

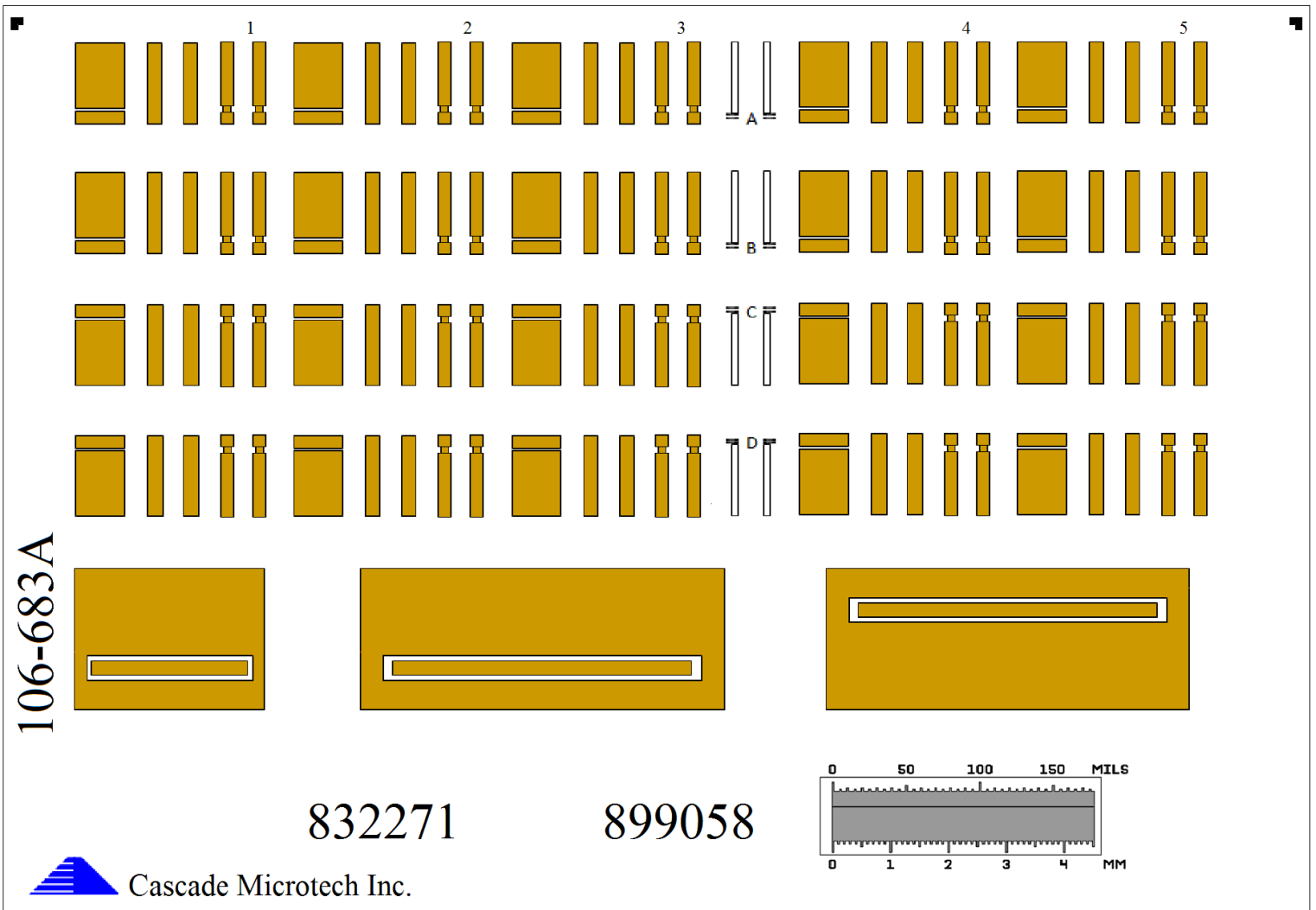
# Cascade Impedance Standard Substrate Map


000111100010

► **P/N: 106-683**

Pitch: 250  $\mu\text{m}$  - 1250  $\mu\text{m}$

Configuration: **GS, SG**




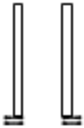





 Cascade Microtech Inc.

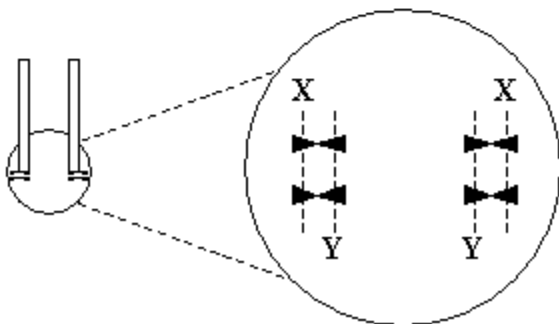
## > Key to Map

### Key to the 106-683 Map

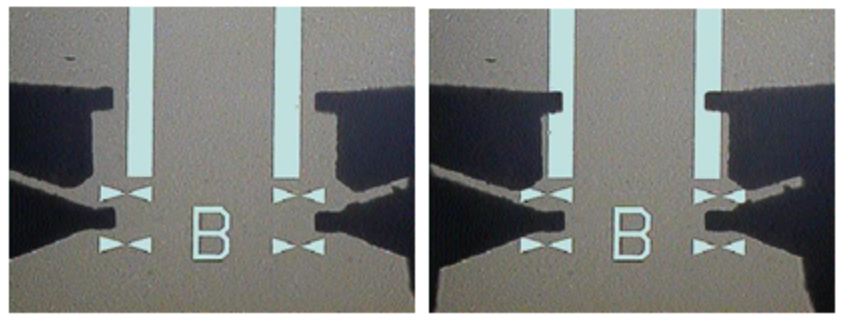
Substrate specifications: Material: Alumina; Thickness: 25 mils (635  $\mu\text{m}$ ); Dielectric constant: 9.9

 <p><b>Thru</b></p>	<p><b>Thru delay:</b> 4 ps</p> <p><b>Impedance:</b> Nominally 50 <math>\Omega</math></p>	 <p><b>Load</b></p>	<p>For optimum calibration accuracy <b>only</b> the <b>Red</b>-marked load standards should be used</p>	<p><b>Verification Lines</b></p> 	 <p><b>A-D</b></p>
 <p><b>Short</b></p>		 <p><b>Precision 50 <math>\Omega</math> Load</b></p>	<p><b>DC accuracy:</b> +/- 0.3 %</p> <p><b>Note:</b></p> <p>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</p>	<p>Thru Delay <math>\approx</math> 25 ps; Length <math>\approx</math> 3150 <math>\mu\text{m}</math></p>  <p>Thru Delay <math>\approx</math> 50 ps; Length <math>\approx</math> 6150 <math>\mu\text{m}</math></p>	<p><b>Alignment Marks</b></p> <p><b>Note:</b></p> <p>An <b>Open</b> is synthesized by raising the probes in air a minimum distance of 250 <math>\mu\text{m}</math> above the chuck surface</p>

All of the above specifications are based on an overtravel (downward movement of probe after initial touchdown on the substrate) of 100-150  $\mu\text{m}$ . 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 (midpoint between the outer flat edge and the internal apex). 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 (midpoint between the internal apex and the flag points). This can also be seen from the photographic images shown in Figure 2.



**Figure 1:** Alignment marks



**Figure 2:** Images showing correct alignment and placement of probe tips

**Calibration Coefficients** are dependent on the probe tip configuration, placement on a standard, and the standard configurations. 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.

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