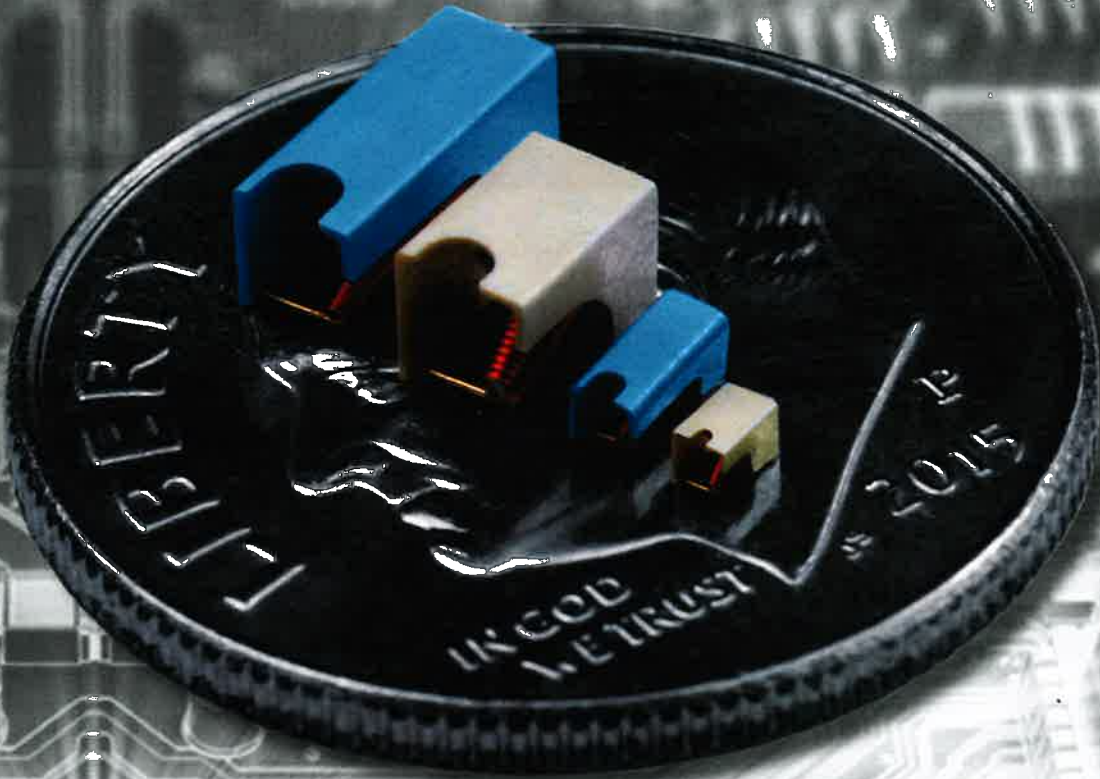




PICONICS

High-Quality Micro-Electronic Inductors



Broadband Conical Inductors



Broadband Conical Inductors

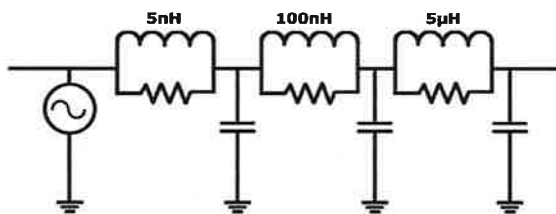
The Piconics broadband conical inductor is ideal for applications ranging from test instrumentation to microwave circuit design. This broadband inductor makes an excellent bias tee for use in communication platforms and RF test setups out past 65 GHz. The unique broadband response of the coil is attributed to precision winding and insulation stripping along with selective gold plating and powdered iron fill material. Piconics offers broadband conical inductors in SMT and flying lead versions along with various size, current handling and frequency ranges.



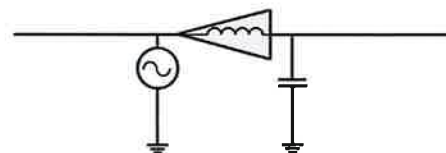
Conventional Method

Vs.

Conical Method

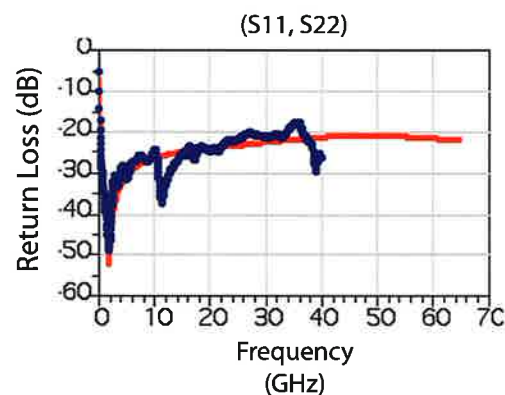
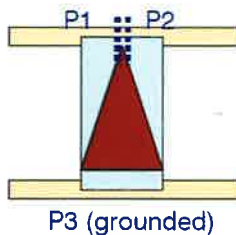
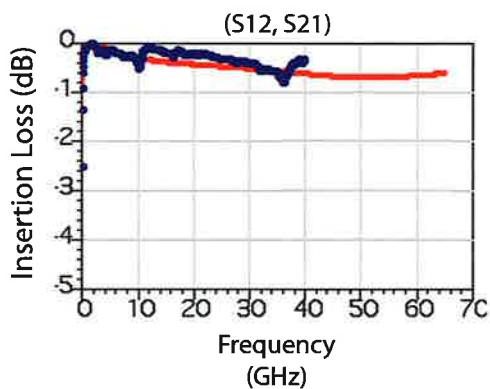


- ▶ More Parts & Real Estate
- ▶ Less Reliability
- ▶ Greater Insertion Loss



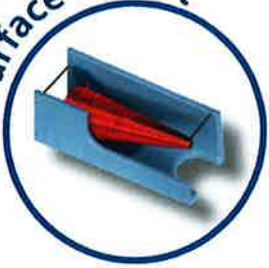
- ▶ Single Component
- ▶ Enhanced Reliability
- ▶ Low Insertion Loss

65+ GHz Performance



Modelithics®
Vendor Partner

Surface Mount



Designed for automated assembly of broadband circuits up to 65 GHz. The SMT series conical inductors come packaged in an LCP Carrier allowing assembly with automated pick and place equipment. The specialized carrier automatically sets the mounting angle of the coil and holds the coil leads in position for direct mounting to the landing pads minimizing the capacitance at this connection. All SMT conicals are available in Tape & Reel packaging.

Flying Lead



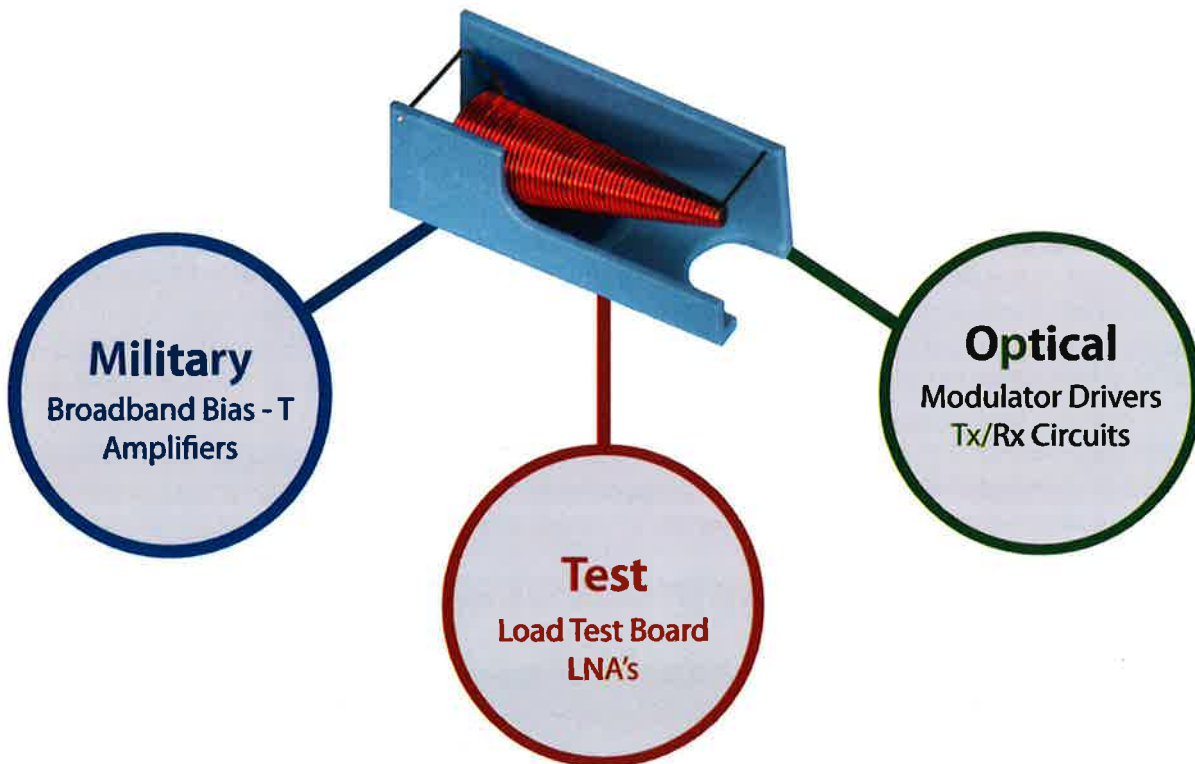
The Flying Leads Conical series offers the widest variety of conical inductors for applications past 65 GHz. The inductor comes as a coil unit only, which allows for the highest performance in the smallest spaces. Both solderable and wire bondable versions are available. Current handling capabilities up to 2.5 amps.

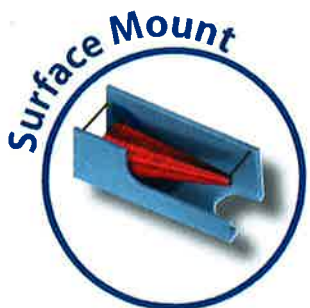
CCM Series



The CCM series come premounted on a 10 mil alumina substrate for chip & wire applications. The substrate has an integrated 50 ohm microstrip with soft gold terminations suitable for wire bonding. Conicals come premounted at the proper angle to reduce coupling with the substrate.

Applications





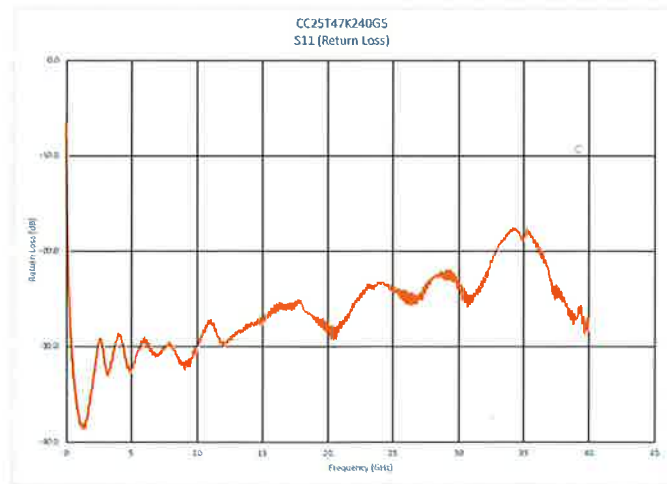
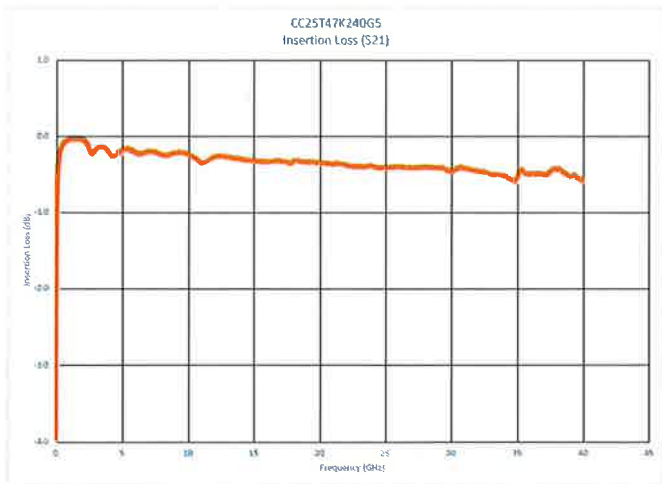
SMT Conical Inductors

SMT Conicals

Series	Part Number	L (uH) @ 10 MHz	I max (mA)	Upper Freq. Limit Typ. (GHz)	DCR Typ. (Ohms)	Wire Size (AWG)	Carrier Color	Carrier
Micro SMT	CC20T44K240G5-C	0.17	325	65+	0.3	44	Tan	Micro
	CC25T47K240G5-C	0.25	230	65+	0.8	47	Tan	Micro
SMT	CC19T40K240G5-C	0.22	700	30	0.18	40	Blue	A
	CC45T47K240G5C2	0.84	160	65+	1.6	47	Tan	A
	CC36T44K240G5-C	0.6	300	40+	0.65	44	Tan	A
	CC21T36K240G5-C	0.425	1000	36	0.14	36	Tan	B
	CC50T40K240G5-C	1.65	400	25	0.625	40	Blue	C
	CC82T44K240G5-C	6.7	180	15	2.83	44	Tan	C
	CC110T47K240G5C	8	100	65+	6.55	47	Tan	C

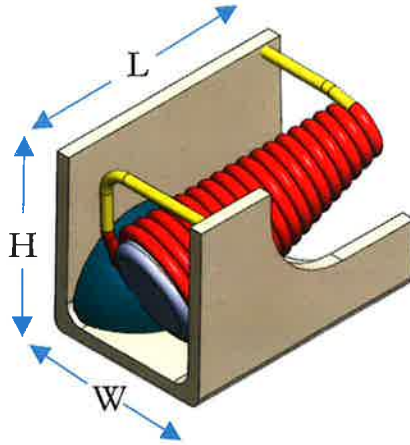
Custom conicals available upon Request - Contact Piconics for more info.
S-Parameters available @ www.piconics.com

Frequency Response



Mechanicals

- ▶ All dimensions in inches
- ▶ Not drawn to scale



Carrier Style	Length (L) (Inch)	Width (W) (Inch)	Height (H) (Inch)
Micro SMT	0.060	0.040	0.040
Carrier A	0.110	0.050	0.050
Carrier B	0.150	0.100	0.105
Carrier C	0.230	0.090	0.096

Environmental

Operating Temp.	-55°C to +155°C	
Storage Temp.	-55°C to +155°C	
RoHS Compliant	Yes	
Outgas	Meets ASTM E595 (Coil & Housing Only, Alt Epoxy Required)	
MSL Rating	1	
Soldering:	Max Temp	260°C
	Max # Reflow	3
	Max Time	10 seconds



Flying Lead Conical Inductors

Flying Lead Conicals

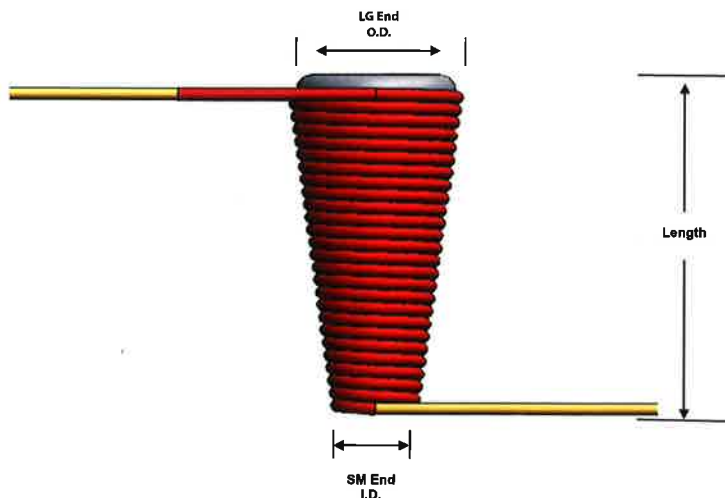
Series	Part Number	L (uH) @ 10 MHz	I max (mA)	Upper Freq. Limit Typ. (GHz)	Q Typ. @ 10 MHz	DCR Typ (Ohms)	Foot Print (OD x L)(in)
Micro Series	CC7T40K240G5	0.024	1300	40+	10-15	0.09	.035 x .035
	CC7T44K240G5	0.024	500	40+	20-25	0.09	.025 x .025
	CC10T40K240G5	0.047	1300	40+	15-20	0.07	.030 x .045
	CC10T47K240G5	0.07	340	40+	25-30	0.39	.023 x .025
	CC15T47K240G5	0.095	250	40+	15-Oct	0.45	.030 x .035
	CC20T44K240G5	0.17	325	40+	22-28	0.3	.030 x .055
	CC24T45K240G5	0.25	375	40+	20-25	0.5	.030 x .055
	CC25T44K240G5	0.25	300	40+	22-28	0.5	.035 x .070
	CC25T47K240G5	0.25	230	40+	25-30	0.8	.025 x .050
G5 Series (Below 500 mA)	CC36T44K240G5	0.6	300	40+	20-25	0.65	.035 x .100
	CC45T44K240G5	1.08	250	36	25-30	0.95	.045 x .115
	CC45T47K240G5	0.84	160	40+	25-30	1.6	.035 x .085
	CC50T40K240G5	1.65	400	25	25-30	0.625	.075 x .200
	CC50T44K240G5	2.35	220	20	25-30	1.6	.060 x .135
	CC65T42K240G5	2.85	300	40+	30-35	1.25	.065 x .120
	CC75T38K240G5	6.35	440	13	25-30	1.08	.140 x .385
	CC82T44K240G5	6.7	180	15	25-30	2.83	.075 x .205
	CC110T47K240G5	8	100	40+	25-30	6.55	.070 x .200
G5 Series (500+ mA)	CC12T30K240G5	0.145	2750	7.5	14-19	0.16	.085 x .150
	CC19T40K240G5	0.22	700	30	25-30	0.18	.040 x .080
	CC21T36K240G5	0.425	1000	36	25-30	0.14	.070 x .135
	CC25T30K240G5	0.825	2500	6	30-35	0.28	.120 x .325
	CC31T30K240G5	1.35	2250	5	30-35	0.3	.175 x .375
	CC50T36K240G5	2.75	700	18	30-35	0.67	.120 x .315
	CC75T36K240G5	6.93	650	13	25-30	0.85	.160 x .475
	CC110T36K240G5	23	600	11	40-45	1.6	.175 x .700

Custom conicals available upon request - Contact Piconics for more info.

S-Parameters available @ www.piconics.com

Mechanicals

- ▶ Lead length is 0.200 inches min
- ▶ Insulation stripped within .050 of coil at large end
- ▶ Insulation stripped to coil body at small end
- ▶ Not drawn to scale



Series	Part Number	L (uH) @ 10 MHz	I max (mA)	Upper Freq. Limit Typ. (GHz)	Q Typ. @ 10 MHz	DCR Typ (Ohms)	Foot Print (OD x L)(in)
50 AWG	CC20T50K240G5	0.15	150	40+	8-12	1	.020 x .028
	CC20T50K240G5-.012	0.23	125	40+	10-15	1.25	.024 x .028
	CC20T50K240G5-.018	0.33	125	40+	10-15	1.55	.030 x .028
	CC25T50K240G5	0.235	150	40+	10-15	1.3	.024 x .034
	CC25T50K240G5-.004	0.125	175	40+	6-10	1	.021 x .034
	CC32T50K240G5	0.8	125	40+	15-20	2.5	.035 x .045
G100	CC21T36K240G100	0.425	1000	36	25-30	0.135	.070 x .135
	CC25T47K240G100	0.25	200	40+	25-30	0.91	.025 x .050
	CC45T47K240G100	0.84	140	40+	25-30	1.84	.035 x .085
	CC50T44K240G100	2.35	200	20	25-30	1.8	.060 x .135
	CC75T36K240G100	6.93	600	13	25-30	0.84	.160 x .475
	CC110T47K240G100	8	100	40+	25-30	7.27	.070 x .200
-X	CC12T30K240G5-X	0.062	2750	7	15-20	0.16	.085 x .150
	CC21T36K240G5-X	0.15	1000	18	18-23	0.14	.070 x .135
	CC21T36K240G5-B	0.26	1000	18	24-28	0.14	.070 x .135
	CC25T30K240G5-X	0.275	2500	6	30-35	0.28	.120 x .325
	CC31T30K240G5-X	0.45	2250	5	30-35	0.3	.175 x .375

Custom conicals available upon request - Contact Piconics for more info.
S-Parameters available @ www.piconics.com



CCM

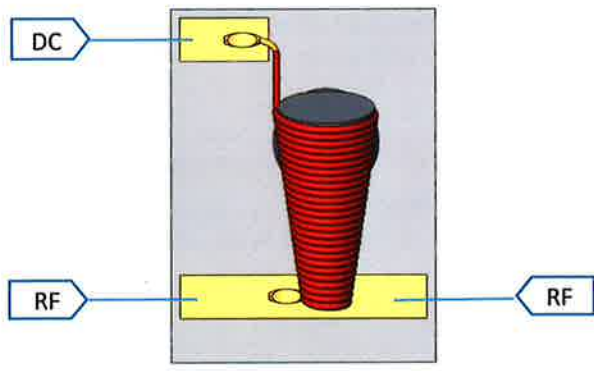
Conical Inductors

Series	Part Number	L (uH) @ 10 MHz	I max (mA)	Upper Freq. Limit Typ. (GHz)	Q Typ. @ 10 MHz	DCR Typ (Ohms)	Wire Size (AWG)	Figure
Micro-CCM	CCM7T44-001	0.024	500	40	20-25	0.09	44	A
	CCM10T47-003	0.07	340	40	25-30	0.39	47	A
	CCM10T40-001	0.047	1000	40	15-20	0.07	40	B
	CCM20T44-001	0.17	325	40	22-28	0.3	44	B
	CCM24T45-001	0.25	275	40	20-25	0.5	45	B
	CCM25T47-003	0.25	230	40	25-30	0.8	47	B
CCM	CCM19T40-002	0.22	700	30	25-30	0.18	40	C
	CCM36T44-001	0.6	300	40	20-25	0.65	44	C
	CCM45T47-001	0.84	160	40	25-30	1.6	47	C
	CCM50T40-001	1.65	400	30	25-30	0.625	40	D
	CCM65T42-001	2.85	300	40	30-35	1.25	42	D
	CCM82T44-001	6.7	180	40	25-30	2.83	44	D
	CCM110T47-001	8	100	40	25-30	6.55	47	D

Custom conical assemblies available upon request - Contact Piconics for more info.

S-Parameters available @ www.piconics.com

Mounting

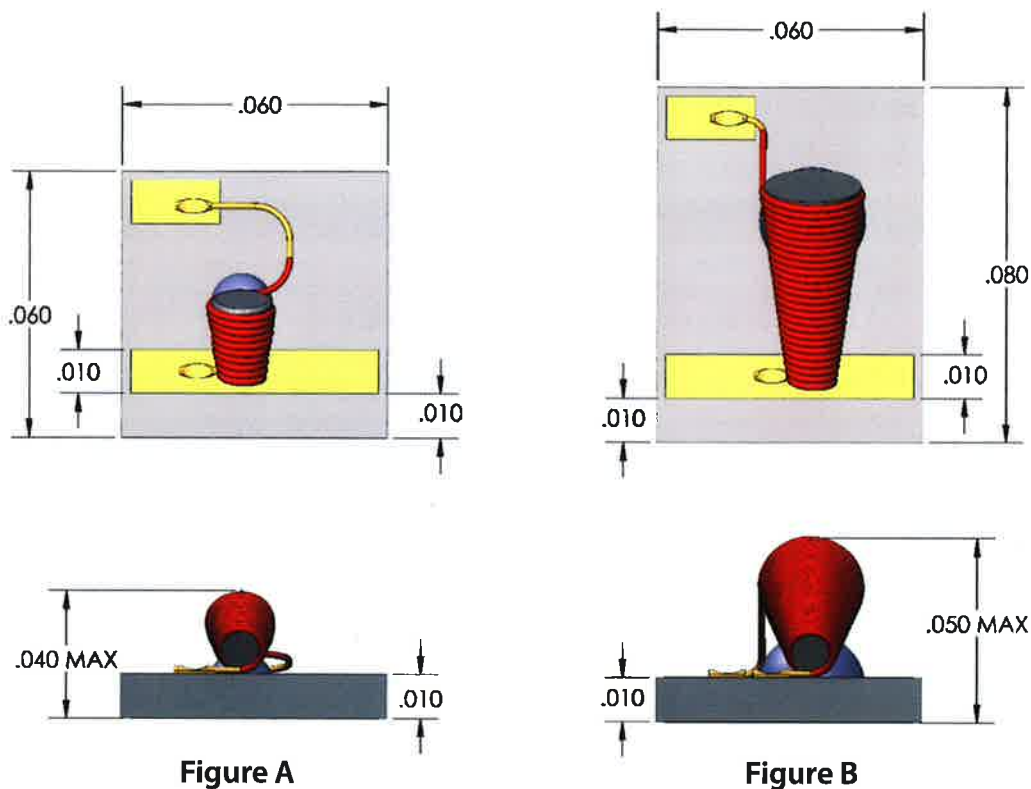


Wire Bond For Connection

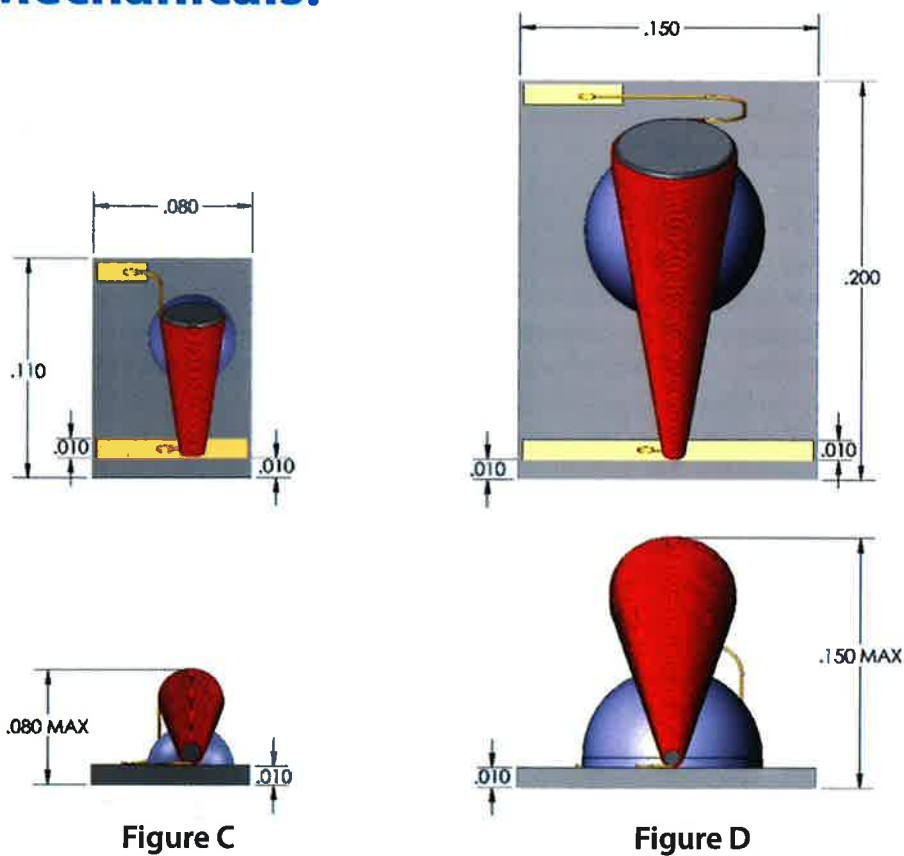
Substrate

Material	99.6 % Alumina
Metallization – Front side	TiW/Au/Ni/Au
Metallization - Backside	TiW/Au/Ni/Au

Micro CCM Mechanicals:



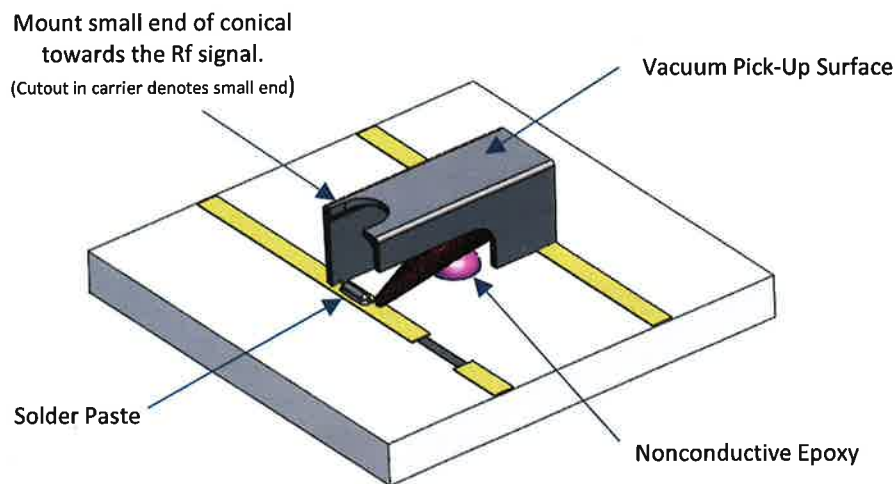
CCM Mechanicals:





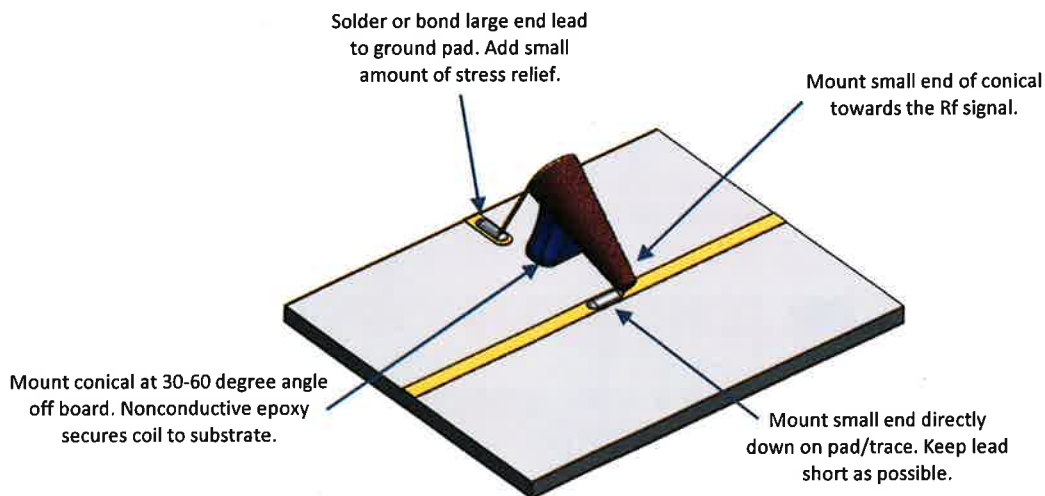
SMT Mounting Instructions

1. The top of the plastic carrier that houses the inductor is designed as a vacuum pick up surface. Using a vacuum pick and place device is ideal for handling the inductor.
2. To mount the inductor on a board, start by screening the solder paste in the pad location areas specified in the product drawing.
3. Next, place a small spot of nonconductive epoxy in between the two contact pads. The epoxy must be capable of surviving reflow solder temperatures. The epoxy adds strength to the inductor being mounted. (Epotek 360T is recommended Epoxy)
(Note: Remove any solder mask below conical as it will affect the epoxy adhesion to the substrate.)
4. Place the inductor on the board so the leads fall on the solder pads. The small end of the coil identified by the notch in the carrier goes on the signal end of the trace.
5. Place the assembly in an oven to cure the nonconductive epoxy spot that holds the inductor on the board. See the data sheet for the epoxy to obtain proper cure temperature and time.
6. Once the epoxy is cured, place the board into the reflow solder oven to reflow the solder and make the connection with the leads.
*Note 1: Steps 5 & 6 may be combined if the nonconductive epoxy is capable of curing in the ramp up cycle of the solder reflow oven.



Flying Lead Mounting Instructions

1. Place drop of nonconductive epoxy on the substrate where large end will sit. (Epotek 360T is recommended epoxy)
(Note: Remove any solder mask below conical as it will affect the epoxy adhesion to the substrate.)
2. Place conical down at proper angle with small end lead directly on the signal trace
3. Cure epoxy in oven.
4. Weld or solder leads as shown to pads. Keep small end lead as short as possible for optimum performance.
*No tuning is required for device when mounted properly.



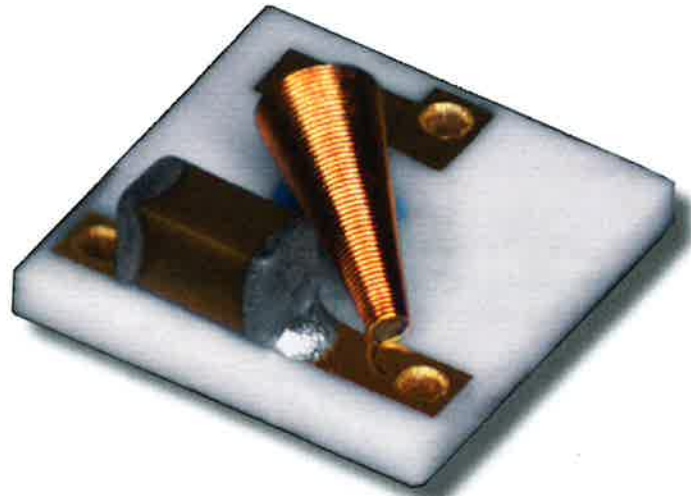
Engineering Designer Kits

- ▶ Flying Lead Conicals (Kit #1)
- ▶ SMT Conicals (Kit #2)
- ▶ -X Conicals (Kit #3)



Custom Solutions

- ▶ Coil & Chip Sub Assemblies
- ▶ Custom inductance & current handling values
- ▶ Lead formations & lead length trimming
- ▶ Custom SMT Packaging





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