

# 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)



**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.

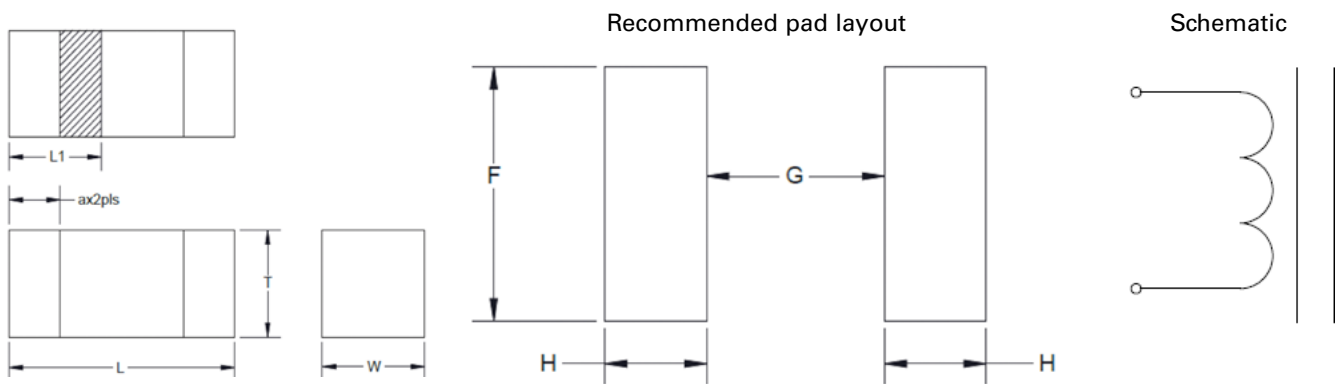
3. Part Number Definition: MCLA1005V2-xxx-R  
MCLA1005V2 = Product code and size  
xxx= inductance value in nH, R= decimal point,  
If no R is present then last character equals number of zeros  
-R suffix = RoHS compliant

| Part number      | OCL Tolerance | OCL (nH) | Q minimum | DCR@ (+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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**Mechanical parameters, schematic, pad layout (mm)**



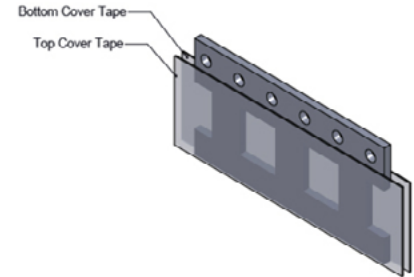
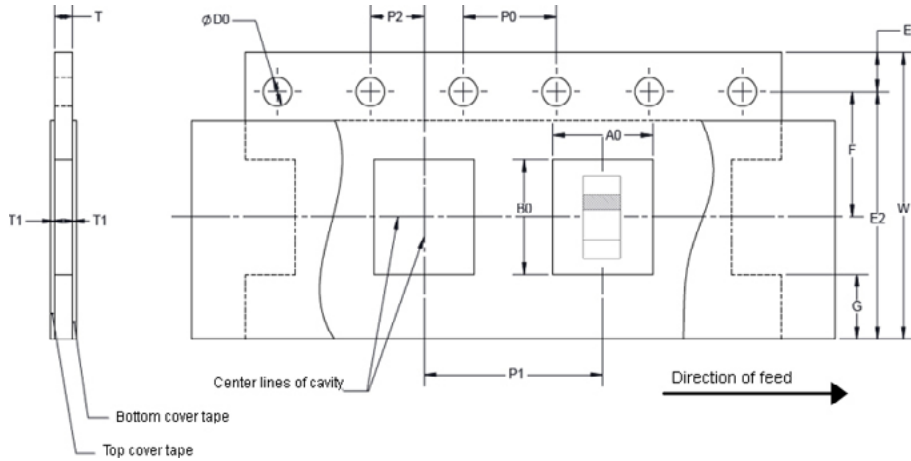
| Part Number      | L         | W         | T         | A         | L1        | F        | G        | H        |
|------------------|-----------|-----------|-----------|-----------|-----------|----------|----------|----------|
| MCLA1005V2-xxx-R | 1.00±0.15 | 0.50±0.15 | 0.50±0.15 | 0.25±0.10 | 0.50±0.15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

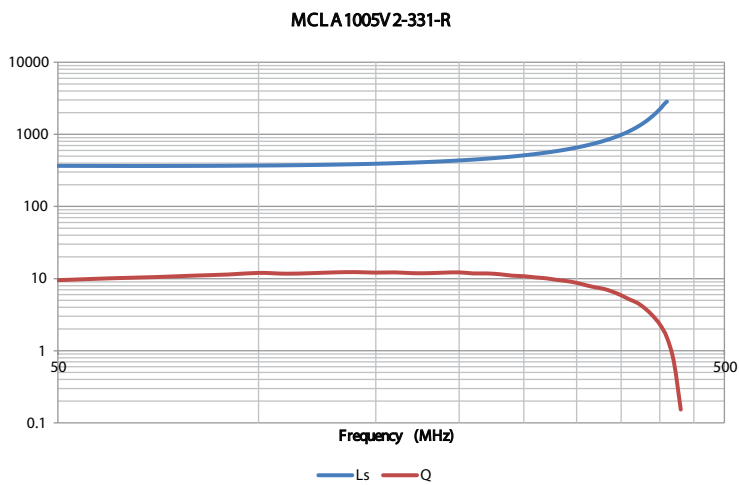
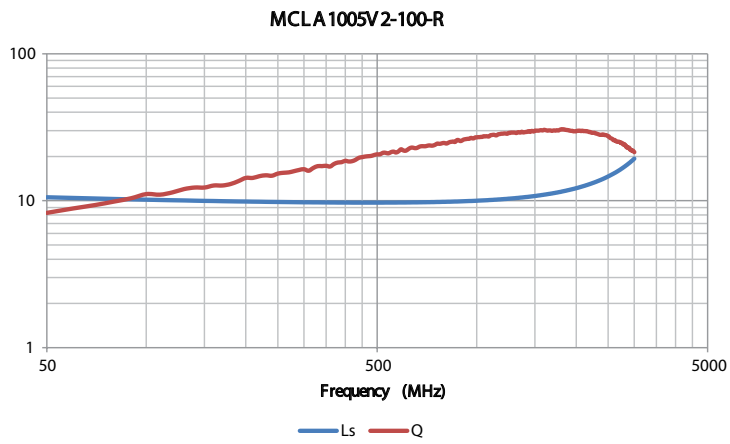
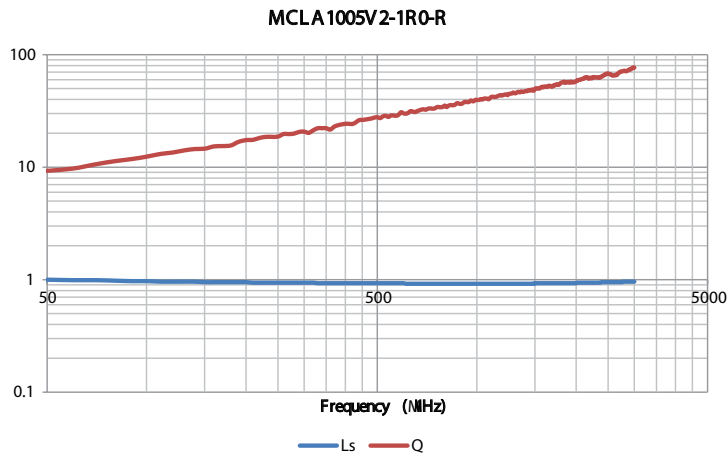
Drawing not to scale

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

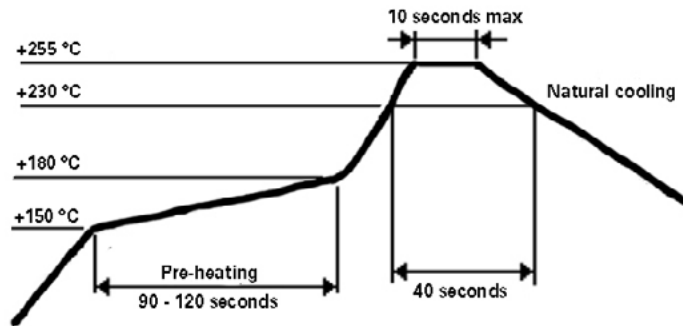


|              |                |
|--------------|----------------|
| $W \pm 0.2$  | 8.00           |
| $F \pm 0.1$  | 3.50           |
| $E1 \pm 0.2$ | 1.75           |
| E2 Min       | na             |
| $P0 \pm 0.2$ | 4.00           |
| $P1 \pm 0.1$ | 2.00           |
| $P2 \pm 0.1$ | 2.00       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

Inductance and Q vs frequency



### Solder reflow profile



Life Support Policy: Eaton does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

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