70	±25%	100	0.10	1200
KRFB0402L121C1RO□□T	120	±25%	100	0.12	1000
KRFB0402L221CR80□□T	220	±25%	100	0.18	800
KRFB0402L601CR45□□T	600	±25%	100	0.34	450

0603 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB0603L300A3RO□□T	30	±25%	100	0.03	3000
KRFB0603L600A2RO□□T	60	±25%	100	0.08	2000
KRFB0603L750A1RO□□T	75	±25%	100	0.15	1000
KRFB0603L121A1RO□□T	120	±25%	100	0.20	1000
KRFB0603L221A1RO□□T	220	±25%	100	0.20	1000
KRFB0603L601AR50□□T	600	±25%	100	0.35	500
KRFB0603L600B1R4□□T	60	±25%	100	0.10	1400
KRFB0603L100C3RO□□T	10	-10 Ω +5	100	0.02	3000
KRFB0603L300C3RO□□T	30	±25%	100	0.03	3000
KRFB0603L600C2R5□□T	60	±25%	100	0.04	2500
KRFB0603L121C2RO□□T	120	±25%	100	0.05	2000
KRFB0603L221C1R4□□T	220	±25%	100	0.10	1400
KRFB0603L331C1R2□□T	330	±25%	100	0.14	1200
KRFB0603L391C1RO□□T	390	±25%	100	0.14	1000
KRFB0603L471C1RO□□T	470	±25%	100	0.20	1000

0805 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB0805L390A4RO□□T	39	±25%	100	0.02	4000
KRFB0805L800A3RO□□T	80	±25%	100	0.04	3000
KRFB0805L121A2R5□□T	120	±25%	100	0.06	2500
KRFB0805L221A1R5□□T	220	±25%	100	0.08	1500
KRFB0805L301A1R5□□T	300	±25%	100	0.12	1500
KRFB0805L471AR80□□T	470	±25%	100	0.25	800
KRFB0805L601AR80□□T	600	±25%	100	0.25	800
KRFB0805L300C3RO□□T	30	-10 Ω +5	100	0.02	3000
KRFB0805L300C4RO□□T	30	±25%	100	0.015	4000

KRFB0805L600C3RO□□T	60	±25%	100	0.025	3000
KRFB0805L121C2R5□□T	120	±25%	100	0.04	2500
KRFB0805L221C2RO□□T	220	±25%	100	0.07	2000
KRFB0805L301C1R5□□T	300	±25%	100	0.10	1500
KRFB0805L421C1RO□□T	420	±25%	100	0.20	1000
KRFB0805L601CR80□□T	600	±25%	100	0.25	800

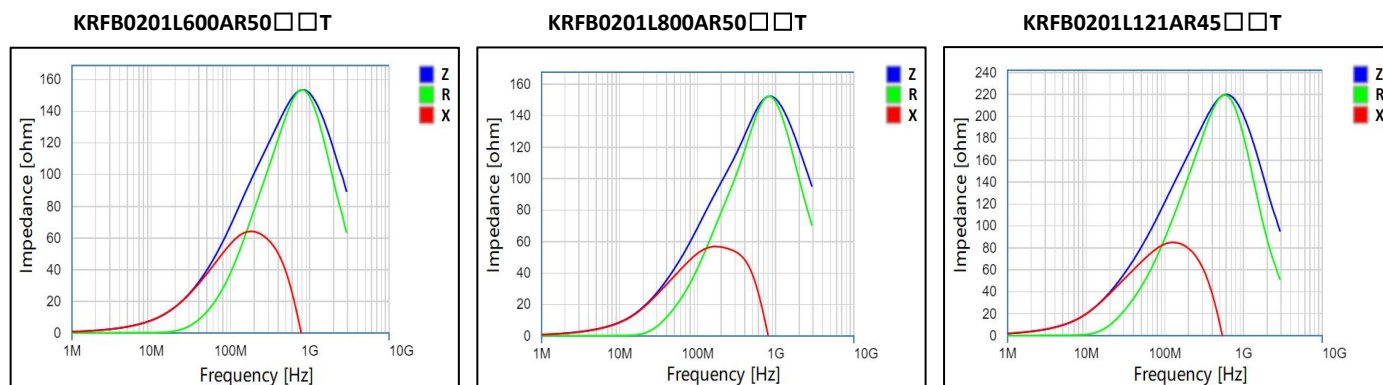
1206 Type

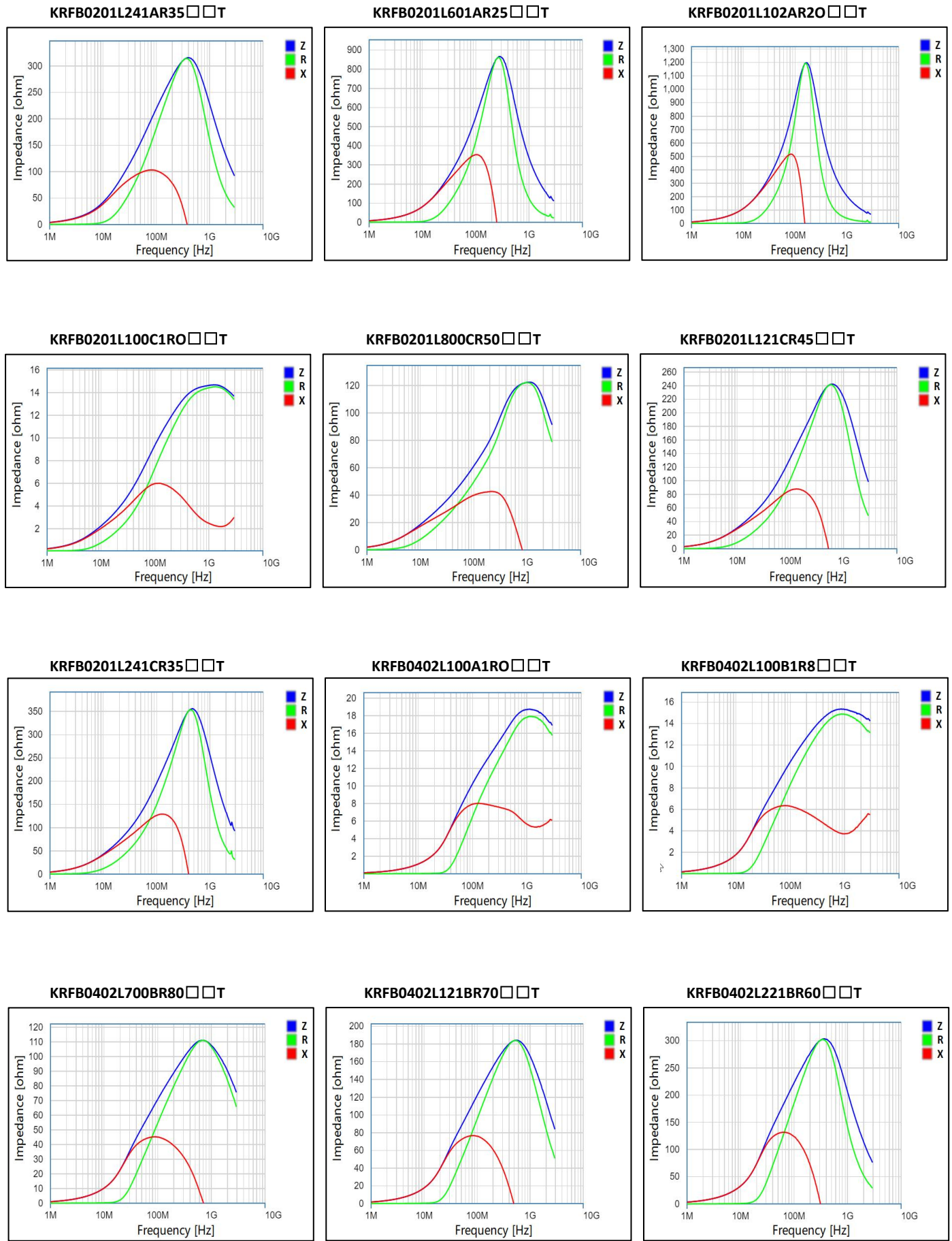
Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (mΩ) max	Rated current (mA) Max
KRFB1206L190A6R0□□T	19	±25%	100	0.010	6000
KRFB1206L600A4R0□□T	60	±25%	100	0.02	4000
KRFB1206L300C6RO□□T	30	±25%	100	0.01	6000
KRFB1206L600C4RO□□T	60	±25%	100	0.025	4000
KRFB1206L221C2RO□□T	220	±25%	100	0.08	2000
KRFB1206L301C2RO□□T	300	±25%	100	0.10	2000
KRFB1206L391C2RO□□T	390	±25%	100	0.07	2000
KRFB1206L601C1R5□□T	600	±25%	100	0.10	1500
KRFB1206L102CR50□□T	1000	±25%	100	0.30	500

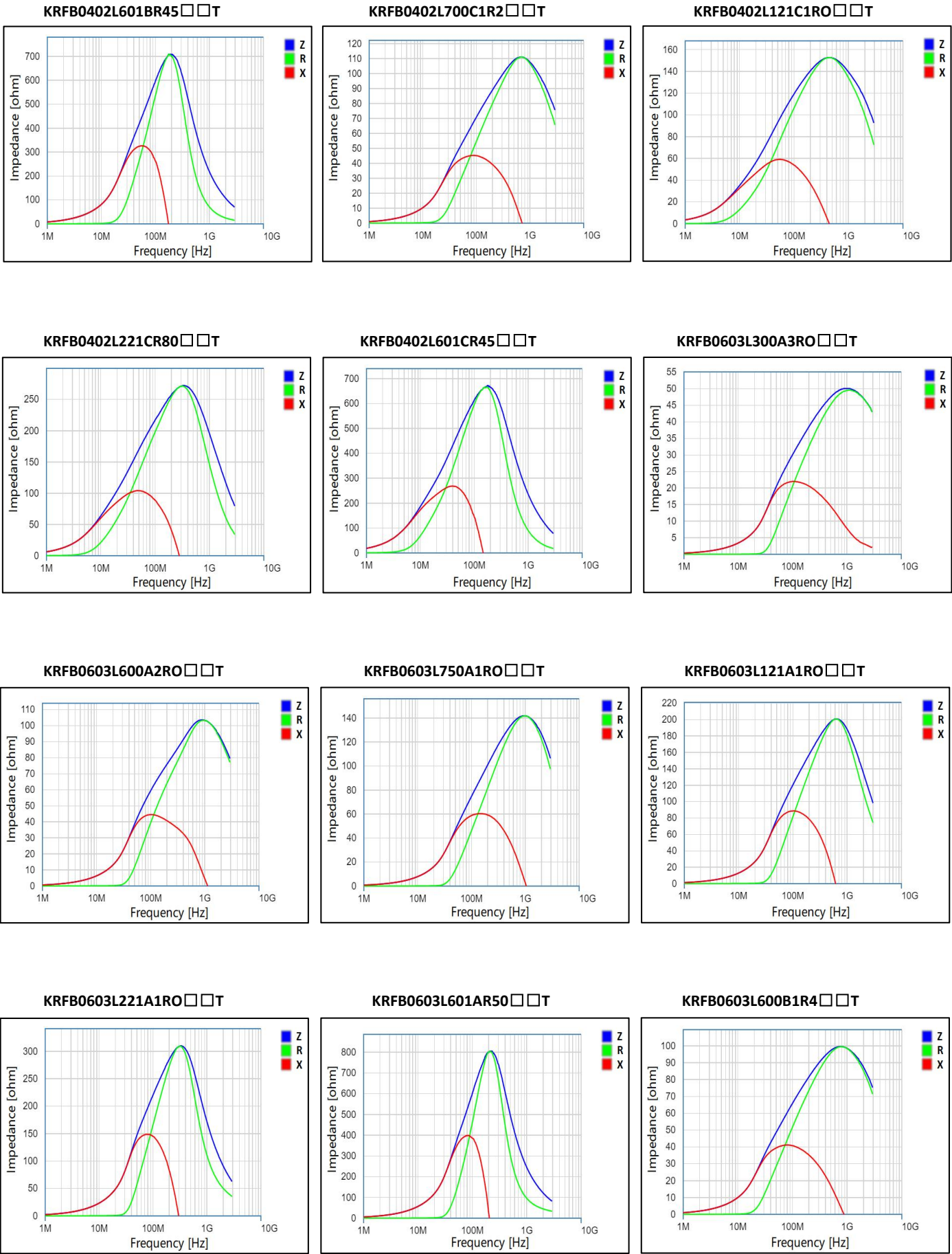
1806 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (mΩ) max	Rated current (mA) Max
KRFB1806L600C6RO□□T	60	±25%	100	0.01	6000
KRFB1806L720C6RO□□T	72	±25%	100	0.01	6000
KRFB1806L181C3RO□□T	180	±25%	100	0.025	3000
KRFB1806L471C2RO□□T	470	±25%	100	0.05	2000
KRFB1806L102C1R5□□T	1000	±25%	100	0.09	1500

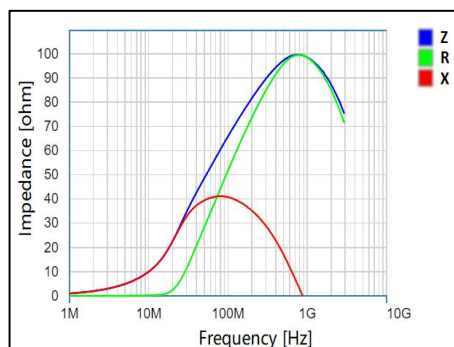
Typical Characteristic Curve



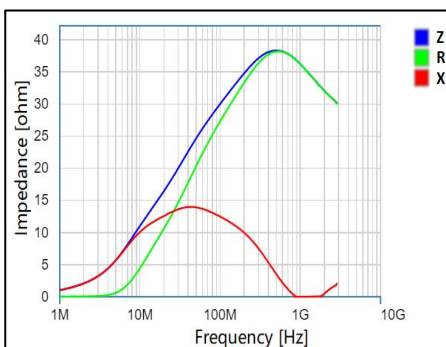




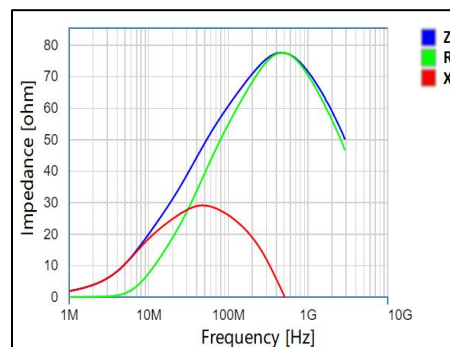
KRFB0603L100C3RO□□T



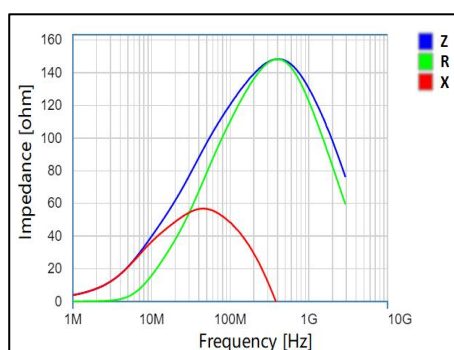
KRFB0603L300C3RO□□T



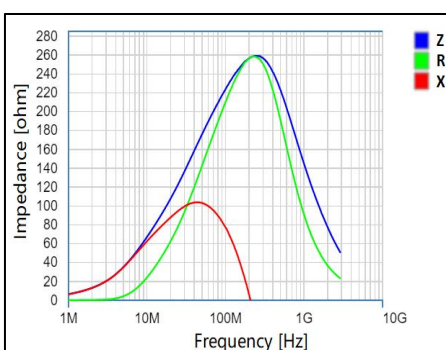
KRFB0603L600C2R5□□T



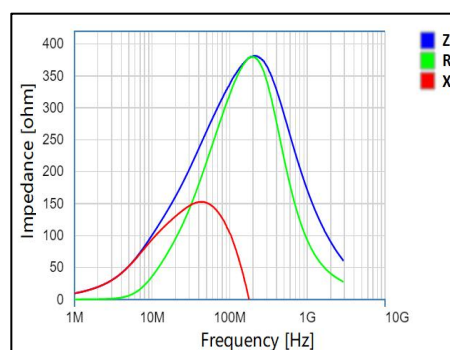
KRFB0603L121C2RO□□T



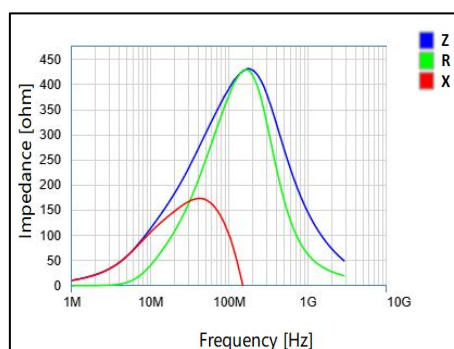
KRFB0603L221C1R4□□T



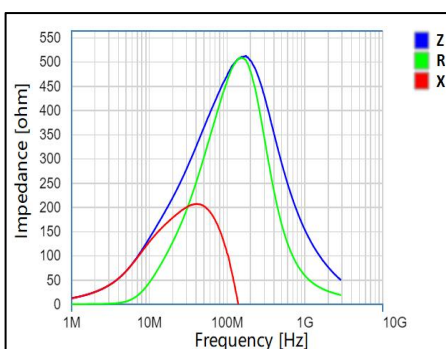
KRFB0603L331C1R2□□T



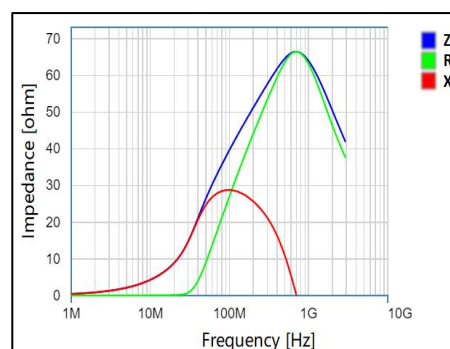
KRFB0603L391C1RO□□T



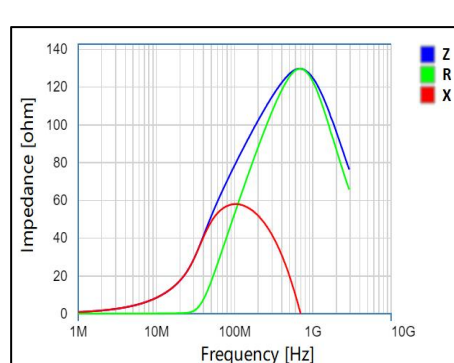
KRFB0603L471C1RO□□T



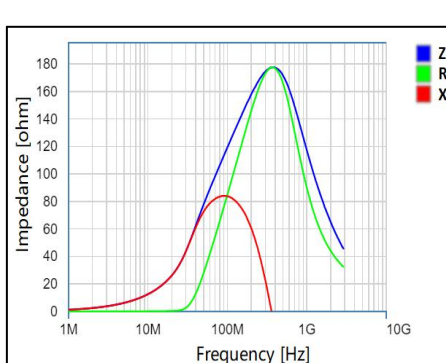
KRFB0805L390A4RO□□T



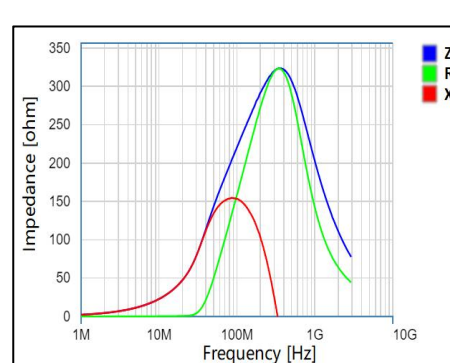
KRFB0805L800A3RO□□T

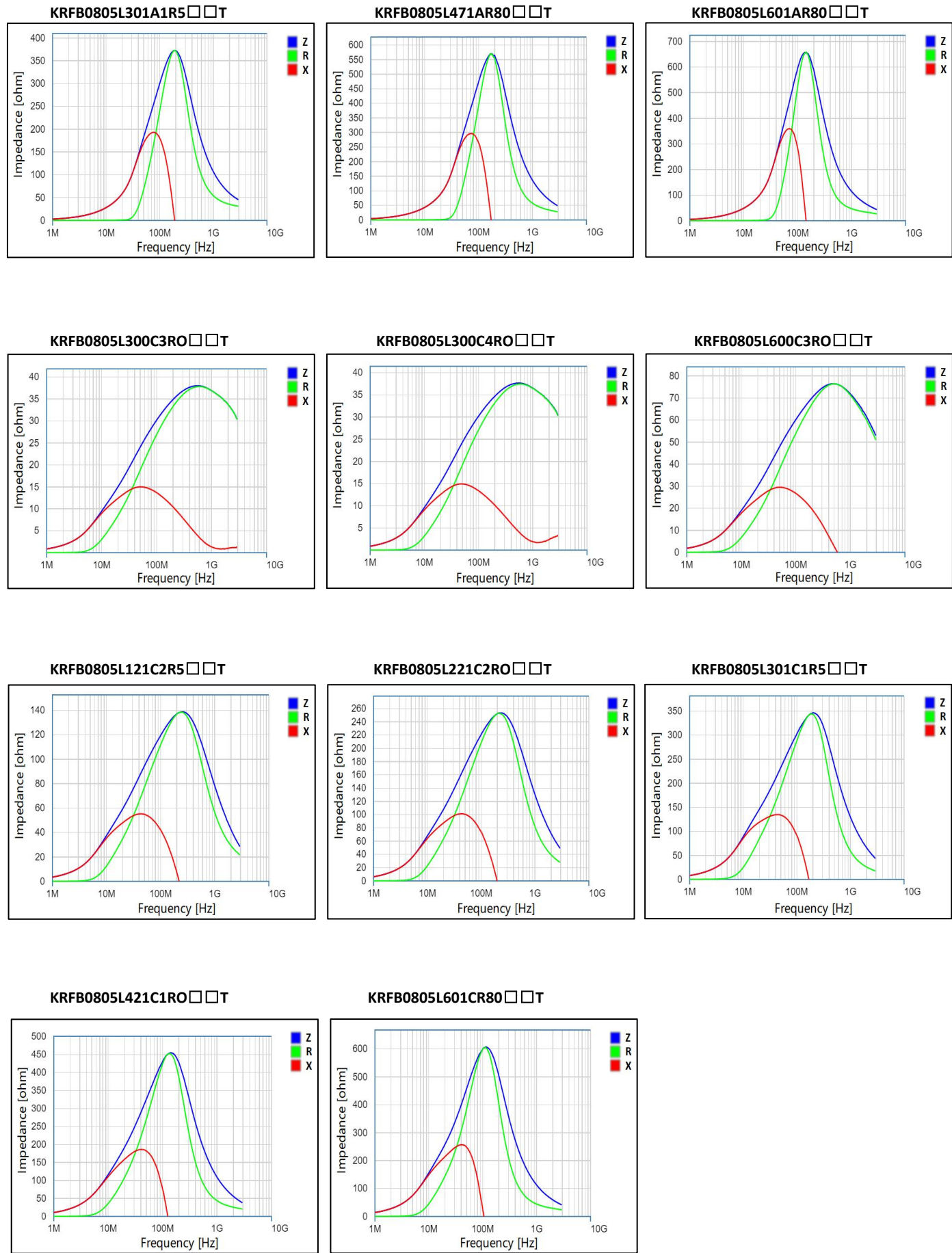


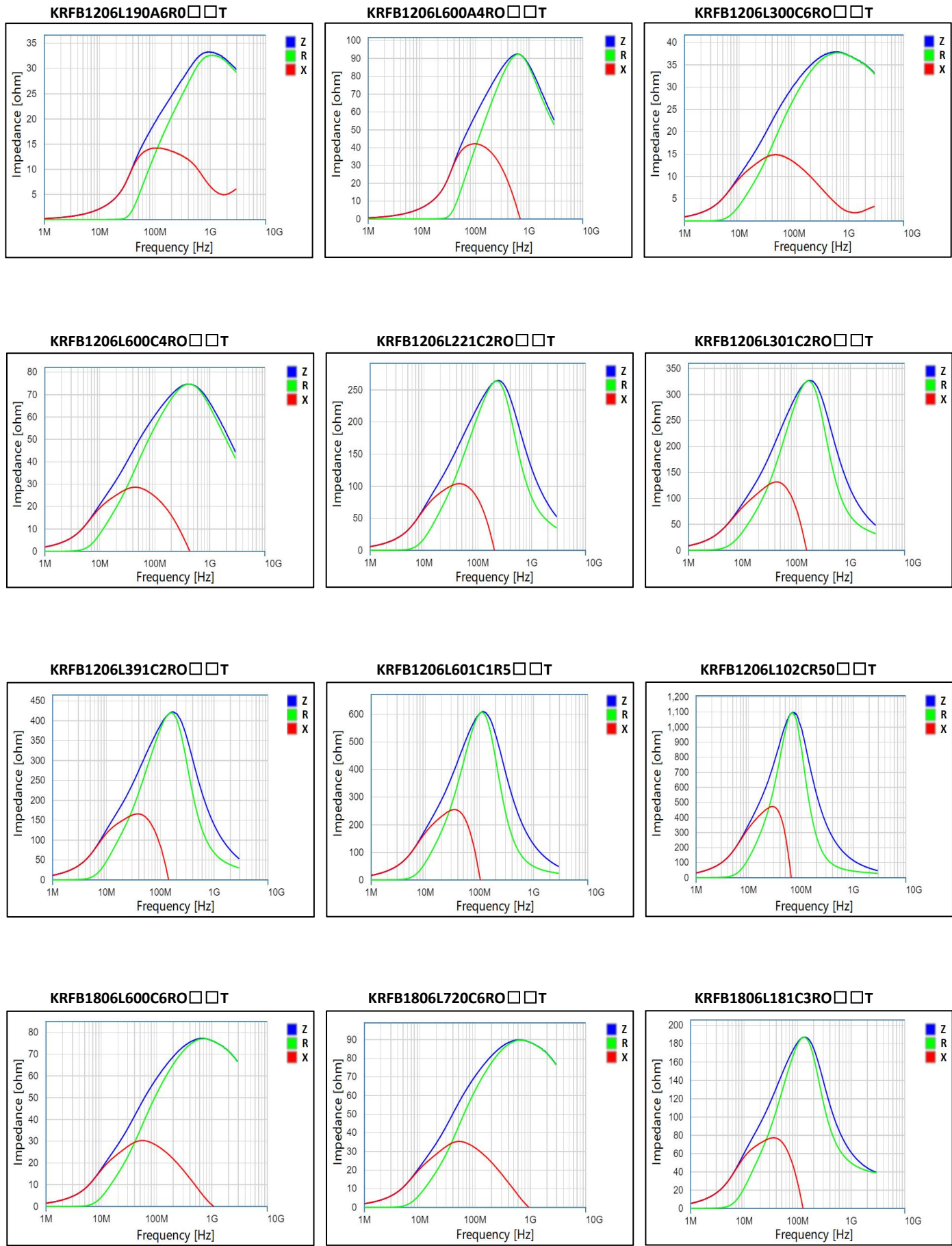
KRFB0805L121A2R5□□T

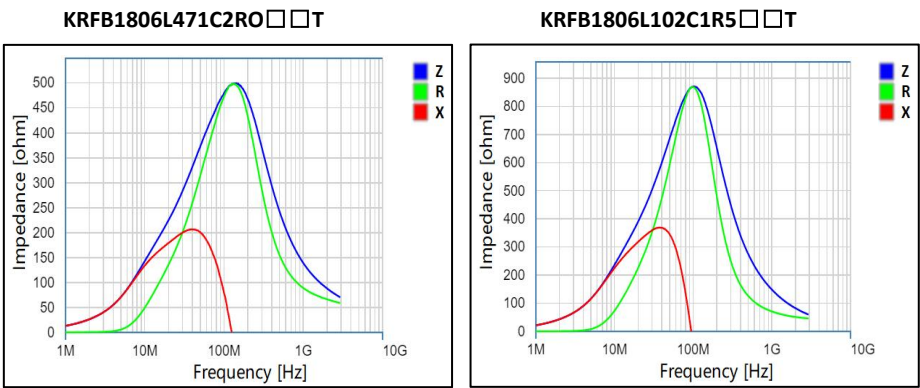


KRFB0805L221A1R5□□T



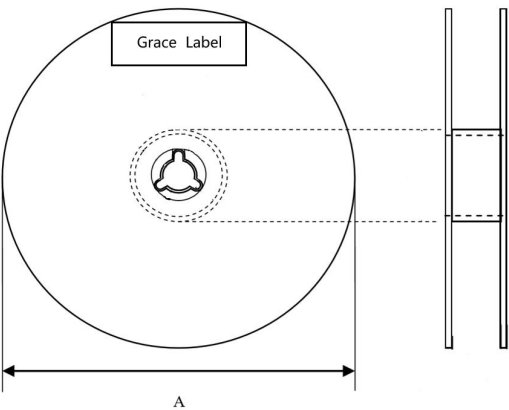




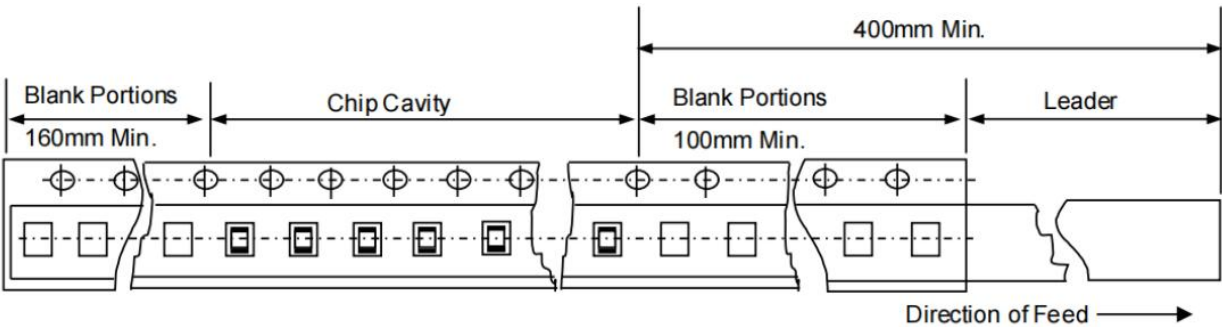


Taping and Packing

Tape and reel packing according to IEC 60286-3.



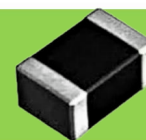
Size (EIA/JIS)	A	Quantity(Pcs)
		Tape & reel
0201/0603	178±2mm	15,000
0402/1005		10,000
0603/1608		4,000
0805/2012		4,000
1206/3216		4,000
1806/4516		2,000



Multilayer Chip Ferrite Audio Beads —KRFB-UL series

For **power lines**

- **Ultra large current**



Features

- Low DC resistance, large current rating.
- Multilayer Chip Ferrite Beads with nickel barrier termination (AgNiSn) .
- Operating temperature from -55 °C to 125°C.
- Suitable reflow and wave soldering.
- 100% Pb free, RoHS .

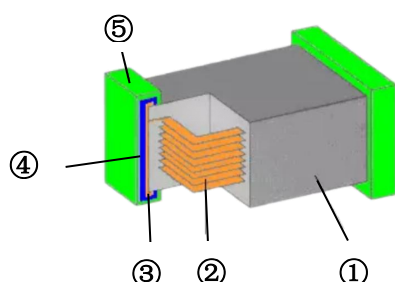
Applications

- Noise suppression for power lines or large current signal lines of electric equipment, such as communication equipment, computers, A/V equipment, etc

Part Numbering

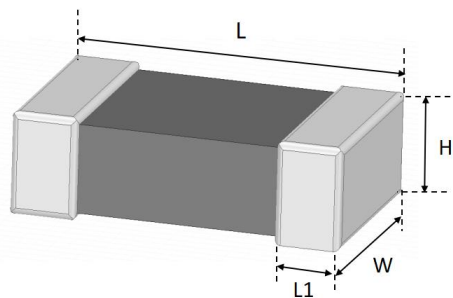
KRFB		0402		UL		100		A		2R0		A		A001		T	
①		②		③		④		⑤		⑥		⑦		⑧		⑨	
①		Product Code		②		Dimensions (EIA)		③		Series Code		④		Nominal Impedance (Ω)			
GRACE Multilayer Chip Ferrite Beads				0201、0402、0603、0805				UL		Ultra large current		100		10			
												121		120			
⑤		Material Code		⑥		Rated Curent (A)		⑦		internal code		⑧		Customer identification code			
A、B、C				R90		0.9		A				A001					
				2R0		2.0											
⑨		Packaging style															
T		Tape															
B		Bulk															

Construction



No.	Name	
①	Body	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0201/0603	0.60 ± 0.05	0.30 ± 0.05	0.30 ± 0.05	0.15 ± 0.05
0402/1005	1.00 ± 0.15	0.50 ± 0.15	0.50 ± 0.15	0.25 ± 0.10
0603/1608	1.60 ± 0.15	0.80 ± 0.15	0.80 ± 0.15	0.30 ± 0.20
0805/2012	2.00 ± 0.20	1.20 ± 0.20	0.85 ± 0.20	0.50 ± 0.30

Electrical Characteristics

0201 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB0201UL220C1R8□□T	22	$\pm 25\%$	100	40	1800
KRFB0201UL330C1R5□□T	33	$\pm 25\%$	100	55	1500
KRFB0201UL470C1RO□□T	47	$\pm 25\%$	100	120	1000
KRFB0201UL800C1RO□□T	80	$\pm 25\%$	100	130	1000

0402 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB0402UL100A2RO□□T	10	-10 $+20$ Ω	100	45	2000
KRFB0402UL300A1R7□□T	30	$\pm 25\%$	100	50	1700
KRFB0402UL300A2R2□□T	30	$\pm 25\%$	100	35	2200
KRFB0402UL600A1R5□□T	60	$\pm 25\%$	100	75	1500
KRFB0402UL800A1R5□□T	80	$\pm 25\%$	100	70	1500
KRFB0402UL121A1R3□□T	120	$\pm 25\%$	100	90	1300
KRFB0402UL221AR90□□T	220	$\pm 25\%$	100	160	900

0603 Type

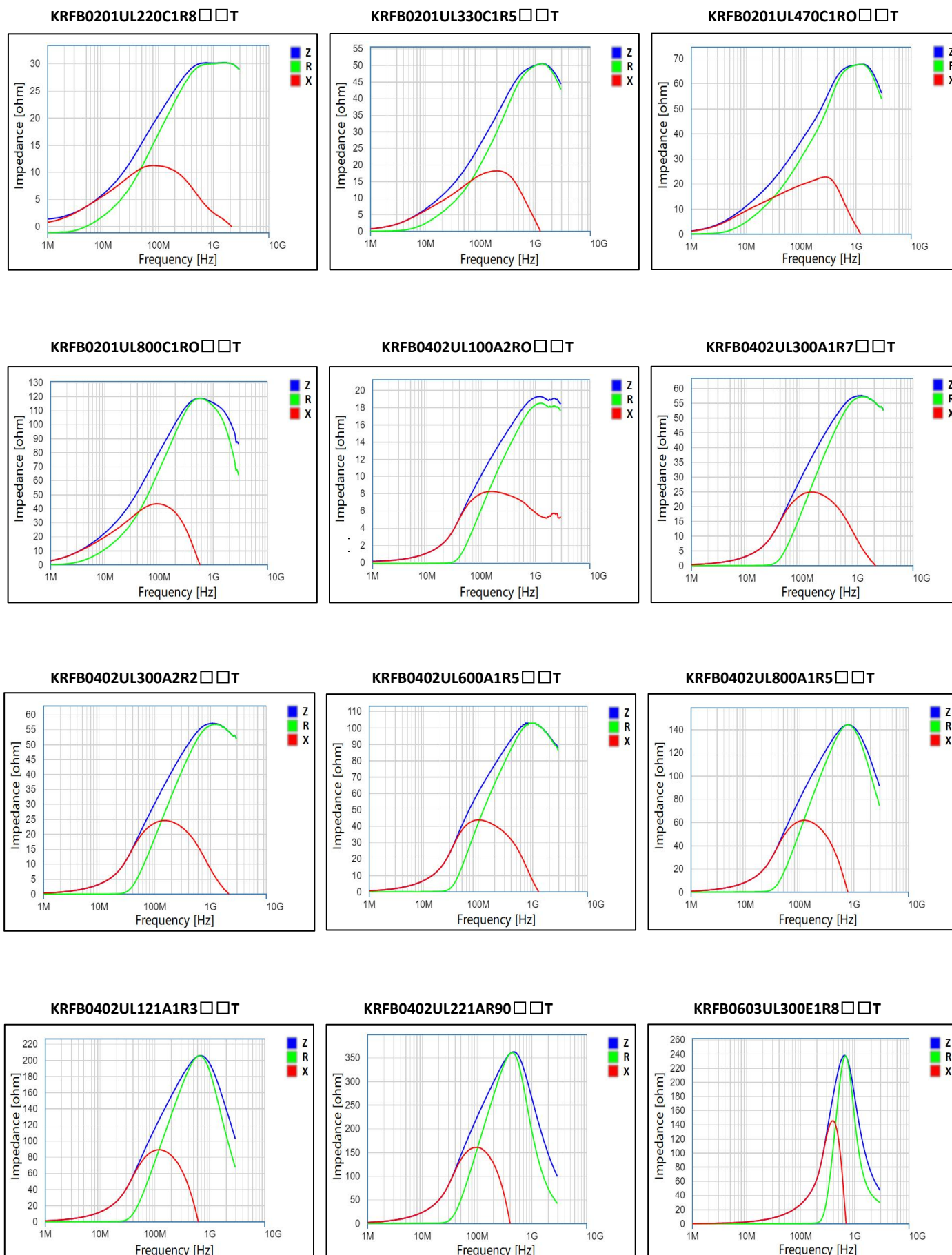
Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB0603UL300E1R8□□T	30	$\pm 25\%$	100	60	1800
KRFB0603UL600E1R2□□T	60	$\pm 25\%$	100	100	1200
KRFB0603UL101E1RO□□T	100	$\pm 25\%$	100	150	1000
KRFB0603UL220C6RO□□T	22	$\pm 25\%$	100	10	6000

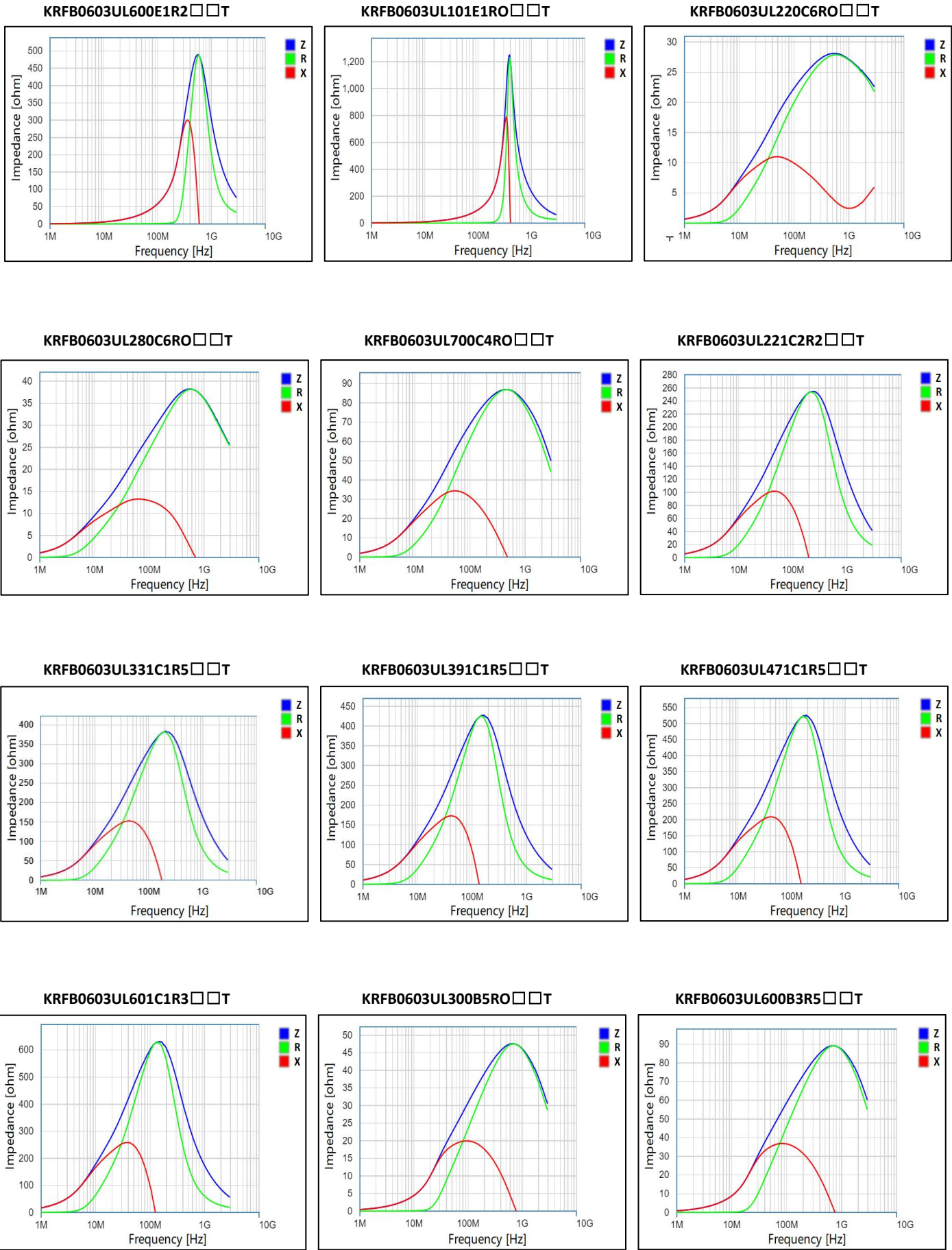
KRFB0603UL280C6RO□□T	28	±25%	100	10	6000
KRFB0603UL700C4RO□□T	70	±25%	100	20	4000
KRFB0603UL221C2R2□□T	220	±25%	100	50	2200
KRFB0603UL331C1R5□□T	330	±25%	100	70	1500
KRFB0603UL391C1R5□□T	390	±25%	100	120	1500
KRFB0603UL471C1R5□□T	470	±25%	100	120	1500
KRFB0603UL601C1R3□□T	600	±25%	100	150	1300
KRFB0603UL300B5RO□□T	30	±25%	100	10	5000
KRFB0603UL600B3R5□□T	60	±25%	100	20	3500
KRFB0603UL101B3RO□□T	100	±25%	100	30	3000
KRFB0603UL181B2R2□□T	180	±25%	100	50	2200
KRFB0603UL221B2R2□□T	220	±25%	100	50	2200
KRFB0603UL331B1R7□□T	330	±25%	100	80	1700
KRFB0603UL601B1RO□□T	600	±25%	100	150	1000
KRFB0603UL260G6RO□□T	26	±25%	100	7	6000

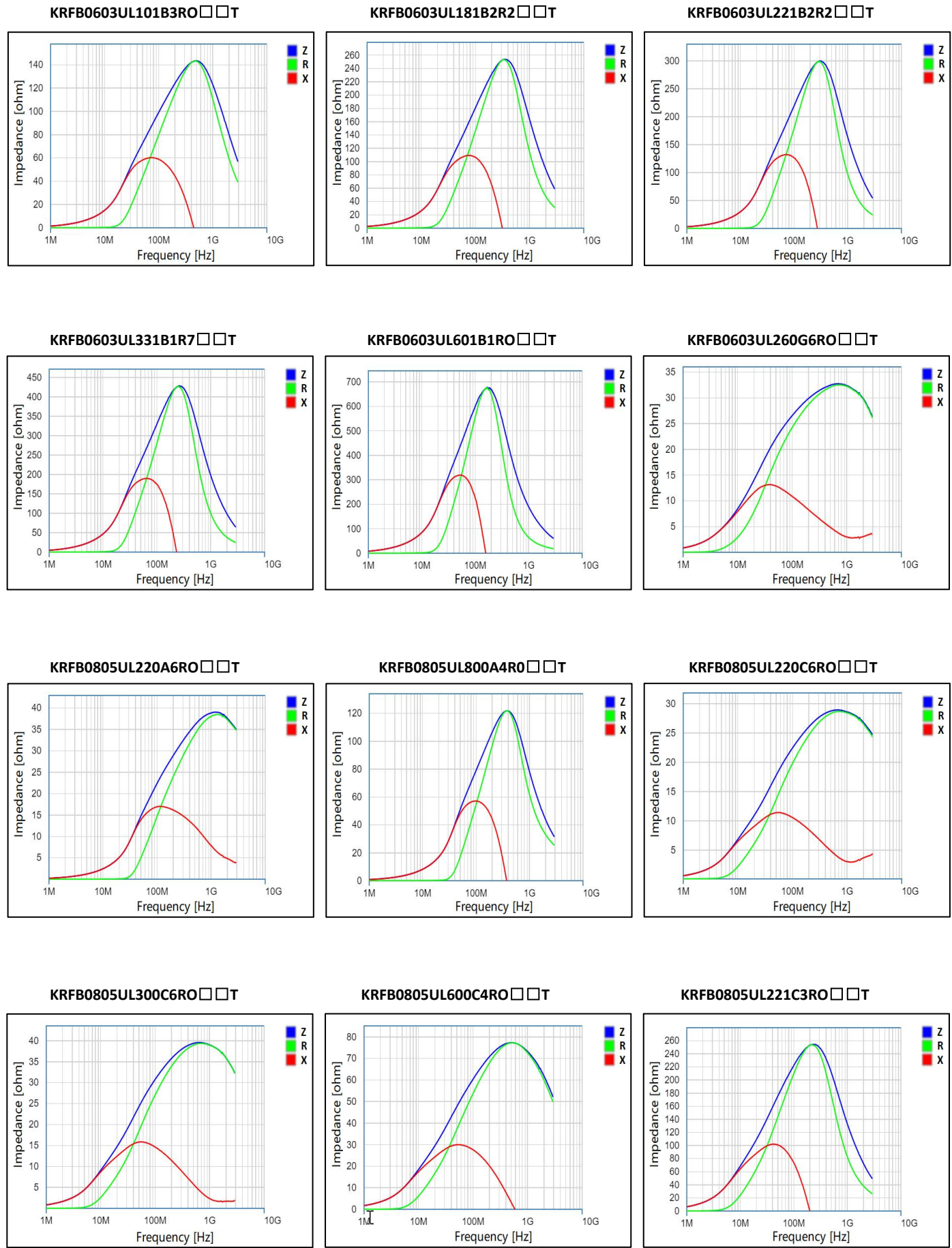
0805 Type

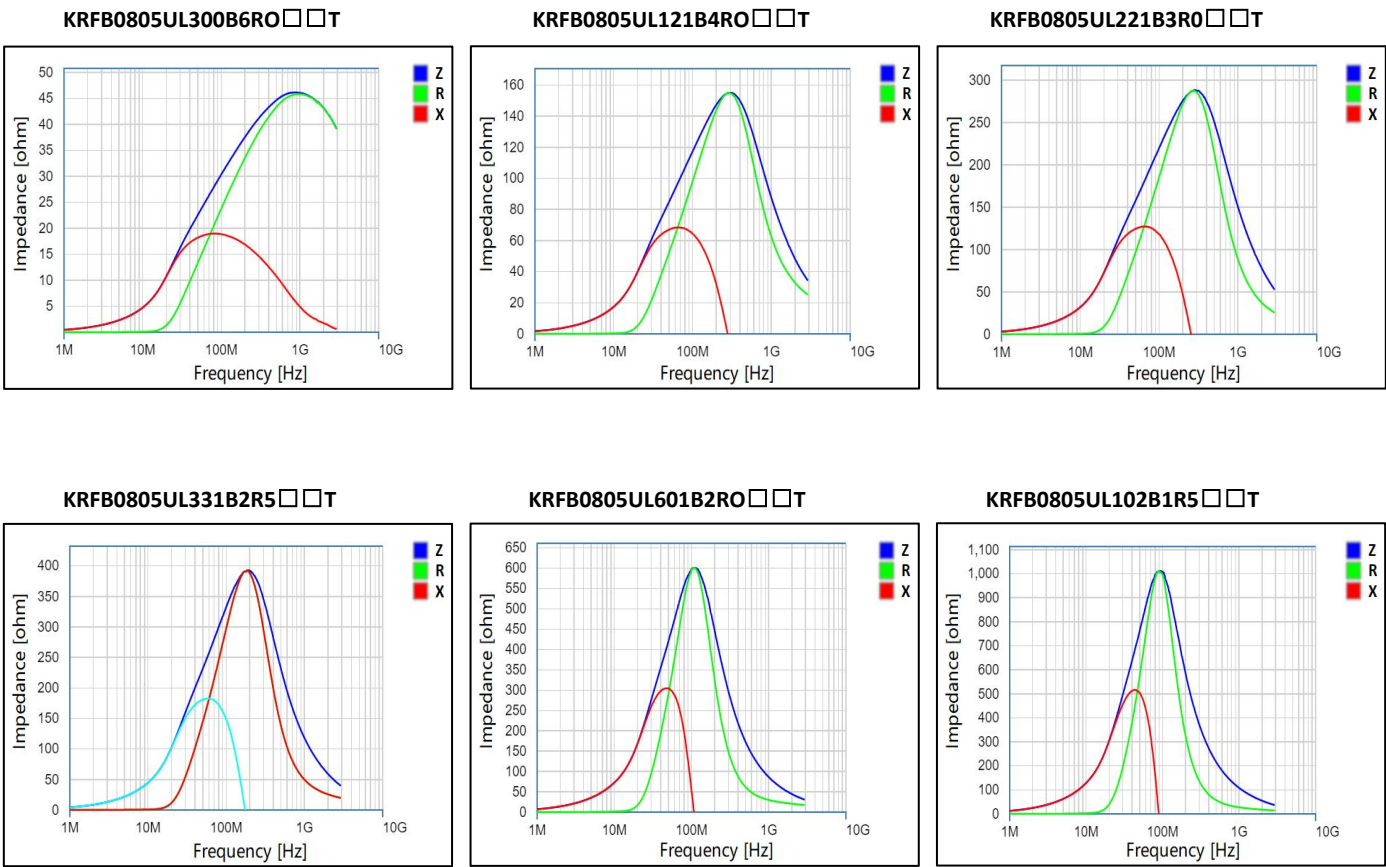
Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB0805UL220A6RO□□T	22	±25%	100	10	6000
KRFB0805UL800A4R0□□T	80	±25%	100	20	4000
KRFB0805UL220C6RO□□T	22	±25%	100	10	6000
KRFB0805UL300C6RO□□T	30	±25%	100	10	6000
KRFB0805UL600C4RO□□T	60	±25%	100	20	4000
KRFB0805UL221C3RO□□T	220	±25%	100	40	3000
KRFB0805UL300B6RO□□T	30	±25%	100	10	6000
KRFB0805UL121B4RO□□T	120	±25%	100	20	4000
KRFB0805UL221B3R0□□T	220	±25%	100	40	3000
KRFB0805UL331B2R5□□T	330	±25%	100	50	2500
KRFB0805UL601B2RO□□T	600	±25%	100	90	2000
KRFB0805UL102B1R5□□T	1000	±25%	100	120	1500

Typical Characteristic Curve



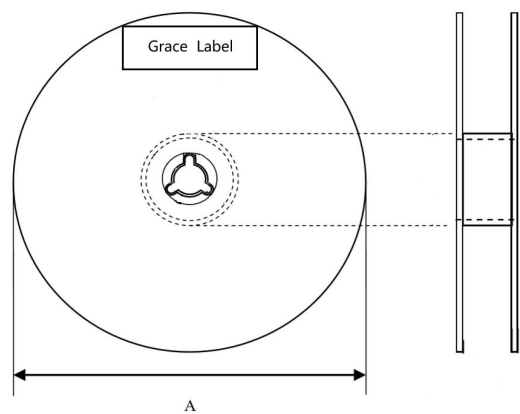




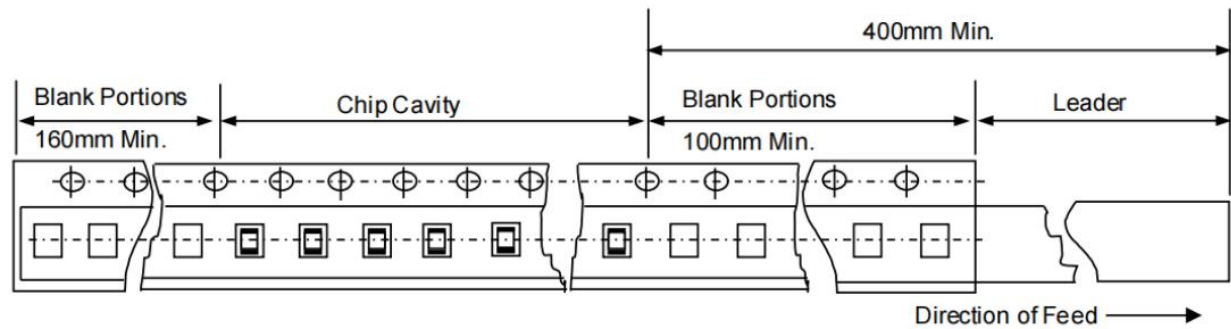


Taping and Packing

Tape and reel packing according to IEC 60286-3.



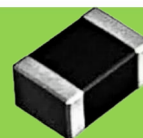
Size (EIA/JIS)	A	Quantity(Pcs)
		Tape & reel
0201/0603	178±2mm	15,000
0402/1005		10,000
0603/1608		4,000
0805/2012		4,000



Multilayer Chip Ferrite Audio Beads —KRFB-EL series

For **power lines**

- **Extra high current**



Features

- Smaller DC resistance and larger allowable current than UP series.
- Multilayer Chip Ferrite Beads with nickel barrier termination (AgNiSn) .
- Operating temperature from -55 °C to 125°C.
- Suitable reflow and wave soldering.
- 100% Pb free, RoHS .

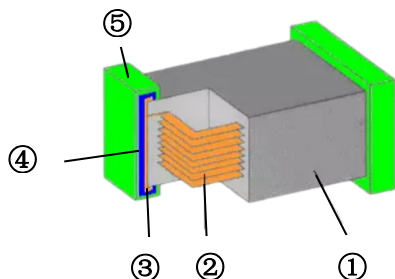
Applications

- Noise suppression for power lines or large current signal lines of electric equipment, such as communication equipment, computers, A/V equipment, etc

Part Numbering

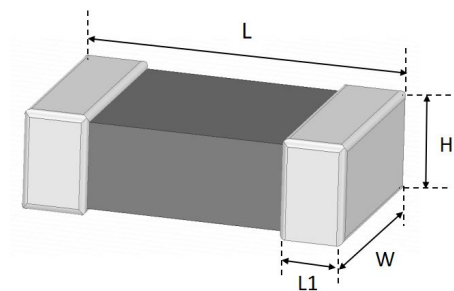
KRFB		0402		EL		100		A		3R1		A		A001		T	
①		②		③		④		⑤		⑥		⑦		⑧		⑨	
①		Product Code		②		Dimensions (EIA)		③		Series Code		④		Nominal Impedance (Ω)			
GRACE Multilayer Chip Ferrite Beads				0402				EL		Extra large current		100		10			
				1612								121		120			
⑤		Material Code		⑥		Rated Curent (A)		⑦		internal code		⑧		Customer identification code			
A、 B、 C				3R1		3.10		A				A001					
				10R0		10.0											
⑨		Packaging style															
T		Tape															
B		Bulk															

Construction



No.	Name	
①	Body	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0402/1005	1.00 ± 0.15	0.50 ± 0.15	0.50 ± 0.15	0.25 ± 0.10
1612/4030	4.0 ± 0.20	3.0 ± 0.20	1.6 ± 0.20	0.80 ± 0.30

Electrical Characteristics

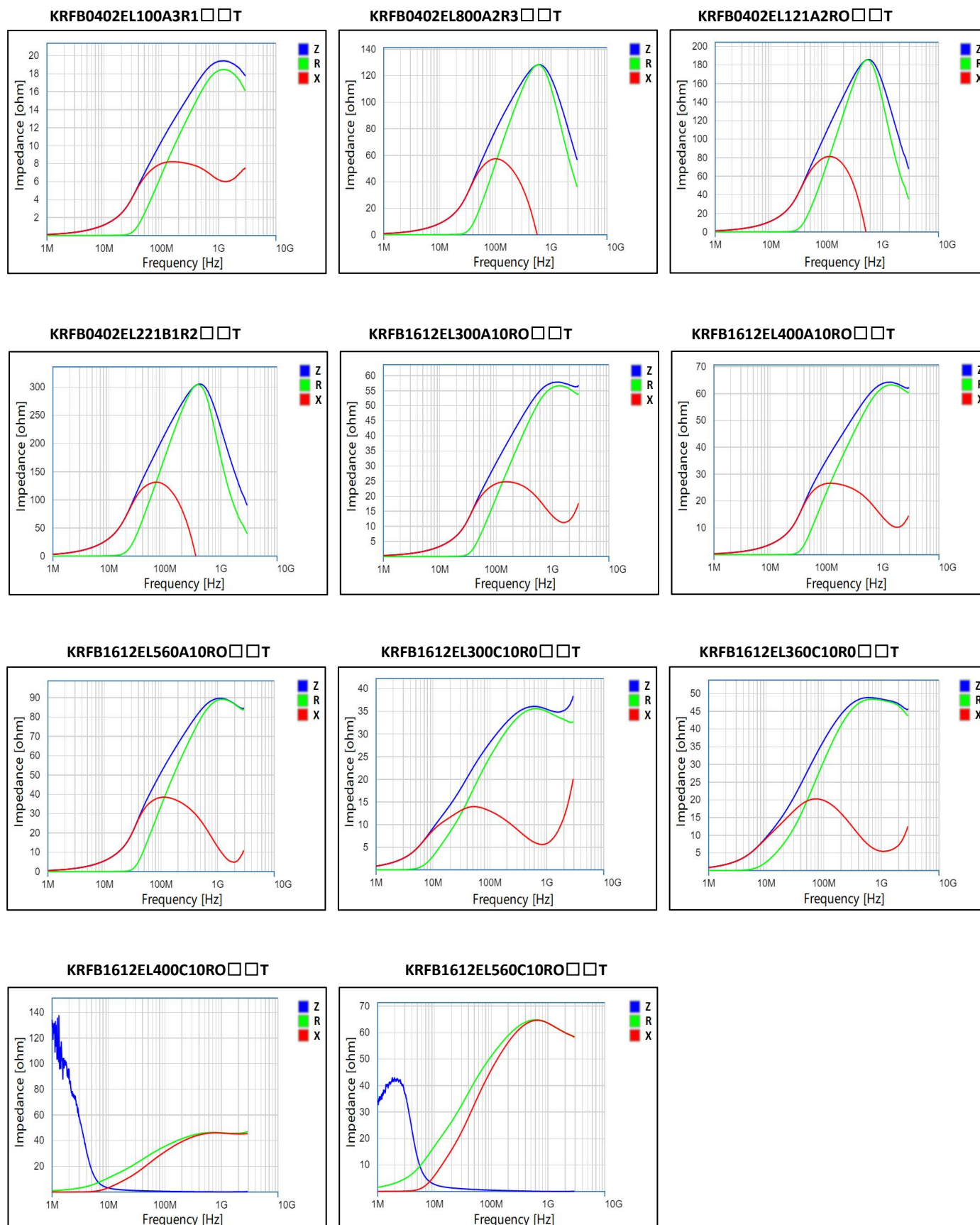
0402 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB0402EL100A3R1□□T	10	$\pm 25\%$	100	18	3100
KRFB0402EL800A2R3□□T	80	$\pm 25\%$	100	38	2300
KRFB0402EL121A2RO□□T	120	$\pm 25\%$	100	50	2000
KRFB0402EL221B1R2□□T	220	$\pm 25\%$	100	100	1200

1612 Type

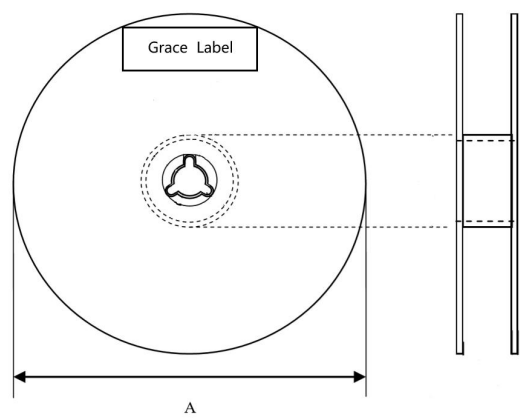
Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (m Ω) max	Rated current (mA) Max
KRFB1612EL300A10RO□□T	30	$\pm 25\%$	100	4	10000
KRFB1612EL400A10RO□□T	40	$\pm 25\%$	100	4	10000
KRFB1612EL560A10RO□□T	56	$\pm 25\%$	100	4	10000
KRFB1612EL300C10R0□□T	30	$\pm 25\%$	100	4	10000
KRFB1612EL360C10R0□□T	36	$\pm 25\%$	100	0.75	10000
KRFB1612EL400C10RO□□T	40	$\pm 25\%$	100	4	10000
KRFB1612EL560C10RO□□T	56	$\pm 25\%$	100	4	10000

Typical Characteristic Curve

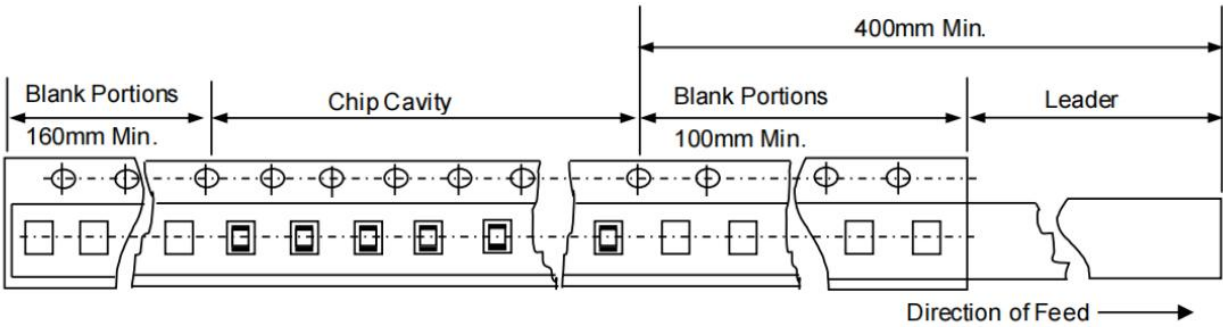


Taping and Packing

Tape and reel packing according to IEC 60286-3.



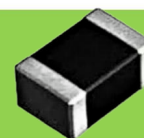
Size (EIA/JIS)	A	Quantity(Pcs)
		Tape & reel
0402/1005	178±2mm	10,000
1612/4030	330mm	4,000



Multilayer Chip Ferrite Audio Beads —KRFB-F series

For **Signal lines**

- **High frequency noise**



Features

- High impedance characteristic in 1GHz or higher frequency.
- Multilayer Chip Ferrite Beads with nickel barrier termination (AgNiSn) .
- Operating temperature from -55 °C to 125°C.
- Suitable reflow and wave soldering.
- 100% Pb free, RoHS .

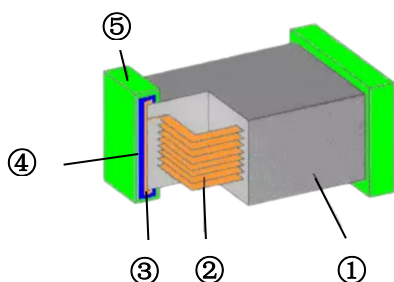
Applications

- High frequency noise suppression in All kinds of electronic equipment signal.

Part Numbering

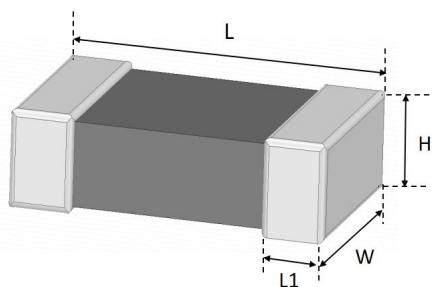
KRFB		0402		F		121		E		R30		A		A001		T	
①		②		③		④		⑤		⑥		⑦		⑧		⑨	
①		Product Code		②		Dimensions (EIA)		③		Series Code		④		Nominal Impedance (Ω)			
GRACE Multilayer Chip Ferrite Beads				0402				F		High frequency noise		121		120			
				0603								102		1000			
⑤		Material Code		⑥		Rated Curent (A)		⑦		internal code		⑧		Customer identification code			
A、C、E、F				R05		0.05		A				A001					
				R30		0.30											
⑨		Packaging style															
T		Tape															
B		Bulk															

Construction



No.	Name	
①	Body	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

Dimensions



Size (JIS/EIA)	L (mm)	W (mm)	H (mm)	L1 (mm)
0402/1005	1.00 ± 0.15	0.50 ± 0.15	0.50 ± 0.15	0.25 ± 0.10
0603/1608	1.60 ± 0.15	0.80 ± 0.15	0.80 ± 0.15	0.30 ± 0.20

Electrical Characteristics

0402 Type

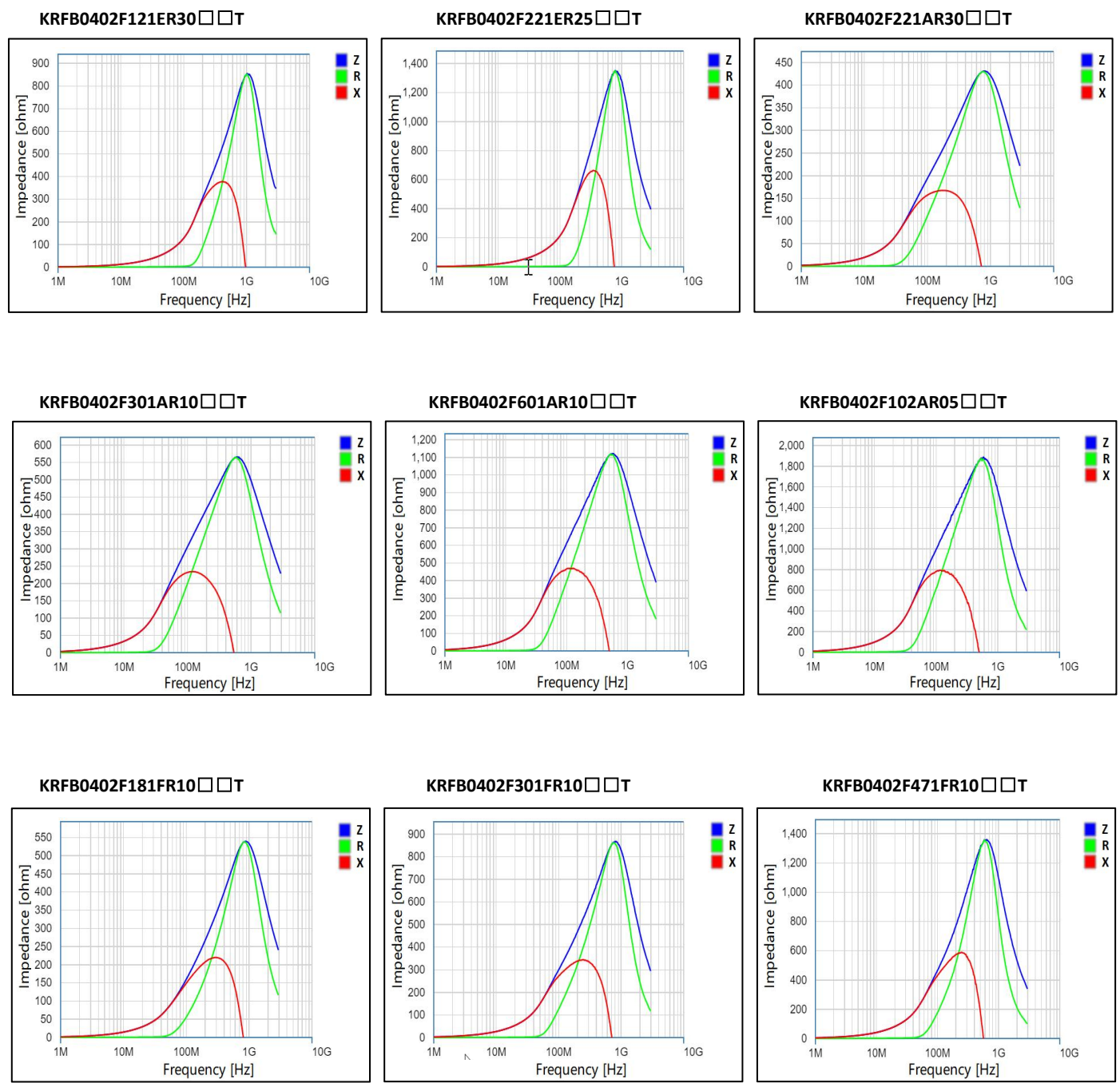
Part Number	Impedance(Ω)		RDC (Ω) max	Rated current (mA) Max
	@100MHZ	@1GHz(Min.)		
KRFB0402F121ER30□□T	$120 \pm 25\%$	500	0.70	300
KRFB0402F221ER25□□T	$220 \pm 25\%$	900	1.00	250
KRFB0402F221AR30□□T	$220 \pm 25\%$	300	0.50	300
KRFB0402F301AR10□□T	$300 \pm 25\%$	400	1.00	100
KRFB0402F601AR10□□T	$600 \pm 25\%$	700	1.50	100
KRFB0402F102AR05□□T	$1000 \pm 25\%$	900	1.80	50
KRFB0402F181FR10□□T	$180 \pm 25\%$	400	1.00	100
KRFB0402F301FR10□□T	$300 \pm 25\%$	600	1.10	100
KRFB0402F471FR10□□T	$470 \pm 25\%$	900	1.30	100
KRFB0402F601FR30□□T	$600 \pm 25\%$	1100	0.85	300
KRFB0402F102FR25□□T	$1000 \pm 25\%$	1200	1.25	250
KRFB0402F152FR05□□T	$1500 \pm 25\%$	1400	2.20	50
KRFB0402F182FR20□□T	$1800 \pm 25\%$	1620	2.20	200
KRFB0402F601CR30□□T	$600 \pm 25\%$	600	0.70	300
KRFB0402F102CR25□□T	$1000 \pm 25\%$	900	1.10	250

0603 Type

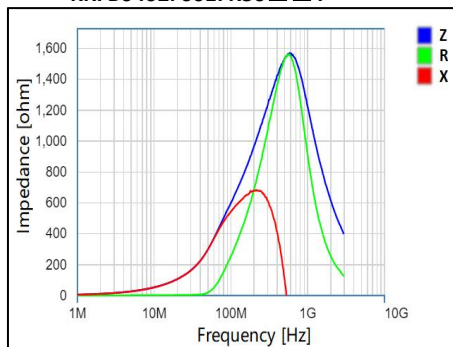
Part Number	Impedance(Ω)		RDC (Ω) max	Rated current (mA) Max
	@100MHZ	@1GHz(Min.)		
KRFB0603F471FR10□□T	$470 \pm 25\%$	700	1.20	100
KRFB0603F601FR10□□T	$600 \pm 25\%$	850	1.50	100
KRFB0603F102FR05□□T	$1000 \pm 25\%$	1100	1.80	50
KRFB0603F181CR20□□T	$180 \pm 25\%$	180	0.55	200
KRFB0603F301CR20□□T	$300 \pm 25\%$	300	0.75	200

KRFB0603F471CR20□□T	470±25%	400	0.85	200
KRFB0603F601CR20□□T	600±25%	450	1.00	200
KRFB0603F102CR10□□T	1000±25%	750	1.60	100

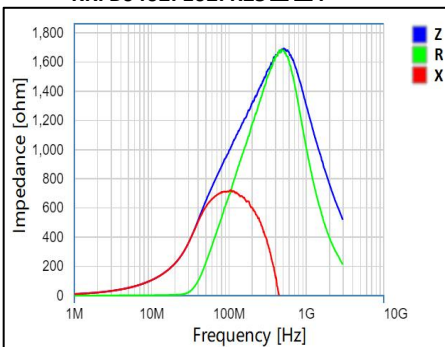
Typical Characteristic Curve



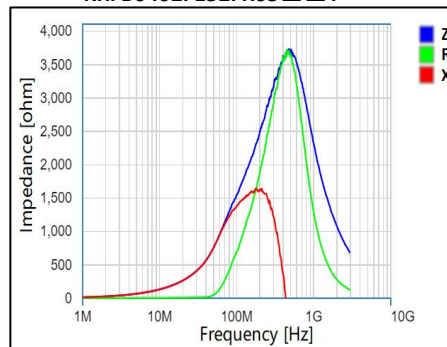
KRFB0402F601FR30□□T



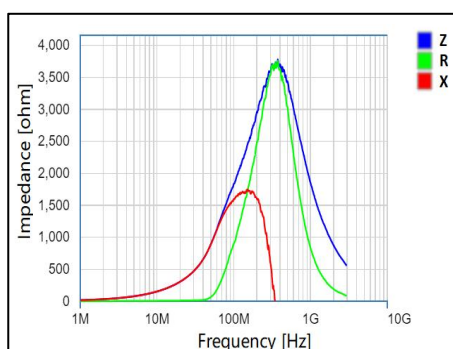
KRFB0402F102FR25□□T



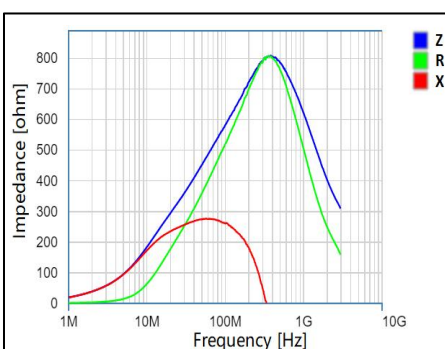
KRFB0402F152FR05□□T



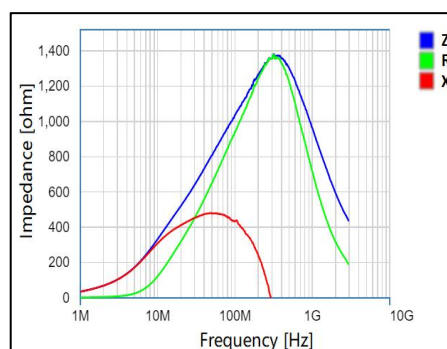
KRFB0402F182FR20□□T



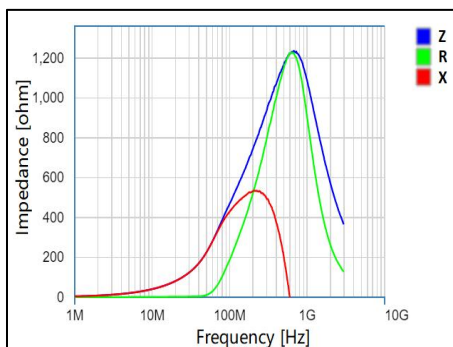
KRFB0402F601CR30□□T



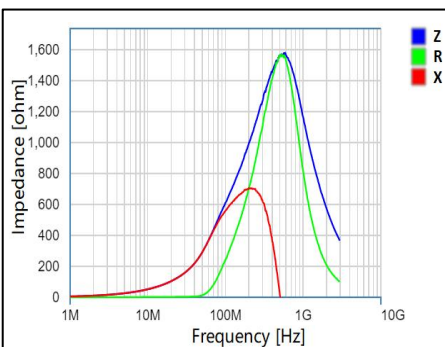
KRFB0402F102CR25□□T



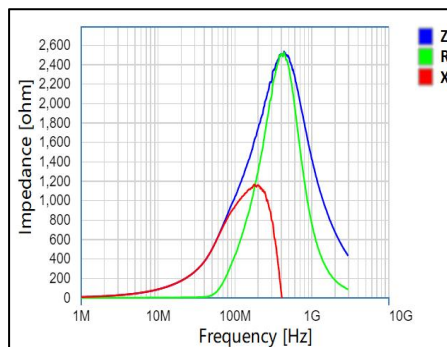
KRFB0603F471FR10□□T



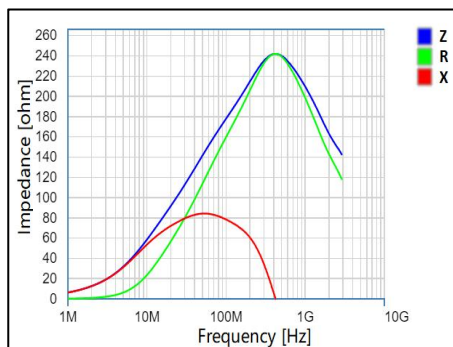
KRFB0603F601FR10□□T



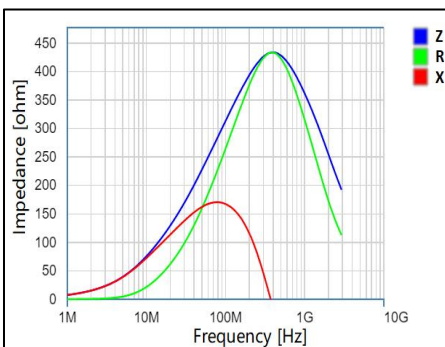
KRFB0603F102FR05□□T



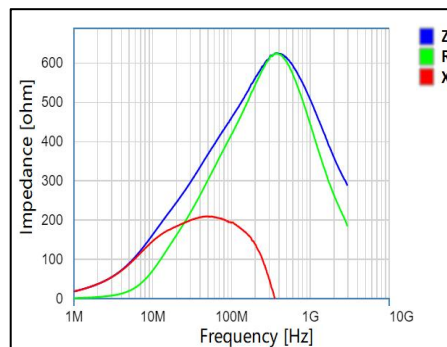
KRFB0603F181CR20□□T

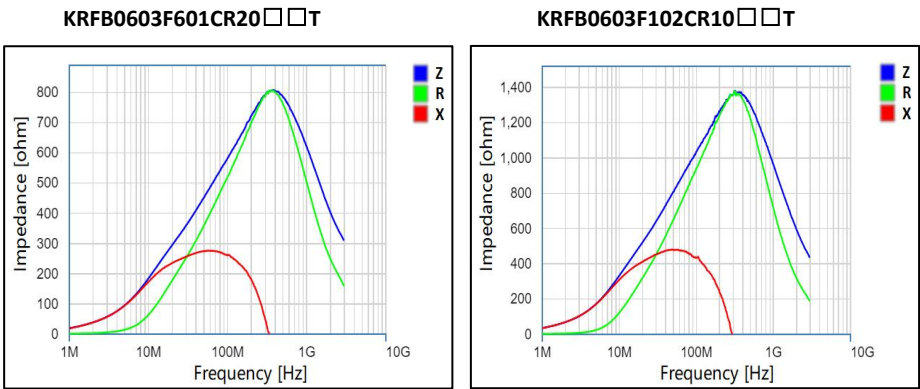


KRFB0603F301CR20□□T



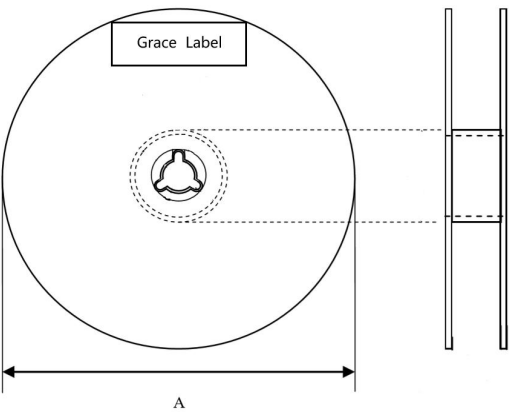
KRFB0603F471CR20□□T



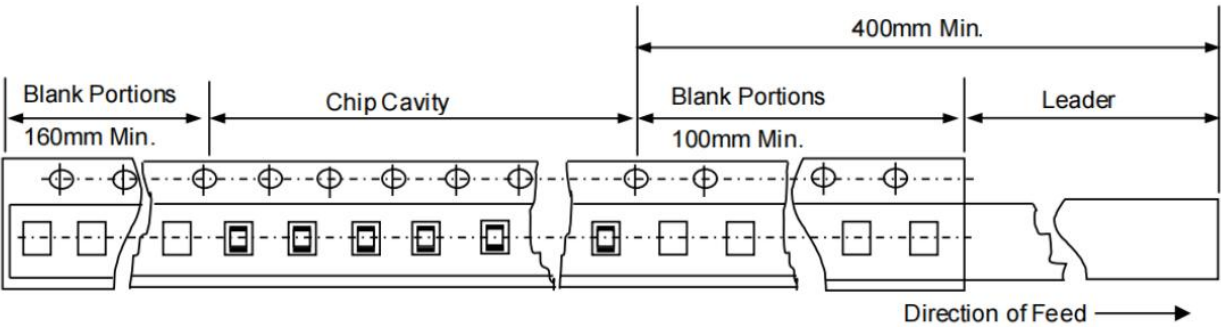


Taping and Packing

Tape and reel packing according to IEC 60286-3.



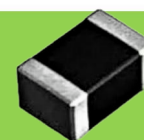
Size (JIS/EIA)	A	Quantity(Pcs)
		Tape & reel
0402/1005	178±2mm	10,000
0603/1608		4,000



Multilayer Chip Ferrite Audio Beads —KRFB-FL series

For **Signal and Power lines**

- **High frequency and Large current**



Features

- Perfect effect for EMI suppression at high frequency ($\geq 1\text{GHz}$),
- Low DC resistance suitable for large current signals.
- Multilayer Chip Ferrite Beads with nickel barrier termination (AgNiSn).
- Operating temperature from $-55\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$
- 100% Pb free, RoHS

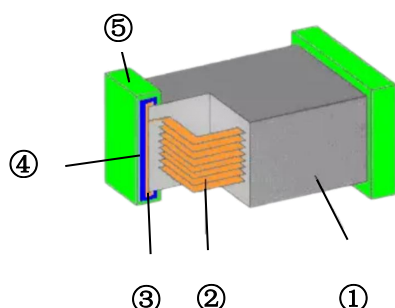
Applications

- Noise suppression for PCs with high-speed CPU and high-speed bus, and for interface lines of peripheral equipment.
- High harmonic noise suppression for digital equipment with several hundred MHz or higher clock speeds.

Part Numbering

KRFB		0402		FL		121		A		R60		A		A001		T	
①		②		③		④		⑤		⑥		⑦		⑧		⑨	
①		Product Code		②		Dimensions (EIA)		③		Series Code		④		Nominal Impedance (Ω)			
GRACE Multilayer Chip Ferrite Beads				0402				FL High frequency and Large current				250		25			
				0603								121		120			
												102		1000			
⑤		Material Code		⑥		Rated Curent (A)		⑦		internal code		⑧		Customer identification code			
A、B、C、E				R15		0.15		A				A001					
				R60		0.60											
				1R5		1.50											
⑨		Packaging style															
T		Tape															
B		Bulk															

Construction



No.	Name	
①	Body	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

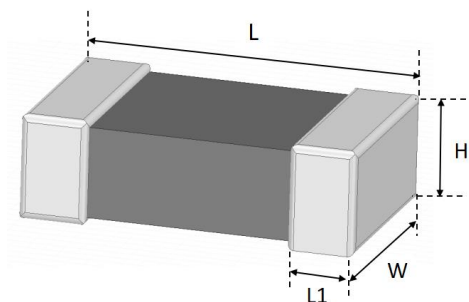
Design and specifications are each subject to change without notice.

Ask factory for the current technical specifications before purchase and/or use.

Please contact our sales representatives or product engineer when you didn't find the suitable product in this catalogue.

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Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0402/1005	1.00 ± 0.15	0.50 ± 0.15	0.50 ± 0.15	0.25 ± 0.10
0603/1608	1.60 ± 0.15	0.80 ± 0.15	0.80 ± 0.15	0.30 ± 0.20

Electrical Characteristics

0402 Type

Part Number	Impedance(Ω)		RDC (Ω) max	Rated current (mA) Max
	@100MHZ	@1GHz(Min.)		
KRFB0402FL121AR60□□T	$120 \pm 25\%$	100	0.25	600
KRFB0402FL221AR50□□T	$220 \pm 25\%$	300	0.38	500
KRFB0402FL121CR60□□T	$120 \pm 25\%$	100	0.25	600
KRFB0402FL121C1R1□□T	$120 \pm 25\%$	100	0.13	1100
KRFB0402FL221CR50□□T	$220 \pm 25\%$	200	0.38	500
KRFB0402FL221CR70□□T	$220 \pm 25\%$	250	0.25	700

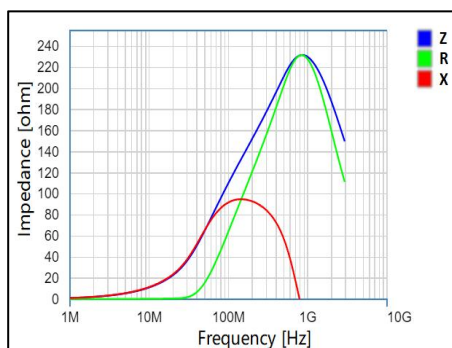
0603 Type

Part Number	Impedance(Ω)		RDC (Ω) max	Rated current (mA) Max
	@100MHZ	@1GHz(Min.)		
KRFB0603FL121ER90□□T	$120 \pm 25\%$	500	0.13	900
KRFB0603FL121A1R5□□T	$120 \pm 25\%$	200	0.07	1500
KRFB0603FL151AR80□□T	$150 \pm 25\%$	200	0.20	800
KRFB0603FL151A1R5□□T	$150 \pm 25\%$	200	0.07	1500
KRFB0603FL221AR60□□T	$220 \pm 25\%$	300	0.25	600
KRFB0603FL221A1R2□□T	$220 \pm 25\%$	300	0.12	1200
KRFB0603FL331AR90□□T	$330 \pm 25\%$	380	0.15	900
KRFB0603FL391AR70□□T	$390 \pm 25\%$	600	0.18	700
KRFB0603FL471AR70□□T	$470 \pm 25\%$	550	0.22	700
KRFB0603FL601AR70□□T	$600 \pm 25\%$	750	0.24	700
KRFB0603FL102AR60□□T	$1000 \pm 25\%$	1000	0.35	600
KRFB0603FL601BR80□□T	$600 \pm 25\%$	500	0.25	800
KRFB0603FL102BR60□□T	$1000 \pm 25\%$	600	0.35	600

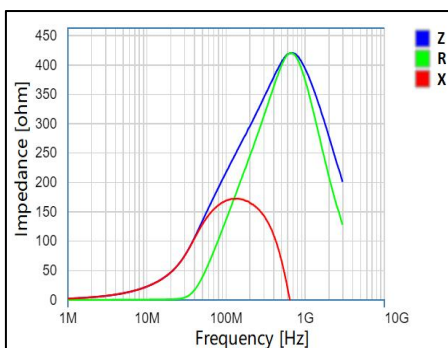
KRFB0603FL152BR50□□T	1500±25%	1000	0.50	500
KRFB0603FL101CR80□□T	100±25%	100	0.20	800
KRFB0603FL101C2RO□□T	100±25%	100	0.055	2000
KRFB0603FL121C2RO□□T	120±25%	110	0.055	2000
KRFB0603FL221CR60□□T	220±25%	220	0.25	600
KRFB0603FL471CR50□□T	470±25%	400	0.32	500
KRFB0603FL601CR50□□T	600±25%	450	0.35	500
KRFB0603FL102CR15□□T	1000±25%	750	0.90	150

Typical Characteristic Curve

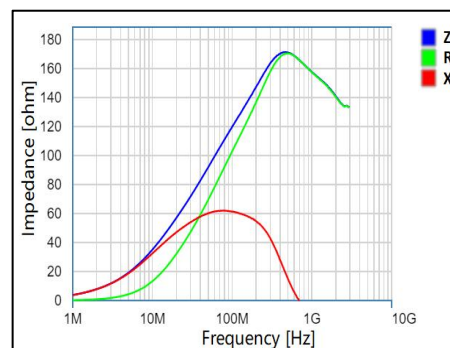
KRFB0402FL121AR60□□T



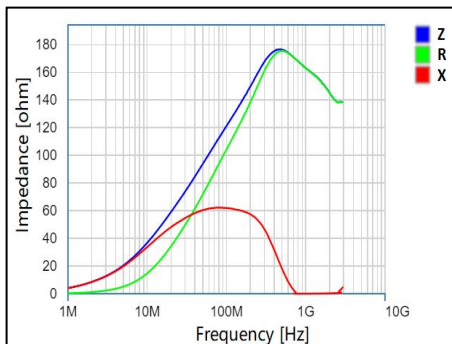
KRFB0402FL221AR50□□T



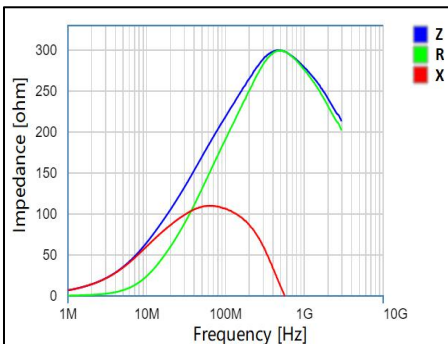
KRFB0402FL121CR60□□T



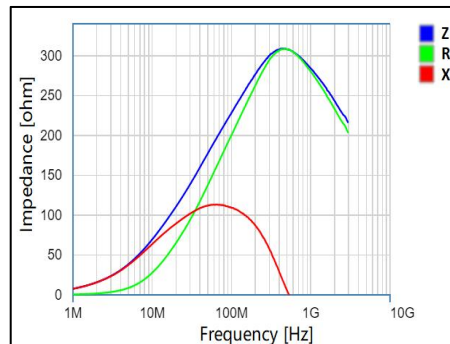
KRFB0402FL121C1R1□□T



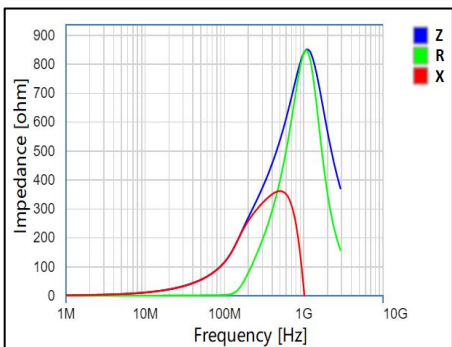
KRFB0402FL221CR50□□T



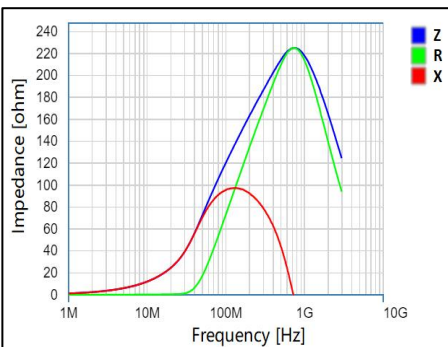
KRFB0402FL221CR70□□T



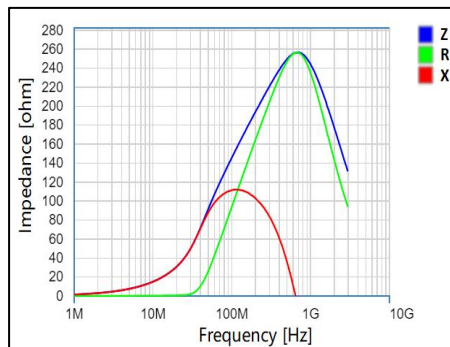
KRFB0603FL121ER90□□T

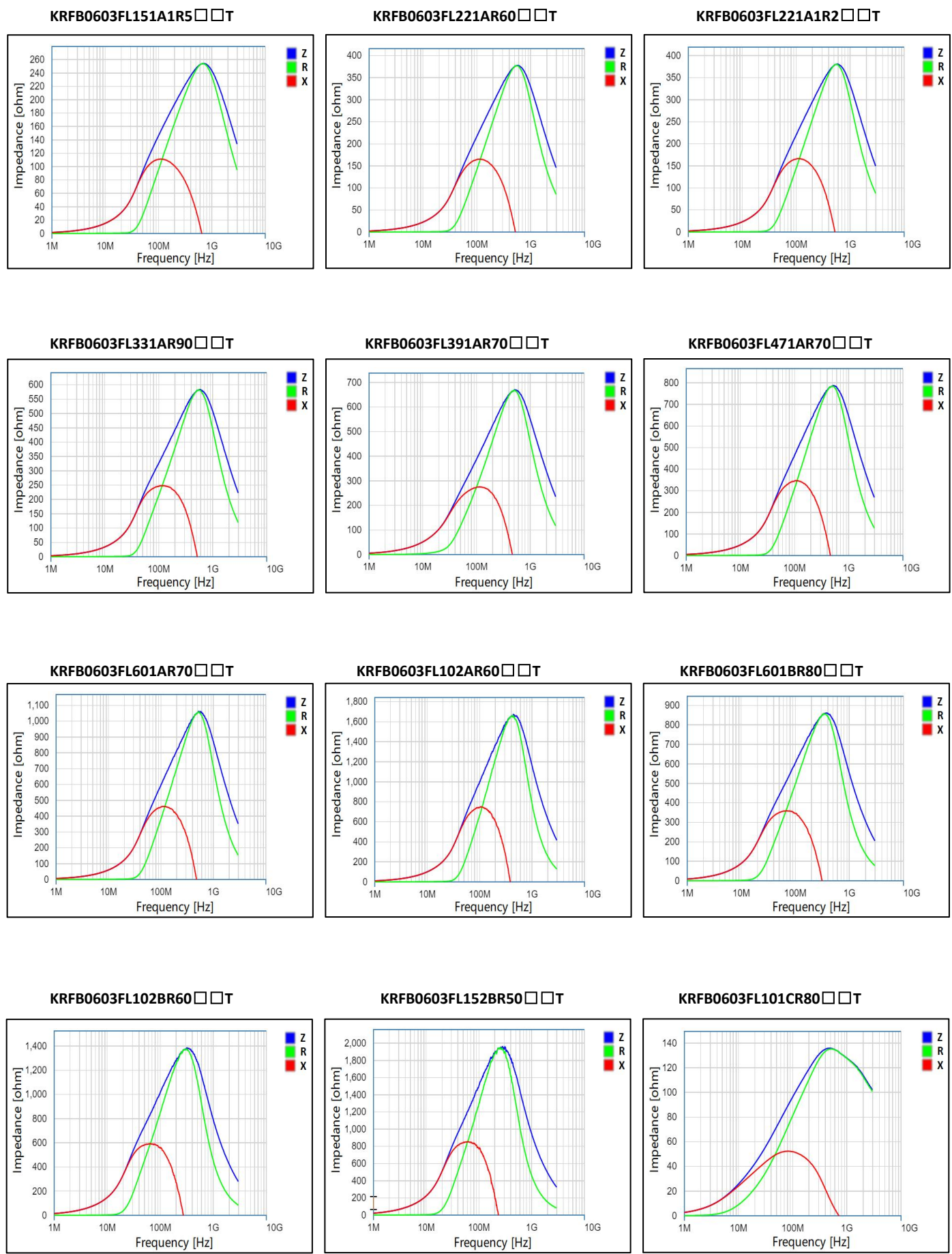


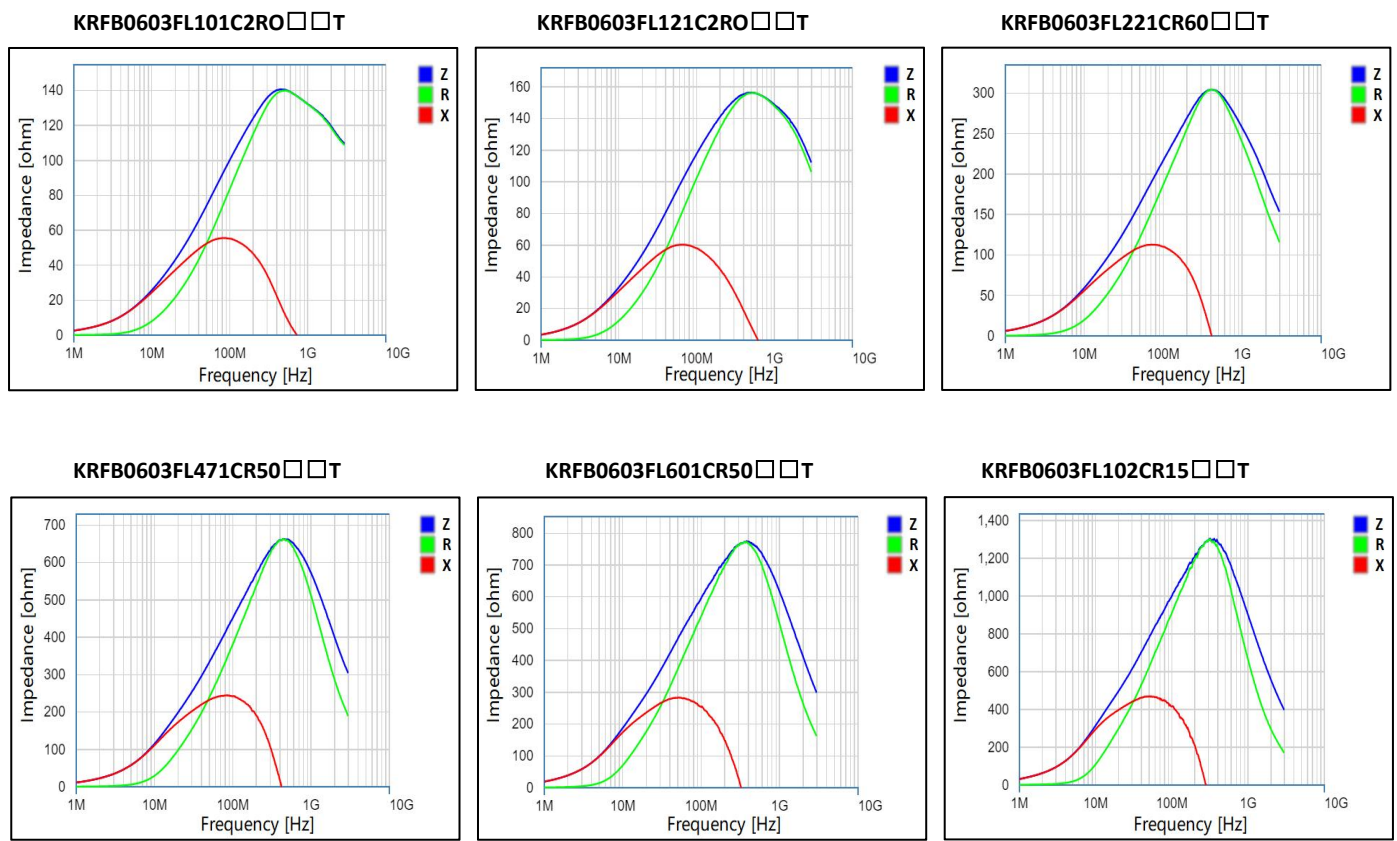
KRFB0603FL121A1R5□□T



KRFB0603FL151AR80□□T

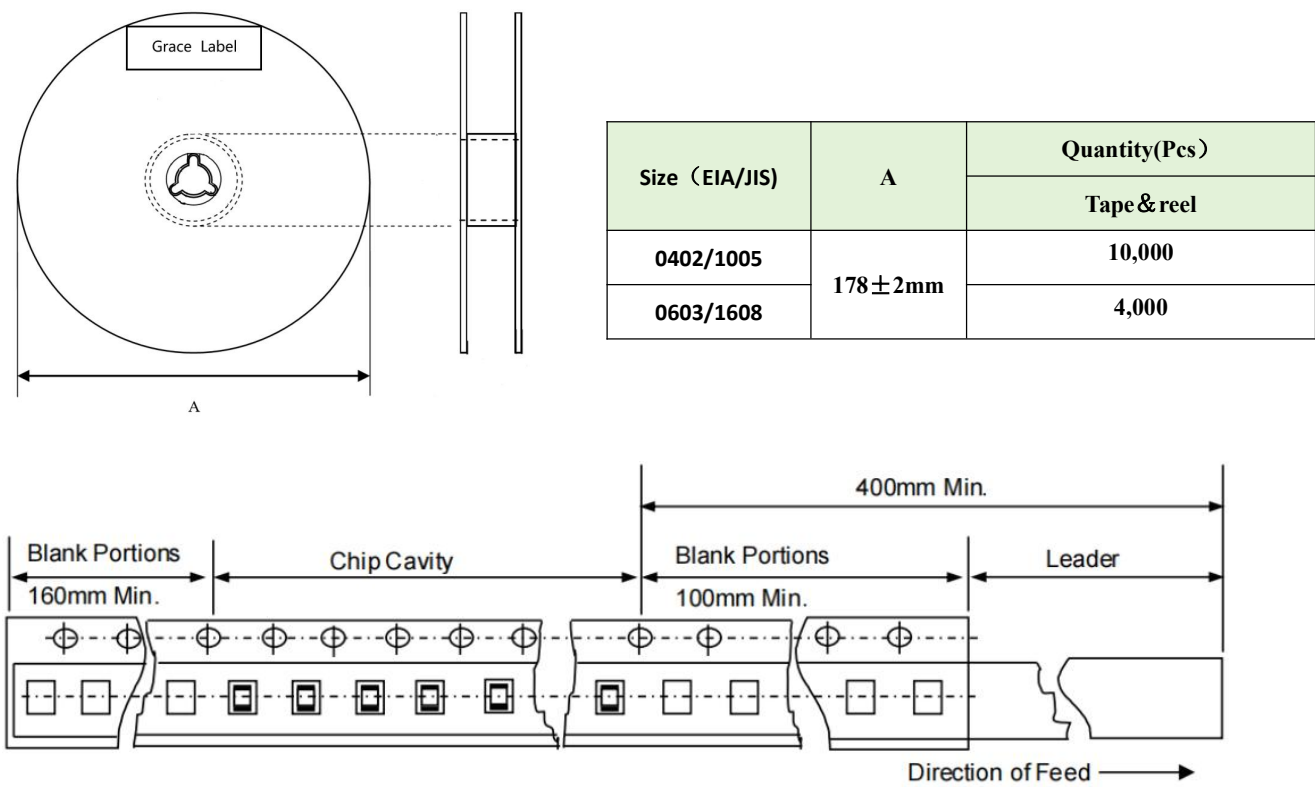






Taping and Packing

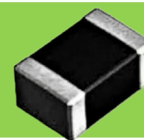
Tape and reel packing according to IEC 60286-3.



Multilayer Chip Ferrite Audio Beads —KRFB-AS series

For **Audio Lines**

- **High Speed**



Features

- Excellent performance of THD+N.
- Multilayer Chip Ferrite Beads with nickel barrier termination (AgNiSn)
- Operating temperature from -55 °C to 125°C
- Suitable reflow and wave soldering.
- 100% Pb free, RoHS

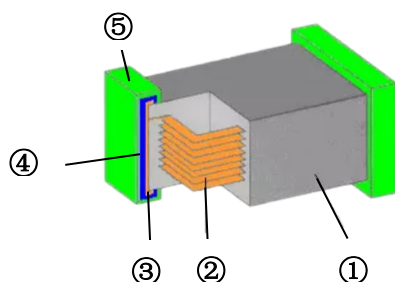
Applications

- Used in Class D amplifier circuits, the audio beads provide noise reduction while maintaining a good audio signal.

Part Numbering

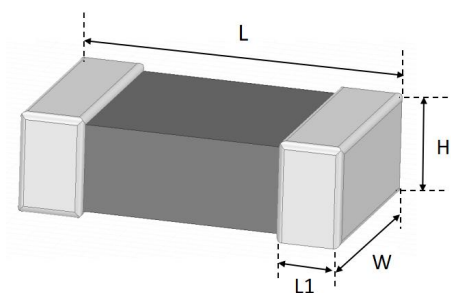
KRFB	0402	AS	700	E	R90	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨
①	Product Code	②	Dimensions (EIA)	③	Series Code	④	Nominal Impedance (Ω)	
GRACE Multilayer Chip Ferrite Beads		0402		AS	Audio Filter for high speed signal	700	70	
		0603				121	120	
		0806				102	1000	
⑤	Material Code	⑥	Rated Curent (A)	⑦	internal code	⑧	Customer identification code	
A、 E、 F		R23	0.23	A		A001		
		R90	0.90					
		1R6	1.60					
⑨	Packaging style							
T	Tape							
B	Bulk							

Construction



No.	Name	
①	Body	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

Dimensions



Size (JIS/EIA)	L (mm)	W (mm)	H (mm)	L1 (mm)
0402/1005	1.00 ± 0.15	0.50 ± 0.15	0.50 ± 0.15	0.25 ± 0.10
0603/1608	1.60 ± 0.15	0.80 ± 0.15	0.80 ± 0.15	0.30 ± 0.20
0806/2016	2.00 ± 0.20	1.20 ± 0.20	0.85 ± 0.20	0.50 ± 0.30
1210/3225	3.20 ± 0.20	2.50 ± 0.20	2.0 ± 0.20	0.70 ± 0.30

Electrical Characteristics

0402 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (Ω) max	Rated current (mA) Max
KRFB0402AS700ER90□□T	70	$\pm 25\%$	100	0.200	900
KRFB0402AS121ER80□□T	120	$\pm 25\%$	100	0.300	800
KRFB0402AS221ER70□□T	220	$\pm 25\%$	100	0.400	700
KRFB0402AS102FR23□□T	1000	$\pm 25\%$	100	0.900	230

0603 Type

Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (Ω) max	Rated current (mA) Max
KRFB0603AS600E1R2□□T	60	$\pm 25\%$	100	0.130	1200
KRFB0603AS121E1R3□□T	120	$\pm 25\%$	100	0.140	1300
KRFB0603AS251E1R1□□T	250	$\pm 25\%$	100	0.190	1100
KRFB0603AS501FR95□□T	500	$\pm 25\%$	100	0.250	950
KRFB0603AS701FR80□□T	700	$\pm 25\%$	100	0.290	800

0806 Type

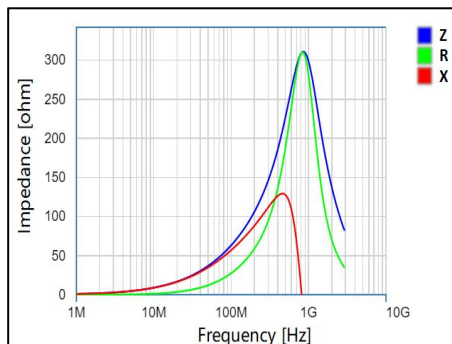
Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (Ω) max	Rated current (mA) Max
KRFB0806AS401E2RO□□T	400	$\pm 25\%$	100	0.10	2000

1210 Type

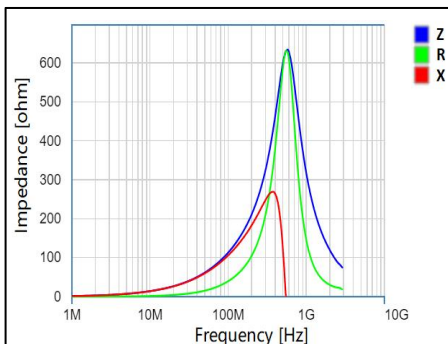
Part Number	Impedance (Ω)	Tolerance	Test Frequency (MHZ)	RDC (Ω) max	Rated current (mA) Max
KRFB1210AS300A10R□□T	30	$\pm 10\%$	100	0.0016	10000

Typical Characteristic Curve

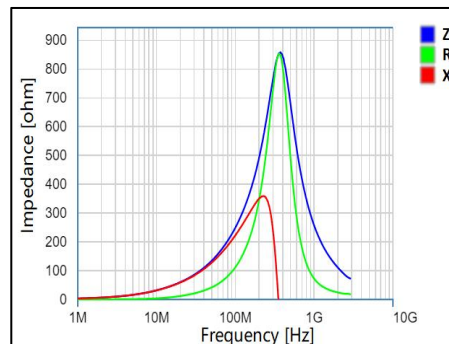
KRFB0402AS700ER90□□T



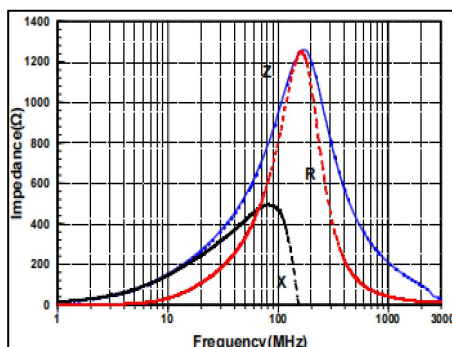
KRFB0402AS121ER80□□T



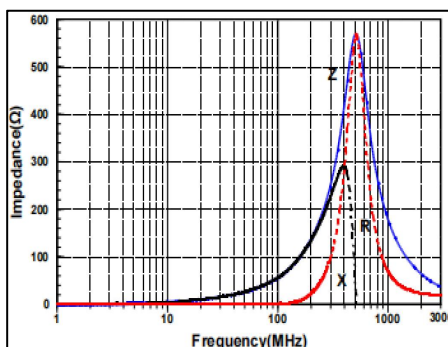
KRFB0402AS221ER70□□T



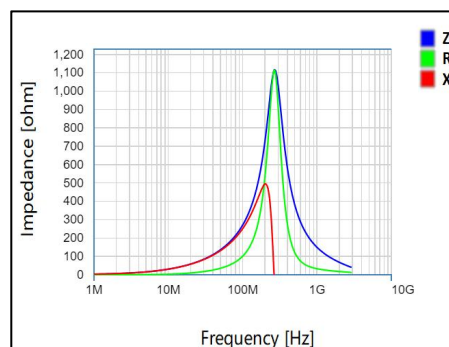
KRFB0402AS102FR23□□T



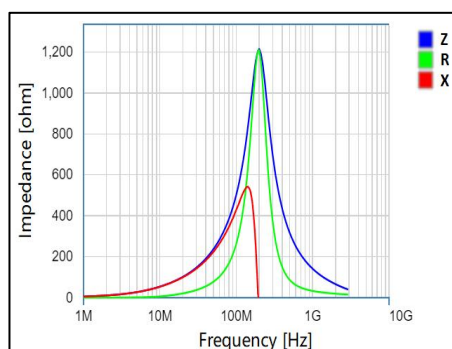
KRFB0603AS600E1R2□□T



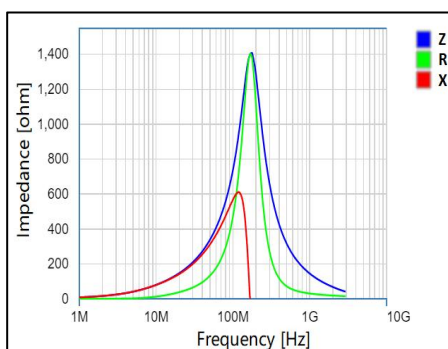
KRFB0603AS251E1R1□□T



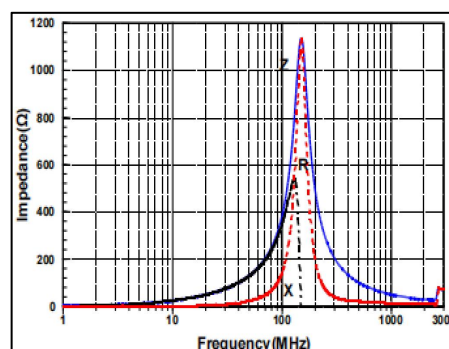
KRFB0603AS501FR95□□T



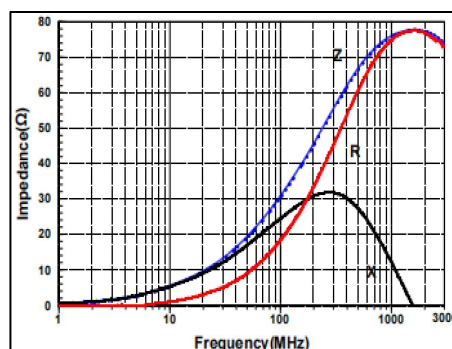
KRFB0603AS701FR80□□T



KRFB0806AS401E2R0□□T

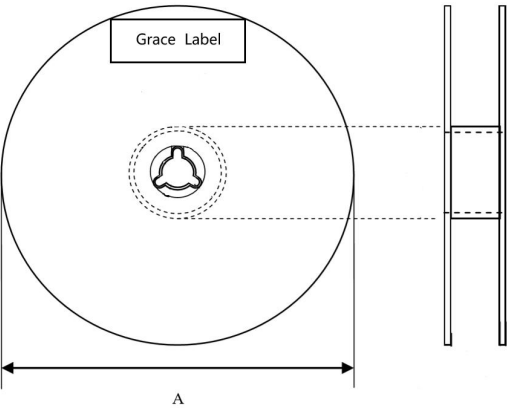


KRFB1210AS300A10R□□T

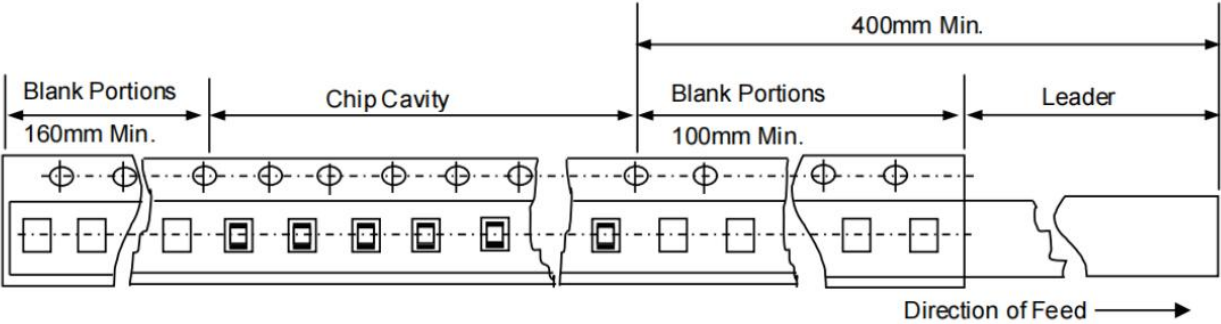


Taping and Packing

Tape and reel packing according to IEC 60286-3.



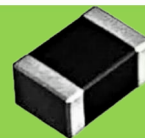
Size (JIS/EIA)	A	Quantity(Pcs)
		Tape & reel
0402/1005	178±2mm	10,000
0603/1608		4,000
0806/2016		3,000
1210/3225		2,000



Multilayer Chip Ferrite Audio Beads —KRFB-AF series

For **Audio Lines**

- **High Frequency Noise**



Features

- Perfect effect for EMI suppression at high frequency.
- Multilayer Chip Ferrite Beads with nickel barrier termination (AgNiSn)
- Operating temperature from -55 °C to 125°C
- Suitable reflow and wave soldering.
- 100% Pb free, RoHS

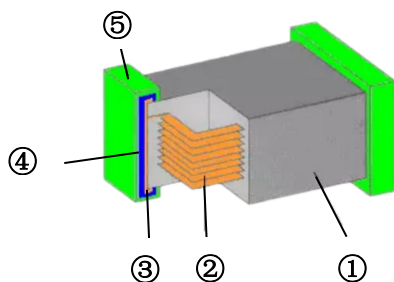
Applications

- EMI Suppression of audio line,such as Moblle phones,TV and other equipment,etc.

Part Numbering

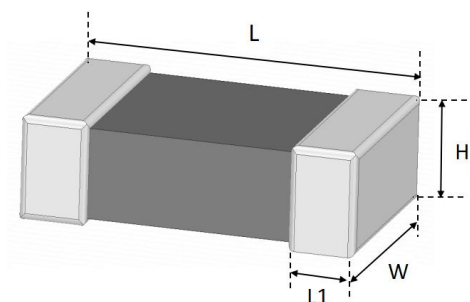
KRFB	0402	AF	101	D	1R1	A	A001	T
①	②	③	④	⑤	⑥	⑦	⑧	⑨
①	Product Code	②	Dimensions (EIA)	③	Series Code	④	Nominal Impedance (Ω)	
	GRACE		0402		AF		101	100
	Multilayer Chip Ferrite		0603		Audio Filter for		331	330
	Beads				Noise		462	4600
⑤	Material Code	⑥	Rated Curent (A)	⑦	internal code	⑧	Customer identification code	
	D、E	R65	0.65		A		A001	
		1R1	1.10					
⑨	Packaging style							
T	Tape							
B	Bulk							

Construction



No.	Name	
①	Body	
②	Internal electrode	
③	Terminal electrode	Ag
④		Ni
⑤		Sn

Dimensions



Size (EIA/JIS)	L (mm)	W (mm)	H (mm)	L1 (mm)
0402/1005	1.00 ± 0.15	0.50 ± 0.15	0.50 ± 0.15	0.25 ± 0.10
0603/1608	1.60 ± 0.15	0.80 ± 0.15	0.80 ± 0.15	0.30 ± 0.20

Electrical Characteristics

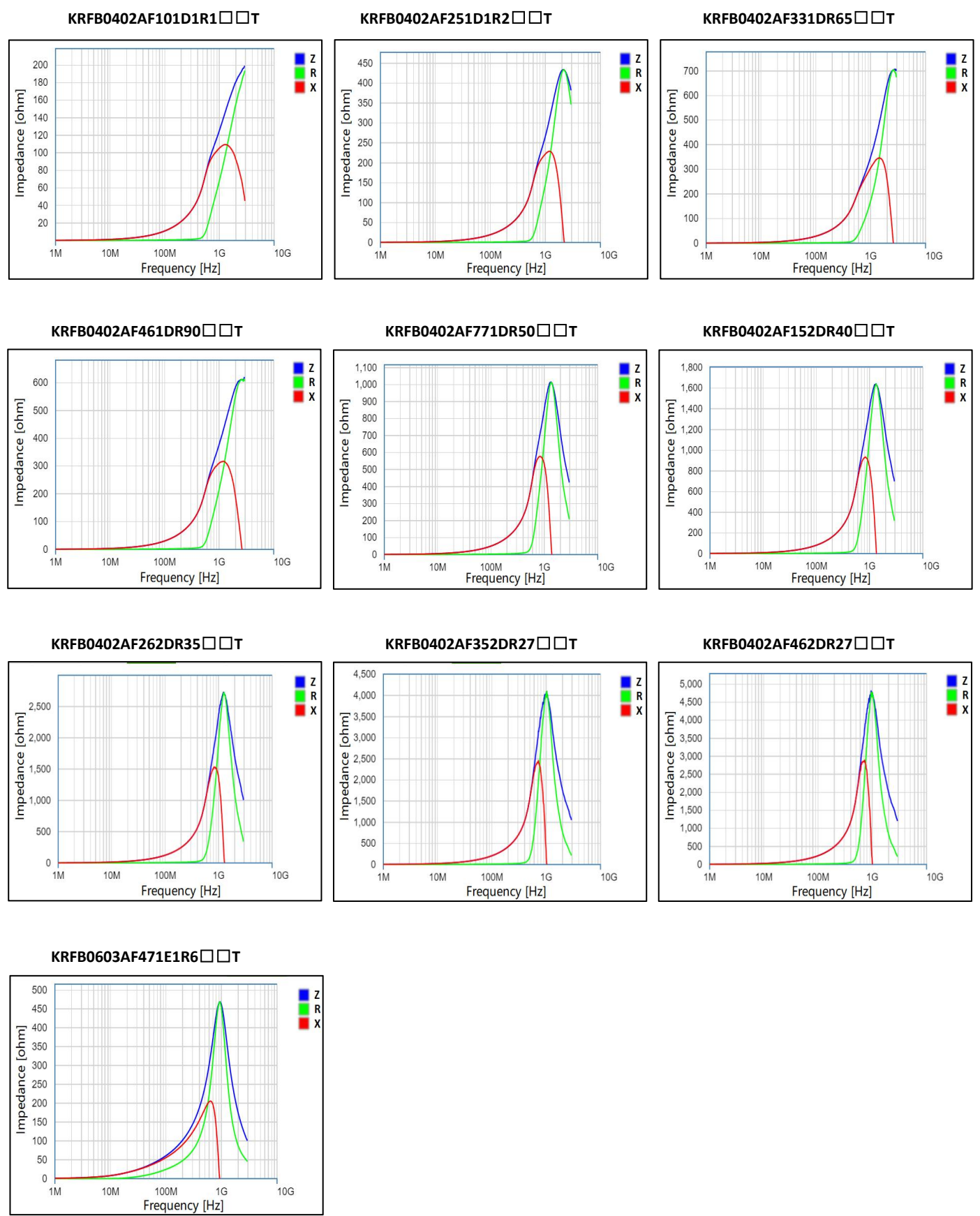
0402 Type

Part Number	Impedance (Ω)			RDC (Ω) max	Rated current (mA) Max
	@900MHz(Typ.)	@900MHz(Min.)	@1.7GHz(Typ.)		
KRFB0402AF101D1R1□□T	100	70	160	0.100	1100
KRFB0402AF251D1R2□□T	250	150	320	0.150	1200
KRFB0402AF331DR65□□T	330	230	54	0.300	650
KRFB0402AF461DR90□□T	460	300	600	0.170	900
KRFB0402AF771DR50□□T	770	530	900	0.500	500
KRFB0402AF152DR40□□T	1500	1000	1000	0.600	400
KRFB0402AF262DR35□□T	2600	1800	1450	0.800	350
KRFB0402AF352DR27□□T	3500	2500	1600	1.350	270
KRFB0402AF462DR27□□T	4600	2800	1800	1.650	270

0603 Type

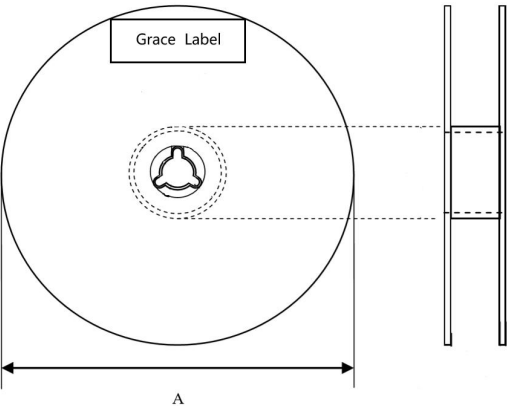
Part Number	Impedance (Ω)			RDC (Ω) max	Rated current (mA) Max
	@900MHz(Typ.)	@900MHz(Min.)	@1.7GHz(Typ.)		
KRFB0603AF471E1R6□□T	470	280	270	0.075	1600

Typical Characteristic Curve

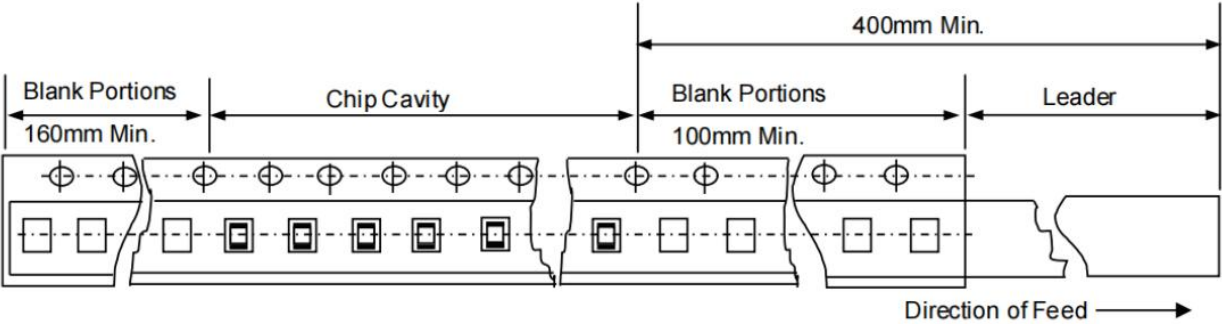


Taping and Packing

Tape and reel packing according to IEC 60286-3.



Size (EIA/JIS)	A	Quantity(Pcs)
		Tape & reel
0402/1005	178±2mm	10000
0603/1608		4000



无限可能 锐意进取

CONTACT US

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