PRODUCT INFORMATION LETTER

PIL AMS-MSH/12/7614
Dated 06 Dec 2012

New carrier tape with reduced depth of pocket for LGA 4x4x1 and LGA 4x4x1.1

Sales Type/product family label	LGA 4x4x1 and LGA 4x4x1.1 packages
Type of change	Packing
Reason for change	to improve the placement of the device in the carrier tape
Description	to reduce the depth of the pocket of the carrier tape from 1.8mm down to 1.25 mm (mean depth)
Forecasted date of implementation	15-Dec-2012
Forecasted date of samples for customer	29-Nov-2012
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	29-Nov-2012
Involved ST facilities	Malta

DOCUMENT APPROVAL

Name	Function
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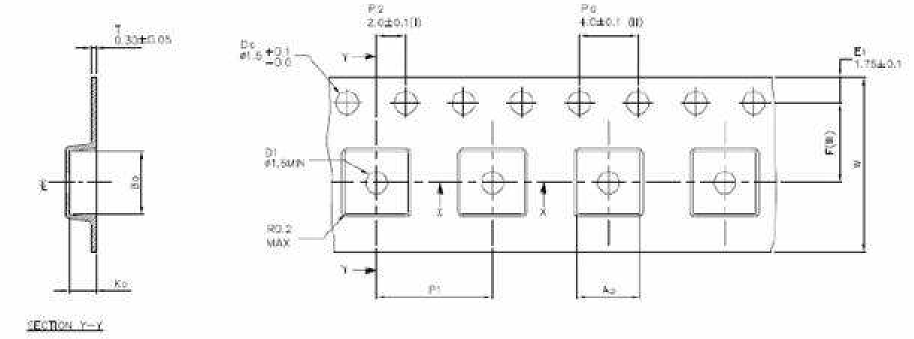
New carrier tape for LGA 4x4x1 and LGA 4x4x1.1 packages

The scope of the introduction of this new carrier tape for the packages LGA 4x4x1 and LGA 4x4x1.1 is to improve the placement of the device in the carrier tape by reducing the depth of the pocket.

1. Description of the change

Here follow the design of the old carrier tape (*Figure 1*) and the new one (*Figure 2*).



Ao	4.35 +/−0.1
Bo	4.35 +/−0.1
Ko	1.80 +/−0.1
F	5.50 +/−0.1
P1	8.00 +/−0.1
W	12.00 +/−0.3

Figure 1: Current design of the carrier tape for LGA 4x4x1 and LGA 4x4x1.1 packages

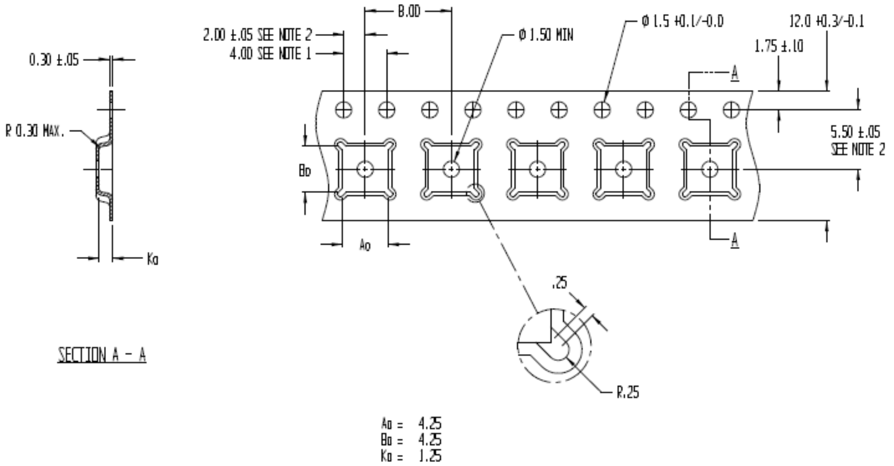


Figure 2: Proposed design of the carrier tape for LGA 4x4x1 and LGA 4x4x1.1 packages

Here follow the detail of Ko parameter (depth of the pocket) in both cases *(Figure3)*

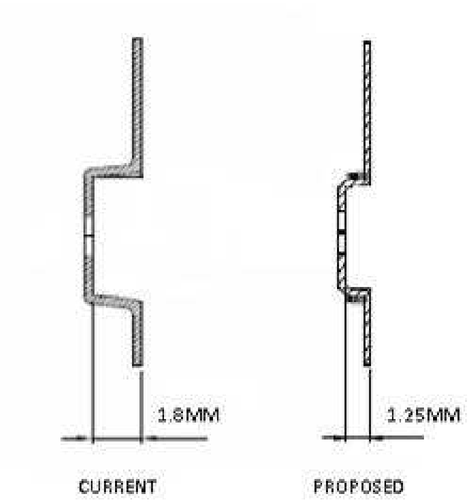


Figure 3: Ko parameter in the current and in the proposed carrier tape

2. Qualification Result

Here follow the result of the qualification performed on the new carrier tape according with ST specifications.

a) Visual Inspection

Visual Inspection	Yes	No	Quantities	Remarks
Damage		✓	N/A	Answer must be No
Burr		✓	N/A	Answer must be No
Orientation		✓	N/A	Must align with ST corporate spec
Contain stain or foreign material		✓	N/A	Answer must be No
The component does not protrude above the top surface of the carrier tape.	✓		N/A	Answer must be Yes
The component can be removed from the cavity in a vertical direction without mechanical restriction, after the top cover tape has been removed.	✓		N/A	Answer must be Yes
Lateral movement of the component is restricted to 1mm maximum.	✓		N/A	Answer must be Yes

b) Camber Test

Camber less than the 1mm maximum per 250mm.

c) Maximum Component Rotation

Component rotation less than 20º in both the lateral and vertical directions.

d) Peel tests

Peel tests were carried out on V-Tek peel testing equipment. 9.3mm width HA cover tape was used for these tests.

For all tests material was stored at normal controlled temperature and humidity (approx. 25ºC, 50%RH)

Time	0	336hrs
Peel Force	66g	68g

Time	0	72hrs @ 55ºC 60%RH
Peel Force	66g	67g

All results are within specification as specified in ST specification (spec #0083826).

e) Drop Test

Drop tests were performed according to ST specification (spec # 7416802). Hereunder are the results:

Drop Test	Max. coplanarity	Min. standoff	Max. standoff	Max. pitch
Before drop	N/A	N/A	N/A	N/A
After drop	N/A	N/A	N/A	N/A
Variance	N/A	N/A	N/A	N/A
Visual Inspection	**YES**	**NO**		
Bend lead	N/A	N/A		
Damaged Carrier Tape		✓		
Others				

f) ESD Characteristics

ST Spec - Surface Resistance: 1E+4 to 1E+11 ohms (according to spec # 0019256)
Measurements of surface resistance were performed:

	Surface Resistance of Carrier Tape / ohms			
Readings	1.8E+5	3.4E+5	1.4E+5	3.4E+5
	2.4E+5	1.1E+5	3.1E+5	5.8E+5

Measurements were within ST specification limits.

g) Workability Test

Carrier tape was used on an ICOS T-120 machine. No problems were encountered when taping devices.

Two devices on top of each other were detected by the plate sensor installed on the finishing scanners.

Dimensional Analysis:

Dimension	Spec /mm	Mean reading /mm	Max. reading /mm	Min. reading /mm
D	1.5 +0.1/0	1.54	1.57	1.53
E	1.75 +/-0.1	1.79	1.81	1.77
P_0	4 +/-0.1	3.99	3.99	4.00
D_1 min	1.5	1.53	1.54	1.5
F	5.5 +/-0.05	5.51	5.54	5.47
P_2	2 +/- 0.05	2.01	2.03	1.99
W	12 +/-0.3	12.18	12.19	12.17
P	8 +/-0.1	7.99	8.01	7.98

All critical parameters are within spec.

Lateral movement of the component inside the tape is 0.35mm. This is less than the maximum movement of 0.5mm allowed in the spec.

h) Outgas material test

10 devices were taped and sealed. They were placed for 24 hours at 30ºC, 60%RH. Lands were then inspected and no discoloration was noted.

3. Conclusion

The new carrier tape for LGA 4x4x1 and LGA 4x4x1.1 packages passed all tests. It can therefore be qualified.

This tape will improve the placement of the device in the carrier tape by reducing the pocket depth.

Public Products List

PIL Title : New carrier tape with reduced depth of pocket for LGA 4x4x1 and LGA 4x4x1.1
PIL Reference : AMS-MSH/12/7614
PIL Created on : 11-DEC-2012

Subject : Public Products List

Dear Customer,

Please find below the Standard Public Products List impacted by the change:

ST COMMERCIAL PRODUCT

L3G4200D	L3G4200DTR

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