MX-40 GPI Drain Pad Bonding

Small Gate Pad

The MX-40 has a very small gate capacitance (0.26 pF). This is accomplished by making the diameter ("width") of the gate very small. With a drain pad diameter of only 70 µm and a gate diameter of only 86 µm, it is easy to short the drain to the gate by placing the drain bond slightly off-center.

Wirebonding Solution

Moxtek is successfully wirebonding the MX-40 JFET without shorting the gate to drain pads. Our bonding process is listed below:

- Equipment:
  - Westbond Model 7700E Wire Bonder
  - Capillary SBN-35110-535F-ZM76T from Small Precision Tools (a "slimline bottleneck" capillary designed for fine-pitch bonding)
  - Westbond K~1200D Heated Workholder/ Temperature Controller
  - 1 mil gold wire
- Settings and Conditions:
  - JFET heated to 115°C
  - First (ball) bond on the JFET pad; Second (stitch) bond on the circuit board trace.
  - Bonder Settings:
    - Lift before torch: 250
    - Ultrasonic power: 310 (bond 1) and 500 (bond 2)
    - Ultrasonic time: 55 (bond 1) and 50 (bond 2)
    - Force: calibrated to 30 g (bond 1) and 50 g (bond 2)
    - Ultrasonic power during feed: 500
    - Free air ball time: 2.5
    - Free air ball power: 4.4

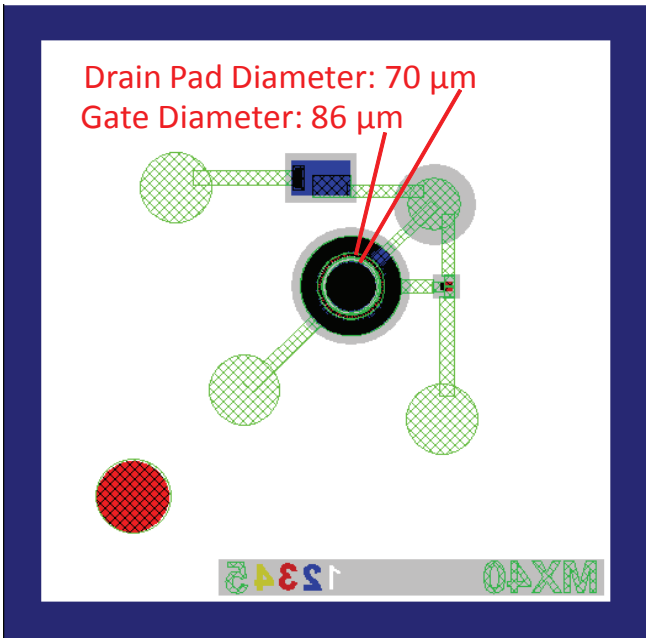

Figure 1: MX-40 Layout and Critical Diameter

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