

# THIN FILM CHIP INDUCTORS

ATFC-0402

 RoHS/RoHS II Compliant



1.00 x 0.50 x 0.32mm

## FEATURES:

- Photolithographic single layer ceramic chip
- High SRF, excellent Q, superior temperature stability
- Tight tolerance  $\pm 0.1\text{nH}$  available
- Self resonant frequency controlled within 10%
- Stable inductance in high frequency circuit
- Highly stable design for critical needs

## APPLICATIONS:

- Cell phones and GPS
- VCO, TCXO Circuit and RF Transceiver Module
- Wireless LAN, Bluetooth Module, Communication Appliances

## STANDARD SPECIFICATIONS:

### PARAMETERS

|                        |                           |
|------------------------|---------------------------|
| ABRACON P/N:           | ATFC-0402                 |
| Operating temperature: | -45°C to +85°C            |
| Storage temperature:   | +25 $\pm$ 3°C, 80% RH max |

| Part Number<br>ATFC-0402-<br>Inductance Code | L(nH) | Tolerance | Q, Min @ 500MHz | SRF Min<br>(GHz) | R <sub>DC</sub> Max<br>( $\Omega$ ) | I <sub>DC</sub> Max<br>(mA) |
|----------------------------------------------|-------|-----------|-----------------|------------------|-------------------------------------|-----------------------------|
| ATFC-0402-0N2                                | 0.2   | B, C, S   | 13              | 14               | 0.10                                | 800                         |
| ATFC-0402-0N3                                | 0.3   | B, C, S   | 13              | 14               | 0.10                                | 800                         |
| ATFC-0402-0N4                                | 0.4   | B, C, S   | 13              | 14               | 0.10                                | 800                         |
| ATFC-0402-0N5                                | 0.5   | B, C, S   | 13              | 14               | 0.15                                | 700                         |
| ATFC-0402-0N6                                | 0.6   | B, C, S   | 13              | 14               | 0.15                                | 700                         |
| ATFC-0402-0N8                                | 0.8   | B, C, S   | 13              | 14               | 0.15                                | 700                         |
| ATFC-0402-0N9                                | 0.9   | B, C, S   | 13              | 14               | 0.15                                | 700                         |
| ATFC-0402-1N0                                | 1.0   | B, C, S   | 13              | 12               | 0.15                                | 700                         |
| ATFC-0402-1N1                                | 1.1   | B, C, S   | 13              | 12               | 0.15                                | 700                         |
| ATFC-0402-1N2                                | 1.2   | B, C, S   | 13              | 12               | 0.15                                | 700                         |
| ATFC-0402-1N3                                | 1.3   | B, C, S   | 13              | 10               | 0.25                                | 700                         |
| ATFC-0402-1N4                                | 1.4   | B, C, S   | 13              | 10               | 0.25                                | 700                         |
| ATFC-0402-1N5                                | 1.5   | B, C, S   | 13              | 10               | 0.25                                | 700                         |
| ATFC-0402-1N6                                | 1.6   | B, C, S   | 13              | 10               | 0.25                                | 560                         |
| ATFC-0402-1N7                                | 1.7   | B, C, S   | 13              | 10               | 0.25                                | 560                         |
| ATFC-0402-1N8                                | 1.8   | B, C, S   | 13              | 10               | 0.25                                | 560                         |
| ATFC-0402-1N9                                | 1.9   | B, C, S   | 13              | 8                | 0.35                                | 560                         |
| ATFC-0402-2N0                                | 2.0   | B, C, S   | 13              | 8                | 0.35                                | 560                         |
| ATFC-0402-2N1                                | 2.1   | B, C, S   | 13              | 8                | 0.35                                | 440                         |
| ATFC-0402-2N2                                | 2.2   | B, C, S   | 13              | 8                | 0.35                                | 440                         |
| ATFC-0402-2N3                                | 2.3   | B, C, S   | 13              | 8                | 0.35                                | 440                         |
| ATFC-0402-2N4                                | 2.4   | B, C, S   | 13              | 8                | 0.35                                | 440                         |
| ATFC-0402-2N5                                | 2.5   | B, C, S   | 13              | 8                | 0.35                                | 440                         |
| ATFC-0402-2N6                                | 2.6   | B, C, S   | 13              | 8                | 0.35                                | 440                         |
| ATFC-0402-2N7                                | 2.7   | B, C, S   | 13              | 8                | 0.35                                | 440                         |
| ATFC-0402-2N8                                | 2.8   | B, C, S   | 13              | 6                | 0.45                                | 380                         |
| ATFC-0402-2N9                                | 2.9   | B, C, S   | 13              | 6                | 0.45                                | 380                         |
| ATFC-0402-3N0                                | 3.0   | B, C, S   | 13              | 6                | 0.45                                | 380                         |
| ATFC-0402-3N1                                | 3.1   | B, C, S   | 13              | 6                | 0.45                                | 380                         |
| ATFC-0402-3N2                                | 3.2   | B, C, S   | 13              | 6                | 0.45                                | 380                         |
| ATFC-0402-3N3                                | 3.3   | B, C, S   | 13              | 6                | 0.45                                | 380                         |
| ATFC-0402-3N4                                | 3.4   | B, C, S   | 13              | 6                | 0.55                                | 380                         |
| ATFC-0402-3N5                                | 3.5   | B, C, S   | 13              | 6                | 0.55                                | 380                         |
| ATFC-0402-3N6                                | 3.6   | B, C, S   | 13              | 6                | 0.55                                | 380                         |
| ATFC-0402-3N7                                | 3.7   | B, C, S   | 13              | 6                | 0.55                                | 340                         |
| ATFC-0402-3N8                                | 3.8   | B, C, S   | 13              | 6                | 0.55                                | 340                         |
| ATFC-0402-3N9                                | 3.9   | B, C, S   | 13              | 6                | 0.55                                | 340                         |
| ATFC-0402-4N3                                | 4.3   | B, C, S   | 13              | 6                | 0.65                                | 320                         |
| ATFC-0402-4N7                                | 4.7   | B, C, S   | 13              | 6                | 0.65                                | 320                         |
| ATFC-0402-5N4                                | 5.4   | B, C, S   | 13              | 6                | 0.85                                | 280                         |
| ATFC-0402-5N6                                | 5.6   | B, C, S   | 13              | 6                | 0.85                                | 280                         |
| ATFC-0402-5N9                                | 5.9   | B, C, S   | 13              | 6                | 0.85                                | 280                         |
| ATFC-0402-6N5                                | 6.5   | B, C, S   | 13              | 6                | 1.05                                | 260                         |
| ATFC-0402-6N8                                | 6.8   | B, C, S   | 13              | 6                | 1.05                                | 260                         |

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Revised: 06.17.13

# THIN FILM CHIP INDUCTORS

ATFC-0402

 RoHS/RoHS II Compliant



0.60 x 0.30 x 0.23mm

## Key Electrical Specifications (Con'd)

| Part Number<br>ATFC-0402-<br>Inductance Code | L(nH) | Tolerance  | Q, Min @ 500MHz | SRF Min<br>(GHz) | RDC Max<br>( $\Omega$ ) | IDC Max<br>(mA) |
|----------------------------------------------|-------|------------|-----------------|------------------|-------------------------|-----------------|
| ATFC-0402-7N2                                | 7.2   | B, C, S    | 13              | 6                | 1.05                    | 260             |
| ATFC-0402-8N0                                | 8.0   | B, C, S    | 13              | 5.5              | 1.25                    | 220             |
| ATFC-0402-8N1                                | 8.1   | B, C, S    | 13              | 5.5              | 1.25                    | 220             |
| ATFC-0402-8N2                                | 8.2   | B, C, S    | 13              | 5.5              | 1.25                    | 220             |
| ATFC-0402-9N1                                | 9.1   | B, C, S    | 13              | 5.5              | 1.25                    | 220             |
| ATFC-0402-10N                                | 10.0  | F, G, H, J | 13              | 4.5              | 1.35                    | 200             |
| ATFC-0402-10N8                               | 10.8  | F, G, H, J | 13              | 4.5              | 1.35                    | 200             |
| ATFC-0402-12N                                | 12.0  | F, G, H, J | 13              | 3.7              | 1.55                    | 180             |
| ATFC-0402-13N8                               | 13.8  | F, G, H, J | 13              | 3.7              | 1.75                    | 180             |
| ATFC-0402-15N                                | 15.0  | F, G, H, J | 13              | 3.3              | 1.75                    | 130             |
| ATFC-0402-17N                                | 17.0  | F, G, H, J | 13              | 3.1              | 1.95                    | 100             |
| ATFC-0402-18N                                | 18.0  | F, G, H, J | 13              | 3.1              | 2.15                    | 100             |
| ATFC-0402-20N8                               | 20.8  | F, G, H, J | 13              | 2.8              | 2.55                    | 90              |
| ATFC-0402-22N                                | 22.0  | F, G, H, J | 13              | 2.8              | 2.65                    | 90              |
| ATFC-0402-27N                                | 27.0  | F, G, H, J | 13              | 2.5              | 3.25                    | 75              |
| ATFC-0402-33N                                | 33.0  | J          | 13              | 2.5              | 4.50                    | 75              |

## Test Conditions and Equipments

Inductance (L)

- Test equipment: Agilent4287A+Agilent16196C
- Test frequency: 500MHz

## PART IDENTIFICATION:

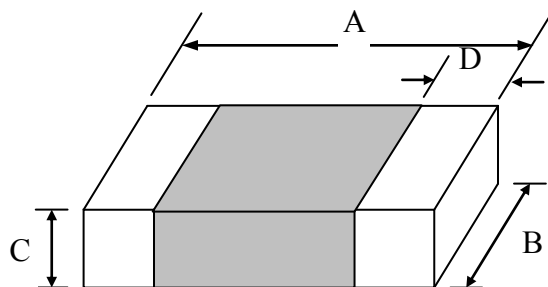
ATFC- 0402-     -  

**Inductance Code**  
Please refer to the  
table above

| Inductance Tolerance  |
|-----------------------|
| B: $\pm 0.1\text{nH}$ |
| C: $\pm 0.2\text{nH}$ |
| S: $\pm 0.3\text{nH}$ |
| F: $\pm 1\%$          |
| G: $\pm 2\%$          |
| H: $\pm 3\%$          |
| J: $\pm 5\%$          |

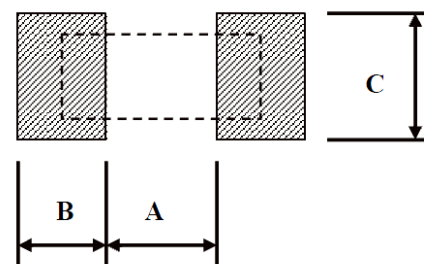
**Packaging**  
T: Tape and Reel  
(10kpcs reel)

## OUTLINE DIMENSIONS:



| A              | B              | C               | D               |
|----------------|----------------|-----------------|-----------------|
| 1.0 $\pm$ 0.05 | 0.5 $\pm$ 0.05 | 0.32 $\pm$ 0.05 | 0.20 $\pm$ 0.10 |

## Recommended Land Pattern



| A    | B    | C              |
|------|------|----------------|
| 0.50 | 0.45 | 0.60 $\pm$ 0.2 |

Dimension: mm



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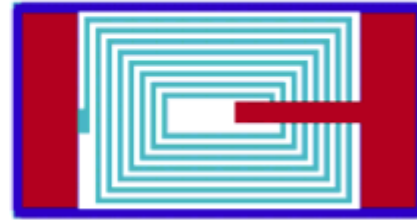
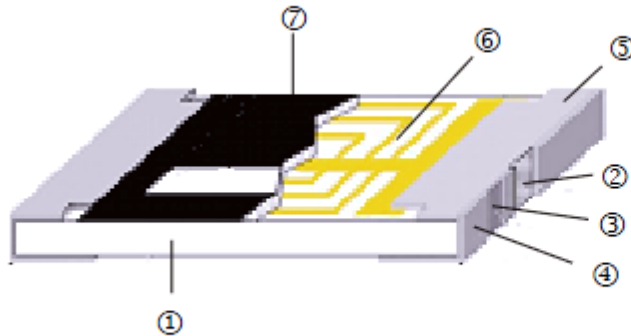
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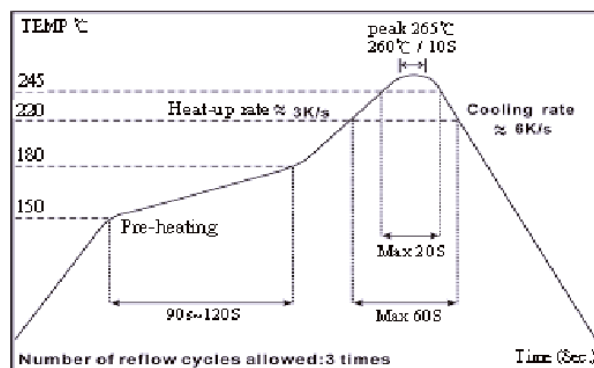
0.60 x 0.30 x 0.23mm

## MATERIALS:



| No. | Material                |
|-----|-------------------------|
| 1   | Alumina Substrate       |
| 2   | Inner Electrode (Ni-Cr) |
| 3   | Barrier Layer (Ni)      |
| 4   | External Electrode (Sn) |
| 5   | Edge Electrode          |
| 6   | Cu Circuits             |
| 7   | Overcoat                |

## REFLOW PROFILE:



# THIN FILM CHIP INDUCTORS

ATFC-0402

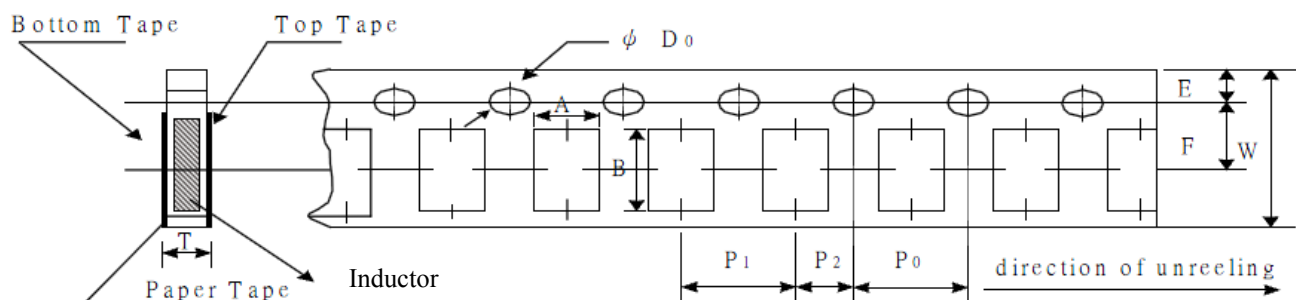
 RoHS/RoHS II Compliant



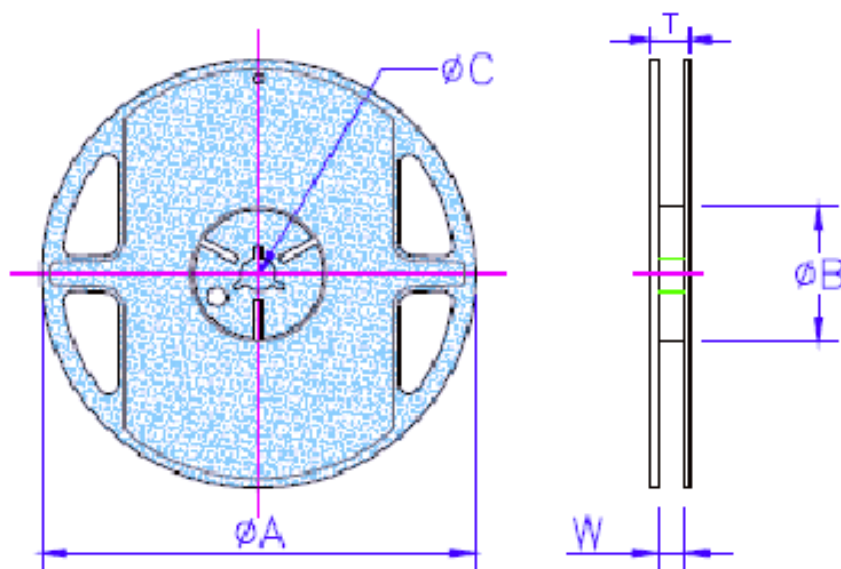
0.60 x 0.30 x 0.23mm

## TAPE & REEL:

T= tape and reel (10,000pcs/reel)



| A         | B         | W         | E         | F         | P0        | P1        | P2        | ΦD0       | T         |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 0.70±0.05 | 1.16±0.05 | 8.00±0.10 | 1.75±0.05 | 3.50±0.05 | 4.00±0.10 | 2.00±0.05 | 2.00±0.05 | 1.55±0.05 | 0.40±0.03 |



| ΦA        | ΦB       | ΦC       | W       | T        |
|-----------|----------|----------|---------|----------|
| 178.0±1.0 | 60.0±1.0 | 13.5±0.7 | 9.5±1.0 | 11.5±1.0 |

Dimension: mm

**ATTENTION:** Abracon Corporation's products are COTS – Commercial-Off-The-Shelf products; suitable for Commercial, Industrial and, where designated, Automotive Applications. Abracon's products are not specifically designed for Military, Aviation, Aerospace, Life-dependant Medical applications or any application requiring high reliability where component failure could result in loss of life and/or property. For applications requiring high reliability and/or presenting an extreme operating environment, written consent and authorization from Abracon Corporation is required. Please contact Abracon Corporation for more information.

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