

SMD Inductors(Coils) For High Frequency(Multilayer)

Conformity to RoHS Directive

MLK Series MLK1005

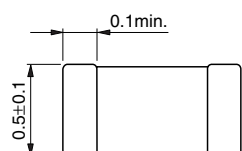
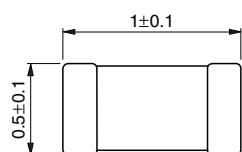
FEATURES

- Inductance values are supported from 1 to 100nH.
- With the adoption of a giga-spiral laminated structure, self-resonant frequency higher than that of the MLG structure can be obtained, while the decrease of Q in the GHz band is limited.
- Advanced monolithic structure is formed using a multilayering and sintering process with ceramic and conductive materials for high-frequency.
- There is no directivity.
- The products contain no lead and also support lead-free soldering.
- It is a product conforming to RoHS directive.

APPLICATIONS

For high-frequency applications including mobile phones, high frequency modules (PA, VCO, FEM etc.), Bluetooth, W-LAN, UWB and tuners.

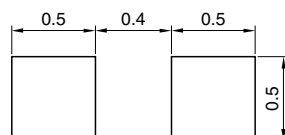
SHAPES AND DIMENSIONS



Weight: 1.0mg

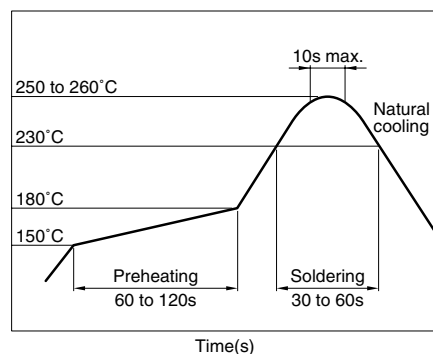


RECOMMENDED PC BOARD PATTERN



Dimensions in mm

RECOMMENDED SOLDERING CONDITION REFLOW SOLDERING



- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.
- Please contact our Sales office when your application are considered the following:
The device's failure or malfunction may directly endanger human life (e.g. application for automobile/aircraft/medical/nuclear power devices, etc.)

• All specifications are subject to change without notice.

PRODUCT IDENTIFICATION

| MLK | 1005 | S | 2N2 | S | T |
|-----|------|-----|-----|-----|-----|
| (1) | (2) | (3) | (4) | (5) | (6) |

(1) Series name

(2) Dimensions

| | |
|------|-----------------|
| 1005 | 1.0×0.5mm (L×W) |
|------|-----------------|

(3) Material code

(4) Inductance value

| | |
|-----|-------|
| 2N2 | 2.2nH |
| 12N | 12nH |
| R10 | 100nH |

(5) Inductance tolerance

| | |
|---|--------|
| S | ±0.3nH |
| D | ±0.5nH |
| J | ±5% |

(6) Packaging style

| | |
|---|---------------|
| T | Taping (reel) |
|---|---------------|

SPECIFICATIONS

| | |
|-----------------------------|---------------|
| Operating temperature range | -55 to +125°C |
| Storage temperature range | -55 to +125°C |

PACKAGING STYLE AND QUANTITIES

| | |
|-----------------|-------------------|
| Packaging style | Quantity |
| Taping | 10000 pieces/reel |

HANDLING AND PRECAUTIONS

- Before soldering, be sure to preheat components.
The preheating temperature should be set so that the temperature difference between the solder temperature and product temperature does not exceed 150°C.
- After mounting components onto the printed circuit board, do not apply stress through board bending or mishandling.
- When hand soldering, apply the soldering iron to the printed circuit board only. Temperature of the iron tip should not exceed 350°C. Soldering time should not exceed 3 seconds.

ELECTRICAL CHARACTERISTICS

| Inductance (nH) | Inductance tolerance | Q min. | Test frequency L, Q (MHz) | Self-resonant frequency (GHz) | | DC resistance (Ω) | | Rated current (mA)max. | Part No.* |
|--------------------|-------------------------|-----------|------------------------------|-------------------------------------|------|-------------------------------|------|---------------------------|---------------|
| | | | | min. | typ. | max. | typ. | | |
| 1.0 | ± 0.3 nH | 5 | 100 | 12.0 | 16.9 | 0.10 | 0.05 | 500 | MLK1005S1N0□ |
| 1.1 | ± 0.3 nH | 5 | 100 | 11.5 | 14.8 | 0.12 | 0.05 | 500 | MLK1005S1N1□ |
| 1.2 | ± 0.3 nH | 5 | 100 | 11.0 | 14.4 | 0.12 | 0.05 | 500 | MLK1005S1N2□ |
| 1.3 | ± 0.3 nH | 5 | 100 | 10.0 | 12.6 | 0.15 | 0.06 | 500 | MLK1005S1N3□ |
| 1.5 | ± 0.3 nH | 6 | 100 | 9.5 | 12.2 | 0.15 | 0.06 | 500 | MLK1005S1N5□ |
| 1.6 | ± 0.3 nH | 6 | 100 | 9.0 | 11.8 | 0.17 | 0.07 | 500 | MLK1005S1N6□ |
| 1.8 | ± 0.3 nH | 6 | 100 | 8.5 | 10.9 | 0.17 | 0.07 | 500 | MLK1005S1N8□ |
| 2.0 | ± 0.3 nH | 6 | 100 | 8.3 | 9.9 | 0.18 | 0.08 | 500 | MLK1005S2N0□ |
| 2.2 | ± 0.3 nH | 6 | 100 | 8.0 | 9.6 | 0.18 | 0.08 | 500 | MLK1005S2N2□ |
| 2.4 | ± 0.3 nH | 6 | 100 | 7.8 | 9.5 | 0.20 | 0.09 | 500 | MLK1005S2N4□ |
| 2.7 | ± 0.3 nH | 6 | 100 | 7.5 | 9.1 | 0.20 | 0.10 | 500 | MLK1005S2N7□ |
| 3.0 | ± 0.3 nH | 6 | 100 | 7.2 | 8.4 | 0.22 | 0.11 | 400 | MLK1005S3N0□ |
| 3.3 | ± 0.3 nH | 7 | 100 | 7.0 | 8.3 | 0.22 | 0.11 | 400 | MLK1005S3N3□ |
| 3.6 | ± 0.3 nH | 7 | 100 | 6.8 | 8.1 | 0.25 | 0.12 | 400 | MLK1005S3N6□ |
| 3.9 | ± 0.3 nH | 7 | 100 | 6.5 | 7.8 | 0.25 | 0.12 | 400 | MLK1005S3N9□ |
| 4.3 | ± 0.3 nH | 7 | 100 | 6.3 | 7.4 | 0.28 | 0.13 | 400 | MLK1005S4N3□ |
| 4.7 | ± 0.3 nH | 7 | 100 | 6.0 | 6.9 | 0.28 | 0.13 | 400 | MLK1005S4N7□ |
| 5.1 | ± 0.3 nH | 7 | 100 | 5.8 | 6.9 | 0.30 | 0.15 | 400 | MLK1005S5N1□ |
| 5.6 | ± 0.3 nH, 0.5nH | 7 | 100 | 5.7 | 6.7 | 0.30 | 0.15 | 400 | MLK1005S5N6□ |
| 6.2 | ± 0.3 nH, 0.5nH | 7 | 100 | 5.6 | 6.4 | 0.35 | 0.19 | 400 | MLK1005S6N2□ |
| 6.8 | $\pm 5\%$, 0.5nH | 7 | 100 | 5.5 | 6.3 | 0.35 | 0.18 | 400 | MLK1005S6N8□ |
| 7.5 | $\pm 5\%$, 0.5nH | 7 | 100 | 5.0 | 6.0 | 0.38 | 0.21 | 350 | MLK1005S7N5□ |
| 8.2 | $\pm 5\%$, 0.5nH | 7 | 100 | 5.0 | 6.0 | 0.38 | 0.21 | 350 | MLK1005S8N2□ |
| 9.1 | $\pm 5\%$ | 7 | 100 | 4.8 | 5.8 | 0.42 | 0.24 | 350 | MLK1005S9N1□ |
| 10 | $\pm 5\%$ | 7 | 100 | 4.7 | 5.2 | 0.42 | 0.23 | 350 | MLK1005S10N□ |
| 12 | $\pm 5\%$ | 7 | 100 | 4.3 | 5.3 | 0.47 | 0.27 | 350 | MLK1005S12NJ□ |
| 15 | $\pm 5\%$ | 7 | 100 | 4.0 | 4.8 | 0.50 | 0.33 | 300 | MLK1005S15NJ□ |
| 18 | $\pm 5\%$ | 7 | 100 | 4.0 | 4.7 | 0.60 | 0.38 | 250 | MLK1005S18NJ□ |
| 22 | $\pm 5\%$ | 7 | 100 | 3.5 | 4.4 | 0.70 | 0.46 | 200 | MLK1005S22NJ□ |
| 27 | $\pm 5\%$ | 7 | 100 | 3.0 | 3.9 | 0.80 | 0.53 | 200 | MLK1005S27NJ□ |
| 33 | $\pm 5\%$ | 7 | 100 | 2.5 | 3.5 | 0.90 | 0.59 | 200 | MLK1005S33NJ□ |
| 39 | $\pm 5\%$ | 6 | 100 | 2.0 | 3.1 | 1.00 | 0.65 | 200 | MLK1005S39NJ□ |
| 47 | $\pm 5\%$ | 6 | 100 | 1.8 | 3.0 | 1.20 | 0.74 | 200 | MLK1005S47NJ□ |
| 56 | $\pm 5\%$ | 6 | 100 | 1.5 | 2.6 | 1.30 | 0.84 | 200 | MLK1005S56NJ□ |
| 68 | $\pm 5\%$ | 6 | 100 | 1.4 | 2.4 | 1.50 | 1.01 | 150 | MLK1005S68NJ□ |
| 82 | $\pm 5\%$ | 6 | 100 | 1.3 | 2.2 | 1.80 | 1.39 | 150 | MLK1005S82NJ□ |
| 100 | $\pm 5\%$ | 6 | 100 | 1.1 | 1.9 | 2.20 | 1.60 | 100 | MLK1005SR10J□ |

* □: Please specify inductance tolerance, S (± 3 nH), D (± 0.5 nH) or J ($\pm 5\%$).

• Test equipment

Inductance Q : HP4291A+16193A, or equivalent

SRF: HP8720C, or equivalent

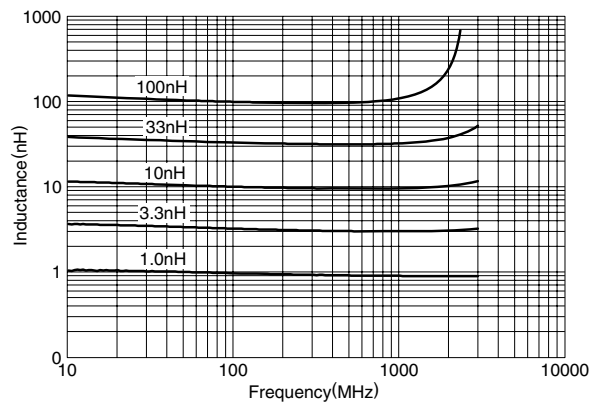
Rdc: YOKOGAWA TYPE7561, or equivalent

L, Q vs. FREQUENCY CHARACTERISTICS

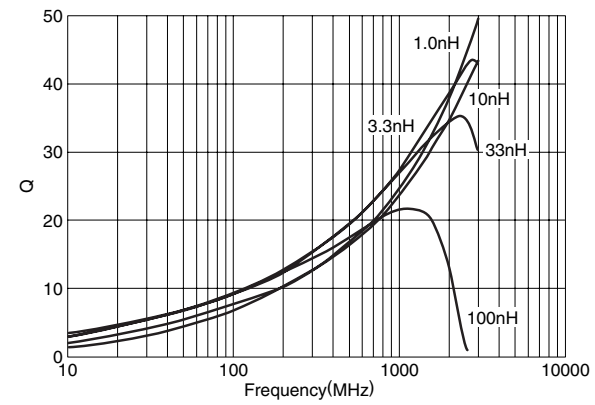
| Part No. | Inductance(nH)typ. | | | | | Q typ. | | | | |
|-------------|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 500MHz | 800MHz | 1.8GHz | 2.0GHz | 2.4GHz | 500MHz | 800MHz | 1.8GHz | 2.0GHz | 2.4GHz |
| MLK1005S1N0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 16 | 20 | 30 | 32 | 36 |
| MLK1005S1N1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 16 | 20 | 32 | 35 | 39 |
| MLK1005S1N2 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 15 | 18 | 28 | 30 | 33 |
| MLK1005S1N3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 17 | 20 | 33 | 35 | 39 |
| MLK1005S1N5 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 15 | 19 | 29 | 31 | 34 |
| MLK1005S1N6 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 17 | 21 | 34 | 36 | 40 |
| MLK1005S1N8 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 16 | 21 | 32 | 33 | 37 |
| MLK1005S2N0 | 1.9 | 1.8 | 1.9 | 1.9 | 1.9 | 16 | 20 | 32 | 34 | 38 |
| MLK1005S2N2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 15 | 19 | 29 | 31 | 34 |
| MLK1005S2N4 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 16 | 20 | 32 | 34 | 38 |
| MLK1005S2N7 | 2.5 | 2.5 | 2.5 | 2.6 | 2.6 | 17 | 22 | 33 | 35 | 39 |
| MLK1005S3N0 | 2.8 | 2.8 | 2.8 | 2.9 | 2.9 | 18 | 22 | 35 | 36 | 41 |
| MLK1005S3N3 | 3.1 | 3.1 | 3.1 | 3.1 | 3.2 | 16 | 20 | 31 | 32 | 36 |
| MLK1005S3N6 | 3.4 | 3.3 | 3.4 | 3.5 | 3.5 | 17 | 22 | 33 | 35 | 39 |
| MLK1005S3N9 | 3.7 | 3.6 | 3.7 | 3.7 | 3.8 | 17 | 21 | 32 | 33 | 37 |
| MLK1005S4N3 | 4.0 | 4.0 | 4.1 | 4.2 | 4.3 | 17 | 22 | 34 | 35 | 39 |
| MLK1005S4N7 | 4.4 | 4.4 | 4.5 | 4.6 | 4.7 | 17 | 22 | 33 | 35 | 38 |
| MLK1005S5N1 | 4.8 | 4.8 | 4.9 | 5.0 | 5.1 | 17 | 22 | 33 | 35 | 38 |
| MLK1005S5N6 | 5.3 | 5.2 | 5.4 | 5.5 | 5.7 | 17 | 22 | 33 | 34 | 38 |
| MLK1005S6N2 | 5.8 | 5.8 | 6.0 | 6.2 | 6.4 | 18 | 23 | 34 | 35 | 39 |
| MLK1005S6N8 | 6.4 | 6.4 | 6.6 | 6.7 | 7.0 | 17 | 22 | 32 | 33 | 36 |
| MLK1005S7N5 | 7.1 | 7.0 | 7.4 | 7.6 | 7.9 | 18 | 23 | 34 | 36 | 38 |
| MLK1005S8N2 | 7.7 | 7.7 | 8.1 | 8.3 | 8.6 | 19 | 23 | 34 | 36 | 38 |
| MLK1005S9N1 | 8.6 | 8.6 | 9.1 | 9.3 | 9.7 | 18 | 23 | 34 | 36 | 38 |
| MLK1005S10N | 9.4 | 9.4 | 10.0 | 10.2 | 10.7 | 19 | 23 | 34 | 35 | 38 |
| MLK1005S12N | 11.3 | 11.3 | 12.1 | 12.4 | 13.0 | 19 | 23 | 34 | 35 | 37 |
| MLK1005S15N | 14.2 | 14.2 | 15.3 | 15.8 | 16.8 | 18 | 23 | 33 | 34 | 35 |
| MLK1005S18N | 17.0 | 17.1 | 18.6 | 19.2 | 20.6 | 18 | 23 | 32 | 33 | 34 |
| MLK1005S22N | 20.8 | 20.9 | 23.0 | 23.9 | 25.8 | 18 | 23 | 32 | 33 | 34 |
| MLK1005S27N | 25.6 | 25.9 | 29.8 | 31.5 | 35.7 | 18 | 23 | 30 | 30 | 28 |
| MLK1005S33N | 31.4 | 31.9 | 37.6 | 40.2 | | 18 | 23 | 29 | 29 | |
| MLK1005S39N | 37.2 | 38.1 | 48.9 | | | 17 | 21 | 24 | | |
| MLK1005S47N | 45.0 | 46.2 | 60.6 | | | 18 | 21 | 24 | | |
| MLK1005S56N | 53.7 | 55.4 | 76.7 | | | 17 | 21 | 22 | | |
| MLK1005S68N | 65.4 | 68.1 | 102.3 | | | 17 | 20 | 19 | | |
| MLK1005S82N | 79.4 | 83.3 | 137.7 | | | 16 | 19 | 17 | | |
| MLK1005SR10 | 97.4 | 103.7 | 204.7 | | | 16 | 19 | 14 | | |

TYPICAL ELECTRICAL CHARACTERISTICS

INDUCTANCE vs. FREQUENCY CHARACTERISTICS

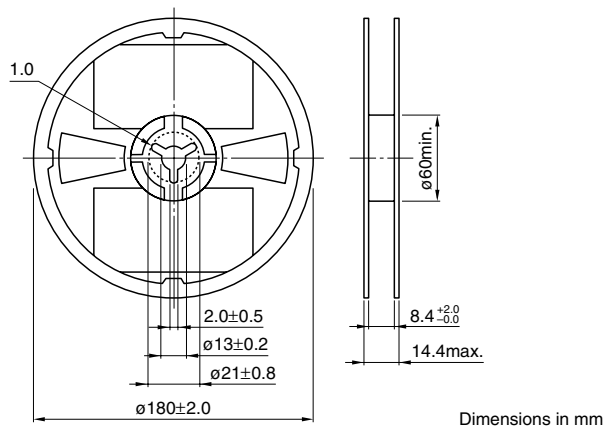


Q vs. FREQUENCY CHARACTERISTICS

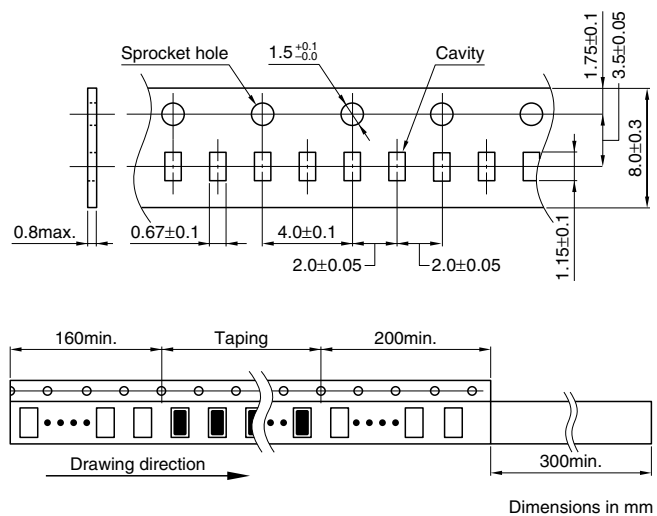


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PACKAGING STYLES REEL DIMENSIONS



TAPE DIMENSIONS



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