# HI 1005 Series

ACX
Advanced Ceramic X

## High Frequency Multilayer Chip Inductors

### Features

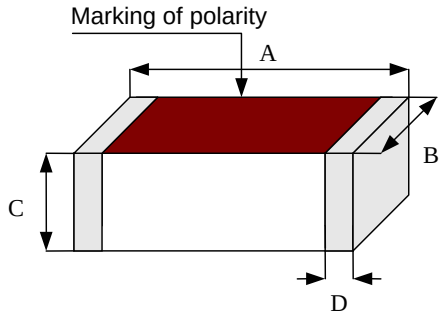
❖Monolithic structure ensuring high performance and reliability.

❖High frequency applications up to 6GHz.

### Applications

❖RF modules for telecommunication systems including GSM, PCS, DECT, WLAN, Bluetooth, etc.

### Shape and Dimensions




Unit : mm (inch)

| TYPE | EIA Code | A | B | C | D |
|---|---|---|---|---|---|
| 1005 | 0402 | 1.00 ±0.10 | 0.50 ±0.10 | 0.50 ±0.10 | 0.23 ±0.10 |
| | | (.040 ±.004 ) | (.020 ±.004 ) | (.020 ±.004 ) | (.0092 ±.004 ) |

* Marking of polarity indicating the magnetic flux direction is taped upward.

### Part Number

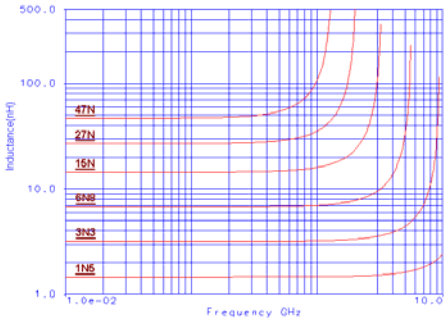
HI 1005 - 1 C 4N7 □ □ □

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

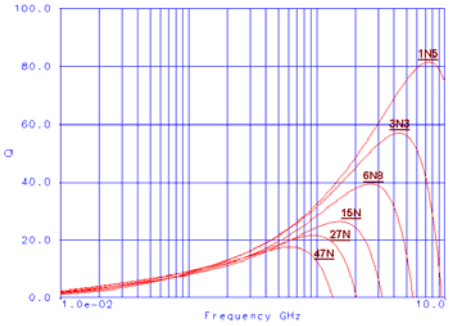
| | | | |
|---|---|---|---|
| ① Type | HI :High Frequency Inductors | ② Dimensions ( L × W ) | 1.0 × 0.5 mm |
| ③ Circuit | 1 : Single | ④ Material Code | B (lead-containing)<br>C (lead-free) |
| ⑤ Inductance | 4N7=4.7nH<br>47N=47nH<br>R10=100nH | ⑥ Tolerance | S:±0.3nH,<br>J:±5%, K:±10% |
| ⑦ Marking | M: With marking | ⑧ Packaging | T: Tape & Reel<br>B: Bulk |

## Typical Electrical Characteristics

L vs. Frequency




Q vs. Frequency




## Specifications

| Part Number | Inductance (nH) | Q Min. | L/Q Freq. (MHz) | $R_{DC}$ (Ω) Max. | S.R.F. (MHz) Typ. | $I_{DC}$ (mA) Max. |
|---|---|---|---|---|---|---|
| HI1005-1_1N0_M_ | 1.0 ± 0.3 | 8 | 100 | 0.12 | >15000 | 300 |
| HI1005-1_1N2_M_ | 1.2 ± 0.3 | 8 | 100 | 0.12 | >15000 | 300 |
| HI1005-1_1N5_M_ | 1.5 ± 0.3 | 8 | 100 | 0.13 | >15000 | 300 |
| HI1005-1_1N8_M_ | 1.8 ± 0.3 | 8 | 100 | 0.14 | 14000 | 300 |
| HI1005-1_2N2_M_ | 2.2 ± 0.3 | 8 | 100 | 0.16 | 12000 | 300 |
| HI1005-1_2N7_M_ | 2.7 ± 0.3 | 8 | 100 | 0.17 | 9500 | 300 |
| HI1005-1_3N3_M_ | 3.3 ± 0.3 or ± 10% | 8 | 100 | 0.19 | 8500 | 300 |
| HI1005-1_3N9_M_ | 3.9 ± 0.3 or ± 10% | 8 | 100 | 0.22 | 7000 | 300 |
| HI1005-1_4N7_M_ | 4.7 ± 0.3 or ± 10% | 8 | 100 | 0.24 | 6000 | 300 |
| HI1005-1_5N6_M_ | 5.6 ± 0.3 or ± 10% | 8 | 100 | 0.27 | 5400 | 300 |
| HI1005-1_6N8_M_ | 6.8 ± 5% or ± 10% | 8 | 100 | 0.32 | 5000 | 250 |
| HI1005-1_8N2_M_ | 8.2 ± 5% or ± 10% | 8 | 100 | 0.40 | 4600 | 250 |
| HI1005-1_10N_M_ | 10 ± 5% or ± 10% | 8 | 100 | 0.45 | 3700 | 250 |
| HI1005-1_12N_M_ | 12 ± 5% or ± 10% | 8 | 100 | 0.50 | 3200 | 250 |
| HI1005-1_15N_M_ | 15 ± 5% or ± 10% | 8 | 100 | 0.60 | 3100 | 250 |
| HI1005-1_18N_M_ | 18 ± 5% or ± 10% | 8 | 100 | 0.65 | 2900 | 200 |
| HI1005-1_22N_M_ | 22 ± 5% or ± 10% | 8 | 100 | 0.80 | 2100 | 200 |
| HI1005-1_27N_M_ | 27 ± 5% or ± 10% | 8 | 100 | 0.90 | 1900 | 200 |
| HI1005-1_33N_M_ | 33 ± 5% or ± 10% | 8 | 100 | 1.00 | 1600 | 200 |
| HI1005-1_39N_M_ | 39 ± 5% or ± 10% | 8 | 100 | 1.20 | 1400 | 150 |
| HI1005-1_47N_M_ | 47 ± 5% or ± 10% | 8 | 100 | 1.30 | 1200 | 150 |
| HI1005-1_56N_M_ | 56 ± 5% or ± 10% | 8 | 100 | 2.00 | 1100 | 150 |
| HI1005-1_68N_M_ | 68 ± 5% or ± 10% | 8 | 100 | 2.20 | 1000 | 100 |
| HI1005-1_82N_M_ | 82 ± 5% or ± 10% | 8 | 100 | 2.50 | 900 | 100 |
| HI1005-1_R10_M_ | 100 ± 5% or ± 10% | 8 | 100 | 2.50 | 850 | 100 |
| HI1005-1_R12_M_ | 120 ± 5% or ± 10% | 8 | 100 | 2.50 | 750 | 100 |

Operating Temperature Range : -40 ~ +100 °C
Storage Temperature Range : +5 ~ +35 °C, Humidity 45~75%RH
Storage Period: 12 months max.
Test Method : L and Q : HP 4291B (+16192A)
S.R.F. (Self Resonant Frequency) : HP 8722D
$R_{DC}$ (DC Resistance) : HP 4338B
$I_{DC}$ (Rated Current) : HP 4284A

## Notes

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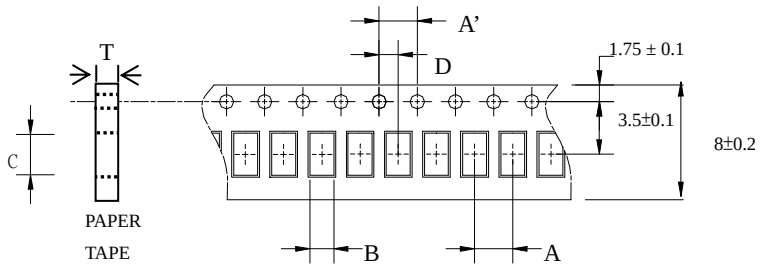
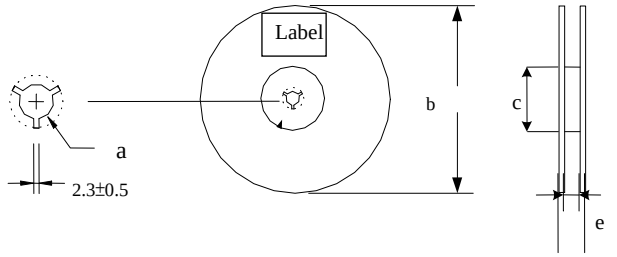
## Taping Specifications

### ❖Tape Dimensions (Unit: mm) & Quantity




### ❖Reel Dimensions (Unit: mm)

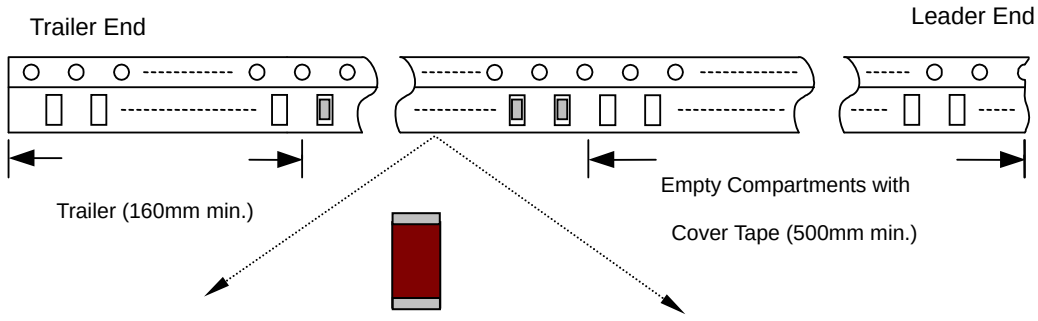
| Type | A | A' | B | C | D | T | Quantity/ reel | Tape material |
|---|---|---|---|---|---|---|---|---|
| HI1005 | 2.0±0.05 | 4.0±0.1 | 0.62±0.03 | 1.15±0.03 | 2.0±0.05 | 0.60±0.03 | 10,000 pcs | Paper |




Label: Customer's Name, ACX P/N, Q'ty, Date, ACX Corp.

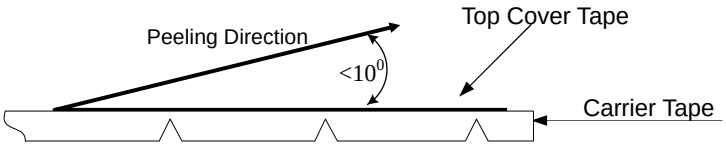
| Type | a | b | c | d | e |
|---|---|---|---|---|---|
| HI1005 | 13.5±0.5 | 178±1 | 60±1 | 1.2±0.2 | 9.0±0.3 |

### ❖Leader / Trailer Tape (Unit: mm)



❖**Peel-off Force**

Peel-off force should be in the range of 0.1 – 0.6 N at a peel-off speed of 300±10 mm/min .

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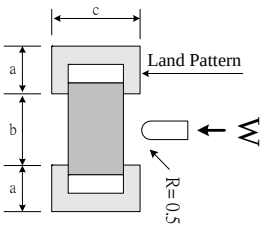
## Mechanical & Environmental Characteristics

| tem | Requirements | Procedure |
|---|---|---|
| Solderability | 1. No apparent damage<br>2. More than 95% of the terminal electrode shall be covered with new solder.<br>3. L : within ± 10 %<br>4. Q : within ± 20 % | 1. Preheat：120±20°C for ≧ 1 min<br>2. Solder：245±5°C for 5±1 sec |
| Termination Adhesion（Flexure Strength） | 1. No apparent damage |  |

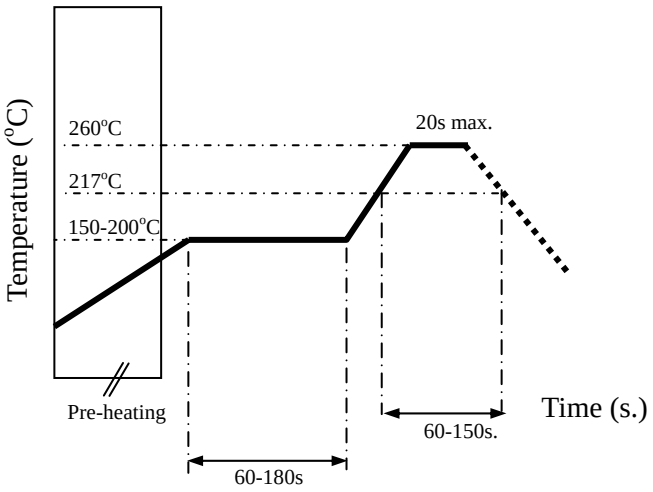
| Type | HI1005 |
|---|---|
| a (mm) | 0.6 |
| b (mm) | 0.5 |
| c (mm) | 0.6 |
| W (kgf) | 0.75 |

| | | |
|---|---|---|
| Solder Heat Resistance | 1. No apparent damage<br>2. More than 95% of the terminal electrode shall be covered with new solder. | 1. Preheat：120±20°C for ≧ 1 min<br>2. Solder：260±5°C for 10±1 sec |
| Heat/ Humidity Resistance | 1. No apparent damage<br>2. L : within ± 10 %<br>3. Q: within ± 20 %<br>4. Fulfill the electrical specification | 1. Temperature：85 ± 2°C<br>2. Humidity：80%~85% RH<br>3. Applied current：rated current<br>4. Duration：500 ± 24 hours<br>5. Recovery：1-2hr |
| Thermal Shock (Temperature Cycle) | 1. No apparent damage<br>2. L : within ± 10 %<br>3. Q: within ± 20 %<br>4. Fulfill the electrical specification | 1. One cycle/step 1：125 ± 5°C for 30 min<br>step 2：- 40 ± 3°C for 30 min<br>2. No. of cycles：100<br>3. Recovery:1-2 hrs |
| Low Temperature Resistance | 1. No apparent damage<br>2. L : within ± 10 %<br>3. Q: within ± 20 %<br>4. Fulfill the electrical specification | 1. Temperature：–40 ± 5°C<br>2. Duration：500 ± 24 hours<br>3. Recovery：1-2hr |

## Soldering Conditions

❖**Typical Soldering Profile for Lead-free Process**

Reflow Soldering :

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