DEVICE LEAD FORMING/BENDING — A GENERAL GUIDELINE

The following is a general guideline for bending or forming of device leads (lead forming) for use on printed circuit boards. IXYS Corporation does not advocate the bending or forming of device leads. Device users do so at their own risk.

To bend or not to bend:
Unless it is absolutely necessary, do not bend the leads. IXYS recommends the device end user to use as received with straight leads.

ESD precautions at all times:
Make sure the operator, workstation and forming tools are properly grounded to prevent ESD damage to the device.

What are the risks to the device that are subjected to lead forming:
The bending of the leads can induce stress to the encapsulated device. Remember the exposed lead is an extension of the encapsulated lead frame that contains the silicon device and associated wire bond connections. Some issues that can arise from lead forming are:

a. Cracks to the epoxy encapsulant.
b. Stressing the internal wire bond connections: lead to the silicon device
c. Cracking of the silicon device.
d. Loss of package backside flatness
e. Lead solderability may be compromised due to removal of the tin or solder coating on the lead.

General guidelines to lead forming:
1. Ensure the proper set up of the lead forming tool/fixture.
   a. Clamping of the device.
   b. No damage to the lead forming tool.
   c. If the leads are trimmed after forming, the cutter should be sharp
   d. Proper air pressure settings at all times.
   e. Ensure the lead bending tool is clean and free of lead or plating material buildup.

2. Never bend on wide lead portions. Only bend where the width of the lead is narrow.

3. Do not make sharp bends. Make a bend that is at least 2 or 3 times radius of the thickness of the lead material.

4. Do not re-try to straighten and re-bend again on the same location. The lead can become fatigued or break.

5. Do not pull or tug the lead when forming. This an lead to internal damage to the device or wire bond connections. The portion of the lead closest to the body of the part should be firmly clamped so that the force of the bend does not stress the lead frame.

6. If trimming a lead, make sure the force of the cut is pushing away from the package body so as to not transmit the cutting force into the packaged device.