

Application Note

ASSEMBLY GUIDELINES

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TO-8 Units

The unit is mounted to the one side of the circuit card and the leads stick through the board and are soldered to traces/pads on the other side. The leads are either trimmed flush to that side of the board or bent out flat if there is sufficient area. Better RF performance occurs if the side the TO-8 can is on is a ground plane (fully metallized, usually bare or solder-plated copper or brass). Solder tacking two points around the RF output pin is usually sufficient to achieve good RF grounding. A higher power soldering iron may be needed to do the tack soldering to the ground plane because the metal will conduct more heat out of the tip. Some customers will put Teflon tubing around the leads that stick through the board to prevent solder shorting any of the leads to ground. The trace size for a good 50 ohm interface with the RF output pin will depend on the thickness and the dielectric constant of the circuit board. Minimal flux is required to get the solder to flow well and the soldered area can easily be cleaned with acetone or alcohol. We use and recommend a low activity, non-halide flux such as Kester Solder brand 920-CXF.

Surface Mount Units

These are a little more difficult in that care must be taken so that no solder or flux shorts the leads to each other or to ground. If the units are hand soldered, then the assembly procedure is similar to that described above. Clean the bottom of the unit and the traces on the circuit board. While pressing down on the cover to hold the unit in place, tack solder to opposite corners of the case to the ground trace that is underneath the VCO. Then solder the leads to the board, followed by tacking the other two corners in place. This procedure should minimize excess flux residue, which can be cleaned off as previously described. If the VCO's are to be assembled with other surface mount components, then a solder paste is usually applied to the bottom of the mounting plate and the leads. When the unit is run through a belt furnace with a specific heating profile, the solder paste will melt and attach the unit to the circuit board.

We solder seal our units with SN 96 solder (melting temperature of 220 deg C). As such, we recommend that our VCO's be hand soldered to your printed circuit card using a lower temperature solder, such as SN63 (melting temperature of 180 deg C), and limiting the exposure to this temperature to 1 minute maximum.