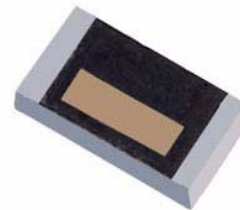


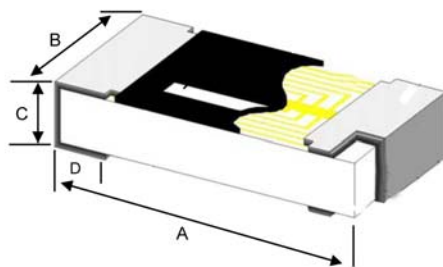
- Features:**
- A photo lithographic single layer ceramic chip
  - Provides high SRF, excellent Q, superior temperature stability
  - SRF controlled within 10%
  - Stable inductance in high frequency circuits
  - Highly stable design for critical needs
  - Tight tolerances of  $\pm 1\%$  down to  $\pm 0.1\text{nH}$  available
  - Contact factory for inductance values outside those listed in the datasheet
  - Find frequency curves, environmental and packaging specifications in relevant supplemental documents



- Applications:**
- Cellular phones
  - Pagers
  - GPS receiver
  - Bluetooth module
  - VCO and TCXO circuits
  - RF transceiver modules
  - Wireless LAN
  - Communication appliances

### How to Order

| AL02GT10N      |                         |      |      |           |        |           |             |       |          |            |        |
|----------------|-------------------------|------|------|-----------|--------|-----------|-------------|-------|----------|------------|--------|
| Product Series |                         | Code | Size | Tolerance |        | Packaging |             |       |          | Inductance |        |
| AL             | Thin Film Chip Inductor | 01   | 0201 | Code      | Tol    | Code      | Description | Sizes | Quantity | Code       | nH     |
|                |                         | 02   | 0402 | B         | ±0.1nH | T         | Tape & Reel | All   | 10,000   | 1N0        | 1nH    |
|                |                         |      |      | C         | ±0.2nH |           |             |       |          | 10N        | 10nH   |
|                |                         |      |      | S         | ±0.3nH |           |             |       |          | 20N8       | 20.8nH |
|                |                         |      |      | F         | ±1%    |           |             |       |          |            |        |
|                |                         |      |      | G         | ±2%    |           |             |       |          |            |        |
|                |                         |      |      | H         | ±3%    |           |             |       |          |            |        |
|                |                         | J    | ±5%  |           |        |           |             |       |          |            |        |



### Mechanical Specifications - Standard

| Type / Code | A             | B             | C             | D             | Unit   |
|-------------|---------------|---------------|---------------|---------------|--------|
| AL01        | 0.024 ± 0.002 | 0.012 ± 0.002 | 0.009 ± 0.002 | 0.006 ± 0.002 | inches |
|             | 0.60 ± 0.05   | 0.30 ± 0.05   | 0.23 ± 0.05   | 0.15 ± 0.05   | mm     |
| AL02        | 0.039 ± 0.002 | 0.020 ± 0.002 | 0.013 ± 0.002 | 0.008 ± 0.004 | inches |
|             | 1.00 ± 0.05   | 0.50 ± 0.05   | 0.32 ± 0.05   | 0.20 ± 0.10   | mm     |

### Performance Characteristics

| Item                         | Requirement          | Test Method                                                                                        |
|------------------------------|----------------------|----------------------------------------------------------------------------------------------------|
| Inductance                   | as specified         | Measuring equipment and fixture:<br>0201: HP4287 + Agilent 16196C<br>0402: HP4287 + Agilent 16196B |
| Insulation Resistance        | > 1000Mohm           | Apply 100V <sub>DC</sub> for 1 minute                                                              |
| Damp Heat with Load          | $\Delta L \leq 10\%$ | 40±2°C, 90~95% R.H. Max working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"           |
| Bending Strength             | as specified         | Bending amplitude 3mm for 10 seconds                                                               |
| Solderability                | 95% min. coverage    | 245±5°C for 3 seconds                                                                              |
| Resistance to soldering Heat | $\Delta L \leq 10\%$ | 260±5°C for 10 seconds                                                                             |
| Dielectric Withstand Voltage | > 100V               | Apply 100VA (rms) for 1 minute                                                                     |
| High Temperature Exposure    | $\Delta L \leq 10\%$ | 85±2°C, 1000 +48/-0 hours                                                                          |
| Low Temperature Storage      | $\Delta L \leq 10\%$ | -40±3°C, 1000 +48/-0 hours                                                                         |
| Temperature Cycle            | $\Delta L \leq 10\%$ | -40/RT/85/RT, 10 cycles                                                                            |

Reference Standards: MIL-STD-202F, JIS-C 5201-1

Storage Temperature: 25±3°C; Humidity < 80%RH

| Electrical Specifications – AL01 |                                   |                        |                   |                          |                  |
|----------------------------------|-----------------------------------|------------------------|-------------------|--------------------------|------------------|
| Inductance<br>(nH)               | Inductance<br>Tolerance (nH or %) | Quality Factor<br>min. | SRF (GHz)<br>min. | DCR ( $\Omega$ )<br>max. | IDC (mA)<br>max. |
| 0.1                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.20                     | 400              |
| 0.2                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.20                     | 400              |
| 0.3                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.20                     | 400              |
| 0.4                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.25                     | 350              |
| 0.5                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.25                     | 350              |
| 0.6                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.25                     | 350              |
| 0.7                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.30                     | 300              |
| 0.8                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.30                     | 300              |
| 0.9                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.30                     | 300              |
| 1.0                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.30                     | 300              |
| 1.1                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.35                     | 300              |
| 1.2                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.35                     | 300              |
| 1.3                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.45                     | 250              |
| 1.4                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.45                     | 250              |
| 1.5                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.45                     | 250              |
| 1.6                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.55                     | 200              |
| 1.7                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.55                     | 200              |
| 1.8                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.55                     | 200              |
| 1.9                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 9                 | 0.55                     | 200              |
| 2.0                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 8                 | 0.70                     | 200              |
| 2.1                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 8                 | 0.70                     | 200              |
| 2.2                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 8                 | 0.70                     | 200              |
| 2.3                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 8                 | 0.80                     | 150              |
| 2.4                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 8                 | 0.80                     | 150              |
| 2.5                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 8                 | 0.80                     | 150              |
| 2.6                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 8                 | 0.80                     | 150              |
| 2.7                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 8                 | 0.80                     | 150              |
| 2.8                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.00                     | 150              |
| 2.9                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.00                     | 150              |
| 3.0                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.00                     | 150              |
| 3.1                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.00                     | 150              |
| 3.2                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.00                     | 150              |
| 3.3                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.00                     | 150              |
| 3.4                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.20                     | 150              |
| 3.5                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.20                     | 150              |
| 3.6                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.20                     | 150              |
| 3.7                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.20                     | 150              |
| 3.8                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.20                     | 150              |
| 3.9                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.20                     | 150              |
| 4.0                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.20                     | 150              |
| 4.4                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.30                     | 140              |
| 4.7                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.40                     | 130              |
| 4.9                              | $\pm 0.1, 0.2, 0.3\text{nH}$      | 8 / 500MHz             | 6                 | 1.60                     | 130              |
| 5.6                              | $\pm 2, \pm 5\%$                  | 8 / 500MHz             | 4                 | 1.80                     | 130              |
| 6.1                              | $\pm 2, \pm 5\%$                  | 8 / 500MHz             | 4                 | 2.00                     | 120              |
| 6.8                              | $\pm 2, \pm 5\%$                  | 8 / 500MHz             | 4                 | 2.30                     | 110              |
| 7.4                              | $\pm 2, \pm 5\%$                  | 8 / 500MHz             | 4                 | 2.80                     | 110              |
| 8.2                              | $\pm 2, \pm 5\%$                  | 8 / 500MHz             | 3                 | 3.00                     | 110              |
| 9.1                              | $\pm 2, \pm 5\%$                  | 8 / 500MHz             | 3                 | 3.25                     | 100              |
| 9.2                              | $\pm 2, \pm 5\%$                  | 8 / 500MHz             | 3                 | 3.25                     | 100              |
| 10.0                             | $\pm 2, \pm 5\%$                  | 8 / 500MHz             | 2                 | 3.50                     | 80               |

**Electrical Specifications – AL02**

| Inductance<br>(nH) | Inductance<br>Tolerance (nH or %) | Quality Factor<br>min. | SRF (GHz)<br>min. | DCR ( $\Omega$ )<br>max. | IDC (mA)<br>max. |
|--------------------|-----------------------------------|------------------------|-------------------|--------------------------|------------------|
| 0.2                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 14                | 0.10                     | 800              |
| 0.3                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 14                | 0.10                     | 800              |
| 0.4                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 14                | 0.10                     | 800              |
| 0.5                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 14                | 0.15                     | 700              |
| 0.8                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 14                | 0.15                     | 700              |
| 0.9                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 14                | 0.15                     | 700              |
| 1.0                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 12                | 0.15                     | 700              |
| 1.1                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 12                | 0.15                     | 700              |
| 1.2                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 12                | 0.15                     | 700              |
| 1.3                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 10                | 0.25                     | 700              |
| 1.4                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 10                | 0.25                     | 700              |
| 1.5                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 10                | 0.25                     | 700              |
| 1.6                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 10                | 0.25                     | 560              |
| 1.7                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 10                | 0.25                     | 560              |
| 1.8                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 10                | 0.25                     | 560              |
| 1.9                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 8                 | 0.35                     | 560              |
| 2.0                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 8                 | 0.35                     | 560              |
| 2.1                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 8                 | 0.35                     | 440              |
| 2.2                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 8                 | 0.35                     | 440              |
| 2.3                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 8                 | 0.35                     | 440              |
| 2.4                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 8                 | 0.35                     | 440              |
| 2.5                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 8                 | 0.35                     | 440              |
| 2.6                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 8                 | 0.35                     | 440              |
| 2.7                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 8                 | 0.35                     | 440              |
| 2.8                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.45                     | 380              |
| 2.9                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.45                     | 380              |
| 3.0                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.45                     | 380              |
| 3.1                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.45                     | 380              |
| 3.2                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.45                     | 380              |
| 3.3                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.45                     | 380              |
| 3.4                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.55                     | 380              |
| 3.5                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.55                     | 380              |
| 3.6                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.55                     | 380              |
| 3.7                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.55                     | 340              |
| 3.8                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.55                     | 340              |
| 3.9                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.55                     | 340              |
| 4.3                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.65                     | 320              |
| 4.7                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.65                     | 320              |
| 5.4                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.85                     | 280              |
| 5.6                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.85                     | 280              |
| 5.9                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 0.85                     | 280              |
| 6.5                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 1.05                     | 260              |
| 6.8                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 1.05                     | 260              |
| 7.2                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 6                 | 1.05                     | 260              |
| 8.0                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 5.5               | 1.25                     | 220              |
| 8.1                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 5.5               | 1.25                     | 220              |
| 8.2                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 5.5               | 1.25                     | 220              |
| 9.1                | $\pm 0.1, 0.2, 0.3\text{nH}$      | 13 / 500MHz            | 5.5               | 1.25                     | 220              |
| 10.0               | $\pm 1, 2, 3, 5\%$                | 13 / 500MHz            | 4.5               | 1.35                     | 200              |
| 10.8               | $\pm 1, 2, 3, 5\%$                | 13 / 500MHz            | 4.5               | 1.35                     | 200              |
| 12.0               | $\pm 1, 2, 3, 5\%$                | 13 / 500MHz            | 3.7               | 1.55                     | 180              |
| 13.8               | $\pm 1, 2, 3, 5\%$                | 13 / 500MHz            | 3.7               | 1.75                     | 180              |
| 15.0               | $\pm 1, 2, 3, 5\%$                | 13 / 500MHz            | 3.3               | 1.75                     | 130              |
| 17.0               | $\pm 1, 2, 3, 5\%$                | 13 / 500MHz            | 3.1               | 1.95                     | 100              |
| 18.0               | $\pm 1, 2, 3, 5\%$                | 13 / 500MHz            | 3.1               | 2.15                     | 100              |
| 20.8               | $\pm 1, 2, 3, 5\%$                | 13 / 500MHz            | 2.8               | 2.55                     | 90               |
| 22.0               | $\pm 1, 2, 3, 5\%$                | 13 / 500MHz            | 2.8               | 2.65                     | 90               |
| 27.0               | $\pm 1, 2, 3, 5\%$                | 13 / 500MHz            | 2.5               | 3.25                     | 75               |
| 33.0               | $\pm 5\%$                         | 13 / 500MHz            | 2.5               | 4.50                     | 75               |