

molex[®] APPLICATION SPECIFICATION

1.0 SCOPE

This specification covers the requirements for the application of Nano-Fit 2.50 mm pitch wire to board connector systems.

2.0 PRODUCT NAME AND SERIES NUMBERS

Nano-Fit Female Crimp Terminal	105300
Nano-Fit Receptacle Housing	105307 / 105308
TPA	105325
Nano-Fit Vertical Header	105309 / 105310 / 105311 / 105312
Nano-Fit Right Angle Header	105313 / 105314

3.0 REFERENCE DOCUMENTS

See the appropriate sales drawings for information on specific part numbers and materials.

4.0 GENERAL APPLICATION NOTES

Appearance:

- Parts conform to class "B" requirements of cosmetic specification PS-45499-002 except where noted on the sales drawings.

Connector Application

- This connector system is designed to mate gold plating to gold plating OR tin plating to tin plating. Never cross mate tin plated parts to gold plated parts.
- This connector system is not designed for current sharing (i.e. splitting one current load across multiple circuits)
- Connectors are not to be mated or unmated while circuits are live except per the current interrupt rating listed in product specification: PS-105300-100
- UL rating only maintained when used with molex application tooling
- the product was tested and qualified with molex application tooling

Packaging

- The parts should remain in the original Molex packaging until ready for use to prevent damage.

Chemical Exposure

- Do not store terminals or header assemblies near any chemicals listed below as they may cause corrosion in the terminal contacts.

Alkalies	Ammonia	Citrates	Phosphates	Citrates	Sulfur Compounds
Amines	Carbonates	Nitrites	Sulfur Nitrites		Tartrates

REVISION: B	ECR/ECN INFORMATION: EC No: 649262 DATE: 2020/11/16	TITLE: APPLICATION SPECIFICATION FOR NANO-FIT WIRE TO BOARD CONNECTOR SYSTEM	SHEET No. 1 of 13
DOCUMENT NUMBER: AS-105300-100	CREATED / REVISED BY: Dixon Li	CHECKED BY: Jonny Zheng	APPROVED BY: Jonny Zheng

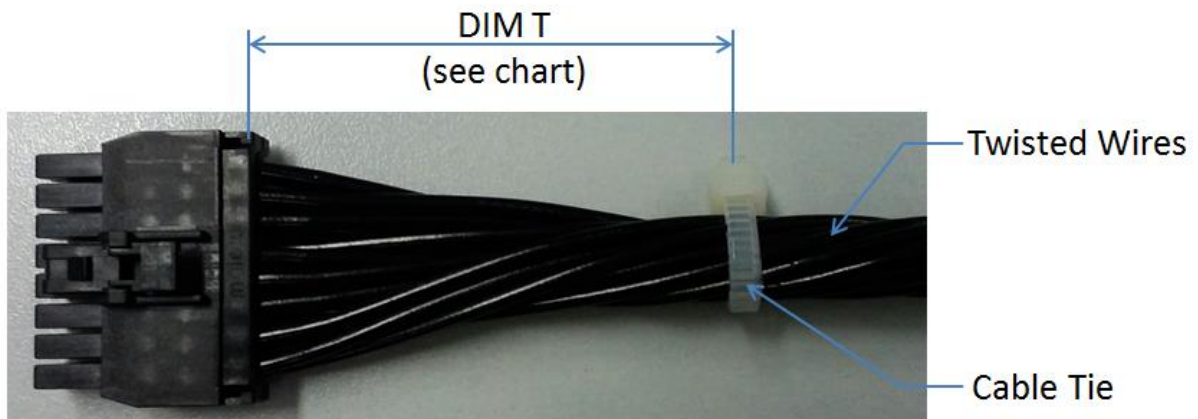
molex[®] APPLICATION SPECIFICATION

Crimped Terminal Extraction

- Female terminal extraction tool: See Molex part# 63824-4600 instructions online on website. Do not reuse terminals that have been removed with the extraction tool. The receptacle housing can be reused if it was not damaged.

Minimum wire bend, cable tie or twist location

Circuit Sizes	Dim T Min. (single row)	Dim T Min. (dual row)
2	.50" (12.7 mm)	
4-6	.75" (19.1 mm)	.75" (19.1 mm)
8	1.00" (25.4 mm)	1.00" (25.4 mm)
10-12		1.25" (31.75 mm)
14-16		1.25" (31.75 mm)



- The "T" dimension defines a "free" length of wire, or a length of wire that is not subject to significant bias by external factors such as a wire tie, wire twisting, or other means of bending or deforming of the wires that repositions them from their natural relaxed state or location where they enter the housing. This dimension is a general recommendation and may need to be adjusted for different wire gauges and wire type and insulation thickness and insulation material.
- Wires are to be dressed in such a manner to allow the terminals to float freely in the receptacle pocket.

Connector Testing

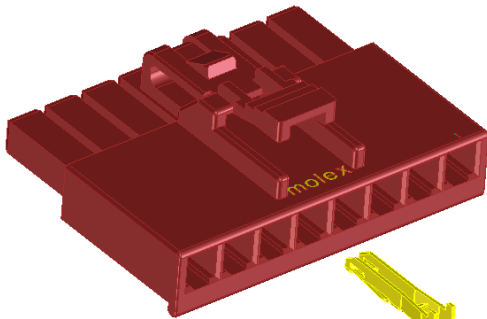
- Do not use Nano-Fit connectors as test parts, they are not intended to be used with repeated mating. Follow durability cycles as listed in PS-105300-100

REVISION: B	ECR/ECN INFORMATION: EC No: 649262 DATE: 2020/11/16	TITLE: APPLICATION SPECIFICATION FOR NANO-FIT WIRE TO BOARD CONNECTOR SYSTEM	SHEET No. 2 of 13
DOCUMENT NUMBER: AS-105300-100	CREATED / REVISED BY: Dixon Li	CHECKED BY: Jonny Zheng	APPROVED BY: Jonny Zheng

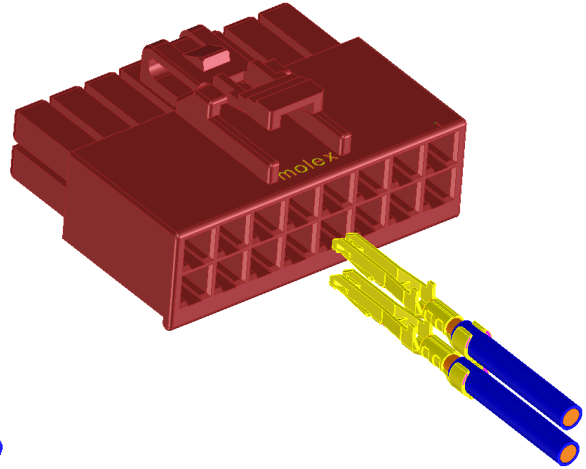
molex[®] APPLICATION SPECIFICATION

Crimped Terminal Insertion

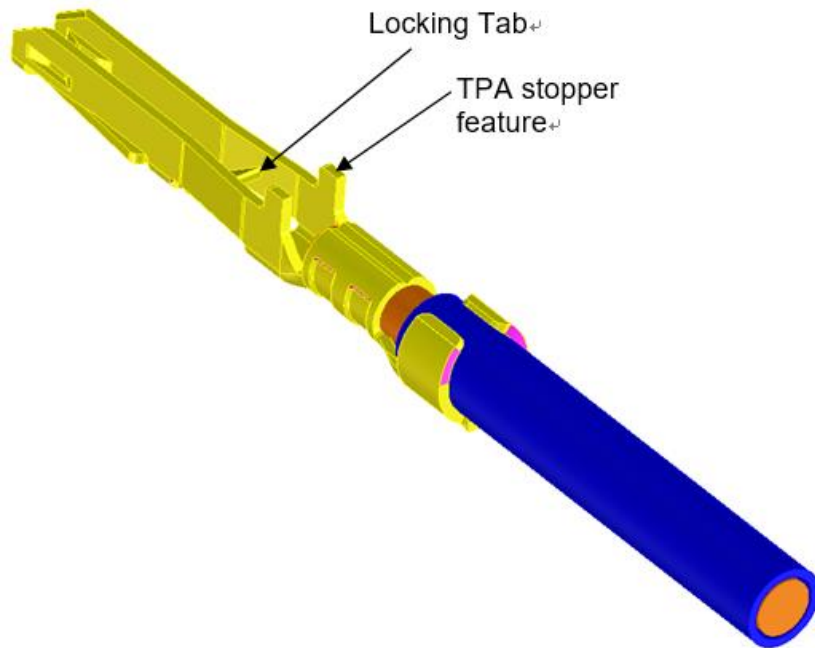
- Terminals are inserted in same orientation for top and bottom row. Details refer to below **pictures**.
- DO NOT reuse receptacle housing if a crimped terminal was pushed out without an extraction tool.



Single Row Receptacle –
Terminal position into the housing



Dual Row Receptacle –
Terminal position into the housing

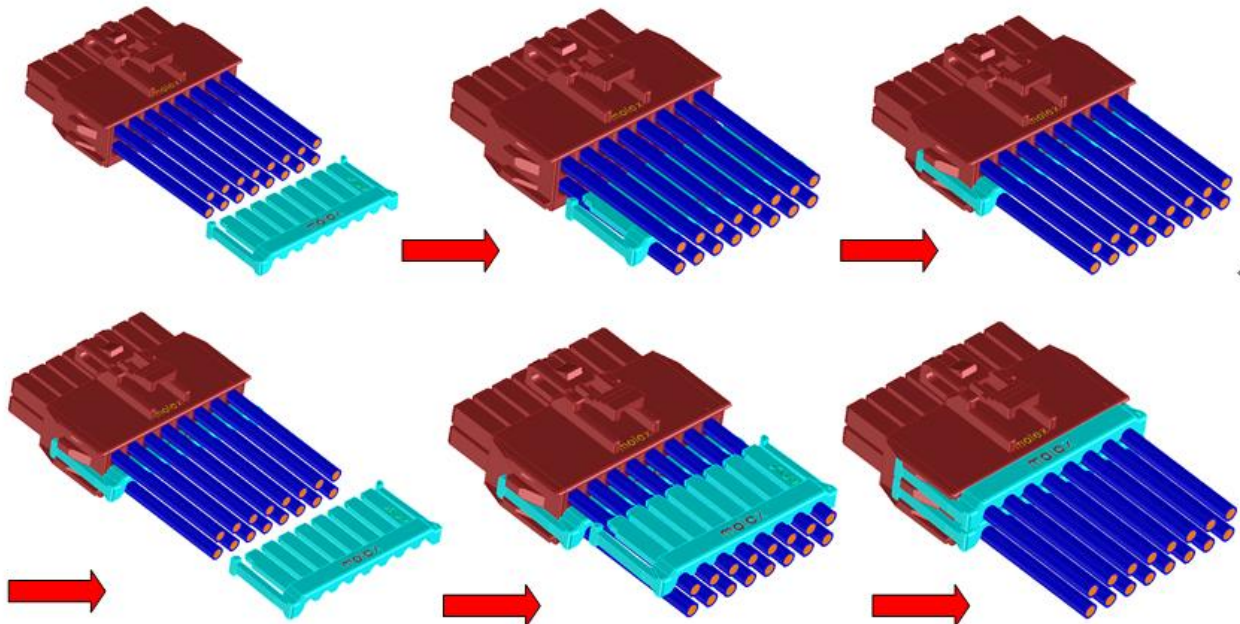


- Ensure terminals are fully seated and locked during terminal insertion to the receptacle housing

REVISION: B	ECR/ECN INFORMATION: EC No: 649262 DATE: 2020/11/16	TITLE: APPLICATION SPECIFICATION FOR NANO-FIT WIRE TO BOARD CONNECTOR SYSTEM	SHEET No. 3 of 13
DOCUMENT NUMBER: AS-105300-100	CREATED / REVISED BY: Dixon Li	CHECKED BY: Jonny Zheng	APPROVED BY: Jonny Zheng

molex[®] APPLICATION SPECIFICATION

TPA Assembly over the wires



- Do not use damaged TPA showing as below picture



Crimp Terminal Appearance

- Forming marks on female terminal are normal. These are due to stretching of the plating during the forming process and are superficial cracks on the plating surface. Refer to cosmetic specification PS-45499-002.

Crimp Terminal Handling

- Due to exposed terminal interface, keep crimp terminals on prepackaged reel until they are crimped onto wires. Do not precut and bulk pack terminals due to risk of damaging the contact

REVISION: B	ECR/ECN INFORMATION: EC No: 649262 DATE: 2020/11/16	TITLE: APPLICATION SPECIFICATION FOR NANO-FIT WIRE TO BOARD CONNECTOR SYSTEM	SHEET No. 4 of 13
DOCUMENT NUMBER: AS-105300-100	CREATED / REVISED BY: Dixon Li	CHECKED BY: Jonny Zheng	APPROVED BY: Jonny Zheng

molex[®] APPLICATION SPECIFICATION

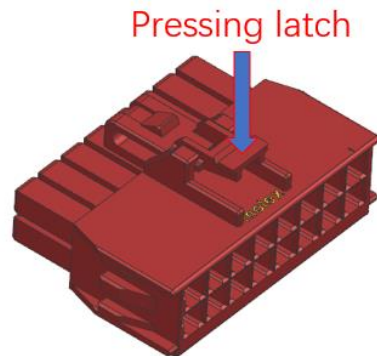
interface. Store and handle crimped terminals so the interface does not make contact with other terminals or foreign objects. If terminal interface is damaged please discard prior to assembly.

Crimping

- For acceptable crimp tools and specifications see application tooling section on Molex.com listed for each terminal part number.
- Use with multi strand wire only. Single strand wire should not be used.
- This female crimp terminal is designed for single wire crimping only, no double wire crimping is allowed.
- Use only Molex specified crimp tooling, refer to Molex.com for acceptable crimp tooling. Crimped terminals must also meet Molex crimp specifications. Using crimp tooling/specifications other than specified voids any product warranties and will negatively impact mechanical and electrical performance.

Receptacle latch pressing notice

- Avoid pressing latch except for operation of mating and unmating



Header Appearance

- Discoloration in the bandolier carrier area of the pin is inherent to the plating process and is due to the masking effect of the carrier. This discoloration is in a non-functional area of the pin and will not affect the performance of the header assembly. Refer to cosmetic specification PS-45499-002.

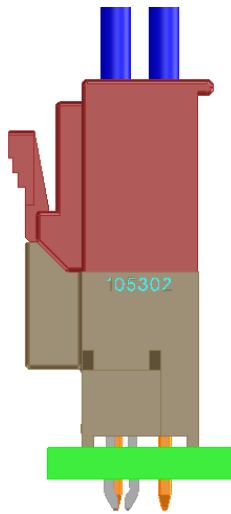
Right Angle Header Appearance

- Forming marks on header pins are acceptable. Refer to cosmetic specification PS-45499-002.

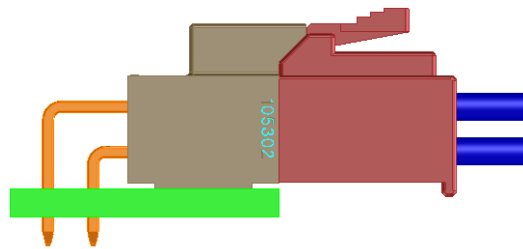
Header Assembly to Board

- Headers are designed with press fit pegs and need to be pushed into the circuit board.
- Header should be flush with board after insertion.
- See below for solder process information.

REVISION: B	ECR/ECN INFORMATION: EC No: 649262 DATE: 2020/11/16	TITLE: APPLICATION SPECIFICATION FOR NANO-FIT WIRE TO BOARD CONNECTOR SYSTEM	SHEET No. 5 of 13
DOCUMENT NUMBER: AS-105300-100	CREATED / REVISED BY: Dixon Li	CHECKED BY: Jonny Zheng	APPROVED BY: Jonny Zheng



Vertical type



Right angle type

Solder Process Temperatures

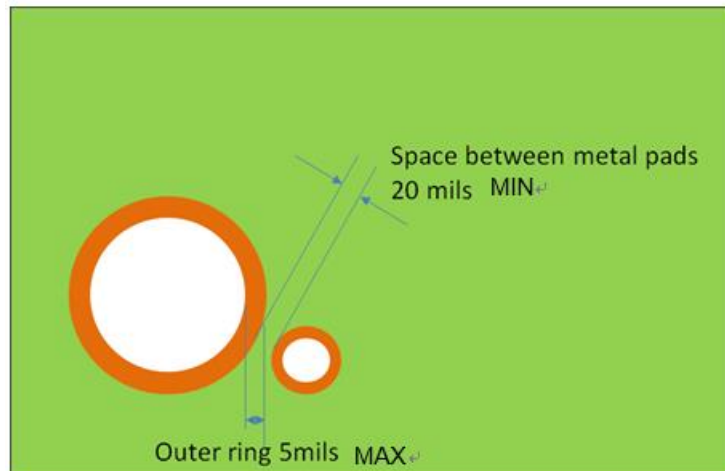
- Wave Solder: 260°C Max
- Reflow Solder: 260°C Max

Reflow Soldering Profile

- See AS-40000-5013

Plated Thru Hole profile

- Keep outer ring at 5 mils max with at least 20 mils distance between adjacent metal pads

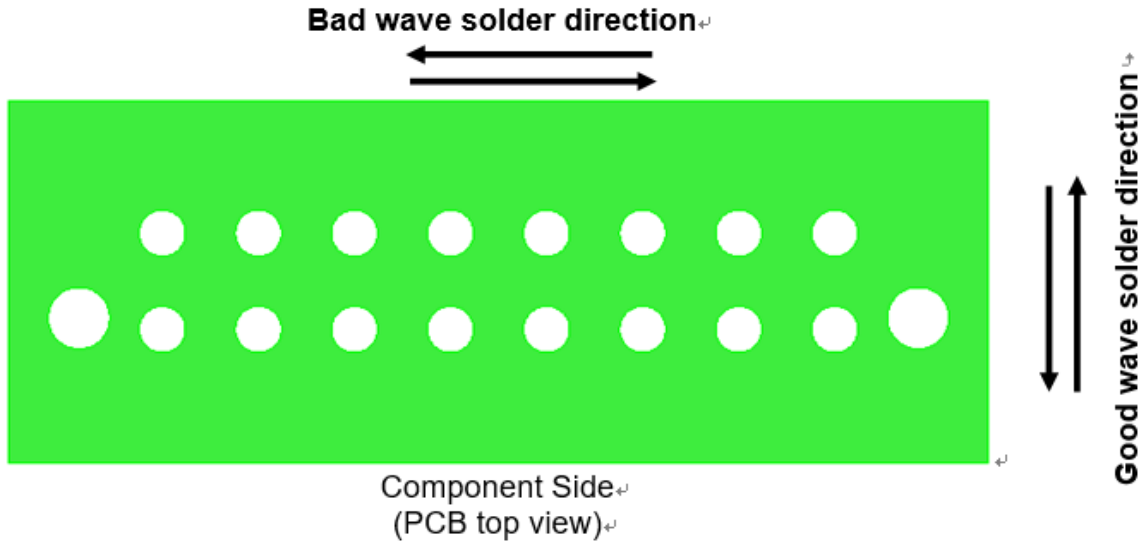


REVISION: B	ECR/ECN INFORMATION: EC No: 649262 DATE: 2020/11/16	TITLE: APPLICATION SPECIFICATION FOR NANO-FIT WIRE TO BOARD CONNECTOR SYSTEM	SHEET No. 6 of 13
DOCUMENT NUMBER: AS-105300-100	CREATED / REVISED BY: Dixon Li	CHECKED BY: Jonny Zheng	APPROVED BY: Jonny Zheng

molex[®] APPLICATION SPECIFICATION

Wave Solder Direction

- Preferred wave solder direction:



HANDLING OF NANO-FIT WIRE-TO-BOARD (WTB) HEADER ASSEMBLIES IN TRAYS

1.0 SCOPE

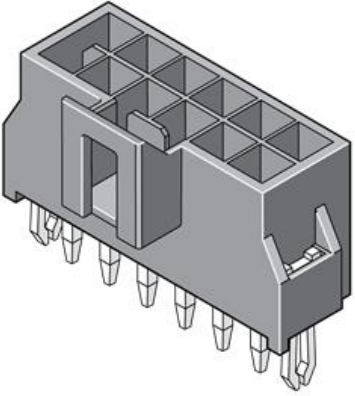
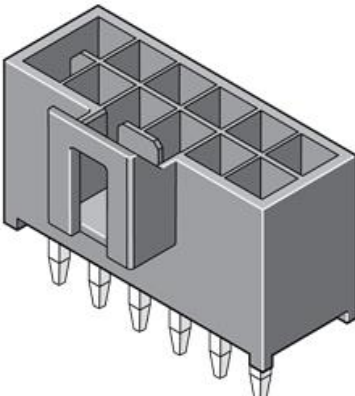
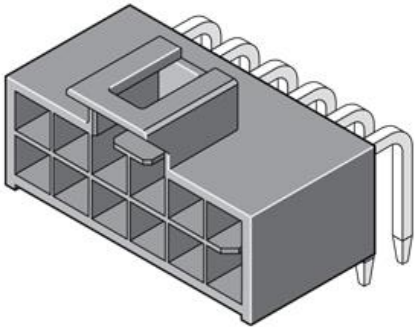
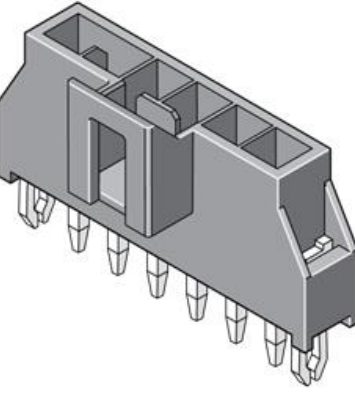
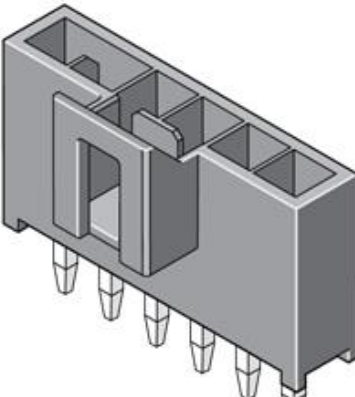
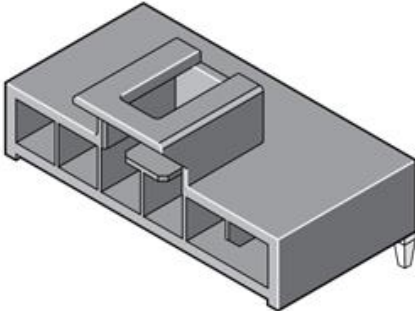
This specification covers the handling guidelines for Molex Nano-Fit Wire-to-Board (WTB) Header Assembly connectors. Any figures and illustrations found in this document are for graphical representation only and are not drawn to scale.

When corresponding with Molex personnel, kindly use the terminology provided in this document to facilitate your request for more information. Basic terms and features of this product are illustrated below.

REVISION: B	ECR/ECN INFORMATION: EC No: 649262 DATE: 2020/11/16	TITLE: APPLICATION SPECIFICATION FOR NANO-FIT WIRE TO BOARD CONNECTOR SYSTEM	SHEET No. 7 of 13
DOCUMENT NUMBER: AS-105300-100	CREATED / REVISED BY: Dixon Li	CHECKED BY: Jonny Zheng	APPROVED BY: Jonny Zheng

molex[®] APPLICATION SPECIFICATION

Header

	Vertical		Right angle
	Solder clip	Kinked pins	
Dual row	 <p>105312</p>	 <p>105310</p>	 <p>105314</p>
Single row	 <p>105311</p>	 <p>105309</p>	 <p>105313</p>

2.0 DESCRIPTION ON PRODUCT PACKAGING

Nano-Fit WTB header assemblies are packed in trays:



REVISION: B	ECR/ECN INFORMATION: EC No: 649262 DATE: 2020/11/16	TITLE: APPLICATION SPECIFICATION FOR NANO-FIT WIRE TO BOARD CONNECTOR SYSTEM	SHEET No. 8 of 13
DOCUMENT NUMBER: AS-105300-100	CREATED / REVISED BY: Dixon Li	CHECKED BY: Jonny Zheng	APPROVED BY: Jonny Zheng

molex[®] APPLICATION SPECIFICATION

3.0 REFERENCE DOCUMENT

3.1 DRAWINGS:

Packaging Specification Drawings (PSD) is available from the Molex service network. By referring to the appropriate PSD for information on number of parts per tray, number of trays per carton, orientation of parts and trays vs packaging method.

In the event of any discrepancies between the information contained in the PSD and this specification or with any other technical documentation supplied. PSD take precedence.

4.0 PROCEDURES

4.1 HANDLING OF PACKAGING

Simulations have been done on the potential of on spot handling scenario by the material handlers/operators. This session will guide them on the dos and don'ts when handling the received packaging.

a) Avoid stacking the pallet on another pallet.



b) Ensure the 'Molex' logo is at upright location when opening the box.



REVISION: B	ECR/ECN INFORMATION: EC No: 649262 DATE: 2020/11/16	TITLE: APPLICATION SPECIFICATION FOR NANO-FIT WIRE TO BOARD CONNECTOR SYSTEM	SHEET No. 9 of 13
DOCUMENT NUMBER: AS-105300-100	CREATED / REVISED BY: Dixon Li	CHECKED BY: Jonny Zheng	APPROVED BY: Jonny Zheng

molex[®] APPLICATION SPECIFICATION

c) Lift up the stack of trays from the carton. Grab the stack, using both hands, by the packing tape as shown.



d) After removing the stretch film around the stack of trays, it is advisable to take out only 1 tray at a time with both hands in vertical direction. Avoid lifting the trays from the box at an angle or pour the trays out.



4.2 HANDLING OF CONNECTORS

a) Handle the stack of trays using both hands.

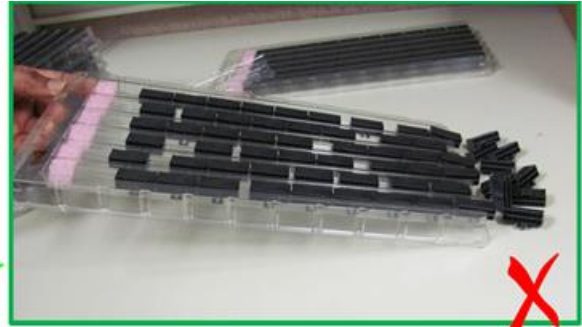


REVISION: B	ECR/ECN INFORMATION: EC No: 649262 DATE: 2020/11/16	TITLE: APPLICATION SPECIFICATION FOR NANO-FIT WIRE TO BOARD CONNECTOR SYSTEM	SHEET No. 10 of 13
DOCUMENT NUMBER: AS-105300-100	CREATED / REVISED BY: Dixon Li	CHECKED BY: Jonny Zheng	APPROVED BY: Jonny Zheng

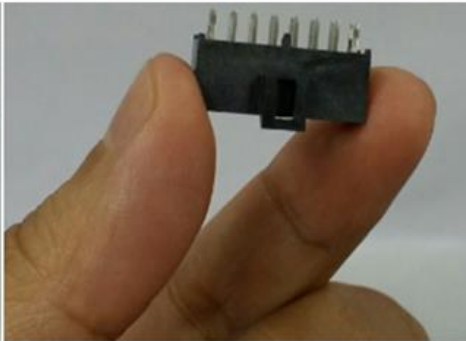
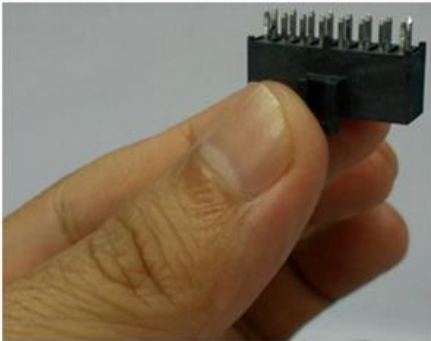
molex[®] APPLICATION SPECIFICATION

b) Pick one tray out of stack one at a time, using both hands.

c) It is not advisable to carry the tray from one side. Hold both sides of the tray so that the tray will be balanced.

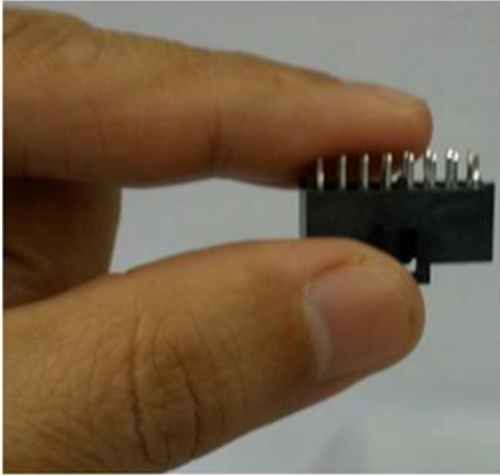


d) Avoid touching the terminals. Do not hold the connector by its terminals but from the outer housing walls in order to prevent potential bent pins.



REVISION: B	ECR/ECN INFORMATION: EC No: 649262 DATE: 2020/11/16	TITLE: APPLICATION SPECIFICATION FOR NANO-FIT WIRE TO BOARD CONNECTOR SYSTEM	SHEET No. 11 of 13
DOCUMENT NUMBER: AS-105300-100	CREATED / REVISED BY: Dixon Li	CHECKED BY: Jonny Zheng	APPROVED BY: Jonny Zheng

molex[®] APPLICATION SPECIFICATION



e) Do not take more than one connector at a time. Improper handling can cause connector damage.



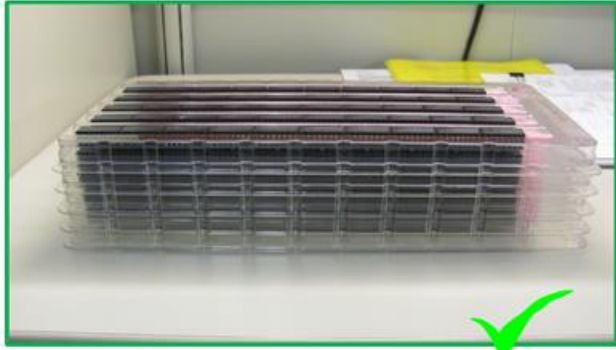
f) When placing unused connectors back into the tray, ensure that they are put in the correct orientation.



REVISION: B	ECR/ECN INFORMATION: EC No: 649262 DATE: 2020/11/16	TITLE: APPLICATION SPECIFICATION FOR NANO-FIT WIRE TO BOARD CONNECTOR SYSTEM	SHEET No. 12 of 13
DOCUMENT NUMBER: AS-105300-100	CREATED / REVISED BY: Dixon Li	CHECKED BY: Jonny Zheng	APPROVED BY: Jonny Zheng

molex[®] APPLICATION SPECIFICATION

g) Only a reasonable number of trays are allow to stack on one another. Do not stack more than a single carton's quantity of trays in any one stack. Over-stacking may damage the connectors and solder tails (if any of the trays falls off the stack, or if trays are mishandled when removing from the stack.)



- End of Document -

REVISION: B	ECR/ECN INFORMATION: EC No: 649262 DATE: 2020/11/16	TITLE: APPLICATION SPECIFICATION FOR NANO-FIT WIRE TO BOARD CONNECTOR SYSTEM	SHEET No. 13 of 13
DOCUMENT NUMBER: AS-105300-100	CREATED / REVISED BY: Dixon Li	CHECKED BY: Jonny Zheng	APPROVED BY: Jonny Zheng