

Table of Contents

Need more information?

Call Technical Support at the numbers listed below.

Technical Support is staffed with specialists well versed in all Tyco Electronics products. They can provide you with:

- Technical support
- Catalogs
- Technical Documents
- Product Samples
- Tyco Electronics Authorized Distributor Locations

For current tooling information, call the Tooling Assistance Center: **1-800-722-1111**.

Produced under a Quality Management System certified to ISO 9001

A copy of the certificate is available upon request.



Dimensioning:

Dimensions are in millimeters and inches unless specified otherwise. Values in brackets are equivalent U.S. customary units.

Metric symbols used are:

- C (Celsius)
- Kg (Kilogram)
- N (newton)
- m (meter)
- mm (millimeter)
- mm² (square millimeter)

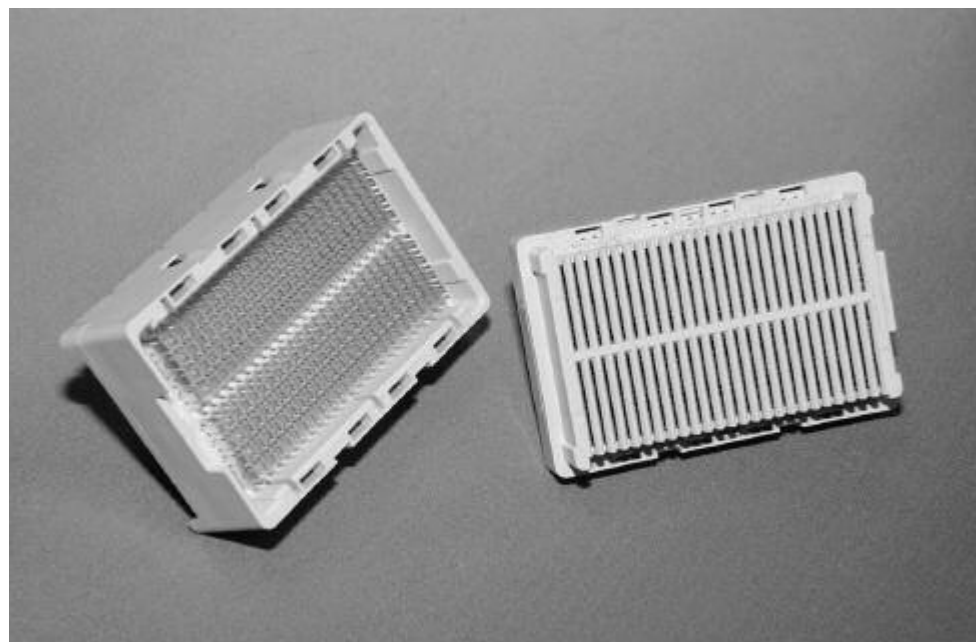
Specifications subject to change. Consult Tyco Electronics for latest design applications.

Signal Integrity Services: Taking SI to the Next Level	1
High Speed Stacking Connectors (Parallel and Right-Angle Board-to-Board) Stacking Height Guide	2
STEP-Z Interconnection System	
Introduction	5
5.00 [.197] Receptacles	6
15.00 [.591] Receptacles	7
10.00 [.394] Plugs	8
12.00 [.472] Plugs	9
13.00 [.512] Plugs	10
15.00 [.591] Plugs	11
20.00 [.787] Plugs	12
25.00 [.984] Plugs	13
MICTOR Interconnection System (0.64 [.025] Centerline)	
Introduction	14
Connector Cross Section	15
Material and Performance Specifications	16
Stack Height Combinations	17
Right-Angle (Straddle Mount) Combinations	18
Vertical Plugs:	
6.60 [.260] Stacking Height	19, 20
8.99 [.354] Stacking Height	21, 22
10.92 [.430] Stacking Height	23, 24
12.57 [.495] Stacking Height	25, 26
17.96 [.707] Stacking Height	27, 28
18.75 [.738] Stacking Height	29
20.02 [.788] Stacking Height	30, 31
22.86 [.900] Stacking Height	32, 33
Right-Angle Plugs	34, 35
Vertical Receptacles	36, 37
Vertical Receptacles (Extended Height)	38, 39
Right-Angle Receptacles	40, 41
MICTOR SB Interconnection System	
Introduction	42
Material and Performance Specifications	43
Stack Height Combinations	44
Connector Cross Section	45
0.80 [.032] Centerline Receptacles	46
0.80 [.032] Centerline Plugs	
5.00 [.197] Stacking Height	47
8.00 [.315] Stacking Height	48
11.00 [.433] Stacking Height	49
14.00 [.551] Stacking Height	50
16.00 [.630] Stacking Height	51
19.00 [.748] Stacking Height	52
22.00 [.866] Stacking Height	53
25.00 [.984] Stacking Height	54
30.00 [1.181] Stacking Height	55
0.50 [.020] Centerline Receptacles	56
0.50 [.020] Centerline Plugs	
5.00 [.197] Stacking Height	57
8.00 [.315] Stacking Height	58
11.00 [.433] Stacking Height	59
14.00 [.551] Stacking Height	60
16.00 [.630] Stacking Height	61
19.00 [.748] Stacking Height	62
22.00 [.866] Stacking Height	63
25.00 [.984] Stacking Height	64
30.00 [1.181] Stacking Height	65
Micro-Strip Interconnection System (1.27 x 2.54 [.050 x .100] Centerline)	
Introduction	66-67
Vertical Plugs:	
10.92 [.430] Stacking Height	68-70
18.75 [.738] Stacking Height	71, 72
Vertical Receptacles	73
Right-Angle Receptacles	74, 75
Extended Vertical Receptacles	76
Application Tooling for MICTOR Right-Angle Connectors	77
ACTION PIN Press-Fit Contacts	78, 79
Application Tooling for Micro-Strip Connectors with ACTION PIN Contacts	80
Technical Documents	81
PRECISION INTERCONNECT BLUE RIBBON Coax Assemblies	82, 83
Part Number Index	84

Introduction to the STEP-Z Interconnection System

Product Facts

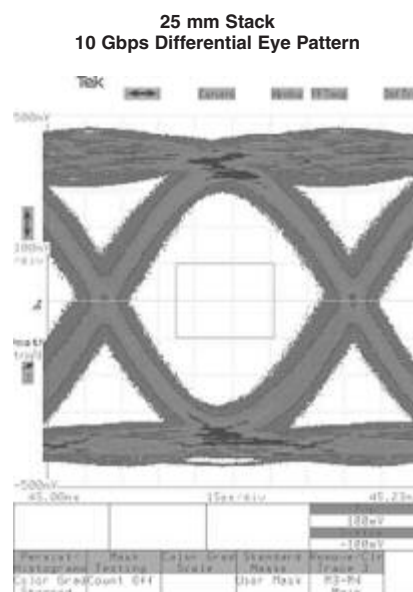
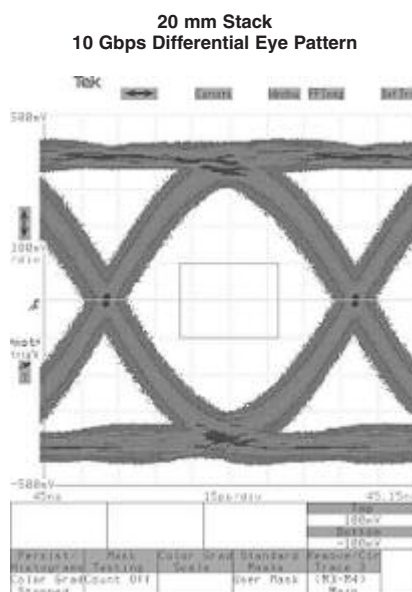
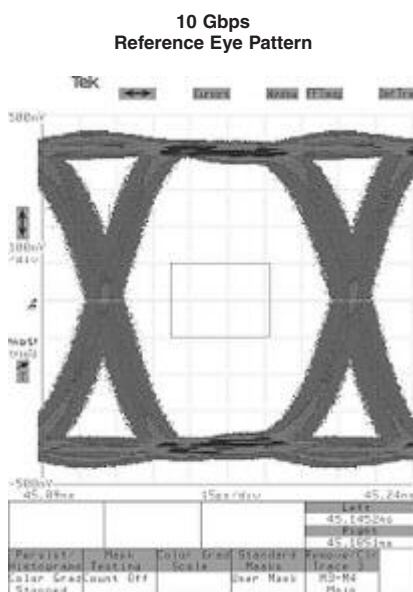
- Excellent electrical performance for applications requiring 10+ Gb/s data rates
- Multipair differential cross talk less than 3% at 100 ps risetime for all stack heights
- Impedance specification of 100 ohms for Differential Pair configuration and 50 ohms for Single-Ended configuration
- Stack heights available ranging from 15.00 [.590] to 35.00 [1.378]
- High Speed position sizes ranging from 104 to 296 per connector
- SMT BGA attachment
- Dual beam signal contacts for high reliability
- Receptacle contacts fully protected with plastic cover
- Polarized housing design
- Packaging available for Trays or Tape & Reel
- High temperature housing plastic
- Caps for use with vacuum pick & place equipment



The STEP-Z connector is a grid array mezzanine connector specifically designed for high speed and high density applications up to 10+ gigabit per second data rates. Pin out patterns for either differential pair or single ended provide excellent isolation of high speed signals. Ground connections in

close proximity to signal connections enable proper electrical coupling through the entire interconnect dramatically reducing crosstalk. The connector system maintains a 100 ohm impedance for differential applications and a 50 ohm impedance for single-ended applications throughout the interconnect.

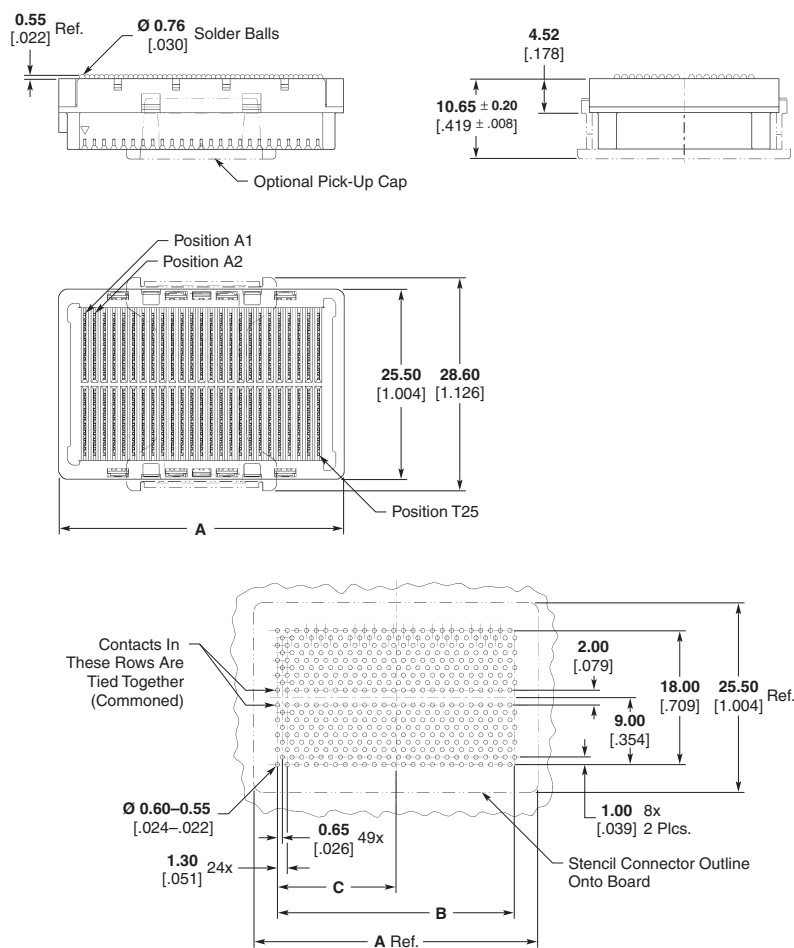
Ball Grid Array attachment for both halves minimizes the performance degradation typically found with through hole connections and improves routing capability. Dual beam signal contacts provide for a highly reliable interface connection. The connector housing is polarized to ensure proper mating.



Mask Amplitude was set to 25% (200mv p-p) of the input signal and mask width was set to 40% (40 ps) of the input signal.

STEP-Z Interconnection System

5.00 [.197] Receptacles



Recommended PC Board Layout

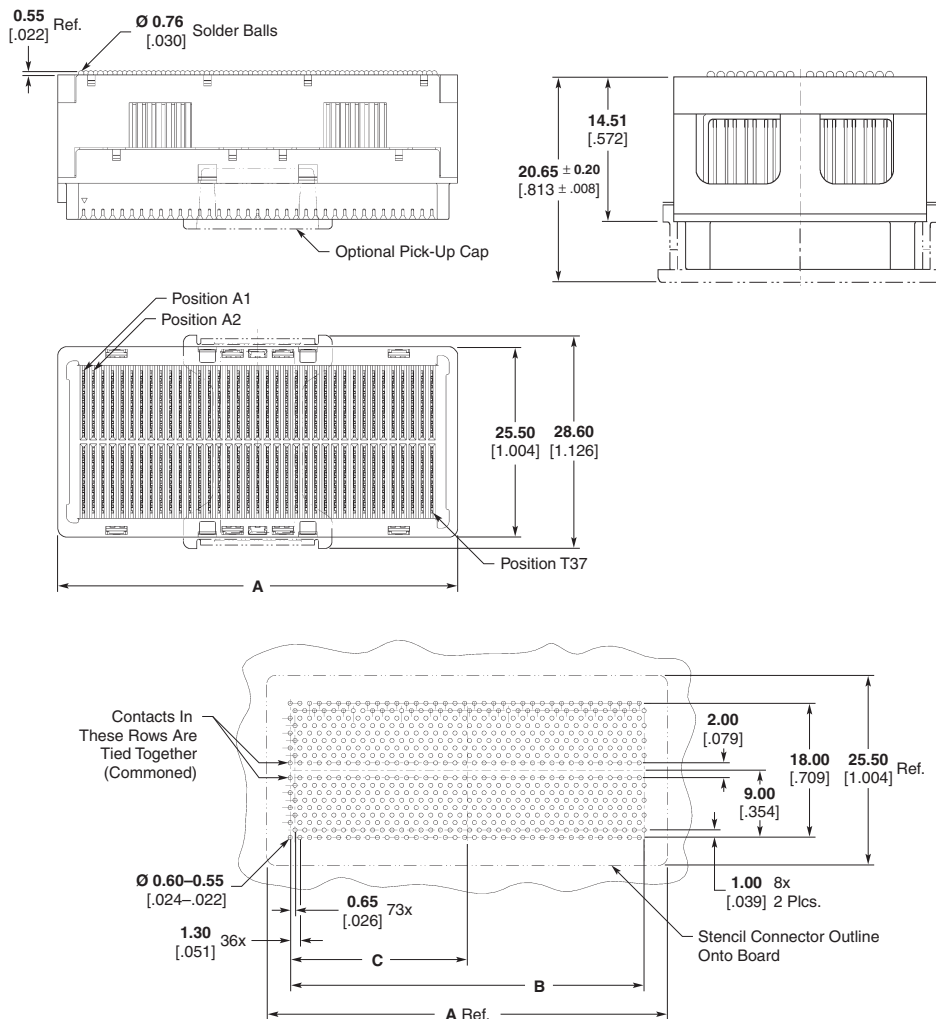
No. of Pos.*	Dimensions			Plating	Part Numbers
	A	B	C		With Pick & Place Cap
104	22.60	16.25	8.13	SnPb	1761613-5◆
	.890	.640	.320	Pb-free	5-1761613-5
200	38.20	31.85	15.93	SnPb	1761615-5◆
	1.504	1.254	.627	Pb-free	5-1761615-5
296	53.75	47.45	23.73	SnPb	1761617-5◆
	2.116	1.868	.934	Pb-free	5-1761617-5

* Signal contacts only, ground contacts not included.
Tray packaged Part Numbers shown. Contact Tyco Electronics Engineering for Tape and Reel packaged versions.

Note: Part Numbers are RoHS compliant except: ◆ Indicates non-RoHS compliant;
● Indicates "5 of 6 compliant" (lead in solderable interface only).

STEP-Z Interconnection System (Continued)

15.00 [.591] Receptacles



Recommended PC Board Layout

No. of Pos.*	Dimensions			Plating	Part Numbers
	A	B	C		With Pick & Place Cap
104	22.60	16.25	8.13	SnPb	1-1761613-5●
	.890	.640	.320	Pb-free	6-1761613-5
200	38.20	31.85	15.93	SnPb	1-1761615-5●
	1.504	1.254	.627	Pb-free	6-1761615-5
296	53.75	47.45	23.73	SnPb	1-1761617-5●
	2.116	1.868	.934	Pb-free	6-1761617-5

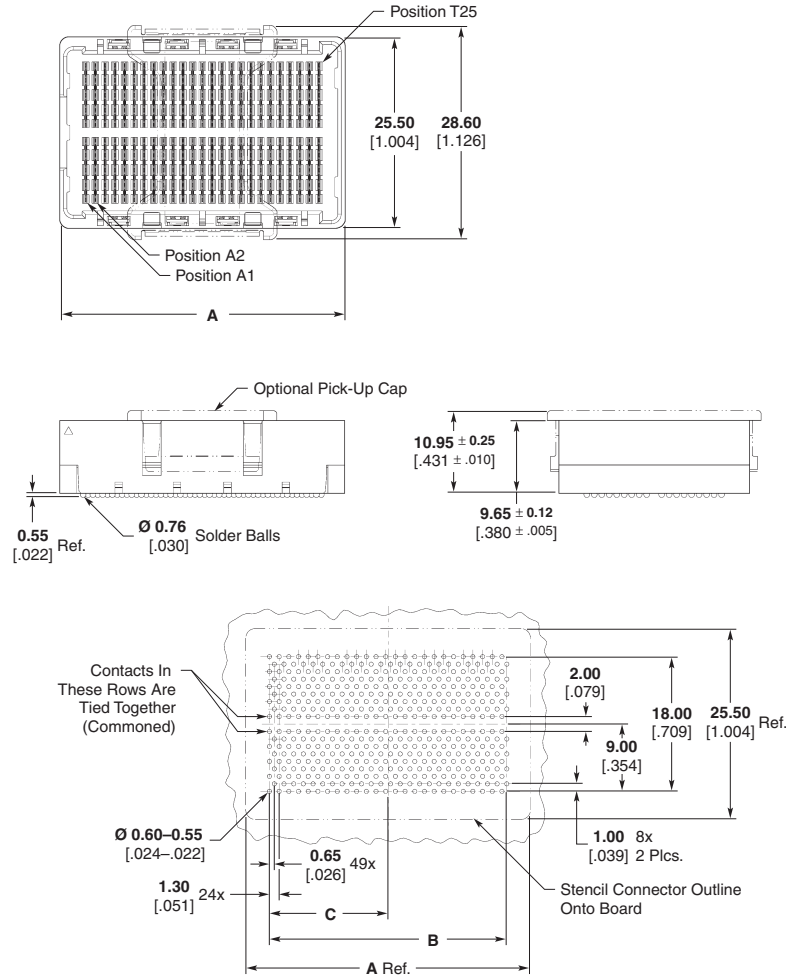
* Signal contacts only, ground contacts not included.

Tray packaged Part Numbers shown. Contact Tyco Electronics Engineering for Tape and Reel packaged versions.

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant;
● Indicates "5 of 6 compliant" (lead in solderable interface only).

STEP-Z Interconnection System (Continued)

10.00 [.394] Plugs



Recommended PC Board Layout

No. of Pos.*	Dimensions			Plating	Part Numbers
	A	B	C		With Pick & Place Cap
104	22.60	16.25	8.13	SnPb	1-1761612-0◆
	.890	.640	.320	Pb-free	6-1761612-0
200	38.20	31.85	15.93	SnPb	1-1761614-0◆
	1.504	1.254	.627	Pb-free	6-1761614-0
296	53.75	47.45	23.73	SnPb	1-1761616-0◆
	2.116	1.868	.934	Pb-free	6-1761616-0

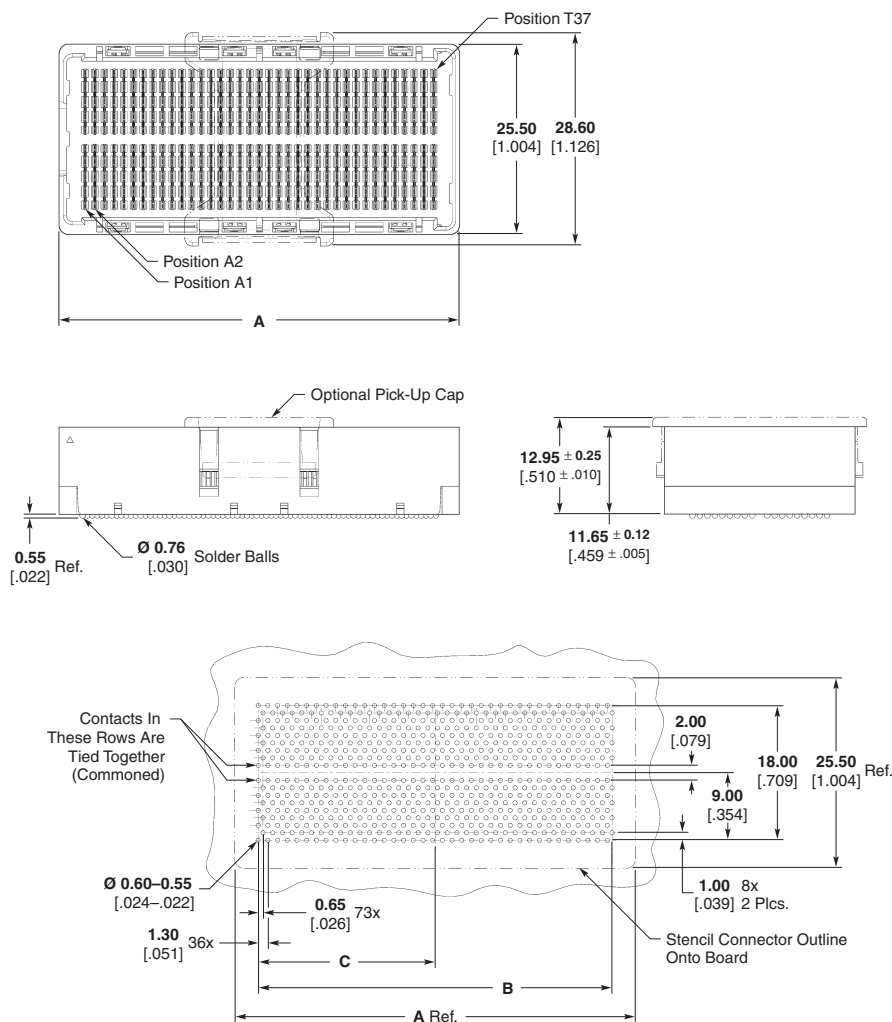
* Signal contacts only, ground contacts not included.

Tray packaged Part Numbers shown. Contact Tyco Electronics Engineering for Tape and Reel packaged versions.

Note: Part Numbers are RoHS compliant except: ◆ Indicates non-RoHS compliant;
● Indicates "5 of 6 compliant" (lead in solderable interface only).

STEP-Z Interconnection System (Continued)

12.00 [.472] Plugs



Recommended PC Board Layout

No. of Pos.*	Dimensions			Plating	Part Numbers
	A	B	C		With Pick & Place Cap
104	22.60	16.25	8.13	SnPb	1-1761612-2◆
	.890	.640	.320	Pb-free	6-1761612-2
200	38.20	31.85	15.93	SnPb	1-1761614-2◆
	1.504	1.254	.627	Pb-free	6-1761614-2
296	53.75	47.45	23.73	SnPb	1-1761616-2◆
	2.116	1.868	.934	Pb-free	6-1761616-2

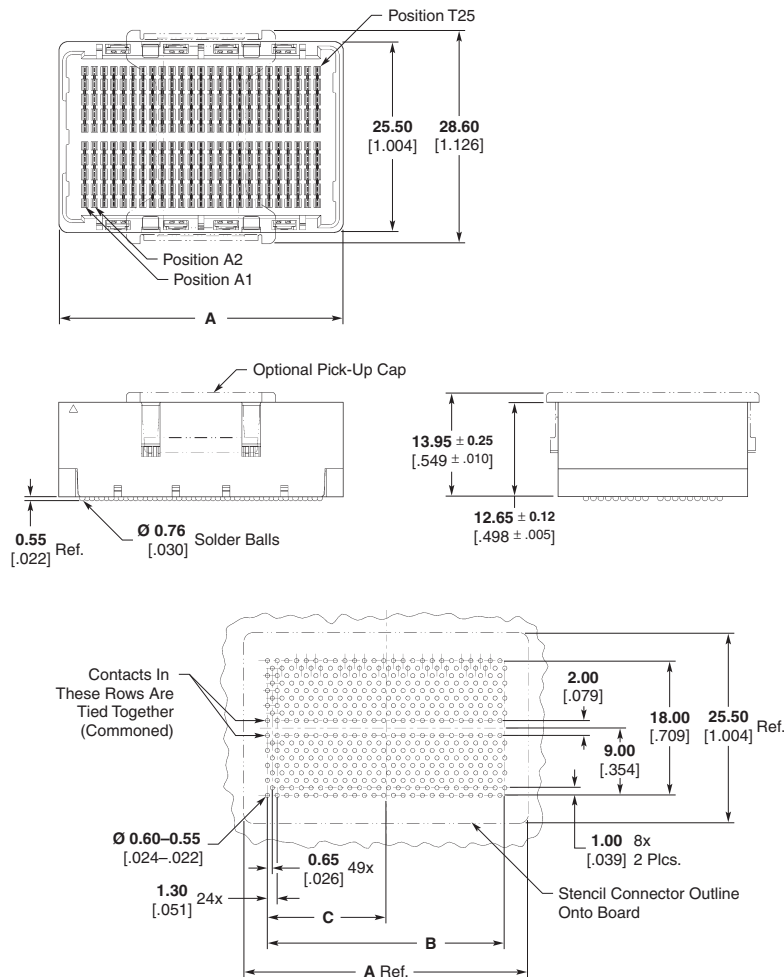
* Signal contacts only, ground contacts not included.

Tray packaged Part Numbers shown. Contact Tyco Electronics Engineering for Tape and Reel packaged versions.

Note: Part Numbers are RoHS compliant except: ◆ Indicates non-RoHS compliant;
● Indicates "5 of 6 compliant" (lead in solderable interface only).

STEP-Z Interconnection System (Continued)

13.00 [.512] Plugs



Recommended PC Board Layout

No. of Pos.*	Dimensions			Plating	Part Numbers
	A	B	C		With Pick & Place Cap
104	22.60	16.25	8.13	SnPb	1-1761612-3◆
	.890	.640	.320	Pb-free	6-1761612-3
200	38.20	31.85	15.93	SnPb	1-1761614-3◆
	1.504	1.254	.627	Pb-free	6-1761614-3
296	53.75	47.45	23.73	SnPb	1-1761616-3◆
	2.116	1.868	.934	Pb-free	6-1761616-3

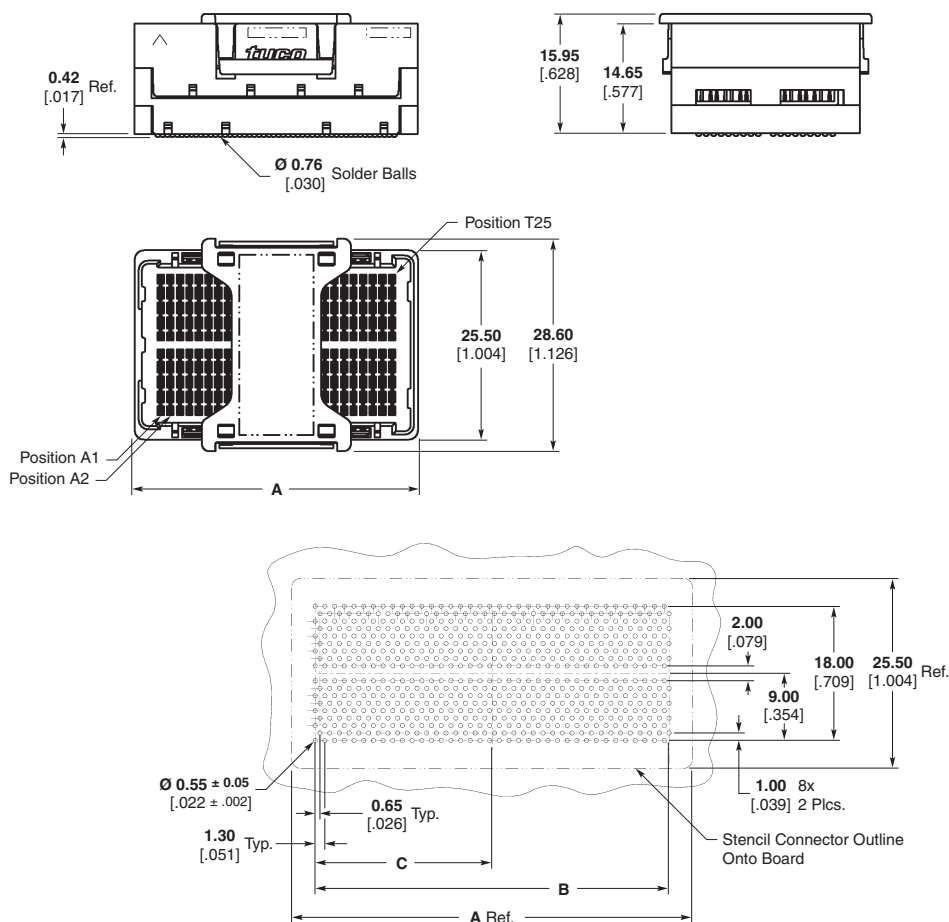
* Signal contacts only, ground contacts not included.

Tray packaged Part Numbers shown. Contact Tyco Electronics Engineering for Tape and Reel packaged versions.

Note: Part Numbers are RoHS compliant except: ◆ Indicates non-RoHS compliant;
● Indicates "5 of 6 compliant" (lead in solderable interface only).

STEP-Z Interconnection System (Continued)

15.00 [.591] Plugs



Recommended PC Board Layout

No. of Pos.*	Dimensions			Plating	Part Numbers
	A	B	C		With Pick & Place Cap
104	22.60	16.25	8.13	SnPb	1-1761612-5●
	.890	.640	.320	Pb-free	6-1761612-5
200	38.20	31.85	15.93	SnPb	1-1761614-5●
	1.504	1.254	.627	Pb-free	6-1761614-5
296	53.75	47.45	23.73	SnPb	1-1761616-5●
	2.116	1.868	.934	Pb-free	6-1761616-5

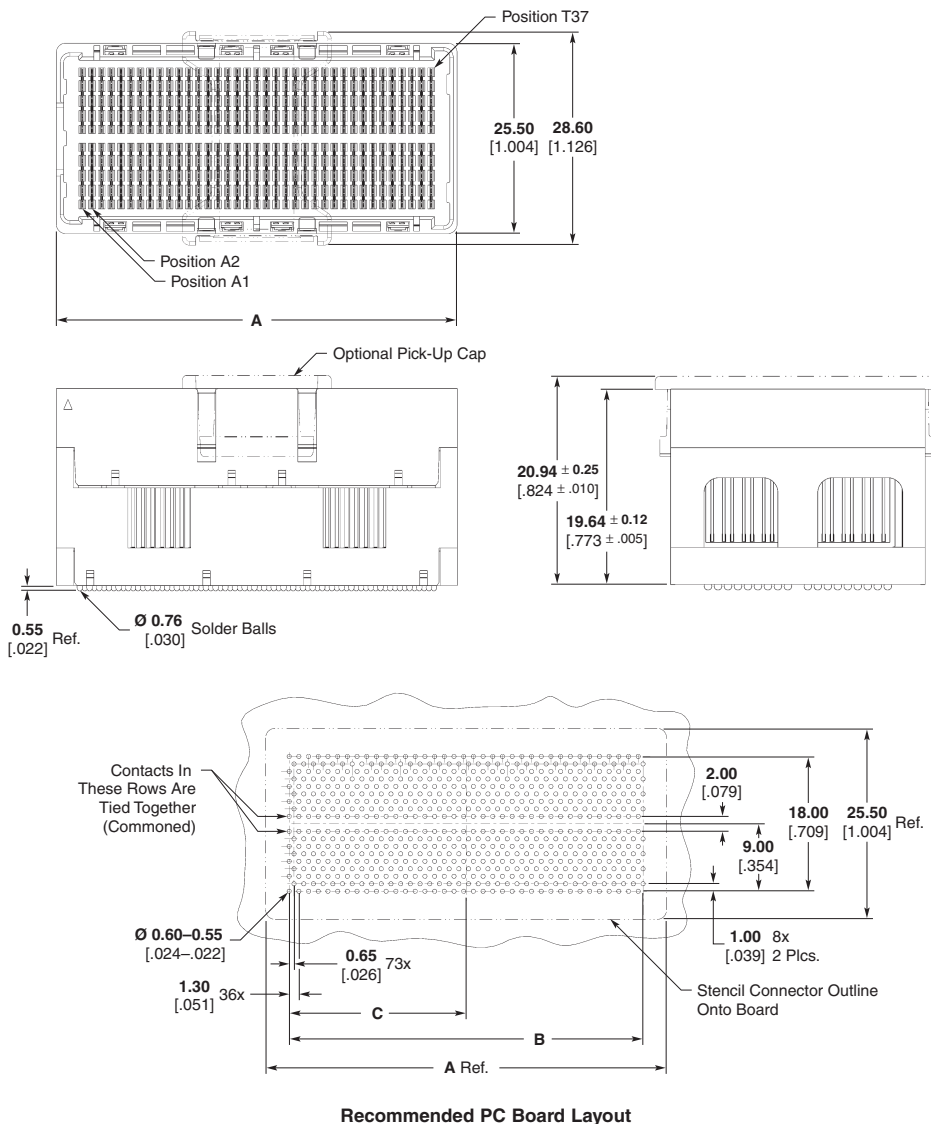
* Signal contacts only, ground contacts not included.

Tray packaged Part Numbers shown. Contact Tyco Electronics Engineering for Tape and Reel packaged versions.

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant;
● Indicates "5 of 6 compliant" (lead in solderable interface only).

STEP-Z Interconnection System (Continued)

20.00 [.787] Plugs



No. of Pos.*	Dimensions			Plating	Part Numbers
	A	B	C		With Pick & Place Cap
104	22.60 .890	16.25 .640	8.13 .320	SnPb	2-1761612-0●
				Pb-free	7-1761612-0
200	38.20 1.504	31.85 1.254	15.93 .627	SnPb	2-1761614-0●
				Pb-free	7-1761614-0
296	53.75 2.116	47.45 1.868	23.73 .934	SnPb	2-1761616-0●
				Pb-free	7-1761616-0

* Signal contacts only, ground contacts not included.
Tray packaged Part Numbers shown. Contact Tyco Electronics Engineering for Tape and Reel packaged versions.

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant;
● Indicates "5 of 6 compliant" (lead in solderable interface only).