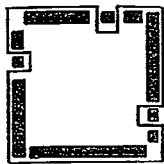


SOLDERING TECHNIQUES

▶ If you want to make sure that each M3500 VCO operates at published performance and phase noise levels, follow the soldering techniques described below.

SURFACE MOUNT

Set iron for 250° C.
Iron contact should not exceed 7 seconds from the time ground plane is hot.



IR Reflow Process. Solder stencils can also be used to dispense solder to the contacts. An appropriate IR reflow profile will help to ensure proper wetting and good VCO/PCB contacts. Avoid reflow of components within the device. Use SN95 solder with a melting temperature of 235° C.

SOLDERING SURFACE MOUNT VCOs
Apply the solder iron to the connections around the periphery of the VCO package. Once the ground plane is heated, the connection will usually take five seconds or less. To ensure proper grounding, all contacts must be soldered without applying excess solder. Limit iron contact to prevent heat damage.

SOLDERING PIN TYPE VCOs
There are five grounding pins on each M3500 pin VCO. All must be soldered to a common ground plane while the ground surface of the VCO is in direct contact with the equivalent ground plane surface on the printed circuit board.

M3500 pin type VCOs use SN63 solder for pin connections. During installation, do not over-heat the contact pins as this will cause them to move upward into the VCO. As with the surface mount VCOs, the underside of the pin type VCO must maintain constant contact with the system PCB. Any displacement will lead to problems of inadequate grounding and/or loading isolation.

Ground current loops

can be eliminated by ensuring that the printed circuit board ground plane is returned to power supply ground through a heavy conductor. Faulty grounding techniques are usually the reason for degraded phase noise performance when testing RF components.

Wires should never be soldered directly to the pins of the VCO. This may cause reflow of the pins and damage the oscillator internally. Proper mounting should include connection of the active pins to microstrip line and RF output to a 50 ohm microstrip line.

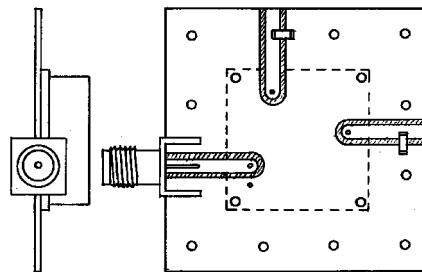
PIN TYPE

Recommended board material is 0.031" Duroid™
(50 Ω line width = 0.092")

Side View

Bottom View

Board = 1.5" square
(scale ≈ 1.5: 1)



Top conductor is solid ground plane except for:

1. Plated-thru holes to fit 5 VCO ground pins
2. 0.062" dia. cutouts centered on 3 active pins

Outer 10 holes are plated-thru

C1: 0.1μF; add parallel 1-10μF, 25V tantalum if supply has <10 MHz noise or ripple.

C2: 10μF, 35V tantalum for phase noise measurement, 100 pF for tune line RF filtering, omit for highest modulation bandwidth.