Impedance Standard Substrate For Up to 67 GHz

Pitch: 100 - 250 μm, Configuration: Ground-Signal-Ground

P/N: 101-190

S/N:
**Substrate specifications:** Material: Alumina; Thickness: 25 mils (635 μm); Dielectric constant: 9.9

- **Thru**
  - Thru delay: **1.0 ps**
  - Length: **220 μm**
  - Impedance: **50 Ohm** (Nominal)
  - Note: Thru and Verification line lengths are signal conductor edge-to-edge dimension.

- **Short**
  - Recommended Overtravel:
    - ACP: 75 - 125 μm
    - Infinity: 50 - 75 μm

- **Load**
  - Precision 50 Ohm Load

- **Verification Lines**
  - | ps | μm |
    |----|----|
    | 3  | 450|
    | 7  | 900|
    | 14 | 1800|
    | 27 | 3500|
    | 40 | 5250|

- **Open**
  - (On Substrate)

Note: Ensure the bias supply is turned off during calibration. Applying bias to the probe during calibration could cause the resistance of the load to change.

DC accuracy: +/- 0.3 %

Note: For optimum calibration accuracy only the Red-marked load standards should be used.

Note: By default, an Open is synthesized by raising the probes in air a minimum distance of 250 mm above the chuck surface. A Substrate Open structure is also provided as an alternative.

All of the above specifications are based on an overtravel (downward movement of probe after initial touchdown on the substrate) listed above. This amount of overtravel can be set before calibration on the Impedance Standard Substrate (ISS) using the alignment marks (allows precise setting of probe separation and overtravel). Figure 1 shows that initial contact with the edge of the probe tips should be made at reference plane X. The desired overtravel and thus skate (forward movement of probe tips after initial contact with substrate) is then achieved by adjusting the Z height on the positioner to move the edge of the probe tips to reference plane Y. This can also be seen from the images shown in Figure 2.

**Initial contact**

**Final contact**

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**Calibration Coefficients**

Calibration coefficients are dependent on the probe tip configuration, placement on a standard, and the shape and configuration of the set of standards. This leads to unique calibration coefficients for a unique pair of probe and ISS. Therefore, the calibration coefficients are supplied with the probe not with the ISS.