

LGA 8-pin (6x8) and WSON 8-pin (6x8) PCB Design

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Associated Part Family: S35ML0xG3

1.0 Introduction

SkyHigh Memory SPI NAND is designed using 8-pin land grid array (LGA) packaging technology. The LGA package is designed with a rectangular grid of contacts underneath the package. The contacts are to be connected to a grid of contacts on the PCB, not all grids need to be used. LGA package is designed to fit in a socket or to be soldered down using surface mount technology (SMT).

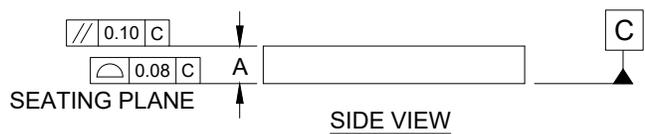
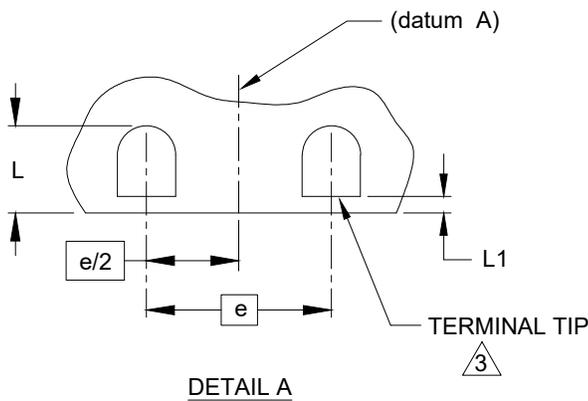
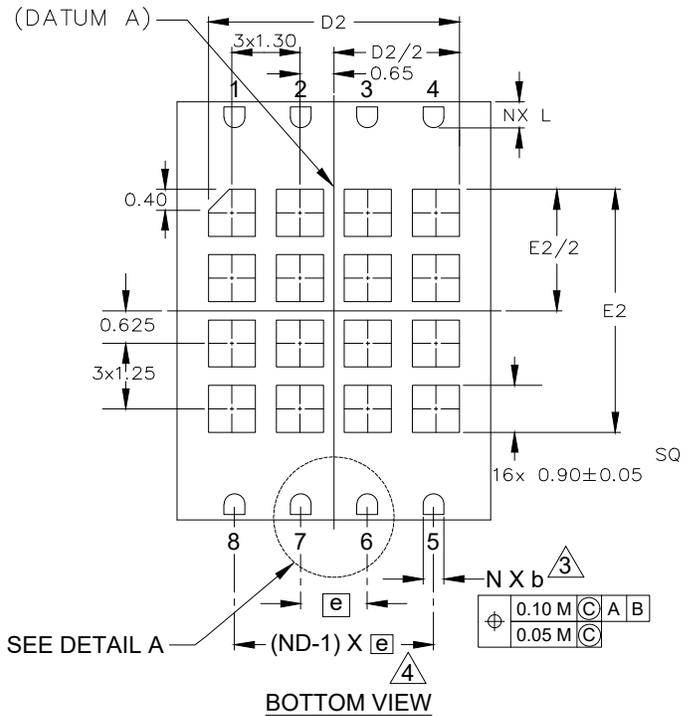
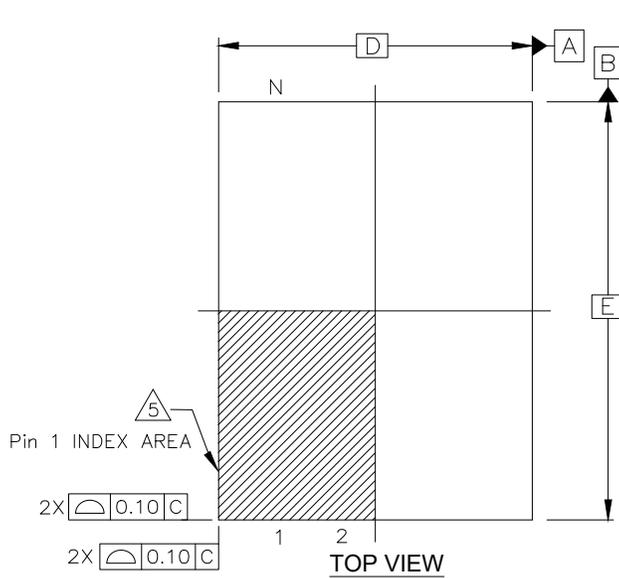
Another package that is commonly used for SPI NAND products from various manufacturers is WSON package. The 8-contact WSON package is “lead-less” and the contacts are configured on the package bottom, with plastic mold compound present on three sides of each contact. WSON has a metal bottom paddle that can be soldered directly to the PC board

This Application note highlights the package dimensions and differences between both packages to help the PCB designer to have the same layout to accommodate both packages

2.0 Package Dimensions Differences (8-Pin LGA 6x8 and 8-pin WSON 6x8)

Package	LGA (8-pin 6x8)			WSON (8-pin 6x8)		
	MIN	NOM	MAX	MIN	NOM	MAX
e	1.27 BSC			1.27 BSC		
N	8			8		
ND	4			4		
L	0.45	0.5	0.55	0.45	0.5	0.55
b	0.35	0.4	0.45	0.35	0.4	0.45
D2	4.7	4.8	4.9	3.9	4	4.1
E2	4.55	4.65	4.75	3.3	3.4	3.5
D	6 BSC			6 BSC		
E	8 BSC			8 BSC		
A	0.7	0.75	0.8	0.7	0.75	0.8
A1	-	-	-	0	-	0.05
L1	0	-	0.15	-	-	-
K	-			0.20 MIN		

8-pin LGA Package (6 x 8 mm body width)



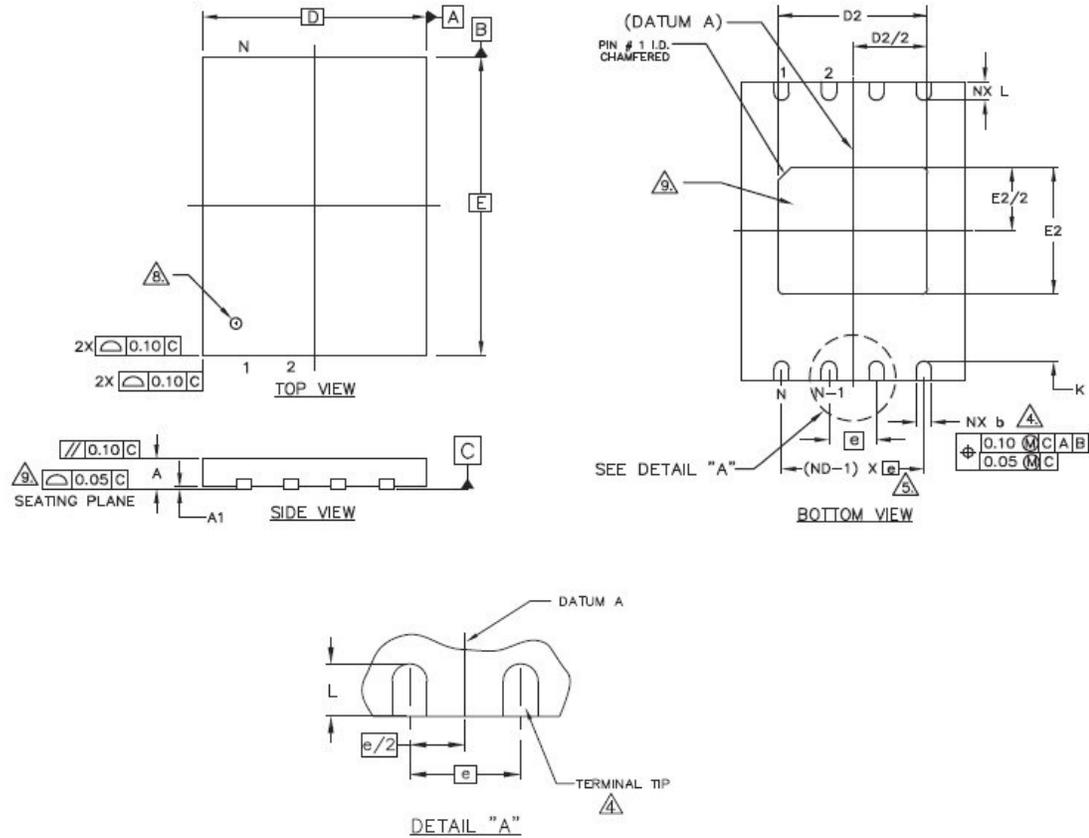
SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
e	1.27 BSC		
N	8		
ND	4		
L	0.45	0.50	0.55
b	0.35	0.40	0.45
D2	4.70	4.80	4.90
E2	4.55	4.65	4.75
D	6.00 BSC		
E	8.00 BSC		
A	0.70	0.75	0.80
L1	0.00	-	0.15

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. N IS THE TOTAL NUMBER OF LANDS.
3. DIMENSION "b" IS MEASURED AT THE MAXIMUM LAND WIDTH IN A PLANE PARALLEL TO DATUM C.
4. ND REFERS TO THE NUMBER OF LANDS ON D SIDE.
5. PIN #1 ID ON TOP WILL BE LOCATED WITHIN THE INDICATED ZONE.

4.0 WSON 8-pin (6x8) Package Dimension

WSON 8-contact 6 x 8 mm Leadless



PACKAGE	WNH008			
SYMBOL	MIN	NOM	MAX	NOTE
e	1.27 BSC.			
N	8			3
ND	4			5
L	0.45	0.50	0.55	
b	0.35	0.40	0.45	4
D2	3.90	4.00	4.10	
E2	3.30	3.40	3.50	
D	6.00 BSC			
E	8.00 BSC			
A	0.70	0.75	0.80	
A1	0.00	---	0.05	
K	0.20 MIN.			

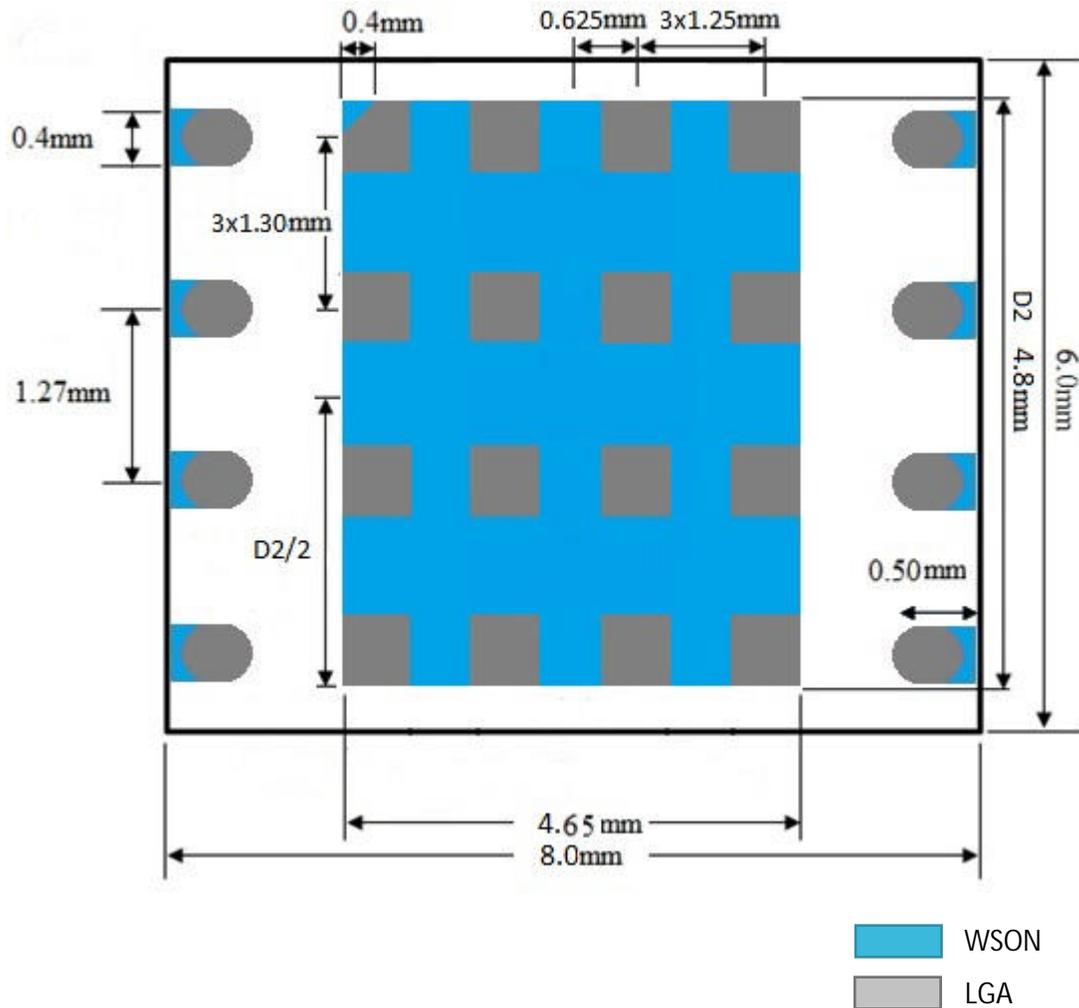
NOTES:

1. DIMENSIONING AND TOLERANCING CONFORMS TO ASME Y14.5M - 1994.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. N IS THE TOTAL NUMBER OF TERMINALS.
4. DIMENSION "b" APPLIES TO METALLIZED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30mm FROM TERMINAL TIP. IF THE TERMINAL HAS THE OPTIONAL RADIUS ON THE OTHER END OF THE TERMINAL, THE DIMENSION "b" SHOULD NOT BE MEASURED IN THAT RADIUS AREA.
5. ND REFERS TO THE NUMBER OF TERMINALS ON D SIDE.
6. MAX. PACKAGE WARPAGE IS 0.05mm.
7. MAXIMUM ALLOWABLE BURRS IS 0.076mm IN ALL DIRECTIONS.
8. PIN #1 ID ON TOP WILL BE LASER MARKED.
9. BILATERAL COPLANARITY ZONE APPLIES TO THE EXPOSED HEAT SINK SLUG AS WELL AS THE TERMINALS.

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5.0 WSON 8-pin and LGA 8-pin Packages with a Dual PCB Layout Footprint

WSON 8-pin and LGA 8-pin Dual Footprint - TOP VIEW



Notes:

1. The diagram represent a top view of both packages
2. The diagram is not drawn to scale
3. Blue color refers to WSON package while the gray color refers to the LGA package
4. Pads heights are slightly different between both packages
5. The metal underneath the package can be either grounded or kept floating- must not be connected to any signal line

6.0 Conclusion

In conclusion, both LGA and WSON packages are widely used by different manufacturers for SPI NAND flash products. It is possible for the PCB designer to accommodate both packages using the same PCB design while considering the differences between both packages

Document History

Document Title: AN200003 – LGA 8-pin (6x8) and WSON 8-pin (6x8) PCB Design

Revision	ECN	Orig. of Change	Submission Date	Description of Change
**		MNADA	02/10/2021	New application note.
A		MNADA	06/21/2021	Added a dual PCB footprint diagram.