



Care and Handling
eWLP Embedded Test Die
With Daisy Chain

Rev. Sept 16, 2011
Check for updates

Table of Contents	Page
a. Drawing Code Table	2
b. Drawing Code System	3
c. Part Number System	3
d. Label Identification	4
e. Polyimide Passivation and Resin Encapsulation	5
f. Die Marking	6~7
g. Unmarked Die – QA Verify Daisy Chain	8
h. Pin A1 Orientation in Waffle Pack (Tray)	9
j. Pin A1 Orientation in Tape and Reel	10
k. Packaging – Die Delivery Options	11
m. Contact TopLine Customer Service	12



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eWLP Embedded Die
TopLine's Drawing Codes

Pin	Pitch	Back Grind Thickness	Size □	TopLine LOT CODE (DP#)				Die Marking Code
				2" Waffle Pack Tray Die Up	2" Waffle Pack Tray Die Down	Tape and Reel Die Down	Wafer Tape & Ring Die Up	
4L	0.3mm	200um	0.56mm	630227	630228	630222	630223	Unmarked
16L			1.16mm	630487	630488	630482	630483	A
36L			1.76mm	630677	630678	630672	630673	A
64L			2.36mm	630887	630888	630882	630883	A
100L			2.96mm	631087	631088	631082	631083	A
144L			3.56mm	631277	631278	631272	631273	A
196L			4.16mm	631487	631488	631482	631483	A
4L			0.3mm	360um	0.56mm	730227	730228	730222
16L	1.16mm	730487			730488	730482	730483	A
36L	1.76mm	730677			730678	730672	730673	A
64L	2.36mm	730887			730888	730882	730883	A
100L	2.96mm	731087			731088	731082	731083	A
144L	3.56mm	731277			731278	731272	731273	A
196L	4.16mm	731487			731488	731482	731483	A
4L	0.4mm	200um			0.76mm	640227	640228	640222
16L			1.56mm	640487	640488	640482	640483	F
36L			2.36mm	640677	640678	640672	640673	F
64L			3.16mm	640887	640888	640882	640883	F
100L			3.96mm	641087	641088	641082	641083	F
144L			4.76mm	641277	641278	641272	641273	F
196L			5.56mm	641487	641488	641482	641483	F
4L			0.4mm	360um	0.76mm	740227	740228	740222
16L	1.56mm	740487			740488	740482	740483	F
36L	2.36mm	740677			740678	740672	740673	F
64L	3.16mm	740887			740888	740882	740883	F
100L	3.96mm	741087			741088	741082	741083	F
144L	4.76mm	741277			741278	741272	741273	F
196L	5.56mm	741487			741488	741482	741483	F

eWLP Embedded Die
TopLine's Drawing Code System

<u>6</u>	<u>4</u>	<u>127</u>	<u>0</u>
Series	Pitch	Daisy Chain Pattern	Packaging
Embedded Die 6 = eWLP Without Balls Background 200um thick 50um Cu Post 7 = eWLP Without Balls Background 360um thick 50um Cu Post	3 = 0.3mm 4 = 0.4mm	Row-Column Matrix	Waffle Pack Tray: 7 = 2-inch Tray - Pad Up 8 = 2-inch Tray - Pad Down Carrier Tape: 2 = T&R - Pad Down Wafer Format: 3 = Sawn Wafer On UV Tape & Ring

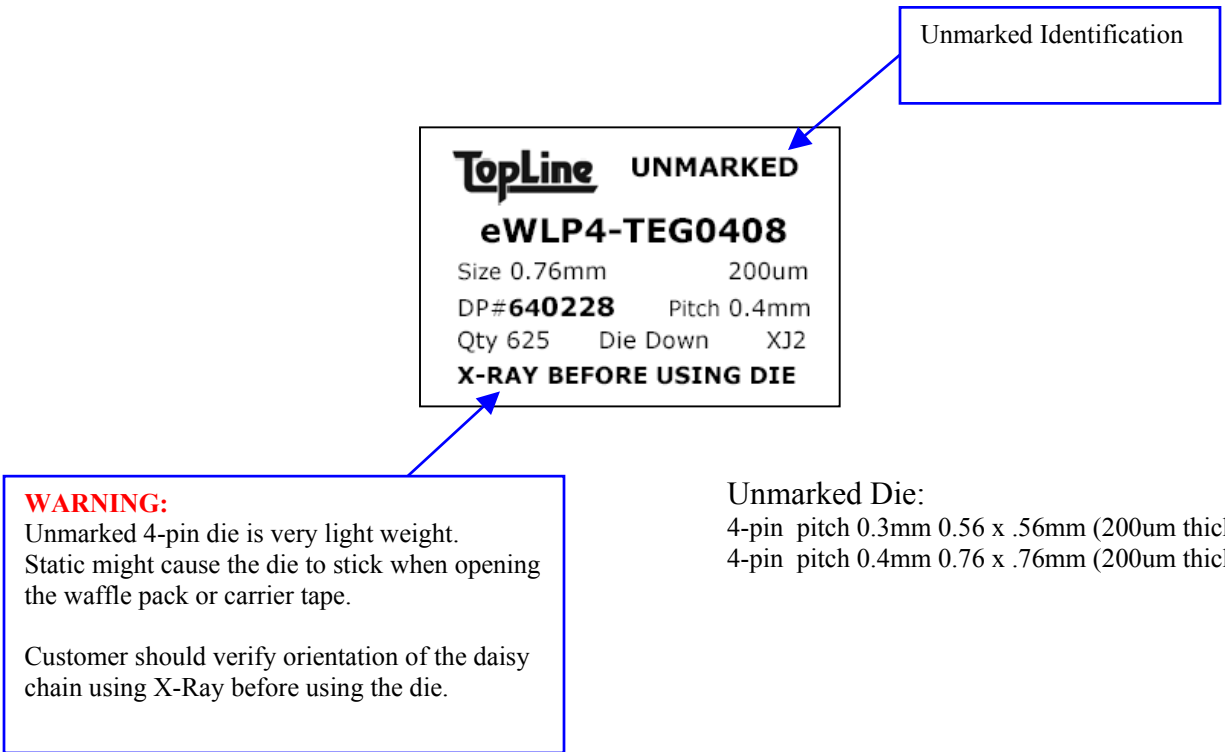
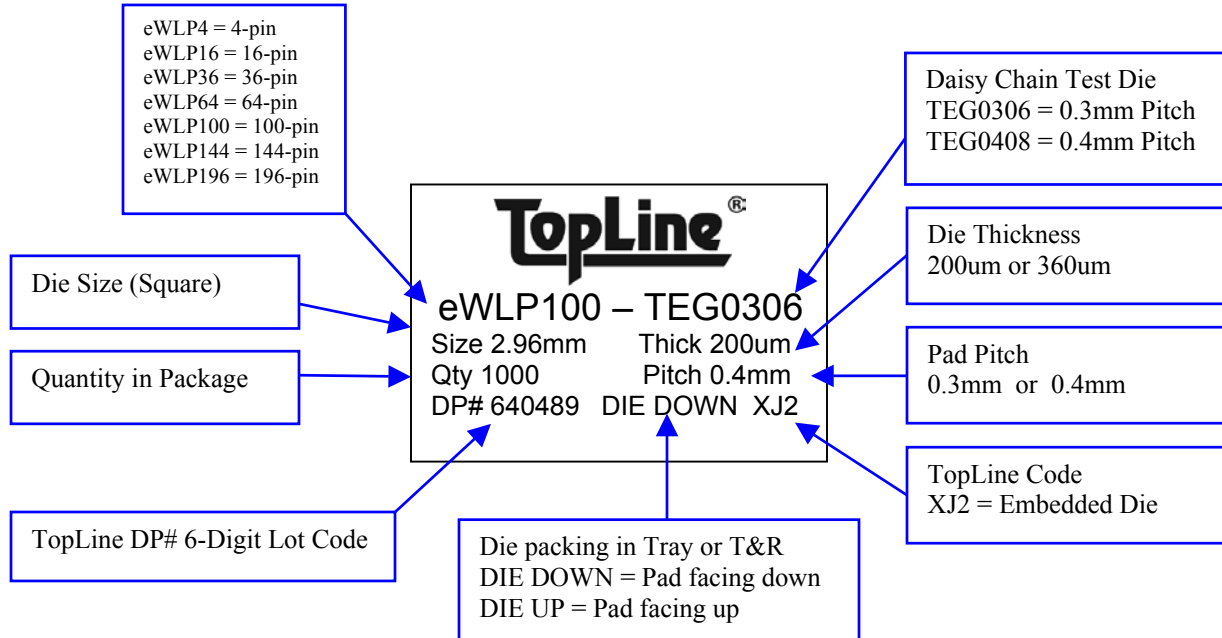
eWLP Embedded Die
TopLine's Part Number System

<u>eWLP</u>	<u>196</u>	<u>T</u>	<u>.4</u>	-	<u>DC127</u>	<u>D2</u>
Series	Nbr Pads	Package Code	Pitch	Pad Alloy	Daisy Chain Pattern	Die Thickness Pad Up/Down
eWLP = Embedded Die	4 ~ 196	W = 2-inch Waffle Tray E = Tape Reel (T&R) U = Sawn Wafer UV Tape & Ring	.3 = 0.3mm TEG0306 .4 = 0.4mm TEG0408	Blank = Pure Cu Pillar	Matrix Pattern	Pad Down: D2 = 200µm Thick 50um Cu Post D3 = 360µm Thick 50um Cu Post Pad Up: U2 = 200µm Thick 50um Cu Post U3 = 360µm Thick 50um Cu Post

Typical Label

(Subject to change without notice)

Label System (Waffle Pack- Tray)



eWLP Passivation and Encapsulation

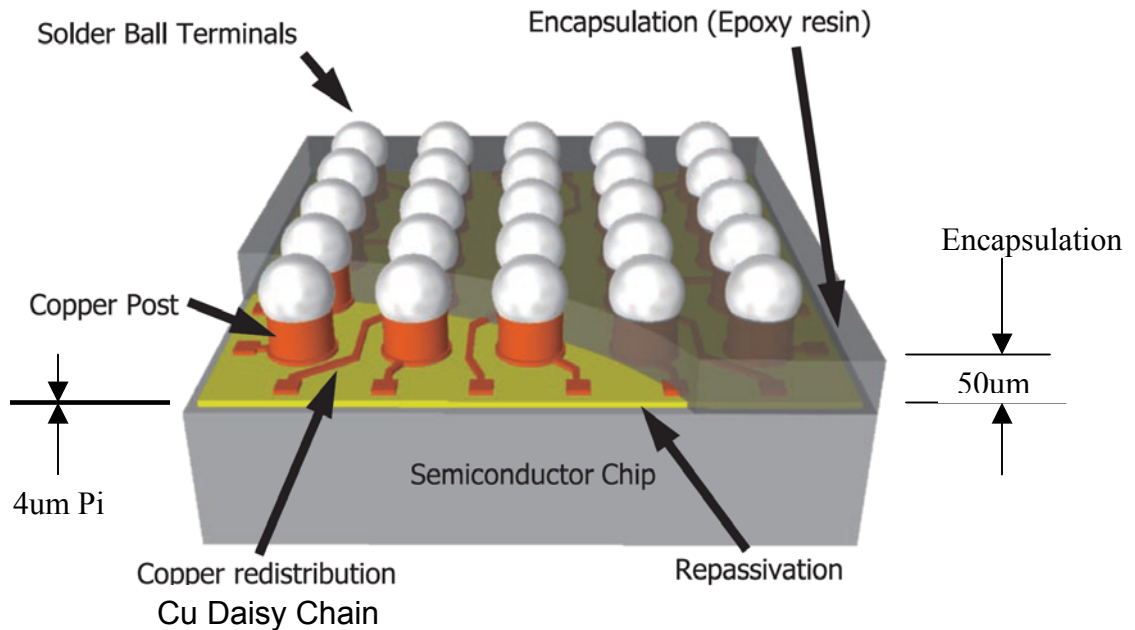
Item	Material	Thickness
Passivation	Polyimide	4um
Encapsulation	Epoxy Resin Sealing Structure	50um

Note 1: Baking (drying) is not required.

Note 2: The epoxy resin structure shuts out moisture the polyimide surface.

Cut-Away View.

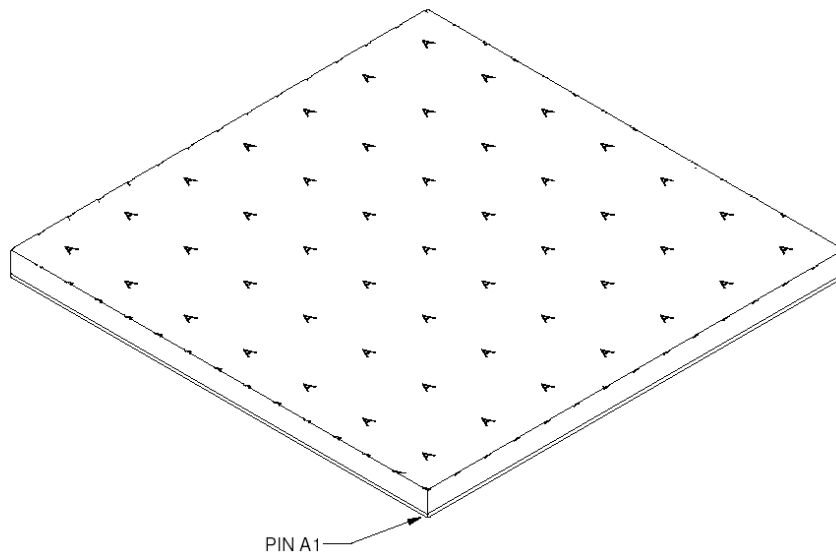
WLP drawing is shown with solder ball.
 eWLP is pure Cu post (without solder ball).
 eWLP is without surface treatment.



eWLP Die Laser Marking

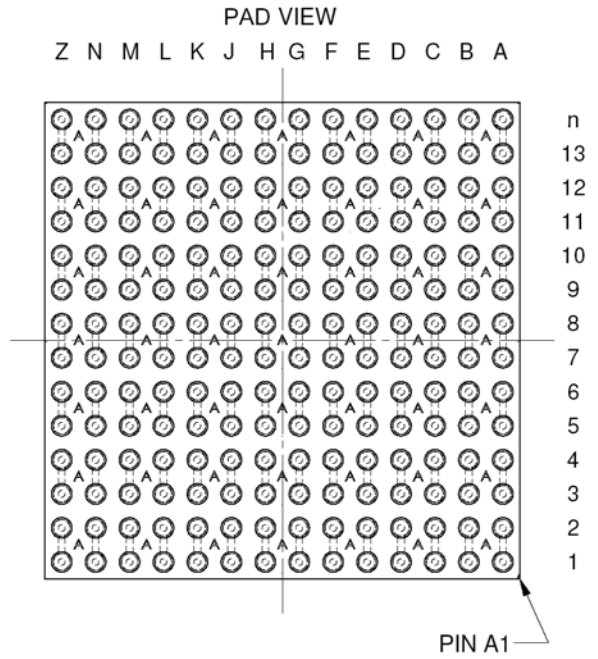
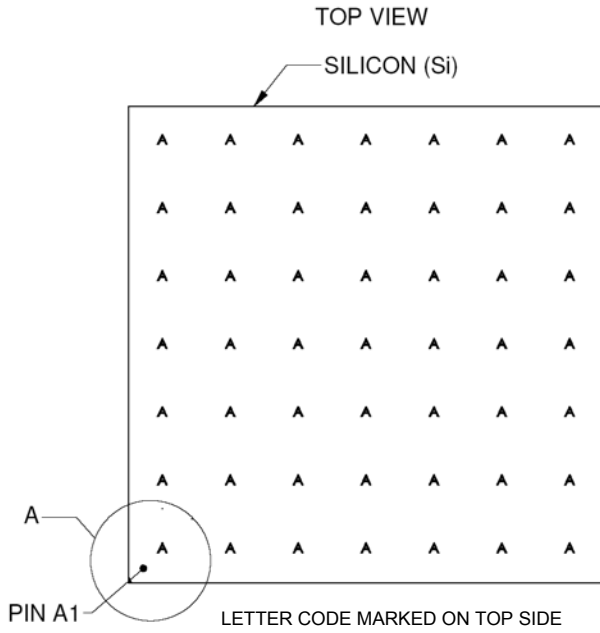
Die Part Series	Pitch	Die Size	Nbr Pins	Die Thickness	Marking Code
eWLP4 - TEG0306	0.3mm	0.56 x 0.56mm	4-pin	200um	Unmarked (See Page 8)
eWLP4 - TEG0306				360um	A
eWLP4 - TEG0408	0.4mm	0.76 x 0.76mm	4-pin	200um	Unmarked (See Page 8)
eWLP4 - TEG0408				360um	F
eWLP16 - TEG0306	0.3mm	1.16 x 1.16mm	16-pin	200~ 360um	A Repeated
eWLP36 - TEG0306		1.76 x 1.76mm	36-pin		
eWLP64 - TEG0306		2.36 x 2.36 mm	64-pin		
eWLP100 - TEG0306		2.96 x 2.96mm	100-pin		
eWLP144 - TEG0306		3.56 x 3.56mm	144-pin		
eWLP196 - TEG0306		4.16 x 4.16mm	196-pin		
eWLP16 - TEG0408	0.4mm	1.56 x 1.56mm	16-pin	200~ 360um	F Repeated
eWLP36 - TEG0408		2.36 x 2.36mm	36-pin		
eWLP64 - TEG0408		3.16 x 3.16mm	64-pin		
eWLP100 - TEG0408		3.96 x 3.96mm	100-pin		
eWLP144 - TEG0408		4.76 x 4.76mm	144-pin		
eWLP196 - TEG0408		5.56 x 5.56mm	196-pin		

Example of eWLP Marking
Pin A1 Orientation



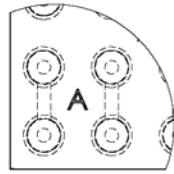
- Note1: eWLP is laser marked with a single letter repeated across the top surface.
 Note2: Orient the markings as shown above. A1 is located in the lower left corner of die.

eWLP Die Laser Marking Continued



MARKING CODE	
PITCH	*LETTER
0.3mm	A
0.4mm	F
0.5mm	P

*SUBJECT TO CHANGE

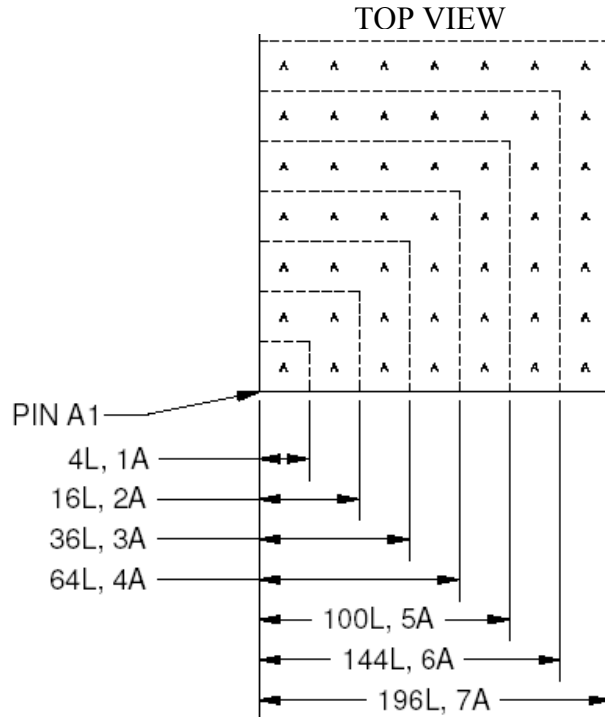


DAISY CHAIN ORIENTATION

DETAIL A
SCALE 25 : 1

Notes: (Unless Otherwise Specified).

- 1) EXAMPLE OF TOP SIDE LASER MARKING.
- 2) ORIENT LETTERS FOR LOCATION OF PIN A1 CORNER.
- 3) ALLOWABLE LETTER MARKING: A, F, T, M, L, Y, AND P.
- 4) SINGLE LETTER IS REPEATED MULTIPLE TIMES ACROSS TOP SIDE.
- 5) DAISY CHAIN IS HIDDEN UNDER RESIN ON BALL SIZE.
- 6) TOP SIDE DOES NOT HAVE A DOT FOR LOCATION OF PIN A1.
- 7) LETTERS ARE NOT MARKED ON BOTTOM (PAD) SIDE.
- 8) 4-pin 200um THICK DIE IS UNMARKED

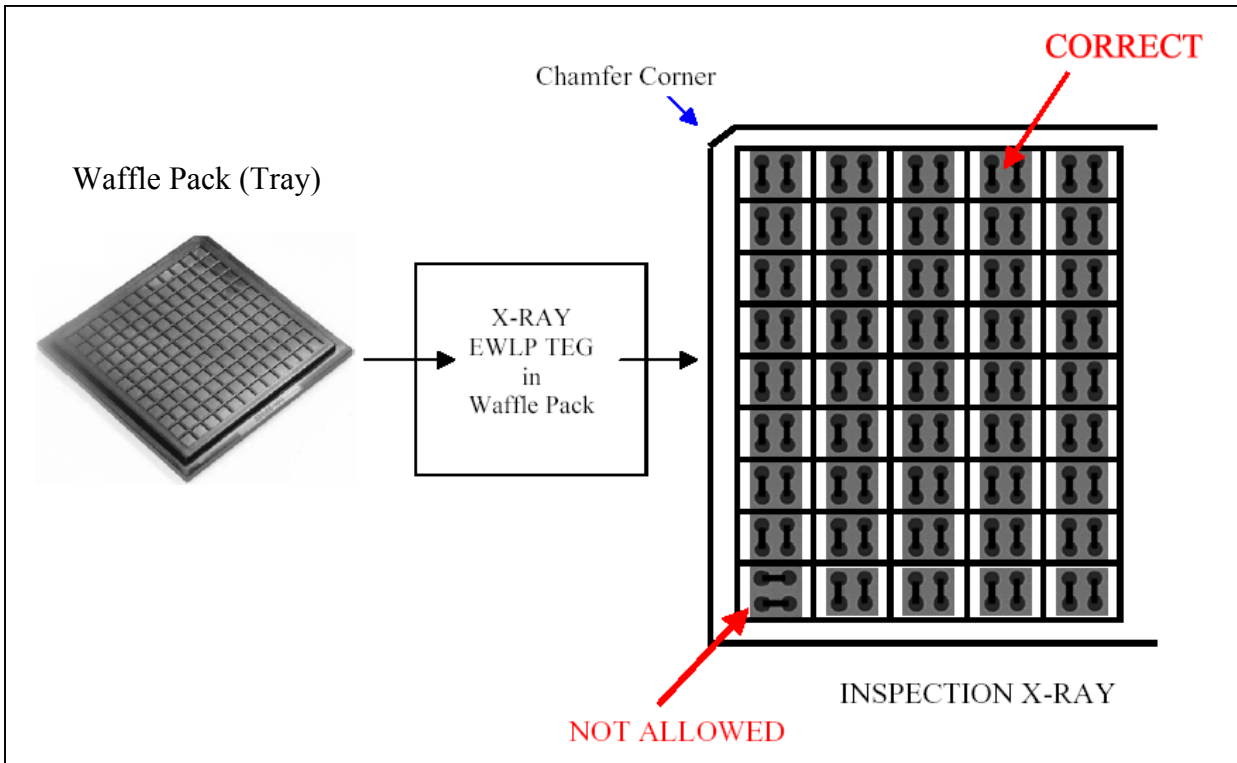
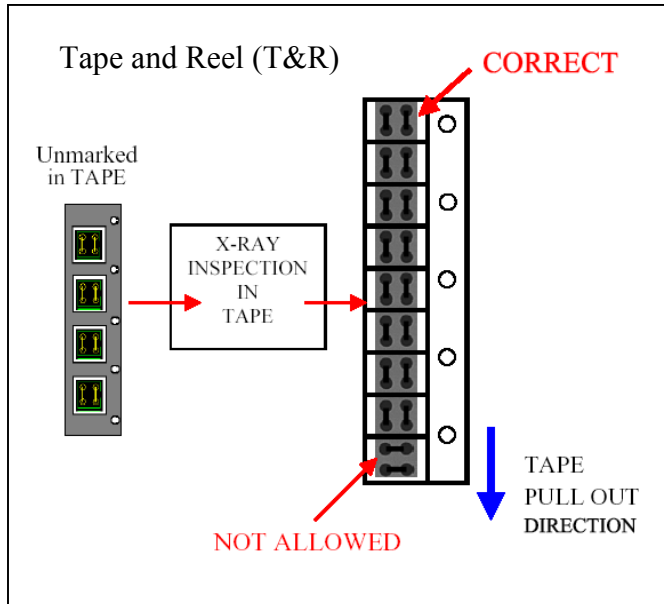


QA Requirement for Unmarked Die

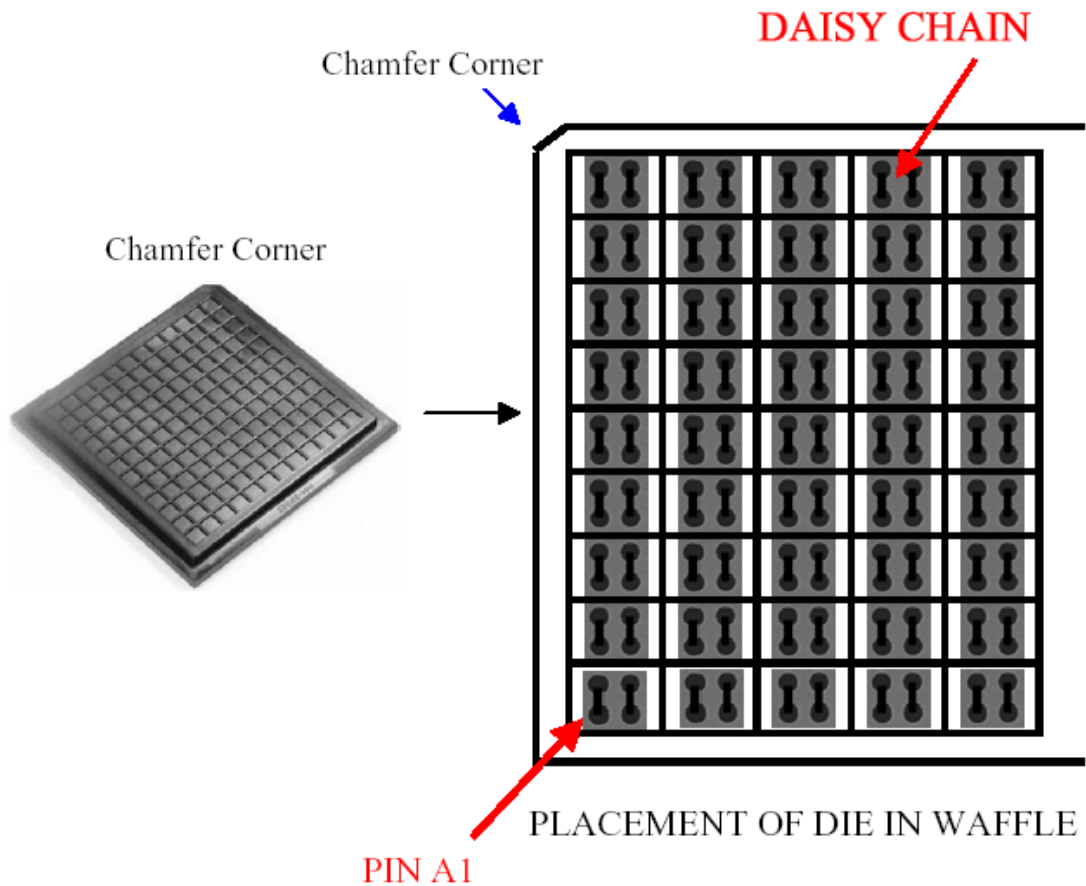
Part Number on Label	Pitch	Die Size	Nbr Pins	Die Thickness	Die Marking
eWLP4 - TEG0306	0.3mm	0.56 x 0.56mm	4-pin	200um	Unmarked
eWLP4 - TEG0408	0.4mm	0.76 x 0.76mm	4-pin	200um	Unmarked

WARNING !

1. Customer must use caution to avoid accidental rotation of unmarked die.
2. TopLine does not guarantee correct orientation of die in the waffle pack (tray) or in tape and reel (T&R).
3. Static might cause die to stick while opening tray. Die might stick to the cover tape when opening the carrier tape.
4. Customer should X-Ray die to verify orientation of daisy chain.



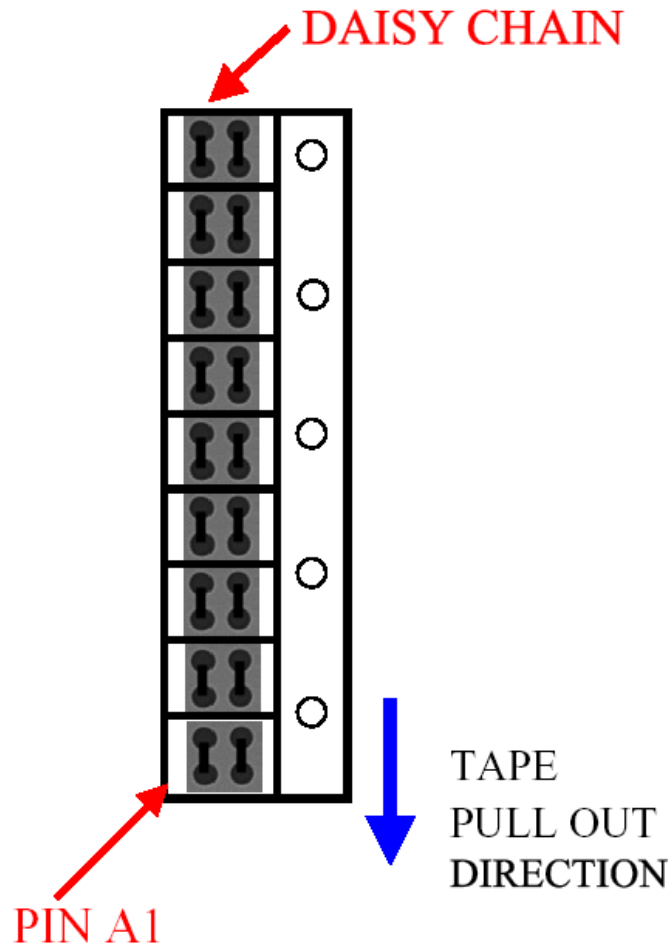
Pin A1 Orientation in Waffle Pack (Tray)



WARNING ! – QA REQUIREMENT

1. Customer must use caution to avoid rotation and flipping of die in waffle pack.
2. Small die (0.56mm and 0.76mm) are very light, and might flip or rotate.
3. Die might stick to paper insert when opening tray cover-lid.
4. Customer should perform QA step with X-Ray to verify orientation of daisy chain.

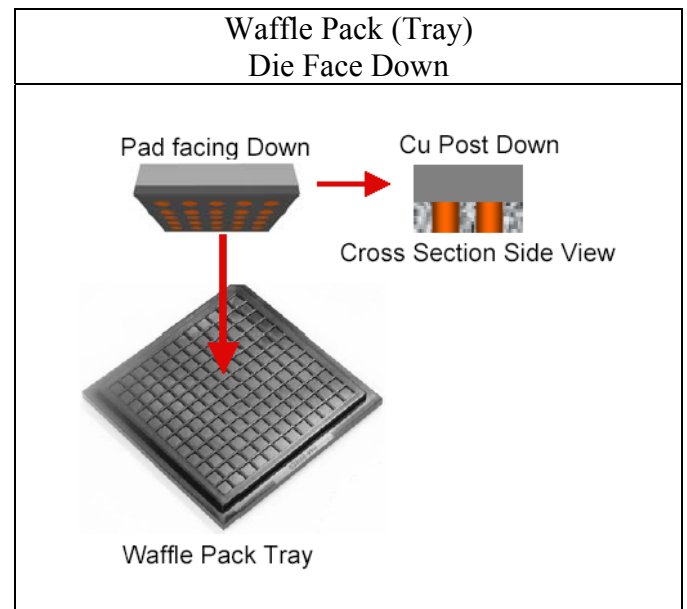
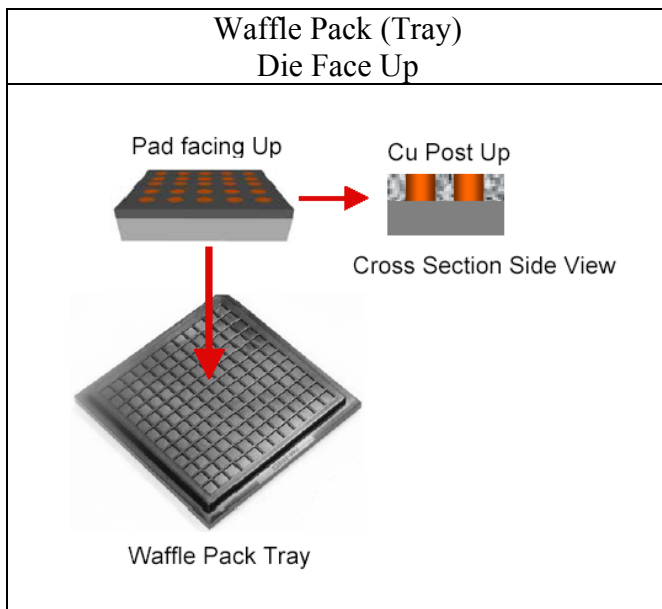
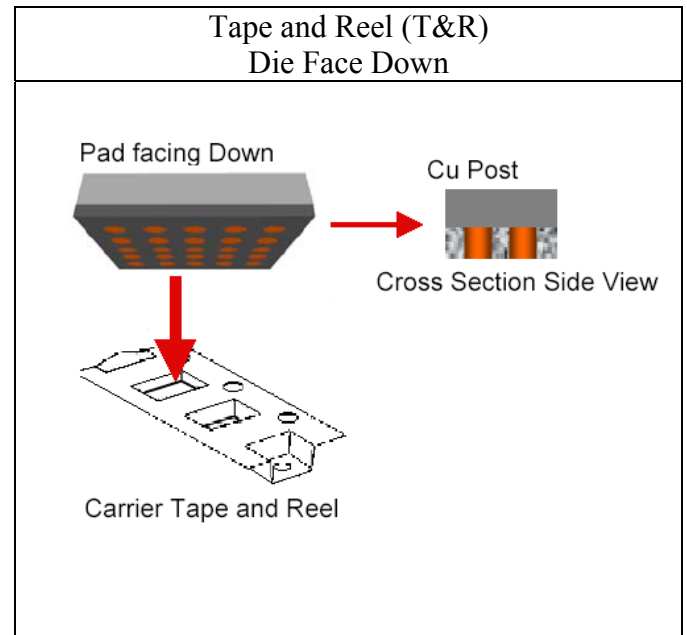
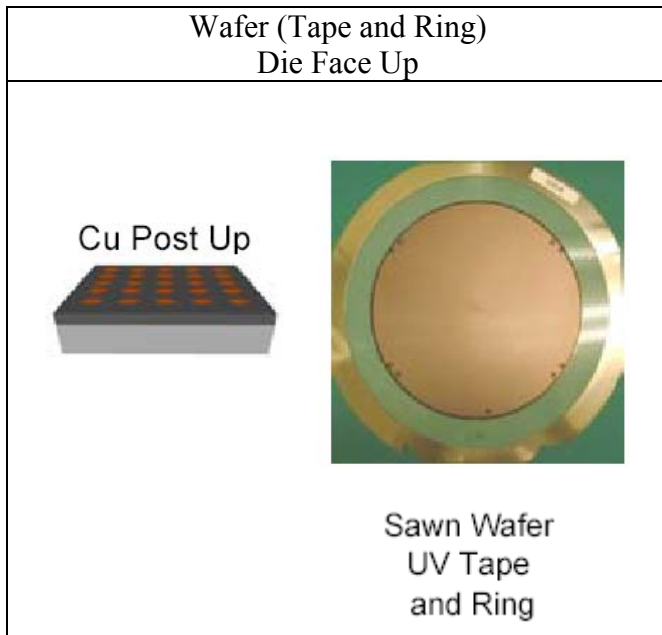
Pin A1 Orientation in Tape and Reel (T&R)



WARNING ! – QA REQUIREMENT

1. Customer must use caution to avoid rotation and flipping of die from carrier tape.
2. Small die (0.56mm and 0.76mm) are very light, and might flip or rotate.
3. Small die might stick to the cover tape while opening carrier tape.
4. Customer should perform QA step with X-Ray to verify orientation of daisy chain.

eWLP Die Delivery Options
 Packaging: Wafer, Tape and Reel (T&R) or Waffle Pack
 Die direction in packaging: Face Up and Face Down





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