

Design for Test Considerations

TOOLING:

Provide two non-plated thru tooling holes, dia 0.125 +0.003/-0.003 as far apart as practical.
Tooling hole to tooling pin tolerance +0.000/-0.003.

A 0.050 annular area around tooling holes must be clear of components and test pads.

TEST PADS:

PCB **Bottom side** test pads size minimum limits as per the following fixture considerations:

- 0.025 in. - Standard Vacuum Fixture with Guided probe plate without Zero-flex
- 0.022 in. - Standard Vacuum Fixture with Zero-flex and Guided probe plate
- 0.020 in. - Standard Vacuum Fixture with Xprobe and Zero-flex Guided probe plate
- 0.018 in. - Pneumatic Fixture and Xprobe with Zero-flex Guided probe plate

PCB **Top side** test pads size minimum limits as per the following fixture considerations:

- 0.025 in. - Standard Vacuum Fixture without Zero-flex and Guided probe plate
- 0.022 in. - Pneumatic Fixture
- 0.020 in. - Pneumatic Fixture with Xprobe

Test pads center to center spacing, 0.049 in. preferred. Probe technology for 0.039 in. centers exists but there will be a need for special handling (i.e. Xprobe or conventional 0.039 in. probe with Zero flex, guided probe on the Support plate).

Tolerance of Test pads to datum 0.002 in.

TEST POINT SPACING MINIMUMS

39Mil - 0.039
50Mil - 0.049
75Mil - 0.070
100Mil- 0.085

CLEARANCES:

Tooling Pin Edge to:

- Test point Center - Minimum Distance = .0675 mils
- Component Edge - Minimum Distance = .0500 mils
- Board Edge (molded gasket only) - Minimum Distance = .200 mils

Probes must be placed within minimum distances from component devices as outlined below:

Component height minimum distance from center of testpad to component edge

	<u>Bottom Side</u>	<u>Top Side</u>
1.00 < height > .400 -----	0.070 in.	0.320 in.
.400 < height > .255 -----	0.070 in.	0.170 in.
.255 < height > .150 -----	0.070 in.	0.090 in.
.150 < height > .050 -----	0.050 in.	0.070 in.
.050 < height > 0 -----	0.028 in.	0.050 in.

notes: need to use 50mil probes
 component edge refers to any component protrusion as in shrouds/legs/heatsinks

TEST POINT CONCENTRATION:

Distribute test points evenly over UUT

Limit test points under BGA:

Criteria:

<29 testpt/sq.in. with 5.5 to 6.5 oz probe

<47 testpt/sq.in. with 4 oz probe

: max 80 testpt/sq.in. can be accommodated providing test pts distributed evenly and there is 200 mils minimum clearance around BGA

: if exceeding above limits, possibility of pushing directly on BGA device or push around BGA device to counter upward force from probes