
Recommended Coil Mounting Methods for ATC 506WLC Ultra-Broadband Inductors

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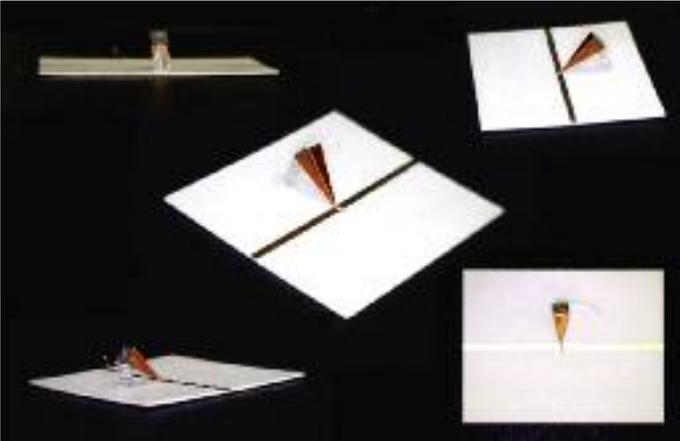
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FEATURES AND CHARACTERISTICS OF ULTRA-BROADBAND INDUCTOR MOUNTING METHODS (FIGURES 1, 2, 3)

The ultra-broadband line of inductors requires correct mounting to perform satisfactorily. This application note describes three mounting methods that have yielded good results. Figures 1, 2, and 3 illustrate and capsulize the various features, advantages and disadvantages of the three methods.

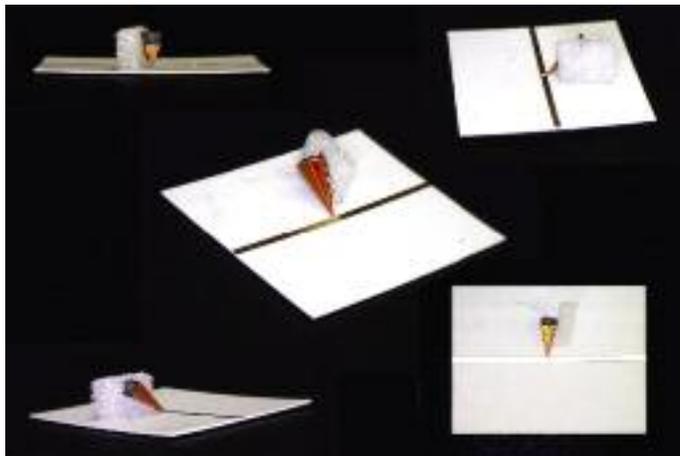
FIGURE 1: RTV REAR SUPPORT



FEATURES/CHARACTERISTICS

- Easiest to implement
- Least complex/costly
- Low real estate requirement
- Least sturdy – the most prone to shock failure and vibration fatigue

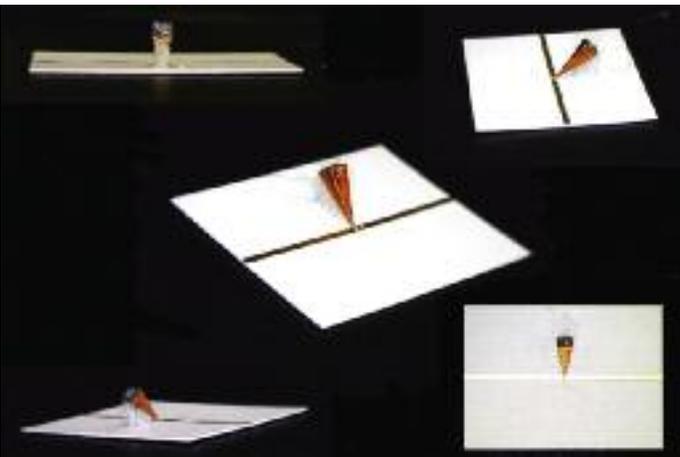
FIGURE 2: FOAM SIDE SUPPORT



FEATURES/CHARACTERISTICS

- Moderately simple to implement
- Medium complexity/cost
- Highest real estate requirement
- Most sturdy – the least prone to shock failure and vibration fatigue

FIGURE 3: FOAM UNDERSIDE SUPPORT



FEATURES/CHARACTERISTICS

- Most difficult to implement
- Most complex/costly
- Lowest real estate requirement
- Sturdy – not prone to shock failure and vibration fatigue

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RTV REAR SUPPORT: ASSEMBLY PROCEDURE

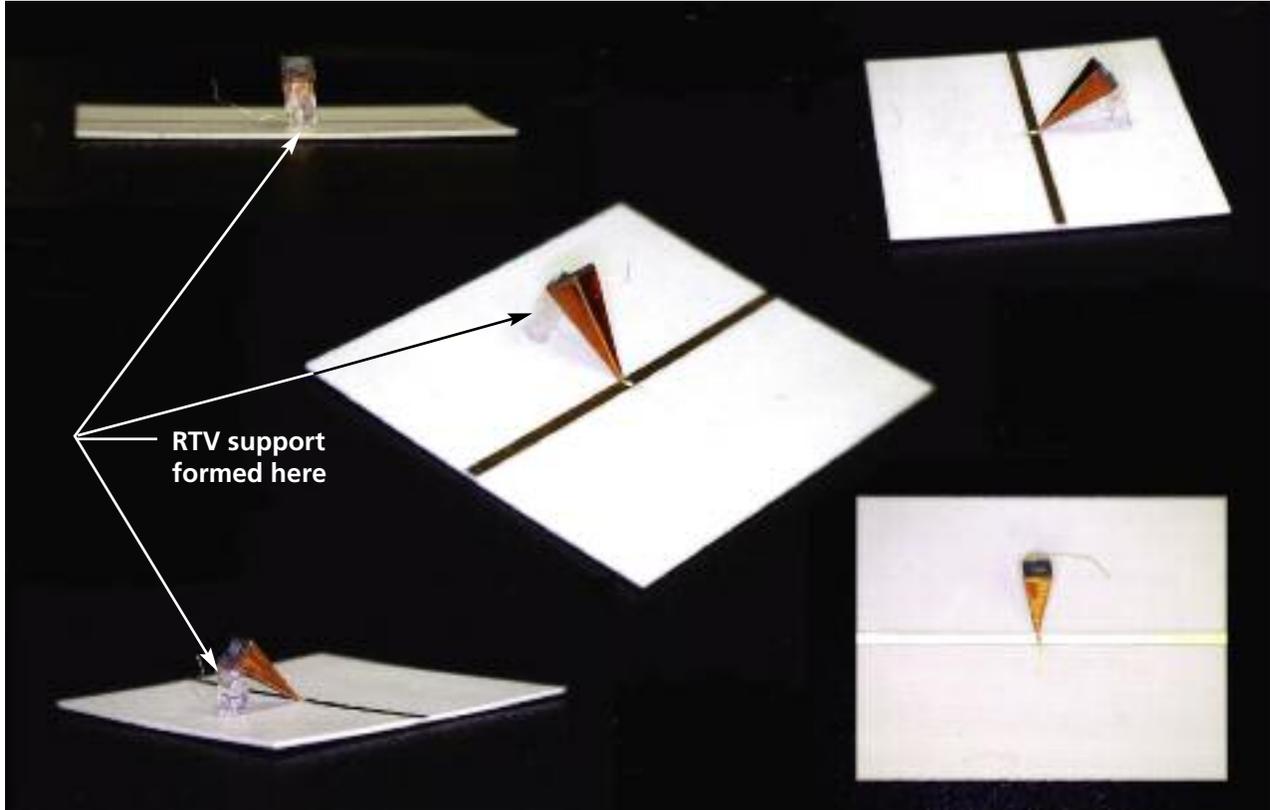


Figure 4: General layout of RTV rear support mount

MOUNTING THE COIL

1. Wash the microstrip board thoroughly with alcohol to remove any debris and oil.
2. Lightly scribe the entry point location on the microstrip line. This is the position where the wire that leaves the sharp end of the coil connects to the printed line.
3. Position the coil's pointed end lead across the printed line at the scribed location of step 2. Temporarily secure this lead to the printed line and dielectric surface with transparent tape as shown in Figure 5. As the picture also shows, it might prove helpful in positioning the piece to secure the second lead to the top dielectric surface as well.

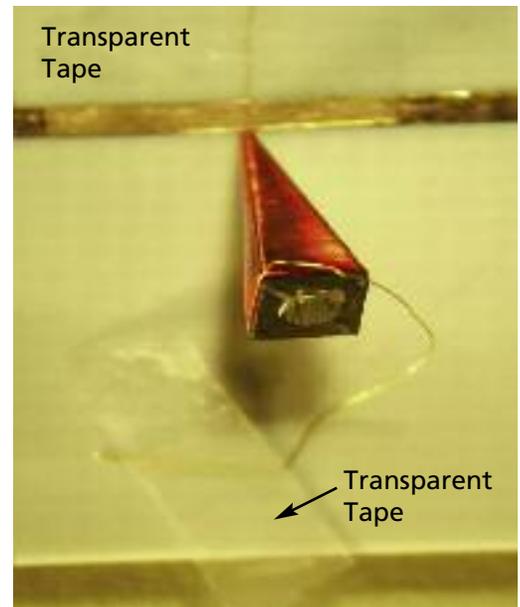


Figure 5: Positioning the coil with clear tape.

MOUNTING THE COIL (Con't.)

4. With the coil laying flat on the top surface of the dielectric and perpendicular to the printed line, lightly mark the starting position on the top surface where the RTV rubber support column will begin. The recommended material is made by General Electric and sold under the name "Silicone I Rubber Sealant". It is available in small tubes with nozzle applicators. The clear material is recommended for this application.
5. Move the coil out of the way and using the smallest nozzle opening, create a uniform column to the desired height as shown in **Figure 6**. Carefully reposition the coil and allow it to rest on the top of the column until the sealant cures (approximately 4 hours).
6. Remove the tape covering the microstrip line and the coil lead and solder or conductive-epoxy the wire to the line. A recommended epoxy used at ATC is EPO-TEK H20E. Then remove the remainder of the tape and trim away the excess lead length. Clean the area with a small amount of alcohol on a cotton swab.

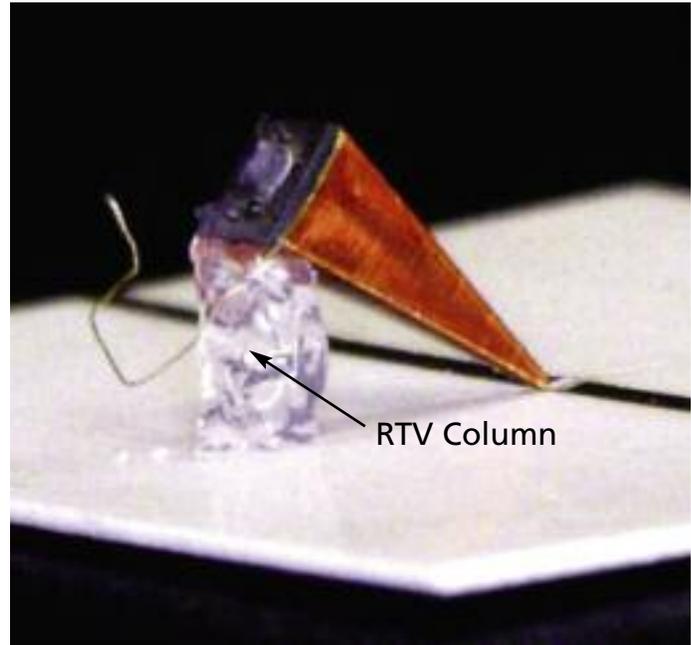


Figure 6: The RTV-mounted coil

FOAM SIDE SUPPORT: ASSEMBLY PROCEDURE

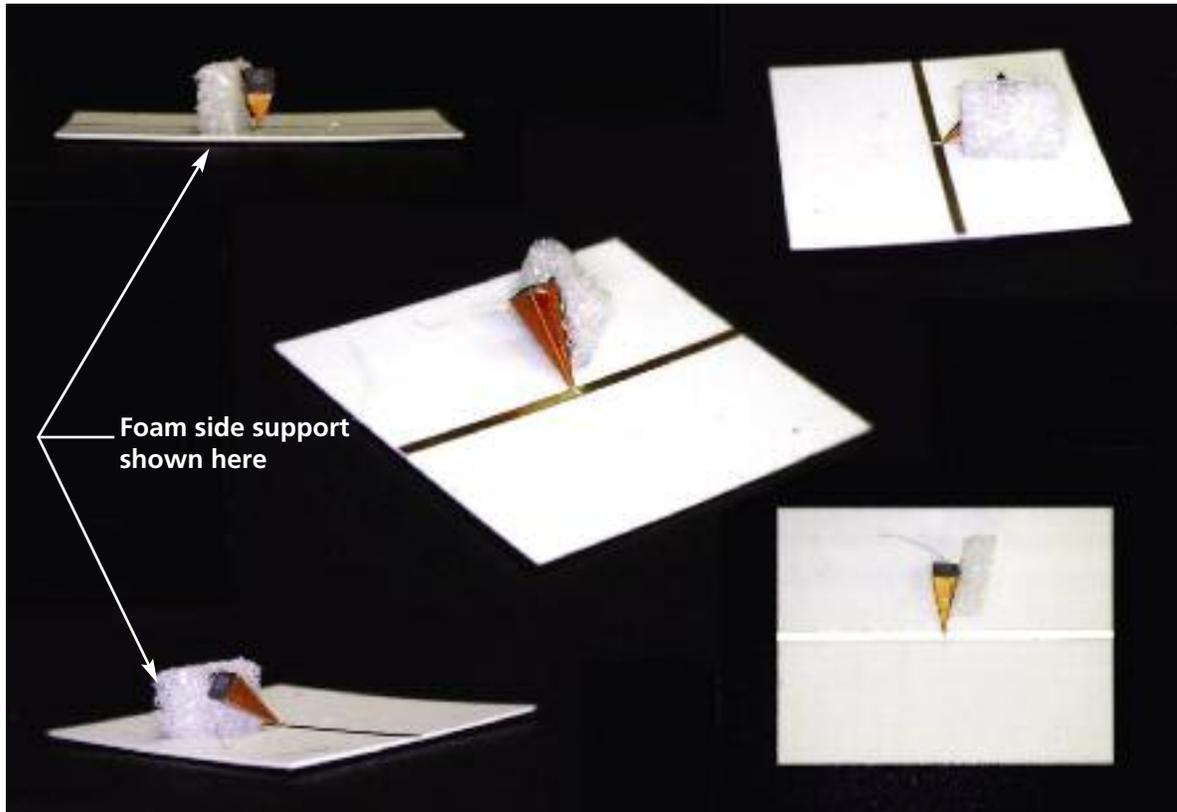


Figure 7: General layout of foam side support mount

MOUNTING THE COIL

1. Wash the microstrip board thoroughly with alcohol to remove any debris and oil.
2. Lightly scribe the entry point location on the microstrip line. This is the position where the wire that leaves the sharp end of the coil connects to the printed line.
3. Obtain a sheet of C-stock RH-5, low loss structural foam from Cuming Microwave Corporation (Phone: 508-584-2309/ www.cumingcorp.com). Cut a small slice with a thickness of 0.075 inches. Using a sharp razor blade, form the parallelogram shown in Figure 8.

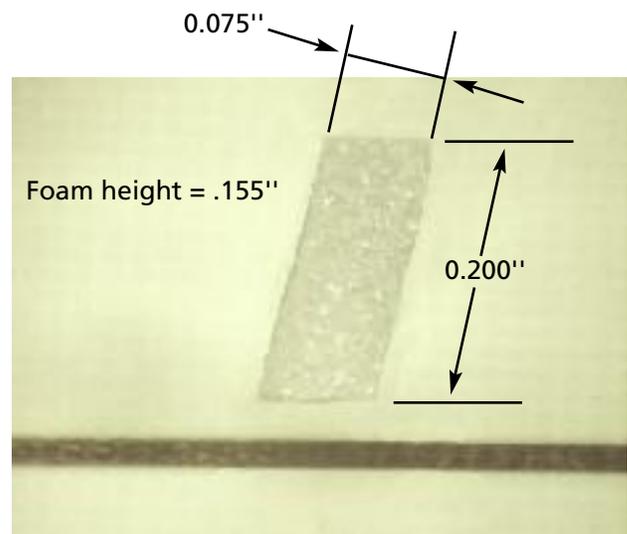


Figure 8: Dimensional details of foam

MOUNTING THE COIL (Con't.)

- Secure the foam block in place with a small amount of low density cyanoacrylate ester (Crazy Glue) as shown in **Figure 9**. The angular position with respect to the printed line should insure that the central axis of the coil is perpendicular to the line as viewed from the top of the board.

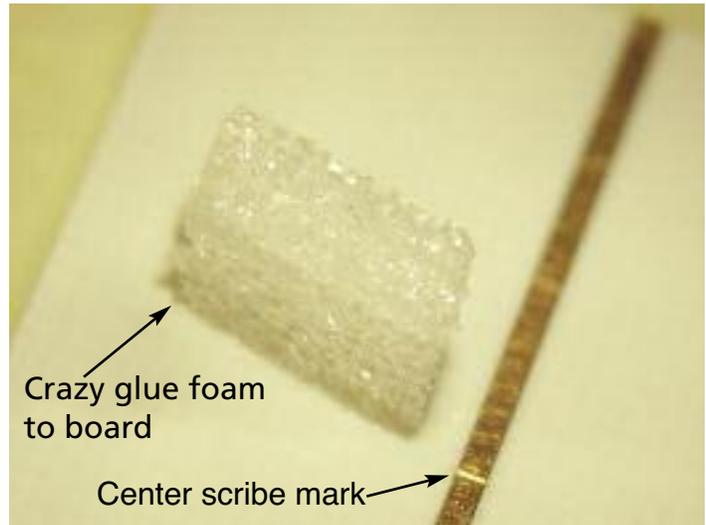


Figure 9: Securing the foam to the board

- Place a 45 degree reference line onto the foam block using a fine tipped marker, as shown in **Figure 10**.



Figure 10: Reference line drawn on foam

- With the board vertically positioned, centralize the coil on the marked foam surface. Position the coil's pointed end lead across the printed line at the scribed location of step 2. Temporarily secure this lead to the printed line and dielectric surface with transparent tape as shown in **Figure 11**.

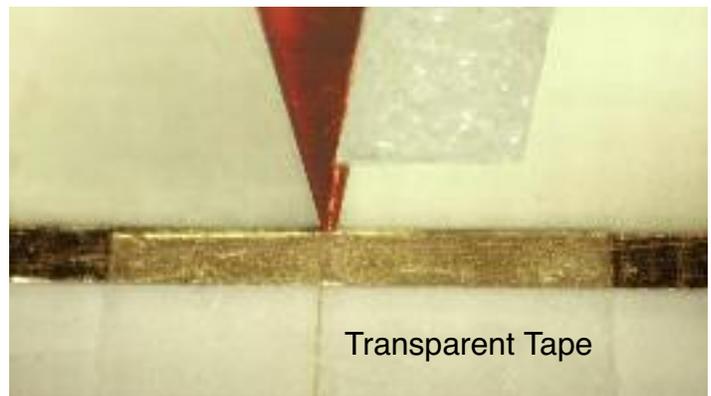


Figure 11: Securing the coil lead with clear tape

MOUNTING THE COIL (Con't.)

7. Push down the coil body flat against the foam support and secure a bond with a small amount of Crazy Glue. Make sure that the central axis of the coil is aligned with the reference line of step 5.
8. Remove the tape covering the microstrip line and the coil lead and bond/solder/epoxy the wire to the line. Then remove the remainder of the tape and trim away the excess lead length. Clean the area with a small amount of alcohol on a cotton swab

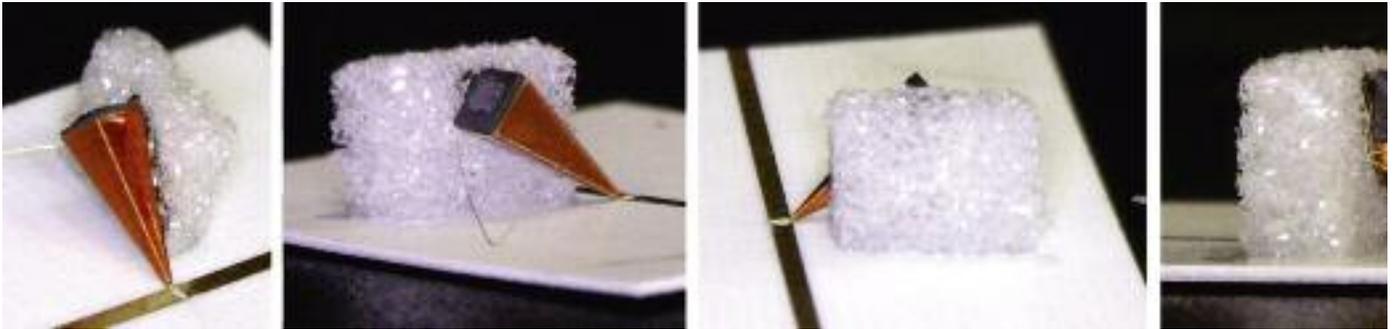


Figure 12: Close-up views of mounted coil

FOAM UNDERSIDE SUPPORT: ASSEMBLY PROCEDURE

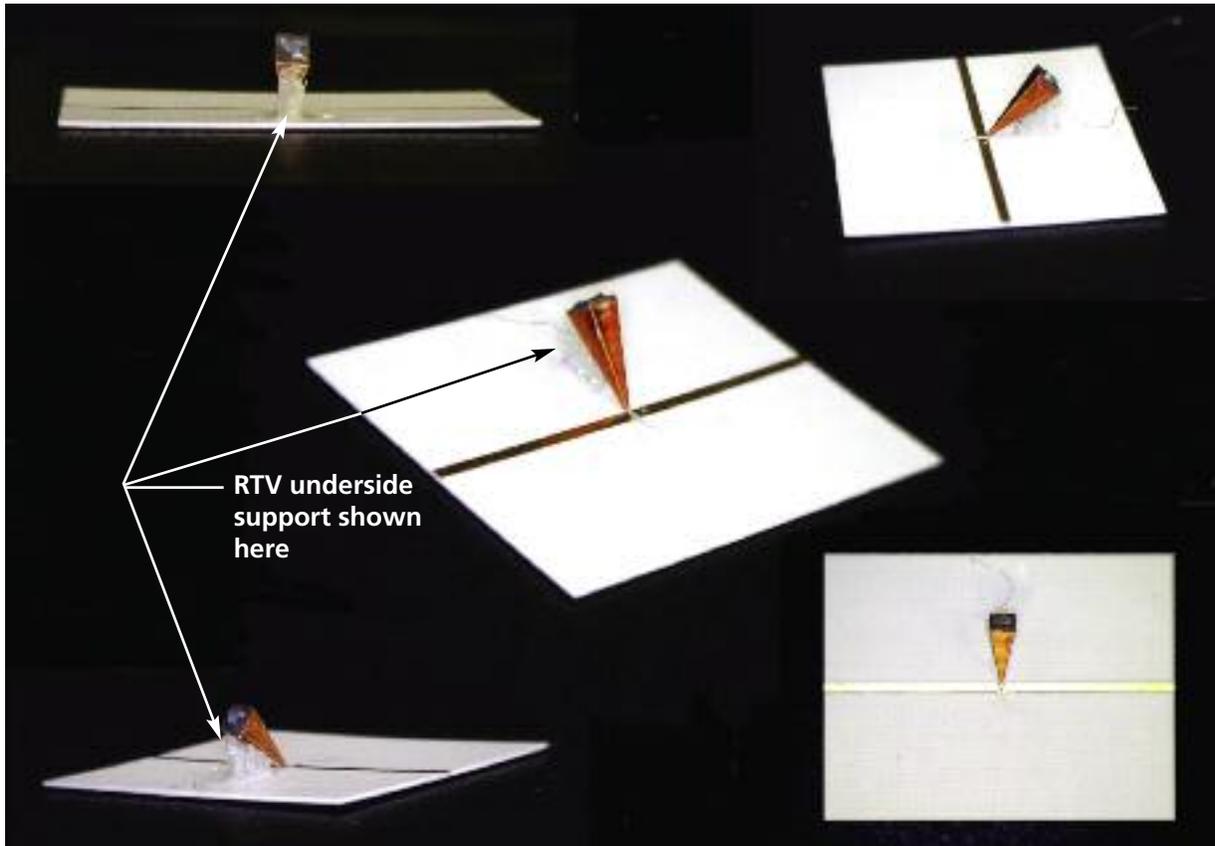


Figure 13: General layout of a foam underside support mount

MOUNTING THE COIL

1. Wash the microstrip board thoroughly with alcohol to remove any debris and oil.
2. Lightly scribe the entry point location on the microstrip line. This is the position where the wire that leaves the sharp end of the coil connects to the printed line.
3. Obtain a sheet of C-stock RH-5, low loss structural foam from Cuming Microwave Corporation (Phone: 508-584-2309 / www.cumingcorp.com). Cut a small slice with a thickness of 0.045 inches. Using a sharp razor blade, form the mounting structure shown in Figure 14 to obtain a coil mounting angle of, in this instance, approximately 36 degrees when used with the larger (0.182" long) coils

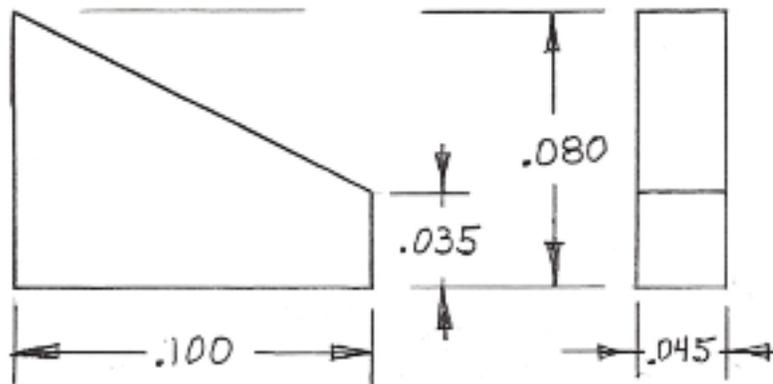


Figure 14: Foam Standoff

MOUNTING THE COIL (Con't.)

- Secure the foam piece to the underside of the coil with a small amount of low density cyanoacrylate ester (Crazy Glue) as shown in **Figure 15**. Make sure that the lead protruding from the small end of the coil is located on the bottom of the coil as shown so that its length will be minimized.

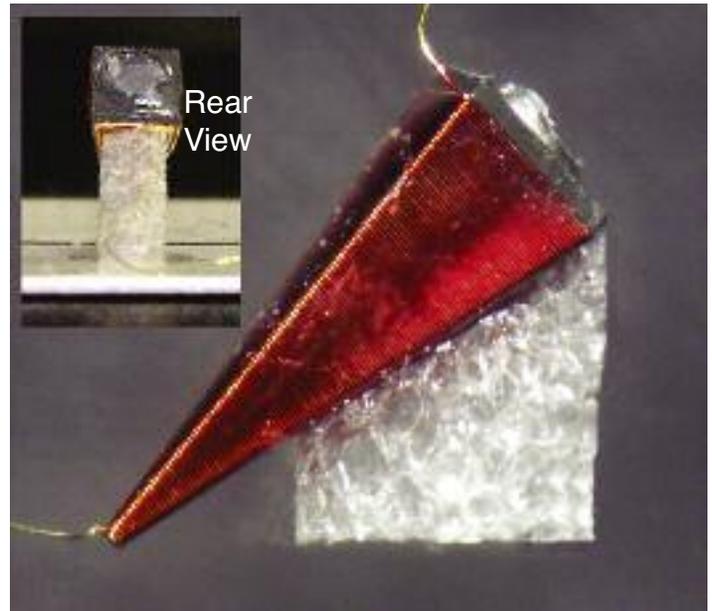


Figure 15: The coil / foam assembly

- After the glue hardens, stand the coil/foam assembly onto the microstrip board and position the coil's pointed end lead across the printed line at the scribed location of step 2. Temporarily secure this lead to the printed line and dielectric surface with transparent tape as shown in **Figure 16**.

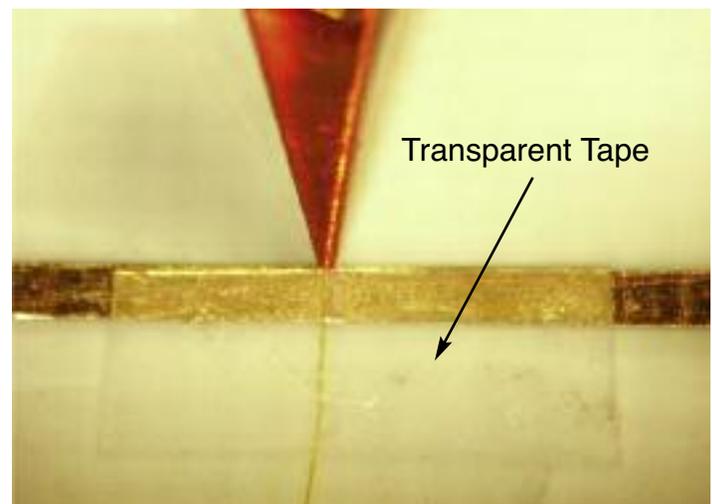


Figure 16: Securing the coil lead with clear tape

- Position the bottom of the foam support/coil assembly perpendicular to the microstrip line and secure it to the surface of the microstrip board with a generous amount of crazy glue. Do not allow the glue to run onto the printed line or away from the contact region of the foam.
- Remove the tape covering the microstrip line and the coil lead, and bond/solder/epoxy the wire to the line. Then remove the remainder of the tape and trim away the excess lead length. Clean the area with a small amount of alcohol on a cotton swab.

RECOMMENDED COIL MOUNTING METHODS FOR ATC 506WLC UBL INDUCTORS

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