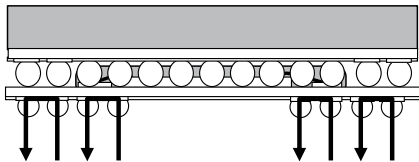
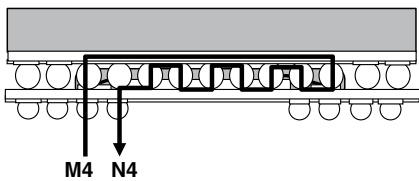
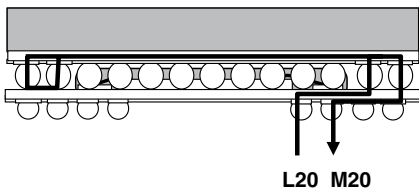


Package on Package (PoP) 12x12mm, 0.65mm to pitch Stacked Daisy Chain—3 Package Stacking

PoP Daisy Chain 3 Net Design—2 Package Stack



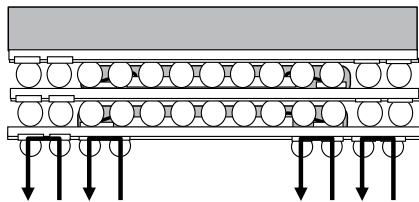
Daisy Chain netlist of PSvfBGA, Bottom package balls



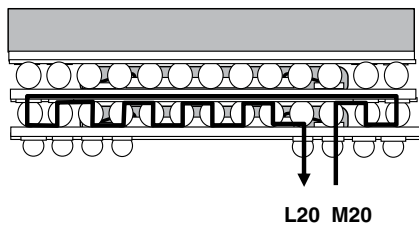
Daisy chain netlist of top side (Top FBGA to PSvfBGA 116 pin memory interface)

Bottom package called:
Package Stackable very thin fine pitch BGA (PSvfBGA)

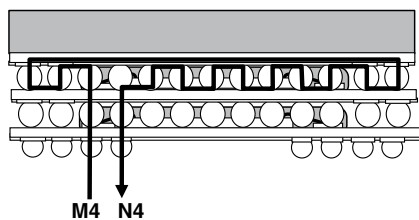
PoP Daisy Chain 3 Net Design—3 Package Stack



Daisy Chain netlist of PSvfBGA, Bottom package balls



Daisy chain netlist of middle/bottom side (middle of PSvfBGA to bottom of PSvfBGA 128 balls)



Daisy chain netlist of middle/top side (FBGA to middle PSvfBGA 128 balls)

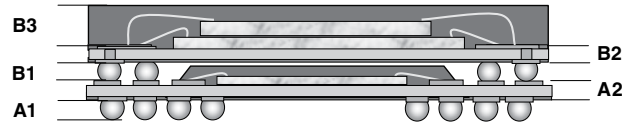
Bottom/middle package called:
Package Stackable very thin fine pitch BGA (PSvfBGA)

Package on Package (PoP)

12x12mm Stacked Daisy Chain—3 Package Stacking



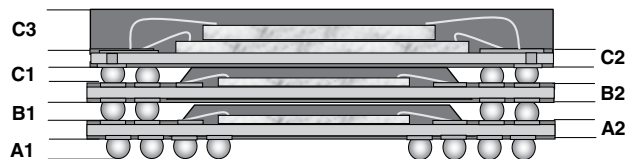
PoP Overall Stack Up—2 Package Stack



Symbol	Unit	Min	Nom	Max
A1 (Ball, 0.5 pitch)	mm	0.180	0.230	0.280
A2 (4L laminate)	mm	0.260	0.300	0.340
B1 (Ball, 0.65 pitch)	mm	0.270	0.300	0.330
B2 (2L laminate)	mm	0.180	0.210	0.240
B3 (Mold cap)	mm	0.420	0.450	0.480
Overall Pkg Height	mm	1.408	1.490	1.572

Assumed standard DC substrate
 Thinner stack up feasible in future build

PoP Overall Stack Up—3 Package Stack

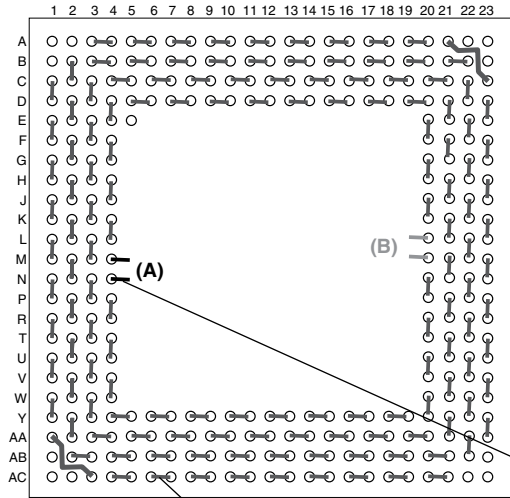


Symbol	Unit	Min	Nom	Max
A1 (Ball, 0.5 pitch)	mm	0.180	0.230	0.280
A2 (4L laminate)	mm	0.260	0.300	0.340
B1 (Ball, 0.65 pitch)	mm	0.270	0.300	0.330
B2 (2L laminate)	mm	0.180	0.210	0.240
C1 (Ball, 0.65 pitch)	mm	0.270	0.300	0.330
C2 (2L laminate)	mm	0.180	0.210	0.240
C3 (Mold cap)	mm	0.420	0.450	0.480
Overall Pkg Height	mm	1.907	2.000	2.093

Assumed standard DC substrate
 Thinner stack up feasible in future build

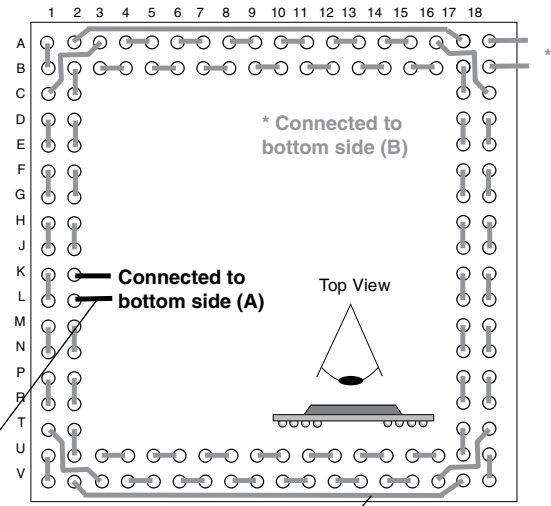
PSvfBGA 305 (Bottom Package) Daisy Chain Nets

Bottom side of bottom package (top view through package)
12x12mm, 0.65 mm PSvfBGA305, 23x23 ball matrix



Daisy chain pattern of PSvfBGA—Bottom BGAs

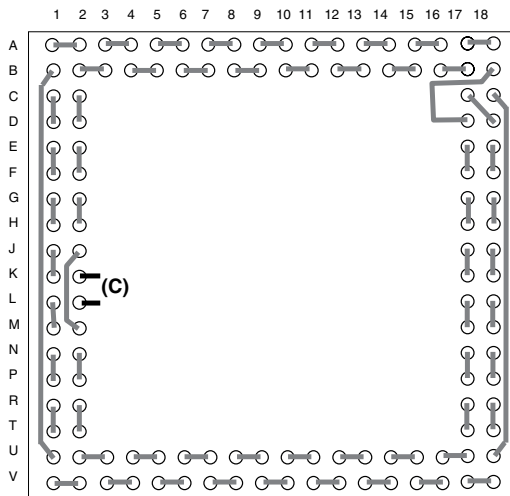
Top side of bottom package
Top/Middle package interface (top view)
0.65mm pitch, 128 pads, 18x18 ball matrix



Top side 12 corner ball DC net

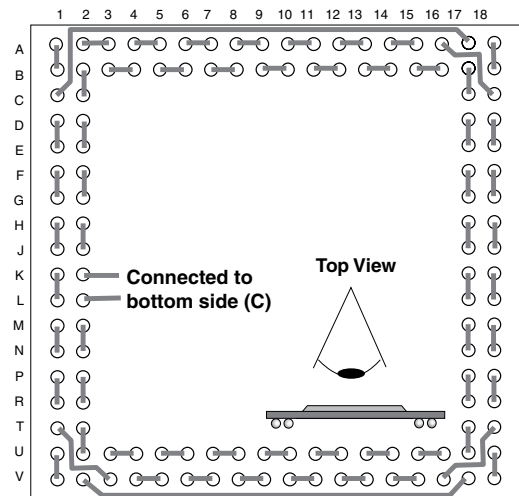
PSvfBGA 128 (Middle Package) Daisy Chain Nets

Bottom side of middle package (top view through package)
12x12mm, 0.65 mm PSvfBGA128, 18x18 ball matrix



Each pad on the top side is connected to the corresponding pad on the bottom side through via.

Top side of middle package
Top package interface (top view)
0.65mm pitch, 128 pads, 18x18 ball matrix

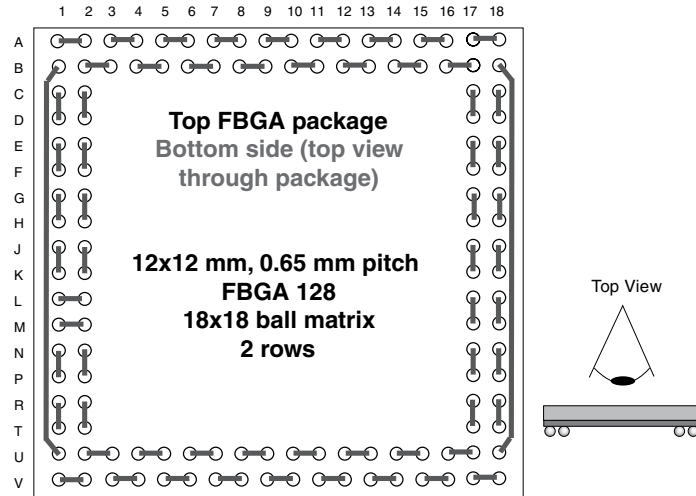


Package on Package (PoP)

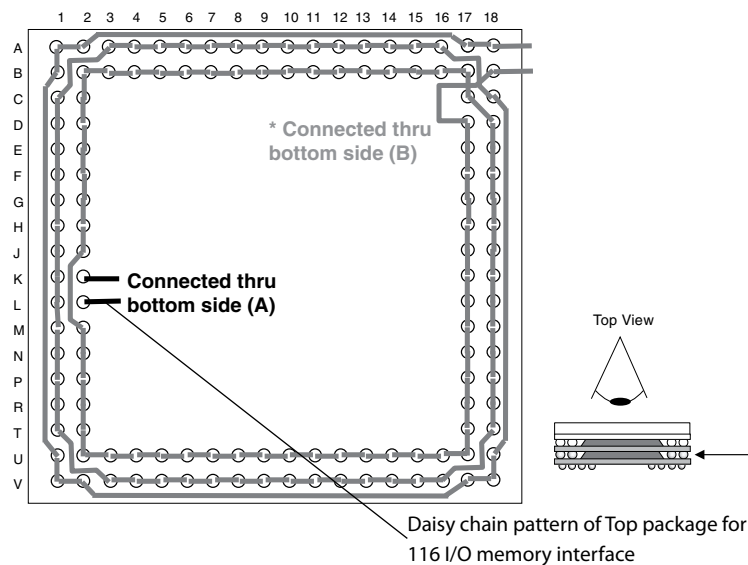
12x12mm Stacked Daisy Chain—3 Package Stacking



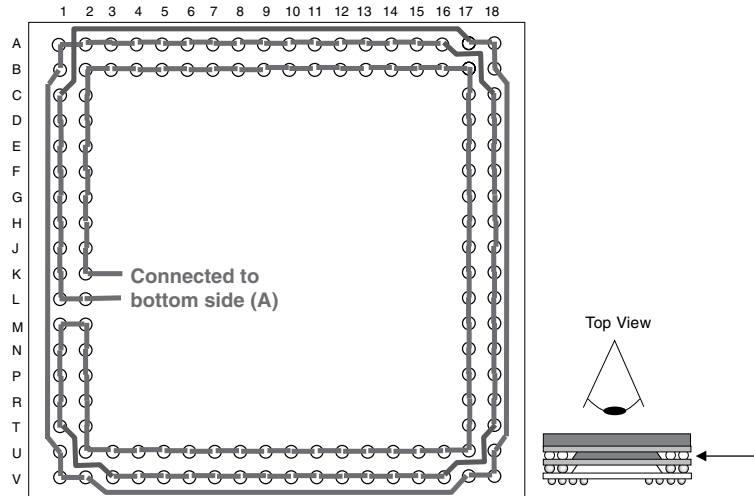
FBGA 128 (Top Package) Daisy Chain Netlist



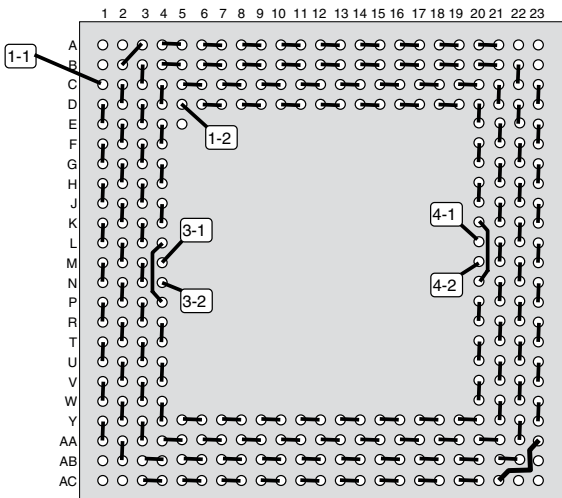
Middle-to-Bottom Package Connection after 3 PKG Stack



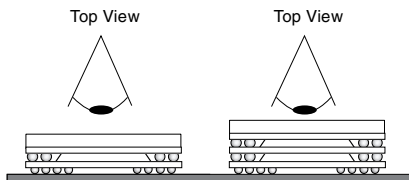
Top-to-Middle Package Connection after 3 PKG Stack



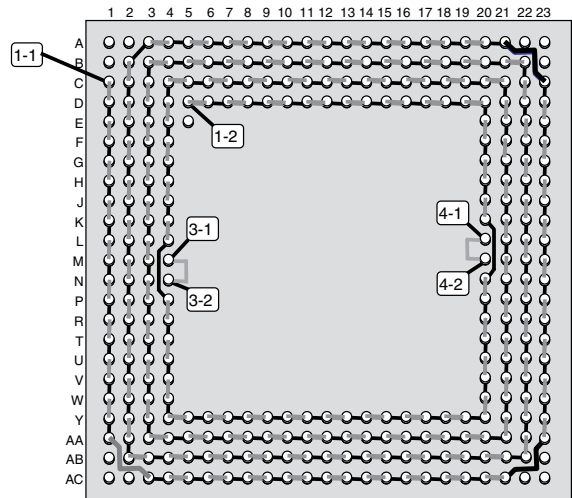
PWB Netlist Pattern for BLR Testing



PWB Pattern
 In: 1-1, 3-1, 4-1
 Common: 1-2, 3-2, 4-2



Stacked View of 3 DC Nets for BLR Testing



PWB Pattern
 In: 1-1, 3-1, 4-1
 Common: 1-2, 3-2, 4-2

