# MCLA1005V2

## Automotive multilayer chip inductor

### Product features

- AEC-Q200 qualified
- 0402 (1005 metric) package
- Multilayer monolithic construction yields high reliability
- Inductance range from 1.0 nH to 330 nH
- Moisture sensitivity level (MSL): 1

### Applications

- ADAS
- Infotainment
- Wireless communications
- Wifi, bluetooth, satellite
- Antennas tuning
- On board computer

### Environmental data

- Operating temperature range: -40 °C to +125 °C (ambient plus self-temperature rise)

Powering Business Worldwide

## Product specifications

| Part number | OCL Tolerance | OCL (nH) | Q minimum | DCR@ (Ω) @ +25 °C maximum | Test frequency (MHz) | Test voltage (mV) | SRF (MHz) minimum | I Rated (mA) |
|---|---|---|---|---|---|---|---|---|
| MCLA1005V2-1R0-R | ±0.3nH | 1.0 | 8 | 0.1 | 100 | 50 | 10000 | 400 |
| MCLA1005V2-1R1-R | ±0.3nH | 1.1 | 8 | 0.1 | 100 | 50 | 10000 | 400 |
| MCLA1005V2-1R2-R | ±0.3nH | 1.2 | 8 | 0.1 | 100 | 50 | 10000 | 400 |
| MCLA1005V2-1R3-R | ±0.3nH | 1.3 | 8 | 0.1 | 100 | 50 | 10000 | 400 |
| MCLA1005V2-1R5-R | ±0.3nH | 1.5 | 8 | 0.1 | 100 | 50 | 6000 | 300 |
| MCLA1005V2-1R6-R | ±0.3nH | 1.6 | 8 | 0.12 | 100 | 50 | 6000 | 300 |
| MCLA1005V2-1R8-R | ±0.3nH | 1.8 | 8 | 0.12 | 100 | 50 | 6000 | 300 |
| MCLA1005V2-2R0-R | ±0.3nH | 2.0 | 8 | 0.15 | 100 | 50 | 6000 | 300 |
| MCLA1005V2-2R2-R | ±0.3nH | 2.2 | 8 | 0.15 | 100 | 50 | 6000 | 300 |
| MCLA1005V2-2R4-R | ±0.3nH | 2.4 | 8 | 0.15 | 100 | 50 | 6000 | 300 |
| MCLA1005V2-2R7-R | ±0.3nH | 2.7 | 8 | 0.15 | 100 | 50 | 6000 | 300 |
| MCLA1005V2-3R0-R | ±0.3nH | 3.0 | 8 | 0.2 | 100 | 50 | 6000 | 300 |
| MCLA1005V2-3R3-R | ±0.3nH | 3.3 | 8 | 0.2 | 100 | 50 | 6000 | 300 |
| MCLA1005V2-3R6-R | ±0.3nH | 3.6 | 8 | 0.2 | 100 | 50 | 4000 | 300 |
| MCLA1005V2-3R9-R | ±0.3nH | 3.9 | 8 | 0.2 | 100 | 50 | 4000 | 300 |
| MCLA1005V2-4R3-R | ±0.3nH | 4.3 | 8 | 0.2 | 100 | 50 | 4000 | 300 |
| MCLA1005V2-4R7-R | ±0.3nH | 4.7 | 8 | 0.25 | 100 | 50 | 4000 | 300 |
| MCLA1005V2-5R1-R | ±0.3nH | 5.1 | 8 | 0.25 | 100 | 50 | 4000 | 300 |
| MCLA1005V2-5R6-R | ±0.3nH | 5.6 | 8 | 0.25 | 100 | 50 | 4000 | 300 |
| MCLA1005V2-6R2-R | ±0.3nH | 6.2 | 8 | 0.3 | 100 | 50 | 3900 | 300 |
| MCLA1005V2-6R8-R | ±5% | 6.8 | 8 | 0.3 | 100 | 50 | 3900 | 300 |
| MCLA1005V2-7R5-R | ±5% | 7.5 | 8 | 0.4 | 100 | 50 | 3700 | 300 |
| MCLA1005V2-8R2-R | ±5% | 8.2 | 8 | 0.4 | 100 | 50 | 3600 | 300 |
| MCLA1005V2-9R1-R | ±5% | 9.1 | 8 | 0.4 | 100 | 50 | 3400 | 300 |
| MCLA1005V2-100-R | ±5% | 10 | 8 | 0.4 | 100 | 50 | 3200 | 300 |
| MCLA1005V2-120-R | ±5% | 12 | 8 | 0.5 | 100 | 50 | 2700 | 300 |
| MCLA1005V2-150-R | ±5% | 15 | 8 | 0.5 | 100 | 50 | 2300 | 300 |
| MCLA1005V2-180-R | ±5% | 18 | 8 | 0.6 | 100 | 50 | 2100 | 300 |
| MCLA1005V2-200-R | ±5% | 20 | 8 | 0.6 | 100 | 50 | 2000 | 300 |
| MCLA1005V2-220-R | ±5% | 22 | 8 | 0.6 | 100 | 50 | 1900 | 300 |
| MCLA1005V2-270-R | ±5% | 27 | 8 | 0.7 | 100 | 50 | 1600 | 300 |
| MCLA1005V2-330-R | ±5% | 33 | 8 | 0.8 | 100 | 50 | 1300 | 200 |
| MCLA1005V2-390-R | ±5% | 39 | 8 | 1 | 100 | 50 | 1200 | 200 |
| MCLA1005V2-430-R | ±5% | 43 | 8 | 1.1 | 100 | 50 | 1100 | 200 |
| MCLA1005V2-470-R | ±5% | 47 | 8 | 1.1 | 100 | 50 | 1000 | 200 |
| MCLA1005V2-560-R | ±5% | 56 | 8 | 1.2 | 100 | 50 | 750 | 200 |
| MCLA1005V2-680-R | ±5% | 68 | 8 | 1.4 | 100 | 50 | 750 | 180 |
| MCLA1005V2-820-R | ±5% | 82 | 8 | 2.4 | 100 | 50 | 750 | 150 |
| MCLA1005V2-101-R | ±5% | 100 | 8 | 2.6 | 100 | 50 | 700 | 150 |
| MCLA1005V2-121-R | ±5% | 120 | 8 | 2.8 | 100 | 50 | 600 | 150 |

1. Test frequency and voltage is for open circuit inductance (OCL) and Q at +25 °C
2. Rated I: When rated I is applied to the product, self-temperature rise will be 20 °C or less.
3. Part Number Definition: MCLA1005V2-xxx-R
   MCLA1005V2 = Product code and size
   xxx= inductance value in nH, R= decimal point,
   If no R is present then last character equals number of zeros
   -R suffix = RoHS compliant

| Part number | OCL Tolerance | OCL (nH) | Q minimum | DCR@ (Ω) @ +25 °C maximum | Test frequency (MHz) | Test voltage (mV) | SRF (MHz) minimum | I Rated (mA) |
|---|---|---|---|---|---|---|---|---|
| MCLA1005V2-151-R | ±5% | 150 | 8 | 3.2 | 100 | 50 | 550 | 100 |
| MCLA1005V2-181-R | ±5% | 180 | 8 | 3.7 | 100 | 50 | 500 | 100 |
| MCLA1005V2-221-R | ±5% | 220 | 8 | 4.0 | 100 | 50 | 450 | 100 |
| MCLA1005V2-271-R | ±5% | 270 | 8 | 4.5 | 100 | 50 | 400 | 100 |
| MCLA1005V2-331-R | ±5% | 330 | 6 | 7.0 | 50 | 50 | 350 | 50 |

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   xxx= inductance value in nH, R= decimal point,
   If no R is present then last character equals number of zeros
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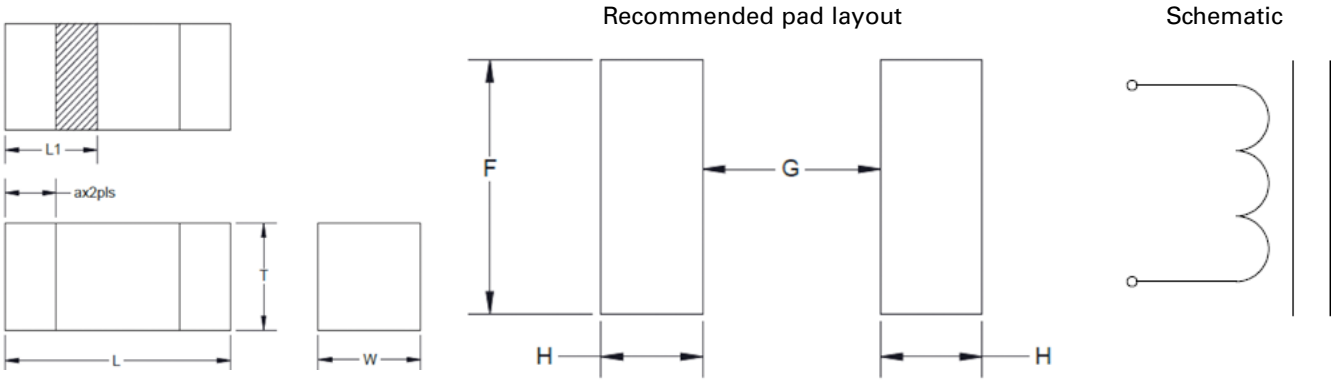
## Mechanical parameters, schematic, pad layout (mm)



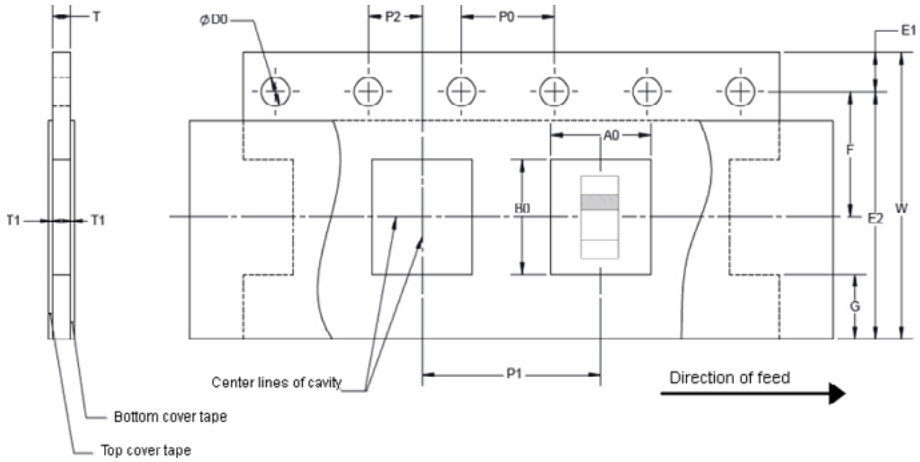

| Part Number | L | W | T | A | L1 | F | G | H |
|---|---|---|---|---|---|---|---|---|
| MCLA1005V2-xxx-R | 1.00±0.15 | 0.50±0.15 | 0.50±0.15 | 0.25±0.10 | 0.50±0.15 | 0.85 ref | 0.15 ref | 0.75 ref |

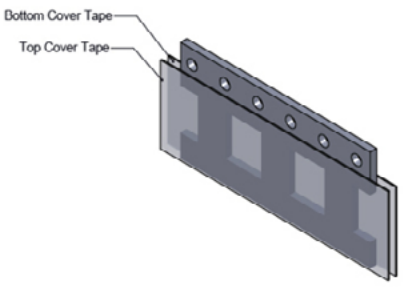
Part marking: No marking
All soldering surfaces to be coplanar within 0.1 millimeters
Tolerances are ±0.1 millimeters unless stated otherwise
Dimension L1 is for orientation
Pad layout dimensions are reference only
Traces or vias underneath the inductor is not recommended

**Packaging information (mm)**

Drawing not to scale

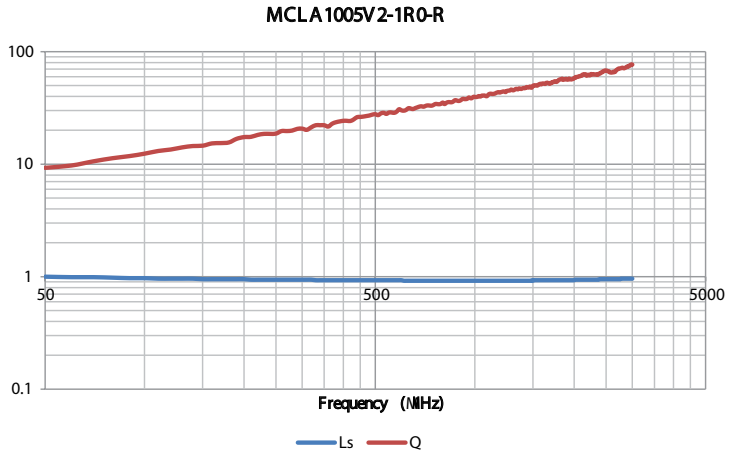
Supplied in tape and reel packaging, 10000 parts per 7" diameter reel

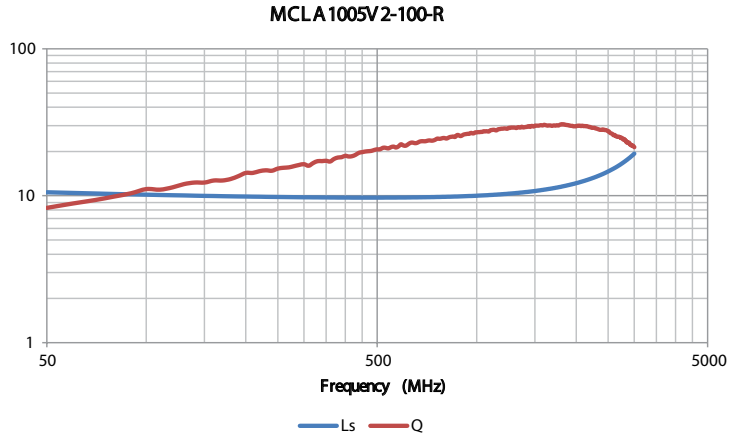


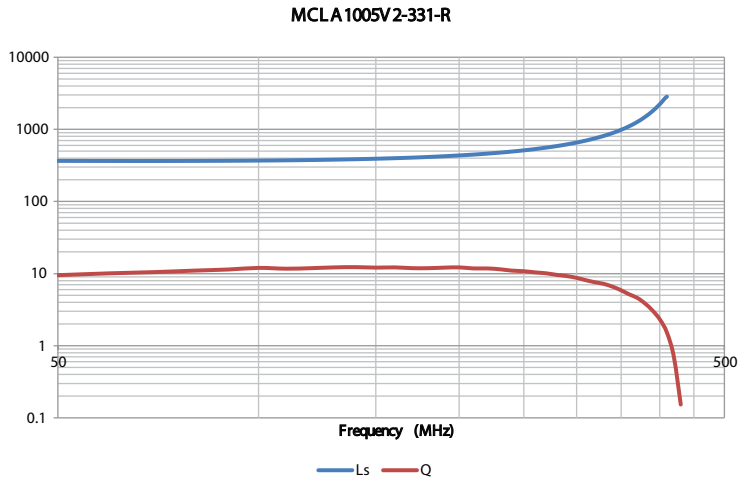




| | |
|---|---|
| W±0.2 | 8.00 |
| F±0.1 | 3.50 |
| E1±0.2 | 1.75 |
| E2 Min | na |
| P0±0.2 | 4.00 |
| P1±0.1 | 2.00 |
| P2±0.1 | 2.00 |
| D0±0.1 | 1.55 |
| A0 | 0.65±0.1 |
| B0 | 1.15±0.1 |
| T | 0.6±0.1 |
| T1 Max | na |

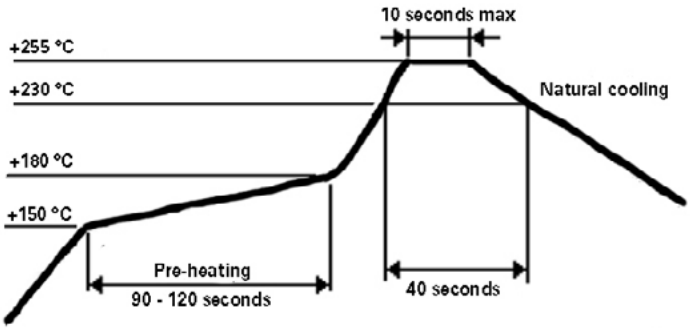
**Inductance and Q vs frequency**



**Solder reflow profile**



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