



Chip Inductors - 0402HP Series (1005)

- Higher Q and lower DCR than other 0402 inductors
- Very high SRF values – as high as 16 GHz
- Excellent current handling capability – up to 2300 mA
- 52 inductance values from 1.0 to 220 nH



Core material Ceramic
Environmental RoHS compliant, halogen free optional
Terminations RoHS compliant silver-palladium-platinum-glass frit. Other terminations available at additional cost.
Weight 0.7 – 1.0 mg
Ambient temperature -40°C to +125°C with Irms current, +125°C to +140°C with derated current
Storage temperature Component: -40°C to +140°C. Tape and reel packaging: -40°C to +80°C
Resistance to soldering heat Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles
Temperature Coefficient of Inductance (TCL) +25 to +125 ppm/°C
Moisture Sensitivity Level (MSL) 1 (unlimited floor life at <30°C / 85% relative humidity)
Failures in Time (FIT) / Mean Time Between Failures (MTBF) One per billion hours / one billion hours, calculated per Telcordia SR-332
Packaging 2000 or 5000 per 7" reel. Paper tape: 8 mm wide, 0.66 mm thick, 2 mm pocket spacing
PCB washing Tested with pure water or alcohol only. For other solvents, see Doc787_PCB_Washing.pdf

| | A max | B (min – max) | C max | | | | | |
|---------|-------|---------------|-------|--------|-------|-------|-------|--------|
| 0402HP | 0.043 | 0.020 – 0.028 | 0.024 | inches | | | | |
| | 1,09 | 0,51 – 0,71 | 0,61 | mm | | | | |
| | A max | B | C max | | | | | |
| 0402HPH | 0.044 | 0.026 ±0.002 | 0.026 | inches | | | | |
| | 1,12 | 0,66 ±0,051 | 0,66 | mm | | | | |
| | D | E | F | G | H | I | J | |
| | 0.010 | 0.020 | 0.008 | 0.024 | 0.026 | 0.014 | 0.020 | inches |
| | 0,25 | 0,51 | 0,20 | 0,61 | 0,66 | 0,36 | 0,51 | mm |

Note: Height dimension (C) is before optional solder application. For maximum height dimension including solder, add 0.006 in / 0,152 mm.

Current Derating



Typical Q vs Frequency



Typical L vs Frequency



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0402HP Series (1005)

Designer's Kits C403A and B contain 20 each of 5% values
Designer's Kits C403A-2 and B-2 contain 20 each of 2% values

| Part number ¹ | Inductance ² (nH) | Percent tolerance ³ | Test freq (MHz) | 900 MHz | | 1.7 GHz | | SRF typ ⁵ (GHz) | DCR max ⁶ (Ohms) | Irms ⁷ (mA) |
|--------------------------|---------------------------------|-----------------------------------|--------------------|---------|--------------------|---------|--------------------|-------------------------------|--------------------------------|---------------------------|
| | | | | L typ | Q typ ⁴ | L typ | Q typ ⁴ | | | |
| 0402HP-1N0XJL_ | 1.0 | 5 | 250 | 0.97 | 46 | 0.99 | 72 | 16.0 | 0.030 | 2300 |
| 0402HP-2N0XJL_ | 2.0 | 5 | 250 | 1.96 | 58 | 1.98 | 85 | 15.2 | 0.038 | 2100 |
| 0402HP-2N2XJL_ | 2.2 | 5 | 250 | 2.17 | 60 | 2.17 | 86 | 15.1 | 0.038 | 2100 |
| 0402HP-2N4X_L_ | 2.4 | 5,3,2 | 250 | 2.37 | 60 | 2.38 | 83 | 14.0 | 0.042 | 2000 |
| 0402HP-2N7X_L_ | 2.7 | 5,3,2 | 250 | 2.66 | 62 | 2.68 | 85 | 13.0 | 0.085 | 1500 |
| 0402HP-3N3X_L_ | 3.3 | 5,3,2 | 250 | 3.26 | 66 | 3.28 | 95 | 12.8 | 0.045 | 1700 |
| 0402HP-3N6X_L_ | 3.6 | 5,3,2 | 250 | 3.56 | 65 | 3.58 | 94 | 11.7 | 0.045 | 1700 |
| 0402HP-3N9X_L_ | 3.9 | 5,3,2 | 250 | 3.87 | 64 | 3.91 | 98 | 9.50 | 0.045 | 1700 |
| 0402HP-4N3X_L_ | 4.3 | 5,3,2 | 250 | 4.26 | 63 | 4.33 | 90 | 7.15 | 0.050 | 1600 |
| 0402HP-4N7X_L_ | 4.7 | 5,3,2 | 250 | 4.67 | 58 | 4.74 | 83 | 6.85 | 0.075 | 1500 |
| 0402HP-5N1X_L_ | 5.1 | 5,3,2 | 250 | 5.07 | 54 | 5.16 | 76 | 6.80 | 0.125 | 1200 |
| 0402HP-5N6X_L_ | 5.6 | 5,3,2 | 250 | 5.56 | 73 | 5.66 | 105 | 6.50 | 0.055 | 1600 |
| 0402HP-6N2X_L_ | 6.2 | 5,3,2 | 250 | 6.18 | 73 | 6.25 | 100 | 5.80 | 0.055 | 1600 |
| 0402HP-6N8X_L_ | 6.8 | 5,3,2 | 250 | 6.78 | 68 | 6.97 | 94 | 5.80 | 0.070 | 1500 |
| 0402HP-7N5X_L_ | 7.5 | 5,3,2 | 250 | 7.49 | 60 | 7.77 | 82 | 5.40 | 0.100 | 1400 |
| 0402HP-8N2X_L_ | 8.2 | 5,3,2 | 250 | 8.10 | 68 | 8.40 | 95 | 5.40 | 0.065 | 1500 |
| 0402HP-8N7X_L_ | 8.7 | 5,3,2 | 250 | 8.73 | 66 | 9.04 | 95 | 5.00 | 0.070 | 1500 |
| 0402HP-9N0X_L_ | 9.0 | 5,3,2 | 250 | 8.99 | 67 | 9.21 | 92 | 5.00 | 0.080 | 1400 |
| 0402HP-9N5X_L_ | 9.5 | 5,3,2 | 250 | 9.52 | 64 | 9.97 | 90 | 4.70 | 0.090 | 1400 |
| 0402HP-10NX_L_ | 10 | 5,3,2 | 250 | 9.98 | 62 | 10.4 | 90 | 4.70 | 0.110 | 1300 |
| 0402HP-11NX_L_ | 11 | 5,3,2 | 250 | 11.0 | 68 | 11.6 | 98 | 4.70 | 0.065 | 1400 |
| 0402HP-12NX_L_ | 12 | 5,3,2 | 250 | 12.0 | 66 | 12.6 | 100 | 4.40 | 0.100 | 1200 |
| 0402HP-13NX_L_ | 13 | 5,3,2 | 250 | 13.1 | 62 | 13.9 | 82 | 4.20 | 0.155 | 870 |
| 0402HP-15NX_L_ | 15 | 5,3,2 | 250 | 15.1 | 62 | 16.0 | 85 | 3.90 | 0.115 | 1100 |
| 0402HP-16NX_L_ | 16 | 5,3,2 | 250 | 16.2 | 57 | 17.3 | 77 | 3.70 | 0.150 | 850 |
| 0402HP-18NX_L_ | 18 | 5,3,2 | 250 | 18.2 | 58 | 19.5 | 74 | 3.55 | 0.120 | 900 |
| 0402HP-19NX_L_ | 19 | 5,3,2 | 250 | 19.2 | 61 | 20.7 | 88 | 3.50 | 0.145 | 850 |
| 0402HP-20NX_L_ | 20 | 5,3,2 | 250 | 20.3 | 58 | 22.0 | 76 | 3.50 | 0.185 | 780 |
| 0402HP-21NX_L_ | 21 | 5,3,2 | 250 | 21.3 | 48 | 23.2 | 62 | 1.70 | 0.460 | 450 |
| 0402HP-22NX_L_ | 22 | 5,3,2 | 250 | 22.3 | 60 | 24.4 | 74 | 3.30 | 0.160 | 800 |
| 0402HP-23NX_L_ | 23 | 5,3,2 | 250 | 23.3 | 60 | 25.5 | 77 | 3.30 | 0.160 | 800 |
| 0402HP-24NX_L_ | 24 | 5,3,2 | 250 | 24.5 | 55 | 27.1 | 71 | 3.15 | 0.210 | 700 |
| 0402HP-25NX_L_ | 25 | 5,3,2 | 250 | 25.5 | 57 | 28.3 | 73 | 3.15 | 0.260 | 700 |
| 0402HP-26NX_L_ | 26 | 5,3,2 | 250 | 26.6 | 56 | 29.3 | 74 | 3.15 | 0.290 | 700 |
| 0402HP-27NX_L_ | 27 | 5,3,2 | 250 | 27.3 | 62 | 29.5 | 86 | 3.20 | 0.350 | 450 |
| 0402HP-30NX_L_ | 30 | 5,3,2 | 250 | 30.8 | 61 | 35.0 | 87 | 2.90 | 0.350 | 450 |
| 0402HP-33NX_L_ | 33 | 5,3,2 | 250 | 34.0 | 61 | 38.3 | 80 | 2.80 | 0.330 | 490 |
| 0402HP-36NX_L_ | 36 | 5,3,2 | 250 | 37.1 | 59 | 42.2 | 76 | 2.80 | 0.390 | 480 |
| 0402HP-37NX_L_ | 37 | 5,3,2 | 250 | 38.2 | 57 | 44.0 | 72 | 2.70 | 0.480 | 470 |
| 0402HP-39NX_L_ | 39 | 5,3,2 | 250 | 40.5 | 56 | 47.0 | 84 | 2.60 | 0.430 | 450 |
| 0402HP-40NX_L_ | 40 | 5,3,2 | 250 | 41.3 | 56 | 47.4 | 75 | 2.60 | 0.430 | 450 |
| 0402HP-43NX_L_ | 43 | 5,3,2 | 250 | 45.0 | 52 | 54.1 | 68 | 2.50 | 0.520 | 450 |
| 0402HP-47NX_L_ | 47 | 5,3,2 | 250 | 49.0 | 48 | 58.9 | 62 | 2.40 | 0.580 | 420 |
| 0402HP-51NX_L_ | 51 | 5,3,2 | 250 | 49.1 | 52 | 58.8 | 59 | 2.30 | 0.700 | 360 |
| 0402HPH-56NX_L_ | 56 | 5,3,2 | 250 | 58.8 | 56 | 72.2 | 64 | 2.07 | 0.900 | 330 |
| 0402HPH-68NX_L_ | 68 | 5,3,2 | 250 | 72.2 | 56 | 91.4 | 64 | 1.84 | 1.00 | 320 |
| 0402HPH-82NX_L_ | 82 | 5,3,2 | 250 | 89.7 | 52 | — | — | 1.75 | 1.10 | 315 |
| 0402HPH-R10X_L_ | 100 | 5,3,2 | 250 | — | — | — | — | 1.58 | 1.20 | 310 |
| 0402HPH-R12X_L_ | 120 | 5,3,2 | 250 | — | — | — | — | 1.25 | 1.20 | 310 |
| 0402HPH-R15X_L_ | 150 | 5,3,2 | 100 | — | — | — | — | 1.14 | 2.0 | 240 |
| 0402HPH-R18X_L_ | 180 | 5,3,2 | 100 | — | — | — | — | 1.08 | 2.1 | 240 |
| 0402HPH-R22X_L_ | 220 | 5,3,2 | 100 | — | — | — | — | 0.96 | 3.1 | 160 |

1. When ordering, specify **tolerance**, **termination** and **packaging** codes:

0402HP-82NXJLW

Tolerance: G = 2% H = 3% J = 5%
(Table shows stock tolerances in bold.)

Termination: L = RoHS compliant silver-palladium-platinum-glass frit.
E = Halogen free component. RoHS compliant silver-palladium-platinum-glass frit terminations.
Special order: T = RoHS tin-silver-copper (95.5/4/0.5) or S = non-RoHS tin-lead (63/37).

Packaging: W = 7" machine-ready reel. EIA-481 punched paper tape (2000 parts per full reel).
Q = 7" machine-ready reel. EIA-481 punched paper tape (5000 parts per full reel).
U = Less than full reel. In tape, but not machine ready.
To have a leader and trailer added (\$25 charge), use code letter W instead.

2. Inductance measured at test frequency using a Coilcraft SMD-F fixture in an Agilent/HP 4286 impedance analyzer with Coilcraft-provided correlation pieces.

3. Tolerances in bold are stocked for immediate shipment.

4. Q measured using an Agilent/HP 4287A with an Agilent/HP 16197 test fixture.

5. SRF measured using an Agilent/HP 8722ES network analyzer and a Coilcraft SMD-D test fixture.

6. DCR measured on a micro-ohmmeter and a Coilcraft CCF858 test fixture.

7. Current that causes a 15°C temperature rise from 25°C ambient.

8. Electrical specifications at 25°C.
Refer to Doc 362 "Soldering Surface Mount Components" before soldering.



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