

# Chip Inductor; CIL Series

## General Type



### Feature

- Magnetic shielding eliminates crosstalk, thus permitting higher mounting density.
- Excellent solderability and high heat resistance for either flow or reflow soldering.
- Monolithic structure for high reliability.

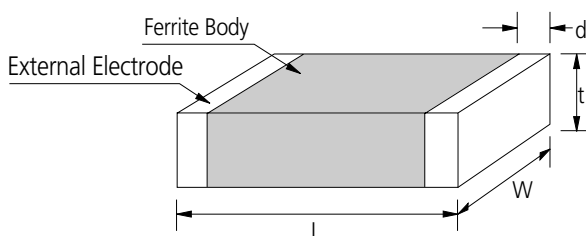
### Application

- Resonance circuits, PLL circuits, Noise suppression, etc.

As it has ferrite body and 100 % Ag internal conductor, the CIL series Inductors have excellent Q characteristics and free of cross talk.

|                |            |
|----------------|------------|
| Operating Temp | -55~+125°C |
| Storage Temp   | -10~+40°C  |

### Dimensions



Unit : mm

| SIZE CODE | L              | W              | T                                | d                 |
|-----------|----------------|----------------|----------------------------------|-------------------|
| 05        | $1.0 \pm 0.05$ | $0.5 \pm 0.05$ | $0.5 \pm 0.05$                   | $0.25 \pm 0.1$    |
| 10        | $1.6 \pm 0.15$ | $0.8 \pm 0.15$ | $0.8 \pm 0.15$                   | $0.3 \pm 0.2$     |
| 21        | $2.0 \pm 0.2$  | $1.25 \pm 0.2$ | $0.85 \pm 0.2$<br>$1.25 \pm 0.2$ | $0.5 + 0.2, -0.3$ |
| 31        | $3.2 \pm 0.2$  | $1.6 \pm 0.2$  | $0.6 \pm 0.2$<br>$1.1 \pm 0.2$   | $0.5 + 0.2, -0.3$ |

### Part Numbering

**CI**    **L**    **10**    **Y**    **5R6**    **K**    **N**    **C**  
 (1)    (2)    (3)    (4)    (5)    (6)    (7)    (8)

- (1) Chip Inductor
- (2) L: General Type
- (3) Dimension
- (4) Material code (N, J, Y, S)
- (5) Inductance (R10:  $0.1\mu\text{H}$ , 5R6:  $5.6\mu\text{H}$ , 100:  $10\mu\text{H}$ )
- (6) Tolerance (K:  $\pm 10\%$ , M:  $\pm 20\%$ )
- (7) Thickness option (N: Standard, A: Thinner than standard, B: Thicker than standard)
- (8) Packaging (C: paper tape, E: embossed tape)

## CIL 1005(0402) Type

| Part No.      | Thickness (mm) | Inductance ( $\mu$ H) | Q Min. | L, Q test frequency (MHZ) | SRF (MHZ) Min. | DC resistance ( $\Omega$ ) Max. | Rated current (mA) Max. |
|---------------|----------------|-----------------------|--------|---------------------------|----------------|---------------------------------|-------------------------|
| CIL 05J 2R2 □ | 0.5 $\pm$ 0.05 | 2.2 $\pm$ 20%, 10%    | 20     | 10                        | 40             | 1.70                            | 10                      |

## CIL 1608(0603) Type

| Part No.      | Thickness (mm)  | Inductance ( $\mu$ H) | Q Min. | L, Q test frequency (MHZ) | SRF (MHZ) Min. | DC resistance ( $\Omega$ ) Max. | Rated current (mA) Max. |
|---------------|-----------------|-----------------------|--------|---------------------------|----------------|---------------------------------|-------------------------|
| CIL 10N 47N □ | 0.80 $\pm$ 0.15 | 0.047 $\pm$ 20%, 10%  | 10     | 50                        | 260            | 0.30                            | 50                      |
| CIL 10N 56N □ | 0.80 $\pm$ 0.15 | 0.056 $\pm$ 20%, 10%  | 10     | 50                        | 260            | 0.30                            | 50                      |
| CIL 10N 68N □ | 0.80 $\pm$ 0.15 | 0.068 $\pm$ 20%, 10%  | 10     | 50                        | 250            | 0.30                            | 50                      |
| CIL 10N 82N □ | 0.80 $\pm$ 0.15 | 0.082 $\pm$ 20%, 10%  | 10     | 50                        | 245            | 0.30                            | 50                      |
| CIL 10N R10 □ | 0.80 $\pm$ 0.15 | 0.10 $\pm$ 20%, 10%   | 15     | 25                        | 240            | 0.50                            | 50                      |
| CIL 10N R12 □ | 0.80 $\pm$ 0.15 | 0.12 $\pm$ 20%, 10%   | 15     | 25                        | 205            | 0.50                            | 50                      |
| CIL 10N R15 □ | 0.80 $\pm$ 0.15 | 0.15 $\pm$ 20%, 10%   | 15     | 25                        | 180            | 0.60                            | 50                      |
| CIL 10N R18 □ | 0.80 $\pm$ 0.15 | 0.18 $\pm$ 20%, 10%   | 15     | 25                        | 165            | 0.60                            | 50                      |
| CIL 10N R22 □ | 0.80 $\pm$ 0.15 | 0.22 $\pm$ 20%, 10%   | 15     | 25                        | 150            | 0.80                            | 50                      |
| CIL 10N R27 □ | 0.80 $\pm$ 0.15 | 0.27 $\pm$ 20%, 10%   | 15     | 25                        | 136            | 0.80                            | 50                      |
| CIL 10N R33 □ | 0.80 $\pm$ 0.15 | 0.33 $\pm$ 20%, 10%   | 15     | 25                        | 125            | 0.85                            | 35                      |
| CIL 10N R39 □ | 0.80 $\pm$ 0.15 | 0.39 $\pm$ 20%, 10%   | 15     | 25                        | 110            | 1.00                            | 35                      |
| CIL 10N R47 □ | 0.80 $\pm$ 0.15 | 0.47 $\pm$ 20%, 10%   | 15     | 25                        | 105            | 1.35                            | 35                      |
| CIL 10N R56 □ | 0.80 $\pm$ 0.15 | 0.56 $\pm$ 20%, 10%   | 15     | 25                        | 95             | 1.55                            | 35                      |
| CIL 10N R68 □ | 0.80 $\pm$ 0.15 | 0.68 $\pm$ 20%, 10%   | 15     | 25                        | 80             | 1.70                            | 35                      |
| CIL 10N R82 □ | 0.80 $\pm$ 0.15 | 0.82 $\pm$ 20%, 10%   | 15     | 25                        | 75             | 2.10                            | 35                      |
| CIL 10J 1R0 □ | 0.80 $\pm$ 0.15 | 1.0 $\pm$ 20%, 10%    | 35     | 10                        | 70             | 0.60                            | 25                      |
| CIL 10J 1R2 □ | 0.80 $\pm$ 0.15 | 1.2 $\pm$ 20%, 10%    | 35     | 10                        | 60             | 0.80                            | 25                      |
| CIL 10J 1R5 □ | 0.80 $\pm$ 0.15 | 1.5 $\pm$ 20%, 10%    | 35     | 10                        | 55             | 0.80                            | 25                      |
| CIL 10J 1R8 □ | 0.80 $\pm$ 0.15 | 1.8 $\pm$ 20%, 10%    | 35     | 10                        | 50             | 0.95                            | 25                      |
| CIL 10J 2R2 □ | 0.80 $\pm$ 0.15 | 2.2 $\pm$ 20%, 10%    | 35     | 10                        | 45             | 1.15                            | 15                      |
| CIL 10J 2R7 □ | 0.80 $\pm$ 0.15 | 2.7 $\pm$ 20%, 10%    | 35     | 10                        | 40             | 1.35                            | 15                      |
| CIL 10J 3R3 □ | 0.80 $\pm$ 0.15 | 3.3 $\pm$ 20%, 10%    | 35     | 10                        | 38             | 1.55                            | 15                      |
| CIL 10J 3R9 □ | 0.80 $\pm$ 0.15 | 3.9 $\pm$ 20%, 10%    | 35     | 10                        | 36             | 1.70                            | 15                      |
| CIL 10J 4R7 □ | 0.80 $\pm$ 0.15 | 4.7 $\pm$ 20%, 10%    | 35     | 10                        | 33             | 2.10                            | 15                      |
| CIL 10Y 5R6 □ | 0.80 $\pm$ 0.15 | 5.6 $\pm$ 20%, 10%    | 35     | 4                         | 22             | 1.55                            | 5                       |
| CIL 10Y 6R8 □ | 0.80 $\pm$ 0.15 | 6.8 $\pm$ 20%, 10%    | 35     | 4                         | 20             | 1.70                            | 5                       |
| CIL 10Y 8R2 □ | 0.80 $\pm$ 0.15 | 8.2 $\pm$ 20%, 10%    | 35     | 4                         | 18             | 2.10                            | 5                       |
| CIL 10Y 100 □ | 0.80 $\pm$ 0.15 | 10.0 $\pm$ 20%, 10%   | 35     | 2                         | 17             | 2.55                            | 5                       |
| CIL 10Y 120 □ | 0.80 $\pm$ 0.15 | 12.0 $\pm$ 20%, 10%   | 35     | 2                         | 15             | 2.75                            | 5                       |
| CIL 10S 150 □ | 0.80 $\pm$ 0.15 | 15.0 $\pm$ 20%, 10%   | 20     | 1                         | 14             | 1.70                            | 1                       |
| CIL 10S 180 □ | 0.80 $\pm$ 0.15 | 18.0 $\pm$ 20%, 10%   | 20     | 1                         | 13             | 1.85                            | 1                       |
| CIL 10S 220 □ | 0.80 $\pm$ 0.15 | 22.0 $\pm$ 20%, 10%   | 20     | 1                         | 11             | 2.10                            | 1                       |
| CIL 10S 270 □ | 0.80 $\pm$ 0.15 | 27.0 $\pm$ 20%, 10%   | 20     | 1                         | 10             | 2.75                            | 1                       |
| CIL 10S 330 □ | 0.80 $\pm$ 0.15 | 33.0 $\pm$ 20%, 10%   | 20     | 0.4                       | 9              | 2.95                            | 1                       |

□: Tolerance (K:  $\pm$ 10%, M:  $\pm$ 20%)

\* Test equipment: Agilent 4291B+16193A

## CIL 2012(0805) Type

| Part No.      | Thickness<br>(mm) | Inductance<br>( $\mu$ H) | Q<br>Min. | L, Q test<br>frequency<br>(MHZ) | SRF<br>(MHZ)<br>Min. | DC<br>resistance<br>( $\Omega$ ) Max. | Rated<br>current<br>(mA) Max. |
|---------------|-------------------|--------------------------|-----------|---------------------------------|----------------------|---------------------------------------|-------------------------------|
| CIL 21N 47N □ | 0.85 $\pm$ 0.2    | 0.047 $\pm$ 20%, 10%     | 15        | 50                              | 320                  | 0.20                                  | 300                           |
| CIL 21N 68N □ | 0.85 $\pm$ 0.2    | 0.068 $\pm$ 20%, 10%     | 15        | 50                              | 280                  | 0.20                                  | 300                           |
| CIL 21N 82N □ | 0.85 $\pm$ 0.2    | 0.082 $\pm$ 20%, 10%     | 15        | 50                              | 255                  | 0.20                                  | 300                           |
| CIL 21N R10 □ | 0.85 $\pm$ 0.2    | 0.10 $\pm$ 20%, 10%      | 20        | 25                              | 235                  | 0.20                                  | 250                           |
| CIL 21N R12 □ | 0.85 $\pm$ 0.2    | 0.12 $\pm$ 20%, 10%      | 20        | 25                              | 220                  | 0.20                                  | 250                           |
| CIL 21N R15 □ | 0.85 $\pm$ 0.2    | 0.15 $\pm$ 20%, 10%      | 20        | 25                              | 200                  | 0.25                                  | 250                           |
| CIL 21N R18 □ | 0.85 $\pm$ 0.2    | 0.18 $\pm$ 20%, 10%      | 20        | 25                              | 185                  | 0.25                                  | 250                           |
| CIL 21N R22 □ | 0.85 $\pm$ 0.2    | 0.22 $\pm$ 20%, 10%      | 20        | 25                              | 170                  | 0.30                                  | 250                           |
| CIL 21N R27 □ | 0.85 $\pm$ 0.2    | 0.27 $\pm$ 20%, 10%      | 20        | 25                              | 150                  | 0.30                                  | 250                           |
| CIL 21N R33 □ | 0.85 $\pm$ 0.2    | 0.33 $\pm$ 20%, 10%      | 20        | 25                              | 145                  | 0.30                                  | 250                           |
| CIL 21N R39 □ | 0.85 $\pm$ 0.2    | 0.39 $\pm$ 20%, 10%      | 25        | 25                              | 135                  | 0.40                                  | 200                           |
| CIL 21N R47 □ | 1.25 $\pm$ 0.2    | 0.47 $\pm$ 20%, 10%      | 25        | 25                              | 125                  | 0.40                                  | 200                           |
| CIL 21N R56 □ | 1.25 $\pm$ 0.2    | 0.56 $\pm$ 20%, 10%      | 25        | 25                              | 115                  | 0.50                                  | 150                           |
| CIL 21N R68 □ | 1.25 $\pm$ 0.2    | 0.68 $\pm$ 20%, 10%      | 25        | 25                              | 105                  | 0.50                                  | 150                           |
| CIL 21N R82 □ | 1.25 $\pm$ 0.2    | 0.82 $\pm$ 20%, 10%      | 25        | 25                              | 100                  | 0.60                                  | 150                           |
| CIL 21J 1R0 □ | 0.85 $\pm$ 0.2    | 1.0 $\pm$ 20%, 10%       | 45        | 10                              | 75                   | 0.30                                  | 50                            |
| CIL 21J 1R2 □ | 0.85 $\pm$ 0.2    | 1.2 $\pm$ 20%, 10%       | 45        | 10                              | 65                   | 0.40                                  | 50                            |
| CIL 21J 1R5 □ | 0.85 $\pm$ 0.2    | 1.5 $\pm$ 20%, 10%       | 45        | 10                              | 60                   | 0.40                                  | 50                            |
| CIL 21J 1R8 □ | 0.85 $\pm$ 0.2    | 1.8 $\pm$ 20%, 10%       | 45        | 10                              | 55                   | 0.40                                  | 50                            |
| CIL 21J 2R2 □ | 0.85 $\pm$ 0.2    | 2.2 $\pm$ 20%, 10%       | 45        | 10                              | 50                   | 0.50                                  | 30                            |
| CIL 21J 2R7 □ | 1.25 $\pm$ 0.2    | 2.7 $\pm$ 20%, 10%       | 45        | 10                              | 45                   | 0.60                                  | 30                            |
| CIL 21J 3R3 □ | 1.25 $\pm$ 0.2    | 3.3 $\pm$ 20%, 10%       | 45        | 10                              | 41                   | 0.60                                  | 30                            |
| CIL 21J 3R9 □ | 1.25 $\pm$ 0.2    | 3.9 $\pm$ 20%, 10%       | 45        | 10                              | 38                   | 0.80                                  | 30                            |
| CIL 21J 4R7 □ | 1.25 $\pm$ 0.2    | 4.7 $\pm$ 20%, 10%       | 45        | 10                              | 35                   | 0.90                                  | 30                            |
| CIL 21Y 5R6 □ | 1.25 $\pm$ 0.2    | 5.6 $\pm$ 20%, 10%       | 50        | 4                               | 32                   | 0.50                                  | 25                            |
| CIL 21Y 6R8 □ | 1.25 $\pm$ 0.2    | 6.8 $\pm$ 20%, 10%       | 50        | 4                               | 29                   | 0.60                                  | 15                            |
| CIL 21Y 8R2 □ | 1.25 $\pm$ 0.2    | 8.2 $\pm$ 20%, 10%       | 50        | 4                               | 26                   | 0.70                                  | 15                            |
| CIL 21Y 100 □ | 1.25 $\pm$ 0.2    | 10.0 $\pm$ 20%, 10%      | 50        | 2                               | 24                   | 0.80                                  | 15                            |
| CIL 21Y 120 □ | 1.25 $\pm$ 0.2    | 12.0 $\pm$ 20%, 10%      | 50        | 2                               | 22                   | 0.90                                  | 15                            |
| CIL 21S 150 □ | 1.25 $\pm$ 0.2    | 15.0 $\pm$ 20%, 10%      | 30        | 1                               | 19                   | 0.80                                  | 5                             |
| CIL 21S 180 □ | 1.25 $\pm$ 0.2    | 18.0 $\pm$ 20%, 10%      | 30        | 1                               | 18                   | 0.90                                  | 5                             |
| CIL 21S 220 □ | 1.25 $\pm$ 0.2    | 22.0 $\pm$ 20%, 10%      | 30        | 1                               | 16                   | 1.10                                  | 5                             |
| CIL 21S 270 □ | 1.25 $\pm$ 0.2    | 27.0 $\pm$ 20%, 10%      | 30        | 1                               | 14                   | 1.15                                  | 5                             |
| CIL 21S 330 □ | 1.25 $\pm$ 0.2    | 33.0 $\pm$ 20%, 10%      | 30        | 0.4                             | 13                   | 1.25                                  | 5                             |

□: Tolerance (K:  $\pm$ 10%, M:  $\pm$ 20%)

\* Test equipment: Agilent 4291B+16193A

## CIL 3216(1206) Type

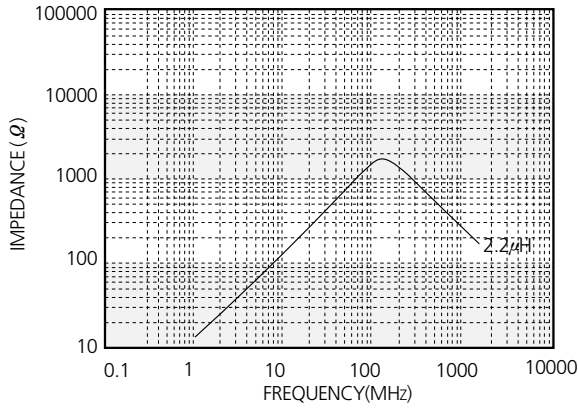
| Part No.     | Thickness<br>(mm) | Inductance<br>( $\mu$ H) | Q<br>Min. | L, Q test<br>frequency<br>(MHZ) | SRF<br>(MHZ)<br>Min. | DC<br>resistance<br>( $\Omega$ ) Max. | Rated<br>current<br>(mA) Max. |
|--------------|-------------------|--------------------------|-----------|---------------------------------|----------------------|---------------------------------------|-------------------------------|
| CIL 31N 47N□ | 0.6±0.2           | 0.047±20%, 10%           | 20        | 50                              | 320                  | 0.15                                  | 300                           |
| CIL 31N 68N□ | 0.6±0.2           | 0.068±20%, 10%           | 20        | 50                              | 280                  | 0.25                                  | 300                           |
| CIL 31N R10□ | 0.6±0.2           | 0.10±20%, 10%            | 20        | 25                              | 235                  | 0.25                                  | 250                           |
| CIL 31N R12□ | 0.6±0.2           | 0.12±20%, 10%            | 20        | 25                              | 220                  | 0.30                                  | 250                           |
| CIL 31N R15□ | 0.6±0.2           | 0.15±20%, 10%            | 20        | 25                              | 200                  | 0.30                                  | 250                           |
| CIL 31N R18□ | 0.6±0.2           | 0.18±20%, 10%            | 20        | 25                              | 185                  | 0.40                                  | 250                           |
| CIL 31N R22□ | 0.6±0.2           | 0.22±20%, 10%            | 20        | 25                              | 170                  | 0.40                                  | 250                           |
| CIL 31N R27□ | 0.6±0.2           | 0.27±20%, 10%            | 20        | 25                              | 150                  | 0.50                                  | 250                           |
| CIL 31N R33□ | 0.6±0.2           | 0.33±20%, 10%            | 20        | 25                              | 145                  | 0.60                                  | 250                           |
| CIL 31N R39□ | 1.1±0.2           | 0.39±20%, 10%            | 25        | 25                              | 135                  | 0.50                                  | 200                           |
| CIL 31N R47□ | 1.1±0.2           | 0.47±20%, 10%            | 25        | 25                              | 125                  | 0.60                                  | 200                           |
| CIL 31N R56□ | 1.1±0.2           | 0.56±20%, 10%            | 25        | 25                              | 115                  | 0.70                                  | 150                           |
| CIL 31N R68□ | 1.1±0.2           | 0.68±20%, 10%            | 25        | 25                              | 105                  | 0.80                                  | 150                           |
| CIL 31N R82□ | 1.1±0.2           | 0.82±20%, 10%            | 25        | 25                              | 100                  | 0.90                                  | 150                           |
| CIL 31J 1R0□ | 0.6±0.2           | 1.0±20%, 10%             | 45        | 10                              | 75                   | 0.40                                  | 100                           |
| CIL 31J 1R2□ | 0.6±0.2           | 1.2±20%, 10%             | 45        | 10                              | 65                   | 0.50                                  | 100                           |
| CIL 31J 1R5□ | 1.1±0.2           | 1.5±20%, 10%             | 45        | 10                              | 60                   | 0.50                                  | 50                            |
| CIL 31J 1R8□ | 1.1±0.2           | 1.8±20%, 10%             | 45        | 10                              | 55                   | 0.50                                  | 50                            |
| CIL 31J 2R2□ | 1.1±0.2           | 2.2±20%, 10%             | 45        | 10                              | 50                   | 0.60                                  | 50                            |
| CIL 31J 2R7□ | 1.1±0.2           | 2.7±20%, 10%             | 45        | 10                              | 45                   | 0.60                                  | 50                            |
| CIL 31J 3R3□ | 1.1±0.2           | 3.3±20%, 10%             | 45        | 10                              | 41                   | 0.70                                  | 50                            |
| CIL 31J 3R9□ | 1.1±0.2           | 3.9±20%, 10%             | 45        | 10                              | 38                   | 0.80                                  | 50                            |
| CIL 31J 4R7□ | 1.1±0.2           | 4.7±20%, 10%             | 45        | 10                              | 35                   | 0.90                                  | 50                            |
| CIL 31Y 5R6□ | 1.1±0.2           | 5.6±20%, 10%             | 50        | 4                               | 32                   | 0.70                                  | 25                            |
| CIL 31Y 6R8□ | 1.1±0.2           | 6.8±20%, 10%             | 50        | 4                               | 29                   | 0.80                                  | 25                            |
| CIL 31Y 8R2□ | 1.1±0.2           | 8.2±20%, 10%             | 50        | 4                               | 26                   | 0.90                                  | 25                            |
| CIL 31Y 100□ | 1.1±0.2           | 10.0±20%, 10%            | 50        | 2                               | 24                   | 1.00                                  | 25                            |
| CIL 31Y 120□ | 1.1±0.2           | 12.0±20%, 10%            | 50        | 2                               | 22                   | 1.05                                  | 15                            |
| CIL 31S 150□ | 1.1±0.2           | 15.0±20%, 10%            | 35        | 1                               | 19                   | 0.70                                  | 5                             |
| CIL 31S 180□ | 1.1±0.2           | 18.0±20%, 10%            | 35        | 1                               | 18                   | 0.70                                  | 5                             |
| CIL 31S 220□ | 1.1±0.2           | 22.0±20%, 10%            | 35        | 1                               | 16                   | 0.90                                  | 5                             |
| CIL 31S 270□ | 1.1±0.2           | 27.0±20%, 10%            | 35        | 1                               | 14                   | 0.90                                  | 5                             |
| CIL 31S 330□ | 1.1±0.2           | 33.0±20%, 10%            | 35        | 0.4                             | 13                   | 1.05                                  | 5                             |

□: Tolerance (K: ±10%, M: ±20%)

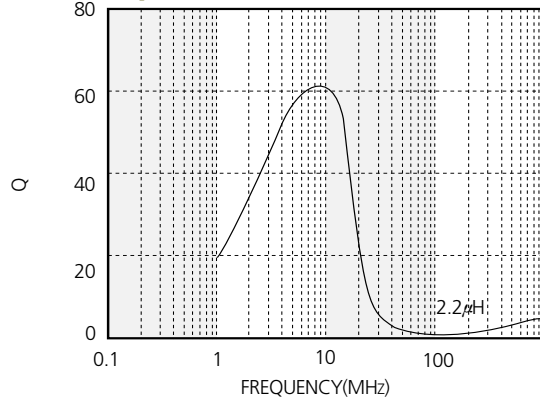
※ Test equipment: Agilent 4291B+16193A

## CIL 1005(0402) Type

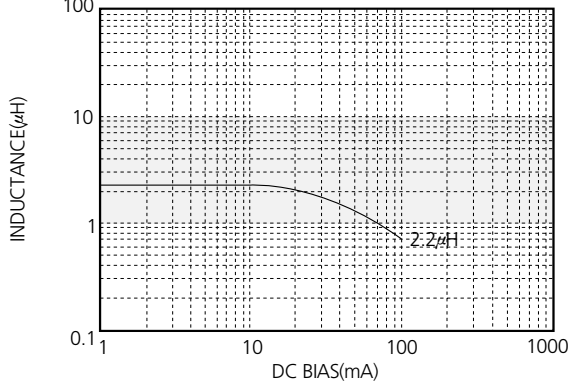
■ IMPEDANCE CHARACTERISTICS



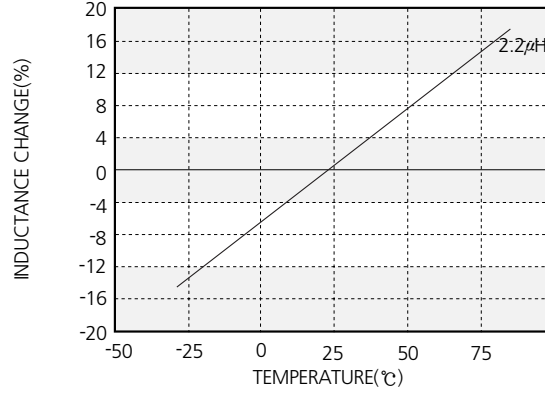
■ Q CHARACTERISTICS



■ DC BIAS CHARACTERISTICS

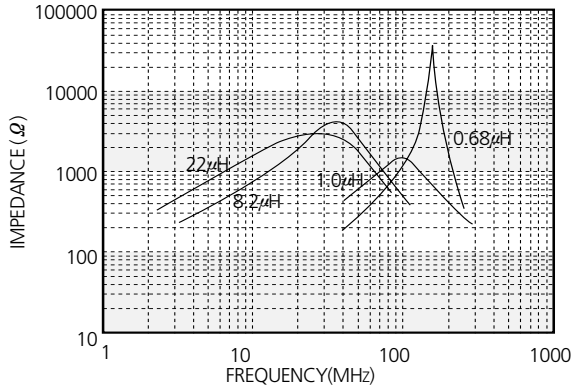


■ TEMPERATURE CHARACTERISTICS

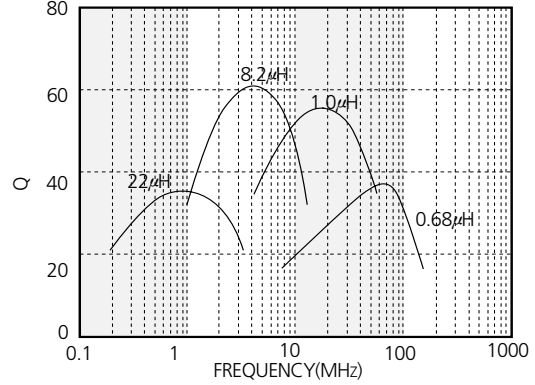


## CIL 1608(0603) Type

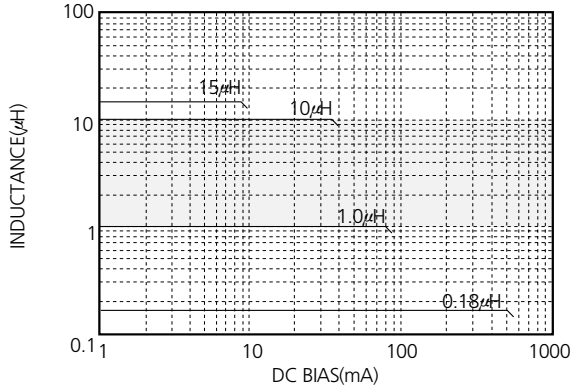
■ IMPEDANCE CHARACTERISTICS



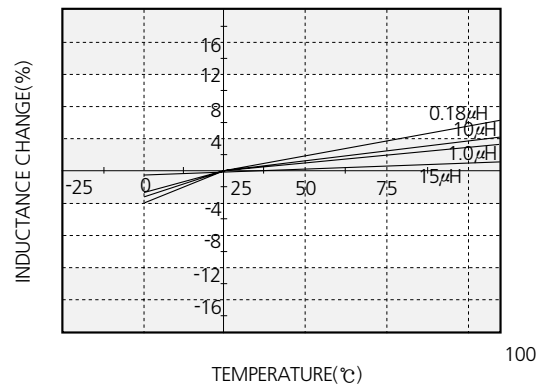
■ Q CHARACTERISTICS



■ DC BIAS CHARACTERISTICS

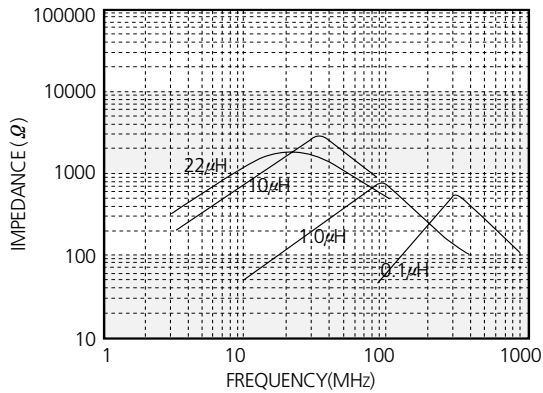


■ TEMPERATURE CHARACTERISTICS

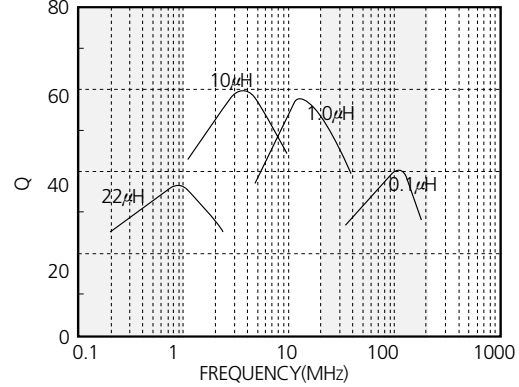


## CIL 2012(0805) Type

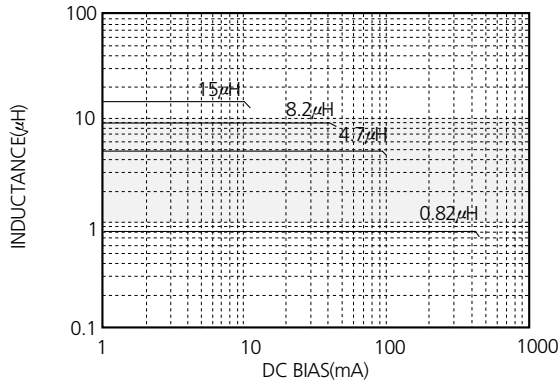
### ■IMPEDANCE CHARACTERISTICS



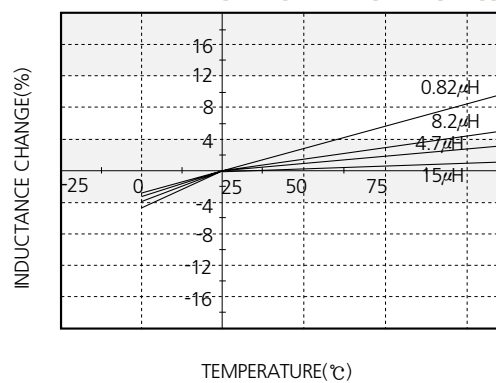
### ■Q CHARACTERISTICS



### ■DC BIAS CHARACTERISTICS

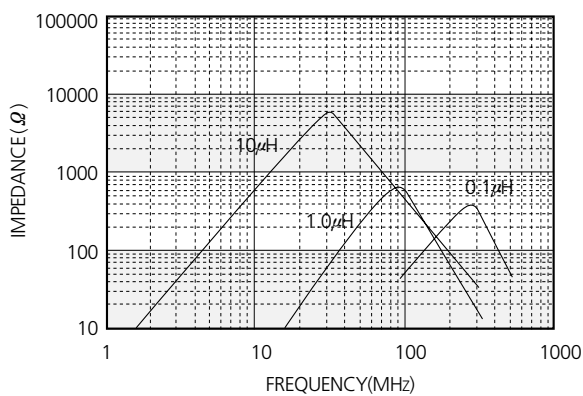


### ■TEMPERATURE CHARACTERISTICS

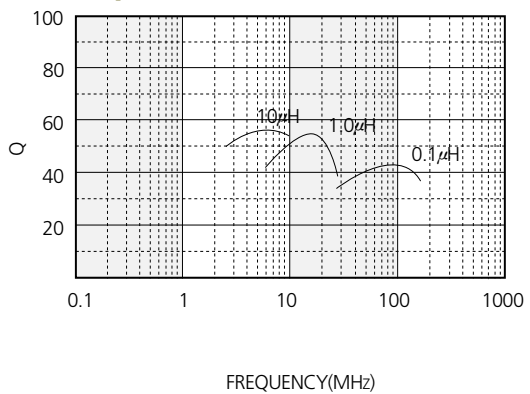


## CIL 3216(1206) Type

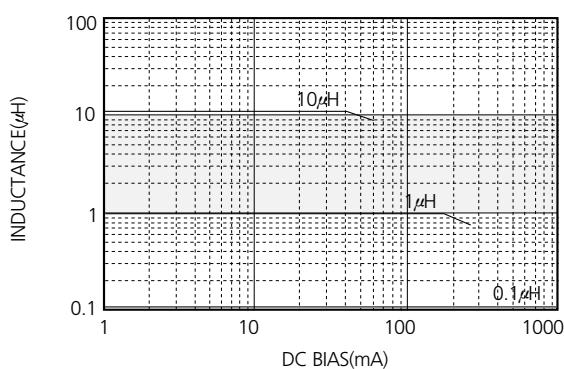
### ■IMPEDANCE CHARACTERISTICS



### ■Q CHARACTERISTICS



### ■DC BIAS CHARACTERISTICS



### ■TEMPERATURE CHARACTERISTICS

