



PQFP Handling Instructions

Humidity Control

Plastic devices are moisture sensitive. If the devices are exposed to production floor's ambient for more than 168 hours, then they need to be rebaked. Exposure to production floor's ambient for more than 24 hours can cause oxidation in the leads as well as other defects. For more information, refer to the [Moisture Sensitivity](#) document.

Follow the instructions on the packaging bag to keep devices dry prior to board assembly.

Handling Trays

The tray stack should be kept fastened with straps during transportation to prevent devices from coming out of their pedestal and bending their leads. If a single loaded tray is to be moved, an empty tray should be placed over it as a cover and both trays should be taped to secure the devices in position ([Figure 1](#)).

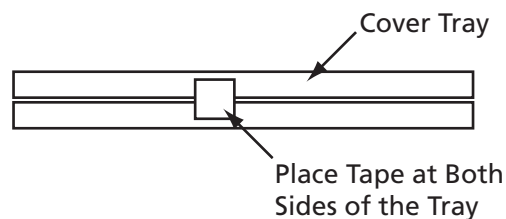


Figure 1: Temporary Tray Holding

When cutting the plastic straps use sharp knife and hold the whole stack of trays so that it remains steady. Any flapping of the trays can dislocate the devices from their pedestal. This can easily bend the leads with a little pressure on the device, resulting bending patterns (Figure 2).

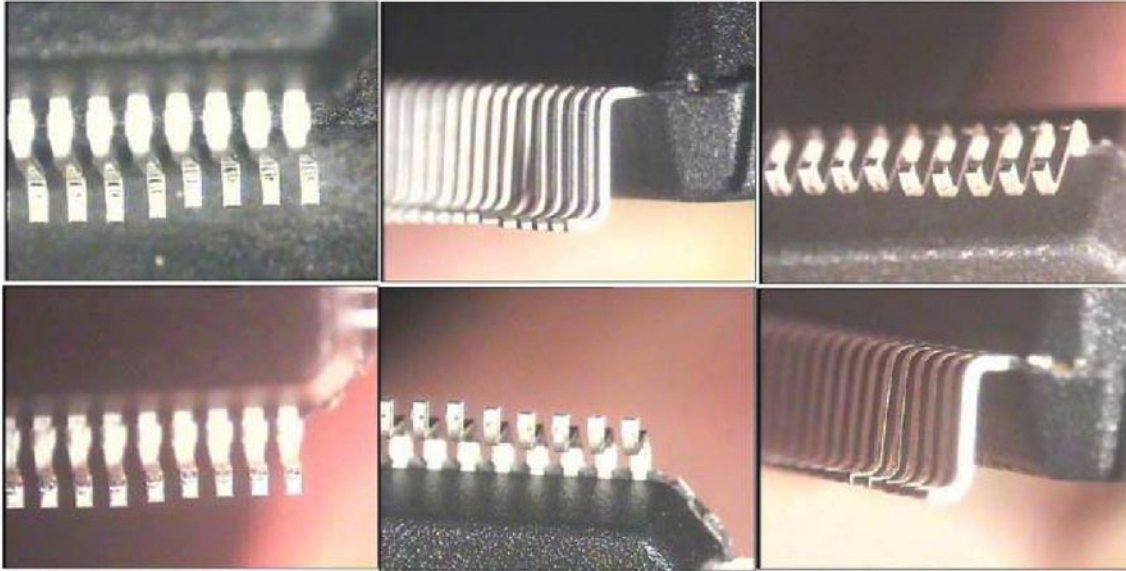


Figure 2: Bent Lead Due to Dislocation of the Devices from the Tray Pedestal

This pattern, shown in Figure 2, is characteristic of damage caused by PQFP devices shifting out of position in the tray. Note that the pattern of bent leads matches the pedestal lengths in the trays.

When a device has shifted out of the centered position and the tray above is pressed down, that device can easily be damaged. This can occur when handling unsecured trays, when destrapping (causing the trays to rapidly flex and rebound), when transporting tray stacks, or when repacking after lots are inspected or split. [Figure 3](#) contains photographs that show the bent lead.

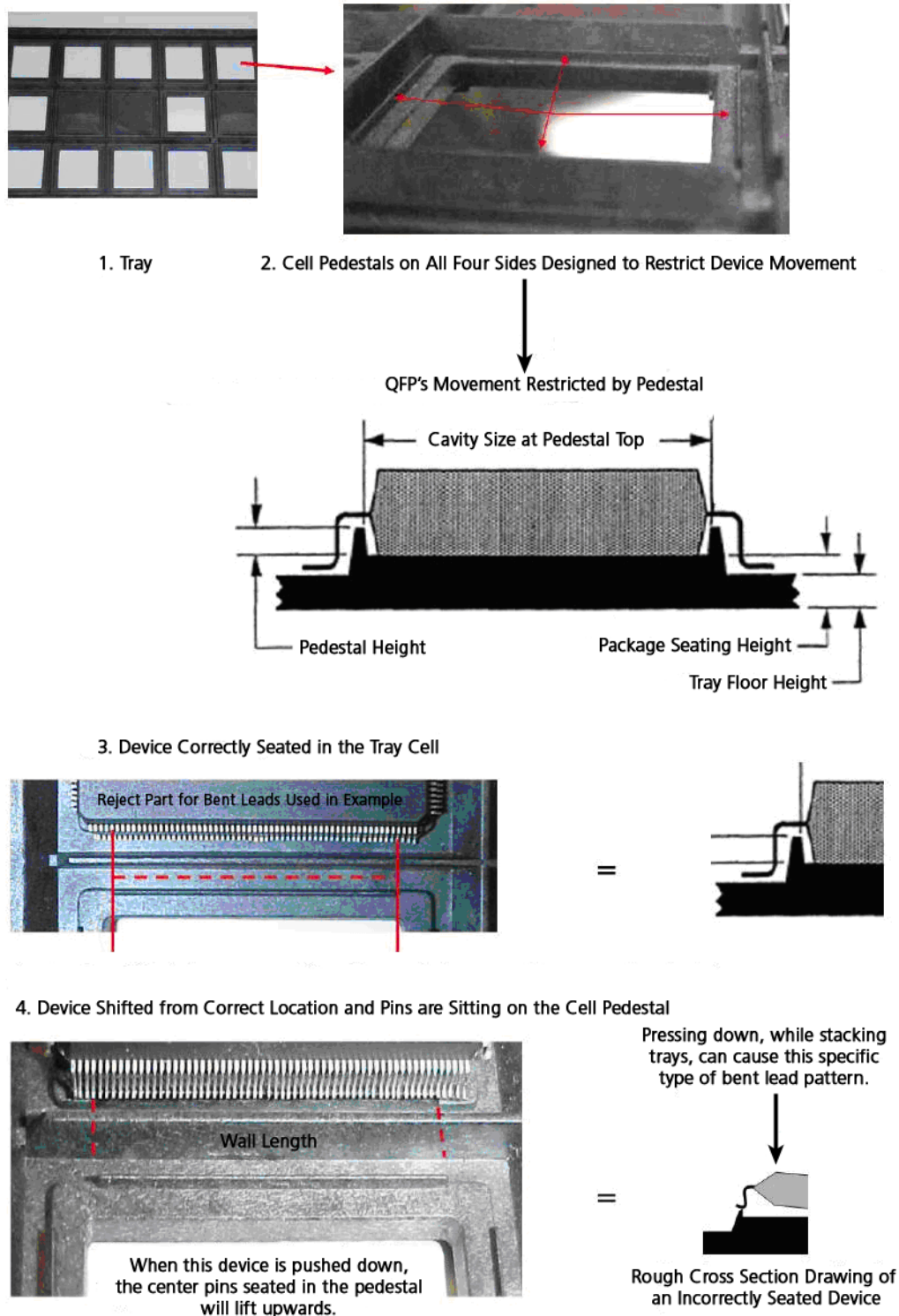


Figure 3: Bent Lead Phenomena

Device Programming

Always use the vacuum wand provided to transfer devices.

Removing Devices from Tray

1. Position the vacuum needle at the proper angle so that your index finger can rest on the vacuum switch (Figure 4).

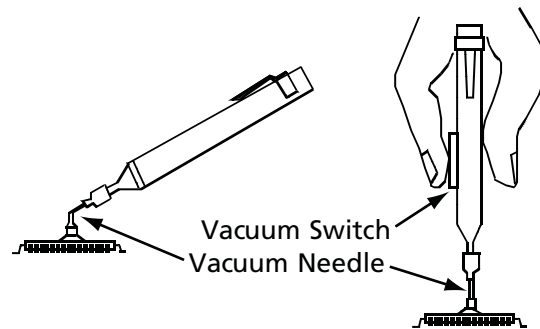


Figure 4: Vacuum Wand

2. Slightly depress the vacuum switch and then place the vacuum cup on the surface of the device.
3. Release the vacuum switch while holding the cup down to generate the vacuum that causes the cup to adhere to the device body.
4. Make certain to transfer a device within 5 to 8 seconds.

Loading the Device into the Programming Socket

1. Carefully align the device with the socket and gently lower the device into the socket (Figure 5). Do not force the device into the socket; otherwise, the corner leads may be bent if the alignment is out.

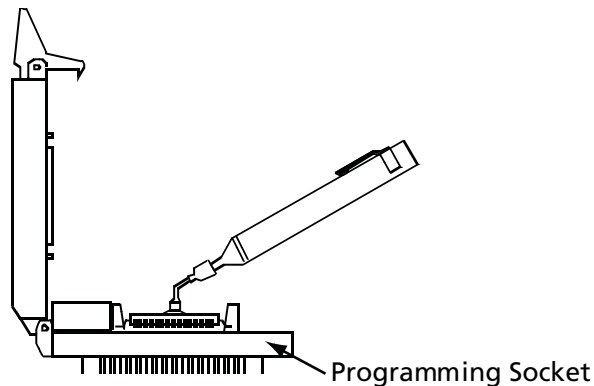


Figure 5: Inserting the Device in the Socket

2. Release the vacuum by depressing the vacuum switch. The device will be self-aligned to the socket.

Note: To completely release the vacuum, the switch should be pressed down further than when pressed to generate the vacuum. Otherwise, a partial vacuum will pull the device back and may cause bent leads.

3. Close the lid. The device is ready for programming.

Removing the Device from the Programming Socket

When the programming of the device is complete, use the vacuum wand to remove the device from the socket and place it in a tray labeled “programmed devices.”

Cleaning the Vacuum Wand

The suction cup of the vacuum wand must be cleaned periodically using IPA to minimize possible leakage in the vacuum.

Ordering a Vacuum Wand

You can purchase ESD safe Vacuum Wands from Actel. Contact your local sales representatives or distributor. [Table 1](#) lists the part number information.

Table 1: Ordering Codes

Part Number	Description
PENVAC	Vacuum wand for PQ, TQ, VQ less than 208 pins
PENVAC-HD	Vacuum wand for PQ, TQ, VQ greater or equal to 208 pins

List of Changes

The following table lists critical changes that were made in the current version of the document.

Previous Version	Changes in Current Version (5193074-2/11.06*)	Page
51900122-1/12.05	The "Humidity Control" section was updated.	1
	Figure 2 is new.	2
	Figure 3 is new.	3
	The "Ordering a Vacuum Wand" section is new.	5

Note: *The part number is located on the last page of the document.

For more information, visit our website at www.actel.com



www.actel.com

Actel Corporation

2061 Stierlin Court
Mountain View, CA
94043-4655 USA
Phone 650.318.4200
Fax 650.318.4600

Actel Europe Ltd.

River Court, Meadows Business Park
Station Approach, Blackwtery
Camberley, Surrey GU17 9AB
United Kingdom
Phone +44 (0) 1276 609 300
Fax +44 (0) 1276 607 540

Actel Japan

EXOS Ebisu Bldg. 4F
1-24-14 Ebisu Shibuya-ku
Tokyo 150 Japan
Phone +81.03.3445.7671
Fax +81.03.3445.7668
www.jp.actel.com

Actel Hong Kong

Suite 2114, Two Pacific Place
88 Queensway, Admiralty
Hong Kong
Phone +852 2185 6460
Fax +852 2185 6488
www.actel.com.cn

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