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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
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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:

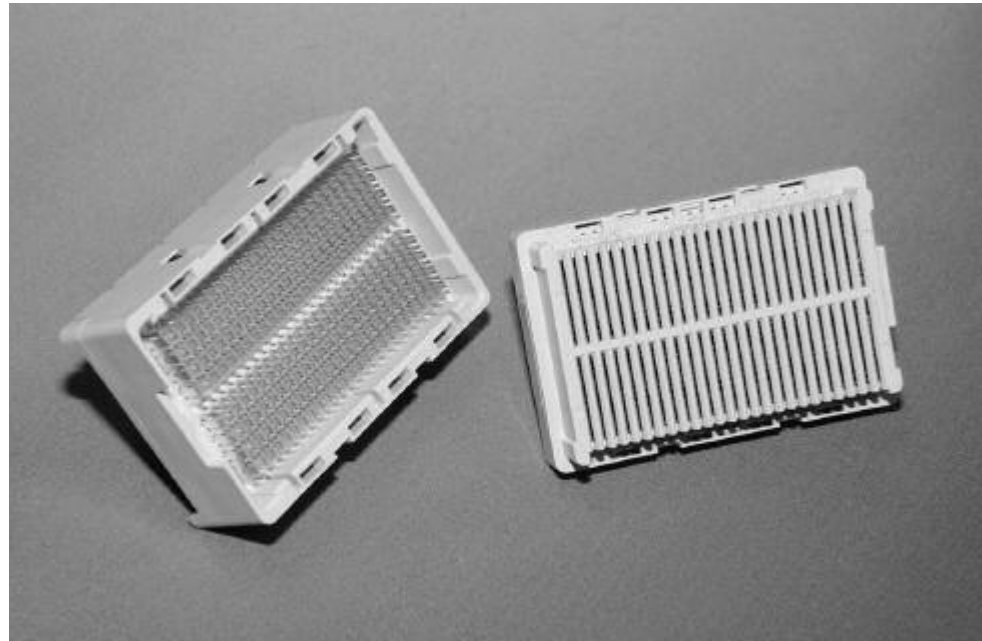
- C (Celsius)
- Kg (Kilogram)
- N (newton)
- m (meter)
- mm (millimeter)
- mm<sup>2</sup> (square millimeter)

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

## Introduction to the STEP-Z Interconnection System

### Product Facts

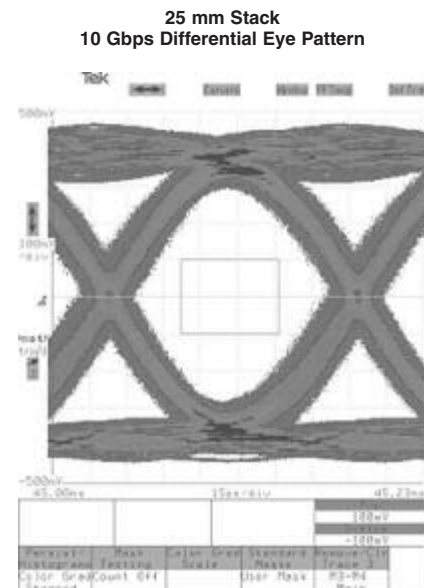
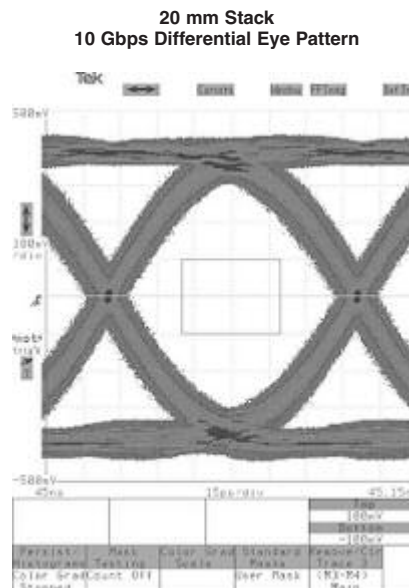
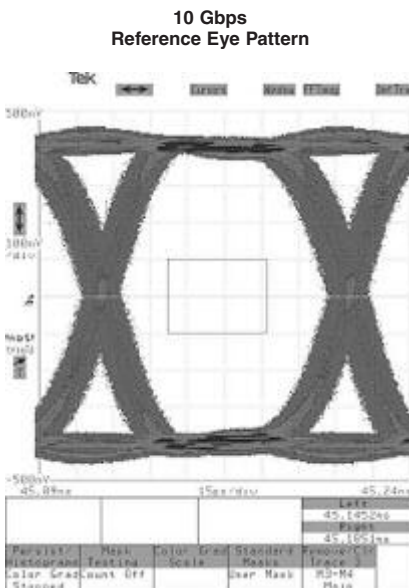
- Excellent electrical performance for applications requiring 10+ Gb/s data rates
- Multipair differential cross talk less than 3% at 100 ps risetime for all stack heights
- Impedance specification of 100 ohms for Differential Pair configuration and 50 ohms for Single-Ended configuration
- Stack heights 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.

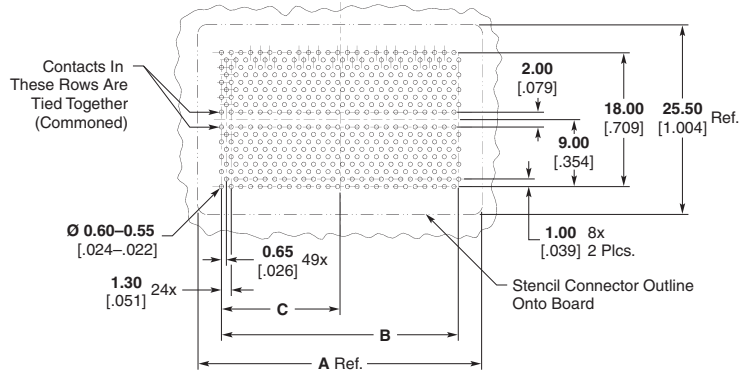
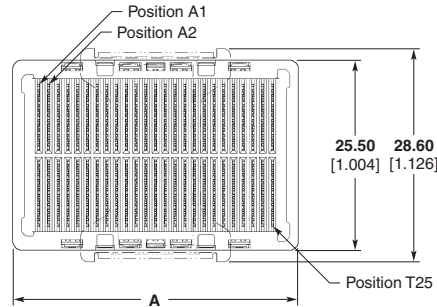
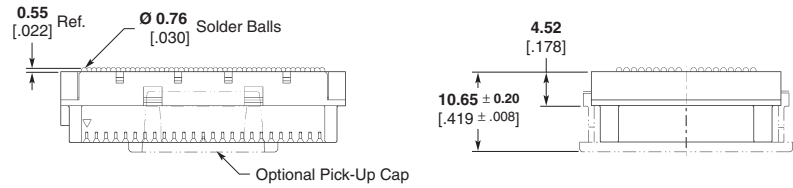


Mask Amplitude was set to 25% (200mv p-p) of the input signal and mask width was set to 40% (40 ps) of the input signal.

## STEP-Z Interconnection System

### 5.00 [.197] Receptacles

STEP-Z  
Interconnection System



Recommended PC Board Layout

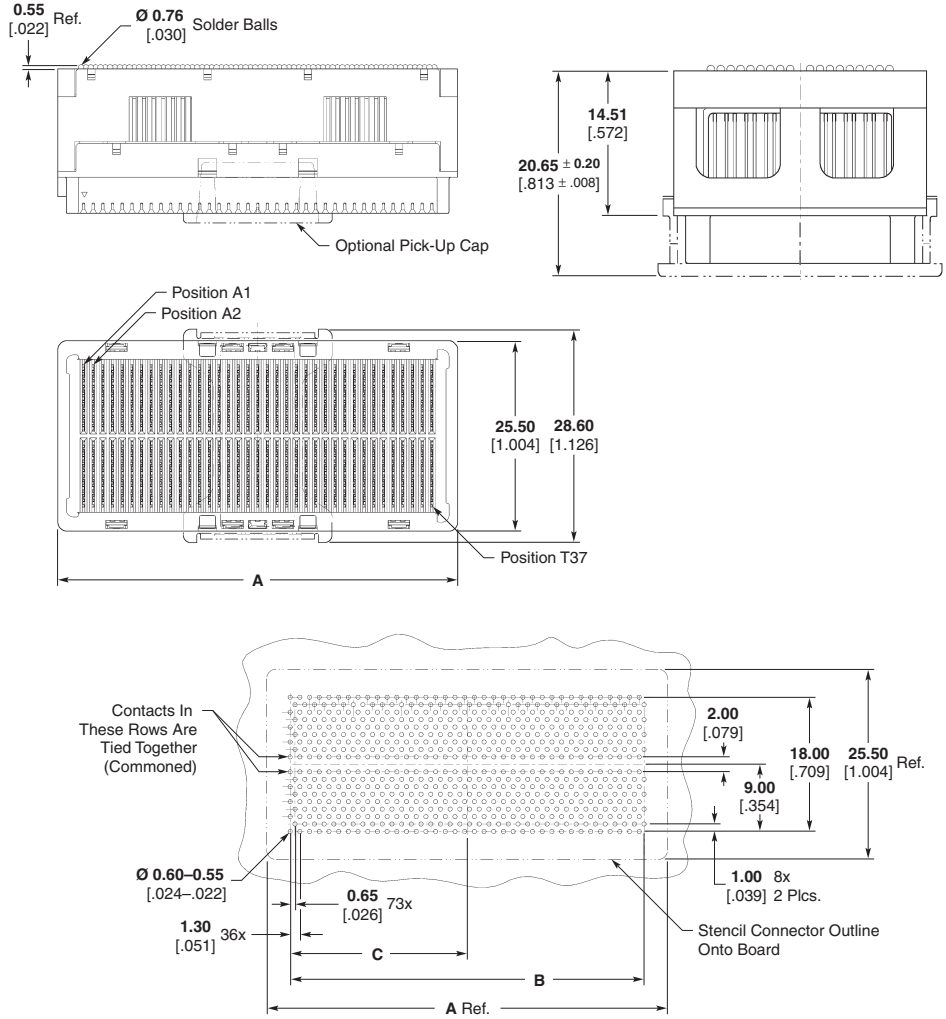
No. of Pos.*	Dimensions			Plating	Part Numbers
	A	B	C		With Pick & Place Cap
104	22.60	16.25	8.13	SnPb	1761613-5◆
	.890	.640	.320	Pb-free	5-1761613-5
200	38.20	31.85	15.93	SnPb	1761615-5◆
	1.504	1.254	.627	Pb-free	5-1761615-5
296	53.75	47.45	23.73	SnPb	1761617-5◆
	2.116	1.868	.934	Pb-free	5-1761617-5

\* 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

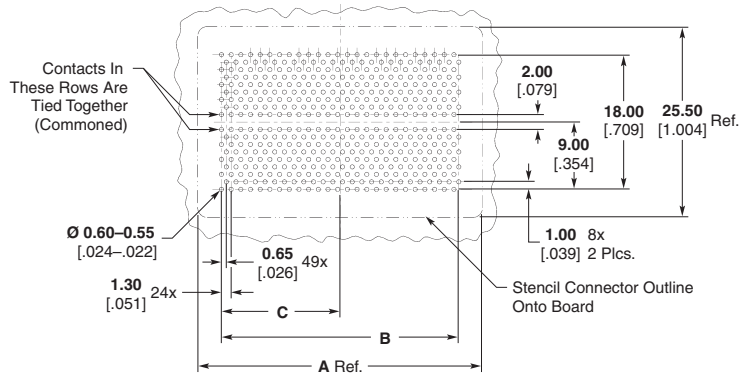
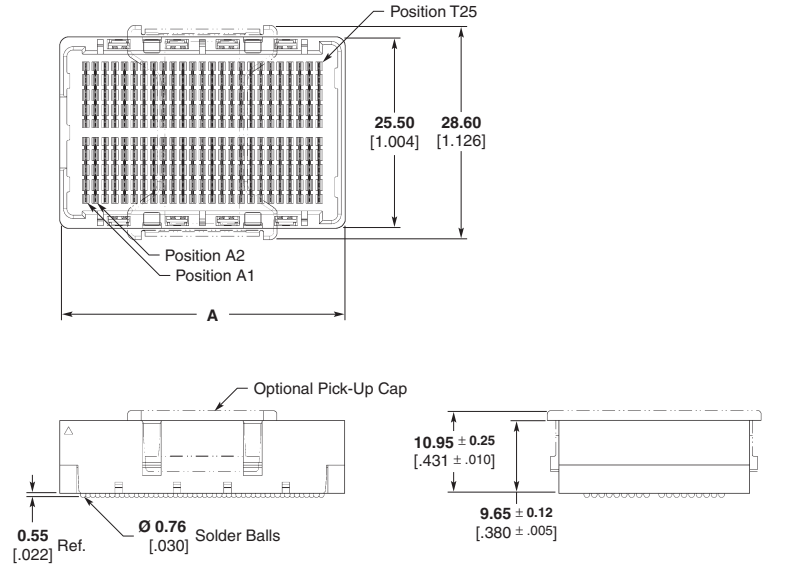
\* Signal contacts only, ground contacts not included.  
Tray packaged Part Numbers shown. Contact Tyco Electronics Engineering for Tape and Reel packaged versions.

**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**

STEP-Z  
Interconnection System



**Recommended PC Board Layout**

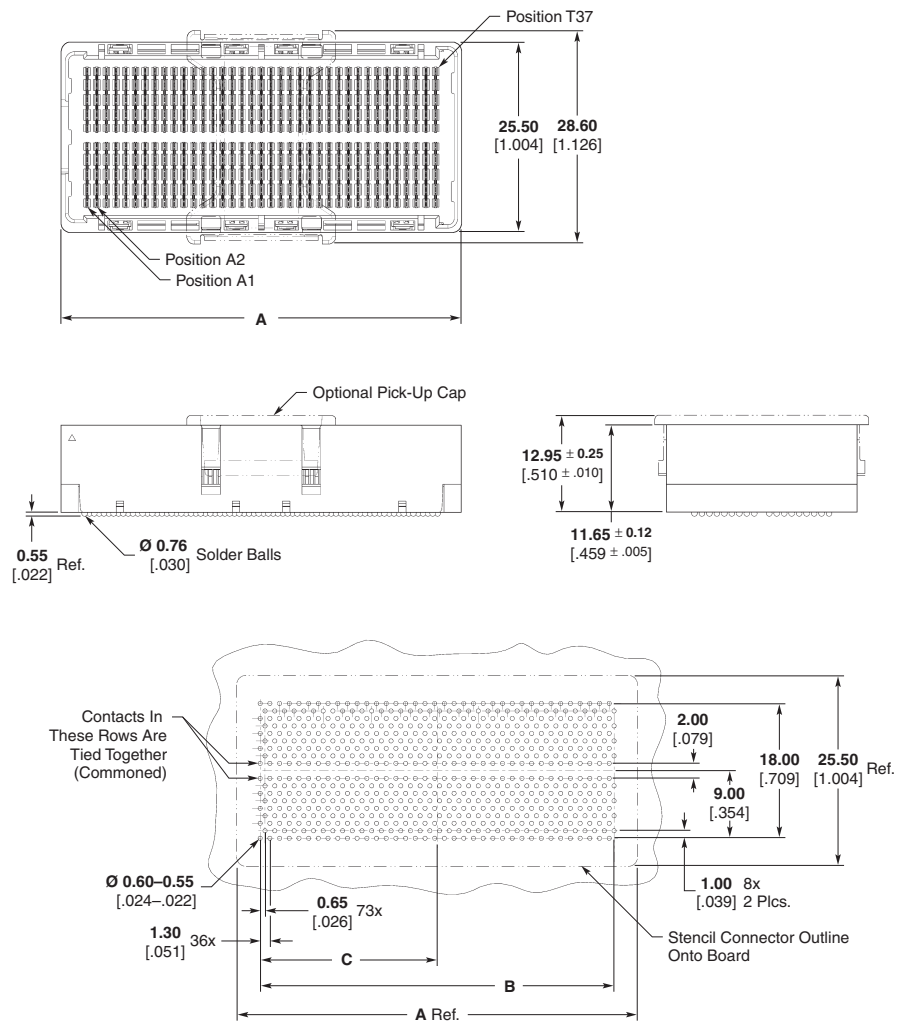
No. of Pos.*	Dimensions			Plating	Part Numbers
	A	B	C		With Pick & Place Cap
104	22.60	16.25	8.13	SnPb	1-1761612-0●
	.890	.640	.320	Pb-free	6-1761612-0
200	38.20	31.85	15.93	SnPb	1-1761614-0●
	1.504	1.254	.627	Pb-free	6-1761614-0
296	53.75	47.45	23.73	SnPb	1-1761616-0●
	2.116	1.868	.934	Pb-free	6-1761616-0

\* 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

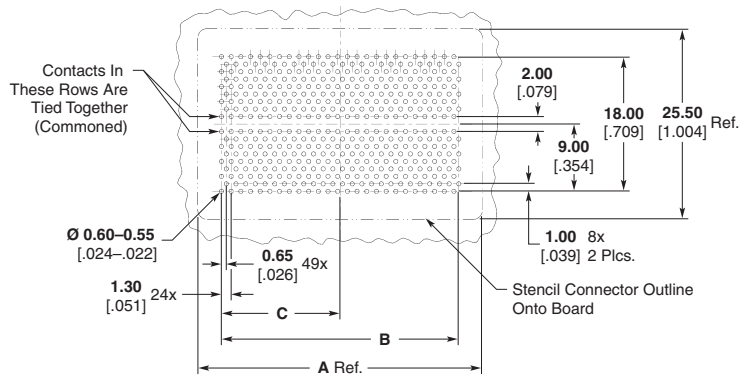
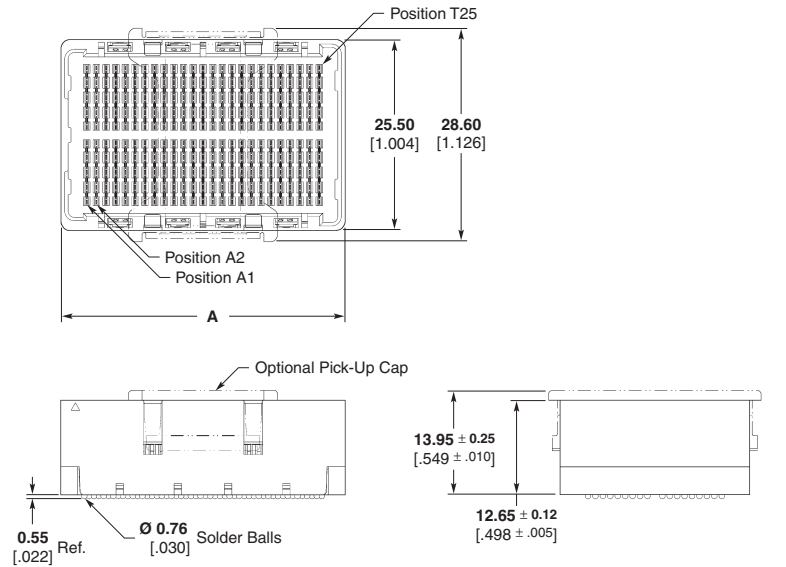
\* Signal contacts only, ground contacts not included.  
Tray packaged Part Numbers shown. Contact Tyco Electronics Engineering for Tape and Reel packaged versions.

**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**

STEP-Z  
Interconnection System



**Recommended PC Board Layout**

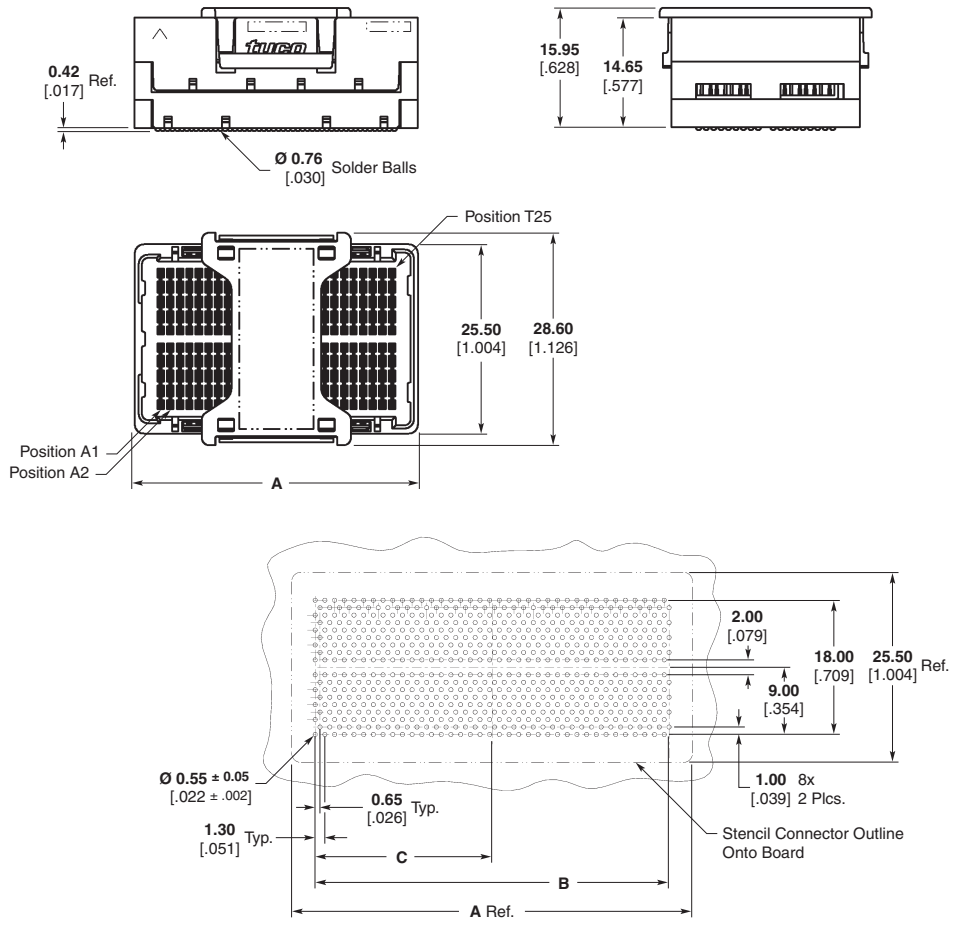
No. of Pos.*	Dimensions			Plating	Part Numbers
	A	B	C		With Pick & Place Cap
104	22.60	16.25	8.13	SnPb	1-1761612-3●
	.890	.640	.320	Pb-free	6-1761612-3
200	38.20	31.85	15.93	SnPb	1-1761614-3●
	1.504	1.254	.627	Pb-free	6-1761614-3
296	53.75	47.45	23.73	SnPb	1-1761616-3●
	2.116	1.868	.934	Pb-free	6-1761616-3

\* 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

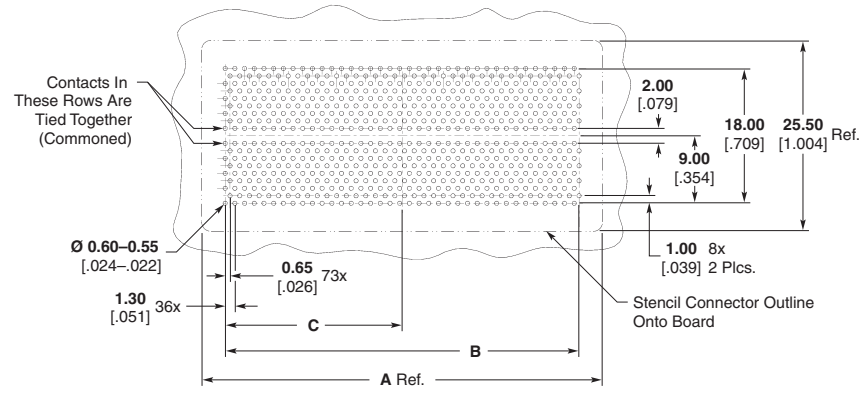
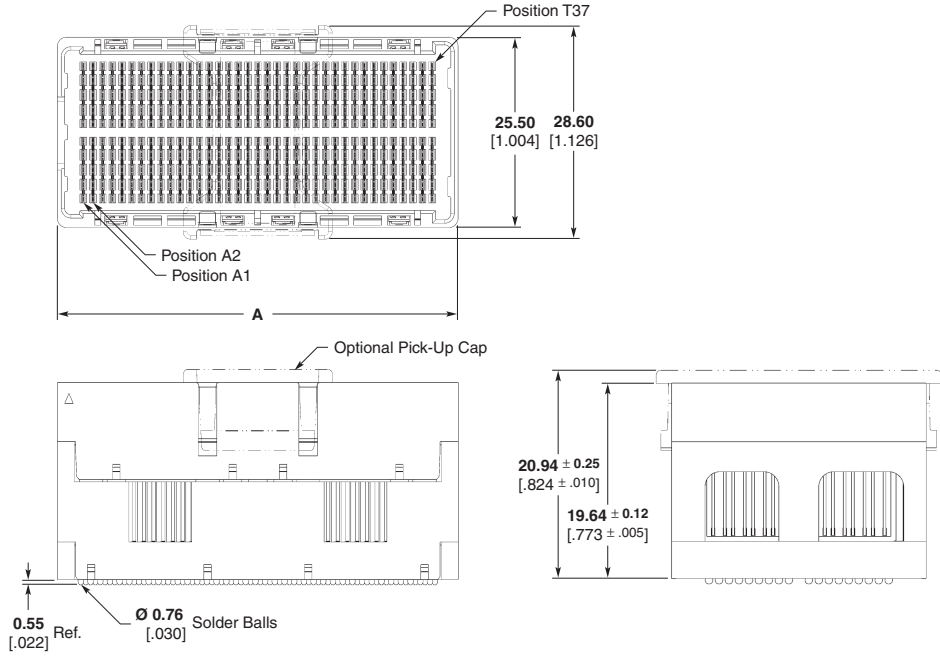
\* Signal contacts only, ground contacts not included.  
Tray packaged Part Numbers shown. Contact Tyco Electronics Engineering for Tape and Reel packaged versions.

**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**



**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	2-1761612-0◆
	.890	.640	.320	Pb-free	7-1761612-0
200	38.20	31.85	15.93	SnPb	2-1761614-0◆
	1.504	1.254	.627	Pb-free	7-1761614-0
296	53.75	47.45	23.73	SnPb	2-1761616-0◆
	2.116	1.868	.934	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).

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