

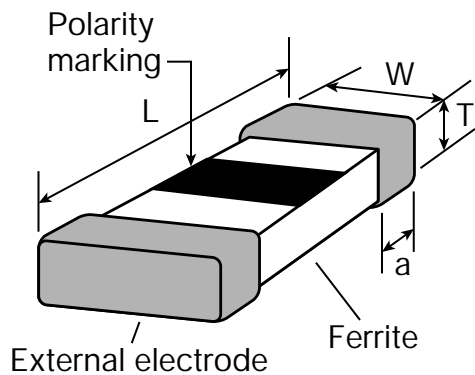


# Multilayer Chip Inductors

## Features

- No crosstalk between inductors due to magnetic shield. Perfect for high density installation.
- Unified automatic chip mounting shape with no directionality.
- Excellent solderability and high resistance for either flow or reflow soldering.
- Monolithic structure for high reliability.

## Dimensions



Marking of polarity indicates the winding direction is upward. (Magnetic Flux Direction)

Unit: mm (inch)

TYPE	L	W	T	a
MLF 1005 (0402)	1.0 ± 0.10 (0.040 ± .004)	0.5 ± 0.10 (0.020 ± .004)	0.5 ± 0.15 (0.020 ± .006)	0.25 ± 0.1 (0.010 ± .004)
MLF 1608 (0603)	1.6 ± 0.15 (0.064 ± .006)	0.8 ± 0.15 (0.032 ± .006)	0.8 ± 0.15 (0.032 ± .006) 1.2 ± 0.2 (0.048 ± .008)	0.3 ± 0.2 (0.012 ± .008)
MLF 2012 (0805)	2.0 ± 0.2 (0.080 ± .008)	1.25 ± 0.2 (0.050 ± .008)	0.85 ± 0.2 (0.034 ± .008) 1.25 ± 0.2 (0.050 ± .008)	0.5 ± 0.3 (0.020 ± .012)
MLF 3216 (1206)	3.2 ± 0.2 (0.128 ± .008)	1.6 ± 0.2 (0.064 ± .008)	0.6 ± 0.2 (0.024 ± .008) 1.1 ± 0.2 (0.044 ± .008)	0.5 ± 0.3 (0.020 ± .012)
MLF 3225 (1210)	3.2 ± 0.2 (0.128 ± .008)	2.5 ± 0.2 (0.100 ± .008)	1.1 ± 0.3 (0.044 ± .012) 2.5 ± 0.3 (0.100 ± .012)	0.5 ± 0.3 (0.020 ± .012)

Operating Temperature Range	-25 to +85° C
Storage Temperature Range	-40 to +85° C

## How To Order

**MLF 1608**

Type

—

**47N**

Inductance Value  
47N: 47nH (0.047μH)  
R12: 0.12μH  
IR0: 1μH

**M**

Tolerance  
J: ± 5%  
K: ± 10%  
M: ± 20%  
S: ± 0.3nH

**T**

Packaging  
B: Bulk  
T: Tape

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## MLF1005 TYPE (0402) - Electrical Characteristics

Inductance (nH)	Inductance tolerance (nH)	Q min.	Test frequency (MHz)	Q (typical) frequency (MHz)					Self-resonant frequency (MHz)		DC resistance (ohms) max.	Rated current (mA) max.	Part No.*
				100	300	500	800	1000	min.	typ.			
1.0	± 0.3nH	8	100	11	20	26	34	39	4000	>13000	0.12	300	MLF1005-1N0S□
1.2	± 0.3nH	8	100	11	20	26	34	39	4000	>13000	0.12	300	MLF1005-1N2S□
1.5	± 0.3nH	8	100	11	20	26	34	39	4000	>13000	0.13	300	MLF1005-1N5S□
1.8	± 0.3nH	8	100	11	18	24	30	35	4000	11000	0.14	300	MLF1005-1N8S□
2.2	± 0.3nH	8	100	10	17	24	29	35	4000	11000	0.16	300	MLF1005-2N2S□
2.7	± 0.3nH	8	100	10	17	23	29	34	4000	9000	0.17	300	MLF1005-2N7S□
3.3	± 10% or ± 5%	8	100	10	17	23	28	34	4000	8000	0.19	300	MLF1005-3N3K□
3.9	± 10% or ± 5%	8	100	10	17	23	28	33	4000	7000	0.22	300	MLF1005-3N9K□
4.7	± 10% or ± 5%	8	100	10	17	23	28	33	4000	6000	0.24	300	MLF1005-4N7K□
5.6	± 10% or ± 5%	8	100	10	17	22	28	33	4000	5700	0.27	300	MLF1005-5N6K□
6.8	± 10% or ± 5%	8	100	10	16	22	27	33	3900	5500	0.32	250	MLF1005-6N8K□
8.2	± 10% or ± 5%	8	100	10	17	22	28	32	3600	4900	0.37	250	MLF1005-8N2K□
10.0	± 10% or ± 5%	8	100	10	17	22	30	32	3200	4300	0.42	250	MLF1005-10NK□
12.0	± 10% or ± 5%	8	100	11	18	24	31	34	2700	3900	0.50	250	MLF1005-12NK□
15.0	± 10% or ± 5%	8	100	11	18	24	30	33	2300	3500	0.55	250	MLF1005-15NK□
18.0	± 10% or ± 5%	8	100	11	18	24	30	32	2100	3100	0.65	200	MLF1005-18NK□
22.0	± 10% or ± 5%	8	100	11	18	24	30	31	1900	2800	0.80	200	MLF1005-22NK□
27.0	± 10% or ± 5%	8	100	11	18	23	27	29	1600	2300	0.90	200	MLF1005-27NK□
33.0	± 10% or ± 5%	8	100	11	18	22	25	25	1300	1900	1.00	200	MLF1005-33NK□
39.0	± 10% or ± 5%	8	100	11	18	22	24	23	1200	1700	1.20	150	MLF1005-39NK□
47.0	± 10% or ± 5%	8	100	11	18	21	23	21	1000	1500	1.30	150	MLF1005-47NK□
56.0	± 10% or ± 5%	8	100	11	18	20	21	19	750	1300	1.40	150	MLF1005-56NK□

\*NOTE — Part No. can be written as MLF0402.

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# Multilayer Chip Inductors

## MLF1608 TYPE (0603) - Electrical Characteristics

Inductance (µH)	Inductance Tolerance	Q		Test frequency L, Q (MHz)	Self-resonant frequency (MHz)		DC resistance (Ω)		Rated current (mA) max.	Thickness T (mm)	Part No.*
		min.	nominal		min.	nominal	max.	nominal			
0.047	± 20%	10	20	50	260	350	0.3	0.2	50	0.8	MLF1608-47N□□
0.068	± 20%	10	20	50	250	325	0.3	0.2	50	0.8	MLF1608-68N□□
0.082	± 20%	10	20	50	245	310	0.3	0.2	50	0.8	MLF1608-82N□□
0.1	± 20. ± 10%	15	25	25	240	295	0.5	0.3	50	0.8	MLF1608-R10□□
0.12	± 20. ± 10%	15	25	25	205	280	0.5	0.3	50	0.8	MLF1608-R12□□
0.15	± 20. ± 10%	15	25	25	180	260	0.6	0.4	50	0.8	MLF1608-R15□□
0.18	± 20. ± 10%	15	25	25	165	245	0.6	0.4	50	0.8	MLF1608-R18□□
0.22	± 20. ± 10%	15	25	25	150	230	0.8	0.45	50	0.8	MLF1608-R22□□
0.27	± 20. ± 10%	15	25	25	136	210	0.8	0.5	50	0.8	MLF1608-R27□□
0.33	± 20. ± 10%	15	25	25	125	200	0.85	0.55	35	0.8	MLF1608-R33□□
0.39	± 20. ± 10%	15	25	25	110	185	1	0.65	35	0.8	MLF1608-R39□□
0.47	± 20. ± 10%	15	25	25	105	170	1.35	0.7	35	0.8	MLF1608-R47□□
0.56	± 20. ± 10%	15	25	25	95	155	1.55	0.75	35	0.8	MLF1608-R56□□
0.68	± 20. ± 10%	15	25	25	90	140	1.7	0.8	35	0.8	MLF1608-R68□□
0.82	± 20. ± 10%	15	25	25	85	125	2.1	0.85	35	0.8	MLF1608-R82□□
1	± 20. ± 10%	35	50	10	75	105	0.6	0.35	25	0.8	MLF1608-1R0□□
1.2	± 20. ± 10%	35	50	10	65	100	0.8	0.45	25	0.8	MLF1608-1R2□□
1.5	± 20. ± 10%	35	50	10	60	90	0.8	0.5	25	0.8	MLF1608-1R5□□
1.8	± 20. ± 10%	35	50	10	55	80	0.95	0.55	25	0.8	MLF1608-1R8□□
2.2	± 20. ± 10%	35	50	10	50	75	1.15	0.65	15	0.8	MLF1608-2R2□□
2.7	± 20. ± 10%	35	50	10	45	65	1.35	0.75	15	0.8	MLF1608-2R7□□
3.3	± 20. ± 10%	35	50	10	40	60	1.55	0.85	15	0.8	MLF1608-3R3□□
3.9	± 20. ± 10%	35	50	10	35	50	1.7	0.9	15	0.8	MLF1608-3R9□□
4.7	± 20. ± 10%	35	50	10	33	47	2.1	1	15	0.8	MLF1608-4R7□□
5.6	± 20. ± 10%	35	55	4	22	45	1.55	0.8	5	0.8	MLF1608-5R6□□
6.8	± 20. ± 10%	35	55	4	20	40	1.7	0.9	5	0.8	MLF1608-6R8□□
8.2	± 20. ± 10%	35	55	4	18	38	2.1	1	5	0.8	MLF1608-8R2□□
10	± 20. ± 10%	30	50	2	17	37	1.85	0.9	3	0.8	MLF1608-100□□
12	± 20. ± 10%	30	50	2	15	35	2.1	1	3	0.8	MLF1608-120□□
15	± 20. ± 10%	20	35	1	14	30	1.7	0.8	1	0.8	MLF1608-150□□
18	± 20. ± 10%	20	35	1	13	28	1.85	0.9	1	0.8	MLF1608-180□□
22	± 20. ± 10%	20	35	1	11	25	2.1	1	1	0.8	MLF1608-220□□
27	± 20. ± 10%	20	35	1	10	23	2.75	1.2	1	1.2	MLF1608-270□□
33	± 20. ± 10%	20	35	1	9	21	2.95	1.3	1	1.2	MLF1608-330□□

\*NOTE — Part No. can be written as MLF0603.

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## MLF2012 TYPE (0805) - Electrical Characteristics

Inductance ( $\mu$ H)	Inductance tolerance	Q		Test frequency L, Q (MHz)	Self-resonant frequency (MHz)		DC resistance ( $\Omega$ )		Rated current (mA) max.	Thickness T (mm)	Part No.*
		min.	nominal		min.	nominal	max.	nominal			
0.047	$\pm 20\%$	15	25	50	320	400	0.2	0.11	300	0.85	MLF2012-47N□□
0.068	$\pm 20\%$	15	25	50	280	350	0.2	0.11	300	0.85	MLF2012-68N□□
0.082	$\pm 20\%$	15	25	50	255	320	0.2	0.11	300	0.85	MLF2012-82N□□
0.1	$\pm 20. \pm 10\%$	20	30	25	235	300	0.3	0.16	250	0.85	MLF2012-R10□□
0.12	$\pm 20. \pm 10\%$	20	30	25	220	280	0.3	0.16	250	0.85	MLF2012-R12□□
0.15	$\pm 20. \pm 10\%$	20	30	25	200	250	0.4	0.21	250	0.85	MLF2012-R15□□
0.18	$\pm 20. \pm 10\%$	20	30	25	185	230	0.4	0.21	250	0.85	MLF2012-R18□□
0.22	$\pm 20. \pm 10\%$	20	30	25	170	220	0.5	0.26	250	0.85	MLF2012-R22□□
0.27	$\pm 20.^{\circ} \pm 10\%$	20	30	25	150	200	0.5	0.26	250	0.85	MLF2012-R27□□
0.33	$\pm 20. \pm 10\%$	20	30	25	145	180	0.55	0.31	250	0.85	MLF2012-R33□□
0.39	$\pm 20. \pm 10\%$	25	35	25	135	170	0.65	0.36	200	0.85	MLF2012-R39□□
0.47	$\pm 20. \pm 10\%$	25	35	25	125	160	0.65	0.36	200	1.25	MLF2012-R47□□
0.56	$\pm 20. \pm 10\%$	25	35	25	115	150	0.75	0.41	150	1.25	MLF2012-R56□□
0.68	$\pm 20. \pm 10\%$	25	35	25	105	135	0.8	0.46	150	1.25	MLF2012-R68□□
0.82	$\pm 20. \pm 10\%$	25	35	25	100	125	1	0.56	150	1.25	MLF2012-R82□□
1	$\pm 20. \pm 10\%$	45	55	10	75	105	0.4	0.21	50	0.85	MLF2012-1R0□□
1.2	$\pm 20. \pm 10\%$	45	55	10	65	95	0.5	0.26	50	0.85	MLF2012-1R2□□
1.5	$\pm 20. \pm 10\%$	45	55	10	60	85	0.5	0.26	50	0.85	MLF2012-1R5□□
1.8	$\pm 20. \pm 10\%$	45	55	10	55	78	0.6	0.31	50	0.85	MLF2012-1R8□□
2.2	$\pm 20. \pm 10\%$	45	60	10	50	70	0.65	0.36	30	0.85	MLF2012-2R2□□
2.7	$\pm 20. \pm 10\%$	45	60	10	45	64	0.75	0.41	30	1.25	MLF2012-2R7□□
3.3	$\pm 20. \pm 10\%$	45	60	10	41	58	0.8	0.46	30	1.25	MLF2012-3R3□□
3.9	$\pm 20. \pm 10\%$	45	60	10	38	53	0.9	0.51	30	1.25	MLF2012-3R9□□
4.7	$\pm 20. \pm 10\%$	45	60	10	35	48	1	0.56	30	1.25	MLF2012-4R7□□
5.6	$\pm 20. \pm 10\%$	50	60	4	32	44	0.9	0.51	15	1.25	MLF2012-5R6□□
6.8	$\pm 20. \pm 10\%$	50	60	4	29	40	1	0.56	15	1.25	MLF2012-6R8□□
8.2	$\pm 20. \pm 10\%$	50	60	4	26	36	1.1	0.61	15	1.25	MLF2012-8R2□□
10	$\pm 20. \pm 10\%$	50	60	2	24	33	1.15	0.66	15	1.25	MLF2012-100□□
12	$\pm 20. \pm 10\%$	50	60	2	22	30	1.25	0.71	15	1.25	MLF2012-120□□
15	$\pm 20. \pm 10\%$	30	40	1	19	27	0.8	0.46	5	1.25	MLF2012-150□□
18	$\pm 20. \pm 10\%$	30	40	1	18	25	0.9	0.51	5	1.25	MLF2012-180□□
22	$\pm 20. \pm 10\%$	30	40	1	16	22	1.1	0.61	5	1.25	MLF2012-220□□
27	$\pm 20. \pm 10\%$	30	40	1	14	20	1.15	0.66	5	1.25	MLF2012-270□□
33	$\pm 20. \pm 10\%$	30	40	0.4	13	18	1.25	0.71	5	1.25	MLF2012-330□□
39	$\pm 20. \pm 10\%$	35	55	2	8	15	2.9	2	4	1.25	MLF2012-390□□
47	$\pm 20. \pm 10\%$	35	55	2	7.5	14	3	2.1	4	1.25	MLF2012-470□□
56	$\pm 20. \pm 10\%$	35	55	2	7	13	3.1	2.2	4	1.25	MLF2012-560□□
68	$\pm 20. \pm 10\%$	25	40	1	6.5	12	2.9	2	2	1.25	MLF2012-680□□
82	$\pm 20. \pm 10\%$	25	40	1	6	11	3	2.1	2	1.25	MLF2012-820□□
100	$\pm 20. \pm 10\%$	25	40	1	5.5	10	3.1	2.2	2	1.25	MLF2012-101□□

\*NOTE — Part No. can be written as MLF0805.

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# Multilayer Chip Inductors

## MLF3216 TYPE (1206) - Electrical Characteristics

Inductance (μH)	Inductance tolerance	Q		Test frequency L, Q (MHz)	Self-resonant frequency (MHz)		DC resistance (Ω)		Rated current (mA) max.	Thickness T (mm)	Part No.*
		min.	nominal		min.	nominal	max.	nominal			
0.047	± 20%	20	30	50	320	400	0.15	0.08	300	0.6 ± 0.2	MLF3216-47N□□
0.068	± 20%	20	30	50	280	330	0.25	0.13	300	0.6 ± 0.2	MLF3216-68N□□
0.1	± 20. ± 10%	20	30	25	235	280	0.25	0.13	250	0.6 ± 0.2	MLF3216-R10□□
0.12	± 20. ± 10%	20	30	25	220	260	0.3	0.18	250	0.6 ± 0.2	MLF3216-R12□□
0.15	± 20. ± 10%	20	30	25	200	240	0.3	0.18	250	0.6 ± 0.2	MLF3216-R15□□
0.18	± 20. ± 10%	20	30	25	185	220	0.4	0.23	250	0.6 ± 0.2	MLF3216-R18□□
0.22	± 20. ± 10%	20	30	25	170	200	0.4	0.23	250	0.6 ± 0.2	MLF3216-R22□□
0.27	± 20. ± 10%	20	30	25	150	180	0.5	0.28	250	0.6 ± 0.2	MLF3216-R27□□
0.33	± 20. ± 10%	20	30	25	145	170	0.6	0.34	250	0.6 ± 0.2	MLF3216-R33□□
0.39	± 20. ± 10%	25	35	25	135	160	0.5	0.28	200	1.1 ± 0.3	MLF3216-R39□□
0.47	± 20. ± 10%	25	35	25	125	145	0.6	0.34	200	1.1 ± 0.3	MLF3216-R47□□
0.56	± 20. ± 10%	25	35	25	115	135	0.7	0.39	150	1.1 ± 0.3	MLF3216-R56□□
0.68	± 20. ± 10%	25	35	25	105	125	0.8	0.44	150	1.1 ± 0.3	MLF3216-R68□□
0.82	± 20. ± 10%	25	35	25	100	115	0.9	0.5	150	1.1 ± 0.3	MLF3216-R82□□
1	± 20. ± 10%	45	60	10	75	90	0.4	0.23	100	0.6 ± 0.2	MLF3216-1R0□□
1.2	± 20. ± 10%	45	60	10	65	80	0.5	0.28	100	0.6 ± 0.2	MLF3216-1R2□□
1.5	± 20. ± 10%	45	60	10	60	70	0.5	0.28	50	1.1 ± 0.3	MLF3216-1R5□□
1.8	± 20. ± 10%	45	60	10	55	66	0.5	0.28	50	1.1 ± 0.3	MLF3216-1R8□□
2.2	± 20. ± 10%	45	60	10	50	58	0.6	0.34	50	1.1 ± 0.3	MLF3216-2R2□□
2.7	± 20. ± 10%	45	60	10	45	53	0.6	0.34	50	1.1 ± 0.3	MLF3216-2R7□□
3.3	± 20. ± 10%	45	65	10	41	49	0.07	0.39	50	1.1 ± 0.3	MLF3216-3R3□□
3.9	± 20. ± 10%	45	65	10	38	45	0.8	0.44	50	1.1 ± 0.3	MLF3216-3R9□□
4.7	± 20. ± 10%	45	65	10	35	41	0.9	0.5	50	1.1 ± 0.3	MLF3216-4R7□□
5.6	± 20. ± 10%	50	65	4	32	38	0.7	0.39	25	1.1 ± 0.3	MLF3216-5R6□□
6.8	± 20. ± 10%	50	65	4	29	34	0.8	0.44	25	1.1 ± 0.3	MLF3216-6R8□□
8.2	± 20. ± 10%	50	65	4	26	31	0.9	0.5	25	1.1 ± 0.3	MLF3216-8R2□□
10	± 20. ± 10%	50	65	2	24	28	1	0.55	25	1.1 ± 0.3	MLF3216-100□□
12	± 20. ± 10%	50	65	2	22	26	1.05	0.6	15	1.1 ± 0.3	MLF3216-120□□
15	± 20. ± 10%	35	45	1	19	23	0.7	0.39	5	1.1 ± 0.3	MLF3216-150□□
18	± 20. ± 10%	35	45	1	18	21	0.7	0.39	5	1.1 ± 0.3	MLF3216-180□□
22	± 20. ± 10%	35	45	1	16	19	0.9	0.5	5	1.1 ± 0.3	MLF3216-220□□
27	± 20. ± 10%	35	45	1	14	17	0.9	0.5	5	1.1 ± 0.3	MLF3216-270□□
33	± 20. ± 10%	35	45	0.4	13	16	1.05	0.6	5	1.1 ± 0.3	MLF3216-330□□

## MLF3225 TYPE (1210) - Electrical Characteristics

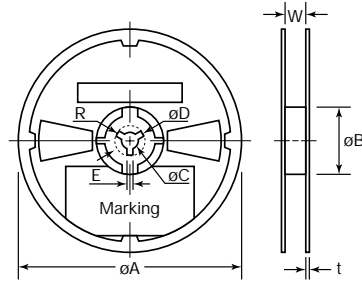
Inductance (μH)	Inductance tolerance	Q		Test frequency L, Q (MHz)	Self-resonant frequency (MHz)		DC resistance (Ω)		Rated current (mA) max.	Thickness T (mm)	Part No.*
		min.	nominal		min.	nominal	max.	nominal			
39	± 20. ± 10%	35	45	0.4	12.5	14	1.2	0.7	5	1.1 ± 0.3	MLF3225-390□□
47	± 20. ± 10%	35	45	0.4	10	11.5	1.3	0.8	5	1.1 ± 0.3	MLF3225-470□□
56	± 20. ± 10%	35	45	0.4	9.5	10.5	1.5	0.9	5	1.1 ± 0.3	MLF3225-560□□
68	± 20. ± 10%	55	70	2	9.5	10.5	3.1	1.75	10	2.5 ± 0.3	MLF3225-680□□
82	± 20. ± 10%	55	70	2	9	10	3.4	1.95	10	2.5 ± 0.3	MLF3225-820□□
100	± 20. ± 10%	55	70	1	8	9	3.8	2.2	10	2.5 ± 0.3	MLF3225-101□□
120	± 20. ± 10%	35	45	0.2	6	7	2.3	1.3	5	2.5 ± 0.3	MLF3225-121□□
150	± 20. ± 10%	35	45	0.2	5.5	6.5	2.6	1.5	5	2.5 ± 0.3	MLF3225-151□□
180	± 20. ± 10%	35	45	0.2	5	6	2.8	1.65	5	2.5 ± 0.3	MLF3225-181□□
220	± 20. ± 10%	35	45	0.2	5	5.5	3.1	1.75	5	2.5 ± 0.3	MLF3225-221□□

\*NOTE — Part No. can be written as MLF1206 and MLF1210.

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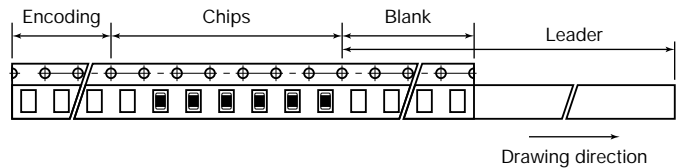
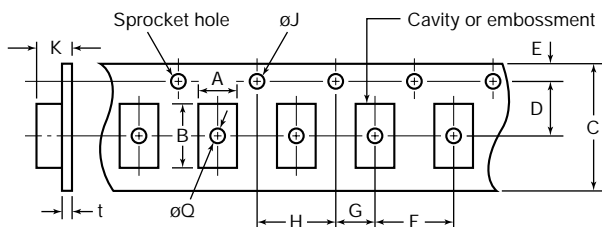
## Reel Dimensions



Dimensions (unit = mm)

Type	Product's Thickness (mm)	Quantities (pieces) Taping (/ reel)	Reel Dimensions (mm)				
			$\phi A$	$\phi B$	$\phi C$	W	t
MLF 1005	0.5 ± 0.10	10,000 (2mm pitch)	178 ± 2	60 ± 2	13 ± 0.5	10 ± 1.5	2.5 ± 0.2
MLF 1608	0.8 ± 0.15	4000 (4mm pitch)	178 ± 2	60 ± 2	13 ± 0.5	10 ± 1.5	2.5 ± 0.2
	1.2 ± 0.2	2000 (4mm pitch)					
MLF 2012	0.85 ± 0.2	4000 (4mm pitch)	178 ± 2	60 ± 2	13 ± 0.5	10 ± 1.5	2.5 ± 0.2
	1.25 ± 0.2	2000 (4mm pitch)					
MLF 3216	0.6 ± 0.2	4000 (4mm pitch)	178 ± 2	60 ± 2	13 ± 0.5	10 ± 1.5	2.5 ± 0.2
	1.1 ± 0.3	2000 (4mm pitch)					
MLF 3225	1.1 ± 0.3	2000 (4mm pitch)	178 ± 2	60 ± 2	13 ± 0.5	10 ± 1.5	2.5 ± 0.2
	2.5 ± 0.3						

## Taping Dimensions



Tape Dimensions (unit = mm)

Type	Tape Dimensions (mm)												Tape Material	Taping Dimensions (mm)		
	A	B	C	D	E	F	G	H	$\phi J$	K	t	$\phi Q$		Leader	Blank	Ending
MLF 1005	0.6	1.1	8	3.5	1.75	2	2	4	1.5	1.0 max.	0.2		150 min.	80 min.	40 min.	
MLF 1608	1.1	1.9	8	3.5	1.75	4	2	4	1.5	1.1 max.	0.3					
										2 max.						
MLF 2012	1.5	2.3	8	3.5	1.75	4	2	4	1.5	1.5 max.	0.3	0.5				
										2 max.						
MLF 3216	1.9	3.5	8	3.5	1.75	4	2	4	1.5	1.1 max.	0.3	0.5				
MLF3225										2 max.						
										2 max.						

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