

Data Sheet

Customer:

Product: Multilayer Chip Inductor – CL-S Series

Sizes.: 0201/0402/0603

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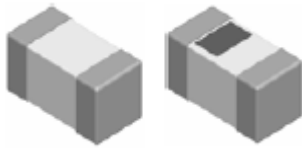
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Multilayer Chip Inductor



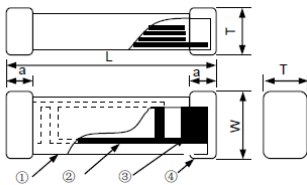
■ Features

- Monolithic structure for high reliability
- High self-resonant frequency
- Excellent solderability and high heat resistance

■ Applications

- RF circuit in telecommunication and other equipments

■ Construction



| | |
|----------------------|----------------------|
| ① Ceramic Material | ③ Pull Out Electrode |
| ② Internal Electrode | ④ End-termination |

■ Dimensions

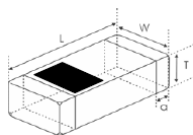


Figure1

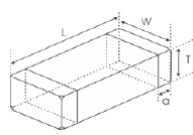


Figure2

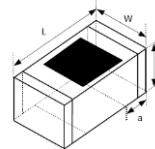


Figure3

Standard

Unit: mm

| Type | Size (Inch) | Figure | L | W | T | a |
|-----------------|-------------|--------|-----------|-----------|-----------|-----------|
| CL02-S (<12nH) | 0402 | 1 | 1.00±0.15 | 0.50±0.15 | 0.50±0.15 | 0.25±0.10 |
| CL02-S (≥12nH) | 0402 | 1&2 | 1.00±0.15 | 0.50±0.15 | 0.50±0.15 | 0.25±0.10 |
| CL03-S (<560nH) | 0603 | 2 | 1.60±0.20 | 0.80±0.20 | 0.80±0.20 | 0.30±0.20 |
| CL03-S (≥560nH) | 0603 | 2 | 1.65±0.20 | 0.80±0.20 | 0.80±0.20 | 0.30±0.20 |

High Q

Unit: mm

| Type | Size (Inch) | Figure | L | W | T | a |
|--------|-------------|--------|-----------|-----------|-----------|-----------|
| CL01-S | 0201 | 1 | 0.60±0.05 | 0.30±0.05 | 0.30±0.05 | 0.12±0.05 |
| CL02-S | 0402 | 3 | 1.00±0.15 | 0.50±0.15 | 0.50±0.15 | 0.25±0.10 |

High Frequency

Unit: mm

| Type | Size (Inch) | Figure | L | W | T | a |
|--------|-------------|--------|-----------|-----------|-----------|-----------|
| CL02-S | 0402 | 2 | 1.00±0.15 | 0.50±0.15 | 0.50±0.15 | 0.25±0.10 |
| CL03-S | 0603 | 2 | 1.60±0.15 | 0.80±0.15 | 0.80±0.15 | 0.30±0.20 |

■ Part Numbering

| | | | | | | |
|--------------|----------------------------------|--------------------------------|----------------|----------------------------------------------|---------------------------------------|----|
| CL | 02 | J | T | | 1N0 | -S |
| Product Type | Dimensions | Inductance Tolerance | Packaging Code | Appearance | Inductance | |
| | 01: 0201 02: 0402 03: 0603 | J: ±5% K: ±10% S: ±0.3nH | T: Taping Reel | : Standard Q: High Q F: High Frequency | 1N0: 1.0nH 39N: 39nH R10: 100nH | |

Standard Electrical Specifications

CL02-S Multilayer Chip Inductors / Standard Type

| Inductance (nH) | Tolerance | Quality Factor /min. | L/Q Freq. (MHz) | Q(Typical) Freq.(MHz) | | | SRF min. (GHz) | RDC (Ω) max. | IDC (mA) max. |
|-----------------|-----------|----------------------|-----------------|-----------------------|-----|------|----------------|--------------|---------------|
| | | | | 100 | 800 | 1000 | | | |
| 1.0 | ±0.3nH | 8 | 100 | 11 | 34 | 36 | 10.00 | 0.10 | 400 |
| 1.1 | ±0.3nH | 8 | 100 | 11 | 34 | 36 | 10.00 | 0.10 | 400 |
| 1.2 | ±0.3nH | 8 | 100 | 11 | 34 | 36 | 10.00 | 0.10 | 400 |
| 1.3 | ±0.3nH | 8 | 100 | 11 | 34 | 36 | 10.00 | 0.10 | 400 |
| 1.5 | ±0.3nH | 8 | 100 | 11 | 34 | 36 | 6.00 | 0.10 | 300 |
| 1.6 | ±0.3nH | 8 | 100 | 11 | 32 | 35 | 6.00 | 0.10 | 300 |
| 1.8 | ±0.3nH | 8 | 100 | 11 | 30 | 34 | 6.00 | 0.10 | 300 |
| 2.0 | ±0.3nH | 8 | 100 | 10 | 29 | 33 | 6.00 | 0.20 | 300 |
| 2.2 | ±0.3nH | 8 | 100 | 10 | 29 | 33 | 6.00 | 0.20 | 300 |
| 2.4 | ±0.3nH | 8 | 100 | 10 | 29 | 32 | 6.00 | 0.20 | 300 |
| 2.7 | ±0.3nH | 8 | 100 | 10 | 29 | 32 | 6.00 | 0.20 | 300 |
| 3.0 | ±0.3nH | 8 | 100 | 10 | 29 | 32 | 6.00 | 0.20 | 300 |
| 3.3 | ±0.3nH | 8 | 100 | 10 | 29 | 32 | 6.00 | 0.20 | 300 |
| 3.6 | ±0.3nH | 8 | 100 | 10 | 28 | 31 | 4.00 | 0.20 | 300 |
| 3.9 | ±0.3nH | 8 | 100 | 10 | 28 | 31 | 4.00 | 0.20 | 300 |
| 4.3 | ±0.3nH | 8 | 100 | 10 | 28 | 31 | 4.00 | 0.20 | 300 |
| 4.7 | ±0.3nH | 8 | 100 | 10 | 28 | 31 | 4.00 | 0.20 | 300 |
| 5.1 | ±0.3nH | 8 | 100 | 10 | 28 | 30 | 4.00 | 0.30 | 300 |
| 5.6 | ±0.3nH | 8 | 100 | 10 | 28 | 30 | 4.00 | 0.30 | 300 |
| 6.2 | ±0.3nH | 8 | 100 | 10 | 27 | 30 | 3.90 | 0.30 | 300 |
| 6.8 | ±5%, ±10% | 8 | 100 | 10 | 27 | 30 | 3.90 | 0.30 | 300 |
| 7.5 | ±5%, ±10% | 8 | 100 | 10 | 27 | 30 | 3.70 | 0.40 | 300 |
| 8.2 | ±5%, ±10% | 8 | 100 | 10 | 27 | 30 | 3.60 | 0.40 | 300 |
| 9.1 | ±5%, ±10% | 8 | 100 | 10 | 27 | 30 | 3.40 | 0.40 | 300 |
| 10 | ±5%, ±10% | 8 | 100 | 10 | 27 | 30 | 3.20 | 0.40 | 300 |
| 12 | ±5%, ±10% | 8 | 100 | 10 | 26 | 29 | 2.70 | 0.50 | 300 |
| 15 | ±5%, ±10% | 8 | 100 | 10 | 26 | 28 | 2.30 | 0.50 | 300 |
| 18 | ±5%, ±10% | 8 | 100 | 10 | 25 | 27 | 2.10 | 0.60 | 300 |
| 20 | ±5%, ±10% | 8 | 100 | 10 | 25 | 26 | 2.00 | 0.60 | 300 |
| 22 | ±5%, ±10% | 8 | 100 | 10 | 25 | 25 | 1.90 | 0.60 | 300 |
| 27 | ±5%, ±10% | 8 | 100 | 10 | 25 | 23 | 1.60 | 0.70 | 300 |
| 33 | ±5%, ±10% | 8 | 100 | 10 | 22 | 22 | 1.30 | 0.80 | 200 |
| 39 | ±5%, ±10% | 8 | 100 | 10 | 22 | 19 | 1.20 | 1.00 | 200 |
| 43 | ±5%, ±10% | 8 | 100 | 10 | 21 | 16 | 1.10 | 1.10 | 200 |
| 47 | ±5%, ±10% | 8 | 100 | 10 | 21 | 16 | 1.00 | 1.10 | 200 |
| 56 | ±5%, ±10% | 8 | 100 | 10 | 18 | 13 | 0.75 | 1.20 | 200 |
| 68 | ±5%, ±10% | 8 | 100 | 10 | 18 | 9 | 0.75 | 1.40 | 180 |
| 82 | ±5%, ±10% | 8 | 100 | 10 | 13 | - | 0.75 | 2.40 | 150 |
| 100 | ±5%, ±10% | 8 | 100 | 10 | 12 | - | 0.70 | 2.60 | 150 |
| 120 | ±5%, ±10% | 8 | 100 | 10 | - | - | 0.60 | 2.80 | 150 |
| 150 | ±5%, ±10% | 8 | 100 | 10 | - | - | 0.55 | 3.20 | 100 |
| 180 | ±5%, ±10% | 8 | 100 | 10 | - | - | 0.50 | 3.70 | 100 |
| 220 | ±5%, ±10% | 8 | 100 | 12 | - | - | 0.45 | 4.00 | 100 |
| 270 | ±5%, ±10% | 8 | 100 | 12 | - | - | 0.40 | 4.50 | 100 |
| 330 | ±5%, ±10% | 6 | 50 | - | - | - | 0.35 | 7.00 | 50 |

Operating temperature range: -55~+125°C

Standard Electrical Specifications

CL03-S Multilayer Chip Inductors / Standard Type

| Inductance (nH) | Tolerance | Quality Factor /min. | L/Q Freq. (MHz) | Q(Typical) Freq.(MHz) | | | SRF min. (GHz) | RDC (Ω) max. | IDC (mA) max. |
|-----------------|-----------|----------------------|-----------------|-----------------------|-----|------|----------------|--------------|---------------|
| | | | | 100 | 800 | 1000 | | | |
| 1.0 | ±0.3nH | 8 | 100 | 13 | 70 | 80 | 10.00 | 0.05 | 500 |
| 1.2 | ±0.3nH | 8 | 100 | 13 | 60 | 70 | 10.00 | 0.05 | 500 |
| 1.5 | ±0.3nH | 8 | 100 | 13 | 47 | 68 | 6.00 | 0.10 | 500 |
| 1.8 | ±0.3nH | 8 | 100 | 13 | 45 | 61 | 6.00 | 0.10 | 500 |
| 2.2 | ±0.3nH | 8 | 100 | 13 | 45 | 60 | 6.00 | 0.10 | 500 |
| 2.7 | ±0.3nH | 10 | 100 | 13 | 44 | 55 | 6.00 | 0.12 | 500 |
| 3.3 | ±0.3nH | 10 | 100 | 13 | 43 | 50 | 6.00 | 0.15 | 500 |
| 3.9 | ±0.3nH | 10 | 100 | 13 | 43 | 50 | 6.00 | 0.16 | 500 |
| 4.7 | ±0.3nH | 10 | 100 | 13 | 43 | 50 | 6.00 | 0.20 | 500 |
| 5.6 | ±0.3nH | 10 | 100 | 14 | 42 | 48 | 5.00 | 0.25 | 500 |
| 6.8 | ±5%, ±10% | 10 | 100 | 14 | 43 | 50 | 5.00 | 0.30 | 500 |
| 8.2 | ±5%, ±10% | 10 | 100 | 14 | 43 | 48 | 4.50 | 0.35 | 500 |
| 10 | ±5%, ±10% | 12 | 100 | 15 | 45 | 50 | 3.50 | 0.40 | 300 |
| 12 | ±5%, ±10% | 12 | 100 | 18 | 48 | 50 | 3.00 | 0.45 | 300 |
| 15 | ±5%, ±10% | 12 | 100 | 18 | 48 | 50 | 2.30 | 0.50 | 300 |
| 18 | ±5%, ±10% | 12 | 100 | 16 | 48 | 51 | 2.20 | 0.55 | 300 |
| 22 | ±5%, ±10% | 12 | 100 | 16 | 45 | 48 | 2.00 | 0.60 | 300 |
| 27 | ±5%, ±10% | 12 | 100 | 16 | 45 | 45 | 1.70 | 0.65 | 300 |
| 33 | ±5%, ±10% | 12 | 100 | 16 | 45 | 41 | 1.50 | 0.70 | 300 |
| 39 | ±5%, ±10% | 12 | 100 | 17 | 40 | 48 | 1.40 | 0.70 | 300 |
| 47 | ±5%, ±10% | 12 | 100 | 17 | 35 | 35 | 1.20 | 0.70 | 300 |
| 56 | ±5%, ±10% | 12 | 100 | 17 | 35 | 30 | 1.10 | 0.75 | 300 |
| 68 | ±5%, ±10% | 12 | 100 | 17 | 30 | 20 | 0.90 | 0.85 | 300 |
| 82 | ±5%, ±10% | 8 | 100 | 15 | 22 | - | 0.80 | 1.00 | 300 |
| 100 | ±5%, ±10% | 8 | 100 | 15 | 16 | - | 0.70 | 1.20 | 300 |
| 120 | ±5%, ±10% | 8 | 50 | 15 | - | - | 0.60 | 1.40 | 200 |
| 150 | ±5%, ±10% | 8 | 50 | 15 | - | - | 0.50 | 1.60 | 200 |
| 180 | ±5%, ±10% | 8 | 50 | 15 | - | - | 0.40 | 1.90 | 200 |
| 220 | ±5%, ±10% | 8 | 50 | 15 | - | - | 0.35 | 2.40 | 200 |
| 270 | ±5%, ±10% | 8 | 50 | 16 | - | - | 0.35 | 2.60 | 150 |
| 330 | ±5%, ±10% | 8 | 50 | 16 | - | - | 0.35 | 2.80 | 150 |
| 390 | ±5%, ±10% | 8 | 50 | 16 | - | - | 0.30 | 3.20 | 150 |
| 430 | ±5%, ±10% | 8 | 50 | 16 | - | - | 0.28 | 3.40 | 150 |
| 470 | ±5%, ±10% | 8 | 50 | 15 | - | - | 0.25 | 3.60 | 150 |
| 560 | ±5%, ±10% | 8 | 50 | 15 | - | - | 0.25 | 4.00 | 100 |
| 680 | ±5%, ±10% | 8 | 50 | 15 | - | - | 0.25 | 4.50 | 100 |

Operating temperature range: -55~+125°C

High Q Electrical Specifications

CL01-S Multilayer Chip Inductors / High Q Type

| Inductance (nH) | Tolerance | Quality Factor /min. | L/Q Freq. (MHz) | Q (Typical) Freq.(MHz) | | | | | SRF (GHz) Min. | RDC (Ω) Max. | IDC (mA) Max. |
|-----------------|------------------------|----------------------|-----------------|------------------------|-----|------|------|------|----------------|--------------|---------------|
| | | | | 500 | 800 | 1800 | 2000 | 2400 | | | |
| 0.6 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | >24 | >32 | >54 | >57 | >65 | 10.00 | 0.06 | 600 |
| 0.7 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | >24 | >32 | >54 | >57 | >65 | 10.00 | 0.06 | 550 |
| 0.8 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | >24 | >32 | >54 | >57 | >65 | 10.00 | 0.07 | 550 |
| 0.9 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | >24 | >32 | >54 | >57 | >65 | 10.00 | 0.07 | 550 |
| 1.0 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 24 | 32 | 54 | 57 | 65 | 10.00 | 0.08 | 520 |
| 1.1 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 19 | 26 | 45 | 47 | 55 | 10.00 | 0.11 | 440 |
| 1.2 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 19 | 25 | 43 | 44 | 52 | 10.00 | 0.12 | 420 |
| 1.3 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 19 | 25 | 40 | 42 | 47 | 10.00 | 0.12 | 420 |
| 1.4 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 19 | 24 | 39 | 41 | 47 | 10.00 | 0.11 | 440 |
| 1.5 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 19 | 24 | 39 | 41 | 46 | 10.00 | 0.12 | 420 |
| 1.6 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 19 | 24 | 39 | 41 | 46 | 10.00 | 0.13 | 410 |
| 1.7 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 19 | 24 | 39 | 41 | 46 | 10.00 | 0.15 | 380 |
| 1.8 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 19 | 24 | 39 | 41 | 46 | 10.00 | 0.15 | 380 |
| 1.9 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 18 | 24 | 38 | 40 | 45 | 10.00 | 0.18 | 350 |
| 2.0 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 24 | 38 | 39 | 44 | 10.00 | 0.23 | 300 |
| 2.1 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 24 | 37 | 39 | 44 | 10.00 | 0.24 | 300 |
| 2.2 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 24 | 38 | 40 | 43 | 10.00 | 0.25 | 290 |
| 2.3 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 24 | 37 | 39 | 43 | 10.00 | 0.20 | 330 |
| 2.4 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 23 | 36 | 38 | 42 | 10.00 | 0.22 | 310 |
| 2.5 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 23 | 35 | 36 | 40 | 9.60 | 0.20 | 330 |
| 2.6 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 22 | 34 | 35 | 39 | 9.40 | 0.20 | 330 |
| 2.7 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 22 | 34 | 35 | 39 | 9.20 | 0.22 | 310 |
| 2.8 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 22 | 34 | 35 | 39 | 8.90 | 0.24 | 300 |
| 2.9 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 22 | 34 | 35 | 39 | 8.80 | 0.26 | 280 |
| 3.0 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 22 | 34 | 35 | 39 | 8.60 | 0.26 | 280 |
| 3.1 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 22 | 34 | 35 | 39 | 8.50 | 0.28 | 270 |
| 3.2 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 22 | 33 | 35 | 39 | 8.20 | 0.28 | 270 |
| 3.3 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 18 | 23 | 34 | 36 | 40 | 8.10 | 0.30 | 270 |
| 3.4 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 23 | 33 | 35 | 39 | 8.00 | 0.30 | 270 |
| 3.5 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 23 | 33 | 35 | 39 | 7.90 | 0.34 | 250 |
| 3.6 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 16 | 23 | 33 | 35 | 39 | 7.70 | 0.38 | 240 |
| 3.7 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 16 | 23 | 33 | 35 | 38 | 7.60 | 0.40 | 230 |
| 3.8 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 16 | 22 | 33 | 35 | 38 | 7.50 | 0.42 | 230 |
| 3.9 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 16 | 22 | 33 | 35 | 38 | 7.40 | 0.42 | 230 |
| 4.3 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 16 | 21 | 32 | 34 | 37 | 6.80 | 0.44 | 220 |
| 4.7 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 16 | 22 | 33 | 35 | 38 | 6.20 | 0.45 | 220 |
| 5.1 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 17 | 22 | 34 | 36 | 38 | 5.90 | 0.46 | 210 |
| 5.6 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 16 | 21 | 33 | 34 | 37 | 5.50 | 0.46 | 210 |
| 6.2 | ±0.1nH, ±0.2nH, ±0.3nH | 13 | 500 | 18 | 23 | 34 | 35 | 37 | 5.10 | 0.48 | 210 |
| 6.8 | ±2%, ±3%, ±5% | 13 | 500 | 17 | 22 | 32 | 33 | 35 | 4.90 | 0.50 | 200 |
| 7.5 | ±2%, ±3%, ±5% | 13 | 500 | 16 | 21 | 31 | 33 | 34 | 4.70 | 0.50 | 200 |
| 8.2 | ±2%, ±3%, ±5% | 13 | 500 | 16 | 21 | 31 | 32 | 34 | 4.30 | 0.56 | 190 |
| 9.1 | ±2%, ±3%, ±5% | 13 | 500 | 16 | 20 | 30 | 31 | 32 | 4.10 | 0.72 | 170 |
| 10 | ±2%, ±3%, ±5% | 13 | 500 | 16 | 20 | 28 | 29 | 31 | 3.80 | 0.80 | 160 |
| 12 | ±2%, ±3%, ±5% | 13 | 500 | 16 | 20 | 27 | 28 | 28 | 3.40 | 0.80 | 160 |
| 15 | ±2%, ±3%, ±5% | 13 | 500 | 15 | 19 | 24 | 24 | 23 | 2.60 | 0.85 | 160 |
| 18 | ±2%, ±3%, ±5% | 13 | 500 | 15 | 19 | 23 | 24 | 22 | 2.30 | 1.00 | 140 |
| 22 | ±2%, ±3%, ±5% | 13 | 500 | 15 | 19 | 22 | 23 | 20 | 1.90 | 1.20 | 130 |
| 27 | ±2%, ±3%, ±5% | 13 | 500 | 15 | 19 | 15 | 13 | 8 | 1.80 | 1.60 | 120 |
| 33 | ±2%, ±3%, ±5% | 11 | 300 | 14 | 15 | 8 | 5 | - | 1.80 | 2.20 | 110 |
| 39 | ±2%, ±3%, ±5% | 11 | 300 | 14 | 15 | 6 | - | - | 1.60 | 2.30 | 100 |
| 47 | ±2%, ±3%, ±5% | 11 | 300 | 14 | 15 | - | - | - | 1.50 | 2.60 | 100 |
| 56 | ±2%, ±3%, ±5% | 11 | 300 | 13 | 13 | - | - | - | 1.40 | 2.80 | 80 |
| 68 | ±2%, ±3%, ±5% | 11 | 300 | 13 | 11 | - | - | - | 1.20 | 3.20 | 80 |
| 82 | ±2%, ±3%, ±5% | 10 | 300 | 12 | 10 | - | - | - | 1.10 | 3.80 | 70 |
| 100 | ±2%, ±3%, ±5% | 10 | 300 | 12 | 10 | - | - | - | 1.00 | 4.00 | 60 |

Operating temperature range: -55~+125°C

High Q Electrical Specifications

CL02-S Multilayer Chip Inductors / High Q Type

| Inductance (nH) | Tolerance | Quality Factor /min. | L/Q Freq. (MHz) | Q (Typical) Freq.(MHz) | | | | SRF (GHz) Min. | RDC (Ω) Max. | IDC (mA) Max. |
|-----------------|------------------------|----------------------|-----------------|------------------------|-----|-----|------|----------------|--------------|---------------|
| | | | | 100 | 250 | 900 | 1800 | | | |
| 1.0 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 13 | 22 | 48 | 75 | 6.00 | 0.05 | 1000 |
| 1.2 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 13 | 22 | 48 | 75 | 6.00 | 0.05 | 1000 |
| 1.5 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 13 | 22 | 58 | 76 | 6.00 | 0.05 | 1000 |
| 1.8 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 13 | 22 | 49 | 78 | 6.00 | 0.07 | 800 |
| 2.0 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 14 | 23 | 49 | 82 | 6.00 | 0.07 | 800 |
| 2.2 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 14 | 23 | 49 | 82 | 6.00 | 0.07 | 800 |
| 2.4 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 14 | 23 | 47 | 78 | 6.00 | 0.07 | 800 |
| 2.5 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 14 | 23 | 47 | 78 | 6.00 | 0.07 | 800 |
| 2.7 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 14 | 23 | 48 | 82 | 6.00 | 0.09 | 700 |
| 2.9 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 14 | 23 | 48 | 82 | 6.00 | 0.09 | 700 |
| 3.0 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 14 | 23 | 50 | 84 | 6.00 | 0.09 | 700 |
| 3.3 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 14 | 24 | 52 | 90 | 6.00 | 0.09 | 700 |
| 3.6 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 15 | 24 | 55 | 95 | 6.00 | 0.10 | 700 |
| 3.9 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 15 | 25 | 50 | 89 | 6.00 | 0.10 | 700 |
| 4.1 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 15 | 25 | 49 | 86 | 6.00 | 0.12 | 650 |
| 4.3 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 15 | 25 | 49 | 86 | 6.00 | 0.13 | 600 |
| 4.7 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 15 | 26 | 50 | 88 | 6.00 | 0.13 | 600 |
| 5.1 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 15 | 26 | 49 | 84 | 5.50 | 0.13 | 600 |
| 5.6 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 15 | 27 | 50 | 84 | 5.50 | 0.13 | 600 |
| 5.8 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 15 | 27 | 50 | 82 | 5.50 | 0.13 | 600 |
| 6.2 | ±0.1nH, ±0.2nH, ±0.3nH | 20 | 250 | 15 | 27 | 50 | 80 | 5.50 | 0.14 | 550 |
| 6.8 | ±2%, ±3%, ±5% | 22 | 250 | 15 | 27 | 55 | 89 | 5.00 | 0.15 | 550 |
| 7.3 | ±2%, ±3%, ±5% | 22 | 250 | 15 | 27 | 54 | 90 | 5.00 | 0.16 | 550 |
| 7.5 | ±2%, ±3%, ±5% | 22 | 250 | 15 | 27 | 54 | 90 | 5.00 | 0.16 | 550 |
| 8.2 | ±2%, ±3%, ±5% | 22 | 250 | 15 | 27 | 56 | 84 | 5.00 | 0.16 | 550 |
| 8.7 | ±2%, ±3%, ±5% | 22 | 250 | 15 | 27 | 53 | 80 | 5.00 | 0.17 | 500 |
| 9.1 | ±2%, ±3%, ±5% | 22 | 250 | 15 | 27 | 53 | 79 | 4.50 | 0.18 | 500 |
| 9.5 | ±2%, ±3%, ±5% | 22 | 250 | 15 | 27 | 52 | 77 | 4.50 | 0.18 | 500 |
| 10 | ±2%, ±3%, ±5% | 22 | 250 | 16 | 29 | 52 | 75 | 4.50 | 0.18 | 500 |
| 11 | ±2%, ±3%, ±5% | 22 | 250 | 16 | 28 | 52 | 71 | 4.00 | 0.20 | 500 |
| 12 | ±2%, ±3%, ±5% | 22 | 250 | 16 | 29 | 51 | 68 | 4.00 | 0.20 | 500 |
| 15 | ±2%, ±3%, ±5% | 22 | 250 | 16 | 29 | 50 | 60 | 4.00 | 0.22 | 430 |

Operating temperature range: -55~+125°C

High Frequency Electrical Specifications

CL02-S Multilayer Chip Inductors / High Frequency Type

| Inductance (nH) | Tolerance | Quality Factor /min. | L/Q Freq. (MHz) | Q(Typical) Freq.(MHz) | | | | | | SRF min. (GHz) | RDC (Ω) max. | IDC (mA) max. |
|-----------------|-----------|----------------------|-----------------|-----------------------|-----|-----|-----|------|------|----------------|--------------|---------------|
| | | | | 100 | 300 | 500 | 800 | 1000 | 1800 | | | |
| 1.0 | ±0.3nH | 5 | 100 | 9 | 16 | 20 | 25 | 28 | 31 | >8.50 | 0.10 | 500 |
| 1.2 | ±0.3nH | 5 | 100 | 9 | 15 | 18 | 24 | 27 | 31 | >8.50 | 0.12 | 500 |
| 1.5 | ±0.3nH | 5 | 100 | 7 | 12 | 16 | 20 | 21 | 29 | >8.50 | 0.15 | 500 |
| 1.8 | ±0.3nH | 5 | 100 | 7 | 12 | 16 | 20 | 21 | 29 | >8.50 | 0.17 | 500 |
| 2.2 | ±0.3nH | 5 | 100 | 7 | 12 | 16 | 20 | 21 | 30 | >8.50 | 0.17 | 500 |
| 2.7 | ±0.3nH | 5 | 100 | 7 | 12 | 16 | 20 | 21 | 29 | >8.50 | 0.20 | 500 |
| 3.3 | ±0.3nH | 5 | 100 | 7 | 12 | 15 | 19 | 20 | 27 | >8.50 | 0.22 | 400 |
| 3.9 | ±0.3nH | 5 | 100 | 7 | 12 | 15 | 20 | 21 | 28 | 7.50 | 0.25 | 400 |
| 4.7 | ±0.3nH | 5 | 100 | 7 | 12 | 15 | 19 | 20 | 27 | 6.50 | 0.28 | 400 |
| 5.6 | ±0.3nH | 5 | 100 | 8 | 12 | 15 | 20 | 22 | 30 | 6.50 | 0.30 | 400 |
| 6.8 | ±0.3nH | 5 | 100 | 8 | 12 | 15 | 20 | 22 | 30 | 6.50 | 0.35 | 400 |
| 8.2 | ±0.3nH | 5 | 100 | 8 | 12 | 15 | 19 | 21 | 30 | 6.50 | 0.38 | 350 |
| 10 | ±5%, ±10% | 5 | 100 | 8 | 13 | 16 | 21 | 23 | 32 | 4.70 | 0.42 | 350 |
| 12 | ±5%, ±10% | 5 | 100 | 8 | 13 | 16 | 20 | 23 | 27 | 4.30 | 0.47 | 350 |
| 15 | ±5%, ±10% | 5 | 100 | 8 | 12 | 15 | 19 | 22 | 28 | 4.00 | 0.50 | 300 |
| 18 | ±5%, ±10% | 5 | 100 | 8 | 13 | 16 | 21 | 24 | 32 | 4.00 | 0.60 | 250 |
| 22 | ±5%, ±10% | 5 | 100 | 8 | 13 | 17 | 22 | 26 | 31 | 3.50 | 0.70 | 200 |
| 27 | ±5%, ±10% | 5 | 100 | 8 | 14 | 18 | 23 | 26 | 32 | 3.00 | 0.80 | 200 |
| 33 | ±5%, ±10% | 5 | 100 | 8 | 14 | 17 | 23 | 27 | 32 | 2.50 | 0.90 | 200 |
| 39 | ±5%, ±10% | 5 | 100 | 8 | 14 | 18 | 23 | 27 | 32 | 2.00 | 1.00 | 200 |
| 47 | ±5%, ±10% | 7 | 100 | 9 | 14 | 18 | 22 | 24 | 29 | 2.40 | 2.20 | 100 |
| 56 | ±5%, ±10% | 7 | 100 | 9 | 14 | 18 | 23 | 24 | 29 | 2.30 | 2.50 | 100 |
| 68 | ±5%, ±10% | 7 | 100 | 9 | 14 | 17 | 22 | 24 | 29 | 2.20 | 2.70 | 100 |
| 82 | ±5%, ±10% | 7 | 100 | 8 | 13 | 17 | 20 | 20 | 16 | 2.10 | 2.90 | 100 |
| 100 | ±5%, ±10% | 7 | 100 | 8 | 13 | 17 | 20 | 20 | 13 | 2.00 | 3.20 | 100 |

Operating temperature range: -55~+125°C

CL03-S Multilayer Chip Inductors / High Frequency Type

| Inductance (nH) | Tolerance | Quality Factor /min. | L/Q Freq. (MHz) | Q(Typical) Freq.(MHz) | | | | | | SRF min. (GHz) | RDC (Ω) max. | IDC (mA) max. |
|-----------------|-----------|----------------------|-----------------|-----------------------|-----|-----|-----|------|------|----------------|--------------|---------------|
| | | | | 100 | 300 | 500 | 800 | 1000 | 1800 | | | |
| 10 | ±5%, ±10% | 8 | 100 | 10 | 22 | 28 | 35 | 39 | 45 | >6.00 | 0.6 | 500 |
| 12 | ±5%, ±10% | 8 | 100 | 10 | 18 | 23 | 26 | 32 | 42 | 6.00 | 0.7 | 500 |
| 15 | ±5%, ±10% | 8 | 100 | 12 | 22 | 28 | 35 | 39 | 42 | 5.50 | 0.8 | 500 |
| 18 | ±5%, ±10% | 8 | 100 | 10 | 18 | 22 | 25 | 30 | 43 | 5.20 | 0.9 | 300 |
| 22 | ±5%, ±10% | 8 | 100 | 12 | 21 | 27 | 34 | 37 | 37 | 5.00 | 1.0 | 300 |
| 27 | ±5%, ±10% | 8 | 100 | 10 | 18 | 24 | 26 | 32 | 38 | 4.80 | 1.2 | 300 |
| 33 | ±5%, ±10% | 8 | 100 | 12 | 21 | 27 | 33 | 35 | 31 | 4.50 | 1.4 | 300 |
| 39 | ±5%, ±10% | 8 | 100 | 11 | 20 | 26 | 32 | 34 | 29 | 4.00 | 1.5 | 200 |
| 47 | ±5%, ±10% | 8 | 100 | 12 | 20 | 26 | 31 | 34 | 27 | 3.50 | 1.6 | 200 |
| 56 | ±5%, ±10% | 8 | 100 | 11 | 20 | 26 | 31 | 34 | 24 | 3.00 | 1.8 | 200 |
| 68 | ±5%, ±10% | 8 | 100 | 10 | 18 | 21 | 24 | 28 | 10 | 2.80 | 2.0 | 200 |
| 82 | ±5%, ±10% | 8 | 100 | 10 | 19 | 22 | 26 | 26 | 15 | 2.50 | 2.2 | 200 |
| 100 | ±5%, ±10% | 8 | 100 | 10 | 19 | 24 | 27 | 25 | - | 2.00 | 2.5 | 150 |
| 120 | ±5%, ±10% | 8 | 100 | 10 | 19 | 23 | 26 | 24 | - | 1.60 | 2.8 | 150 |
| 150 | ±5%, ±10% | 8 | 100 | 10 | 18 | 24 | 26 | 23 | - | 1.40 | 3.0 | 150 |
| 180 | ±5%, ±10% | 8 | 100 | 10 | 17 | 22 | 23 | - | - | 1.00 | 3.4 | 150 |

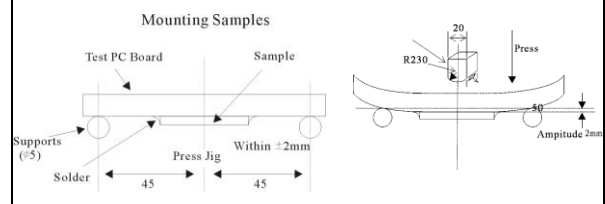
Operating temperature range: -40~+85°C

Environmental Characteristics

Electrical Performance Test

| Item | Requirement | Test Condition |
|---------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inductance | In Within specified tolerance | Temperature: 20±1°C Relative Humidity: 45 to 85%RH Atmospheric Pressure: 86 to 106kpa Measuring equipment and fixture: 0201: E991A+HP16197A 0402/0603: E991A+HP16192A Test Signal: -20dBm or 50mV Test compensation(for 0201 high Q): Product true value= test value + compensation value. for L<3.6nH, compensation value is 0.25nH; for 3.6nH≤L<6.8nH, compensation value is 0.43nH; for 6.8 nH≤L<9.1nH, compensation value is 0.5nH; for L≥9.1nH, compensation value is 0.85nH; |
| Q Value | In accordance with electrical specification | Temperature: 20±1°C Relative Humidity: 45 to 85%RH Atmospheric Pressure: 86 to 106kpa |
| DC Resistance | In accordance with electrical specification | Temperature: 20±1°C Relative Humidity: 45 to 85%RH Atmospheric Pressure: 86 to 106kpa Measuring equipment: HP 4338 |

Mechanical Characteristics Test

| Item | Requirement | Test Condition |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bending Strength | No mechanical damage shall be observed | Flexure: 2mm Pressurizing speed: 0.5mm/sec Keep time: 30sec  |
| Solderability | No visible mechanical damage Wetting shall exceed 75% coverage for 0201 series; exceed 95% coverage for others | Solder temperature: 240±2°C Time: 3 seconds Solder: Sn/3.0Ag/0.5Cu Flux: 25% resin and 75% ethanol in weight |
| Resistance to Soldering Heat | No visible mechanical damage Wetting shall exceed 75% coverage for 0201 series; exceed 95% coverage for others Inductance change: within±10% Q change: within±20% | Solder temperature: 260±3°C Time: 5 seconds Solder: Sn/3.0Ag/0.5Cu Flux: 25% resin and 75% ethanol in weight The chip shall be stabilized at normal condition for 1~2 hours before measuring |
| Dropping | No visible mechanical damage Inductance change: within±10% Q change: within±20% | Drop chip inductor 10 times on a concrete floor from a height of 100cm |

Climatic Test

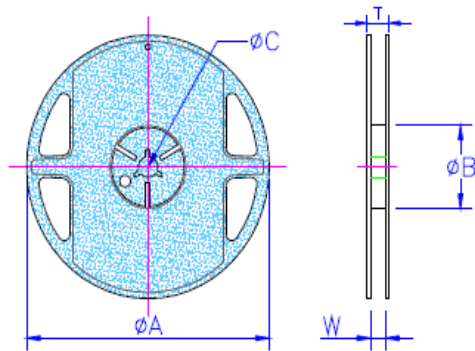
| Item | Requirements | Test Condition |
|--------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Thermal Shock | | 0201/0402 series: -55°C for 30±3 min→125°C for 30±3 min 0603 series: -40°C for 30±3 min→85°C for 30±3 min Transforming interval: max. 20 seconds Test cycle: 100 cycles The chip shall be stabilized at normal condition for 1~2 hours Before measuring |
| Resistance to Low Temperature | | Temperature: 0201/0402 series: -55±2°C ; 0603 series: -40±2°C Time: 1000±24 hours The chip shall be stabilized at normal condition for 1~2 hours Before measuring |
| Resistance to High Temperature | No visible damage | Temperature: 0201/0402 series: 125±2°C ; 0603 series: 85±2°C Time: 1000±24 hours The chip shall be stabilized at normal condition for 1~2 hours Before measuring |
| Damp Heat (Steady States) | Inductance variation within 10% Q variation within 20% | Temperature: 60±2°C Humidity: 90~95% RH. Time: 1000±24 hours The chip shall be stabilized at normal condition for 1~2 hours Before measuring |
| Loading Under Damp Heat | | Temperature: 60±2°C Humidity: 90~95% RH. Time: 1000±24 hours Applied current: Rated current The chip shall be stabilized at normal condition for 1~2 hours Before measuring |
| Loading at High Temperature (Life Test) | | Temperature: 0201/0402 series: 125±2°C ; 0603 series: 85±2°C Time: 1000±24 hours Applied current: Rated current The chip shall be stabilized at normal condition for 1~2 hours Before measuring |

■ Storage Temperature: 15~28°C; Humidity < 80%RH

■ Packaging Specifications

Reel Dimension

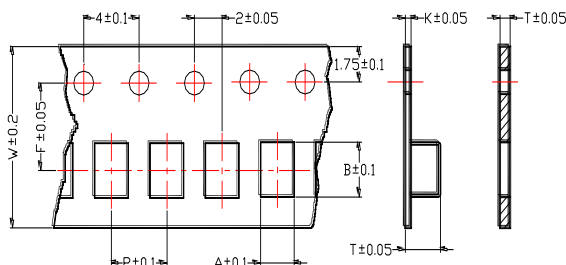
Unit: mm



| Type | A | B | C | W | T | Quantity (EA) |
|--------|-------|----------|-----------|----------|-----------|---------------|
| CL01-S | 178±1 | 60.0±0.5 | 13.0±0.20 | 9.00±0.5 | 12.0±0.15 | 15,000 |
| CL02-S | 178±1 | 60.0±0.5 | 13.0±0.20 | 9.00±0.5 | 12.0±0.15 | 10,000 |
| CL03-S | 178±1 | 60.0±0.5 | 13.0±0.20 | 9.00±0.5 | 12.0±0.15 | 4,000 |

Tape Specifications

Unit: mm



| Type | A | B | T | W | P | F | K | Tape |
|--------|------|------|------|---|---|-----|---|------|
| CL01-S | 0.40 | 0.70 | 0.50 | 8 | 2 | 3.5 | - | B |
| CL02-S | 0.65 | 1.15 | 0.80 | 8 | 2 | 3.5 | - | B |
| CL03-S | 1.10 | 1.80 | 1.10 | 8 | 4 | 3.5 | - | B |

Type A Type B

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