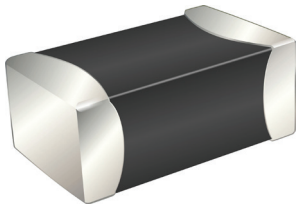
MLF SERIES
GENERAL PURPOSE MULTILAYER INDUCTORS

VENKEL LTD.



FEATURES:

- No cross talk between inductors due to magnetic shielding
- Size range: 0603 and 0805
- Inductance range: 0.01uH to 22uH
- Rated current: 5mA to 50mA
- Unified automatic mounting shape with no directionality
- Ferrite core

RoHS Compliant | REACH Compliant | HF Halogen FREE | Conflict Minerals FREE 3TG

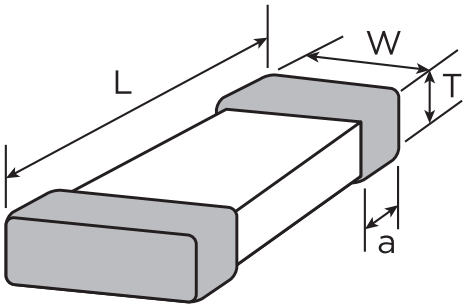
PART NUMBER STRUCTURE

MLF	1608	-	47N	M	T
Series	**Size** 1608 2012		**Inductance Value** 47N = .047uH R39 = .39uH 8R2 = 8.2uH	**Tolerance** K = ±10% M = ±20%	**Packaging** T = Tape & Reel

Example P/N: MLF1608-47NMT

Standard Termination is 100% matte Tin over Nickel.

DIMENSIONS



Unit: mm (inches)

SIZE	L	W	T	a
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)
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)	0.3 ± 0.2 (0.012 ± 0.008)

OPERATING / STORAGE TEMPERATURE RANGE

Operating Temperature Range	-40 to +85° C
Storage Temperature Range	-10 to +40° C

ELECTRICAL SPECIFICATION & RANGE

1608 (0603)

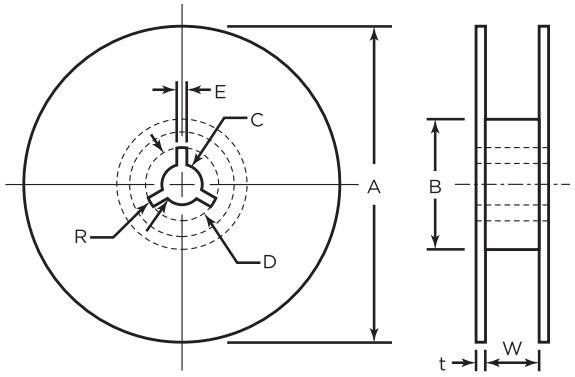
INDUCTANCE (uH)	TOLERANCE (□)	L/Q FREQ. (MHz)	Q MIN.	SELF-RESONANT FREQUENCY (MHz)	DC RESISTANCE (Ω)	RATED CURRENT (mA)	VENKEL PART NUMBER
0.01	±20%	50	10	300	0.20	50	MLF1608-10NMT
0.033	±20%	50	10	270	0.20	50	MLF1608-33NMT
0.047	±20%	50	10	260	0.30	50	MLF1608-47NMT
0.056	±20%	50	10	255	0.30	50	MLF1608-56NMT
0.068	±20%	50	10	250	0.30	50	MLF1608-68NMT
0.082	±20%	50	10	245	0.30	50	MLF1608-82NMT
0.1	±10%, ±20%	50	15	240	0.50	50	MLF1608-R10□T
0.12	±10%, ±20%	25	15	205	0.50	50	MLF1608-R12□T
0.15	±10%, ±20%	25	15	180	0.60	50	MLF1608-R15□T
0.18	±10%, ±20%	25	15	165	0.60	50	MLF1608-R18□T
0.22	±10%, ±20%	25	15	150	0.80	50	MLF1608-R22□T
0.27	±10%, ±20%	25	15	136	0.80	50	MLF1608-R27□T
0.33	±10%, ±20%	25	15	125	0.85	35	MLF1608-R33□T
0.39	±10%, ±20%	25	15	110	1.00	35	MLF1608-R39□T
0.47	±10%, ±20%	25	15	105	1.35	35	MLF1608-R47□T
0.56	±10%, ±20%	25	15	95	1.55	35	MLF1608-R56□T
0.68	±10%, ±20%	25	15	85	1.70	35	MLF1608-R68□T
0.82	±10%, ±20%	25	15	75	2.10	35	MLF1608-R82□T
1	±10%, ±20%	10	35	65	0.60	25	MLF1608-1R0□T
1.2	±10%, ±20%	10	35	60	0.80	25	MLF1608-1R2□T
1.5	±10%, ±20%	10	35	55	0.80	25	MLF1608-1R5□T
1.8	±10%, ±20%	10	35	50	0.95	25	MLF1608-1R8□T
2.2	±10%, ±20%	10	35	45	1.55	15	MLF1608-2R2□T
2.7	±10%, ±20%	10	35	40	1.35	15	MLF1608-2R7□T
3.3	±10%, ±20%	10	35	35	1.55	15	MLF1608-3R3□T
3.9	±10%, ±20%	10	35	35	1.70	15	MLF1608-3R9□T
4.7	±10%, ±20%	10	35	30	2.10	15	MLF1608-4R7□T
5.6	±10%, ±20%	4	35	20	1.55	5	MLF1608-5R6□T
6.8	±10%, ±20%	4	35	20	1.70	5	MLF1608-6R8□T
8.2	±10%, ±20%	4	30	15	2.10	5	MLF1608-8R2□T
10	±10%, ±20%	4	30	15	2.55	5	MLF1608-100□T

ELECTRICAL SPECIFICATION & RANGE

2012 (0805)

INDUCTANCE (uH)	TOLERANCE (□)	L/Q FREQ. (MHz)	Q MIN.	SELF-RESONANT FREQUENCY (MHz)	DC RESISTANCE (Ω)	RATED CURRENT (mA)	VENKEL PART NUMBER
0.047	±20%	50	20	320	0.20	300	MLF2012-47NMT
0.056	±20%	50	20	320	0.20	300	MLF2012-56NMT
0.068	±20%	50	20	280	0.20	300	MLF2012-68NMT
0.082	±20%	50	20	255	0.20	300	MLF2012-82NMT
0.1	±10%, ±20%	25	20	235	0.30	250	MLF2012-R10□T
0.12	±10%, ±20%	25	20	220	0.30	250	MLF2012-R12□T
0.15	±10%, ±20%	25	20	200	0.40	250	MLF2012-R15□T
0.18	±10%, ±20%	25	20	185	0.40	250	MLF2012-R18□T
0.22	±10%, ±20%	25	20	170	0.50	250	MLF2012-R22□T
0.27	±10%, ±20%	25	20	150	0.50	250	MLF2012-R27□T
0.33	±10%, ±20%	25	20	145	0.55	250	MLF2012-R33□T
0.39	±10%, ±20%	25	25	135	0.65	200	MLF2012-R39□T
0.47	±10%, ±20%	25	25	125	0.65	200	MLF2012-R47□T
0.56	±10%, ±20%	25	25	115	0.75	150	MLF2012-R56□T
0.68	±10%, ±20%	25	25	105	0.80	150	MLF2012-R68□T
0.82	±10%, ±20%	25	25	100	1.00	150	MLF2012-R82□T
1	±10%, ±20%	10	45	75	0.40	50	MLF2012-1R0□T
1.2	±10%, ±20%	10	45	65	0.50	50	MLF2012-1R2□T
1.5	±10%, ±20%	10	45	60	0.50	50	MLF2012-1R5□T
1.8	±10%, ±20%	10	45	55	0.60	50	MLF2012-1R8□T
2.2	±10%, ±20%	10	45	50	0.65	30	MLF2012-2R2□T
2.7	±10%, ±20%	10	45	45	0.75	30	MLF2012-2R7□T
3.3	±10%, ±20%	10	45	41	0.80	30	MLF2012-3R3□T
3.9	±10%, ±20%	10	45	38	0.90	30	MLF2012-3R9□T
4.7	±10%, ±20%	4	45	35	1.00	30	MLF2012-4R7□T
5.6	±10%, ±20%	4	45	32	0.90	15	MLF2012-5R6□T
6.8	±10%, ±20%	4	45	29	1.00	15	MLF2012-6R8□T
8.2	±10%, ±20%	4	45	26	1.10	15	MLF2012-8R2□T
10	±10%, ±20%	2	45	24	1.15	15	MLF2012-100□T
12	±10%, ±20%	2	45	22	1.25	15	MLF2012-120□T
15	±10%, ±20%	1	30	19	0.80	5	MLF2012-150□T
18	±10%, ±20%	1	30	18	0.90	5	MLF2012-180□T
22	±10%, ±20%	1	30	16	1.10	5	MLF2012-220□T

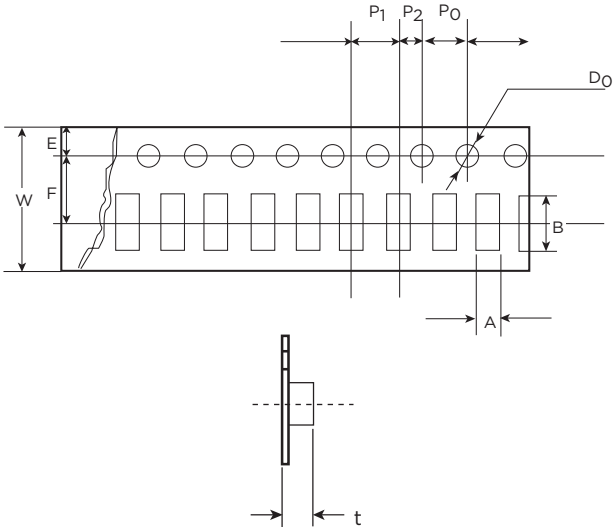
REEL SPECIFICATIONS



Unit: mm

TAPE WIDTH	8mm	12mm
A	178 ± 2	178 ± 2
B	50 ± 1	50 ± 1
C	13.0 ± 0.5	13.0 ± 0.5
D	21.0 ± 0.8	21.0 ± 0.8
E	2.0 ± 0.5	2.0 ± 0.5
W	10.0 ± 1.0	14.0 ± 1.0
t	1.2 ± 0.5	2.0 ± 0.5
R	1.0	1.0

TAPE SPECIFICATIONS



Embossed Tape

Units: mm

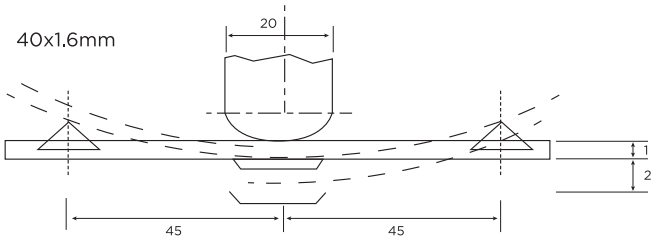
SIZE	0603 (1608)	0805 (2012) (≤ 2.2uH)	0805 (2012) (≥ 2.7uH)
Tape	Embossed	Embossed	Embossed
W	8.0 ± 0.2	8.0 ± 0.2	8.0 ± 0.2
F	3.5 ± 0.05	3.5 ± 0.05	3.5 ± 0.05
E	1.75 ± 0.1	1.75 ± 0.1	1.75 ± 0.1
P_1	4.0 ± 0.1	4.0 ± 0.1	4.0 ± 0.1
P_2	2.0 ± 0.05	2.0 ± 0.05	2.0 ± 0.05
P_0	4.0 ± 0.1	4.0 ± 0.1	4.0 ± 0.1
D_0	1.5 ± 0.1	1.5 ± 0.1	1.5 ± 0.1
A	1.40 ± 0.2	1.42 ± 0.1	1.42 ± 0.1
B	1.8 ± 0.20	2.26 ± 0.1	2.26 ± 0.1
t	1.15 ± 0.1	1.30 ± 0.1	1.30 ± 0.1
Qty/Reel	4,000	4,000	3,000

ENVIRONMENTAL CHARACTERISTICS

ELECTRICAL PERFORMANCE TEST

TEST	REQUIREMENT	TEST METHOD
Inductance	Refer to standard electrical characteristic spec.	**HP4291B**
Q		**HP4291B**
SRF		**HP4291B**
DC Resistance RDC		**Agilent 34401A**
ID		The DC current value having temperature increased 40˚C after thru DC current 2 hours at ambient temperature

MECHANICAL PERFORMANCE TEST

TEST	REQUIREMENT	TEST METHOD
Resistance to Soldering Heat	Appearance: No damage More than 75% of the terminal. Electrode should be covered with solder.	Pre-heating: 150°C, 1min. Solder Composition: Sn/Ag3.0/Cu0.5 (Pb-Free) Solder Temperature: 260±5°C (Pb-Free) Immersion Time: 10±1 sec.
Solderability	The electrodes shall be at least 90% covered with new solder coating	Pre-heating: 150°C, 1min. Solder Composition: Sn/Ag3.0/Cu0.5 (Pb-Free) Solder Temperature: 245±5°C (Pb-Free) Immersion Time: 4±1 sec.
Flexure Strength	The forces applied on the right conditions must not damage the terminal electrode and the ferrite.	Test device shall be soldered on the substrate Substrate Dimension: 100x40x1.6 mm Deflection: 2.0 mm Keeping Time: 30 sec.  *For 0402, substrate dimension is 100x40x0.8 mm
Vibration		Test device shall be soldered on the substrate Oscillation Frequency: 10 to 55 to 10Hz for 1 min. Amplitude: 1.5 mm Time: 2 hrs for each axis (X, Y & Z), total 6 hrs

Environmental Characteristics

Climatic Test

<table>
<tr><th>Test</th><th>Requirement</th><th>Test Method</th></tr>
<tr><td>Damp Heat with Load</td><td rowspan="4">Appearance: No damage
L change: within±20% of initial value</td><td>Temperature: 40±2°C
Relative Humidity: 90 ~ 95%
Time: 1000 hrs
Measured after exposure in the room condition for 24 hrs</td></tr>
<tr><td>Temperature Cycle</td><td>One cycle:
<table>
<tr><th>Step</th><th>Temperature (°C)</th><th>Time (min.)</th></tr>
<tr><td>1</td><td>-40±3</td><td>30</td></tr>
<tr><td>2</td><td>25±2</td><td>3</td></tr>
<tr><td>3</td><td>85±3</td><td>30</td></tr>
<tr><td>4</td><td>25±2</td><td>3</td></tr>
</table>
Total: 100 cycles
Measured after exposure in the room condition for 24 hrs</td></tr>
<tr><td>High Temperature Resistance</td><td>Temperature: 85±3°C
Relative Humidity: 20%
Applied Current: Rated Current
Time: 1000 hrs
Measured after exposure in the room condition for 24 hrs</td></tr>
<tr><td>Low Temperature Resistance</td><td>Temperature: -40±3°C
Relative Humidity: 0%
Time: 1000 hrs
Measured after exposure in the room condition for 24 hrs</td></tr>
</table>

Storage Temperature: 15~28°C; Humidity < 80%RH