

Laser Marking

About this document

Scope and purpose

AN98565 discusses the best practices for using laser marking on devices to designate programming codes after the parts had been programmed for their specific applications.

Infineon warranty does not cover products that have been modified, including by laser marking. Laser marking will void the product warranty and may damage the product or otherwise cause it to fail. Use the information in this document at your own risk

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Introduction

1 Introduction

Customers have been adding a mark to designate programming codes after the parts had been programmed for their specific applications. This process has been a big concern for both Infineon and its customers because of the potential electrical damage to the device if marking is not done properly.

In the process of adding a mark, the laser can cause damage to the underlying die or wires if it gets too deep into the package or compound. Basically, the laser creates a groove by burning away the mold compound in order to make a visible marking. The groove or depth can vary depending upon the speed, power, and pulse rate of the laser marker. To measure this, special depth measuring equipment is required due to the small dimension of the groove.

Most of these issues experienced were caused by the added marks overlapping an existing mark, or adding too large of a font size, which can overlap an existing mark or create a deep groove.

Basic Requirements

2 Basic Requirements

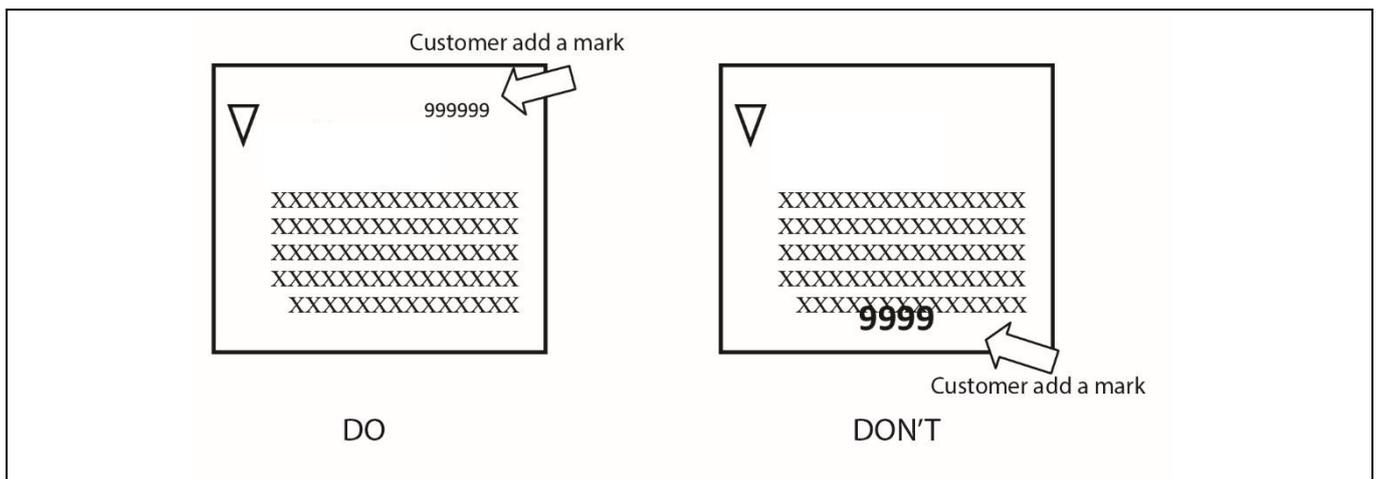
To prevent any physical damage to the device, the marking depth must be less than 30 micron. To control the marking depth, parameters are set in the laser marking machine. Customers may seek assistance from the Original Equipment Manufacturer (OEM) to determine the optimum setting that will provide the required marking depth. Infineon has determined the optimum setting of these parameters through the Design Of Experiments and monitors the depth of marking on a regular basis with SPC control charts.

Typically, for a standard marking provided by Infineon, there are free spaces on the device where it is safe to add a mark. These spaces vary by product and package types. In most cases, a customer’s special marking can be determined up front and a special space can be defined if required.

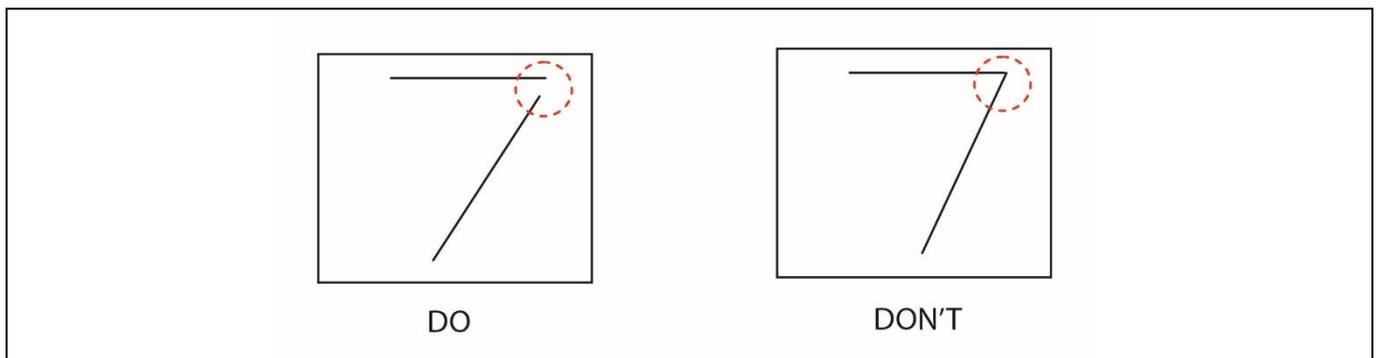
Contact your respective Infineon field support personnel if a customer requires any assistance to determine the safe zone where marking can be added without harmful consequences to the device. They can then relay the questions to Infineon marking experts.

The following are some helpful techniques to help avoid marking depth problems.

1. Add on marking by customers should not overlap with Infineon marking.

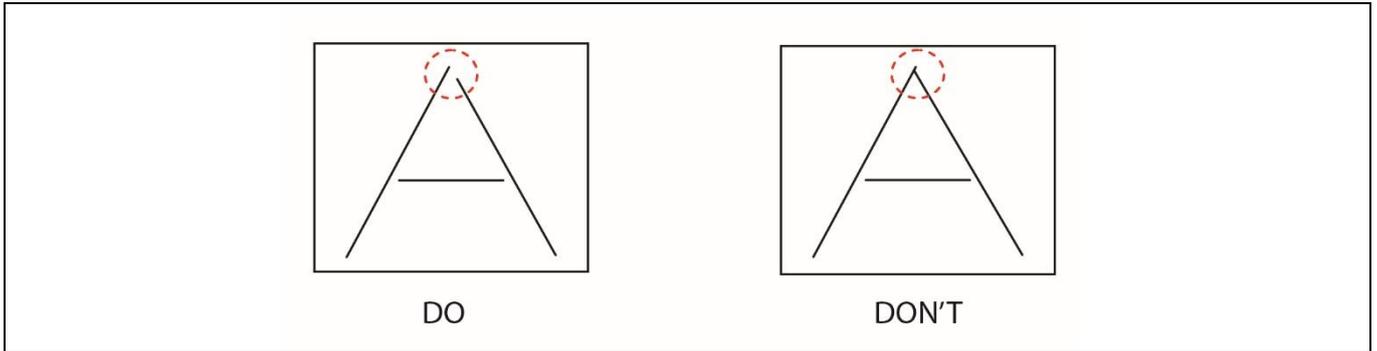


2. Maximum mark depth allowable is 30 micron.
3. Avoid double marking.
4. Any font line that requires a turning angle <math>< 90^\circ</math> needs to have a break in the line.

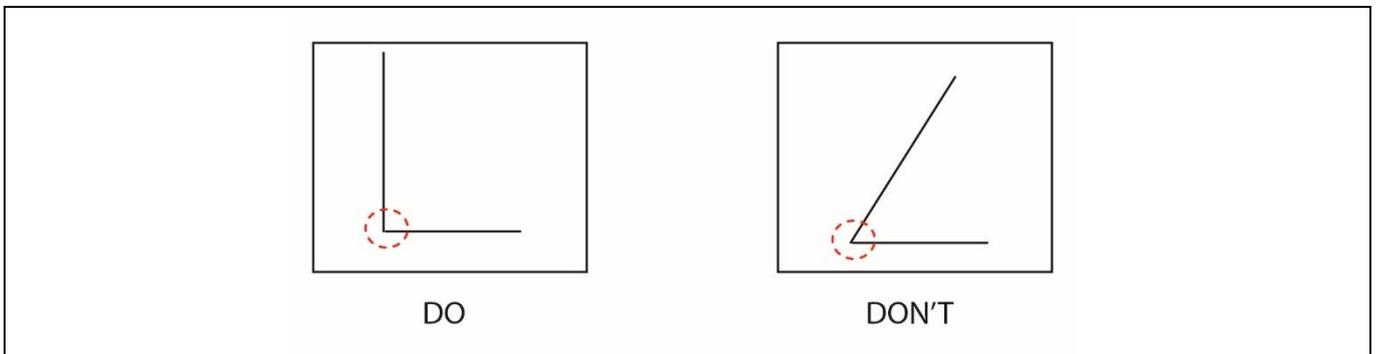


Basic Requirements

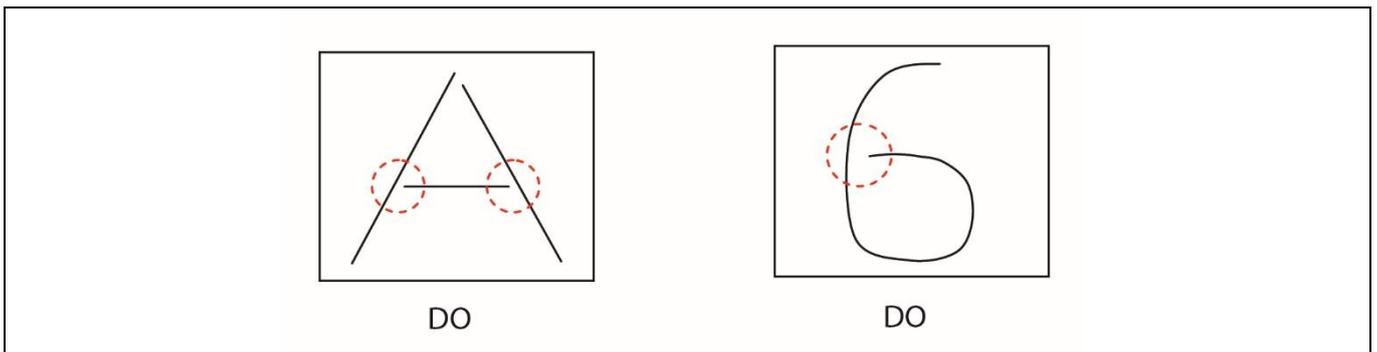
5. No crossing lines or connection between lines.



6. Font line that has a turning angle $< 90^\circ$ will form a continuous line.



7. No overlapping of font lines.



Revision history

Revision history

Document version	Date of release	Description of changes
**	2009-06-19	Initial version
*A	2015-10-12	Updated in template
*B	2017-09-15	Updated logo and Copyright
*C	2018-11-12	Added warranty text in page 1 Updated Sales and Copyright page
*D	2021-03-29	Updated to Infineon template

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