

# Inductors

## For General Applications SMD

## MLF Series MLF2012 Type

### FEATURES

- High-reliability monolithic structure.
- Ferrite core and magnetic shielding enables the design of compact circuits with high packing density.
- Excellent solderability and high heat resistance permits either flow or reflow soldering.

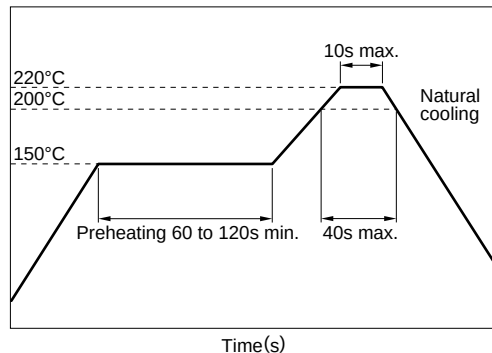
### APPLICATIONS

Personal computers, HDDs, or other various electronic appliances.

### SPECIFICATIONS

|                             |                                |
|-----------------------------|--------------------------------|
| Operating temperature range | -25 to +85°C                   |
| Storage temperature range   | -40 to +85°C[Unit of products] |

### RECOMMENDED REFLOW SOLDERING CONDITIONS



### PRODUCT IDENTIFICATION

| MLF | 1608 | A   | 1R0 | K   | T   |
|-----|------|-----|-----|-----|-----|
| (1) | (2)  | (3) | (4) | (5) | (6) |

(1) Series name

(2) Dimensions L×W

|      |            |
|------|------------|
| 1608 | 1.6×0.8mm  |
| 2012 | 2.0×1.25mm |

(3) Material code

(4) Inductance value

|     |               |
|-----|---------------|
| 47N | 47nH[0.047μH] |
| R15 | 0.15μH        |
| 1R0 | 1μH           |
| 100 | 10μH          |

(5) Inductance tolerance

|   |      |
|---|------|
| K | ±10% |
| M | ±20% |

(6) Packaging style

|   |               |
|---|---------------|
| T | Taping [reel] |
|---|---------------|

### PACKAGING STYLE AND QUANTITIES

| Packaging style | Product's thickness | Quantity         |
|-----------------|---------------------|------------------|
| Taping          | 0.8/0.85mm          | 4000 pieces/reel |
|                 | 1.25mm              | 2000 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.
- The inductance value may change due to magnetic saturation if the current exceeds the rated maximum.
- Do not expose the inductors to stray magnetic fields.
- Avoid static electricity discharge during handling.
- When hand soldering, apply the soldering iron to the printed circuit board only. Temperature of the iron tip should not exceed 300°C. Soldering time should not exceed 3 seconds.

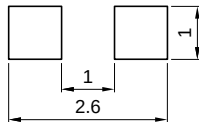
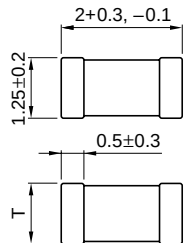
# Inductors

## For General Applications

### SMD

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### SHAPES AND DIMENSIONS/RECOMMENDED PC BOARD PATTERN



| T        | Weight(mg) |
|----------|------------|
| 0.85±0.2 | 10         |
| 1.25±0.2 | 14         |

Dimensions in mm

### ELECTRICAL CHARACTERISTICS

| Inductance<br>(μH) | Inductance<br>tolerance | Q    |      | Test<br>frequency<br>L, Q (MHz) | Self-resonant<br>frequency (MHz) |      | DC resistance<br>(Ω) |      | Rated<br>current<br>(mA) max. | Thickness<br>T<br>(mm) | Part No.          |
|--------------------|-------------------------|------|------|---------------------------------|----------------------------------|------|----------------------|------|-------------------------------|------------------------|-------------------|
|                    |                         | min. | nom. |                                 | min.                             | nom. | max.                 | nom. |                               |                        |                   |
| 0.047              | ±20%                    | 15   | 25   | 50                              | 320                              | 400  | 0.2                  | 0.11 | 300                           | 0.85                   | MLF2012D47N*1X*2T |
| 0.068              | ±20%                    | 15   | 25   | 50                              | 280                              | 350  | 0.2                  | 0.11 | 300                           | 0.85                   | MLF2012D68NXT     |
| 0.082              | ±20%                    | 15   | 25   | 50                              | 255                              | 320  | 0.2                  | 0.11 | 300                           | 0.85                   | MLF2012D82NXT     |
| 0.1                | ±20, ±10%               | 20   | 30   | 25                              | 235                              | 300  | 0.3                  | 0.16 | 250                           | 0.85                   | MLF2012DR10XT     |
| 0.12               | ±20, ±10%               | 20   | 30   | 25                              | 220                              | 280  | 0.3                  | 0.16 | 250                           | 0.85                   | MLF2012DR12XT     |
| 0.15               | ±20, ±10%               | 20   | 30   | 25                              | 200                              | 250  | 0.4                  | 0.21 | 250                           | 0.85                   | MLF2012DR15XT     |
| 0.18               | ±20, ±10%               | 20   | 30   | 25                              | 185                              | 230  | 0.4                  | 0.21 | 250                           | 0.85                   | MLF2012DR18XT     |
| 0.22               | ±20, ±10%               | 20   | 30   | 25                              | 170                              | 220  | 0.5                  | 0.26 | 250                           | 0.85                   | MLF2012DR22XT     |
| 0.27               | ±20, ±10%               | 20   | 30   | 25                              | 150                              | 200  | 0.5                  | 0.26 | 250                           | 0.85                   | MLF2012DR27XT     |
| 0.33               | ±20, ±10%               | 20   | 30   | 25                              | 145                              | 180  | 0.55                 | 0.31 | 250                           | 0.85                   | MLF2012DR33XT     |
| 0.39               | ±20, ±10%               | 25   | 35   | 25                              | 135                              | 170  | 0.65                 | 0.36 | 200                           | 0.85                   | MLF2012DR39XT     |
| 0.47               | ±20, ±10%               | 25   | 35   | 25                              | 125                              | 160  | 0.65                 | 0.36 | 200                           | 1.25                   | MLF2012DR47XT     |
| 0.56               | ±20, ±10%               | 25   | 35   | 25                              | 115                              | 150  | 0.75                 | 0.41 | 150                           | 1.25                   | MLF2012DR56XT     |
| 0.68               | ±20, ±10%               | 25   | 35   | 25                              | 105                              | 135  | 0.8                  | 0.46 | 150                           | 1.25                   | MLF2012DR68XT     |
| 0.82               | ±20, ±10%               | 25   | 35   | 25                              | 100                              | 125  | 1                    | 0.56 | 150                           | 1.25                   | MLF2012DR82XT     |
| 1                  | ±20, ±10%               | 45   | 55   | 10                              | 75                               | 105  | 0.4                  | 0.21 | 50                            | 0.85                   | MLF2012A1R0XT     |
| 1.2                | ±20, ±10%               | 45   | 55   | 10                              | 65                               | 95   | 0.5                  | 0.26 | 50                            | 0.85                   | MLF2012A1R2XT     |
| 1.5                | ±20, ±10%               | 45   | 55   | 10                              | 60                               | 85   | 0.5                  | 0.26 | 50                            | 0.85                   | MLF2012A1R5XT     |
| 1.8                | ±20, ±10%               | 45   | 55   | 10                              | 55                               | 78   | 0.6                  | 0.31 | 50                            | 0.85                   | MLF2012A1R8XT     |
| 2.2                | ±20, ±10%               | 45   | 60   | 10                              | 50                               | 70   | 0.65                 | 0.36 | 30                            | 0.85                   | MLF2012A2R2XT     |
| 2.7                | ±20, ±10%               | 45   | 60   | 10                              | 45                               | 64   | 0.75                 | 0.41 | 30                            | 1.25                   | MLF2012A2R7XT     |
| 3.3                | ±20, ±10%               | 45   | 60   | 10                              | 41                               | 58   | 0.8                  | 0.46 | 30                            | 1.25                   | MLF2012A3R3XT     |
| 3.9                | ±20, ±10%               | 45   | 60   | 10                              | 38                               | 53   | 0.9                  | 0.51 | 30                            | 1.25                   | MLF2012A3R9XT     |
| 4.7                | ±20, ±10%               | 45   | 60   | 10                              | 35                               | 48   | 1                    | 0.56 | 30                            | 1.25                   | MLF2012A4R7XT     |
| 5.6                | ±20, ±10%               | 50   | 60   | 4                               | 32                               | 44   | 0.9                  | 0.51 | 15                            | 1.25                   | MLF2012E5R6XT     |
| 6.8                | ±20, ±10%               | 50   | 60   | 4                               | 29                               | 40   | 1                    | 0.56 | 15                            | 1.25                   | MLF2012E6R8XT     |
| 8.2                | ±20, ±10%               | 50   | 60   | 4                               | 26                               | 36   | 1.1                  | 0.61 | 15                            | 1.25                   | MLF2012E8R2XT     |
| 10                 | ±20, ±10%               | 50   | 60   | 2                               | 24                               | 33   | 1.15                 | 0.66 | 15                            | 1.25                   | MLF2012E100XT     |
| 12                 | ±20, ±10%               | 50   | 60   | 2                               | 22                               | 30   | 1.25                 | 0.71 | 15                            | 1.25                   | MLF2012E120XT     |
| 15                 | ±20, ±10%               | 30   | 40   | 1                               | 19                               | 27   | 0.8                  | 0.46 | 5                             | 1.25                   | MLF2012C150XT     |
| 18                 | ±20, ±10%               | 30   | 40   | 1                               | 18                               | 25   | 0.9                  | 0.51 | 5                             | 1.25                   | MLF2012C180XT     |
| 22                 | ±20, ±10%               | 30   | 40   | 1                               | 16                               | 22   | 1.1                  | 0.61 | 5                             | 1.25                   | MLF2012C220XT     |
| 27                 | ±20, ±10%               | 30   | 40   | 1                               | 14                               | 20   | 1.15                 | 0.66 | 5                             | 1.25                   | MLF2012C270XT     |
| 33                 | ±20, ±10%               | 30   | 40   | 0.4                             | 13                               | 18   | 1.25                 | 0.71 | 5                             | 1.25                   | MLF2012C330XT     |
| 39                 | ±20, ±10%               | 35   | 55   | 2                               | 8                                | 15   | 2.9                  | 2    | 4                             | 1.25                   | MLF2012K390XT     |
| 47                 | ±20, ±10%               | 35   | 55   | 2                               | 7.5                              | 14   | 3                    | 2.1  | 4                             | 1.25                   | MLF2012K470XT     |
| 56                 | ±20, ±10%               | 35   | 55   | 2                               | 7                                | 13   | 3.1                  | 2.2  | 4                             | 1.25                   | MLF2012K560XT     |
| 68                 | ±20, ±10%               | 25   | 40   | 1                               | 6.5                              | 12   | 2.9                  | 2    | 2                             | 1.25                   | MLF2012C680XT     |
| 82                 | ±20, ±10%               | 25   | 40   | 1                               | 6                                | 11   | 3                    | 2.1  | 2                             | 1.25                   | MLF2012C820XT     |
| 100                | ±20, ±10%               | 25   | 40   | 1                               | 5.5                              | 10   | 3.1                  | 2.2  | 2                             | 1.25                   | MLF2012C101XT     |

\*1 47N means for 47nH (0.047μH).

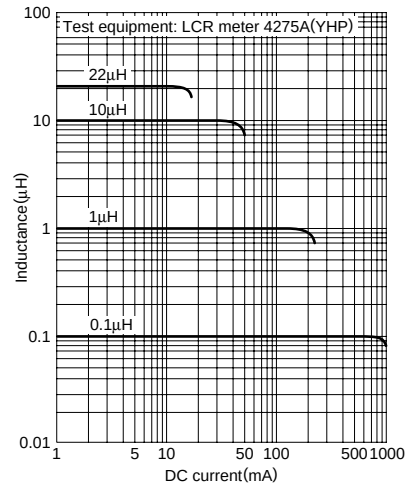
\*2 X: Please specify inductance tolerance, M(±20%) or K(±10%)

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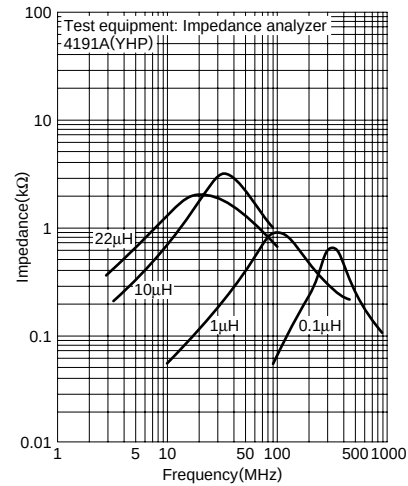
For General Applications  
SMD

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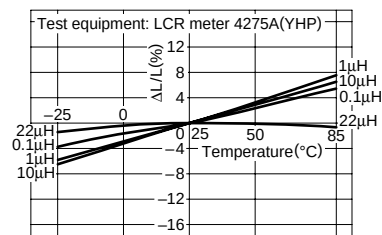
### TYPICAL ELECTRICAL CHARACTERISTICS INDUCTANCE CHANGE vs. DC SUPERPOSITION CHARACTERISTICS



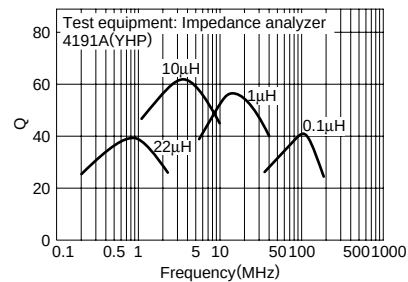
### IMPEDANCE vs. FREQUENCY CHARACTERISTICS



### INDUCTANCE CHANGE vs. TEMPERATURE CHARACTERISTICS



### Q vs. FREQUENCY CHARACTERISTICS



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