TDK

September 2013

Inductors for Standard Circuits

Multilayer Ferrite

MLF-J series

MLF1005-J	**1005 [0402 inch]***
MLF1608-J	**1608 [0603 inch]**
MLF2012-J	**2012 [0805 inch]**

*** Dimensions Code JIS[EIA]**

REMINDERS FOR USING THESE PRODUCTS

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

SAFETY REMINDERS

Please pay sufficient attention to the warnings for safe designing when using these products.

⚠ REMINDERS

- The storage period is less than 12 months. Be sure to follow the storage conditions (Temperature: 5 to 40°C, Humidity: 10 to 75% RH or less).
  If the storage period elapses, the soldering of the terminal electrodes may deteriorate.
- Do not use or store in locations where there are conditions such as gas corrosion (salt, acid, alkali, etc.).
- Before soldering, be sure to preheat components.
  The preheating temperature should be set so that the temperature difference between the solder temperature and chip temperature does not exceed 150°C.
- Soldering corrections after mounting should be within the range of the conditions determined in the specifications.
  If overheated, a short circuit, performance deterioration, or lifespan shortening may occur.
- When embedding a printed circuit board where a chip is mounted to a set, be sure that residual stress is not given to the chip due to the overall distortion of the printed circuit board and partial distortion such as at screw tightening portions.
- Self heating (temperature increase) occurs when the power is turned ON, so the tolerance should be sufficient for the set thermal design.
- Carefully lay out the coil for the circuit board design of the non-magnetic shield type.
  A malfunction may occur due to magnetic interference.
- Use a wrist band to discharge static electricity in your body through the grounding wire.
- Do not expose the products to magnets or magnetic fields.
- Do not use for a purpose outside of the contents regulated in the delivery specifications.
- The products listed on this catalog are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.
  The products are not designed or warranted to meet the requirements of the applications listed below, 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.
  If you intend to use the products in the applications listed below or if you have special requirements exceeding the range or conditions set forth in the each catalog, please contact us.

(1) Aerospace/Aviation equipment
(2) Transportation equipment (cars, electric trains, ships, etc.)
(3) Medical equipment
(4) Power-generation control equipment
(5) Atomic energy-related equipment
(6) Seabed equipment
(7) Transportation control equipment
(8) Public information-processing equipment
(9) Military equipment
(10) Electric heating apparatus, burning equipment
(11) Disaster prevention/crime prevention equipment
(12) Safety equipment
(13) Other applications that are not considered general-purpose applications

When designing your equipment even for general-purpose applications, you are kindly requested to take into consideration securing protection circuit/device or providing backup circuits in your equipment.

Inductors for Standard Circuits

Multilayer Ferrite

Product compatible with RoHS directive
Halogen-free
Compatible with lead-free solders
AEC-Q200

Overview of the MLF-J Series

FEATURES

○ Lineup includes world's smallest class 1005 size products compatible with J tolerance.

APPLICATION

Mobile devices such as smart phones, tablet terminals, and modules, matching circuits such as TV tuners, and FM tuners, filter circuits NFC (Near Field Communication) circuits, automotive equipment (MLF1608-J, MLF2012-J)

PART NUMBER CONSTRUCTION

MLF | 1005 | V | R15 | J | T | □□□

Series name	L×W×H Dimensions (mm)		Characteristics	Inductance (μH)		Inductance tolerance		Packaging style		Internal code
	1005	1.0×0.5×0.5	A	R10	0.1	J	±5%	T	Taping	
	1608	1.6×0.8×0.8	D	1R0	1					
	2012	2.0×1.25×0.85	E	100	10					
		2.0×1.25×1.25	V							
			G							

OPERATING TEMPERATURE RANGE, PACKAGE QUANTITY, PRODUCT WEIGHT

Type		Temperature range		Package quantity	Individual weight
		Operating temperature	Storage temperature*		
		(°C)	(°C)	(pieces/reel)	(mg)
MLF1005-J		–55 to +125	–55 to +125	10,000	1.2
MLF1608-J		–55 to +125	–55 to +125	4,000	4
MLF2012-J	t=0.85	–55 to +125	–55 to +125	4,000	10
	t=1.25			2,000	14

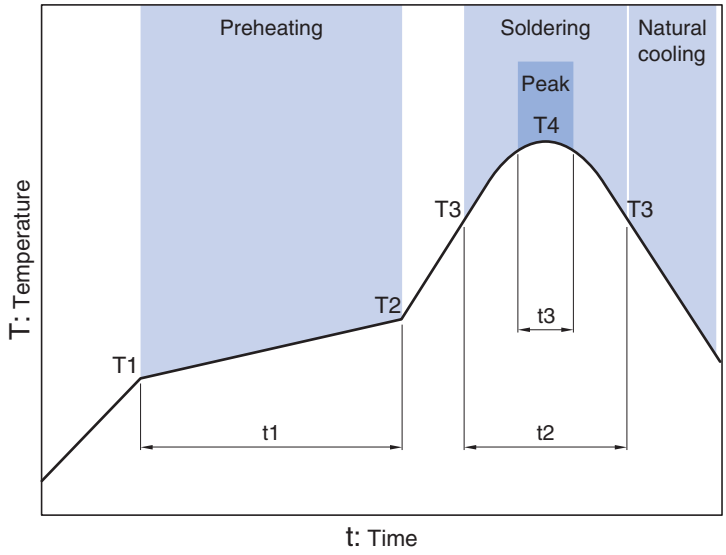
* The Storage temperature range is for after the circuit board is mounted.

○ RoHS Directive Compliant Product: See the following for more details related to RoHS Directive compliant products. http://www.tdk.co.jp/rohs/

○ Halogen-free: Indicates that Cl content is less than 900ppm, Br content is less than 900ppm, and that the total Cl and Br content is less than 1500ppm.

Overview of the MLF-J Series

RECOMMENDED REFLOW PROFILE

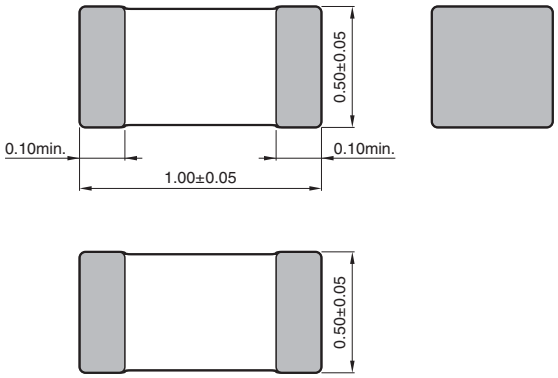


Preheating			Soldering		Peak	
Temp.		Time	Temp.	Time	Temp.	Time
T1	T2	t1	T3	t2	T4	t3
150°C	180°C	60 to 120s	230°C	30 to 60s	250 to 260°C	10s max.

MLF-J series

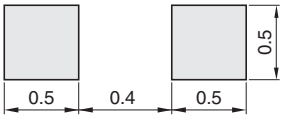
MLF1005-J Type

SHAPE & DIMENSIONS



Dimensions in mm

RECOMMENDED LAND PATTERN



Dimensions in mm

MLF-J series MLF1005-J Type

■ELECTRICAL CHARACTERISTICS

□CHARACTERISTICS SPECIFICATION TABLE

L		Q		L, Q measuring conditions		Self-resonant frequency (MHz)		DC resistance (Ω)		Rated current (mA)	Part No.*
(μH)	Tolerance	min.	typ.	Frequency (MHz)	Current (mA)	min.	typ.	max.	typ.	max.	
0.10	±5%	10	30	25	1.0	450	880	0.51	0.33	180	MLF1005VR10JT□□□
0.12	±5%	10	30	25	1.0	400	800	0.59	0.33	180	MLF1005VR12JT□□□
0.15	±5%	15	30	25	1.0	350	650	0.63	0.39	180	MLF1005VR15JT□□□
0.18	±5%	15	30	25	1.0	320	600	0.72	0.40	160	MLF1005VR18JT□□□
0.22	±5%	15	30	25	1.0	290	450	0.79	0.47	160	MLF1005VR22JT□□□
0.27	±5%	15	30	25	1.0	260	450	0.91	0.65	150	MLF1005VR27JT□□□
0.33	±5%	15	30	25	1.0	230	380	1.05	0.80	140	MLF1005VR33JT□□□
0.39	±5%	15	30	25	1.0	210	330	1.35	0.89	130	MLF1005VR39JT□□□
0.47	±5%	15	30	25	1.0	190	300	1.50	0.95	120	MLF1005VR47JT□□□
0.56	±5%	15	30	25	1.0	170	250	1.95	1.35	120	MLF1005VR56JT□□□
0.39	±5%	30	50	10	1.0	210	600	0.41	0.24	50	MLF1005GR39JT□□□
0.47	±5%	30	50	10	1.0	190	460	0.42	0.25	50	MLF1005GR47JT□□□
0.56	±5%	30	55	10	1.0	170	450	0.47	0.34	45	MLF1005GR56JT□□□
0.68	±5%	30	55	10	1.0	150	360	0.55	0.43	45	MLF1005GR68JT□□□
0.82	±5%	30	55	10	1.0	130	320	0.59	0.43	40	MLF1005GR82JT□□□
1.0	±5%	30	60	10	1.0	120	290	0.64	0.45	40	MLF1005G1R0JT□□□
1.2	±5%	30	60	10	1.0	110	230	0.79	0.55	35	MLF1005G1R2JT□□□
1.5	±5%	30	60	10	1.0	100	200	0.95	0.68	35	MLF1005G1R5JT□□□
1.8	±5%	30	60	10	1.0	90	180	1.05	0.75	30	MLF1005G1R8JT□□□
2.2	±5%	30	60	10	1.0	80	150	1.30	0.99	30	MLF1005G2R2JT□□□

* The " □□□ " of the Part Number contains the internal code.

○ Measurement equipment

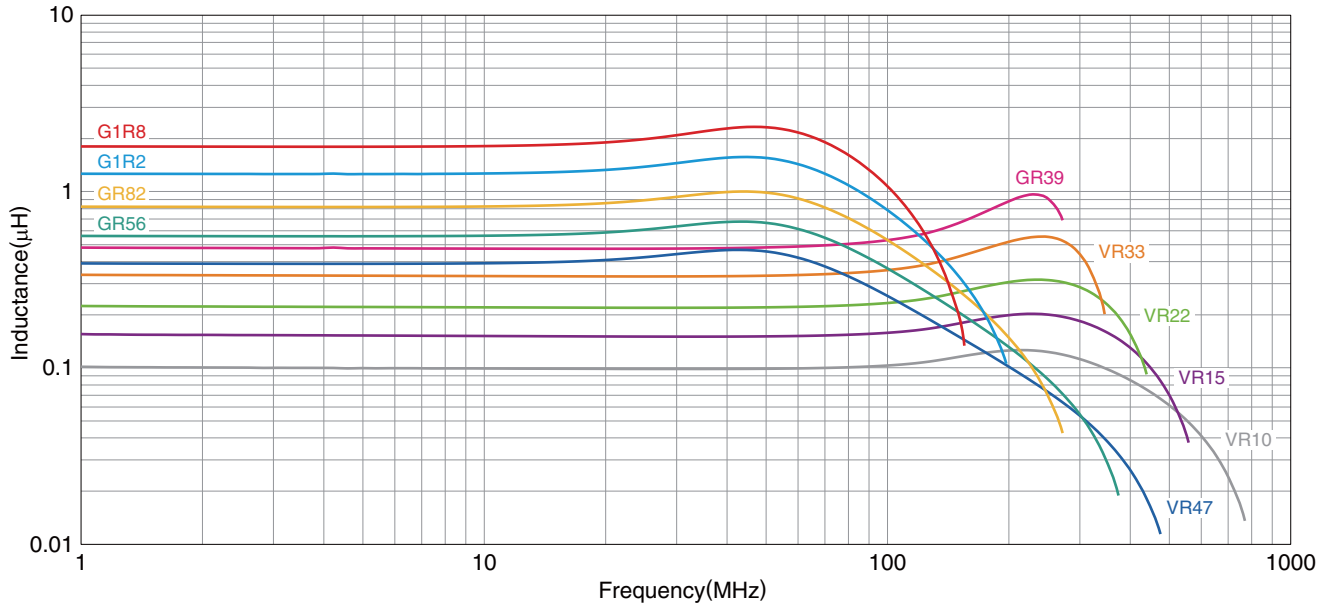
Measurement item	Product No.	Manufacturer
L, Q	4294A+16034G	Agilent Technologies
Self-resonant frequency	E4991A	Agilent Technologies
DC resistance	Type-7561	Yokogawa

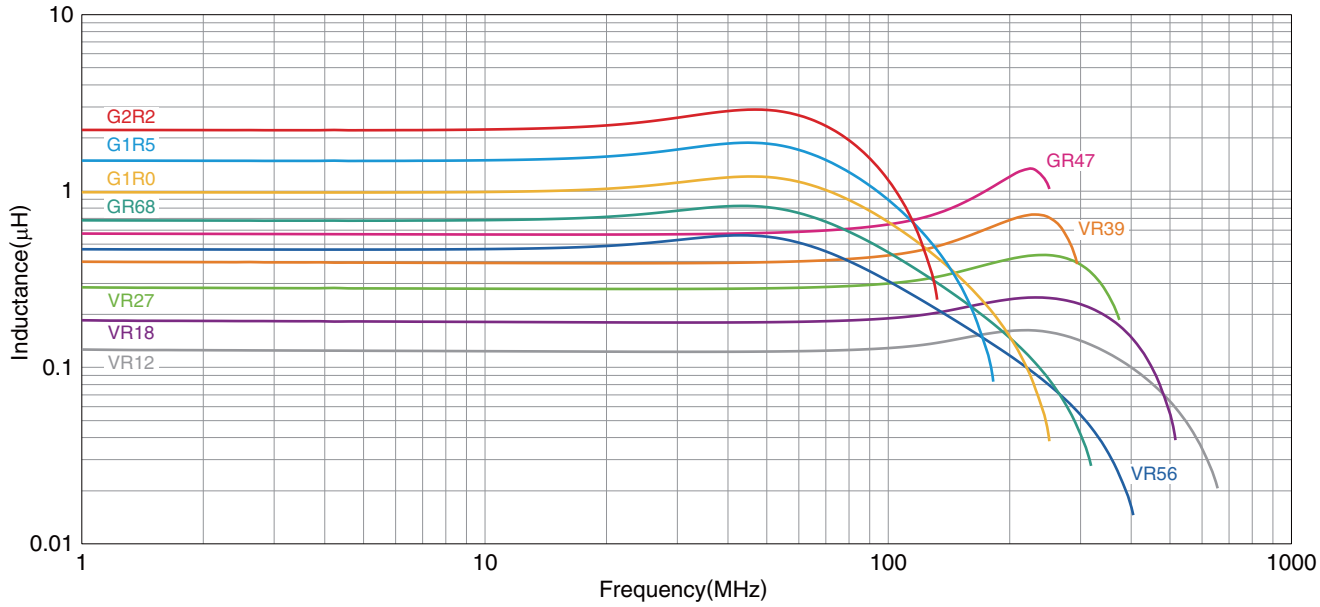
✻ Equivalent measurement equipment may be used.

MLF-J series MLF1005-J Type

■ELECTRICAL CHARACTERISTICS

□L FREQUENCY CHARACTERISTICS GRAPH





○ Measurement equipment

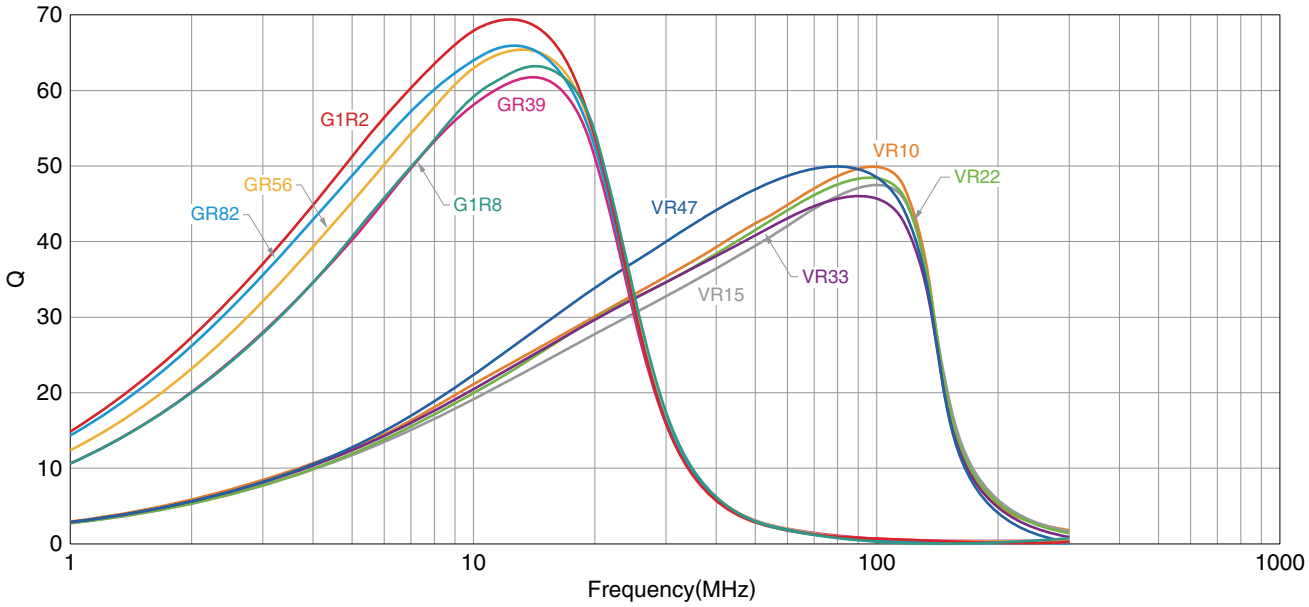
Product No.	Manufacturer
E4991A+16192A	Agilent Technologies

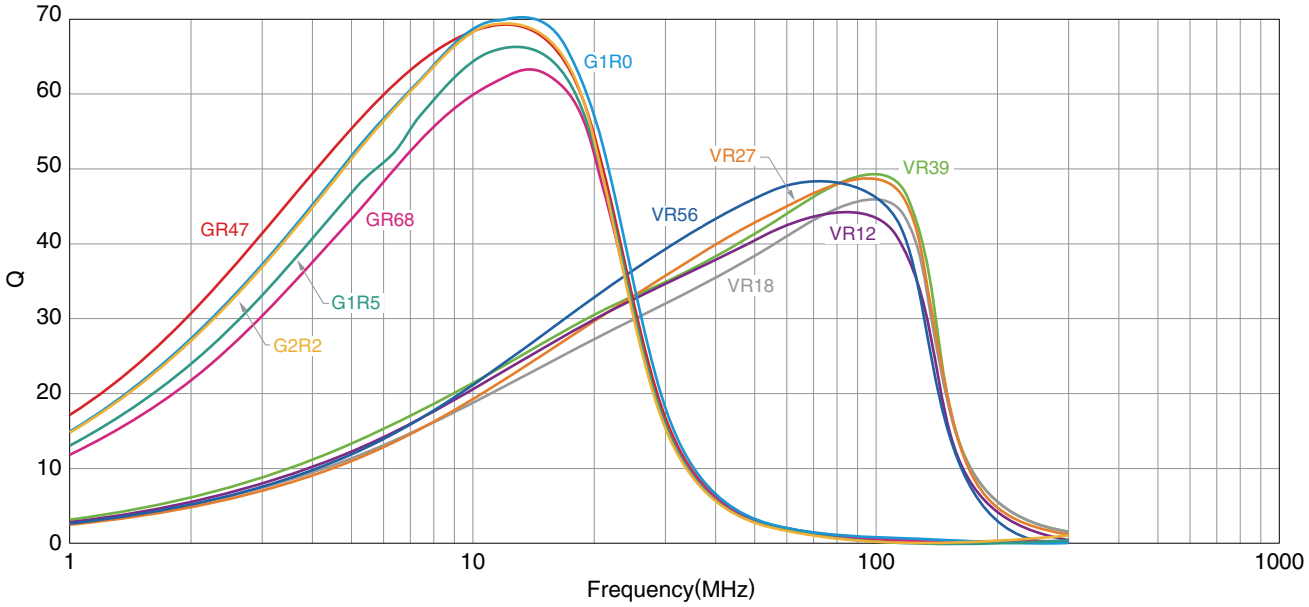
＊ Equivalent measurement equipment may be used.

MLF-J series MLF1005-J Type

■ELECTRICAL CHARACTERISTICS

□Q FREQUENCY CHARACTERISTICS GRAPH





○ Measurement equipment

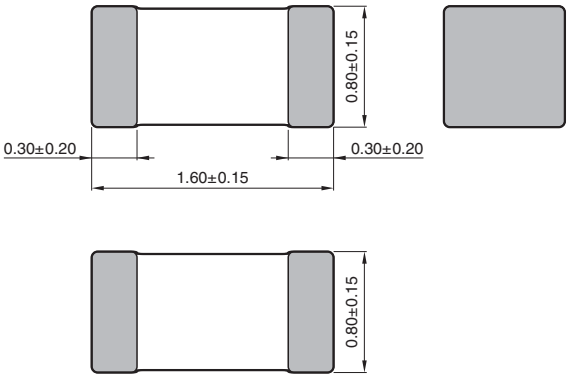
Product No.	Manufacturer
E4991A+16192A	Agilent Technologies

＊ Equivalent measurement equipment may be used.

MLF-J series

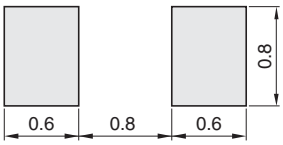
MLF1608-J Type

SHAPE & DIMENSIONS



Dimensions in mm

RECOMMENDED LAND PATTERN



Dimensions in mm

MLF-J series MLF1608-J Type

■ELECTRICAL CHARACTERISTICS

□CHARACTERISTICS SPECIFICATION TABLE

L		Q		L, Q measuring conditions		Self-resonant frequency (MHz)		DC resistance (Ω)		Rated current (mA)	Part No.*
(μH)	Tolerance	min.	typ.	Frequency (MHz)	Current (mA)	min.	typ.	max.	typ.	max.	
0.10	±5%	15	25	25	1.0	450	600	0.35	0.20	200	MLF1608DR10JT□□□
0.12	±5%	15	25	25	1.0	400	550	0.40	0.20	200	MLF1608DR12JT□□□
0.15	±5%	15	25	25	1.0	350	500	0.45	0.25	200	MLF1608DR15JT□□□
0.18	±5%	15	25	25	1.0	320	450	0.50	0.25	150	MLF1608DR18JT□□□
0.22	±5%	15	25	25	1.0	290	400	0.55	0.30	150	MLF1608DR22JT□□□
0.27	±5%	15	25	25	1.0	260	350	0.60	0.35	150	MLF1608DR27JT□□□
0.33	±5%	15	25	25	1.0	230	320	0.75	0.40	100	MLF1608DR33JT□□□
0.39	±5%	15	25	25	1.0	210	290	0.85	0.45	100	MLF1608DR39JT□□□
0.47	±5%	15	30	25	1.0	190	260	0.95	0.50	100	MLF1608DR47JT□□□
0.56	±5%	15	30	25	1.0	170	230	1.05	0.55	100	MLF1608DR56JT□□□
0.68	±5%	15	30	25	1.0	150	210	1.25	0.65	70	MLF1608DR68JT□□□
0.82	±5%	15	30	25	1.0	130	190	1.40	0.75	70	MLF1608DR82JT□□□
1.0	±5%	35	50	10	1.0	120	170	0.50	0.25	50	MLF1608A1R0JT□□□
1.2	±5%	35	50	10	1.0	110	150	0.65	0.25	50	MLF1608A1R2JT□□□
1.5	±5%	35	55	10	1.0	100	140	0.70	0.30	50	MLF1608A1R5JT□□□
1.8	±5%	35	55	10	1.0	90	130	0.85	0.35	50	MLF1608A1R8JT□□□
2.2	±5%	35	55	10	1.0	80	120	1.00	0.45	30	MLF1608A2R2JT□□□
2.7	±5%	35	55	10	1.0	70	110	1.15	0.50	30	MLF1608A2R7JT□□□
3.3	±5%	35	60	10	1.0	65	100	1.30	0.55	30	MLF1608A3R3JT□□□
3.9	±5%	35	60	10	1.0	60	90	1.45	0.65	30	MLF1608A3R9JT□□□
4.7	±5%	35	60	10	1.0	55	80	1.60	0.75	30	MLF1608A4R7JT□□□
5.6	±5%	35	60	4	0.1	45	70	1.10	0.55	15	MLF1608E5R6JT□□□
6.8	±5%	35	60	4	0.1	40	60	1.30	0.65	15	MLF1608E6R8JT□□□
8.2	±5%	35	60	4	0.1	35	55	1.50	0.80	10	MLF1608E8R2JT□□□
10	±5%	30	55	2	0.1	30	50	1.70	1.00	10	MLF1608E100JT□□□
12	±5%	30	55	2	0.1	25	45	1.80	1.20	10	MLF1608E120JT□□□

* The " □□□ " of the Part Number contains the internal code.

○ Measurement equipment

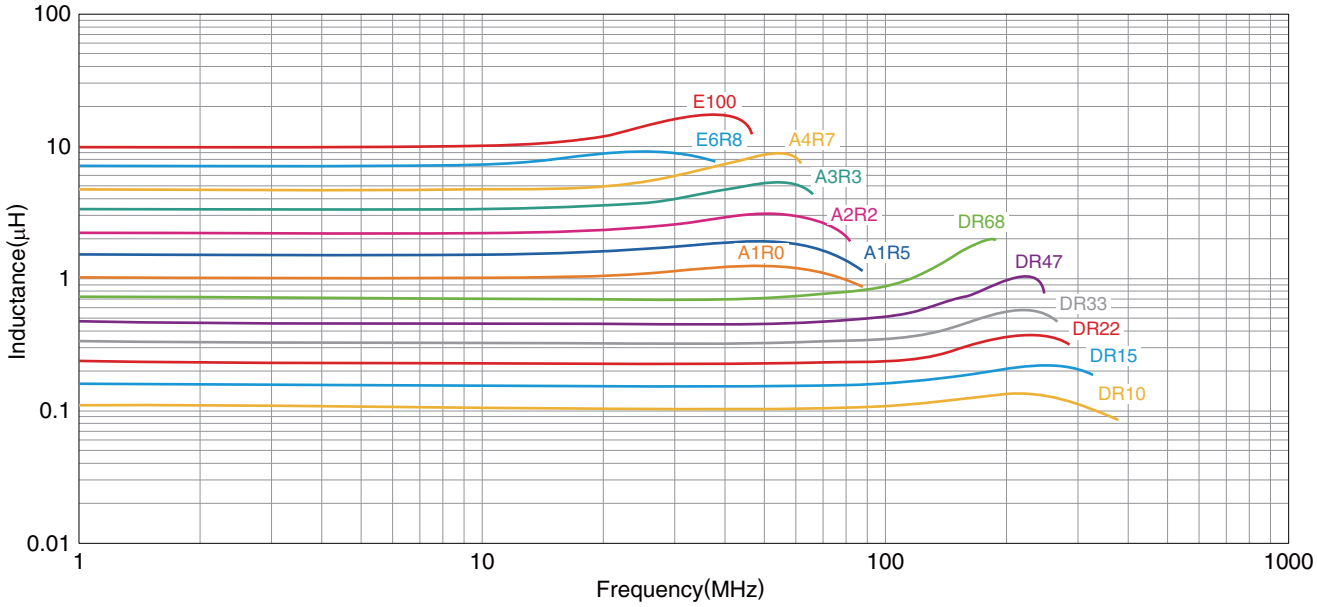
Measurement item	Product No.	Manufacturer
L, Q	4294A+16034G	Agilent Technologies
Self-resonant frequency	E4991A	Agilent Technologies
DC resistance	Type-7561	Yokogawa

＊ Equivalent measurement equipment may be used.

MLF-J series MLF1608-J Type

■ELECTRICAL CHARACTERISTICS

□L FREQUENCY CHARACTERISTICS GRAPH



○ Measurement equipment

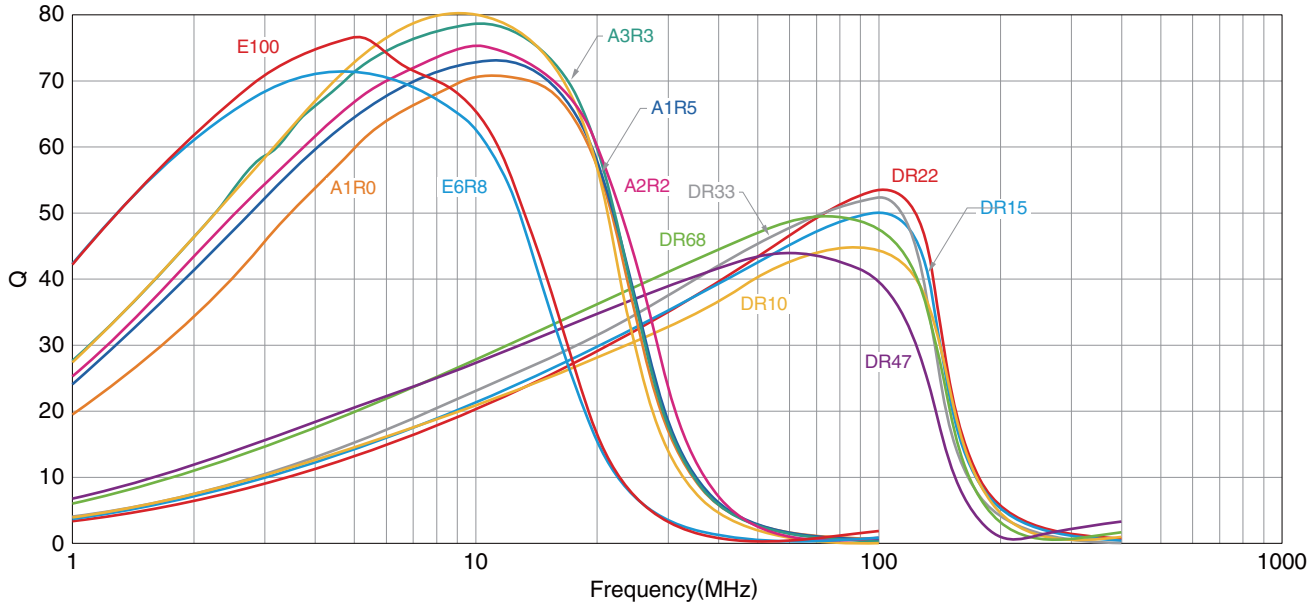
Product No.	Manufacturer
E4991A+16192A	Agilent Technologies

＊ Equivalent measurement equipment may be used.

MLF-J series MLF1608-J Type

■ELECTRICAL CHARACTERISTICS

□Q FREQUENCY CHARACTERISTICS GRAPH



○ Measurement equipment

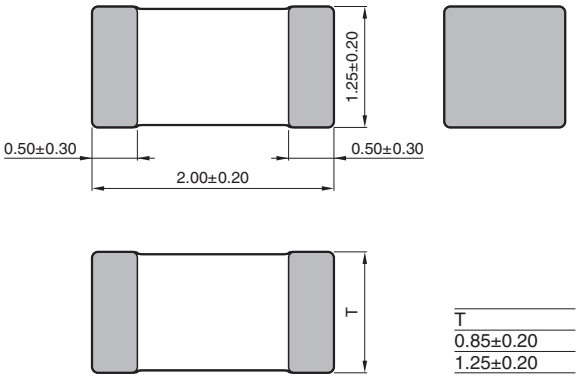
Product No.	Manufacturer
E4991A+16192A	Agilent Technologies

＊ Equivalent measurement equipment may be used.

MLF-J series

MLF2012-J Type

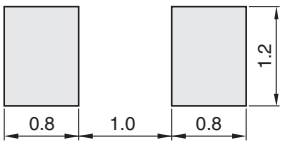
SHAPE & DIMENSIONS



T
0.85±0.20
1.25±0.20

Dimensions in mm

RECOMMENDED LAND PATTERN



Dimensions in mm

MLF-J series MLF2012-J Type

■ELECTRICAL CHARACTERISTICS

□CHARACTERISTICS SPECIFICATION TABLE

Thickness T (mm)	L		Q		L, Q measuring conditions		Self-resonant frequency (MHz)		DC resistance (Ω)		Rated current (mA)	Part No.*
	(μH)	Tolerance	min.	typ.	Frequency (MHz)	Current (mA)	min.	typ.	max.	typ.	max.	
0.85±0.2	0.10	±5%	20	30	25	1.0	400	500	0.15	0.10	300	MLF2012DR10JT□□□
0.85±0.2	0.12	±5%	20	30	25	1.0	360	450	0.20	0.12	300	MLF2012DR12JT□□□
0.85±0.2	0.15	±5%	20	30	25	1.0	320	410	0.20	0.13	300	MLF2012DR15JT□□□
0.85±0.2	0.18	±5%	20	30	25	1.0	280	370	0.25	0.15	300	MLF2012DR18JT□□□
0.85±0.2	0.22	±5%	20	30	25	1.0	250	330	0.30	0.16	250	MLF2012DR22JT□□□
0.85±0.2	0.27	±5%	20	30	25	1.0	220	300	0.35	0.18	250	MLF2012DR27JT□□□
0.85±0.2	0.33	±5%	20	30	25	1.0	200	270	0.40	0.23	250	MLF2012DR33JT□□□
0.85±0.2	0.39	±5%	25	35	25	1.0	180	250	0.45	0.25	200	MLF2012DR39JT□□□
1.25±0.2	0.47	±5%	25	35	25	1.0	160	230	0.50	0.25	200	MLF2012DR47JT□□□
1.25±0.2	0.56	±5%	25	35	25	1.0	150	210	0.55	0.30	150	MLF2012DR56JT□□□
1.25±0.2	0.68	±5%	25	35	25	1.0	140	190	0.60	0.35	150	MLF2012DR68JT□□□
1.25±0.2	0.82	±5%	25	35	25	1.0	130	170	0.65	0.40	150	MLF2012DR82JT□□□
0.85±0.2	1.0	±5%	45	55	10	1.0	120	160	0.30	0.15	80	MLF2012A1R0JT□□□
0.85±0.2	1.2	±5%	45	55	10	1.0	110	150	0.35	0.15	80	MLF2012A1R2JT□□□
0.85±0.2	1.5	±5%	45	60	10	1.0	100	140	0.40	0.18	80	MLF2012A1R5JT□□□
0.85±0.2	1.8	±5%	45	60	10	1.0	90	130	0.45	0.20	80	MLF2012A1R8JT□□□
0.85±0.2	2.2	±5%	45	60	10	1.0	80	120	0.50	0.22	50	MLF2012A2R2JT□□□
1.25±0.2	2.7	±5%	45	70	10	1.0	70	100	0.55	0.25	50	MLF2012A2R7JT□□□
1.25±0.2	3.3	±5%	45	70	10	1.0	60	90	0.60	0.28	50	MLF2012A3R3JT□□□
1.25±0.2	3.9	±5%	45	70	10	1.0	55	80	0.65	0.30	30	MLF2012A3R9JT□□□
1.25±0.2	4.7	±5%	45	70	10	1.0	50	70	0.70	0.35	30	MLF2012A4R7JT□□□
1.25±0.2	5.6	±5%	50	75	4	0.1	45	65	0.60	0.30	15	MLF2012E5R6JT□□□
1.25±0.2	6.8	±5%	50	75	4	0.1	40	60	0.65	0.32	15	MLF2012E6R8JT□□□
1.25±0.2	8.2	±5%	50	75	4	0.1	35	55	0.70	0.35	15	MLF2012E8R2JT□□□
1.25±0.2	10	±5%	50	75	2	0.1	30	50	0.80	0.40	15	MLF2012E100JT□□□
1.25±0.2	12	±5%	50	75	2	0.1	25	45	0.90	0.50	15	MLF2012E120JT□□□

* The " □□□ " of the Part Number contains the internal code.

○ Measurement equipment

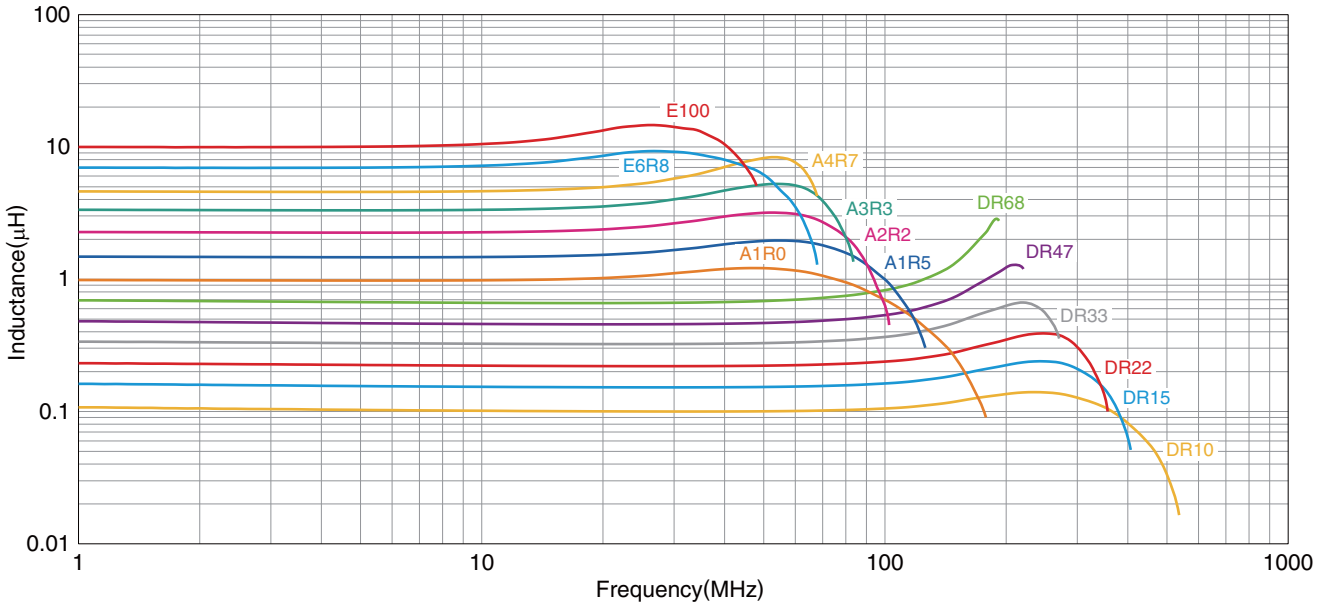
Measurement item	Product No.	Manufacturer
L, Q	4294A+16034G	Agilent Technologies
Self-resonant frequency	E4991A	Agilent Technologies
DC resistance	Type-7561	Yokogawa

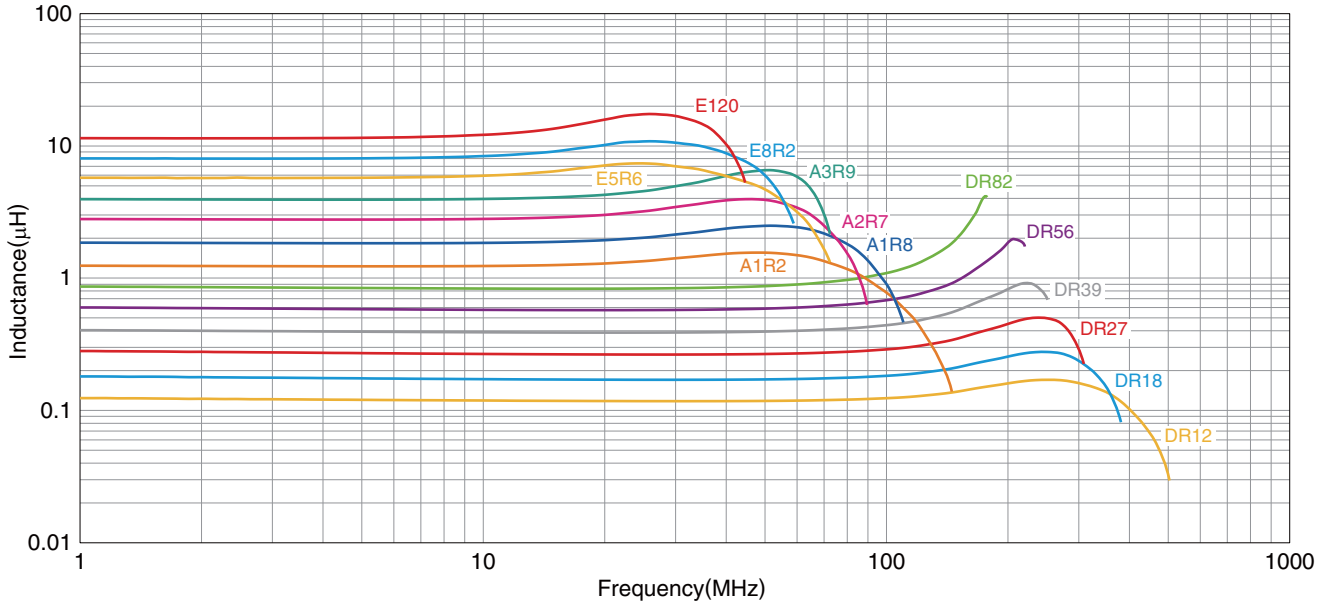
＊ Equivalent measurement equipment may be used.

MLF-J series MLF2012-J Type

■ELECTRICAL CHARACTERISTICS

□L FREQUENCY CHARACTERISTICS GRAPH





○ Measurement equipment

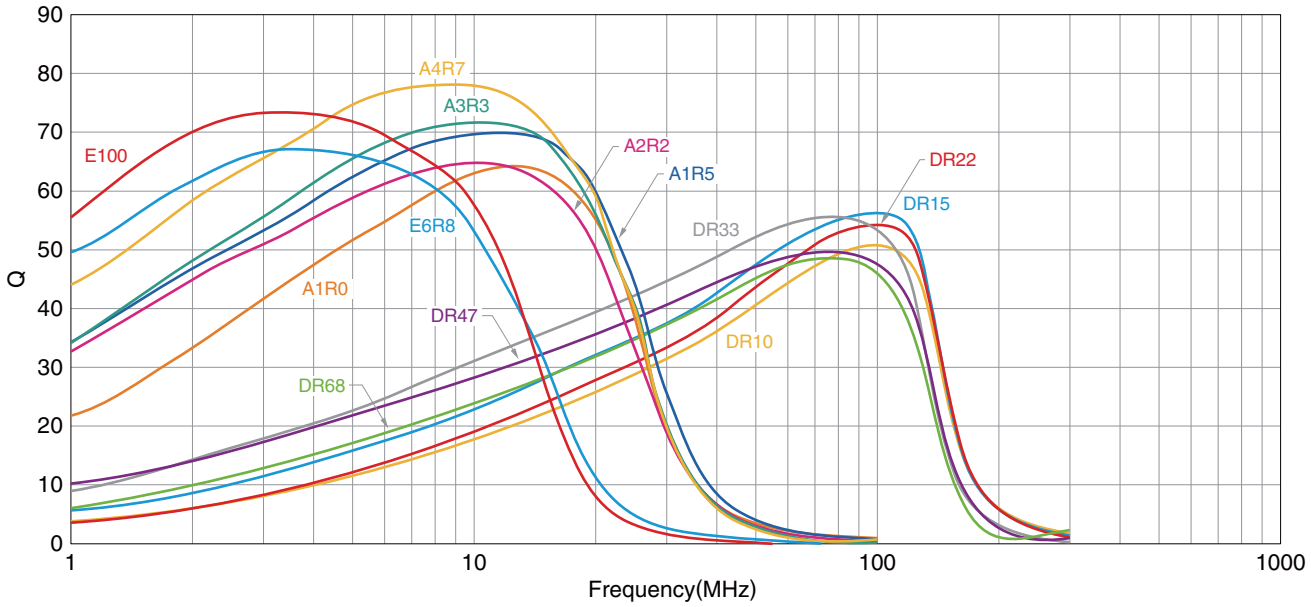
Product No.	Manufacturer
E4991A+16192A	Agilent Technologies

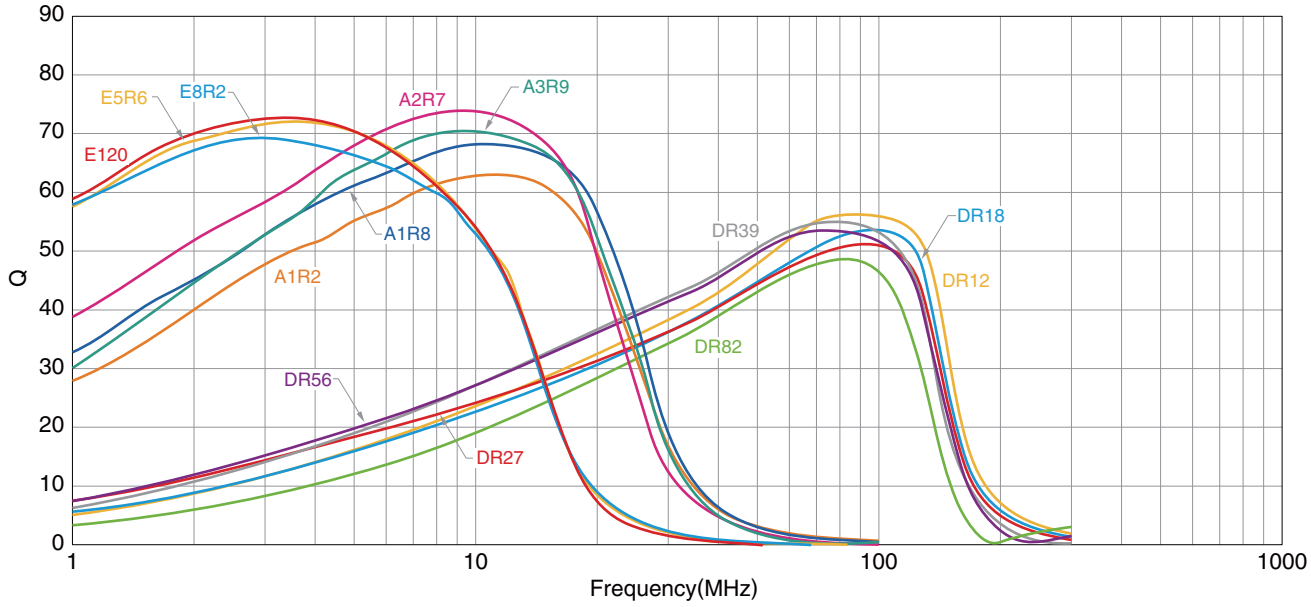
＊ Equivalent measurement equipment may be used.

MLF-J series MLF2012-JType

■ELECTRICAL CHARACTERISTICS

□Q FREQUENCY CHARACTERISTICS GRAPH





○ Measurement equipment

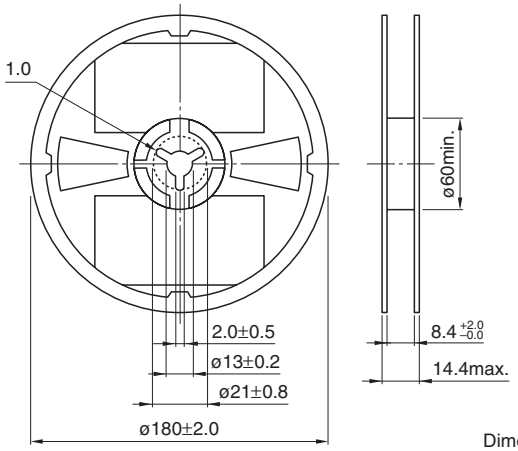
Product No.	Manufacturer
E4991A+16192A	Agilent Technologies

＊ Equivalent measurement equipment may be used.

MLF-J series

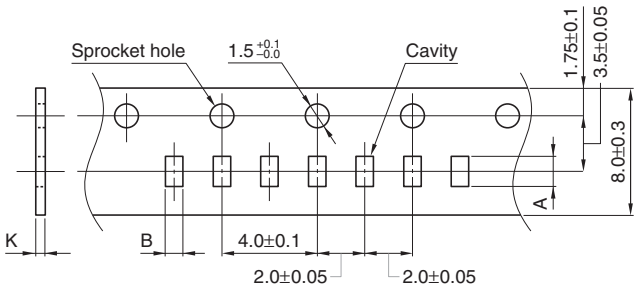
Packaging Style

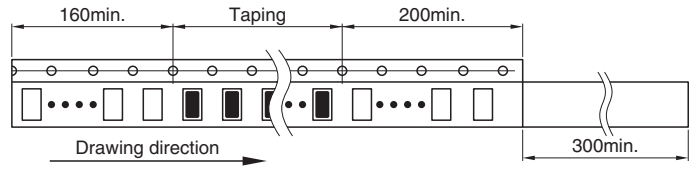
REEL DIMENSIONS



Dimensions in mm

TAPE DIMENSIONS





Type		A	B	K
MLF1005-J		1.15±0.1	0.65±0.1	0.8 max.
MLF1608-J		1.9±0.2	1.1±0.2	1.1 max.
MLF2012-J	**t=0.85**	2.3±0.2	1.5±0.2	1.1 max.
	t=1.25	2.3±0.2	1.5±0.2	1.5 max.

Dimensions in mm