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The Power of Linking Together

Abracon PTM
Introduction to ATFC Thin Film Chip Inductor

Crystals
Oscillators
Filters
Precision Timing
Inductors

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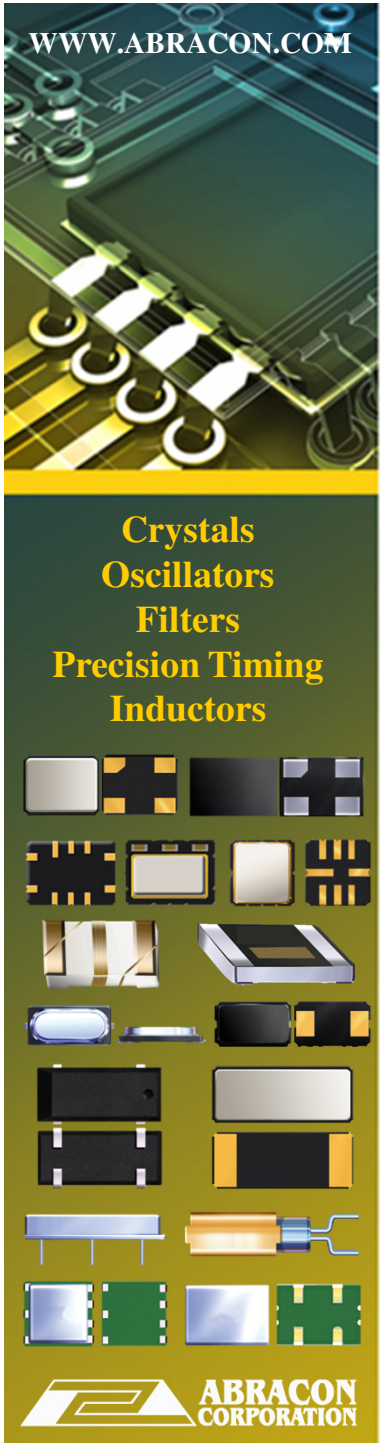


ATFC RF Thin Film Chip Inductors

Purpose

To introduce ATFC RF Thin Film Chip Inductors.

Objective

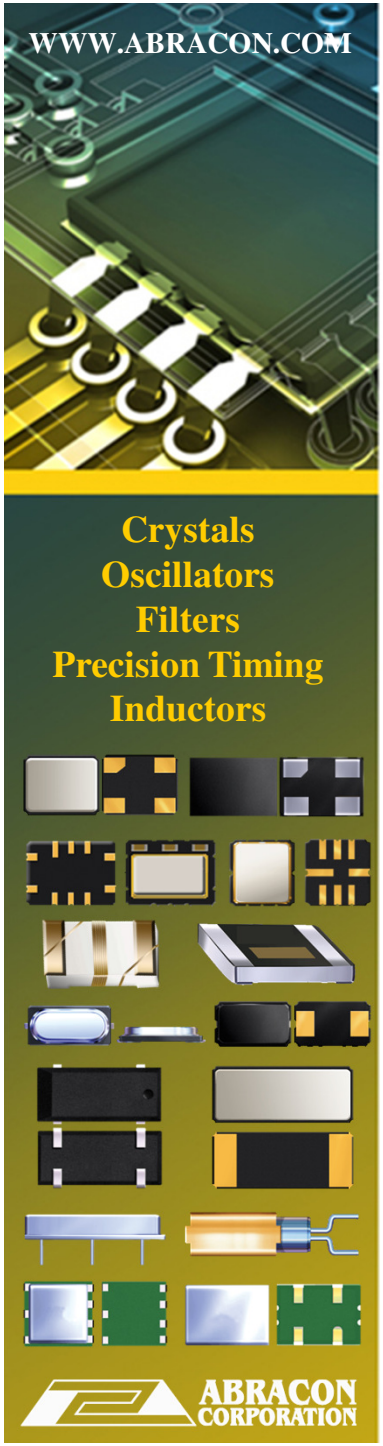
Present the process, advantage, performance and applications of ATFC.

Content

17 pages

Learning Time

10 minutes



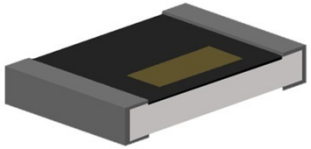
Product-ATFC Series
Thin Film Chip Inductors

Dimensions:

0201 1.0nH-10nH NEW

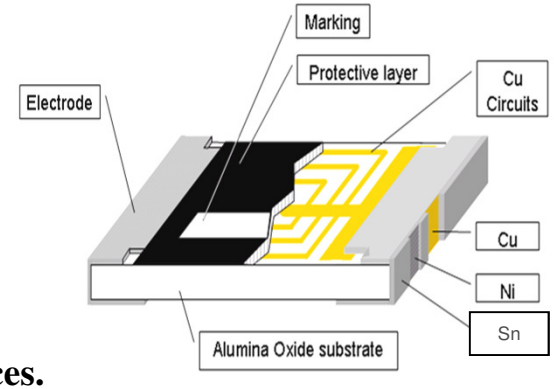
0402 0.2nH-33nH

0603 1nH-100nH



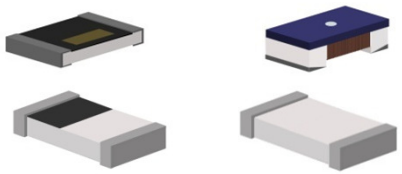
Features:

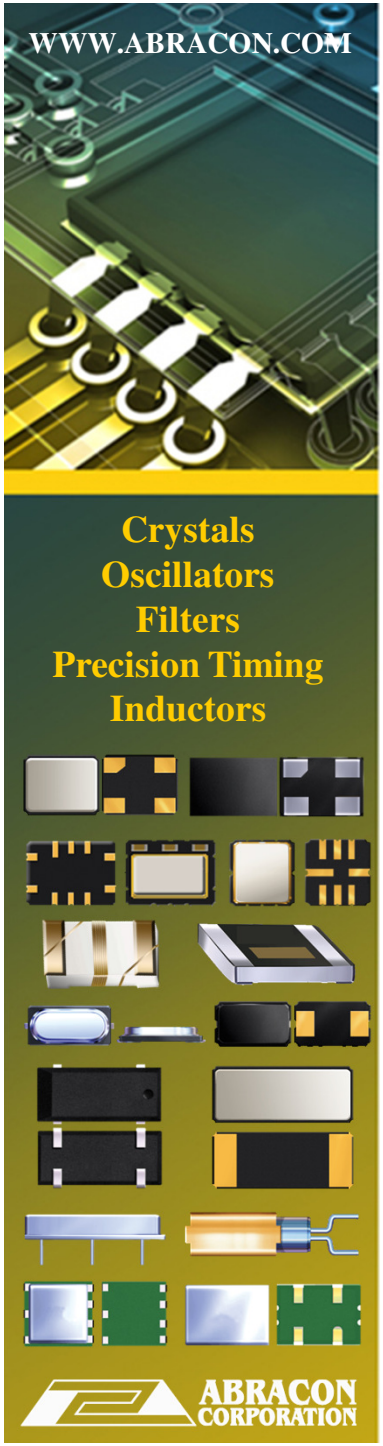
- **Tight Tolerance of 1% or 0.1nH**
- **Self Resonant Frequency Controlled within 10%**
- **Stable Inductance in High Frequency Circuit**
- **Compatible with either Reflow or Flow Soldering**



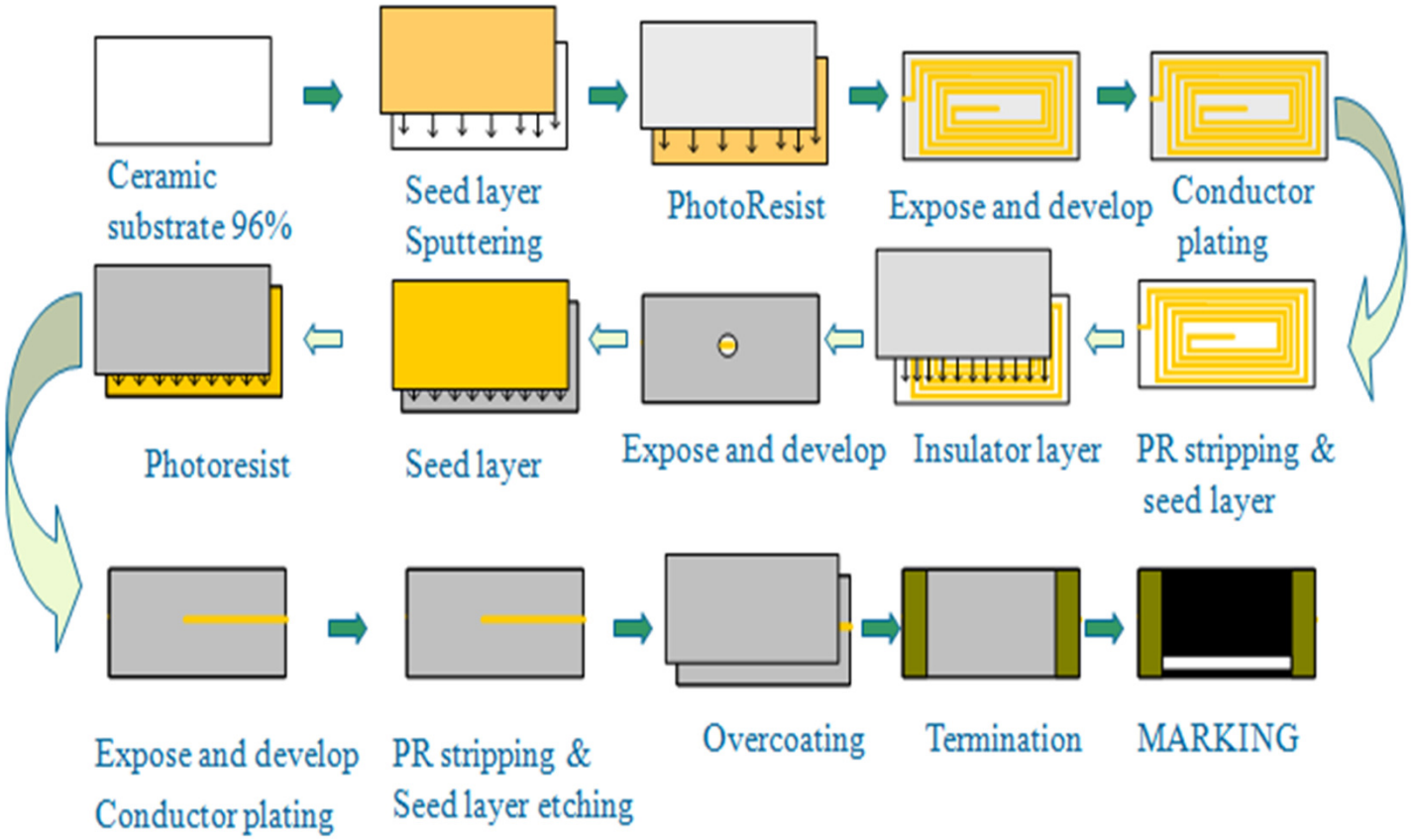
Applications:

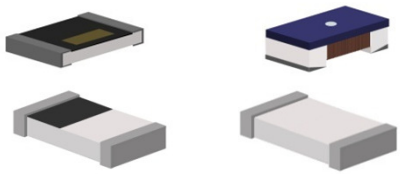
- **Cellular Telephone, Pagers and GPS Products**
- **Bluetooth Module**
- **Wireless LAN and other Communication Appliances.**
- **VCO,TCXO Circuit and RF Transceiver Module**

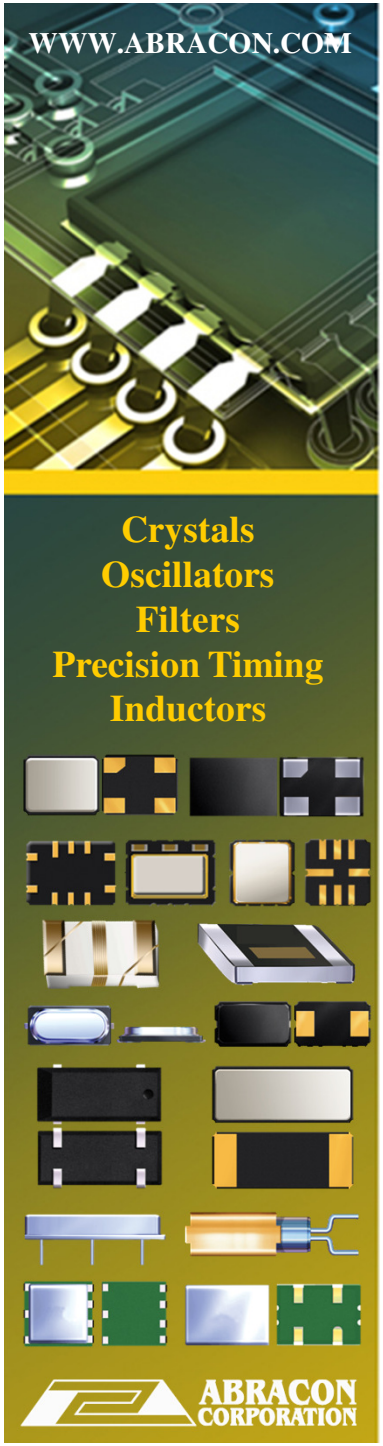




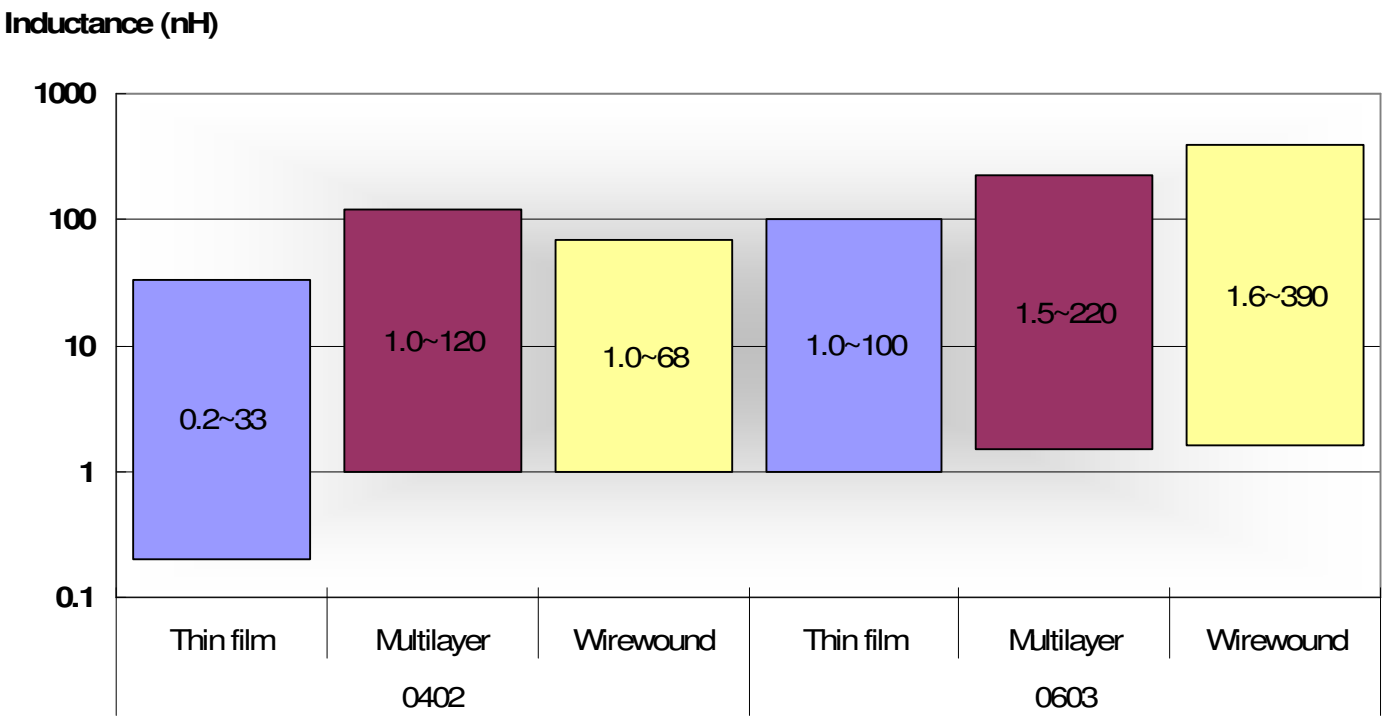
Process of Thin Film Chip Inductor

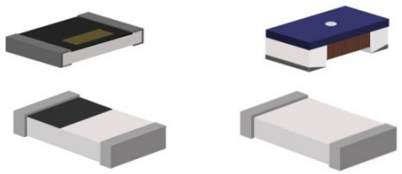


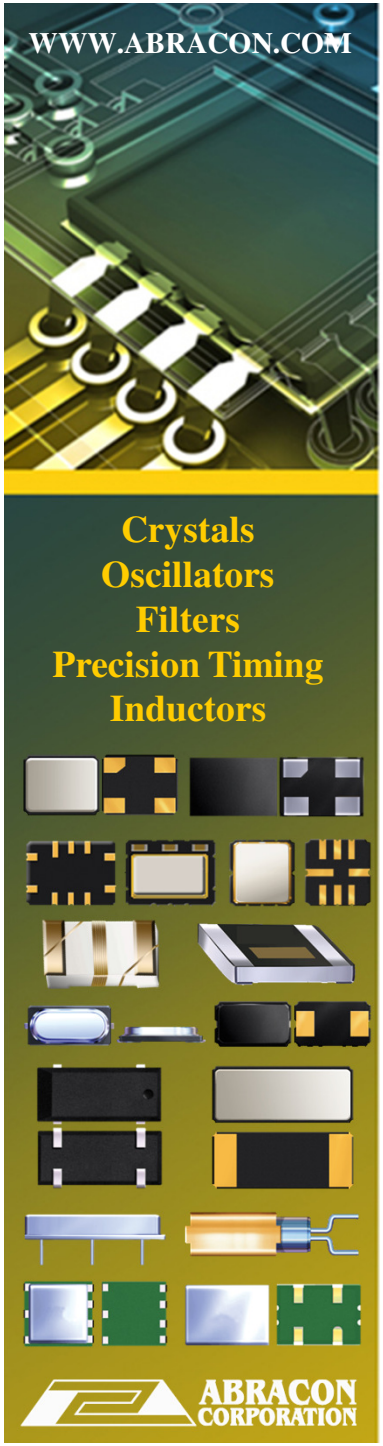




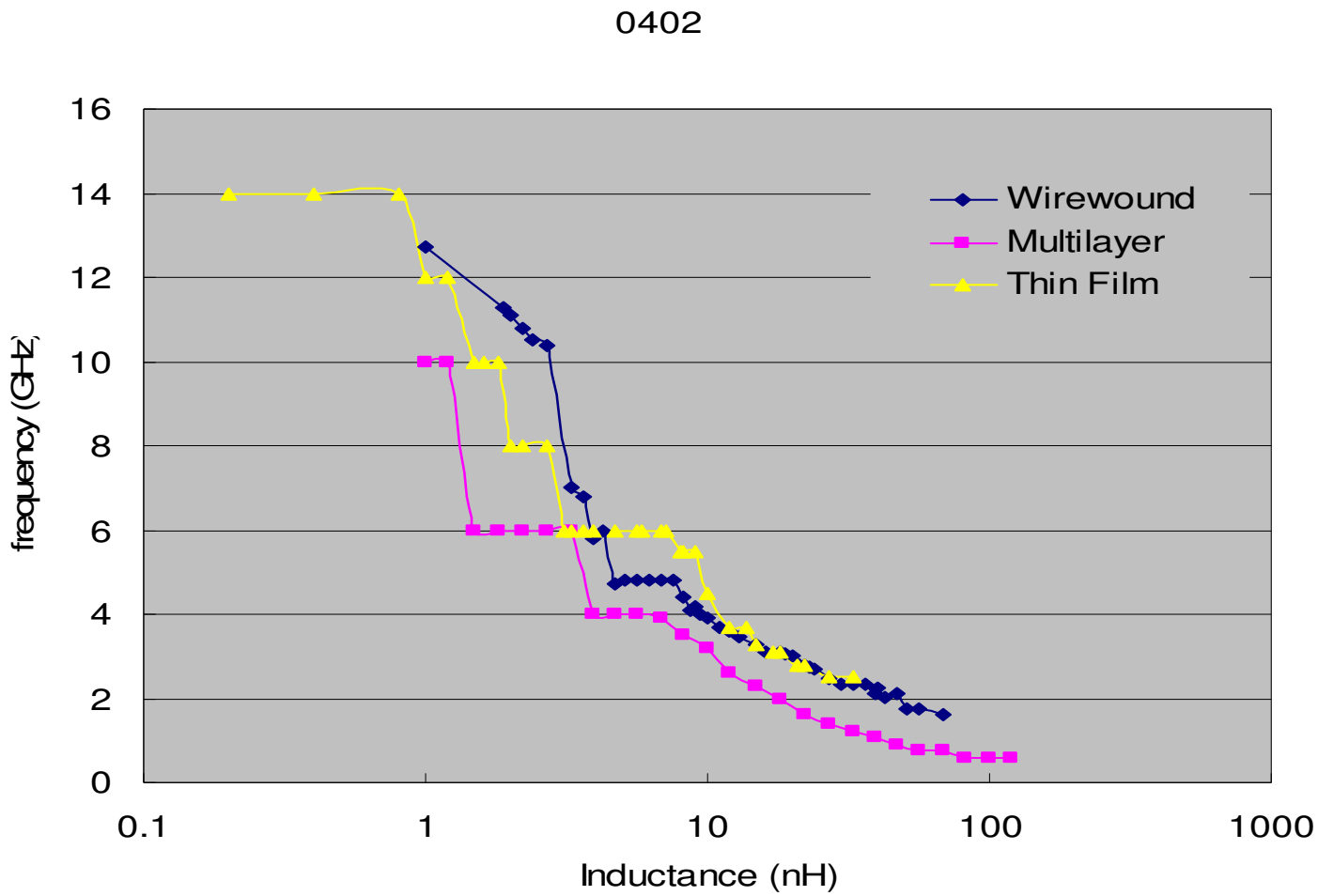
Inductance Comparison (L)

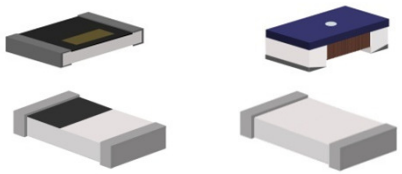


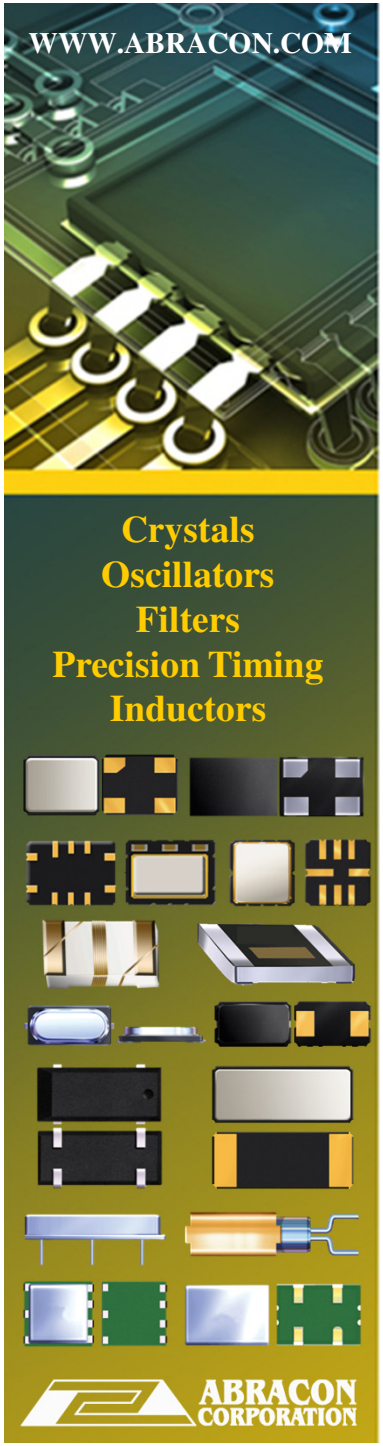




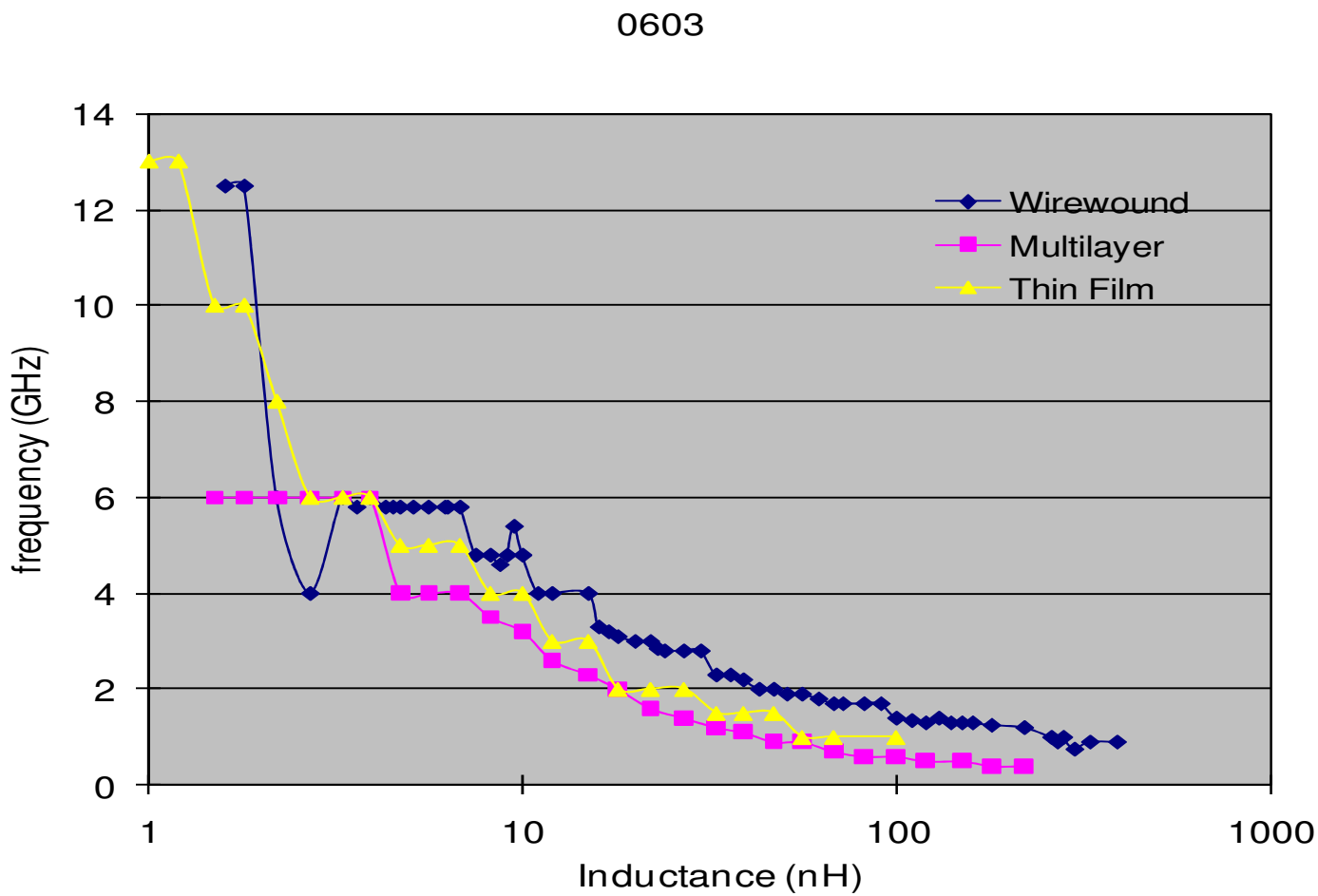
SRF Comparison

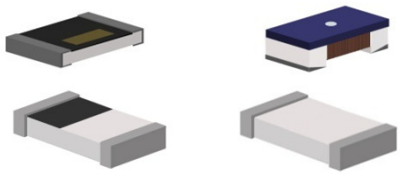


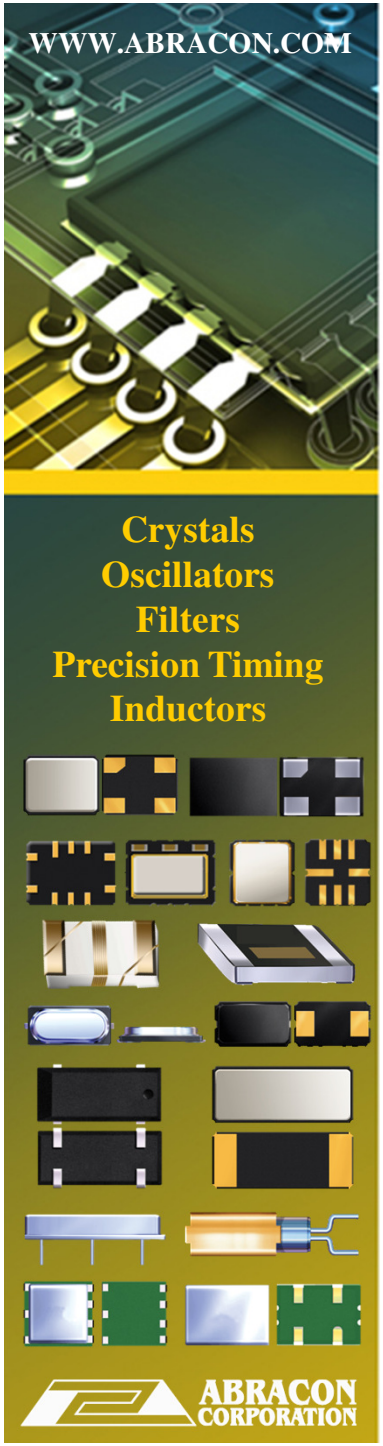




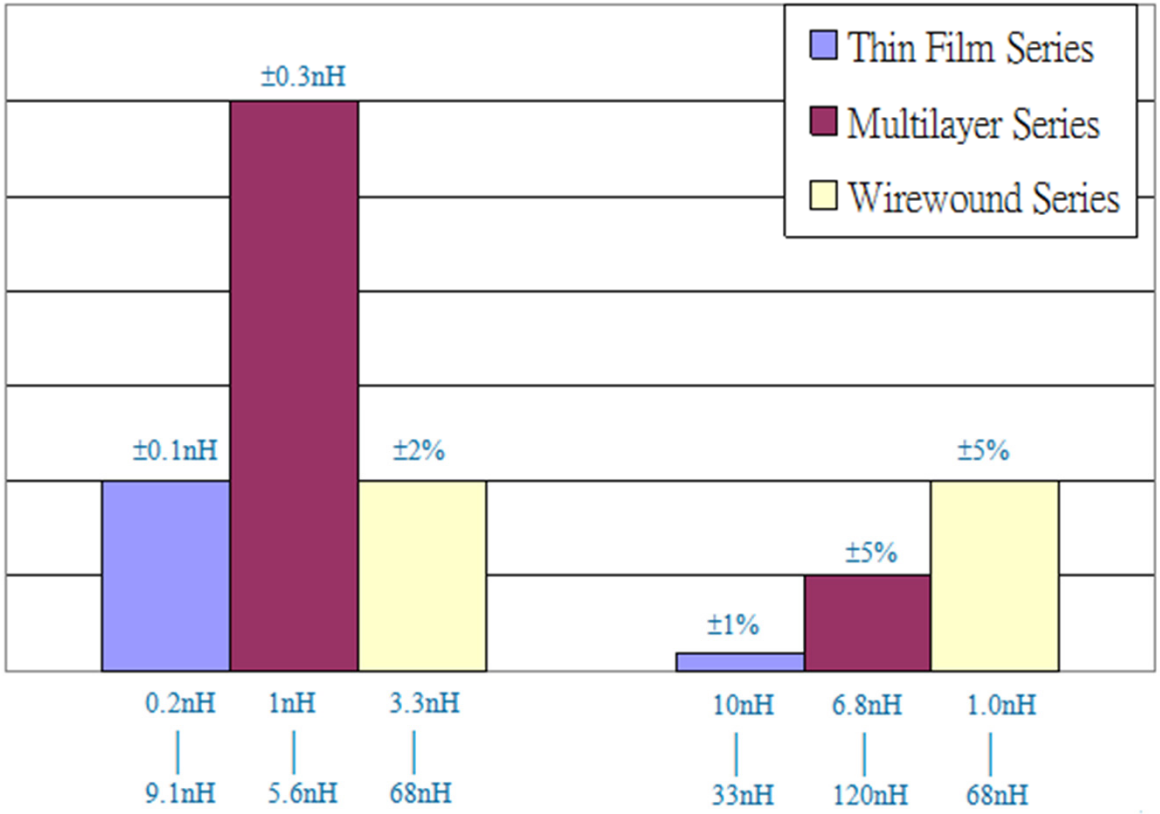
SRF Comparison- Continued

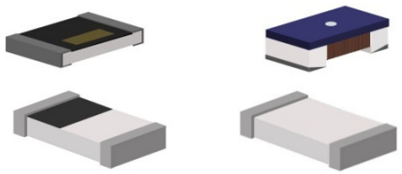


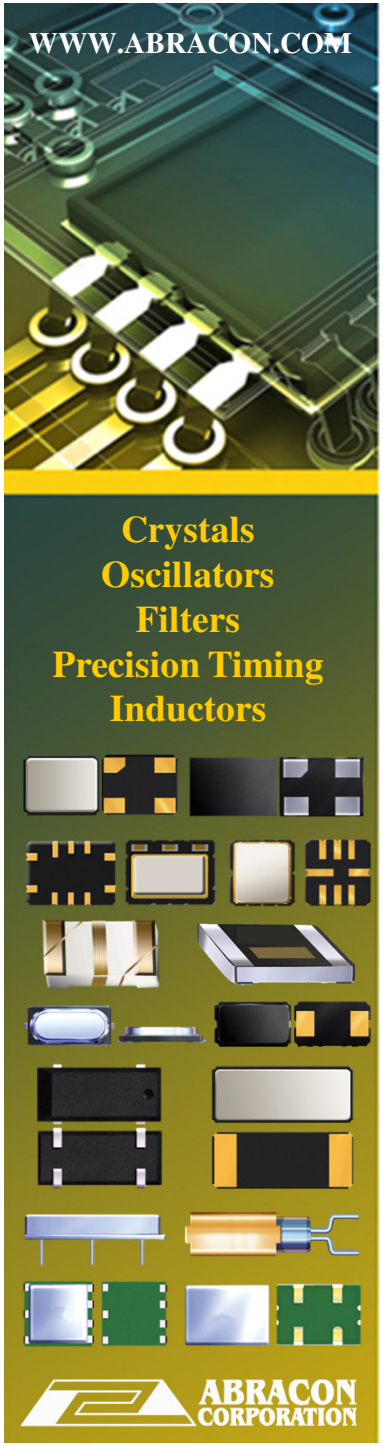




Tolerance Comparison-0402 Series

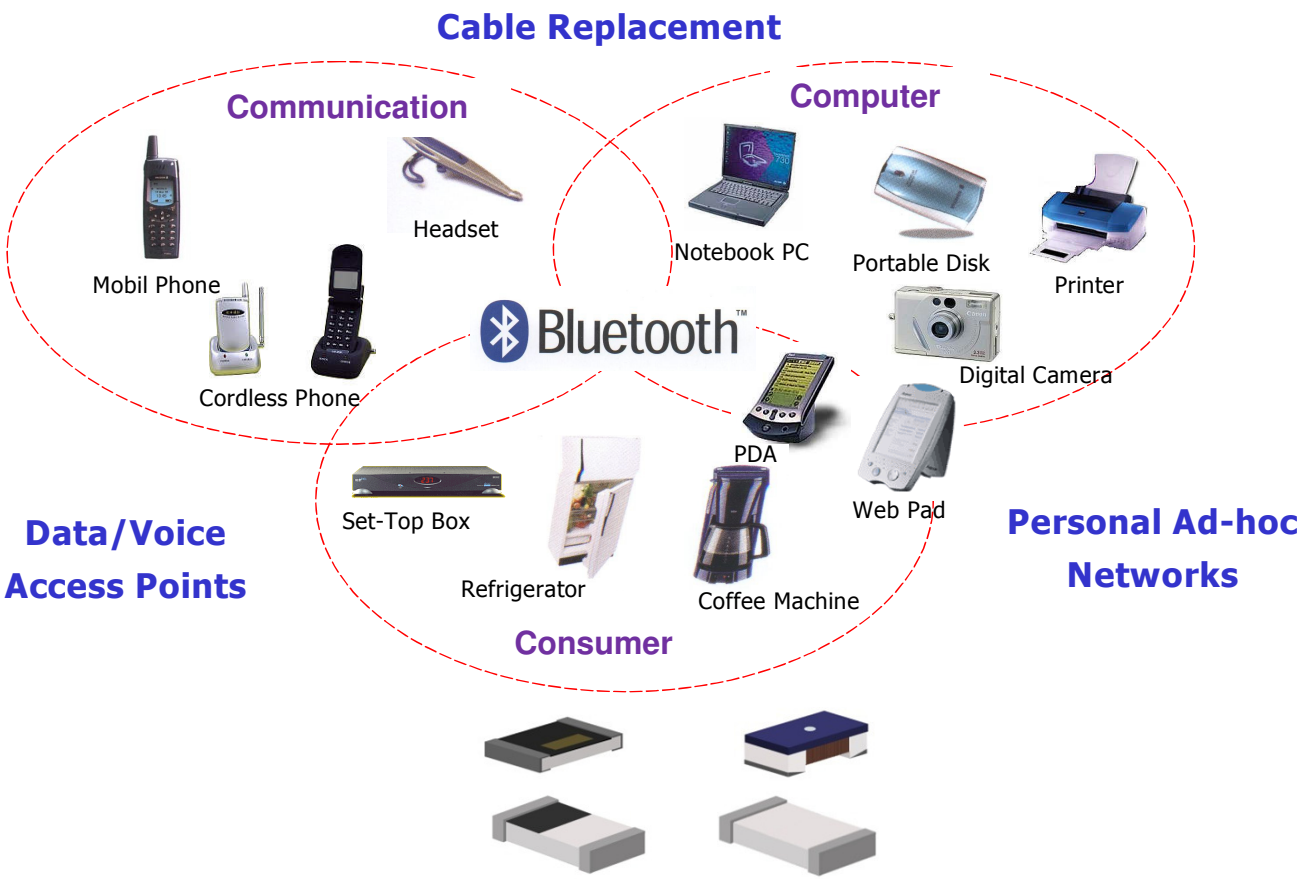


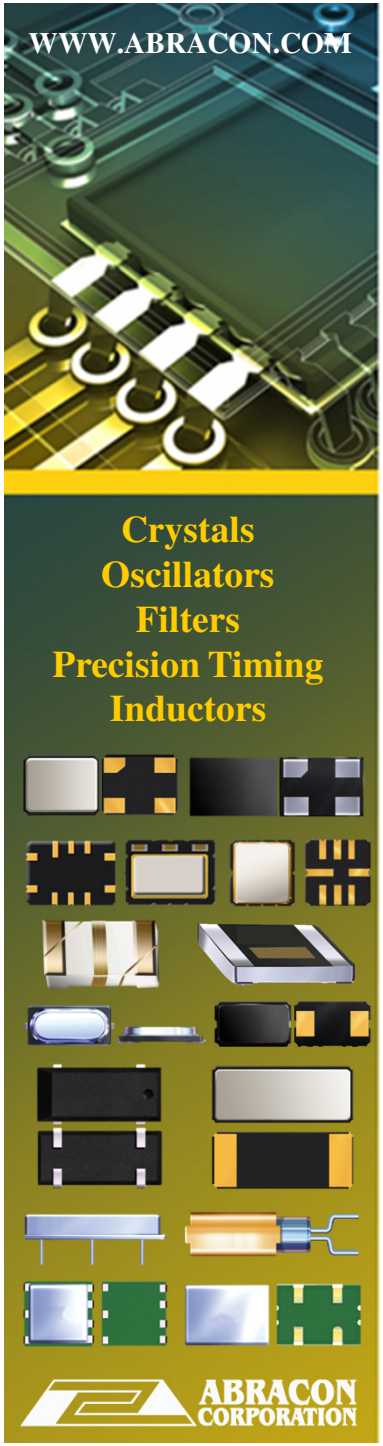




RF Chip Inductor Field Application

- Wireless LAN (Portable computer, Notebook, LAN card….)
- Bluetooth (USB port, earphone, portable PC….)
- GPS (Globe position system) (PDA, Portable phone….)
- GPRS & GSM (Portable phone)

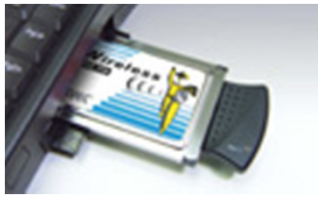


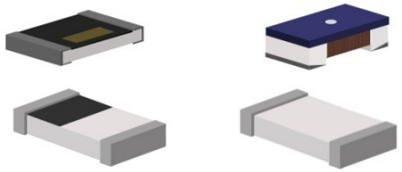


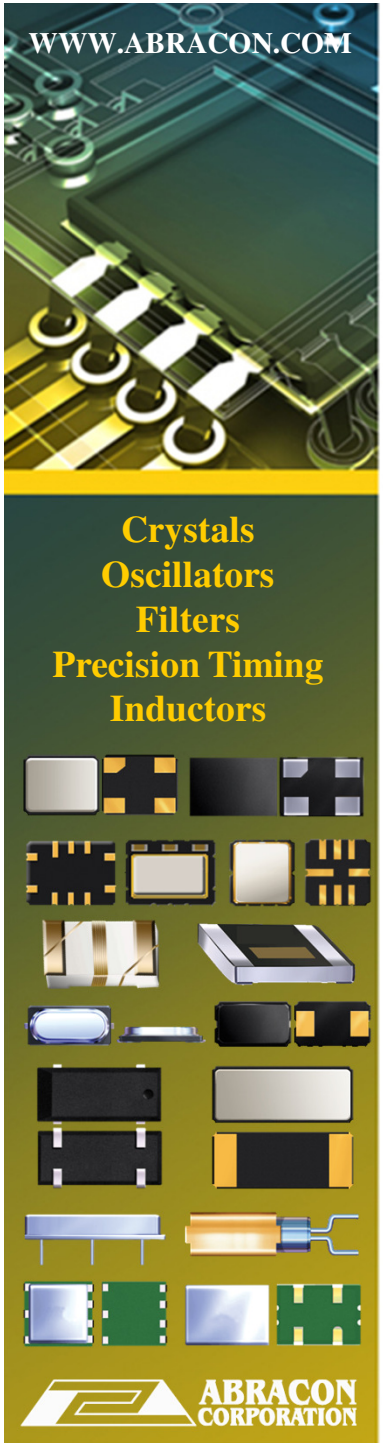
Application of High Frequency Chip Inductor (1)

Planar spiral inductors have become essential elements of communication circuit blocks such as

1. Radio frequency integrated circuits (RFICs):
2. Voltage controlled oscillators (VCO's)
3. Low-noise amplifiers (LNA's)
4. Mixers
5. Intermediate frequency filters (IFF's)
6. Matching networks
7. Bluetooth Module
8. WLAN Card(IEEE 802.11g,802.11a,a+b)

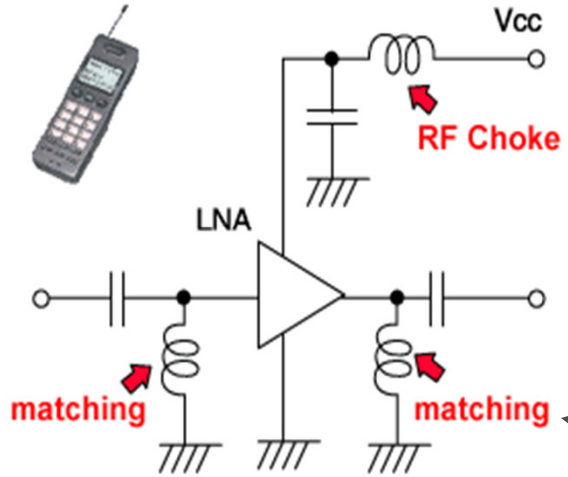






Application of High Frequency Chip Inductor (2)

for Application (LNA)

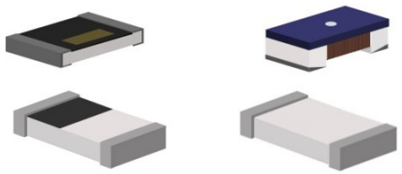


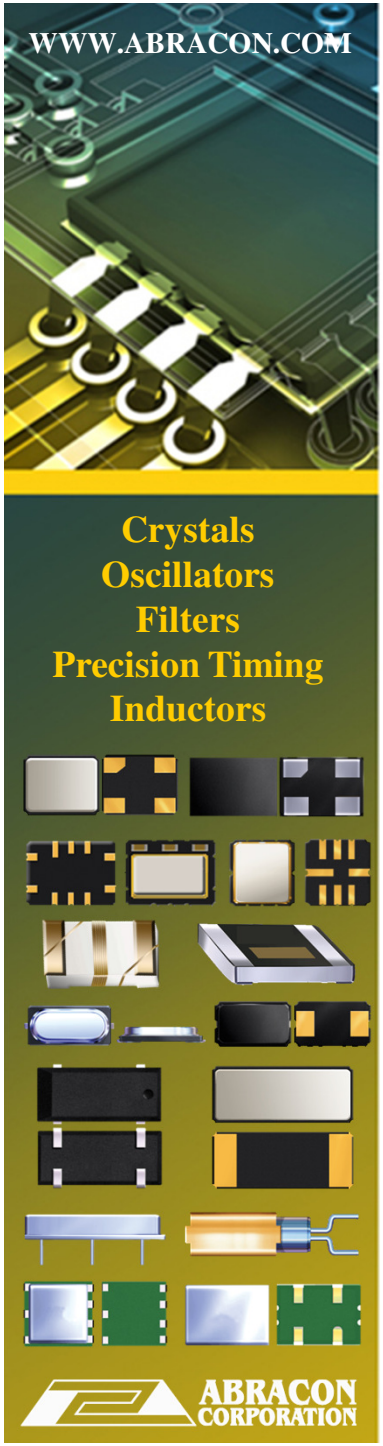
* An example of the matching circuit

Matching coil

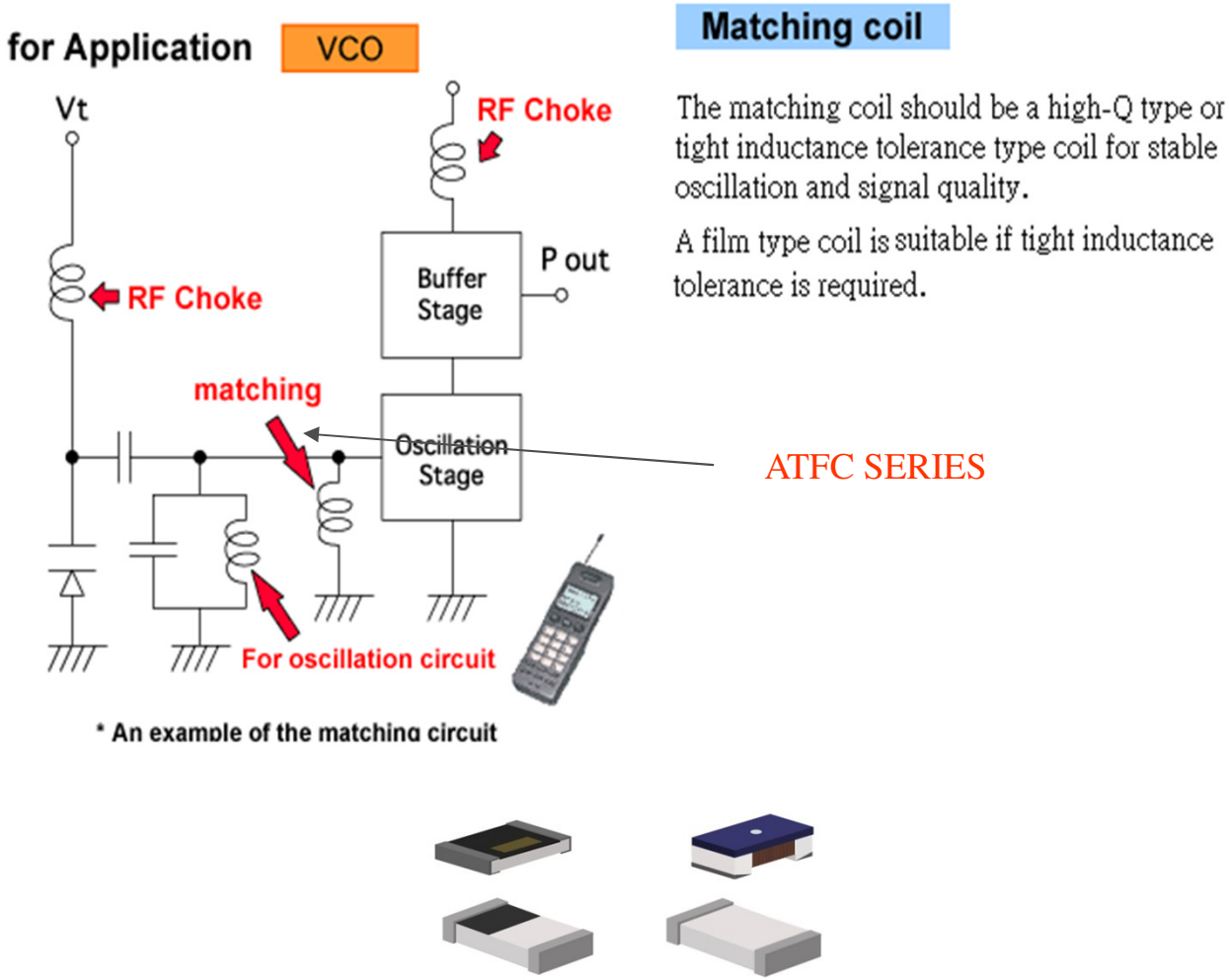
The matching coil should be a high-Q type or tight inductance tolerance type coil for improved reliability, in principle.
A thin film type coil is suitable to a receiver circuit, in particular, which requires tight inductance tolerance.

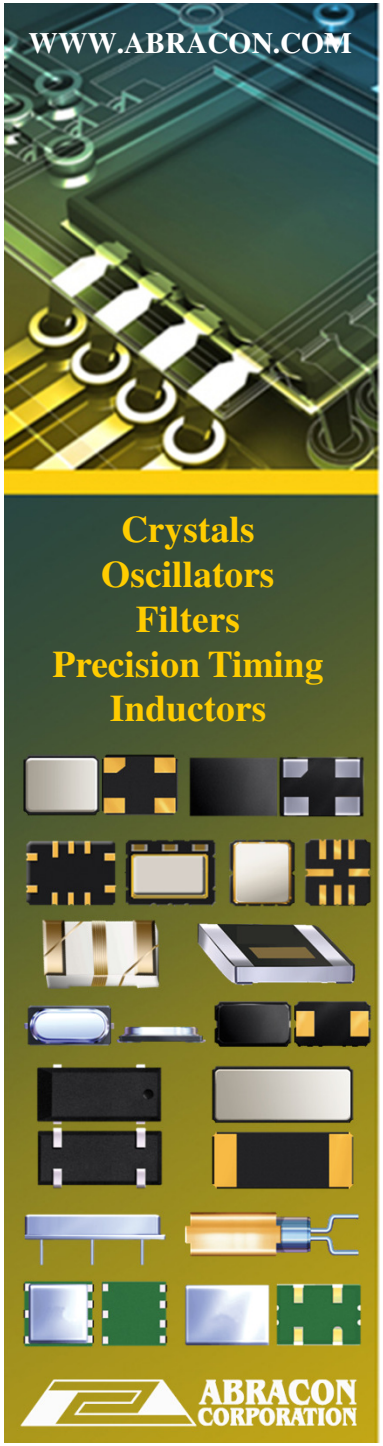
ATFC SERIES





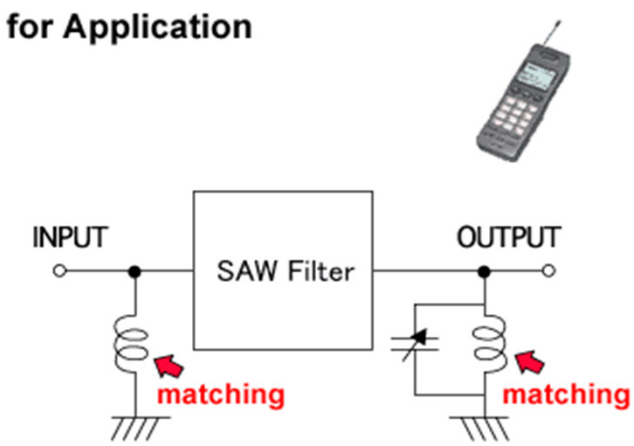
Application of High Frequency Chip Inductor (3)



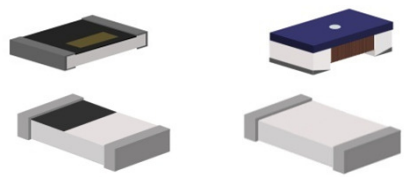


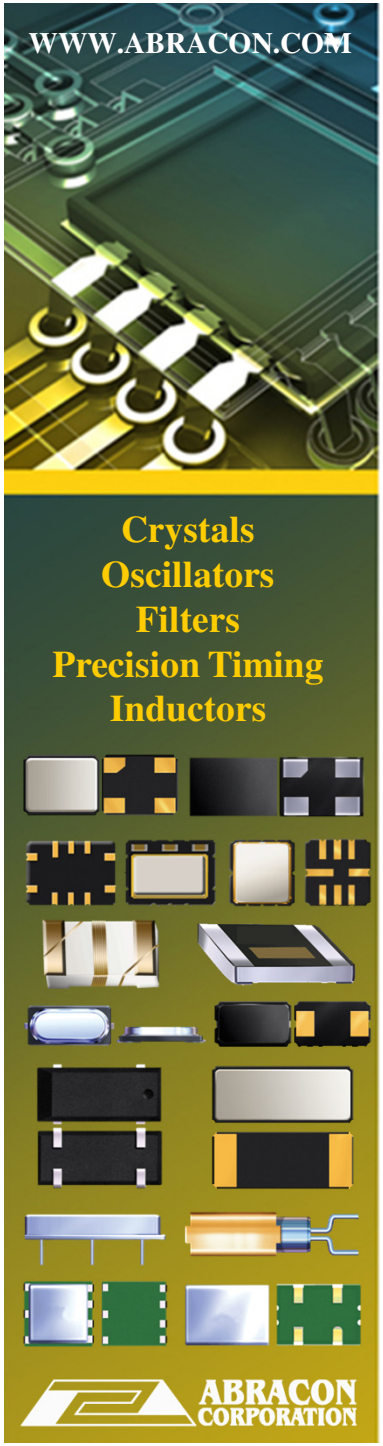
Application of High Frequency Chip Inductor (4) IF SAW Filter

- The matching coil should be a high-Q type coil to reduce signal losses. It should be a tight inductance tolerance type coil to improve the delay characteristics.
  A winding type coil is suitable if high Q characteristics are required. A film type coil is suitable if tight inductance tolerance is required.



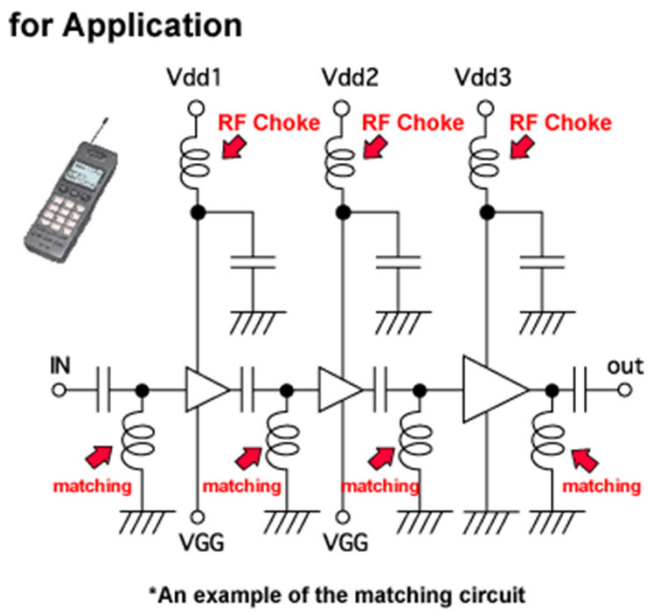
* An example of the matching circuit



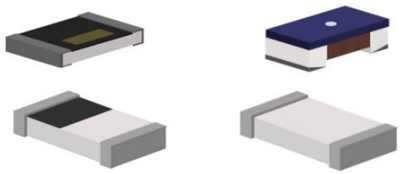


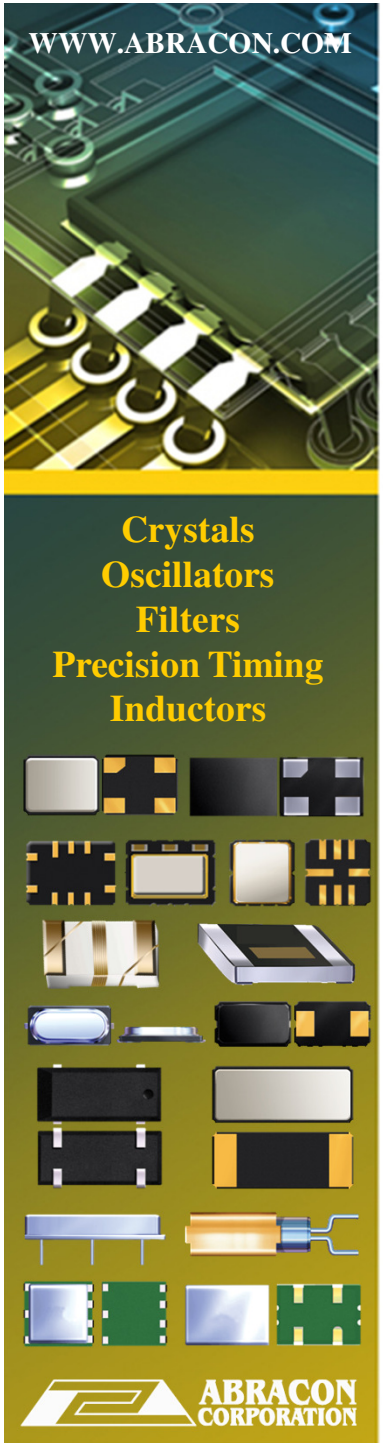
Application of High Frequency Chip Inductor (5) PA

- A multi-layer type coil is generally used.
  A thin film type coil is suitable if tight inductance tolerance is required.



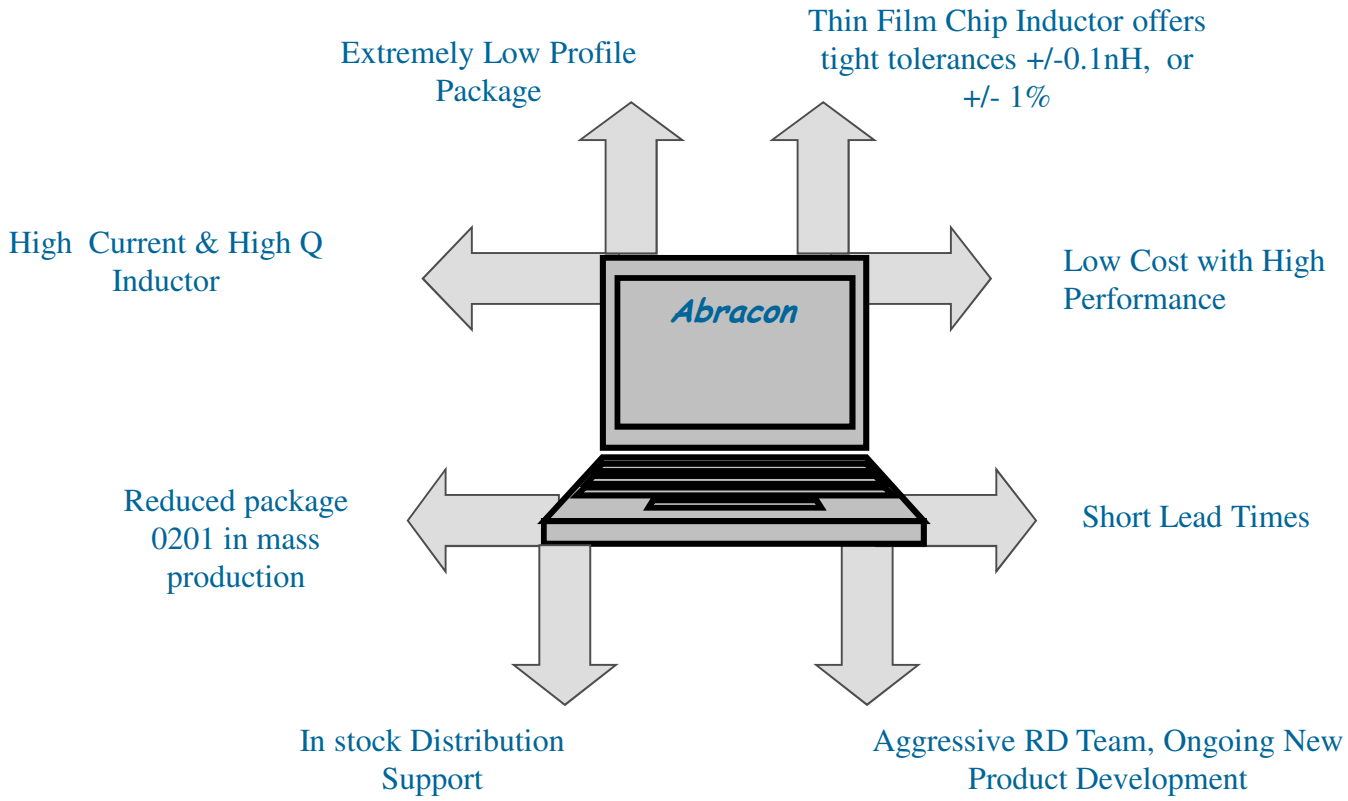
*An example of the matching circuit

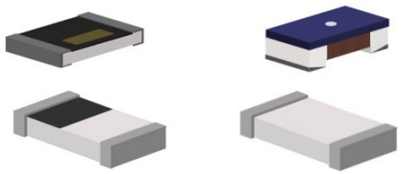


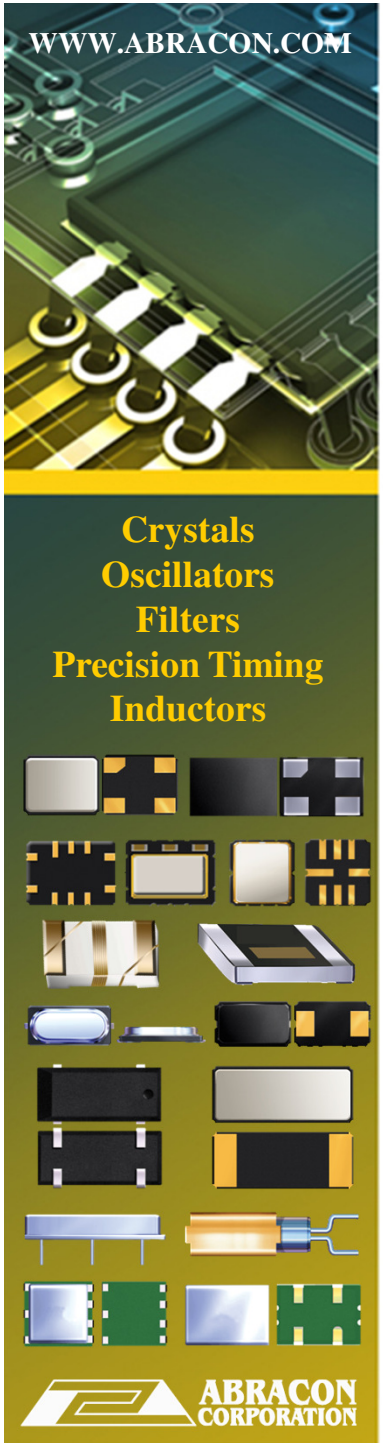


Why Choose Abracon?

High-Level Thin Film Technologies



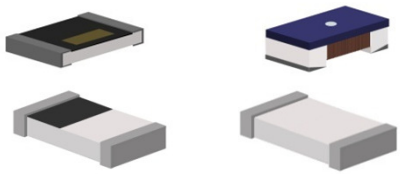


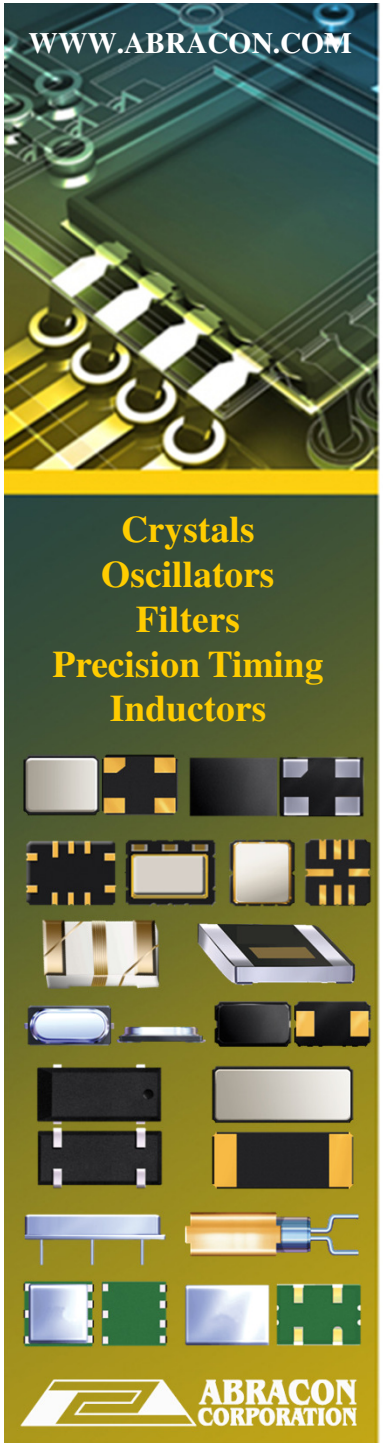


Summary
ATFC Thin Film Inductor

Advantages:

- Simple structure with single layer of copper circuit could avoid short & open circuit.
- Good stability of inductance and Q factor.
- Tight Tolerance, 2%, 1%
- It would be Lower cost in large quantity because of high yield rate
- Higher yield in thin film technology , miniature size of 0201 is key demand.
- Can reach size of 0105 , only thin film can meet the market in the near future.





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