AEC-Q200

# CI100505VHQ1 (Multilayer Ceramic Chip Inductor)

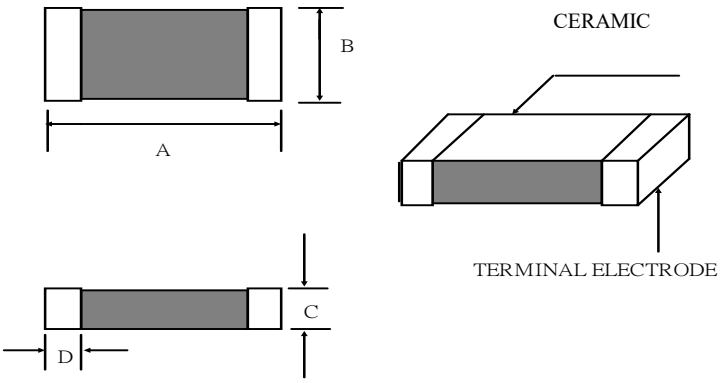
## ●FEATURE

1. Support operating frequency bands up to 10GHz(SIZE:0402)
2. Provides high Q characteristics with large current
3. Monolithic structure for high reliability
4. AEC-Q200 Grade 1 qualified

## ●Applications

1. Cordless phone or pagers and Other various electronic appliances

## ●Shape and Dimension




## ●Specification

Dimension in mm

| TYPE | A | B | C | D |
|---|---|---|---|---|
| CI100505VHQ1(0402) | 1.0±0.15 | 0.50±0.15 | 0.5±0.15 | 0.25±0.10 |

Note1: Test equipment: HP 4291A Impedance analyzer

Note2: Inductance tolerance: B: ±0.1nH; C: ±0.2nH; S: ±0.3nH; G: ±2%; H: ±3%; J: ±5%

Note3.Packaging: Taping ; Quantity: 10000 Pieces/reel

●Electrical characteristics

| Part Number | Inductance (nH) | Tolerance | Q-value (Min) | Test Frequency (MHz) | SRF (MHz) Min. | DCR (Ω) Max. | Rated Current (mA) Max. |
|---|---|---|---|---|---|---|---|
| CI100505VHQ1-R6N□ | 0.6 | B,C,S | - | 250 | 15000 | 0.01 | 1200 |
| CI100505VHQ1-R7N□ | 0.7 | B,C,S | - | 250 | 15000 | 0.02 | 1200 |
| CI100505VHQ1-R8N□ | 0.8 | B,C,S | - | 250 | 15000 | 0.02 | 1200 |
| CI100505VHQ1-R9N□ | 0.9 | B,C,S | - | 250 | 15000 | 0.03 | 1200 |
| CI100505VHQ1-1N0□ | 1.0 | B,C,S | 23 | 250 | 15000 | 0.03 | 1200 |
| CI100505VHQ1-1N1□ | 1.1 | B,C,S | 23 | 250 | 14000 | 0.03 | 1200 |
| CI100505VHQ1-1N2□ | 1.2 | B,C,S | 23 | 250 | 13000 | 0.03 | 1200 |
| CI100505VHQ1-1N3□ | 1.3 | B,C,S | 23 | 250 | 12000 | 0.03 | 1200 |
| CI100505VHQ1-1N4□ | 1.4 | B,C,S | 23 | 250 | 13000 | 0.04 | 1200 |
| CI100505VHQ1-1N5□ | 1.5 | B,C,S | 23 | 250 | 11000 | 0.04 | 1000 |
| CI100505VHQ1-1N6□ | 1.6 | B,C,S | 23 | 250 | 10000 | 0.04 | 1000 |
| CI100505VHQ1-1N7□ | 1.7 | B,C,S | 23 | 250 | 10000 | 0.04 | 1000 |
| CI100505VHQ1-1N8□ | 1.8 | B,C,S | 23 | 250 | 9000 | 0.04 | 1000 |
| CI100505VHQ1-1N9□ | 1.9 | B,C,S | 23 | 250 | 8000 | 0.05 | 1000 |
| CI100505VHQ1-2N0□ | 2.0 | B,C,S | 23 | 250 | 8000 | 0.05 | 1000 |
| CI100505VHQ1-2N1□ | 2.1 | B,C,S | 23 | 250 | 8000 | 0.06 | 1000 |
| CI100505VHQ1-2N2□ | 2.2 | B,C,S | 23 | 250 | 8000 | 0.06 | 1000 |
| CI100505VHQ1-2N3□ | 2.3 | B,C,S | 23 | 250 | 7000 | 0.07 | 1000 |
| CI100505VHQ1-2N4□ | 2.4 | B,C,S | 23 | 250 | 6500 | 0.07 | 1000 |
| CI100505VHQ1-2N5□ | 2.5 | B,C,S | 23 | 250 | 6500 | 0.06 | 900 |
| CI100505VHQ1-2N6□ | 2.6 | B,C,S | 23 | 250 | 6500 | 0.07 | 900 |
| CI100505VHQ1-2N7□ | 2.7 | B,C,S | 23 | 250 | 6500 | 0.07 | 900 |
| CI100505VHQ1-2N8□ | 2.8 | B,C,S | 23 | 250 | 6500 | 0.07 | 900 |
| CI100505VHQ1-2N9□ | 2.9 | B,C,S | 23 | 250 | 6500 | 0.08 | 900 |
| CI100505VHQ1-3N0□ | 3.0 | B,C,S | 23 | 250 | 6000 | 0.09 | 900 |
| CI100505VHQ1-3N1□ | 3.1 | B,C,S | 23 | 250 | 6000 | 0.09 | 900 |
| CI100505VHQ1-3N2□ | 3.2 | B,C,S | 23 | 250 | 6000 | 0.09 | 900 |
| CI100505VHQ1-3N3□ | 3.3 | B,C,S | 23 | 250 | 6000 | 0.08 | 900 |
| CI100505VHQ1-3N4□ | 3.4 | B,C,S | 23 | 250 | 6000 | 0.09 | 900 |
| CI100505VHQ1-3N5□ | 3.5 | B,C,S | 23 | 250 | 5800 | 0.09 | 900 |
| CI100505VHQ1-3N6□ | 3.6 | B,C,S | 23 | 250 | 5500 | 0.09 | 900 |
| CI100505VHQ1-3N7□ | 3.7 | B,C,S | 23 | 250 | 5500 | 0.10 | 900 |

| Part Number | Inductance (nH) | Tolerance | Q-value (Min) | Test Frequency (MHz) | SRF (MHz) Min. | DCR (Ω) Max. | Rated Current (mA) Max. |
|---|---|---|---|---|---|---|---|
| CI100505VHQ1-3N8☐ | 3.8 | B,C,S | 23 | 250 | 5000 | 0.10 | 900 |
| CI100505VHQ1-3N9☐ | 3.9 | B,C,S | 23 | 250 | 5000 | 0.09 | 800 |
| CI100505VHQ1-4N1☐ | 4.1 | B,C,S | 23 | 250 | 5000 | 0.10 | 800 |
| CI100505VHQ1-4N3☐ | 4.3 | B,C,S | 23 | 250 | 5000 | 0.10 | 800 |
| CI100505VHQ1-4N7☐ | 4.7 | B,C,S | 23 | 250 | 5000 | 0.11 | 800 |
| CI100505VHQ1-4N9☐ | 4.9 | B,C,S | 23 | 250 | 5000 | 0.11 | 800 |
| CI100505VHQ1-5N1☐ | 5.1 | B,C,S | 23 | 250 | 4500 | 0.12 | 800 |
| CI100505VHQ1-5N4☐ | 5.4 | B,C,S | 23 | 250 | 4500 | 0.13 | 800 |
| CI100505VHQ1-5N6☐ | 5.6 | B,C,S | 23 | 250 | 4500 | 0.13 | 800 |
| CI100505VHQ1-5N8☐ | 5.8 | B,C,S | 23 | 250 | 4000 | 0.13 | 700 |
| CI100505VHQ1-6N0☐ | 6.0 | B,C,S | 23 | 250 | 4000 | 0.13 | 700 |
| CI100505VHQ1-6N2☐ | 6.2 | B,C,S | 23 | 250 | 4000 | 0.13 | 700 |
| CI100505VHQ1-6N5☐ | 6.5 | G,H,J | 23 | 250 | 4000 | 0.14 | 700 |
| CI100505VHQ1-6N8☐ | 6.8 | G,H,J | 23 | 250 | 4000 | 0.14 | 700 |
| CI100505VHQ1-7N3☐ | 7.3 | G,H,J | 23 | 250 | 4000 | 0.16 | 600 |
| CI100505VHQ1-7N5☐ | 7.5 | G,H,J | 23 | 250 | 4000 | 0.16 | 600 |
| CI100505VHQ1-8N2☐ | 8.2 | G,H,J | 23 | 250 | 3600 | 0.16 | 550 |
| CI100505VHQ1-8N7☐ | 8.7 | G,H,J | 23 | 250 | 3500 | 0.17 | 550 |
| CI100505VHQ1-9N1☐ | 9.1 | G,H,J | 23 | 250 | 3400 | 0.17 | 550 |
| CI100505VHQ1-9N5☐ | 9.5 | G,H,J | 23 | 250 | 3300 | 0.21 | 500 |
| CI100505VHQ1-10N☐ | 10 | G,H,J | 23 | 250 | 3300 | 0.19 | 500 |
| CI100505VHQ1-11N☐ | 11 | G,H,J | 23 | 250 | 3000 | 0.22 | 450 |
| CI100505VHQ1-12N☐ | 12 | G,H,J | 23 | 250 | 2800 | 0.24 | 450 |
| CI100505VHQ1-13N☐ | 13 | G,H,J | 23 | 250 | 2800 | 0.26 | 400 |
| CI100505VHQ1-15N☐ | 15 | G,H,J | 23 | 250 | 2300 | 0.28 | 400 |
| CI100505VHQ1-16N☐ | 16 | G,H,J | 20 | 250 | 2300 | 0.80 | 260 |
| CI100505VHQ1-18N☐ | 18 | G,H,J | 20 | 250 | 2300 | 0.80 | 260 |
| CI100505VHQ1-19N☐ | 19 | G,H,J | 20 | 250 | 2300 | 0.80 | 260 |
| CI100505VHQ1-20R☐ | 20 | G,H,J | 20 | 250 | 2100 | 1.10 | 260 |
| CI100505VHQ1-22N☐ | 22 | G,H,J | 20 | 250 | 2100 | 1.10 | 230 |
| CI100505VHQ1-23N☐ | 23 | G,H,J | 20 | 250 | 2000 | 1.10 | 230 |
| CI100505VHQ1-24N☐ | 24 | G,H,J | 20 | 250 | 2000 | 1.20 | 230 |
| CI100505VHQ1-27N☐ | 27 | G,H,J | 20 | 250 | 1700 | 1.30 | 230 |

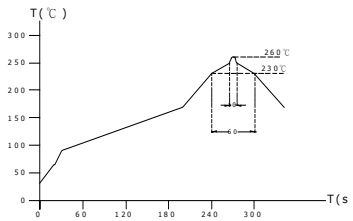
| Part Number | Inductance (nH) | Tolerance | Q-value (Min) | Test Frequency (MHz) | SRF (MHz) Min. | DCR (Ω) Max. | Rated Current (mA) Max. |
|---|---|---|---|---|---|---|---|
| CI100505VHQ1-30N□ | 30 | G,H,J | 20 | 250 | 1700 | 1.30 | 220 |
| CI100505VHQ1-33N□ | 33 | G,H,J | 20 | 250 | 1600 | 1.50 | 220 |
| CI100505VHQ1-36N□ | 36 | G,H,J | 20 | 250 | 1600 | 1.50 | 190 |
| CI100505VHQ1-39N□ | 39 | G,H,J | 20 | 250 | 1400 | 1.50 | 190 |
| CI100505VHQ1-40N□ | 40 | G,H,J | 20 | 250 | 1400 | 1.50 | 190 |
| CI100505VHQ1-43N□ | 43 | G,H,J | 22 | 250 | 1400 | 1.60 | 190 |
| CI100505VHQ1-47N□ | 47 | G,H,J | 22 | 250 | 1300 | 1.60 | 190 |
| CI100505VHQ1-51N□ | 51 | G,H,J | 22 | 250 | 1300 | 1.80 | 190 |
| CI100505VHQ1-56N□ | 56 | G,H,J | 22 | 250 | 1200 | 1.80 | 180 |
| CI100505VHQ1-62N□ | 62 | G,H,J | 22 | 250 | 1100 | 1.90 | 180 |
| CI100505VHQ1-68N□ | 68 | G,H,J | 22 | 250 | 1100 | 2.00 | 160 |
| CI100505VHQ1-72N□ | 72 | G,H,J | 22 | 250 | 1100 | 2.20 | 160 |
| CI100505VHQ1-75N□ | 75 | G,H,J | 22 | 250 | 1100 | 2.20 | 160 |
| CI100505VHQ1-82N□ | 82 | G,H,J | 22 | 250 | 900 | 2.30 | 160 |
| CI100505VHQ1-91N□ | 91 | G,H,J | 22 | 250 | 900 | 2.30 | 160 |
| CI100505VHQ1-R10□ | 100 | G,H,J | 22 | 250 | 900 | 2.50 | 150 |
| CI100505VHQ1-R11□ | 110 | G,H,J | 22 | 250 | 800 | 2.70 | 150 |
| CI100505VHQ1-R12□ | 120 | G,H,J | 22 | 250 | 800 | 2.70 | 140 |
| CI100505VHQ1-R13□ | 130 | G,H,J | 22 | 250 | 800 | 3.00 | 110 |
| CI100505VHQ1-R15□ | 150 | G,H,J | 22 | 250 | 800 | 3.00 | 110 |
| CI100505VHQ1-R16□ | 160 | G,H,J | 22 | 250 | 700 | 5.80 | 90 |
| CI100505VHQ1-R18□ | 180 | G,H,J | 18 | 250 | 600 | 6.00 | 90 |
| CI100505VHQ1-R20□ | 200 | G,H,J | 18 | 250 | 600 | 6.20 | 80 |
| CI100505VHQ1-R22□ | 220 | G,H,J | 18 | 250 | 600 | 6.60 | 80 |
| CI100505VHQ1-R24□ | 240 | G,H,J | 18 | 250 | 600 | 6.80 | 80 |
| CI100505VHQ1-R27□ | 270 | G,H,J | 18 | 250 | 600 | 7.00 | 80 |
| CI100505VHQ1-R30□ | 300 | G,H,J | 13 | 100 | 480 | 7.80 | 80 |
| CI100505VHQ1-R33□ | 330 | G,H,J | 13 | 100 | 480 | 8.20 | 80 |
| CI100505VHQ1-R36□ | 360 | G,H,J | 13 | 100 | 450 | 8.40 | 80 |
| CI100505VHQ1-R39□ | 390 | G,H,J | 13 | 100 | 450 | 8.80 | 70 |
| CI100505VHQ1-R43□ | 430 | G,H,J | 13 | 100 | 380 | 9.60 | 70 |
| CI100505VHQ1-R47□ | 470 | G,H,J | 13 | 100 | 380 | 9.60 | 70 |
| CI100505VHQ1-R51□ | 510 | G,H,J | 13 | 100 | 360 | 10.2 | 70 |

| Part Number | Inductance (nH) | Tolerance | Q-value (Min) | Test Frequency (MHz) | SRF (MHz) Min. | DCR (Ω) Max. | Rated Current (mA) Max. |
|---|---|---|---|---|---|---|---|
| CI100505VHQ1-R56□ | 560 | G,H,J | 13 | 100 | 360 | 10.6 | 70 |

# GENERAL CHARACTERISTICS

1. Operating temperature range: -40 TO + 125℃(Includes temperature when the coil is heated)
2. High temperature exposure(storage) refer MIL-STD-202 Method 108: 1000 hrs at rated operating temperature(e.g. 125℃). Part can be stored for 1000 hrs @125℃. Unpowered. Measurement at 24±4 hours after test conclusion.
3. Temperature cycling refer JESD22 Method JA-104: 1000 cycles(-40 TO + 125℃). Measurement at 24±4 hours after test conclusion. 30 min maximum dwell time at each temp. extreme. 1 min. maximum transition time.
4. Biased Humidity refer MIL-STD-202 Method 103: 1000 hours 85℃/85%RH. Unpowered. Measurement at 24±4 hours after test conclusion.
5. Operational Life refer MIL-PRF-27: 1000 hrs. at 125 ℃ tested. Measurement at 24±4 hours after test conclusion.
6. External Visual refer MIL-STD-883 Method 2009: Inspect device construction, marking and workmanship.
7. Physical Dimension refer JESD22 Method JB-100: Verify physical dimensions to the applicable device detail specification.
8. Resistance to Solvents refer MIL-STD-202 Method 215: Add aqueous wash chemical - OKEM clean or equivalent.
9. Mechanical Shock refer MIL-STD-202 Method 213: Figure 1 of Method 213. Condition C.
10. Vibration refer MIL-STD-202 Method 204: 5g;s for 20 minutes, 12 cycles each of 3 orientations. Test from 10-2000 Hz.
11. Resistance to soldering Heat refer MIL-STD-202 Method 210: Condition B No pre-heat of samples. Single wave solder-procedure 2 for SMD and procedure 1 for leaded with solder within 1.5mm of device body.
12. ESD refer AEC-Q200-002 or ISO/DIS 10605: Direct contact discharge 2kV.
13. Solderability refer J-STD-002: For both Leaded & SMD. Magnification 50X. Conditions: Leaded, Method A@235℃,category 3 ; SMD, a)Method B, 4hrs@125℃ dry heat @235℃, b)Method B@215℃ category 3., c)Method D category 3@260℃
14. Electrical Characterization refer spec: Show Min, Max Mean and Standard deviation at room from Min and Max temperature.
15. Flammability refer UL-94: V-0 or V-1 Acceptable.
16. Board Flex refer AEC-Q200-005: 60 sec minimum holding time.
17. Terminal Strength(SMD) refer AEC-Q200-006
18. Reflow profile recommend:

Lead-free heat endurance test




Lead-free the recommended reflow condition