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DIRECT

Electronics Tech.

(TRAD)

Surface Mount Air Core Inductors

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▶ Product Introduction**||| Direct will wind any Air Core Inductors for you.****Features :**

- High frequency.
- Solder coated leads ensure reliable soldering.
- Non-Flat top and bottom for mechanical stability.
- Highest possible SRFs as well as excellent Q values.

Applications :

- Pager, Cordless phone.
- High Freq. Communication Products.

Direct's ultra-miniature single layer coil has two advantages. Firstly, like all air core coils, it is free from iron losses and the non-linearity. Secondly, single layer coils have the additional advantage of low self-capacitance and thus high self-resonant frequency. Air Coils is known as "Spring Coils". Direct manufactures all types of air coils inductors.

Single layer air coil windings formula and the Q factor can be referred at Equations of Single Layer Air Coil Winding Formula and Methods.



TRAD's inductance is unaffected by the current it carries. This contrasts with the situation with coils using ferromagnetic cores whose inductance tends to reach a peak at moderate field strengths before dropping towards zero as saturation approaches. (TRAD) series features better Q-factor, greater efficiency, greater power handling, highest possible SRFs, and less distortion.

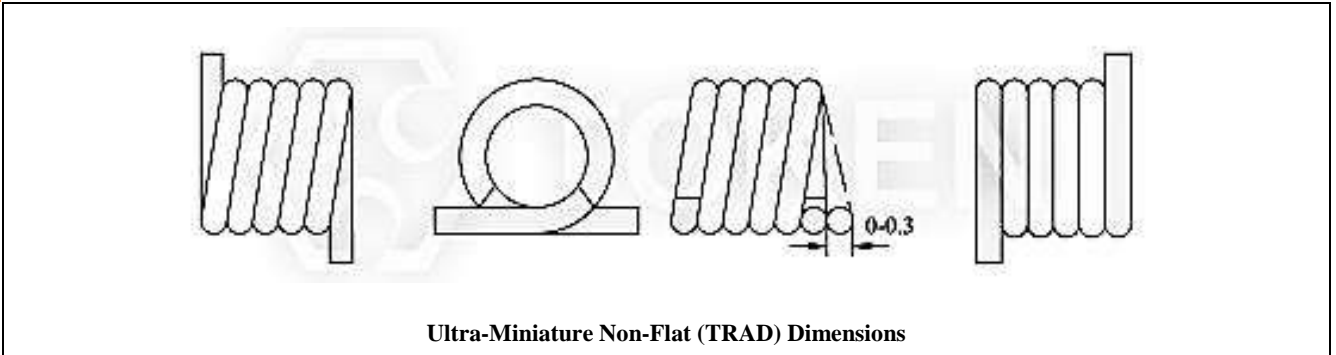
Direct RF chip inductor non-flat top air core inductor conforms to the RoHS directive and Lead-free. Application of specific designs also available including different inductance values and Q specifications adjusted to frequency requirements.

Custom parts are available on request. Direct will also produce devices outside these specifications to meet specific customer requirements, please contact our sales for more information. For more information, please link to Direct official website "[RF Inductors](#)".



► **Configurations & Dimensions**

Configurations & Dimensions (Unit: mm) (TRAD)



Ultra-Miniature Non-Flat (TRAD) Dimensions

● Note: Design as Customer's Requested Specifications.

► **Order Codes**

Order Codes (TRAD)

TRAD	R	-	1.0	×	3.5	×	10
Part Number	Type of Winding		Wire Diameter (mm)		Inner Diameter (mm)		Numbers of Turns
TRAD	R	Clockwise winding					
	L	Counter clockwise winding					

● Note: Manufacturing according to customer's specification.

► General Information

Direct Cuts Inductor Size and Cost

Direct utilizes the latest technology enabling the most cost-effective designs in manufacturing inductors. The 0402, 0603, 0805, 1206, 1210, to 1812 series of RF Miniature Inductors all contain wire wound or multi-layer technology with material substrate in ceramic or ferrite cores. Thus providing economic cost with the ultimate performance demanded by today's RF applications. Inductors feature high Q factor, SRFs (self-resonant or series resonant frequency), and I_{dc} (maximum current carrying capacity).

How to quickly search RF inductors for all of the characteristics?

Searching and comparing data sheets of inductor manufacturers can be time consuming. Direct's Parameter Sorting Search Mode allows selection of inductors based on different parameters. To enter Searching Mode:

- By entering just the inductance value,
- By sorting parameter to narrow down searching range,
- Or by enter keyword / part number / size dimensions L*W*H to partial or exact searching.

Inductors Selection Notes:

For choke applications, the SRFs (self-resonant or series resonant frequency) is the frequency that provides the best signal blocking.

- At the SRF, impedance is at its maximum.
- At frequencies below the SRF, impedance increases with frequency.
- At frequencies above the SRF, impedance decreases with frequency.

For higher order filter or impedance matching applications, in general, the choice of inductance value typically determines the SRF and vice versa. The higher the inductance value, the lower the SRF, due to increased winding capacitance. It is more important to have a relatively flat inductance curve (constant inductance vs. frequency) near the required frequency. This suggests selecting an inductor with an SRF well above the design frequency. A rule of thumb is to select an inductor with an SRF that is a decade (10X) higher than the operating frequency.

What is Q factor? High Q leads to low insertion loss, minimizing power consumption, and narrow bandwidth. It is important if the inductor is to be used as part of an LC (oscillator) circuit or in narrow band pass applications. In general, wire wound inductors have much higher Q values than multilayer inductors of the same size and value. Direct's material science and manufacturing expertise effectively bridges the gap between wire-wound performance and multi-layer inductors with its TRMF100505 (EIA 0402) and TRMI160808 (EIA 0603) series.

How does current requirement affect inductor? Higher current requires larger wire or more threads of the same wire size to keep losses and temperature rise to a minimum. Larger wire lowers the DCR and increases the Q factor. Using a ferrite core inductor with a lower turn count can achieve higher current capacity and lower DCR. Ferrite, however, may introduce new limitations such as larger variation of inductance with temperature, looser tolerances, lower Q, and reduced saturation current ratings. Direct's ferrite inductors with open magnetic structures, will not saturate, even at full rated current.

