

■ Limited Application

1. Equipment Intended for Use

The products listed in this catalog are intended for general-purpose and standard use in general electronic equipment for consumer (e.g., AV equipment, OA equipment, home electric appliances, office equipment, information and communication equipment including, without limitation, mobile phone, and PC) and other equipment specified in this catalog or the individual product specification sheets, or the equipment approved separately by TAIYO YUDEN.

TAIYO YUDEN has the product series intended for use in the following equipment. Therefore, when using our products for these equipment, please check available applications specified in this catalog or the individual product specification sheets and use the corresponding products.

Application	Product Series		Quality Grade ^{*3}
	Equipment ^{*1}	Category (Part Number Code ^{*2})	
Automotive	Automotive Electronic Equipment (POWERTRAIN, SAFETY)	A	1
	Automotive Electronic Equipment (BODY & CHASSIS, INFOTAINMENT)	C	2
Industrial	Telecommunications Infrastructure and Industrial Equipment	B	2
Medical	Medical Devices classified as GHTF Class C (Japan Class III)	M	2
	Medical Devices classified as GHTF Classes A or B (Japan Classes I or II)	L	3
Consumer	General Electronic Equipment	S	3

*Notes: 1. Based on the general specifications required for electronic components for such equipment, which are recognized by TAIYO YUDEN, the use of each product series for the equipment is recommended. Please be sure to contact TAIYO YUDEN before using our products for equipment other than those covered by the product series.

2. On each of our part number, the 2nd code from the left is a code indicating the "Category" as shown in the above table. For details, please check the explanatory materials regarding the part numbering system of each of our products.

3. Each product series is assigned a "Quality Grade" from 1 to 3 in order of higher quality. Please do not incorporate a product into any equipment with a higher Quality Grade than the Quality Grade of such product without the prior written consent of TAIYO YUDEN.

2. Equipment Requiring Inquiry

Please be sure to contact TAIYO YUDEN for further information before using the products listed in this catalog for the following equipment (excluding intended equipment as specified in this catalog or the individual product specification sheets) which may cause loss of human life, bodily injury, serious property damage and/or serious public impact due to a failure or defect of the products and/or malfunction attributed thereto.

- (1) Transportation equipment (automotive powertrain control system, train control system, and ship control system, etc.)
- (2) Traffic signal equipment
- (3) Disaster prevention equipment, crime prevention equipment
- (4) Medical devices classified as GHTF Class C (Japan Class III)
- (5) Highly public information network equipment, data-processing equipment (telephone exchange, and base station, etc.)
- (6) Any other equipment requiring high levels of quality and/or reliability equal to the equipment listed above

3. Equipment Prohibited for Use

Please do not incorporate our products into the following equipment requiring extremely high levels of safety and/or reliability.

- (1) Aerospace equipment (artificial satellite, rocket, etc.)
- (2) Aviation equipment ^{*1}
- (3) Medical devices classified as GHTF Class D (Japan Class IV), implantable medical devices ^{*2}
- (4) Power generation control equipment (nuclear power, hydroelectric power, thermal power plant control system, etc.)
- (5) Undersea equipment (submarine repeating equipment, etc.)
- (6) Military equipment
- (7) Any other equipment requiring extremely high levels of safety and/or reliability equal to the equipment listed above

*Notes: 1. There is a possibility that our products can be used only for aviation equipment that does not directly affect the safe operation of aircraft (e.g., in-flight entertainment, cabin light, electric seat, cooking equipment) if such use meets requirements specified separately by TAIYO YUDEN. Please be sure to contact TAIYO YUDEN for further information before using our products for such aviation equipment.

2. Implantable medical devices contain not only internal unit which is implanted in a body, but also external unit which is connected to the internal unit.

4. Limitation of Liability

Please note that unless you obtain prior written consent of TAIYO YUDEN, TAIYO YUDEN shall not be in any way responsible for any damages incurred by you or third parties arising from use of the products listed in this catalog for any equipment that is not intended for use by TAIYO YUDEN, or any equipment requiring inquiry to TAIYO YUDEN or prohibited for use by TAIYO YUDEN as described above.

Wire-wound Ferrite Bead Inductors for Power Lines LSMC/LSMG series for General Electronic Equipment for Consumer

Code in front of Series have been extracted from Part number, which describes the segment of products, such as kinds and characteristics.

WAVE REFLOW

■ PART NUMBER

*Operating Temp. : -40~+125°C (Including self-generated heat)

L	S	M	C	C	3	2	1	6	1	1	T	8	0	0	R	
①	②	③	④	⑤	⑥	⑦	⑧									

① Series

Code (1)(2)(3)(4)	
LSMC	Wire-wound Ferrite Bead Inductors for Power Lines for General Electronic Equipment for Consumer
LSMG	Wire-wound Ferrite Bead Inductors for Power Lines for General Electronic Equipment for Consumer

(1) Product Group

Code	
L	Inductors

(2) Category

Code	Recommended equipment	Quality Grade
S	General Electronic Equipment for Consumer	3

② Features

Code	Feature
A	Standard (20MHz)
C	Wave-shaping
G	For GHz noise

③ Dimensions (L × W)

Code	Type (inch)	Dimensions (L × W) [mm]
1608	1608 (0603)	1.6 × 0.8
2012	2012 (0805)	2.0 × 1.25
2016	2016 (0806)	2.0 × 1.6
3216	3216 (1206)	3.2 × 1.6
3225	3225 (1210)	3.2 × 2.5
4516	4516 (1806)	4.5 × 1.6
4525	4525 (1810)	4.5 × 2.5
4532	4532 (1812)	4.5 × 3.2

④ Dimensions (T)

Code	Dimensions (T) [mm]
08	0.8
	0.85
11	1.1
16	1.6
25	2.5
32	3.2

(3) Type

Code	
M	Ferrite Wire-wound bead

(4) Features, Characteristics

Code	
C	High current
G	High frequency

⑤ Packaging

Code	Packaging
T	Taping
L	Taping

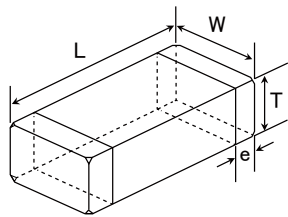
⑥ Nominal impedance

Code (example)	Nominal impedance [Ω]
330	33
221	220
102	1000

⑦ Impedance tolerance

Code	Impedance tolerance
R	±25%
N	±30%

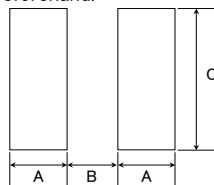
⑧ Internal code



Recommended Land Patterns

Surface Mounting

• Mounting and soldering conditions should be checked beforehand.



Type	A	B	C
1608	1.0	1.0	1.0
2012	1.4	1.2	1.65
2016	1.4	1.2	2.0
3216	1.4	2.2	2.0
3225	1.4	2.2	2.9
4516	1.75	3.5	2.0
4525	1.75	3.5	2.9
4532	1.75	3.5	3.7

Unit: mm

Type	L	W	T	e	Standard quantity [pcs]	
					Paper tape	Embossed tape
160808 *1 (0603)	1.6±0.2 (0.063±0.008)	0.8±0.2 (0.031±0.008)	0.8±0.2 (0.031±0.008)	0.3±0.2 (0.012±0.008)	4000	—
160808 *2 (0603)	1.6±0.1 (0.063±0.004)	0.8±0.1 (0.031±0.004)	0.8±0.1 (0.031±0.004)	0.3±0.15 (0.012±0.006)	4000	—
201208 (0805)	2.0±0.2 (0.079±0.008)	1.25±0.2 (0.049±0.008)	0.85±0.2 (0.033±0.008)	0.5±0.3 (0.020±0.012)	4000	—
201616 (0806)	2.0±0.2 (0.079±0.008)	1.6±0.2 (0.063±0.008)	1.6±0.2 (0.063±0.008)	0.5±0.3 (0.020±0.012)	—	2000
321611 (1206)	3.2±0.3 (0.126±0.012)	1.6±0.2 (0.063±0.008)	1.1±0.2 (0.043±0.008)	0.5±0.3 (0.020±0.012)	—	2000
321616 (1206)	3.2±0.3 (0.126±0.012)	1.6±0.2 (0.063±0.008)	1.6±0.2 (0.063±0.008)	0.5±0.3 (0.020±0.012)	—	2000
322525 (1210)	3.2±0.3 (0.126±0.012)	2.5±0.3 (0.098±0.012)	2.5±0.3 (0.098±0.012)	0.5±0.3 (0.020±0.012)	—	1000
451611 (1806)	4.5±0.3 (0.177±0.012)	1.6±0.2 (0.063±0.008)	1.1±0.2 (0.043±0.008)	0.5±0.3 (0.020±0.012)	—	2000
451616 (1806)	4.5±0.3 (0.177±0.012)	1.6±0.2 (0.063±0.008)	1.6±0.2 (0.063±0.008)	0.5±0.3 (0.020±0.012)	—	2000
452525 (1810)	4.5±0.4 (0.177±0.016)	2.5±0.3 (0.098±0.012)	2.5±0.3 (0.098±0.012)	0.9±0.6 (0.035±0.024)	—	1000
453232 (1812)	4.5±0.4 (0.177±0.016)	3.2±0.3 (0.126±0.012)	3.2±0.3 (0.126±0.012)	0.9±0.6 (0.035±0.024)	—	2000

*1 LSMC, *2 LSMG

Unit: mm (inch)

■ PART NUMBER

Standard type

● 1608 (0603) type

New part number	Old part number (for reference)	EHS	Nominal impedance (Ω)	Impedance tolerance	Measuring frequency [MHz]	DC Resistance [Ω] (max.)	Rated current [A] (max.)	Thickness [mm]
LSMCC160808T280NG	FB MJ1608HS280NT	RoHS	28	±30%	100	0.007	4.0	0.8 ±0.2
LSMCA160808T230NG	FB MJ1608HM230NT	RoHS	23	±30%	100	0.007	4.0	0.8 ±0.2

● 2012 (0805) type

New part number	Old part number (for reference)	EHS	Nominal impedance (Ω)	Impedance tolerance	Measuring frequency [MHz]	DC Resistance [Ω] (max.)	Rated current [A] (max.)	Thickness [mm]
LSMCC201208T250NG	FB MJ2125HS250NT	RoHS	25	±30%	100	0.004	6.0	0.85 ±0.2
LSMCC201208T420RG	FB MJ2125HS420-T	RoHS	42	±25%	100	0.008	4.0	0.85 ±0.2
LSMCA201208T210NG	FB MJ2125HM210NT	RoHS	21	±30%	100	0.004	6.0	0.85 ±0.2
LSMCA201208T330RG	FB MJ2125HM330-T	RoHS	33	±25%	100	0.008	4.0	0.85 ±0.2
LSMCG201208T8R0NG	FB MJ2125HL8R0NT	RoHS	8	±30%	100	0.008	4.0	0.85 ±0.2

● 3216 (1206) type

New part number	Old part number (for reference)	EHS	Nominal impedance (Ω)	Impedance tolerance	Measuring frequency [MHz]	DC Resistance [Ω] (max.)	Rated current [A] (max.)	Thickness [mm]
LSMCC321611T480NG	FB MJ3216HS480NT	RoHS	48	±30%	100	0.005	6.0	1.1 ±0.2
LSMCC321611T800RG	FB MJ3216HS800-T	RoHS	80	±25%	100	0.010	4.0	1.1 ±0.2
LSMCA321611T380NG	FB MJ3216HM380NT	RoHS	38	±30%	100	0.005	6.0	1.1 ±0.2
LSMCA321611T600RG	FB MJ3216HM600-T	RoHS	60	±25%	100	0.010	4.0	1.1 ±0.2
LSMCG321611T160NG	FB MJ3216HL160NT	RoHS	16	±30%	100	0.012	4.0	1.1 ±0.2

● 4516 (1806) type

New part number	Old part number (for reference)	EHS	Nominal impedance (Ω)	Impedance tolerance	Measuring frequency [MHz]	DC Resistance [Ω] (max.)	Rated current [A] (max.)	Thickness [mm]
LSMCC451611T720NG	FB MJ4516HS720NT	RoHS	72	±30%	100	0.007	6.0	1.1 ±0.2
LSMCC451611T111RG	FB MJ4516HS111-T	RoHS	110	±25%	100	0.014	4.0	1.1 ±0.2
LSMCA451611T560NG	FB MJ4516HM560NT	RoHS	56	±30%	100	0.007	6.0	1.1 ±0.2
LSMCA451611T900RG	FB MJ4516HM900-T	RoHS	90	±25%	100	0.014	4.0	1.1 ±0.2
LSMCG451611T230NG	FB MJ4516HL230NT	RoHS	23	±30%	100	0.014	3.5	1.1 ±0.2

High impedance type GHz Band

● 1608 (0603) type

New part number	Old part number (for reference)	EHS	Nominal impedance Measuring frequency 100 [MHz]		Nominal impedance Measuring frequency 1 [GHz]		DC Resistance [Ω] (max.)	Rated current [A] (max.)	Thickness [mm]
			(Ω)	tolerance	(Ω)	tolerance			
LSMGA160808T470RG	FB MH1608HM470-T	RoHS	47	±25%	75	±40%	0.020	3.5	0.8 ±0.1
LSMGA160808T600RG	FB MH1608HM600-T	RoHS	60	±25%	100	±40%	0.025	3.0	0.8 ±0.1
LSMGA160808T101RG	FB MH1608HM101-T	RoHS	100	±25%	170	±40%	0.035	2.5	0.8 ±0.1
LSMGA160808T151RG	FB MH1608HM151-T	RoHS	150	±25%	270	±40%	0.050	2.1	0.8 ±0.1
LSMGA160808T221RG	FB MH1608HM221-T	RoHS	220	±25%	370	±40%	0.070	1.8	0.8 ±0.1
LSMGA160808T331RG	FB MH1608HM331-T	RoHS	330	±25%	520	±40%	0.130	1.2	0.8 ±0.1
LSMGA160808T471RG	FB MH1608HM471-T	RoHS	470	±25%	750	±40%	0.150	1.0	0.8 ±0.1
LSMGA160808T601RG	FB MH1608HM601-T	RoHS	600	±25%	900	±40%	0.170	0.9	0.8 ±0.1
LSMGA160808T102RG	FB MH1608HM102-T	RoHS	1000	±25%	1200	±40%	0.350	0.6	0.8 ±0.1
LSMGG160808T300RG	FB MH1608HL300-T	RoHS	30	±25%	120	±40%	0.028	2.6	0.8 ±0.1
LSMGG160808T600RG	FB MH1608HL600-T	RoHS	60	±25%	220	±40%	0.045	2.1	0.8 ±0.1
LSMGG160808T121RG	FB MH1608HL121-T	RoHS	120	±25%	540	±40%	0.130	1.2	0.8 ±0.1
LSMGG160808T221RG	FB MH1608HL221-T	RoHS	220	±25%	950	±40%	0.170	0.9	0.8 ±0.1
LSMGG160808T331RG	FB MH1608HL331-T	RoHS	330	±25%	1200	±40%	0.210	0.8	0.8 ±0.1
LSMGG160808T471RG	FB MH1608HL471-T	RoHS	470	±25%	1500	±40%	0.350	0.6	0.8 ±0.1
LSMGG160808T601RG	FB MH1608HL601-T	RoHS	600	±25%	1800	±40%	0.450	0.5	0.8 ±0.1

※) The rated current is the value of current at which the temperature of the element is increased by 40 deg.

■ PART NUMBER

High impedance type

● 2012(0805) type

New part number	Old part number (for reference)	EHS	Nominal impedance (Ω)	Impedance tolerance	Measuring frequency [MHz]	DC Resistance [Ω] (max.)	Rated current [A] (max.)	Thickness [mm]
LSMGA201208T800RG	FB MH2012HM800-T	RoHS	80	$\pm 25\%$	100	0.025	2.7	0.85 ± 0.2
LSMGA201208T121RG	FB MH2012HM121-T	RoHS	120	$\pm 25\%$	100	0.032	2.5	0.85 ± 0.2
LSMGA201208T221RG	FB MH2012HM221-T	RoHS	220	$\pm 25\%$	100	0.060	2.0	0.85 ± 0.2
LSMGA201208T331RG	FB MH2012HM331-T	RoHS	330	$\pm 25\%$	100	0.080	1.8	0.85 ± 0.2

● 2016(0806) type

New part number	Old part number (for reference)	EHS	Nominal impedance (Ω)	Impedance tolerance	Measuring frequency [MHz]	DC Resistance [Ω] (max.)	Rated current [A] (max.)	Thickness [mm]
LSMGA201616T121NG	FB MH2016HM121NT	RoHS	120	$\pm 30\%$	100	0.015	4.5	1.6 ± 0.2
LSMGA201616T251NG	FB MH2016HM251NT	RoHS	250	$\pm 30\%$	100	0.050	2.0	1.6 ± 0.2

● 3216(1206) type

New part number	Old part number (for reference)	EHS	Nominal impedance (Ω)	Impedance tolerance	Measuring frequency [MHz]	DC Resistance [Ω] (max.)	Rated current [A] (max.)	Thickness [mm]
LSMGA321616T221NG	FB MH3216HM221NT	RoHS	220	$\pm 30\%$	100	0.020	4.0	1.6 ± 0.2
LSMGA321616T501NG	FB MH3216HM501NT	RoHS	500	$\pm 30\%$	100	0.070	2.0	1.6 ± 0.2

● 3225(1210) type

New part number	Old part number (for reference)	EHS	Nominal impedance (Ω)	Impedance tolerance	Measuring frequency [MHz]	DC Resistance [Ω] (max.)	Rated current [A] (max.)	Thickness [mm]
LSMGA322525T601NG	FB MH3225HM601NT	RoHS	600	$\pm 30\%$	100	0.042	3.0	2.5 ± 0.3
LSMGA322525T102NG	FB MH3225HM102NT	RoHS	1000	$\pm 30\%$	100	0.100	2.0	2.5 ± 0.3
LSMGA322525T202NG	FB MH3225HM202NT	RoHS	2000	$\pm 30\%$	100	0.130	1.2	2.5 ± 0.3

● 4516(1806) type

New part number	Old part number (for reference)	EHS	Nominal impedance (Ω)	Impedance tolerance	Measuring frequency [MHz]	DC Resistance [Ω] (max.)	Rated current [A] (max.)	Thickness [mm]
LSMGA451616T851NG	FB MH4516HM851NT	RoHS	850	$\pm 30\%$	100	0.100	1.5	1.6 ± 0.2

● 4525(1810) type

New part number	Old part number (for reference)	EHS	Nominal impedance (Ω)	Impedance tolerance	Measuring frequency [MHz]	DC Resistance [Ω] (max.)	Rated current [A] (max.)	Thickness [mm]
LSMGA452525T102NG	FB MH4525HM102NT	RoHS	1000	$\pm 30\%$	100	0.060	3.0	2.5 ± 0.3
LSMGA452525T162NG	FB MH4525HM162NT	RoHS	1600	$\pm 30\%$	100	0.130	2.0	2.5 ± 0.3

● 4532(1812) type

New part number	Old part number (for reference)	EHS	Nominal impedance (Ω)	Impedance tolerance	Measuring frequency [MHz]	DC Resistance [Ω] (max.)	Rated current [A] (max.)	Thickness [mm]
LSMGA453232L681RG	FB MH4532HM681-T	RoHS	680	$\pm 25\%$	100	0.028	4.0	3.2 ± 0.3
LSMGA453232L132RG	FB MH4532HM132-T	RoHS	1300	$\pm 25\%$	100	0.060	3.0	3.2 ± 0.3
LSMGA453232L202RG	FB MH4532HM202-T	RoHS	2000	$\pm 25\%$	100	0.130	1.3	3.2 ± 0.3

● High current type

New part number	Old part number (for reference)	EHS	Nominal impedance (Ω)	Impedance tolerance	Measuring frequency [MHz]	DC Resistance [Ω] (max.)	Rated current [A] (max.)	Thickness [mm]
LSMCC160808T220NGR	FB MJ1608HS220NTR	RoHS	22	$\pm 30\%$	100	0.004	7.5	0.8 ± 0.2
LSMCC160808T280NGR	FB MJ1608HS280NTR	RoHS	28	$\pm 30\%$	100	0.006	6.0	0.8 ± 0.2
LSMCA160808T180NGR	FB MJ1608HM180NTR	RoHS	18	$\pm 30\%$	100	0.004	7.5	0.8 ± 0.2
LSMCA160808T230NGR	FB MJ1608HM230NTR	RoHS	23	$\pm 30\%$	100	0.006	6.0	0.8 ± 0.2

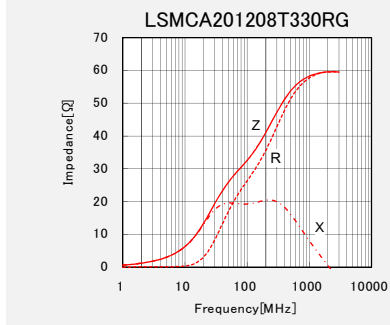
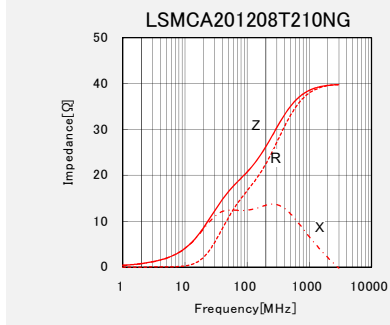
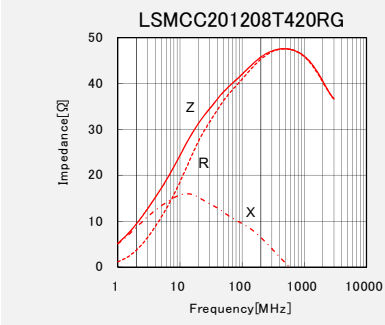
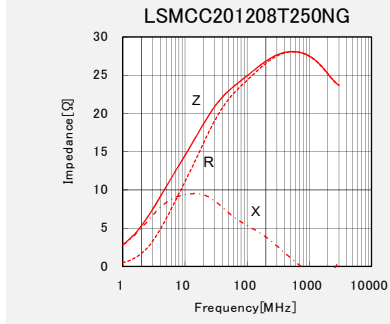
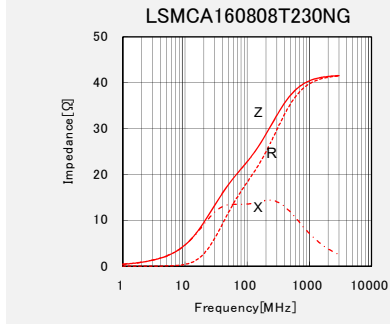
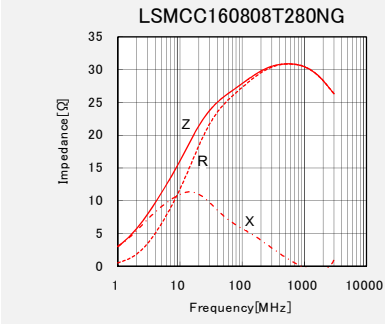
※) The rated current is the value of current at which the temperature of the element is increased by 40 deg.

ELECTRICAL CHARACTERISTICS

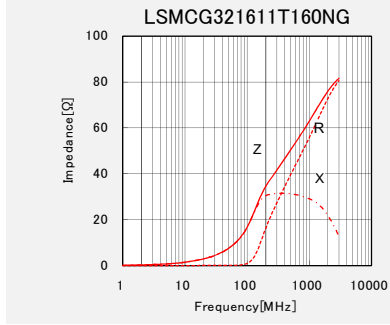
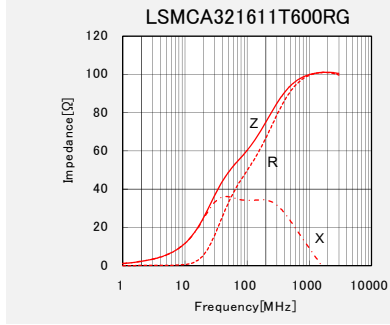
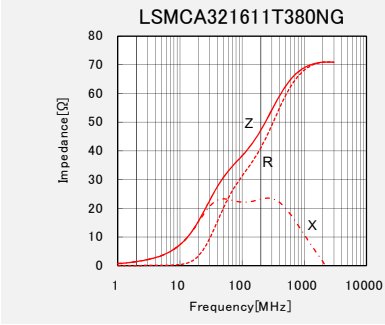
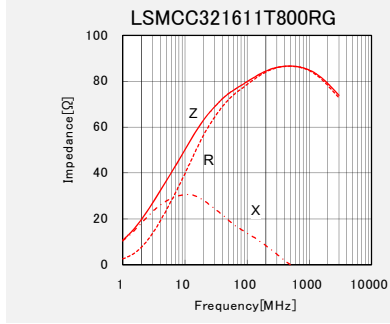
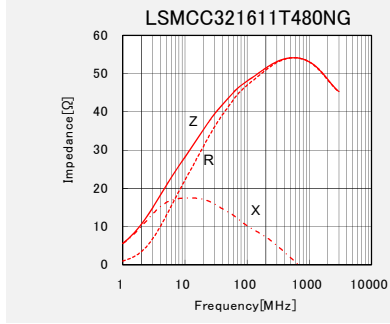
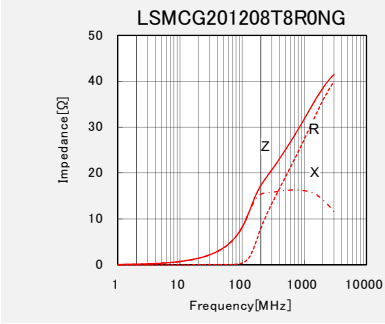
Standard type

1608 type

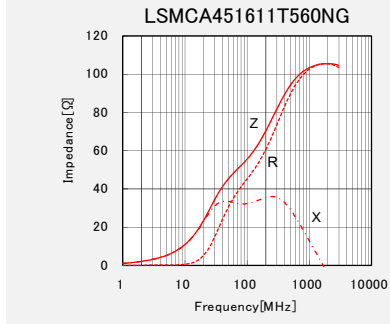
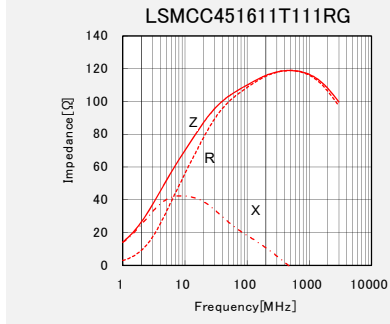
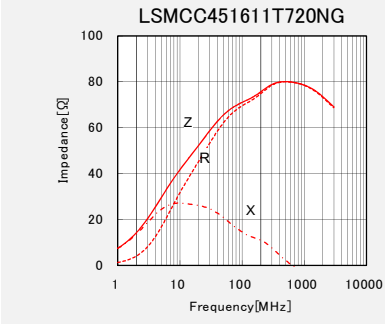
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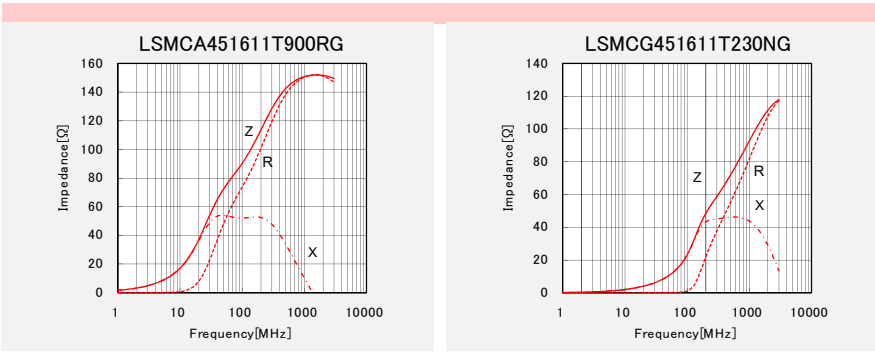


3216 type



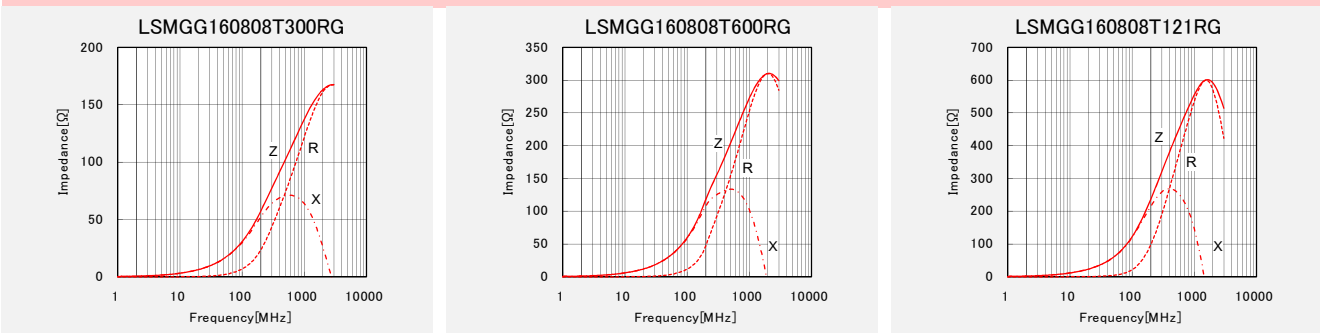
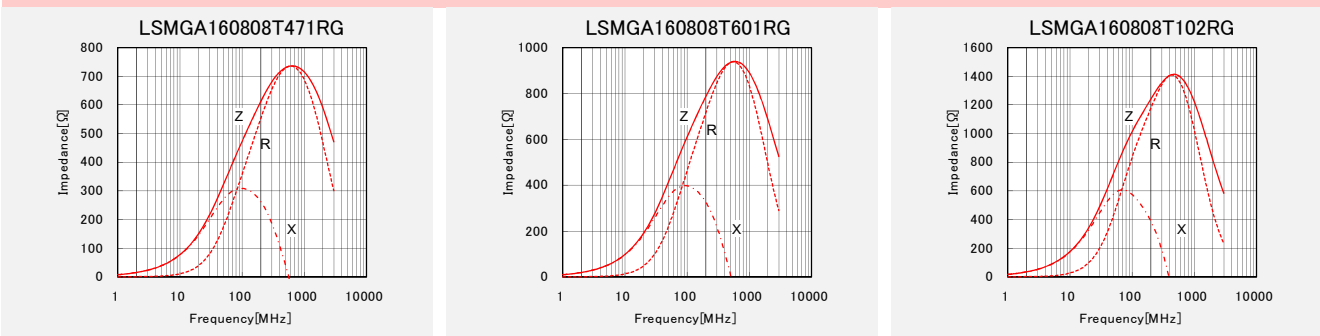
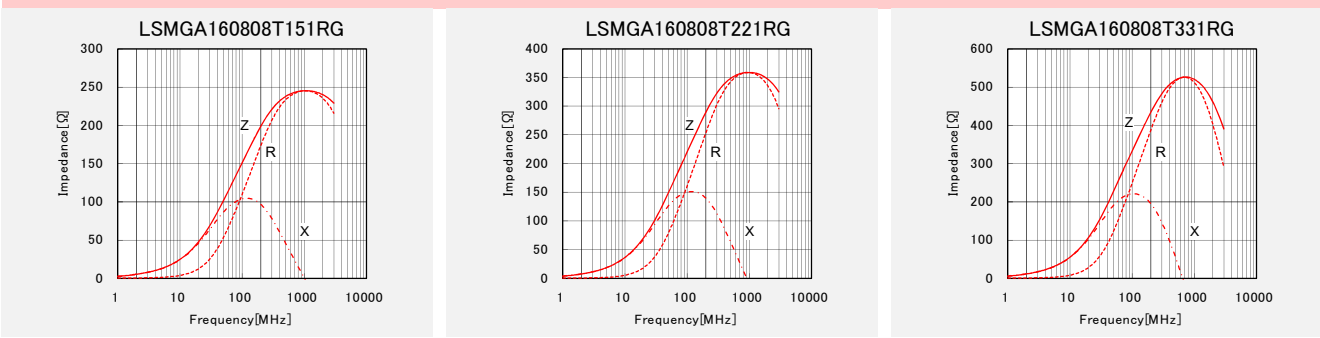
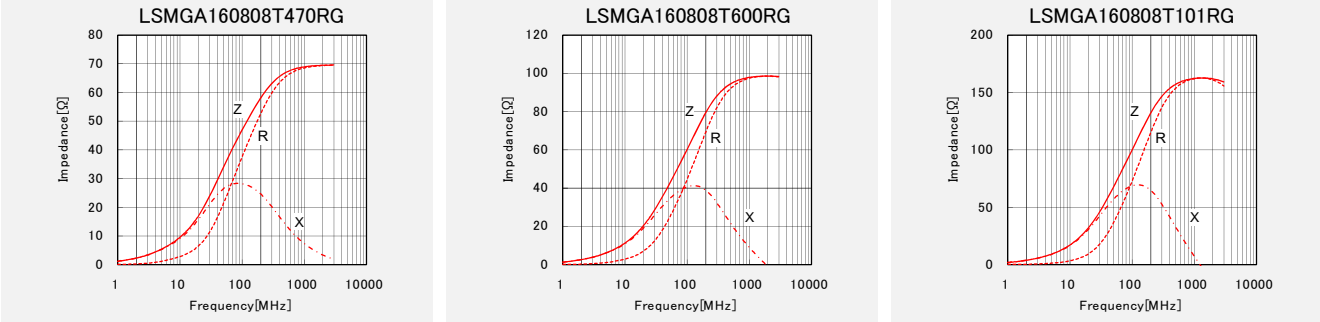
4516 type

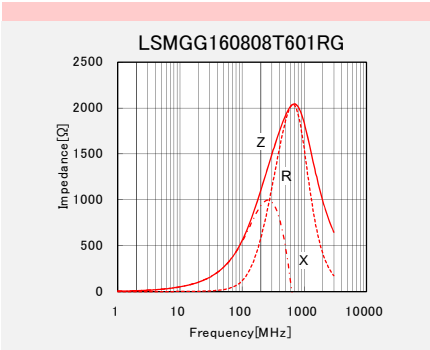
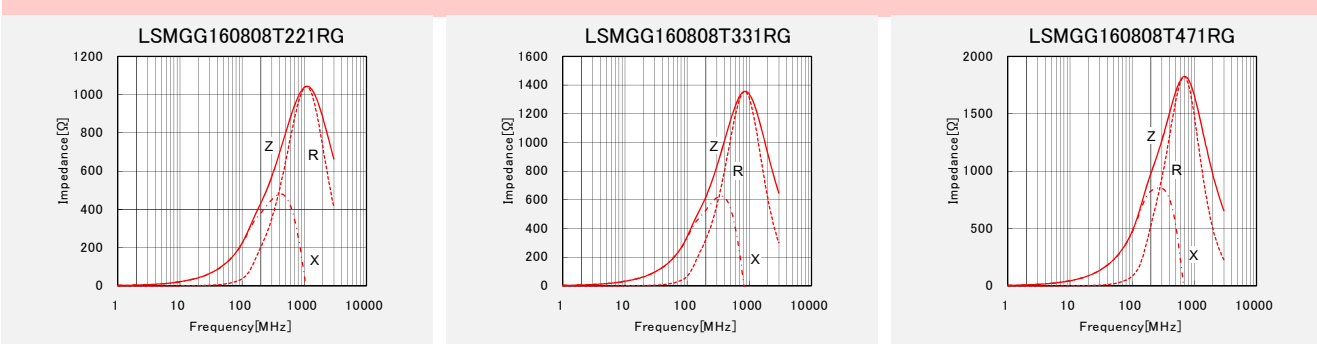




High impedance type GHz Band

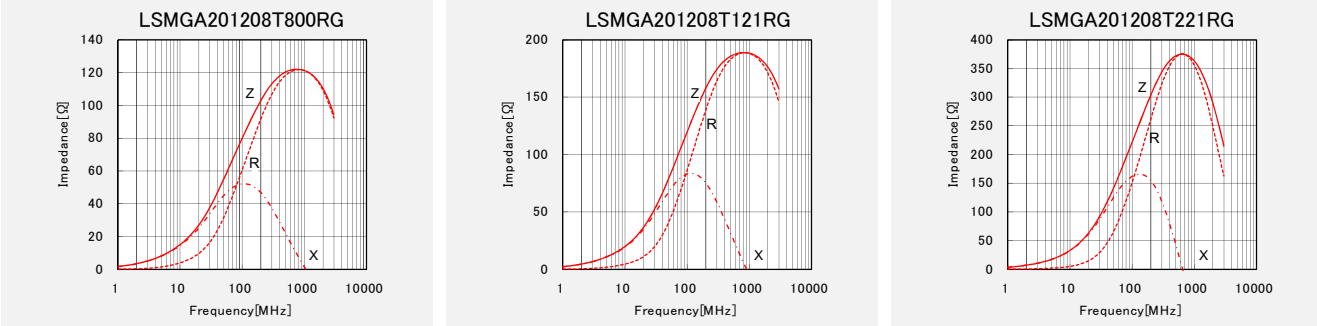
1608 type



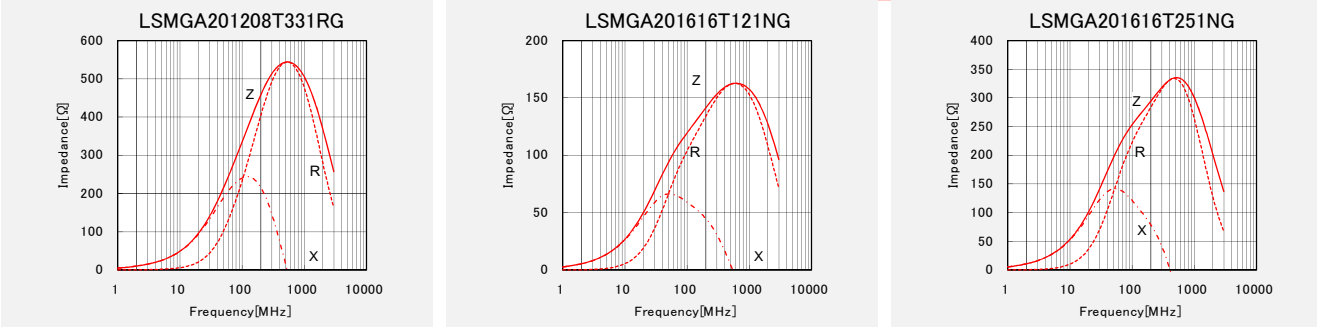


High impedance type

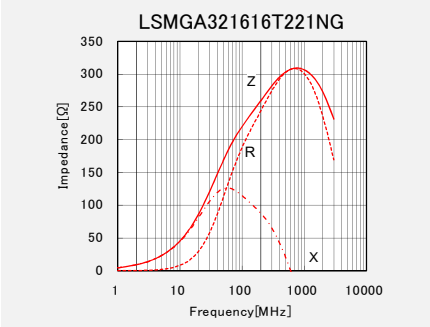
■ 2012 type



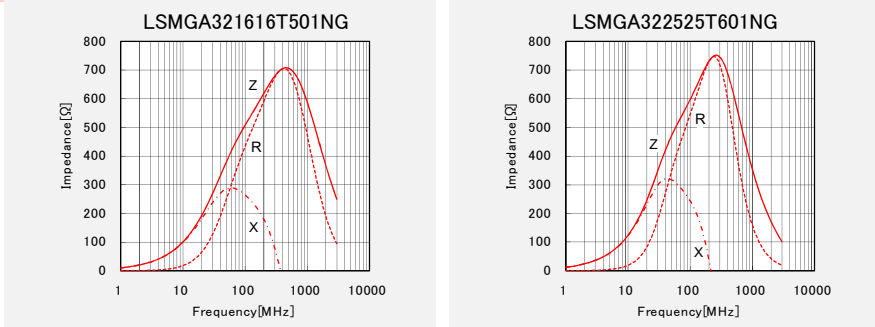
■ 2016 type

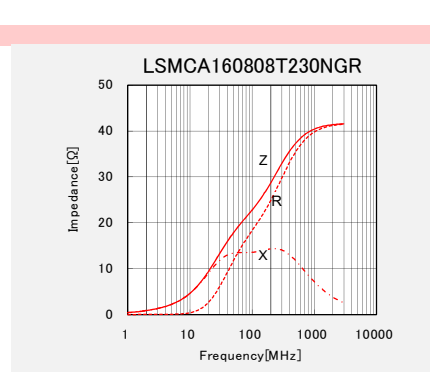
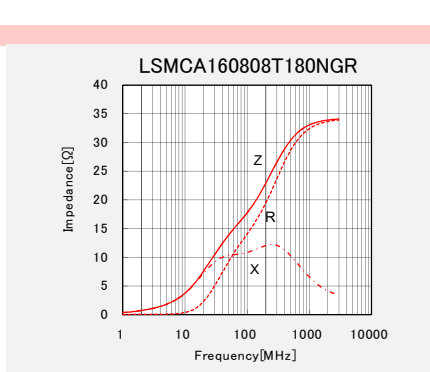
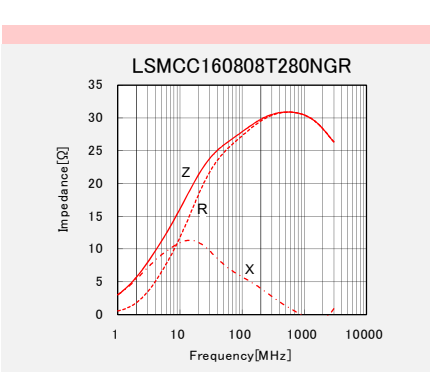
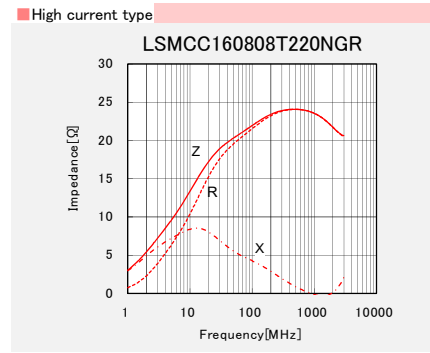
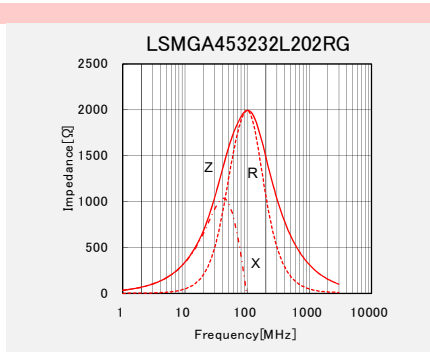
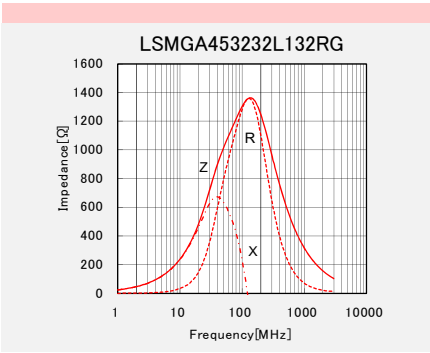
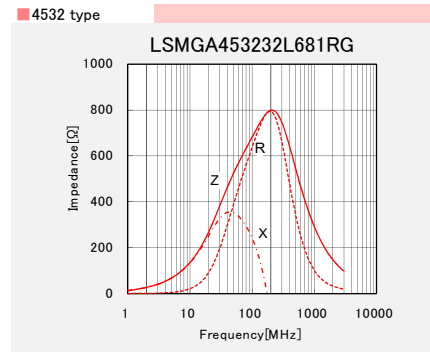
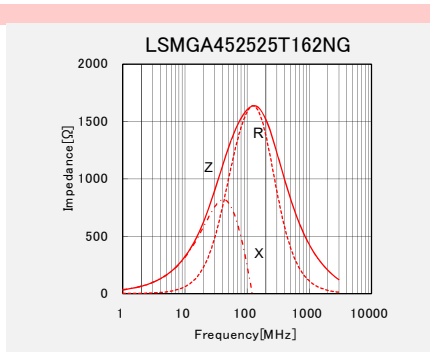
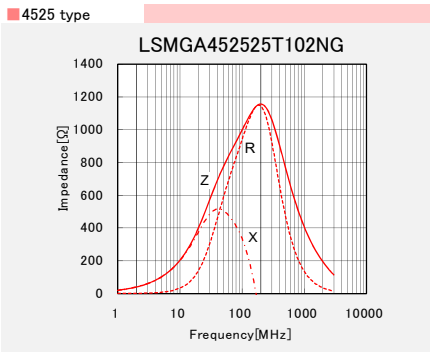
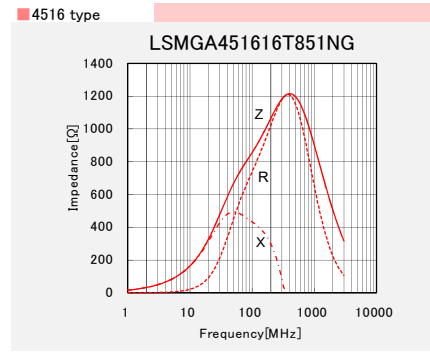
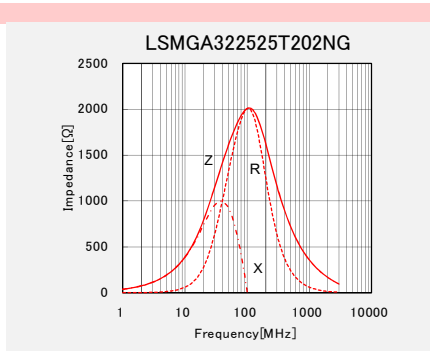
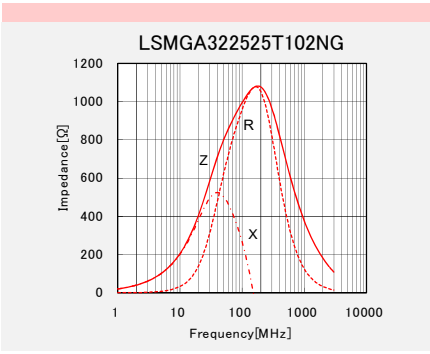


■ 3216 type



■ 3225 type





Wire-wound Ferrite Bead Inductors for Power Lines LSMC/LSMG/LAMG/LCMC/LCMG/LBMC/LBMG/LLMC/LLMG/LMMC/LMMG series

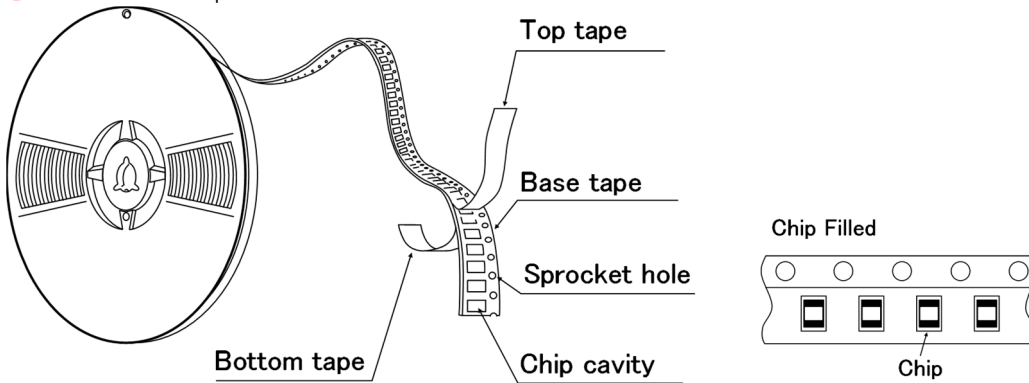
PACKAGING

① Minimum Quantity

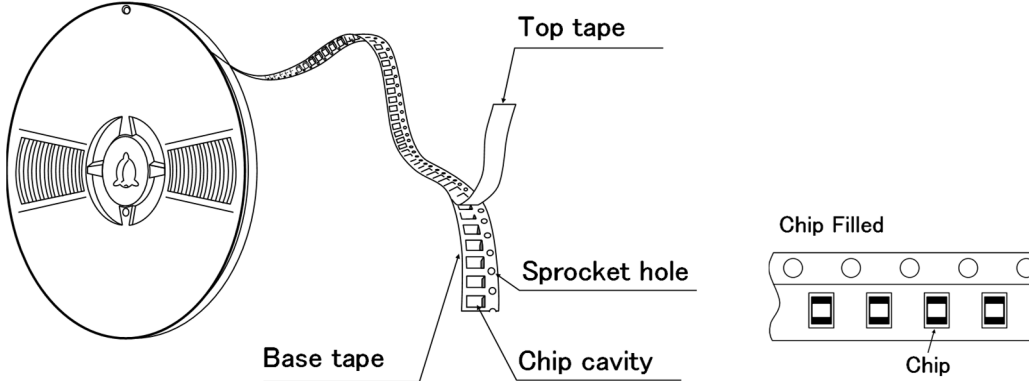
Type	Standard Quantity [pcs]	
	Paper Tape	Embossed Tape
1608(0603)	4000	—
2125(0805)	4000	—
2012(0805)	4000	—
2016(0806)	—	2000
3216(1206)	—	2000
3225(1210)	—	1000
4516(1806)	—	2000
4525(1810)	—	1000
4532(1812)	—	2000

② Tape Material

● Card board carrier tape

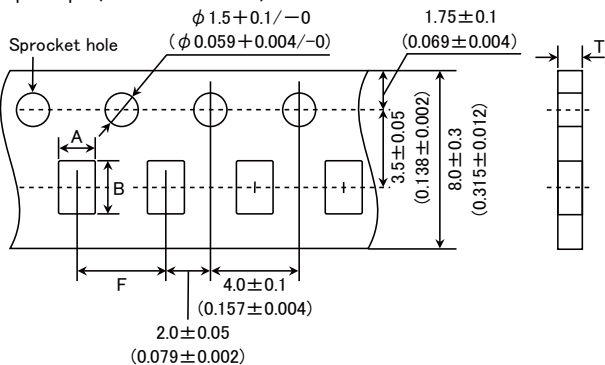


● Embossed tape



③ Taping Dimensions

● Paper tape (0.315 inches wide)

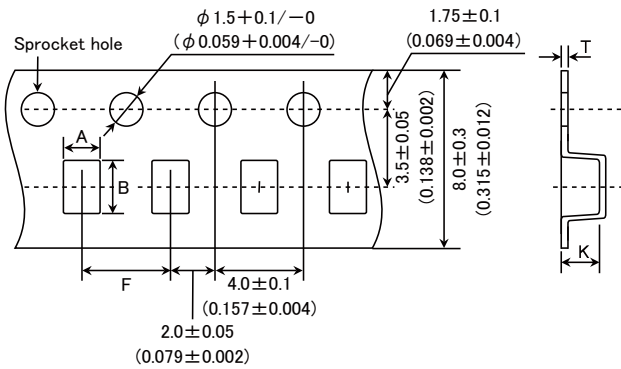


► This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>).

Type	Chip Cavity		Insertion Pitch	Tape Thickness
	A	B		
1608 (0603)	1.0±0.2 (0.039±0.008)	1.8±0.2 (0.071±0.008)	4.0±0.2 (0.157±0.008)	1.1max (0.043max)
2012 (0805)	1.5±0.2 (0.059±0.008)	2.3±0.2 (0.091±0.008)	4.0±0.2 (0.157±0.008)	1.1max (0.043max)

Unit : mm (inch)

● Embossed tape (0.315 inches wide)



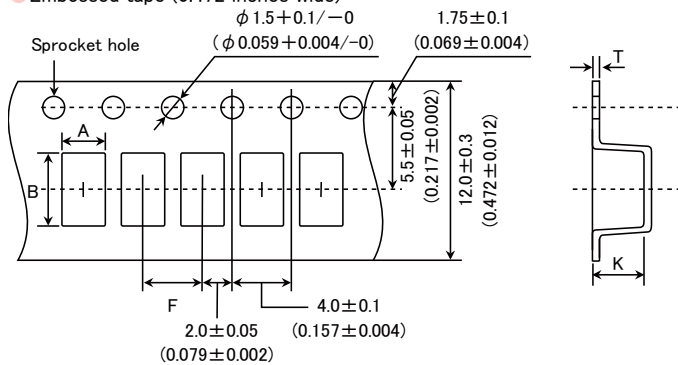
Type	Chip Cavity		Insertion Pitch	Tape Thickness	
	A	B		K	T
2016 (0806)	1.8±0.2 (0.071±0.008)	2.2±0.2 (0.087±0.008)	4.0±0.2 (0.157±0.008)	2.6max (0.102max)	0.6max (0.024max)
3216 *1 (1206)	1.9±0.2 (0.075±0.008)	3.5±0.2 (0.138±0.008)	4.0±0.2 (0.157±0.008)	1.5max (0.059max)	0.3max (0.012max)
3216 *2 (1206)	1.9±0.2 (0.075±0.008)	3.5±0.2 (0.138±0.008)	4.0±0.2 (0.157±0.008)	2.6max (0.102max)	0.6max (0.024max)
3225 (1210)	2.8±0.2 (0.110±0.008)	3.5±0.2 (0.138±0.008)	4.0±0.2 (0.157±0.008)	4.0max (0.157max)	0.6max (0.024max)

Unit : mm (inch)

* 1 LSMC/LCMC/LBMC/LLMC/LMMC

* 2 LSMG/LAMG/LCMG/LBMG/LLMG/LMMG

● Embossed tape (0.472 inches wide)



Type	Chip Cavity		Insertion Pitch	Tape Thickness	
	A	B		K	T
4516 *1 (1806)	1.9±0.2 (0.075±0.008)	4.9±0.2 (0.193±0.008)	4.0±0.2 (0.157±0.008)	1.5max (0.059max)	0.3max (0.012max)
4516 *2 (1806)	1.9±0.2 (0.075±0.008)	4.9±0.2 (0.193±0.008)	4.0±0.2 (0.157±0.008)	2.6max (0.102max)	0.6max (0.024max)
4525 (1810)	2.9±0.2 (0.114±0.008)	4.9±0.2 (0.193±0.008)	4.0±0.2 (0.157±0.008)	4.0max (0.157max)	0.6max (0.024max)
4532 (1812)	3.6±0.2 (0.142±0.008)	4.9±0.2 (0.193±0.008)	8.0±0.2 (0.315±0.008)	4.0max (0.157max)	0.6max (0.024max)

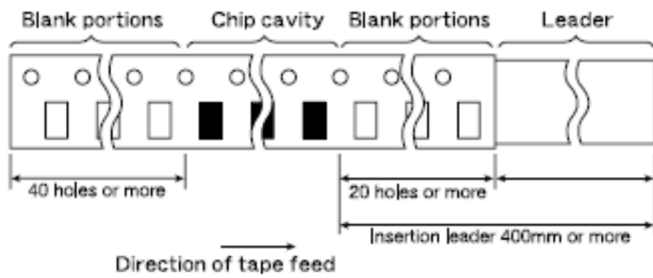
Unit : mm (inch)

* 1 LSMC/LCMC/LBMC/LLMC/LMMC

* 2 LSMG/LAMG/LCMG/LBMG/LLMG/LMMG

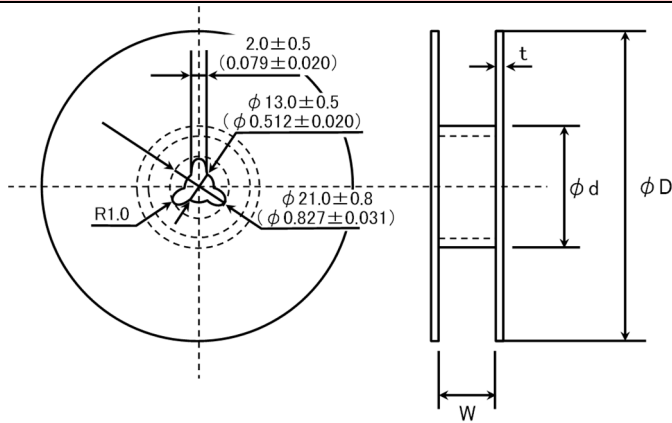
▶ This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>).

④ Leader and Blank portion



Insertion leader is 400 mm or more (including 20 empty cavities)
 Empty cavities at end of reel: 40 holes or more

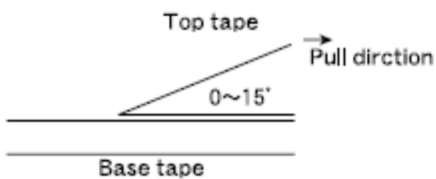
⑤ Reel size



Type	ϕD	ϕd	W	t
1608(0603) 2012(0805) 2016(0806) 3216(1206) 3225(1210)	180+0/-3 (7.09+0/-0.118)	60+1/-0 (2.36+0.039/-0)	10.0±1.5 (0.394±0.059)	2.5max (0.098max)
4516(1806) 4525(1810)			14.0±1.5 (0.551±0.059)	
4532(1812)	330±2.0 (12.99±0.080)	100±1.0 (3.94±0.039)	14.0±2.0 (0.551±0.080)	3.0max (1.181max)

Unit : mm (inch)

⑥ Top tape strength



The top tape requires a peel-off force of 0.1 to 0.7N in the direction of the arrow as illustrated below.

**Wire-wound Ferrite Bead Inductors for Power Lines LSMC/LSMG series
for General Electronic Equipment for Consumer**
**Wire-wound Ferrite Bead Inductors for Power Lines LLMC/LLMG series
for Medical Devices classified as GHTF Classes A or B (Japan Classes I or II)**

■ RELIABILITY DATA

1. Operating Temperature Range

Specified Value : $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$ (Including self-generated heat)

2. Storage Temperature Range

Specified Value : $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$

Test Methods and Remarks : *Note: -5 to $+40^{\circ}\text{C}$ in taped packaging

3. Impedance

Specified Value : Within the specified range

Test Methods and Remarks : Measuring equipment : Impedance analyzer (HP4291A) or its equivalent
Measuring frequency : 100 ± 1 MHz

4. DC Resistance

Specified Value : Within the specified range

Test Methods and Remarks : Four-terminal method
Measuring equipment : Milliohm High-Tester 3226 (Hioki Denki) or its equivalent

5. Rated Current

Specified Value : Within the specified range

6. Vibration

Specified Value : Appearance : No significant abnormality
Impedance change : Within $\pm 30\%$ of the initial value

Test Methods and Remarks : The test samples shall be soldered to the test board by the reflow.
Then it shall be submitted to below test conditions.

Frequency	10~55Hz	
Overall Amplitude	1.5mm (Shall not exceed acceleration 196m/s^2)	
Sweeping Method	1min(10→55→10Hz)	
Time	X	2hours
	Y	
	Z	

7. Solderability

Specified Value : 90% or more of immersed surface of terminal electrode shall be covered with fresh solder.

Test Methods and Remarks	Solder Temperature	$230 \pm 5^{\circ}\text{C}$
	Time	4 ± 1 秒
	Preconditioning	Immersion into flux.
	Immersing Speed	25mm/s

8. Resistance to Soldering Heat

Specified Value : Appearance : No significant abnormality
Impedance change : Within $\pm 30\%$ of the initial value

Test Methods and Remarks : The test sample shall be exposed to reflow oven at 230°C for 40 seconds, with peak temperature at $260 \pm 0 / -5^{\circ}\text{C}$ for 10 seconds, 2times.
Test board material : Glass epoxy-resin
Test board thickness : 1.6mm

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For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>).

9. Thermal Shock

Specified Value	Appearance : No significant abnormality Impedance change : Within +50/−10% of the initial value															
Test Methods and Remarks	<p>Conditions for 1 cycle</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Duration (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>−40±3°C</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room Temperature</td> <td>Within 3</td> </tr> <tr> <td>3</td> <td>85±2°C</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room Temperature</td> <td>Within 3</td> </tr> </tbody> </table> <p>Number of cycles : 100 Mounting method : Soldering onto PC board The measurement, after the test, shall be carried out the test sample has been left for 2 to 3 hours</p>	Step	Temperature (°C)	Duration (min)	1	−40±3°C	30±3	2	Room Temperature	Within 3	3	85±2°C	30±3	4	Room Temperature	Within 3
Step	Temperature (°C)	Duration (min)														
1	−40±3°C	30±3														
2	Room Temperature	Within 3														
3	85±2°C	30±3														
4	Room Temperature	Within 3														

10. Resistance to Humidity (steady state)

Specified Value	Appearances : No significant abnormality Impedance change : Within ±30% of the initial value						
Test Methods and Remarks	<p>The test samples shall be soldered to the test board by the reflow. The test samples shall be placed in thermostatic oven set at specified temperature and humidity as shown in below table.</p> <table border="1"> <tbody> <tr> <td>Temperature</td> <td>40±2°C</td> </tr> <tr> <td>Humidity</td> <td>90~95%RH</td> </tr> <tr> <td>Time</td> <td>500+24/−0 hour</td> </tr> </tbody> </table> <p>The measurement, after the test, shall be carried out the test sample has been left for 2 to 3 hours</p>	Temperature	40±2°C	Humidity	90~95%RH	Time	500+24/−0 hour
Temperature	40±2°C						
Humidity	90~95%RH						
Time	500+24/−0 hour						

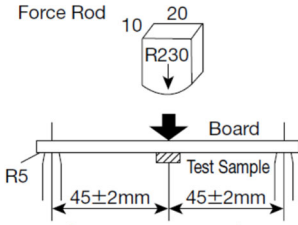
11. Loading under Damp Heat

Specified Value	Appearance : No significant abnormality Impedance change : Within ±30% of the initial value								
Test Methods and Remarks	<p>The test samples shall be soldered to the test board by the reflow soldering. The test samples shall be placed in thermostatic oven set at specified temperature, humidity, and applied the rated current continuously as shown in below table.</p> <table border="1"> <tbody> <tr> <td>Temperature</td> <td>40±2°C</td> </tr> <tr> <td>Humidity</td> <td>90~95%RH</td> </tr> <tr> <td>Applied current</td> <td>Rated current</td> </tr> <tr> <td>Time</td> <td>500+24/−0 hour</td> </tr> </tbody> </table> <p>The measurement, after the test, shall be carried out the test sample has been left for 2 to 3 hours</p>	Temperature	40±2°C	Humidity	90~95%RH	Applied current	Rated current	Time	500+24/−0 hour
Temperature	40±2°C								
Humidity	90~95%RH								
Applied current	Rated current								
Time	500+24/−0 hour								

12. High Temperature Loading Test

Specified Value	Appearance : No significant abnormality Impedance change : Within ±30% of the initial value						
Test Methods and Remarks	<p>The test samples shall be soldered to the test board by the reflow soldering. The test samples shall be placed in thermostatic oven set at specified temperature and applied the rated current continuously as shown in below table.</p> <table border="1"> <tbody> <tr> <td>Temperature</td> <td>85±2°C</td> </tr> <tr> <td>Applied current</td> <td>Rated current</td> </tr> <tr> <td>Time</td> <td>500+24/−0 hour</td> </tr> </tbody> </table> <p>The measurement, after the test, shall be carried out the test sample has been left for 2 to 3 hours</p>	Temperature	85±2°C	Applied current	Rated current	Time	500+24/−0 hour
Temperature	85±2°C						
Applied current	Rated current						
Time	500+24/−0 hour						

13. Bending Strength

Specified Value	Appearance : No mechanical damage.
Test Methods and Remarks	<p>The test samples shall be soldered to the test board by the reflow. As illustrated below, apply force in the direction of the arrow indicating until deflection of the test board reaches to 2 mm</p> <p>Warp : 2mm Testing board : Glass epoxy-resin substrate Thickness : 0.8mm</p> 

14. Adhesion of Electrode

Specified Value	No separation or indication of separation of electrode.
Test Methods and Remarks	Applied force : 5N Duration : 10 sec.

Note on standard condition: "standard condition" referred to herein is defined as follows:
5 to 35°C of temperature, 45 to 85% relative humidity and 86 to 106kPa of air pressure.

When there are questions concerning measurement results:

In order to provide correlation data, the test shall be conducted under condition of $20 \pm 2^\circ\text{C}$ of temperature, 60 to 70% relative humidity and 86 to 106kPa of air pressure. Unless otherwise specified, all the tests are conducted under the "standard condition."