

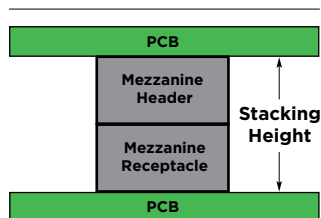


## Quick Reference Guide: Stacking Connectors

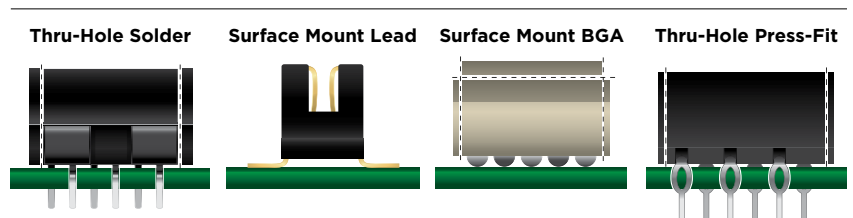
### THINGS TO CONSIDER WHEN SELECTING A MEZZANINE CONNECTOR

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. TE Connectivity does offer several open pin field connectors that have very good electrical performance characteristics.

### HOW TO MEASURE FOR A MEZZANINE CONNECTOR



### MOUNTING STYLES



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	MITOR 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	MITOR	.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	MITOR 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	MITOR	.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	MITOR	.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	MITOR 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	MITOR	.025"	Smt	Controlled Z				
13.00	0.512	.6mm Free Height	.6mm	Smt	Open Pin				

PRODUCT SIZES (Continued)									
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								
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				
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				

**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



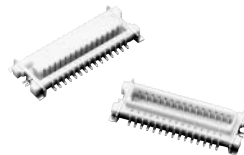
**0.6mm Free Height (FH) Connectors**

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



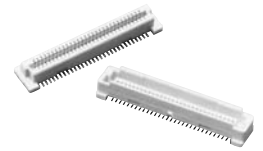
**0.8mm Fine Mate Connectors**

- 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



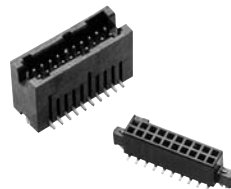
**0.8mm Free Height (FH) Connectors**

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



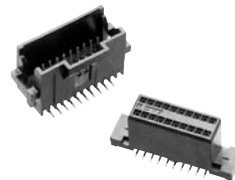
**1.0mm FH (IEEE 1386) Connectors**

- 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 (Din)**

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

**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 TE 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

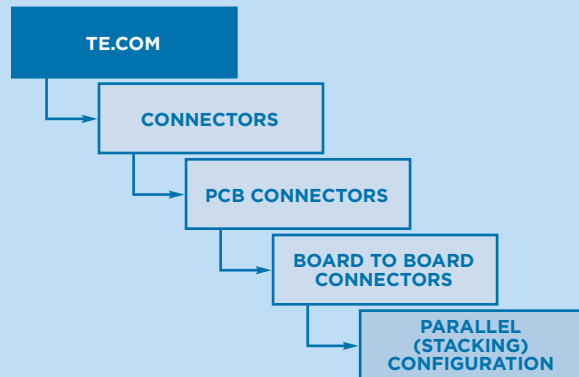
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[Link](#)

<http://www.tycoelectronics.com/>

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

[Breakdown From Main Page](#)



## FOR MORE INFORMATION

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France:	+33 (0) 1-3420-8686
Netherlands:	+31 (0) 73-6246-999
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Part numbers in this brochure are RoHS Compliant\*, unless marked otherwise.

\*as defined [www.te.com/leadfree](http://www.te.com/leadfree)

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2-1773454-6 CIS LUG PDF 4/2012

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