ABOUT US

As a leading manufacturer of air coils for microelectronics applications, Microwave Components, Inc. offers a comprehensive line of standard as well as derivative or custom components, engineered to meet the widest possible range of requirements.

MCI's entire product offering is available in a variety of materials: gold, silver, copper, copper plated gold, aluminum and nickel copper alloy, in both bare and insulated wire.

MCI inductances range from 1 nH to 1000 nH. Customers have reported using MCI coils at frequencies as high as 50 GHz. Configurations include: spaced or non-spaced, bonded or non-bonded windings; stripped or non-stripped, tinned or non-tinned leads.

All of MCI coils afford multi-octave performance, high Q and low loss. Applications include; filters, switches, mixers, amplifiers, attenuators and multipliers.

MCI

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Microwave Components, a small, veteran owned, leading producer of custom miniature air coils, has been proudly delivering to the aerospace, defense, and space markets since 1978.

Since our inception, MCI has been an industry leading developer and manufacturer of miniature microelectronic coils by maintaining an unparalleled record of delivery, performance, quality and repeatability.

Supporting this record is a carefully controlled production process that incorporates the highest possible standards of material selection and quality control from incoming inspection to final assembly, packaging and delivery.

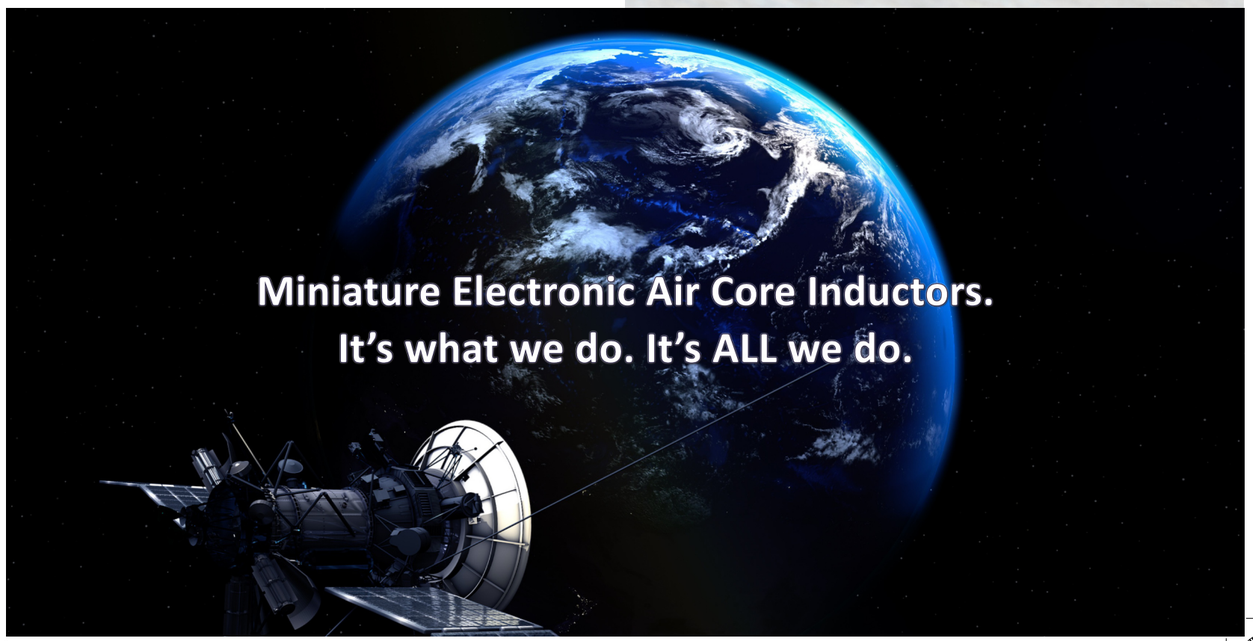
To assure the quickest possible response to customer requirements, MCI maintains a wide inventory of basic materials, including copper, gold and nickel copper alloys, as well as specialty metals that include aluminum, silver, and gold-plated copper.

All materials are purchased in accordance with military specifications, regardless of application. MCI material suppliers provide a certificate of compliance (C of C), which can be shared with MCI's customers. MCI products can be traced to the original wire source.

During the production process, MCI uses machines that are custom designed to meet these very demanding requirements. The process itself takes place in a tightly controlled environment designed to eliminate dust and impurities. Frequent inspection steps assure the tightest possible control of quality and configuration integrity. The result is an exceptional product that has virtually no customer rejections.

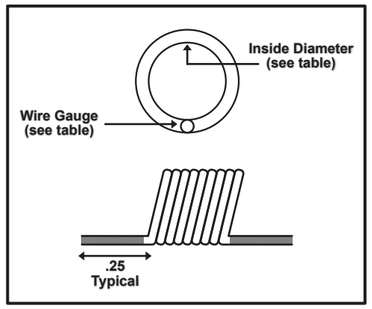
MCI supplements this tightly-controlled in-house production capability with the services of a technical staff that is available to discuss customer applications and design requirements in a knowledgeable and helpful manner. Assistance may be obtained at any time by calling MCI at (978) 453-6016 or by emailing Sales@mcicoils.com.

Brochure design by: Something More Designs - Saint Marys, PA



DEFINITION OF TERMS

Figure 1



The process of specifying a desired value of inductance is a relatively simple one. It is based on the conventional terms and abbreviations that identify the component parameters (see Inductance Calculation on page 3).

MCI's part number (P/N) includes four alpha-numerical groupings: (1) the number of turns in the coil; (2) the inside diameter of the coil (Figure 1); (3) the American Wire Gauge (AWG) of the wire; and (4) the coil material and composition.

The first two numerical groupings are relatively self-explanatory. The first being the number of turns in the coil. The second grouping is composed of the inside coil diameter and gauge of the wire. The gauge selection available at MCI ranges from 0.001 inches to 0.0126 inches. In terms of AWG numbers, the range is from AWG 28 to AWG 50. A complete breakdown of these dimensions is presented in the Design Guide on page 3.

The final grouping represents the wire material and composition of the coil and is an abbreviation identifying the wires composition or metal and its mechanical characteristics. The more popular of these abbreviations can be found in the Design Guide on page 3.

HOW TO SPECIFY

As previously discussed, each MCI part number is divided into the same categories and sequences. Using the Design Guide as a source of information, one can determine a part number for their specific application or requirement.

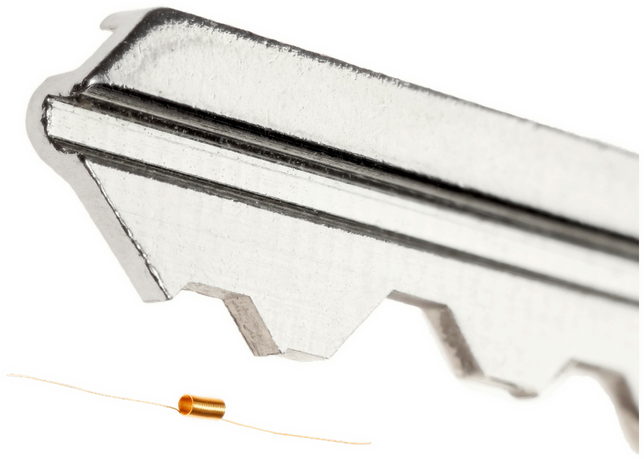
As an example, let's assume that your requirement calls for an inductance value of 65 nH. In order to create a component with this value, it is determined that the specifications require a coil made using insulated gold, with the leads stripped, having 15 turns bonded together, and an inside dimension of 0.018 inches using 47-gauge wire.

Referring to the Design Guide, the part number would be as follows:

1. Number of Turns - 15
2. Inside Diameter - 0.018 inches
3. Wire Gauge - #47
4. Wire Composition - GCCAS

With this information, we obtain the part number 15-1847-GCCAS.

Using the above guidelines, together with the included data, it is possible to develop a part number for any required inductance. Any remaining questions or assistance can be addressed by simply calling MCI's customer service team at (978) 453-6016 or by emailing Sales@mcicoils.com.



MADE IN THE USA

DESIGN GUIDE

Provide MCI with the inductance required, along with any other key parameters (i.e. material, bonding method, height/length restrictions, max current, cost targets, application requirements, etc.) and we will calculate the coil dimensions, build, and send samples in one week (ISO 9001:2015 Registered).

ANOTHER EXAMPLE P/N 5-1847-CA

NUMBER OF TURNS	INSIDE DIAMETER (MLS)	WIRE GAUGE	COIL TYPE
5	18 (.018" DIAM.)	47 (#47 AWG 0.0014" DIAM. 0.036 MM)	CA (COPPER COIL; POLYNYLON INSULATION; TURNS BONDED TOGETHER)

Inductance for this example is 15.5 nH, calculated using the equation below.

STANDARD INSIDE COIL DIAMETER

INCH MM	0.010 0.25	0.013 0.33	0.015 0.38	0.018 0.45	0.020 0.51	0.025 0.64	0.030 0.76	0.035 0.89	0.040 1.0	0.045 1.14	0.050 1.27
TYP. AWG WIRE SIZE FOR COIL DIAM.	#50	#50	#50	#50	#48	#47	#44	#42	#42	#42	#40
	#48	#48	#48	#48	#47	#44	#42	#40	#40	#40	#38
	#47	#47	#47	#47	#46	#42	#40	#38	#38	#38	#36
	#44	#46	#46	#46	#44	#40	#38	#36	#36	#36	#34
		#44	#44	#44	#42	#38	#36	#34	#34	#34	#32
			#42	#42	#40	#36	#34	#32	#32	#32	#30
			#40	#40	#38		#32		#30	#30	#28
			#38	#38	#36						
			#36	#36							

COIL MATERIAL AND COMPOSITION

A	COPPER COIL, POLYNYLON INSULATION, TURNS ARE NOT BONDED TOGETHER
CA	COPPER COIL, POLYNYLON INSULATION, TURNS ARE BONDED TOGETHER
CAT	COPPER COIL, POLYNYLON INSULATION, TURNS ARE BONDED TOGETHER, LEADS ARE TINNED
SA	COPPER COIL, POLYNYLON INSULATION, TURNS ARE SPACED AND SEPARATED ONE WIRE WIDTH
SAT	COPPER COIL, POLYNYLON INSULATION, TURNS ARE SPACED AND SEPARATED ONE WIRE WIDTH, LEADS ARE TINNED

GA	GOLD COIL, BARE WIRE, TURNS ARE TOUCHING
GSA	GOLD COIL, BARE WIRE, TURNS ARE SEPARATED ONE WIRE WIDTH
GSCAS	GOLD COIL, POLYIMIDE INSULATION, TURNS ARE SEPARATED ONE WIRE WIDTH, LEADS ARE STRIPPED
GCCAS	GOLD COIL, POLYIMIDE INSULATION, TURNS ARE BONDED TOGETHER, LEADS ARE STRIPPED
NCA	NICKEL-COPPER ALLOY WIRE, POLYNYLON INSULATION, TURNS ARE BONDED TOGETHER

TYPICAL AWG WIRE SPECIFICATIONS

WIRE SIZE (AWG)	BARE WIRE DIAMETER (INCHES)	SINGLE BUILD TOTAL DIAMETER (INCHES)	OHMS/ 1000 FEET (25°C)
28	0.0126	0.0137	65.31
29	0.0113	0.0123	81.22
30	0.01	0.0109	103.7
31	0.0089	0.0097	130.9
32	0.008	0.0088	162.1
33	0.0071	0.0078	205.7
34	0.0063	0.007	261.3
35	0.0056	0.0062	330.7
36	0.005	0.0056	414.8
37	0.0045	0.005	512.2
38	0.004	0.0045	648.2
39	0.0035	0.0039	846.6
40	0.0031	0.0035	1079
41	0.0028	0.0031	1323
42	0.0025	0.0028	1659
43	0.0022	0.0025	2143
44	0.002	0.0022	2593
45	0.00176	0.00195	3348
46	0.00157	0.00175	4207
47	0.0014	0.0016	5291
48	0.00124	0.0014	6745
49	0.00111	0.00125	8417
50	0.00099	0.00115	10580

INDUCTANCE CALCULATIONS

(CLOSE APPROXIMATION)

$$L = \frac{17N^{1.3}\ (D + D1)^{1.7}}{(D1 + S)^{0.7}}$$

L = NANOHENRIES
N = NUMBER OF TURNS
D = INSIDE DIAMETER (INCHES)
D1 = BARE WIRE DIAMETER (INCHES)
S = SPACE BETWEEN TURNS (INCHES)