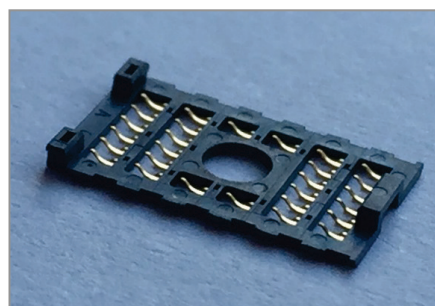


Product Specification: X-Beam™ Product Series (XBM)

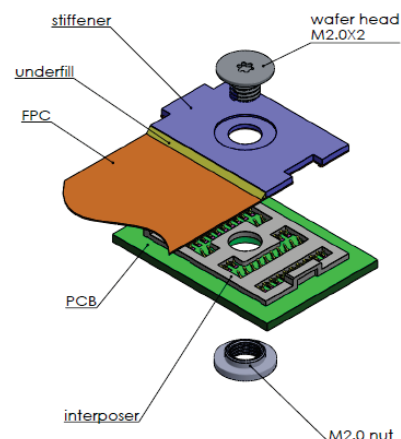
OVERVIEW

The **X-Beam™ Connector** provides a unique solution in its ability to support both high current and high signal speed in one design. By integrating the historically proven Neoconix micro-spring design into an over-molded thermoplastic carrier, the X-Beam connector enables superior electrical performance coupled with ease of assembly in a ~ 1mm total mated height solution. The ultra low profile design provides excellent signal integrity at data rates of up to 28 Gbps. The current capacity is scalable, with flexibility to allocate as many positions to power and ground as desired in the 12 position, 48 position and 68 position configurations.



FEATURES

- Ultra-low profile, 0.35 – 0.46mm interposer base height
- One-step high reliability screw assembly
- High speed signal contacts to 28 Gbps
- SMT Processing
- Current capacity up to 1.5A per position
- Offered with pick & place cap and tape & reel packaging
- Pick & place compatible standard hardware
- Additional customization options offered
- Compliant with ROHS 2011/65/EU and IPC-4101B (halogen-free)



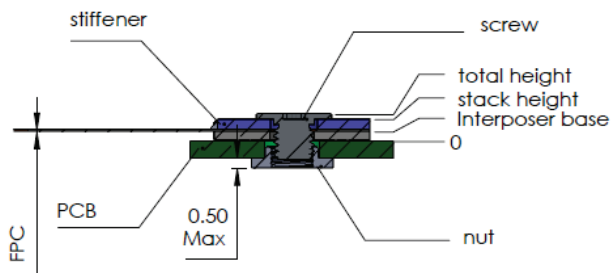
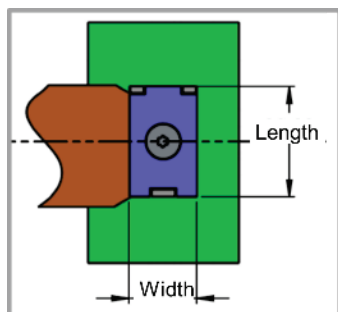
XBM STANDARD PRODUCT SERIES

Table 1 XBM Standard Product Series

Part Number	Application	Contacts	Current Max (A)	Length (mm)	Width (mm)	Base Height (mm)	FPC Thickness (mm)	Stiffener Thickness (mm)	Hardware (Nut and Screw)	Total Height (mm)
XBM-D012A	Power or Signal	12	5.5	7.96	3.60	0.46	0.10	0.20	M1.2	1.03
XBM-G028A	Power	28	8.5	10.80	6.65	0.35	0.15	0.40	M2.0	1.22*
XBM-D048A	Signal	48	11	11.35	7.68	0.40	0.10	0.50	M2.0	1.33*
XBM-D048C	Signal	48	11	11.35	7.68	0.40	0.10	0.50	M2.0	1.68
XBM-D068A	Signal	68	14	13.60	7.68	0.40	0.10	0.50	M2.0	1.68
XBM-D068C	Signal	68	14	13.60	7.68	0.40	0.10	0.50	M2.0	1.33*

*Based on 0.25mm screw head thickness. For 0.50mm screw head thickness, add 0.25mm to obtain total height

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Compatible Hardware

Standard nut and screw hardware are available as an option. Nut/screw configuration will depend on the product design and PCB thickness. Table 2 below lists the hardware recommendations versus the PCB thickness, assuming an FPC thickness of 0.10mm.

Table 2 Recommended screw/nut configuration vs PCB thickness

Product	PCB Thickness (mm)	Description	Screw Head Thickness (mm)	Screw Head Type	Screw Part Number	SMT Nut Part Number
XBM-G028A XBM-D048X XBM-D068X	2.6-4.0	M2x0.40mm pitch, 5mm Screw Length	0.25	#0 Phillips	B01-000659	B01-000654
			0.50	Torx T5	B01-000802	
	1.6-2.6	M2x0.40mm pitch, 4mm Screw Length	0.25	#0 Phillips	B01-000660	
			0.50	Torx T5	B01-000801	
	1.0-1.6	M2x0.40mm pitch, 3mm Screw Length	0.25	#0 Phillips	B01-000661	B01-000633
			0.50	Torx T5	B01-000800	
	0.6-1.0	M2x0.25mm pitch, 2mm Screw Length	0.25	#0 Phillips	B01-000662	
			0.50	Torx T5	B01-000799	
XBM-D012A	2.6-4.0	M1.2x0.25mm pitch, 5mm Screw Length	0.25	#0 Phillips	B01-000668	B01-000588
	1.6-2.6	M1.2x0.25mm pitch, 4mm Screw Length	0.25	#0 Phillips	B01-000667	
	1.0-1.6	M1.2x0.25mm pitch, 3mm Screw Length	0.25	#0 Phillips	B01-000666	
	0.6-1.0	M1.2x0.25mm pitch, 2mm Screw Length	0.25	#0 Phillips	B01-000665	

Mechanical	Description	XBM-DG028	XBM-D012A XBM-D048X XBM-D068X	Comments
M1	Contact Pitch	0.8 mm	0.6 mm	
M2	X-Beam Normal Force	30 +/-10g normal force / contact	30 +/-10g normal force / contact	
M3	Recommended Screw Torque	0.4~0.6kg-cm	12pos=0.5~0.8kg-cm 48-68pos=0.5~0.6kg-cm	Based on NCX recommended hardware
M4	Durability Cycles	50	50	
M5	FPC pull force	2.5 kgf	2.5 kgf	Along FPC direction

PRODUCT SPECIFICATIONS

Electrical	Description	XBM-DG028	XBM-D012A XBM-D048X XBM-D068X	Comments
E1	Resistance Per Position (signal)	< 30 m-Ohm	< 30 m-Ohm	
E2	Resistance for power contacts	<2.5 m-Ohm	N/A	
E3	Resistance variance (Delta R after test)	N/A	< 10 m-Ohm	
E4	Current Rating Capability (signal pin)	1.5A/contact	1.5A/contact	< 30°C temp rise Use the formula for more than 2 contacts ganged together: Max current rating = 2A x (Contacts/2) + 0.5A
E5	Current Rating Capability (power pin)	8.5A power + 8.5A GND	N/A	< 30°C temp rise
E6	Rated voltage	30V AC/DC	N/A	
E7	Insulation Resistance	>100 MOhm	>100 MOhm	
E8	Dielectric Withstanding Voltage	100 V	100 V	
E9	Diff. insertion loss (S21)	N/A	> -1 dB (~20ghz)	
E10	Diff. return loss(S11)	N/A	< -20 dB (~5 GHz) < -14 dB (~20 GHz)	

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PRODUCT SPECIFICATIONS

Environmental	Description	XBM-DG028A	XBM-D012A XBM-D048X XBM-D068X	Comments
EN1	Operating Temperature	-40C to 85C	-40°C to 85°C	
EN2	Storage Temperature	-40C to 85C	-40°C to 85°C	
EN3	Temperature Life	NA	105C x 96 hours	Per EIA-1000, table 8 condition
EN4	Temperature Cycle	<10mOhm Delta	N/A	-40°C to 85°C, 10 cycles
EN5	Humidity Resistance	<10mOhm Delta	N/A	96hrs at 90-95% RH and 40C,
EN6	Cyclic Temperature & Humidity	N/A	Cycling the Connector between 25C +/- 3C at 80% RH and 65° +/-3°C at 50% RH, Ramp times should be 0.5 hour and dwell times = 1 hour. Perform 24 cycles.	EIA 364-31, Specimen shall be mated during test
EN7	Salt Spray	<10mOhm Delta	<10mOhm Delta	48 hours, 5% Mist
EN8	Vibration	<10 mOhm delta No signal discontinuities of more than 1 u-sec during the test.	<10 mOhm delta No signal discontinuities of more than 1 u-sec during the test.	Duration: 10 minutes per axis for all 3 axis. Frequency Range: 5~ 500 Hz. 5- 20 Hz (slope): (0.01gsq/Hz)@5Hz, (0.2gsq/Hz)@20Hz: 20 to 500 Hz (flat): Input acceleration is 3.13 g RMS:

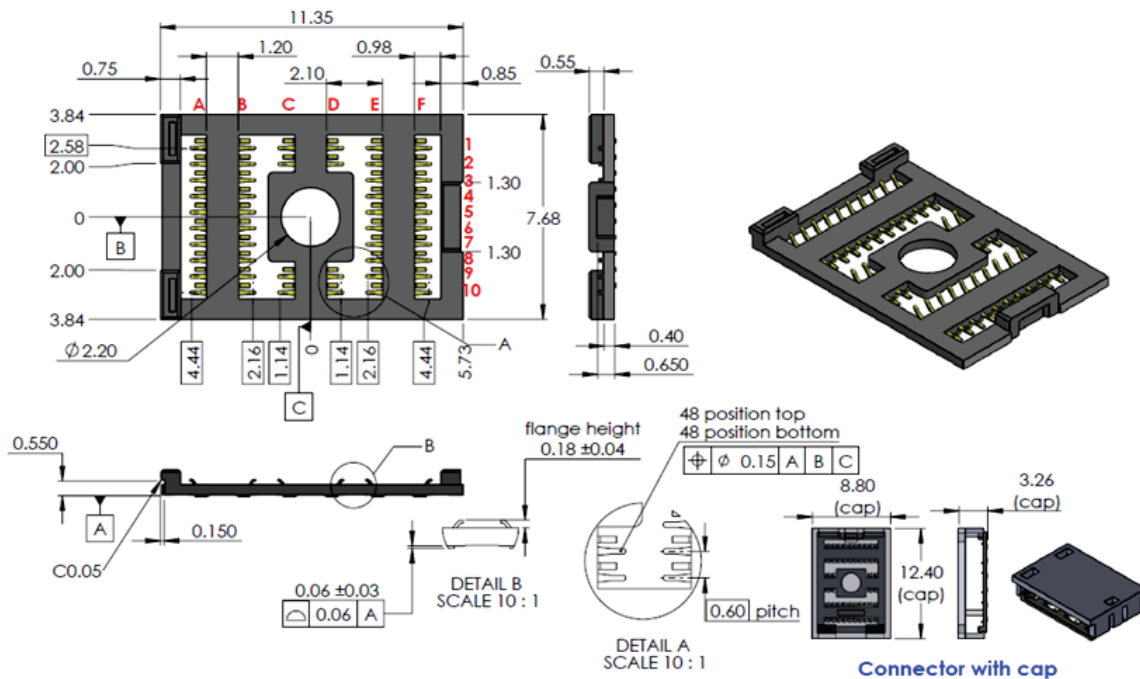
PRODUCT SPECIFICATIONS

Compatible Hardware	Description	XBM-D012A	XBM-D028A XBM-D048X XBM-D068X	Comments
C1	Screw	M1.2 Screw	M2 Screw	See Table 2 on page 2
C2	Nut	M1.2 Female Fastener	M2 Female Fastener	See Table 2 on page 2
C3	FPC Stiffener	SUS301 or 304 x 0.2mm Thick	28ps: SUS301 x0.4mm thk 48-68pos: SUS 301 or SUS304 x 0.5thk	See product drawing for details

Materials	Description	XBM-XXXXX	Comments
MA1	Plastic Housing	LCP, UL94 v-0	
MA2	Contact Elements	High- Performance Copper Alloy	
MA3	Contact Plating	Min 5 u" hard Au over Ni	
MA4	Plastic Cap	LCP, UL94 V-0	
MA5	RoHS	RoHS Compliant per 2011/65/EU2002/92/EC	
MA6	Package	Tape and Reel	

APPLICATION NOTES:

A1, Dimensional Information – X-Beam Interposer (Example XBM-D048A)



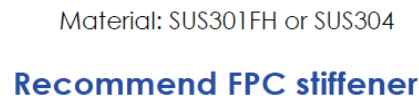
DIMENSIONS ARE IN mm
TOLERANCES (unless otherwise specified):

ANGULAR: ± 2 degree
LINEAR: .X ± 0.15
.XX ± 0.08
.XXX ± 0.04

Note: This example is for reference only. Please refer to the product drawing for the specific part number of interest.

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(Example XBM-D048A)

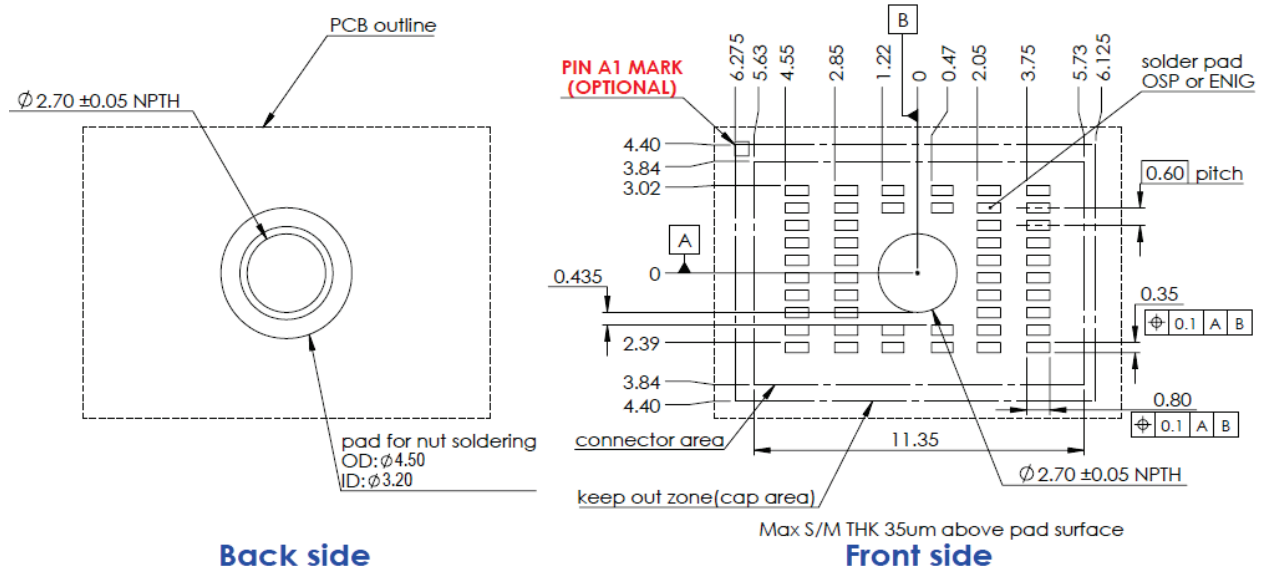


1. The stiffener is to align with connector housing when final assembly.
2. The alignment tolerance for FPC & stiffener is $\pm 0.075\text{mm}$.
Based on left notch (1.250+1.250)&right protrusion (2.050+2.050) feature.
3. Solder mask opening min: $0.50 \times 0.80 \text{ mm min.}$

Note: This example is for reference only. Please refer to the product drawing for the specific part number of interest.

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A3, PCB Mainboard Footprint (Example XBM-D048A)



Recommend PCB footprint

Note: This example is for reference only. Please refer to the product drawing for the specific part number of interest.

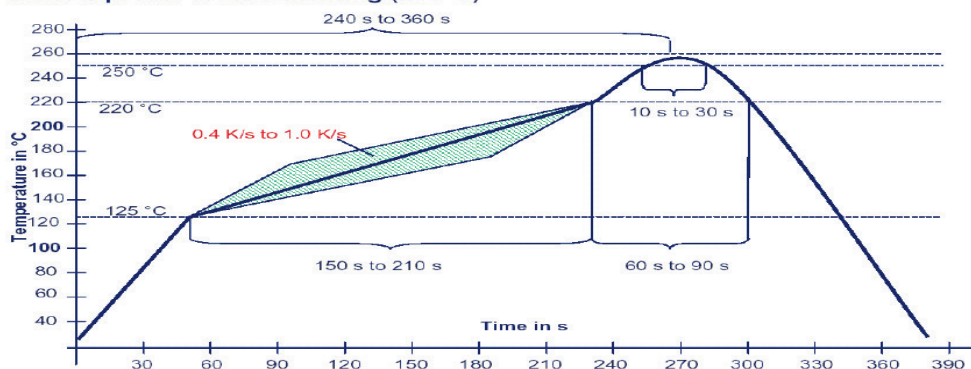
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A4, Solder Stencil

Recommend minimum stencil thickness is 0.10mm for X-Beam connection.

A5, Recommended Reflow Profile:

Reflow profile for MSL testing (260°C)



Preheat	125 °C to 220 °C 150 s to 210 s @ 0.4 K/s to 1.0 K/s
Time at T>185 °C	60 s to 90 s
Peak temperature	260 °C -5/+0 °C
Peaktime	10 s to 30 s (≥ 250 °C)
Cooling rate	≤ 6 K/s
Time from 25 °C to peak	240 s to 360 s

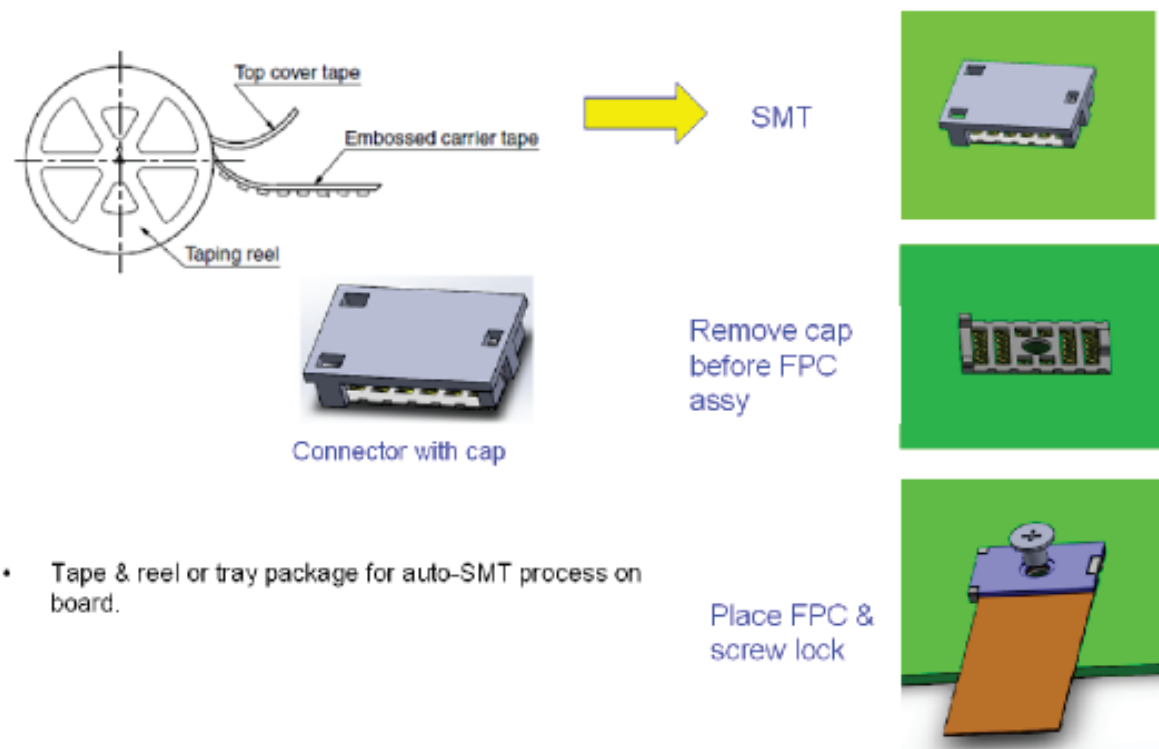
A6, X-Beam connector assembly process:

Nut: Bottom side of board



- Tape & reel or tray package for auto-SMT process on board.

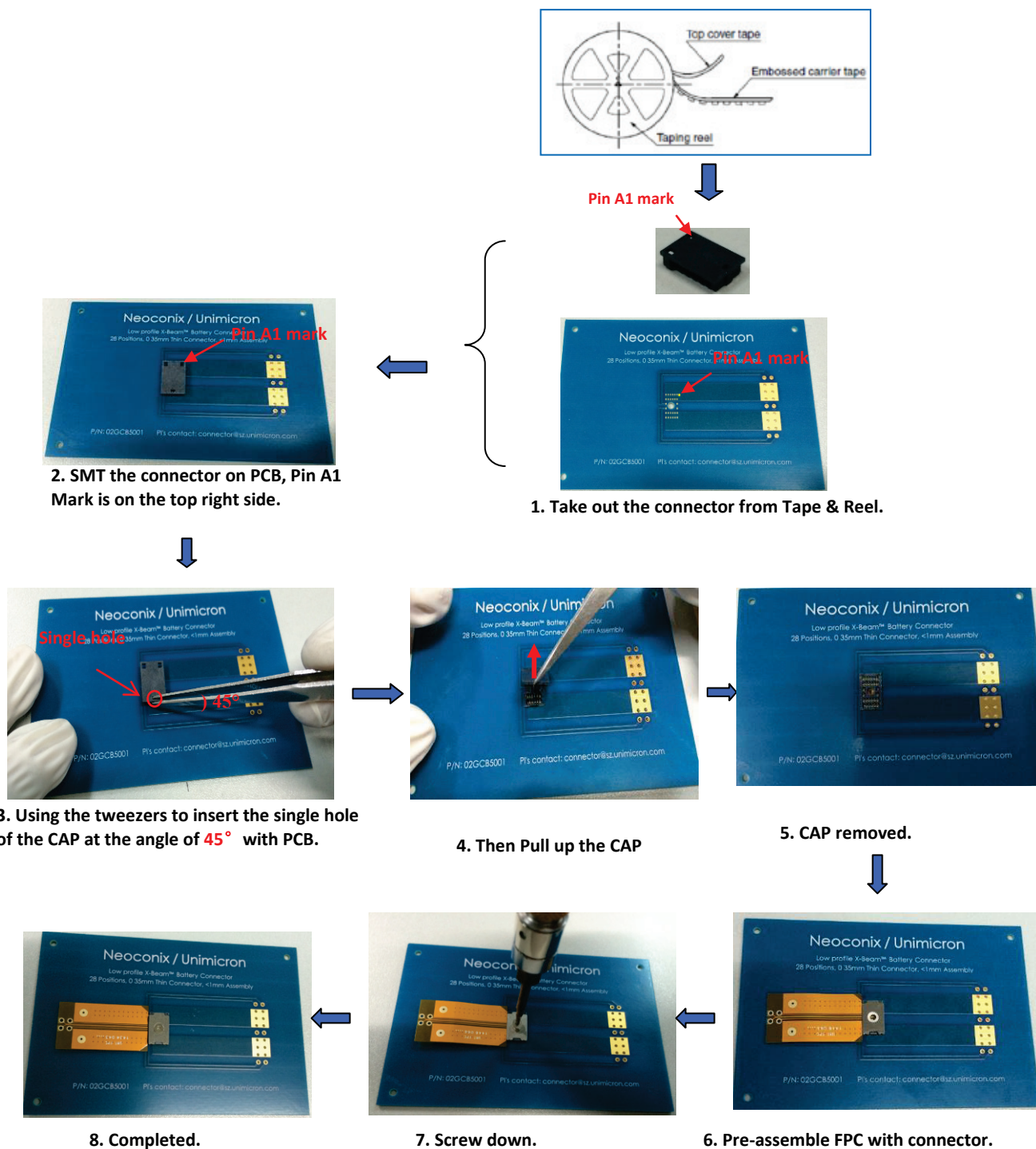
X-Beam: Top side of board



- Tape & reel or tray package for auto-SMT process on board.

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A7, Recommended Assembly Guideline:



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A8, Handling Guidelines

- The use of latex gloves is recommended when handling connectors. As with any normal force connector, avoid touching contact tips and handle the product only by its edges.
- Mating surfaces should be clean prior to assembly. Foreign contaminants can result in opens or shorts after assembly.
- Connector cleaning is not needed if the product is kept in original packaging. When necessary, cleaning can be employed with the use of compressed air. Cleaning can also be performed with an ultrasonic bath of isopropyl alcohol (IPA). A 5 minute soak should be followed by a 10 minute bake at 65°C.
- When not in use, please keep product stored in original packaging.

ORDERING INFO

To obtain a quotation, please contact the Neoconix sales office at sales@neoconix.com or 408-530-9393. Please include the part number(s) of interest.

Custom interposers and hardware are also available from Neoconix. Please contact the factory for more information.

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Shenzhen 518104, Guangdong, China
86-755-27245188 (phone)
86-755-27245990 (fax)
<http://www.unimicron.com/en/product26.htm>
Connector@sz.unimicron.com

REVISION HISTORY

Rev A	09/05/2017	Rev A Release
Rev B	7/31/2018	Added Nut SMT procedure, updated recommended FPC layout
Rev C	8/30/2019	Misc. updates –dimensional, speed, current capacity, etc.
Rev D	11/13/2020	Updated screw hardware options

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