

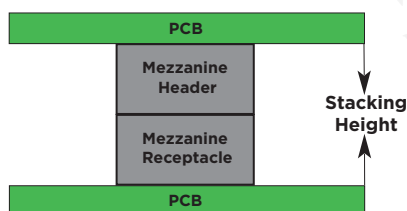
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Quick Reference Guide: Stacking Connectors

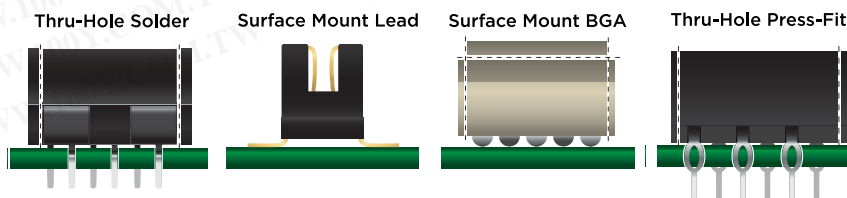
THINGS TO CONSIDER WHEN SELECTING A MEZZANINE CONNECTOR

1. Determine a range of stack heights that will meet the application requirements.
2. Determine the minimum number of signals that must pass between the two printed circuit boards (PCBs) with consideration for power and ground.
3. Determine how much space is available for the connectors with consideration for its location. Will a traditional two-row connector fit or will a "grid" (many rows) style product work best in the application? The largest pitch that will fit is typically chosen, as larger pitch connectors tend to be more rugged and easier to process.
4. Determine the preferred method of attachment. Ball-Grid Array (BGA) products are a variant of surface mount that give connector manufacturers greater co-planarity tolerance than typical surface mount leads. Other types of attachments are solder thru-hole and press-fit thru-hole.
5. Determine the connector type, open pin field or controlled impedance, that will best fit the application. Open pin field connectors typically do not have any pre-determined grounds and are usually used in lower speed applications. Tyco Electronics does offer several open pin field connectors that have very good electrical performance characteristics.

HOW TO MEASURE FOR A MEZZANINE CONNECTOR



MOUNTING STYLES



Stacking Connectors



PRODUCT SIZES

| Mated Stack Height | | Connector Description | Pitch | PCB Attach Method | Type | Up to 30 Positions | Less than 100 Positions | 100 to 200 Positions | 200 Positions and Greater |
|--------------------|-------|-----------------------|--------|-------------------|--------------|--------------------|-------------------------|----------------------|---------------------------|
| mm | inch | | | | | | | | |
| 1.00 | 0.039 | .4mm Fine Stack | .4mm | Smt | Open Pin | | | | |
| 1.50 | 0.059 | .4mm Fine Stack | .4mm | Smt | Open Pin | | | | |
| 1.50 | 0.059 | .5mm Fine Stack | .5mm | Smt | Open Pin | | | | |
| 3.00 | 0.118 | .8mm Fine Stack | .8mm | Smt | Open Pin | | | | |
| 3.90 | 0.154 | .8mm Fine Stack | .8mm | Smt | Open Pin | | | | |
| 4.00 | 0.157 | .5mm Fine Mate | .5mm | Smt | Open Pin | | | | |
| 4.00 | 0.157 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |
| 4.00 | 0.157 | .8mm Fine Mate | .8mm | Smt | Open Pin | | | | |
| 4.20 | 0.165 | .8mm Fine Stack | .8mm | Smt | Open Pin | | | | |
| 4.50 | 0.177 | .5mm Fine Mate | .5mm | Smt | Open Pin | | | | |
| 4.50 | 0.177 | .8mm Fine Mate | .8mm | Smt | Open Pin | | | | |
| 4.70 | 0.185 | .8mm Fine Stack | .8mm | Smt | Open Pin | | | | |
| 5.00 | 0.197 | .5mm Free Height | .5mm | Smt | Open Pin | | | | |
| 5.00 | 0.197 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |
| 5.00 | 0.197 | .8mm Fine Stack | .8mm | Smt | Open Pin | | | | |
| 5.00 | 0.197 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 5.00 | 0.197 | 1.25mm Fine Pitch | 1.25mm | Smt | Open Pin | | | | |
| 5.00 | 0.197 | MICTOR SB | .8mm | Smt | Controlled Z | | | | |
| 5.50 | 0.217 | .5mm Fine Mate | .5mm | Smt | Open Pin | | | | |
| 5.90 | 0.232 | .8mm Fine Stack | .8mm | Smt | Open Pin | | | | |
| 6.00 | 0.236 | .5mm Fine Mate | .5mm | Smt | Open Pin | | | | |
| 6.00 | 0.236 | .5mm Free Height | .5mm | Smt | Open Pin | | | | |
| 6.00 | 0.236 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |
| 6.00 | 0.236 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 6.35 | 0.250 | AMPMODU 50/50 | .050" | Smt | Open Pin | | | | |
| 6.50 | 0.256 | 1.25mm Fine Pitch | 1.25mm | Smt | Open Pin | | | | |
| 6.60 | 0.260 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 7.00 | 0.276 | .5mm Free Height | .5mm | Smt | Open Pin | | | | |
| 7.00 | 0.276 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |
| 7.00 | 0.276 | .8mm Fine Stack | .8mm | Smt | Open Pin | | | | |
| 7.00 | 0.276 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 7.00 | 0.276 | 1.25mm Fine Pitch | 1.25mm | Smt | Open Pin | | | | |
| 8.00 | 0.315 | .5mm Free Height | .5mm | Smt | Open Pin | | | | |
| 8.00 | 0.315 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |
| 8.00 | 0.315 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 8.00 | 0.315 | 1mm Free Height | 1mm | Smt | Open Pin | | | | |
| 8.00 | 0.315 | MICTOR SB | .8mm | Smt | Controlled Z | | | | |
| 8.00 | 0.315 | 1.25mm Fine Pitch | 1.25mm | Smt | Open Pin | | | | |
| 8.13 | 0.320 | AMPMODU 50/50 | .050" | Smt | Open Pin | | | | |
| 9.00 | 0.354 | .5mm Free Height | .5mm | Smt | Open Pin | | | | |
| 9.00 | 0.354 | .8mm Fine Stack | .8mm | Smt | Open Pin | | | | |
| 9.00 | 0.354 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 9.00 | 0.354 | 1mm Free Height | 1mm | Smt | Open Pin | | | | |
| 9.00 | 0.354 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 9.91 | 0.390 | AMPMODU 50/50 | .050" | Smt | Open Pin | | | | |
| 10.00 | 0.394 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |
| 10.00 | 0.394 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 10.00 | 0.394 | 1mm Free Height | 1mm | Smt | Open Pin | | | | |
| 10.00 | 0.394 | 1.25mm Fine Pitch | 1.25mm | Smt | Open Pin | | | | |
| 10.50 | 0.413 | 1.25mm Fine Pitch | 1.25mm | Smt | Open Pin | | | | |
| 10.92 | 0.430 | Micro-Strip | .050" | Thru-Hole | Controlled Z | | | | |
| 10.92 | 0.430 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 11.00 | 0.433 | .5mm Free Height | .5mm | Smt | Open Pin | | | | |
| 11.00 | 0.433 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |
| 11.00 | 0.433 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 11.00 | 0.433 | 1mm Free Height | 1mm | Smt | Open Pin | | | | |
| 11.00 | 0.433 | 1.25mm Fine Pitch | 1.25mm | Smt | Open Pin | | | | |
| 11.00 | 0.433 | MICTOR SB | .8mm | Smt | Controlled Z | | | | |
| 12.00 | 0.472 | .5mm Free Height | .5mm | Smt | Open Pin | | | | |
| 12.00 | 0.472 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |
| 12.00 | 0.472 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 12.00 | 0.472 | 1mm Free Height | 1mm | Smt | Open Pin | | | | |
| 12.57 | 0.495 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 13.00 | 0.512 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |
| 13.00 | 0.512 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 13.00 | 0.512 | 1mm Free Height | 1mm | Smt | Open Pin | | | | |
| 13.08 | 0.515 | AMPMODU System 50 | .050" | Smt | Open Pin | | | | |
| 14.00 | 0.551 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |

Stacking Connectors



PRODUCT SIZES

| Mated Stack Height | | Connector Description | Pitch | PCB Attach Method | Type | Up to 30 Positions | Less than 100 Positions | 100 to 200 Positions | 200 Positions and Greater |
|--------------------|-------|-----------------------|-------|-------------------|--------------|--------------------|-------------------------|----------------------|---------------------------|
| mm | inch | | | | | | | | |
| 14.00 | 0.551 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 14.00 | 0.551 | 1mm Free Height | 1mm | Smt | Open Pin | | | | |
| 14.00 | 0.551 | MICTOR SB | .8mm | Smt | Controlled Z | | | | |
| 15.00 | 0.591 | .5mm Free Height | .5mm | Smt | Open Pin | | | | |
| 15.00 | 0.591 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |
| 15.00 | 0.591 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 15.00 | 0.591 | 1mm Free Height | 1mm | Smt | Open Pin | | | | |
| 15.00 | 0.591 | Z-PACK 2mm HM | 2mm | Press Fit | Open Pin | | | | |
| 15.00 | 0.591 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 15.00 | 0.591 | Z-PACK TinMan 85ohm | 1.9mm | Press Fit | Controlled Z | | | | |
| 15.61 | 0.615 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 16.00 | 0.630 | .5mm Free Height | .5mm | Smt | Open Pin | | | | |
| 16.00 | 0.630 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |
| 16.00 | 0.630 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 16.00 | 0.630 | MICTOR SB | .8mm | Smt | Controlled Z | | | | |
| 16.00 | 0.630 | Z-PACK TinMan | 1.9mm | Press Fit | Controlled Z | | | | |
| 16.66 | 0.656 | Eurocard (Din) | .100" | Thru-Hole | Open Pin | | | | |
| 17.00 | 0.669 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 17.00 | 0.669 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 17.70 | 0.697 | Z-PACK Futurebus + | 2mm | Press Fit | Open Pin | | | | |
| 17.96 | 0.707 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 18.00 | 0.709 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |
| 18.00 | 0.709 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 18.00 | 0.709 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 18.00 | 0.709 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 18.00 | 0.709 | Micro-Strip | .050" | Thru-Hole | Controlled Z | | | | |
| 18.00 | 0.709 | Z-PACK HM-Zd | 2.5mm | Press Fit | Controlled Z | | | | |
| 18.75 | 0.738 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 19.00 | 0.748 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 19.00 | 0.748 | MICTOR SB | .8mm | Smt | Open Pin | | | | |
| 20.00 | 0.787 | .6mm Free Height | .6mm | Smt | Open Pin | | | | |
| 20.00 | 0.787 | .8mm Free Height | .8mm | Smt | Open Pin | | | | |
| 20.00 | 0.787 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 20.00 | 0.787 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 21.00 | 0.787 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 21.60 | 0.827 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 22.00 | 0.866 | MICTOR SB | .8mm | Smt | Controlled Z | | | | |
| 22.86 | 0.900 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 23.00 | 0.906 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 23.00 | 0.906 | Z-PACK HS3 | 25mm | Press Fit | Controlled Z | | | | |
| 24.00 | 0.945 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 25.00 | 0.984 | MICTOR SB | .8mm | Smt | Controlled Z | | | | |
| 25.00 | 0.984 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 26.00 | 1.020 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 27.00 | 1.063 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 27.00 | 1.063 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 27.80 | 1.094 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 28.00 | 1.102 | STRADA Mesa | Grid | Press Fit | Controlled Z | | | | |
| 28.00 | 1.102 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 29.00 | 1.142 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 30.00 | 1.181 | MICTOR SB | .8mm | Smt | Controlled Z | | | | |
| 30.00 | 1.181 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 31.00 | 1.220 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 31.12 | 1.220 | Micro-Strip | .050" | Thru-Hole | Controlled Z | | | | |
| 31.88 | 1.255 | MICTOR | .025" | Smt | Controlled Z | | | | |
| 35.00 | 1.378 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 36.00 | 1.417 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |
| 38.94 | 1.533 | Micro-Strip | .050" | Thru-Hole | Controlled Z | | | | |
| 40.00 | 1.575 | STEP-Z Grid Array | Grid | BGA | Controlled Z | | | | |

Stacking Connectors



FINE PITCH SMT STACKING CONNECTORS (PARALLEL BOARD-TO-BOARD)



0.4mm Fine Stack Connectors

- 0.4mm contact pitch
- 1.0mm and 1.5mm stacking height
- 20 to 90 positions



0.5mm Fine Mate Connectors

- 0.5mm contact pitch
- 4.0mm to 6.0mm stacking heights
- 16 to 100 positions
- Right angle options



0.5mm Fine Stack Connectors

- 0.5mm contact pitch
- 1.5mm stacking height
- 20 to 80 positions



0.5mm Free Height (FH) Connectors

- 0.5mm contact pitch
- 5.0mm to 16mm stacking heights
- 120 to 440 positions



0.6mm Free Height (FH) Connectors

- 0.6mm contact pitch
- 4.0mm to 16mm stacking heights
- 50 to 320 positions
- Grounded (GIGA) versions



0.8mm Fine Mate Connectors

- 0.8mm contact pitch
- 4.0mm and 4.5mm stacking heights
- 10 to 60 positions



0.8mm Fine Stack Connectors

- 0.8mm contact pitch
- 3.0mm stacking height
- 14 to 50 positions



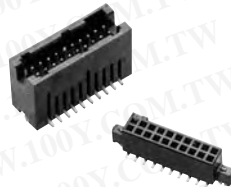
0.8mm Free Height (FH) Connectors

- 0.8mm contact pitch
- 5.0mm to 16mm stacking heights
- 40 to 200 positions



1.0mm FH (IEEE 1386) Connectors

- 1.0mm contact pitch
- 8.0mm to 15mm stacking heights
- 64 and 84 positions



AMPMODU 50/50 Grid Connectors

- 1.27 [.050] contact pitch
- 6.35 [.250], 8.13 [.320] and 9.91 [.390] stacking heights
- 10 to 100 positions



AMPMODU System 50 Connectors

- 1.27mm [.050"] contact pitch
- 13.08mm [.515"] stacking height
- 10 to 100 positions



Eurocard (Dln) Connectors

- 0.4mm contact pitch
- 1.0mm and 1.5mm stacking height
- 20 to 90 positions

Stacking Connectors

FINE PITCH SMT STACKING CONNECTORS (PARALLEL BOARD-TO-BOARD) CONTINUED



Micro-Strip Connectors

- 1.27mm [.050"] pitch
- 10.92mm to 38.94mm height
- 40-240 positions
- Controlled impedance



MICTOR Connectors

- 0.635mm [.025"] contact pitch
- 6.6mm to 22.86mm [.260" to .900"] stacking heights
- 38-266 positions
- Matched impedance



MICTOR SB Connectors

- 0.8mm pitch
- 5mm to 30mm height
- 40 to 200 positions
- Controlled impedance



STEP-Z Grid Array Connectors

- 1 x 0.65 grid
- 15mm to 40mm height
- 104, 200, 296 positions
- Controlled impedance



STRADA Mesa Connectors

- 3.1 x 2.6 grid
- 8mm to 42mm height
- 130 to 518 positions
- Controlled impedance
- Power options



Z-PACK 2mm HM Connectors

- 2mm pitch
- 15mm height
- 55 positions minimum
- End-to-end stackable



Z-PACK Futurebus + Connectors

- 2mm pitch
- 17.7mm height
- 24 positions minimum
- End-to-end stackable



Z-PACK HM-Zd Connectors

- 2.5mm pitch
- 18mm height
- 40 different pairs minimum
- End-to-end stackable
- Controlled impedance



Z-PACK TinMan & Z-PACK TinMan 85ohm Connectors

- 1.9mm pitch
- 15mm, 16mm, and 39mm height
- 24 different pair minimum
- Controlled impedance
- End-to-end stackable



1.25 mm Centerline Fine Pitch Connectors

- 1.25mm fine pitch
- 5mm to 11mm height
- 4 to 30 positions
- Pin and socket



Z-PACK HS3 Connectors

- 2.5mm pitch
- 23mm height
- 30 positions minimum
- Controlled impedance
- End-to-end stackable

Stacking Connectors

Once you have determined which connector description best suits your needs (using the chart on pages 2 and 3 of this document), use the chart below to find a part number to search the Tyco Electronics website.

| Connector Description | Representative Part Numbers | |
|-------------------------------|-----------------------------|-------------|
| | Plug | Receptacle |
| 4mm Fine Stack | 2-1871566-4 | 2-1747769-4 |
| 5mm Fine Mate | 1565359-1 | 1565357-1 |
| 5mm Fine Stack | 7-5353164-6 | 7-5353159-5 |
| 5mm Free Height | 3-6318491-6 | 3-6318490-6 |
| 6mm Free Height | 1-5353184-0 | 1-5353190-0 |
| 8mm Fine Mate | 2-5917407-2 | 2-5917408-2 |
| 8mm Fine Stack | 1-179396-2 | 1-179397-2 |
| 8mm Free Height | 5177983-4 | 5177984-4 |
| 1mm Free Height | 5120528-1 | 5120534-1 |
| AMPMODU 50/50 | 5-104693-2 | 5-104652-2 |
| AMPMODU System 50 | 5-147377-3 | 5-104550-4 |
| Eurocard (Din) | 650889-1 | 5353032-4 |
| Micro-Strip | 5536280-1 | 5536279-1 |
| MICTOR | 5767007-8 | 2-5767004-2 |
| MICTOR SB | 1658013-1 | 1658012-1 |
| STEP-Z Grid Array | 6-1761714-3 | 5-1761715-5 |
| STRADA Mesa | 2-2057470-8 | 2057471-1 |
| Z-PACK 2mm HM | 100143-1 | 106773-1 |
| Z-PACK Futurebus+ | 223002-1 | 223652-1 |
| Z-PACK HM-Zd | 1469002-1 | 1469362-1 |
| Z-PACK TinMan | 1934312-1 | 1934544-1 |
| Z-PACK TinMan 85ohm | 1934948-1 | 1934949-1 |
| 1.25 mm Centerline Fine Pitch | 4-176890-6 | 4-175630-6 |
| Z-PACK HS3 | 120732-1 | 120948-1 |

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NOTE: For purposes of this Catalog, included within the definition of RoHS Compliant are products that are clearly "Out of Scope" of the RoHS Directive such as hand tools and other non-electrical accessories.

NOTE: Information regarding RoHS compliance is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. For latest compliance status, refer to our website referenced at right.

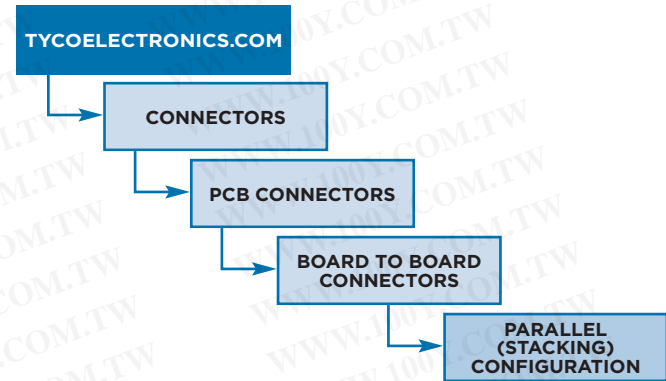
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Do a keyword search for Parallel (Stacking) Configuration or follow the breakdown below.

[Breakdown From Main Page](#)



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- Downloadable Technical Data Customer Information Presentation
- More detailed information regarding the definitions used above
- So whatever your questions when it comes to RoHS, we've got the answers at www.tycoelectronics.com/leadfree

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