QREP9901
QUALIFICATION REPORT

Laser Marking for PLCC, TSOP, SO, PDIP and FDIP Packages

INTRODUCTION

Laser marking will be used as an alternative manufacturing solution to the ink marking. This change will allow to improve the marking cycle time and therefore the service to the ST customers.

STMicroelectronics has performed a standard qualification for marking. No impact is forecasted at customer level.

Director of
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The Laser Marking qualification criteria are:

– v) visibility (marking must be deep enough)

– q) quality (marking must not be so deep to approach wire loops)

– r) reliability (humidity penetration)

In order to qualify laser marking, trials have been set-up to verify conformity to all these concerns, with the following criteria:

– v) lighting = 600 lux, angle 45°, distance 45 cm.

– q) good control of marking depth w.r.t. clearance to wire loop.

– r) (Preconditioning+) Pressure Pot + Thermal Cycles

TSOP package is the thinnest, the most critical and therefore the most tested. Since the other packages are much thicker, **similarity to TSOP** has been used to qualify laser marking on the other packages. Clear visibility has been verified on all packages.

After completion of trials for all packages (see Table 1 collecting trials for MPG packages), STMicroelectronics is confident that Laser Marking process in Singapore meets all visibility, quality and reliability targets. It is therefore qualified for all MPG packages.

Table 1. Matrix of Trials and Results for Laser Marking Qualification

Package	Visibility Check (1)	Marking Depth/Wire Loop	Reliability Trials
TSOP PCN: NV7009	Test Vehicle: 32 lead		Test Vehicle: 28, 32, 40, 48 lead
	s/s = 4 units all OK	s/s = 8 points x 4 units min = 20 µm, max = 38 µm spec: depth < 50 µm	s/s = 76 units total MSL3 + IR reflow PPT at 240h: 0/76 TCT at 500#: 0/76
SO PCN: NV8003	Test Vehicle: 44 lead		Similarity (TSOP)
	s/s = 80 units all OK	s/s = 7 points x 20 units min = 20 µm, max = 35 µm spec: depth < 75µm	
PLCC PCN: NV6004	Test Vehicle: 32 lead		Similarity (TSOP)
	s/s = 4 units all OK	s/s = 8 points x 4 units min = 19 µm, max = 47 µm spec: depth < 75 µm	
PDIP PCN: NV8003	Test Vehicle: 600mils		Similarity (TSOP)
	s/ = 10 units all OK	s/s = 7 points x 10 units min = 30 µm, max = 51 µm spec: depth < 75 µm	
FDIP PCN: NV8006	Test Vehicle: 600mils		N/A
	s/s = 10 units all OK	s/s = 7 points x 10 units min = 17 µm, max = 30 µm spec: depth < 75 µm	

Note: 1. Visibility Spec: visually clear at distance = 30 cm, angle = 45°, with lighting = 600 lux.
s/s = Sample size
MSL3 = Moisture sensivity level 3 preconditioning.

If you have any questions or suggestion concerning the matters raised in this document please send them to the following electronic mail address:

ask.memory@st.com (for general enquiries)

Please remember to include your name, company, location, telephone number and fax number.