WLCSP Products Description

Confidentiality Requested

Content & Short Description

Content

I. WLCSP Introduction

II. GLF all Size POD Outline

III. Bump Spec

IV. Suggestions & Conclusions

Short Description

This document is to introduce the WLCSP's package features and physical features, which can help customers to reduce the risks or even help to improve the process in SMT or assembly process.

WLCSP Introduction

1. What is WLCSP

Wafer Level Chip Scale Package (WLCSP) is different from traditional package. The typical WLCSP assembly process is bumping and CP testing in a whole wafer firstly, and then back grinding, wafer dicing and IC taping. So after assembly process, the WLCSP size is keep the same with die size. While the traditional package assembly process is back grinding, wafer dicing firstly and then assembling, molding and FT testing. So the traditional package size is at least 20% larger than die size.

2. WLCSP Structure

WLCSP is build by 4 parts: The electrical signal in the internal circuit is exported by balls (bumps) which are built directly on silicon die.

- Silicon Die
- Re-passivation
- UBM
- Ball (bump)

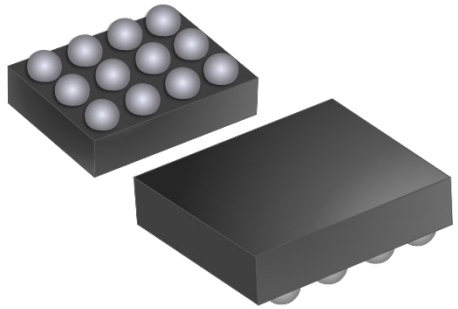


Fig 1. WLCSP Structure

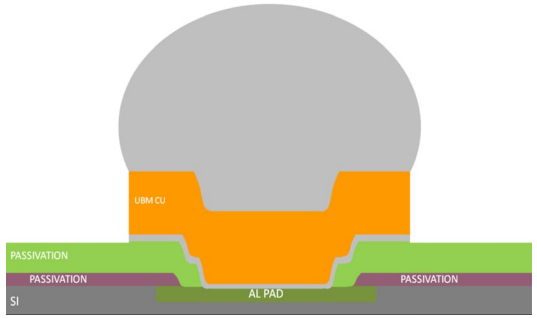


Fig 2. WLCSP Bump Structure

WLCSP Introduction

3. Advantages of WLCSP

- The greatest advantage of WLCSP is reduced the package size that makes the chip size much smaller and thinner, so that can match the request of portable electronic products.
- The electrical signal in the internal circuit is exported by bumps. Through this way, the WLCSP chips have better electrical performance, faster transfer speed and more stable signal output.
- Since WLCSP without molding compound and ceramic shells, the heat produced by chips can be dissipated rapidly.

WLCSP Introduction

4. The MSL of WLCSP

Since the organic material used in traditional chips, like molding compound, the chips will absorb moisture, when expose in air. That moist chips will delam during SMT process, because the moisture in chips can produce such strong steam pressure that can delam chips, or even cause “Popcorn effect”.

While WLCSP chips can avoid the risk of delam due to without organic material. So WLCSP can achieve MSL1 naturally.

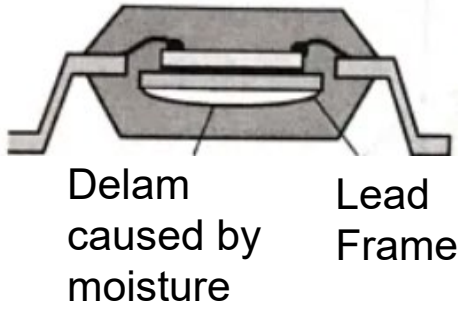


Fig 3. molding chip delam

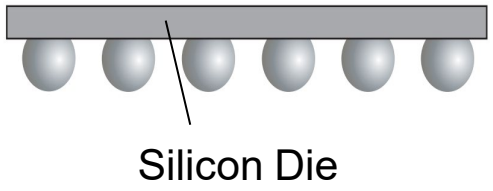
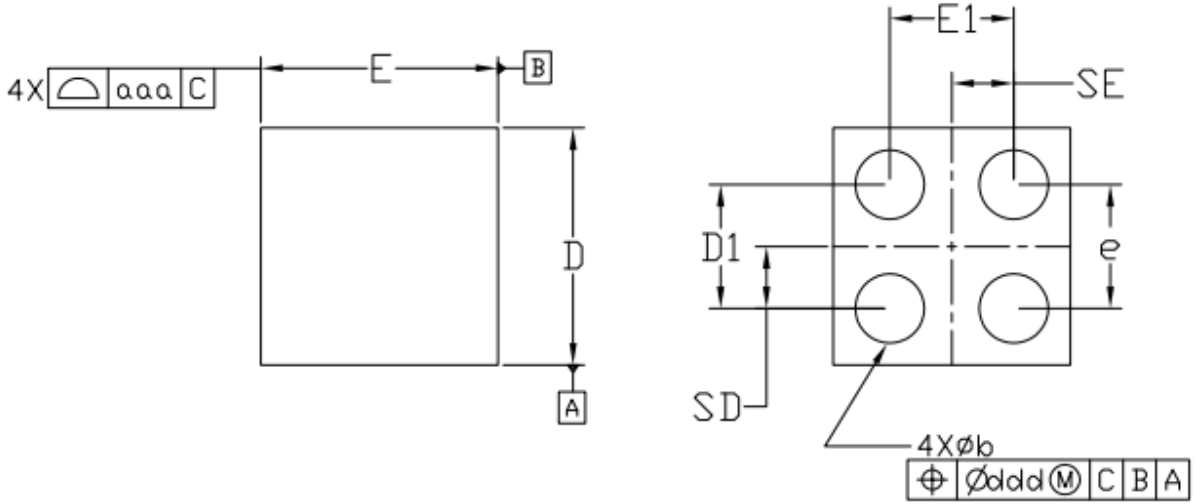


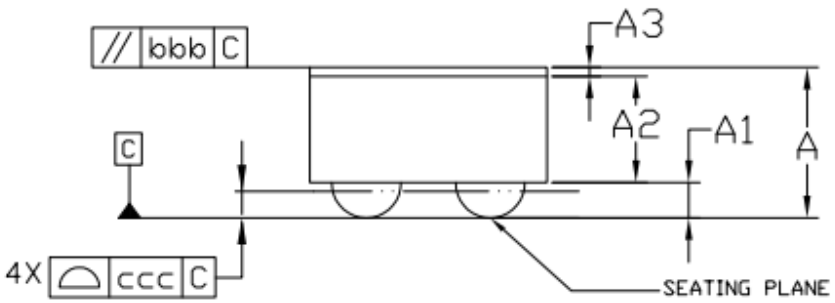
Fig 4. WLCSP Structure

LEVEL	FLOOR LIFE[4]		SOAK REQUIREMENTS[3]				
			STANDARD		ACCELERATED EQUIVALENT[1]		
					eV 0.40-0.48	eV 0.30-0.39	
	TIME	CONDITION	TIME (hours)	CONDITION	TIME (hours)	TIME (hours)	CONDITION
1	Unlimited	≤30 °C/85% RH	168 +5/-0	85 °C/85% RH	NA	NA	NA
2	1 year	≤30 °C/60% RH	168 +5/-0	85 °C/60% RH	NA	NA	NA
2a	4 weeks	≤30 °C/60% RH	696[2] +5/-0	30 °C/60% RH	120 +1/-0	168 +1/-0	60 °C/60% RH
3	168 hours	≤30 °C/60% RH	192[2] +5/-0	30 °C/60% RH	40 +1/-0	52 +1/-0	60 °C/60% RH
4	72 hours	≤30 °C/60% RH	96[2] +2/-0	30 °C/60% RH	20 +0.5/-0	24 +0.5/-0	60 °C/60% RH
5	48 hours	≤30 °C/60% RH	72[2] +2/-0	30 °C/60% RH	15 +0.5/-0	20 +0.5/-0	60 °C/60% RH
5a	24 hours	≤30 °C/60% RH	48[2] +2/-0	30 °C/60% RH	10 +0.5/-0	13 +0.5/-0	60 °C/60% RH
6	Time on Label (TOL)	≤30 °C/60% RH	TOL	30 °C/60% RH	NA	NA	NA

Table 1 Moisture Sensitivity Levels

GLF WLCSP POD- 0.67x0.67mm (with Lamination)





Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.389	0.425	0.461
A1	0.075	0.100	0.125
A2	0.275	0.300	0.325
A3	0.020	0.025	0.030
D	0.655	0.670	0.685
E	0.655	0.670	0.685
D1	0.300	0.350	0.400
E1	0.300	0.350	0.400
b	0.165	0.195	0.225
e	0.350 BSC		
SD	0.175 BSC		
SE	0.175 BSC		
Tol. of Form&Position			
aaa	0.05		
bbb	0.05		
ccc	0.05		
ddd	0.05		

Key Size:

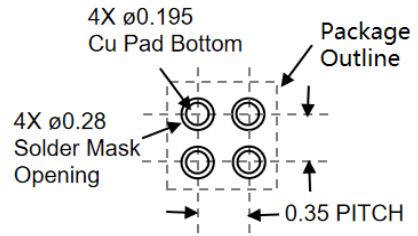
Chip Thickness：0.425mm

Bump High(A1)：0.10mm

Silicon Thickness(A2)：0.3mm

Lamination Thickness(A3): 25um

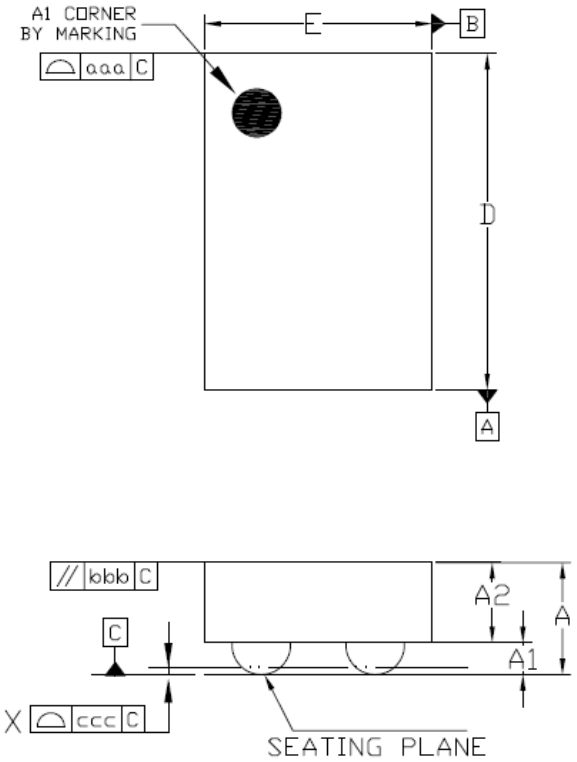
Recommended Footprint

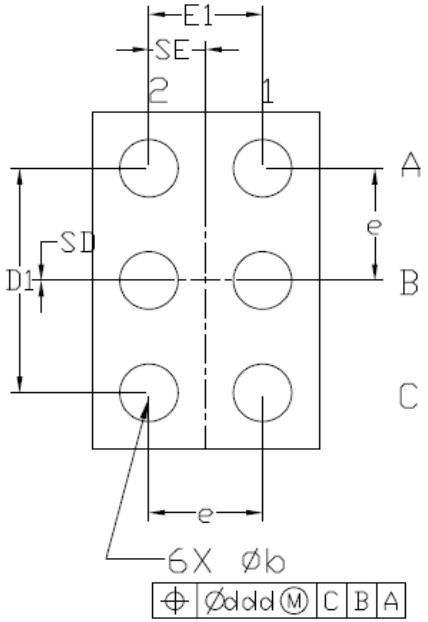


Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 0.67x1.020mm (without Lamination and Thin Section)





Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.300	0.350	0.400
A1	0.075	0.100	0.125
A2	0.225	0.250	0.275
D	1.005	1.020	1.035
E	0.655	0.670	0.685
D1	0.650	0.700	0.750
E1	0.300	0.350	0.400
b	0.175	0.210	0.245
e	0.350 BSC		
SD	0.000 BSC		
SE	0.175 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

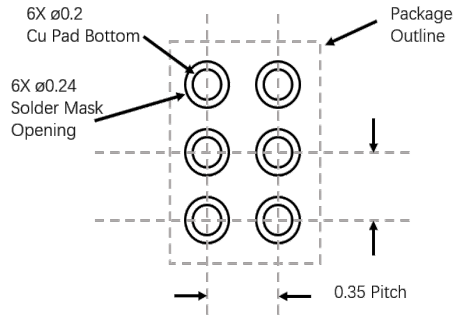
Key Size:

Chip Thickness：0.35mm

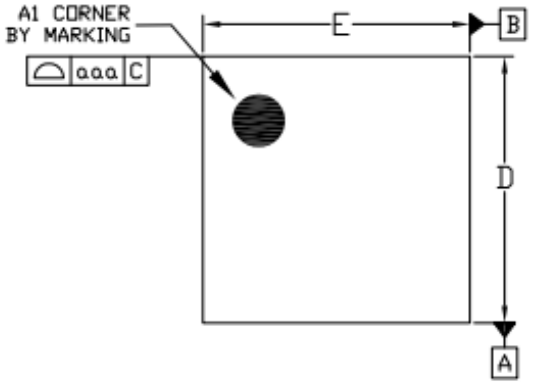
Bump High(A1)：0.1mm

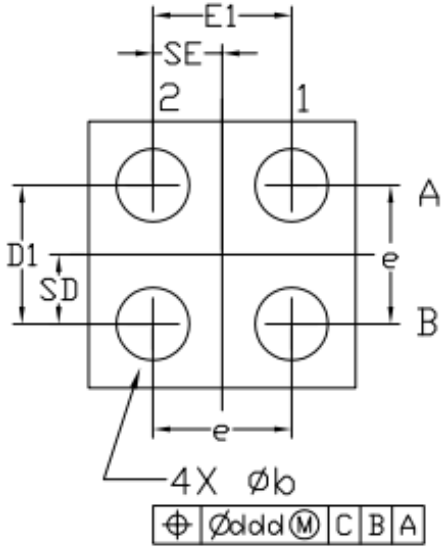
Silicon Thickness(A2)：0.25mm

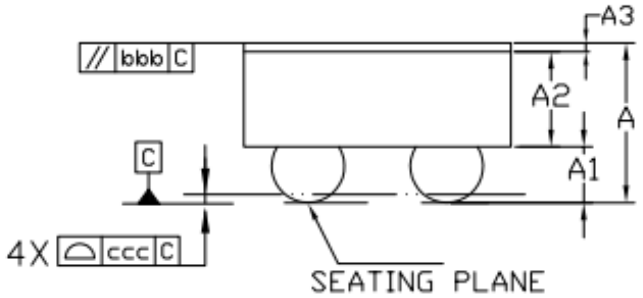
Recommended Footprint



GLF WLCSP POD- 0.77x0.77mm (with Lamination)







Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.410	0.460	0.510
A1	0.135	0.160	0.185
A2	0.250	0.275	0.300
A3	0.020	0.025	0.030
D	0.755	0.770	0.785
E	0.755	0.770	0.785
D1	0.350	0.400	0.450
E1	0.350	0.400	0.450
b	0.170	0.210	0.250
e	0.400 BSC		
SD	0.200 BSC		
SE	0.200 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

Key Size:

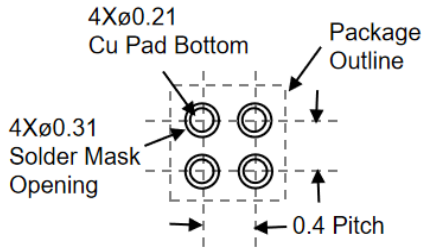
Chip Thickness：0.46mm

Bump High(A1)：0.16mm

Silicon Thickness(A2)：0.275mm

Lamination Thickness(A3): 25um

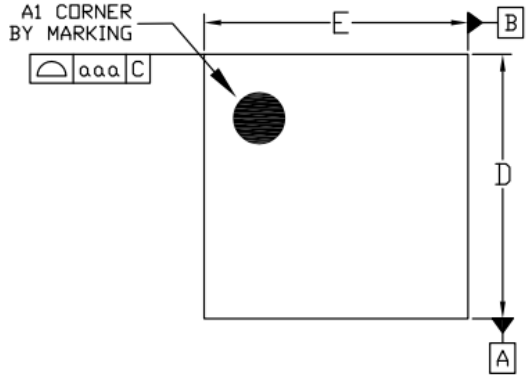
Recommended Footprint

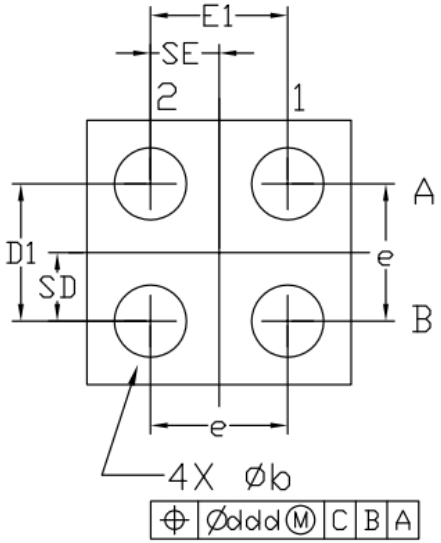


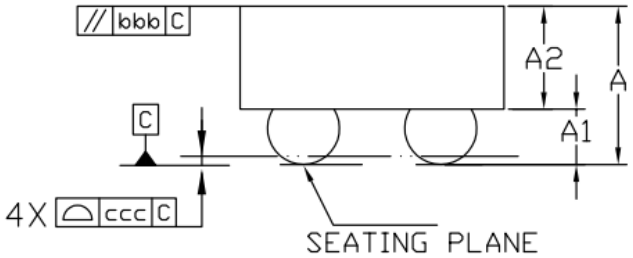
Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 0.77x0.77mm (without Lamination)







Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.410	0.460	0.510
A1	0.135	0.160	0.185
A2	0.275	0.300	0.325
D	0.755	0.770	0.785
E	0.755	0.770	0.785
D1	0.350	0.400	0.450
E1	0.350	0.400	0.450
b	0.170	0.210	0.250
e	0.400 BSC		
SD	0.200 BSC		
SE	0.200 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

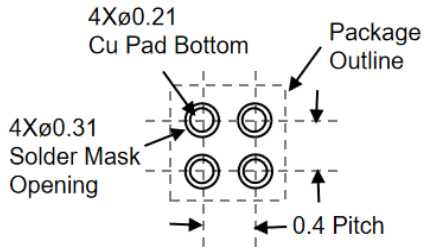
Key Size:

Chip Thickness：0.46mm

Bump High(A1)：0.16mm

Silicon Thickness(A2)：0.3mm

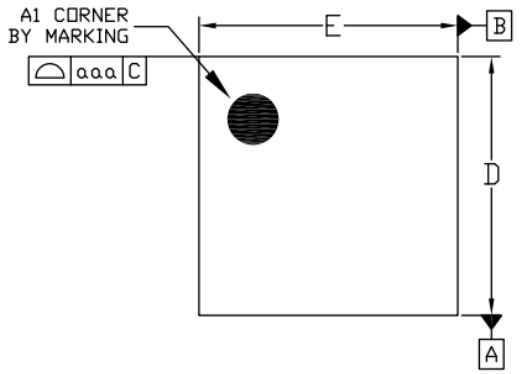
Recommended Footprint

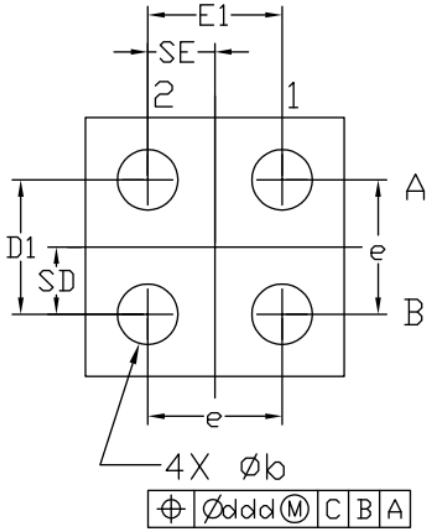


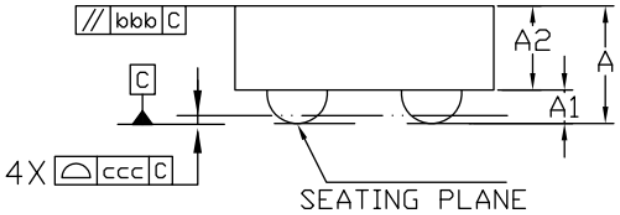
Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 0.77x0.77mm (without Lamination and Thin Section)







Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.300	0.350	0.400
A1	0.075	0.100	0.125
A2	0.225	0.250	0.275
D	0.755	0.770	0.785
E	0.755	0.770	0.785
D1	0.350	0.400	0.450
E1	0.350	0.400	0.450
b	0.145	0.180	0.215
e	0.400 BSC		
SD	0.200 BSC		
SE	0.200 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

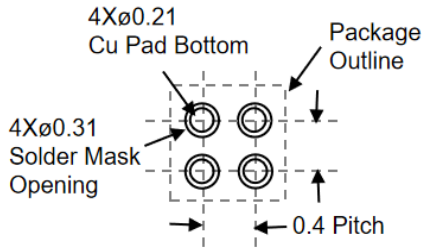
Key Size:

Chip Thickness：0.35mm

Bump High(A1)：0.1mm

Silicon Thickness(A2)：0.25mm

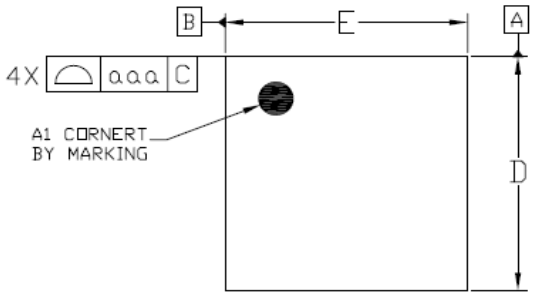
Recommended Footprint

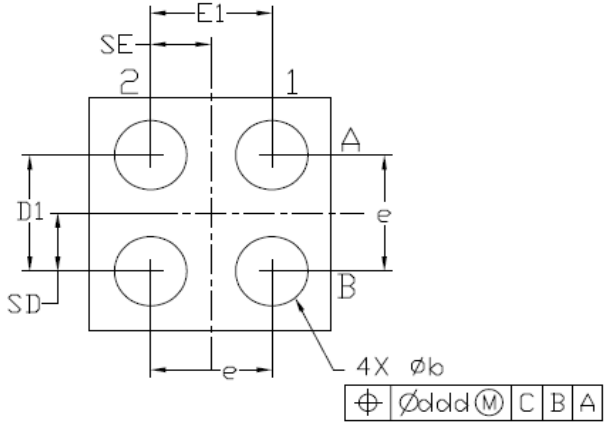


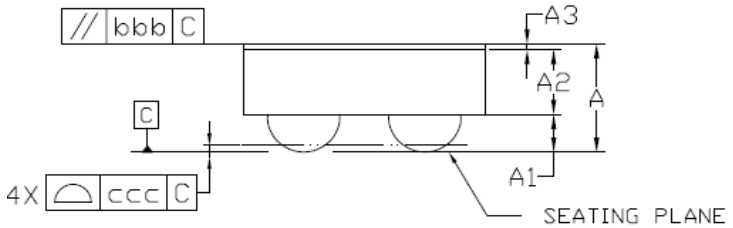
Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 0.77x0.77mm (with Lamination and Thin Section)







Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.310	0.350	0.390
A1	0.050	0.060	0.070
A2	0.240	0.265	0.290
A3	0.020	0.025	0.030
D	0.755	0.770	0.785
E	0.755	0.770	0.785
D1	0.300	0.350	0.400
E1	0.300	0.350	0.400
b	0.165	0.200	0.235
e	0.350 BSC		
SD	0.175 BSC		
SE	0.175 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

Key Size:

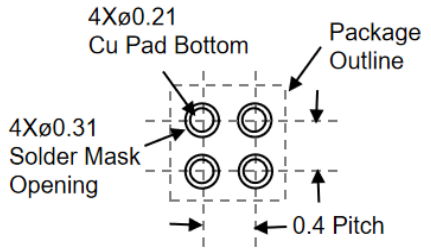
Chip Thickness：0.35mm

Bump High(A1)：0.06mm

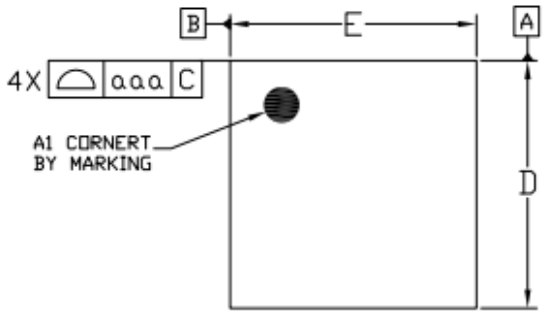
Silicon Thickness(A2)：0.265mm

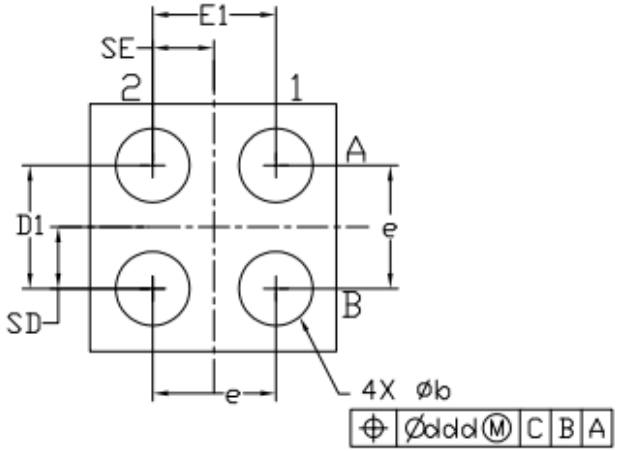
Lamination Thickness(A3): 25um

Recommended Footprint



GLF WLCSP POD- 0.97x0.97mm (with Lamination)





Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.500	0.550	0.600
A1	0.225	0.250	0.275
A2	0.255	0.275	0.300
A3	0.020	0.025	0.030
D	0.960	0.970	0.985
E	0.960	0.970	0.985
D1	0.450	0.500	0.550
E1	0.450	0.500	0.550
b	0.260	0.310	0.360
e	0.500 BSC		
SD	0.250 BSC		
SE	0.250 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

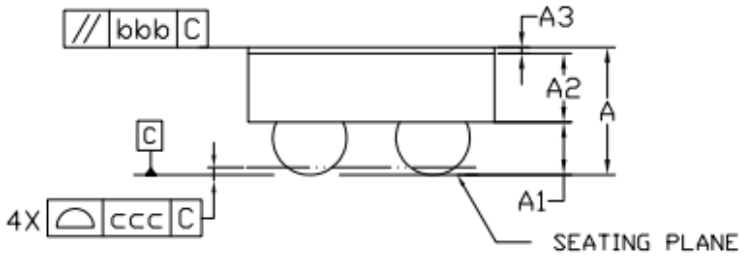
Key Size:

Chip Thickness：0.55mm

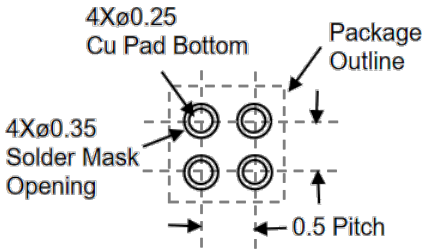
Bump High(A1)：0.25mm

Silicon Thickness(A2)：0.275mm

Lamination Thickness(A3): 25um



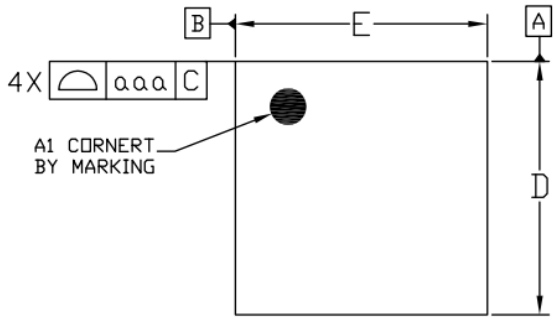
Recommended Footprint

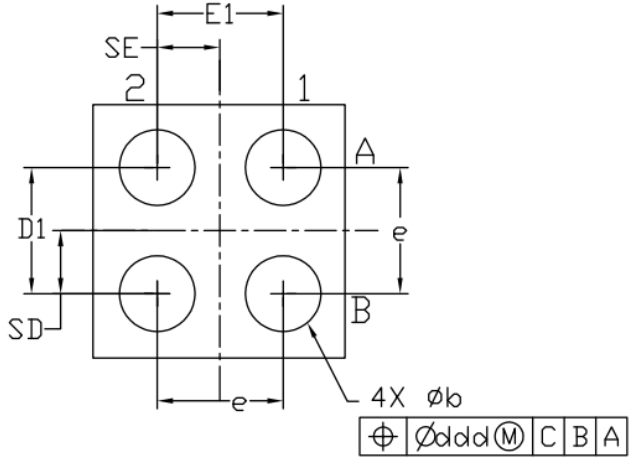


Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 0.97x0.97mm (without Lamination)





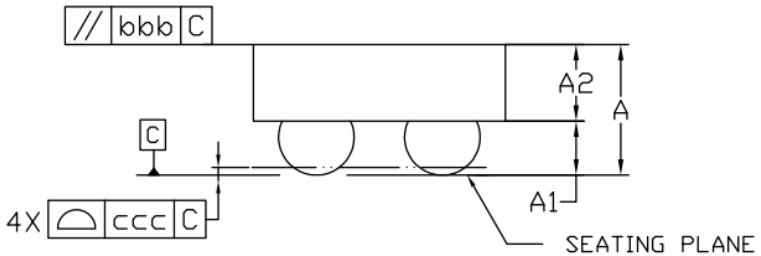
Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.500	0.550	0.600
A1	0.225	0.250	0.275
A2	0.275	0.300	0.325
D	0.955	0.970	0.985
E	0.955	0.970	0.985
D1	0.450	0.500	0.550
E1	0.450	0.500	0.550
b	0.260	0.310	0.360
e	0.500 BSC		
SD	0.250 BSC		
SE	0.250 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

Key Size:

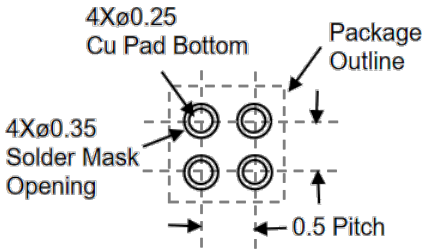
Chip Thickness：0.55mm

Bump High(A1)：0.25mm

Silicon Thickness(A2)：0.3mm



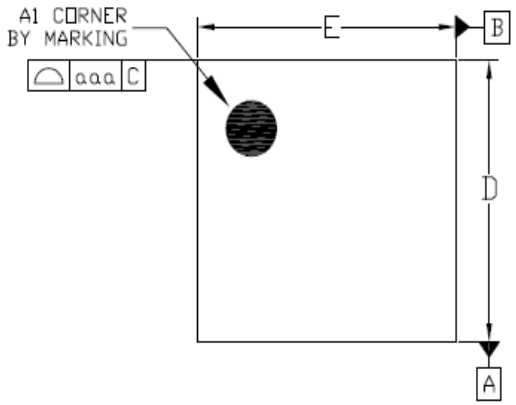
Recommended Footprint

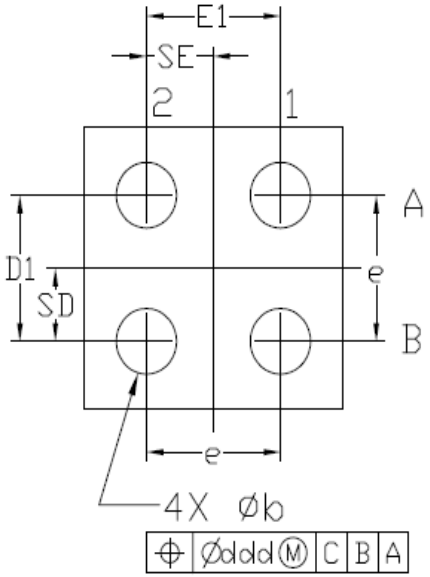


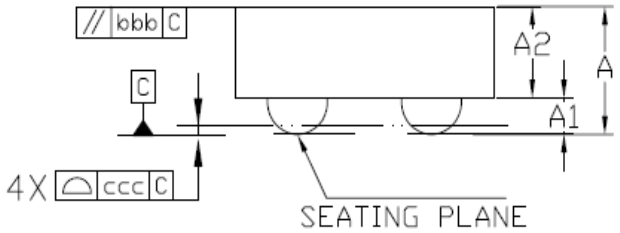
Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 0.97x0.97mm (without Lamination and Thin Section)







Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.300	0.350	0.400
A1	0.075	0.100	0.125
A2	0.225	0.250	0.275
D	0.755	0.770	0.785
E	0.755	0.770	0.785
D1	0.350	0.400	0.450
E1	0.350	0.400	0.450
b	0.145	0.180	0.215
e	0.400 BSC		
SD	0.200 BSC		
SE	0.200 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

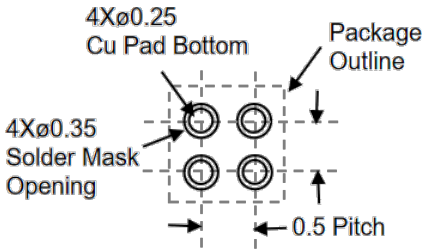
Key Size:

Chip Thickness：0.35mm

Bump High(A1)：0.1mm

Silicon Thickness(A2)：0.25mm

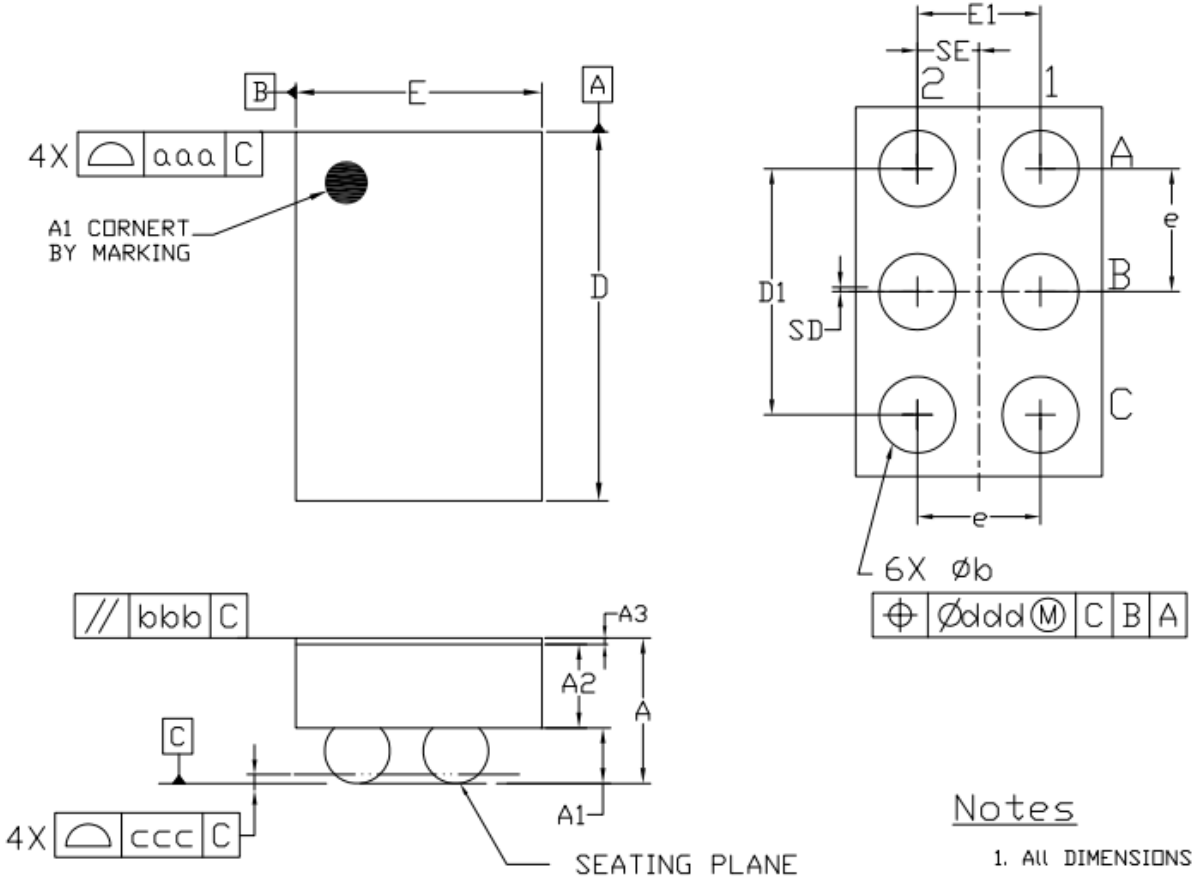
Recommended Footprint



Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 0.97x1.47mm (with Lamination)



Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.500	0.550	0.600
A1	0.225	0.250	0.275
A2	0.250	0.275	0.300
A3	0.020	0.025	0.030
D	1.460	1.470	1.485
E	0.960	0.970	0.985
D1	0.950	1.000	1.050
E1	0.450	0.500	0.550
b	0.260	0.310	0.360
e	0.500 BSC		
SD	0.000 BSC		
SE	0.250 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

Key Size:

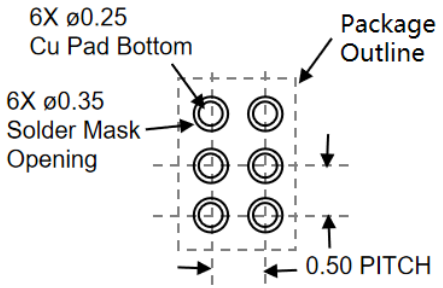
Chip Thickness：0.55mm

Bump High(A1)：0.25mm

Silicon Thickness(A2)：0.275mm

Lamination Thickness(A3): 25um

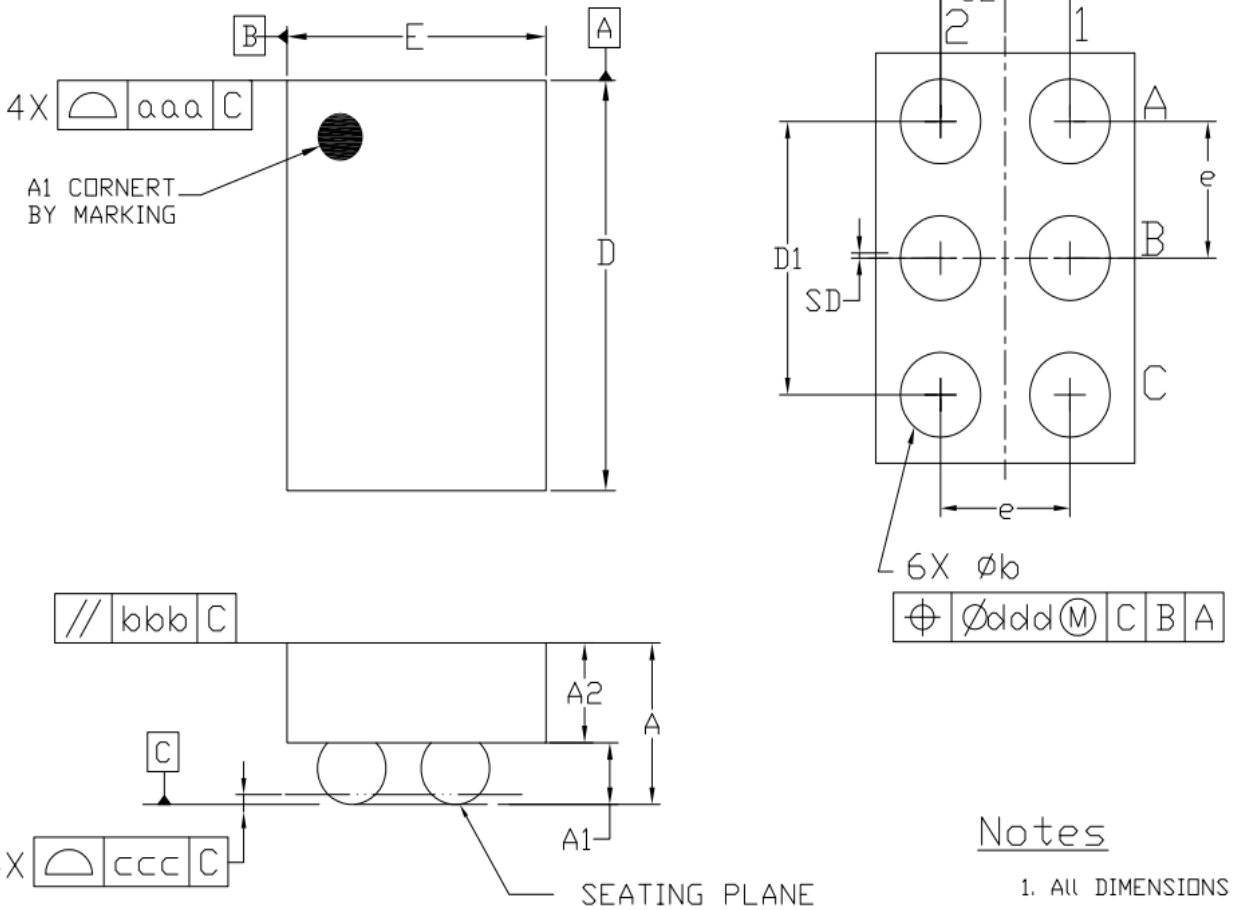
Recommended Footprint



Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 0.97x1.47mm (without Lamination)



Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.500	0.550	0.600
A1	0.225	0.250	0.275
A2	0.275	0.300	0.325
D	1.460	1.470	1.485
E	0.960	0.970	0.985
D1	0.950	1.000	1.050
E1	0.450	0.500	0.550
b	0.260	0.310	0.360
e	0.500 BSC		
SD	0.000 BSC		
SE	0.250 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

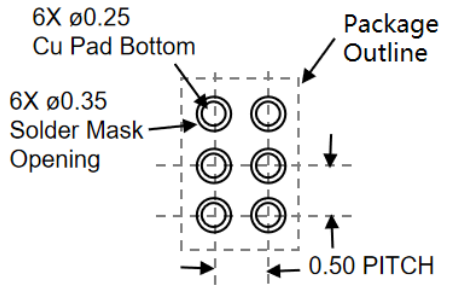
Key Size:

Chip Thickness：0.55mm

Bump High(A1)：0.25mm

Silicon Thickness(A2)：0.3mm

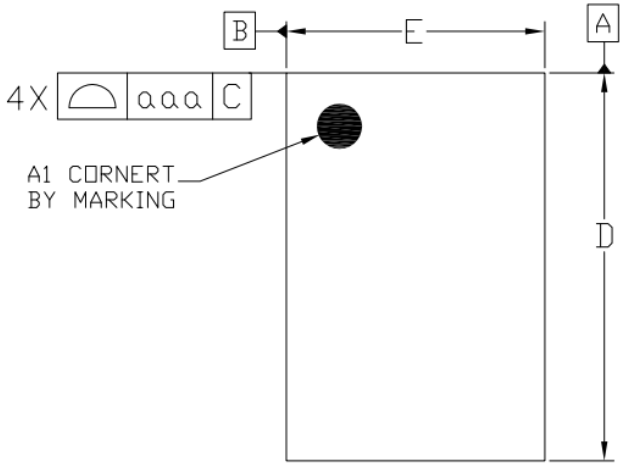
Recommended Footprint

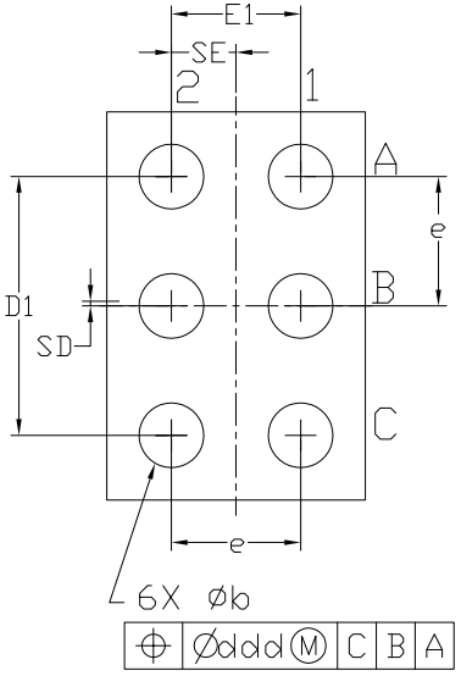


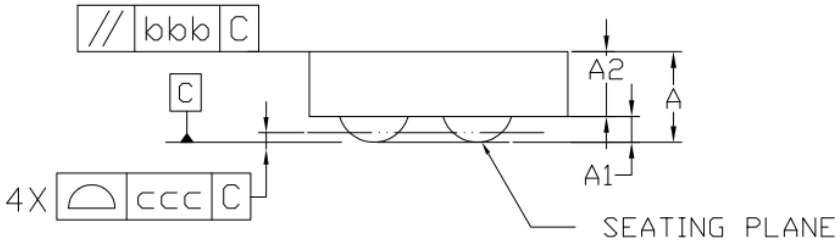
Notes

1. ALL DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 0.97x1.47mm (without Lamination and Thin Section)







Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.300	0.350	0.400
A1	0.075	0.100	0.125
A2	0.225	0.250	0.275
D	1.460	1.470	1.485
E	0.960	0.970	0.985
D1	0.950	1.000	1.050
E1	0.450	0.500	0.550
b	0.210	0.250	0.290
e	0.500 BSC		
SD	0.000 BSC		
SE	0.250 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

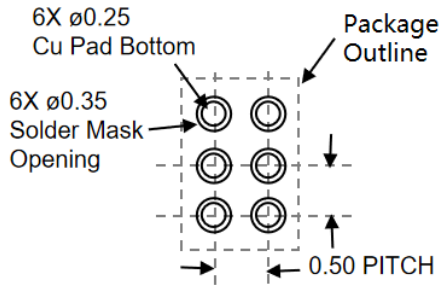
Key Size:

Chip Thickness：0.35mm

Bump High(A1)：0.1mm

Silicon Thickness(A2)：0.25mm

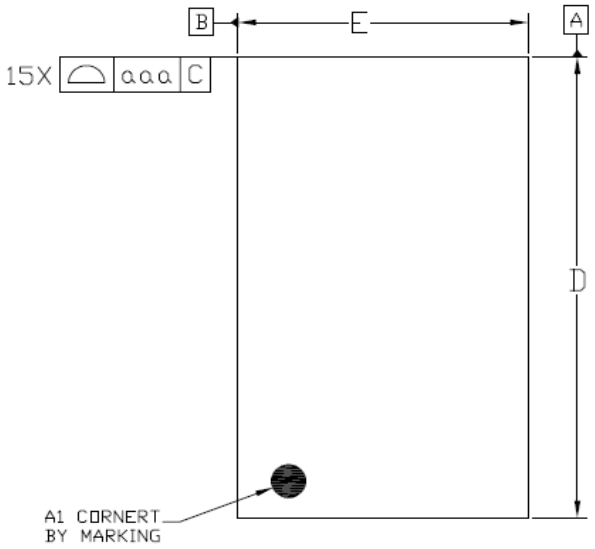
Recommended Footprint

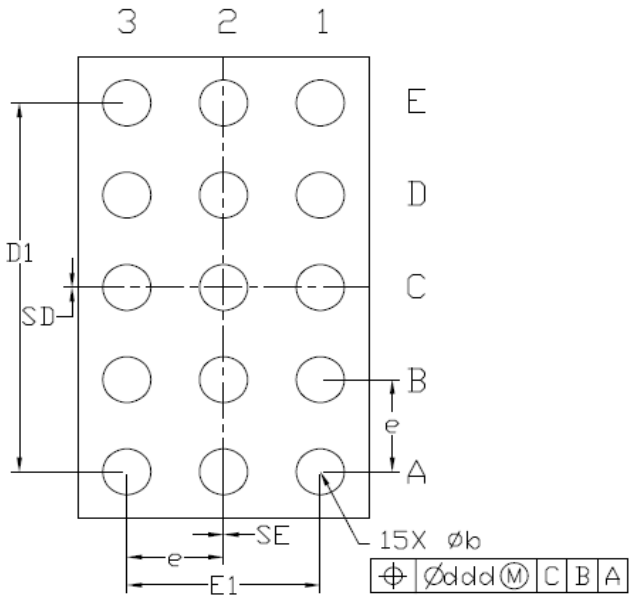


Notes

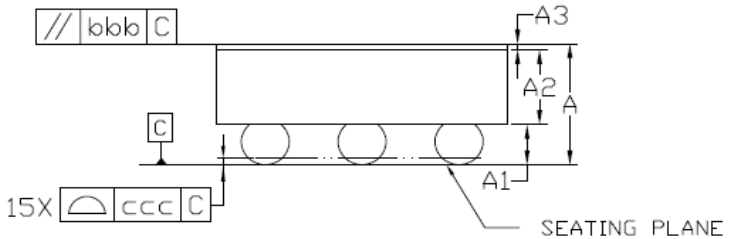
1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 1.17x1.97mm (with Lamination)





Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.500	0.550	0.600
A1	0.149	0.175	0.201
A2	0.325	0.350	0.375
A3	0.020	0.025	0.030
D	1.955	1.970	1.985
E	1.155	1.170	1.185
D1	1.550	1.600	1.650
E1	0.750	0.800	0.850
b	0.197	0.232	0.267
e	0.400 BSC		
SD	0.000 BSC		
SE	0.000 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		



Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

Key Size:

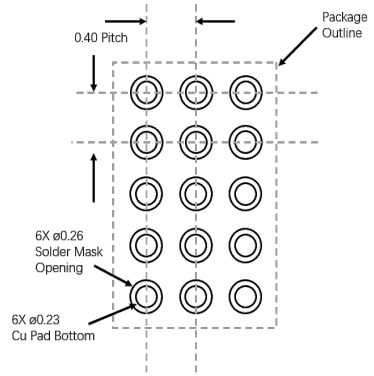
Chip Thickness：0.55mm

Bump High(A1)：0.175mm

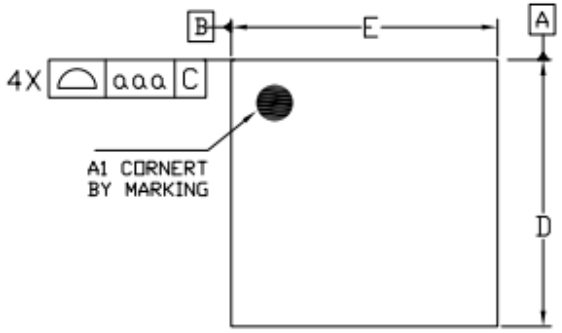
Silicon Thickness(A2)：0.350mm

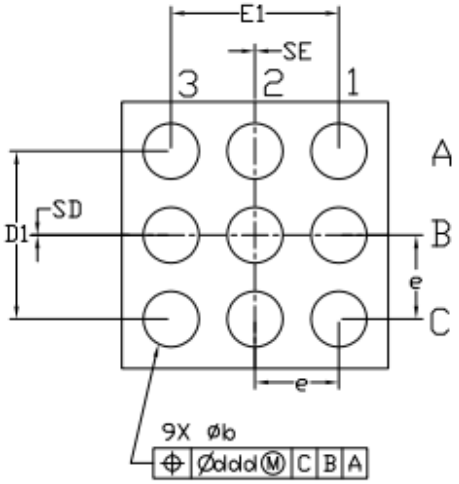
Lamination Thickness(A3): 25um

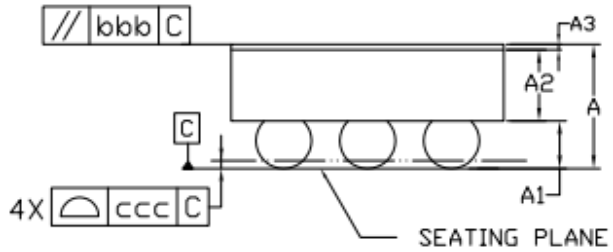
Recommended Footprint



GLF WLCSP POD- 1.27x1.27mm (with Lamination)







Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.500	0.550	0.600
A1	0.175	0.200	0.225
A2	0.300	0.325	0.350
A3	0.020	0.025	0.030
D	1.255	1.270	1.285
E	1.255	1.270	1.285
D1	0.750	0.800	0.850
E1	0.750	0.800	0.850
b	0.215	0.265	0.315
e	0.400 BSC		
SD	0.000 BSC		
SE	0.000 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

Key Size:

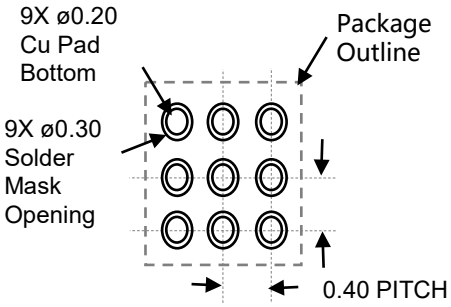
Chip Thickness：0.55mm

Bump High(A1)：0.20mm

Silicon Thickness(A2)：0.325mm

Lamination Thickness(A3): 25um

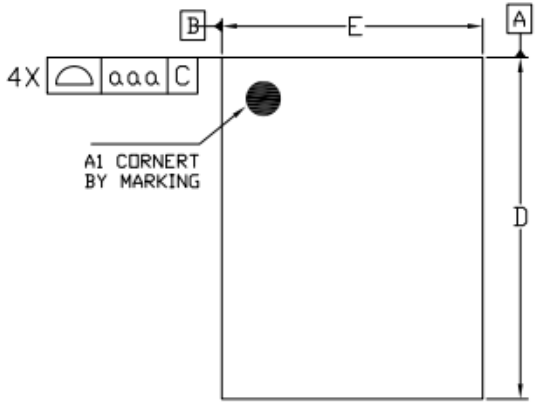
Recommended Footprint

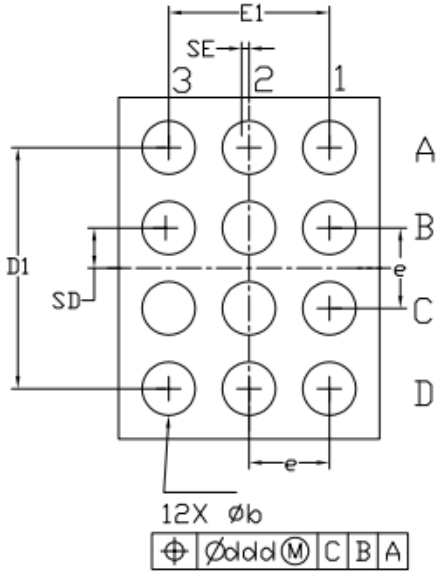


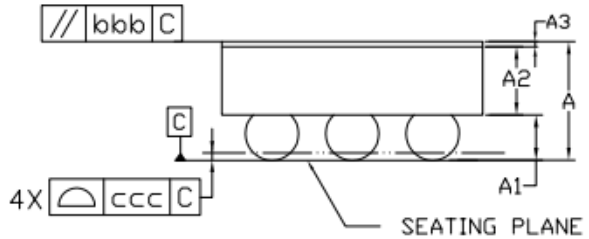
Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 1.27x1.67mm (with Lamination)







Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.500	0.550	0.600
A1	0.175	0.200	0.225
A2	0.300	0.325	0.350
A3	0.020	0.025	0.030
D	1.655	1.670	1.685
E	1.255	1.270	1.285
D1	1.150	1.200	1.250
E1	0.750	0.800	0.850
b	0.215	0.265	0.315
e	0.400 BSC		
SD	0.200 BSC		
SE	0.000 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

Key Size:

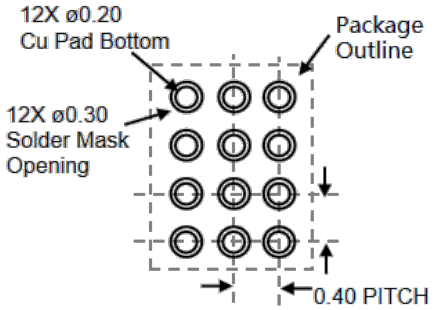
Chip Thickness：0.55mm

Bump High(A1)：0.20mm

Silicon Thickness(A2)：0.325mm

Lamination Thickness(A3): 25um

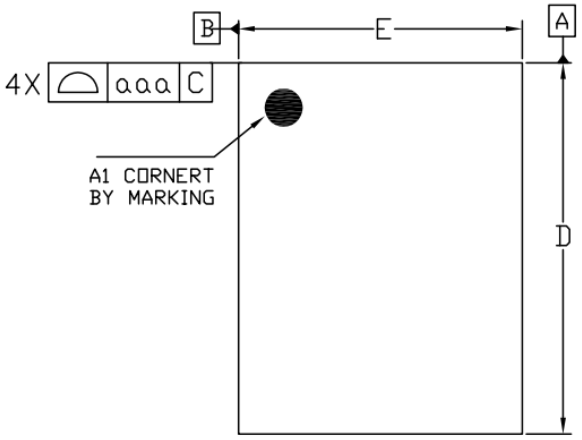
Recommended Footprint

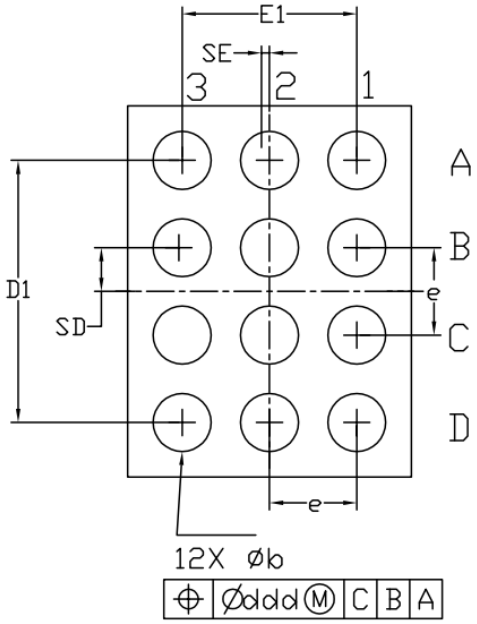


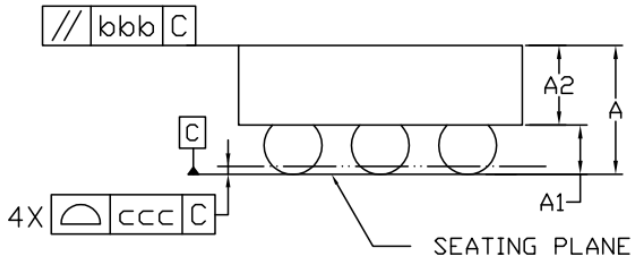
Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 1.27x1.67mm (without Lamination)







Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.500	0.550	0.600
A1	0.175	0.200	0.225
A2	0.325	0.350	0.375
D	1.655	1.670	1.685
E	1.255	1.270	1.285
D1	1.150	1.200	1.250
E1	0.750	0.800	0.850
b	0.215	0.265	0.315
e	0.400 BSC		
SD	0.200 BSC		
SE	0.000 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

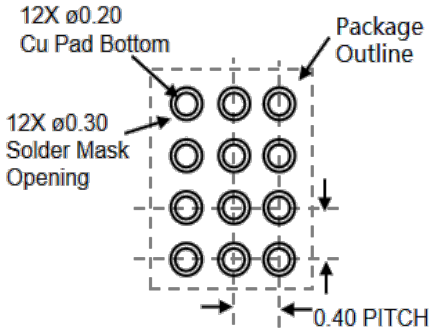
Key Size:

Chip Thickness：0.55mm

Bump High(A1)：0.20mm

Silicon Thickness(A2)：0.35mm

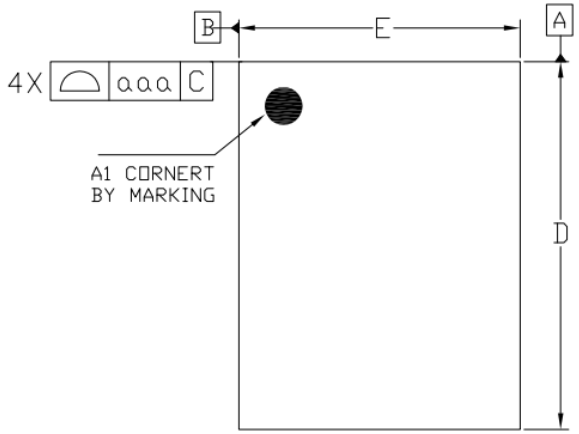
Recommended Footprint

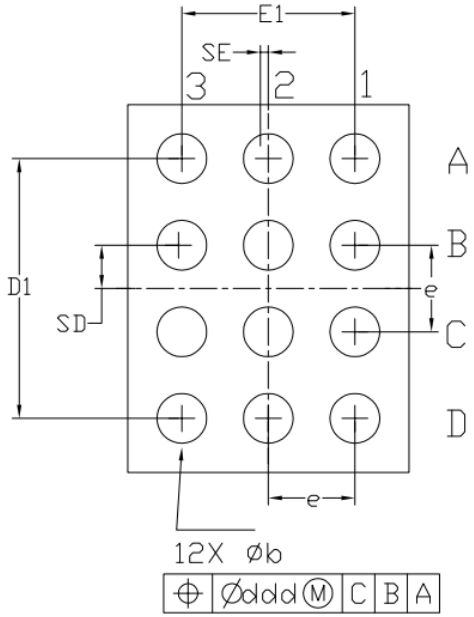


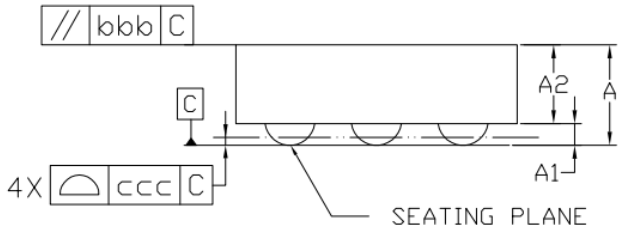
Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 1.27x1.67mm (without Lamination and Thin Section)







Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.300	0.350	0.400
A1	0.075	0.100	0.125
A2	0.225	0.250	0.275
D	1.655	1.670	1.685
E	1.255	1.270	1.285
D1	1.150	1.200	1.250
E1	0.750	0.800	0.850
b	0.200	0.230	0.260
e	0.400 BSC		
SD	0.200 BSC		
SE	0.000 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

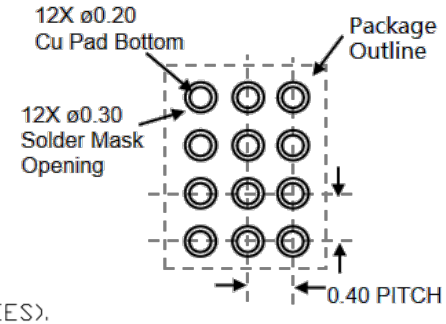
Key Size:

Chip Thickness：0.35mm

Bump High(A1)：0.10mm

Silicon Thickness(A2)：0.25mm

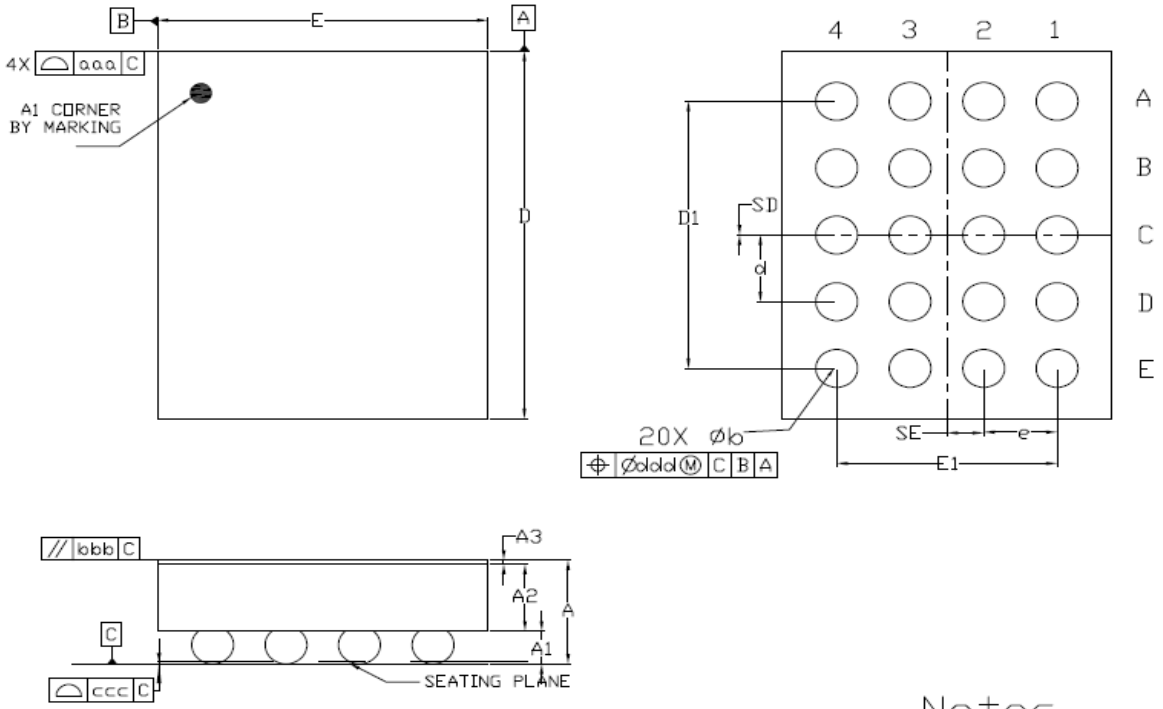
Recommended Footprint



Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

GLF WLCSP POD- 1.77x2.17mm (with Lamination)



Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.573	0.623	0.673
A1	0.173	0.198	0.223
A2	0.375	0.400	0.425
A3	0.020	0.025	0.030
D	2.155	2.170	2.185
E	1.755	1.770	1.785
D1	1.550	1.600	1.650
E1	1.150	1.200	1.250
b	0.225	0.265	0.305
d	0.400 BSC		
e	0.400 BSC		
SD	0.000 BSC		
SE	0.200 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

Notes

1. All DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

Key Size:

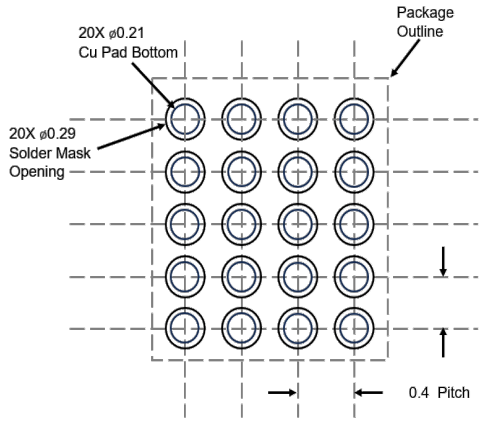
Chip Thickness：0.623mm

Bump High(A1)：0.198mm

Silicon Thickness(A2)：0.4mm

Lamination Thickness(A3): 25um

Recommended Footprint



Solder Ball Spec-SAC305

SAC305

SAC305 Solder Sphere

PRODUCT DESCRIPTION

This product is an alternate lead-free choice to replace Tin-Lead solder sphere to meet ROHS and used to form reliable conductive interconnections of most electronic devices (ex: BGA, WLCSP, µBGA, and etc..). Appropriate ball placement machine picks solder spheres electronic devices and following thermal equipment (ex: reflow oven, hot plate, and etc..) with proper reflow profile to melt solder sphere that forms a strong IMC layer between solder spheres and electronic devices.

TYPICAL PROPERTIES

Property	Test Method	Value
Color	As-received Visual	Silvery-white
Color	As-reflowed Visual	Silvery-white
Odor	As-received Smelling	Odorless
Specific Gravity	**Instrument: Electronic Densimeter** The solder ingot is placed in the electronic densimeter and measured the specific gravity based on Archimedes Method.	= 7.4 g/cm^3

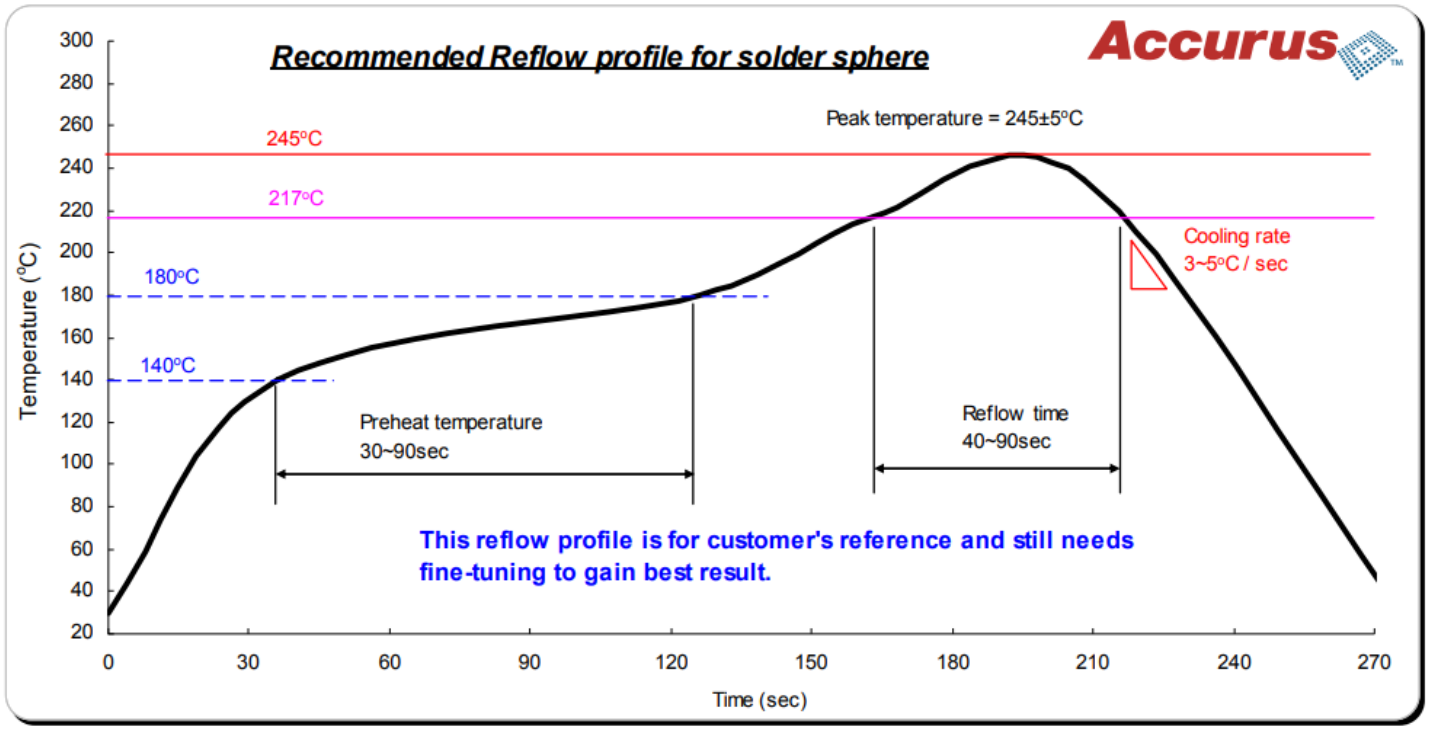
Solder Ball Spec-SAC305

Property	Test Method	Value
Melting Temperature	**Instrument: DSC (Differential Scanning Calorimeter), PERKIN ELMER PYRIS-6 DSC** Appropriately 2 mg of solder spheres were put in DSC with 5°C/min ramp up rate till DSC curve appears fully. 1% of curve area is defined as the solidus temperature and 99% of curve area is defined as the liquidus temperature.	Solidus temperature = 217 °C Liquidus temperature = 221 °C
Compositions	**Instrument: Composition Analyzes Machine, AES SpectroLAB F, Spectrometry (Spark-OES) instrument** Using AES (OES) method, elements were analyzed to determine the composition of sphere samples. The results were recorded in weight percentage.	Ag = 3.0 wt% Cu = 0.5 wt% Sn = Remained Other elements ①
Estimated Storage Life		1. 12 months @ 30°C max / 60%RH max

Solder Ball Spec-SAC305

REFLOW PROCESS GUIDELINES

Following figure is a typical reflow profile③ for this product to joint on most electronic devices.



STORAGE AND HANDLING

This product is supplied in a range of jar sizes (For more detail information, please contact our sales office.), and must be stored @ 30°C max / 60%RH max. If storage temperature is lower than operation temperature, jar must be completely thawed before opening. This product can be used after opening the jars without any preparation.

Solder Ball Spec-SAC266

Preliminary Technical Data Sheet

SAC266 Solder Sphere

PRODUCT DESCRIPTION

This product is an alternate lead-free choice to replace Tin-Lead solder sphere to meet ROHS and used to form reliable conductive interconnections of most electronic devices (ex: BGA, WLCSP, µBGA, and etc..). Appropriate ball placement machine picks solder spheres electronic devices and following thermal equipment (ex: reflow oven, hot plate, and etc..) with proper reflow profile to melt solder sphere that forms a strong IMC layer between solder spheres and electronic devices.

TYPICAL PROPERTIES

Property	Test Method	Value
Color	As-received Visual	Silvery-white
Color	As-reflowed Visual	Silvery-white
Odor	As-received Smelling	Odorless
Specific Gravity	**Instrument: Electronic Densimeter** The solder ingot is placed in the electronic densimeter and measured the specific gravity based on Archimedes Method.	= 7.4 g/cm^3

No.508-51, Section 1, Wen-Sien Road, Rende District, Tainan City 717, Taiwan (R.O.C.) • TEL:886-6-3661288 • FAX:886-6-3661726
Website: http://www.accurus.com.tw/

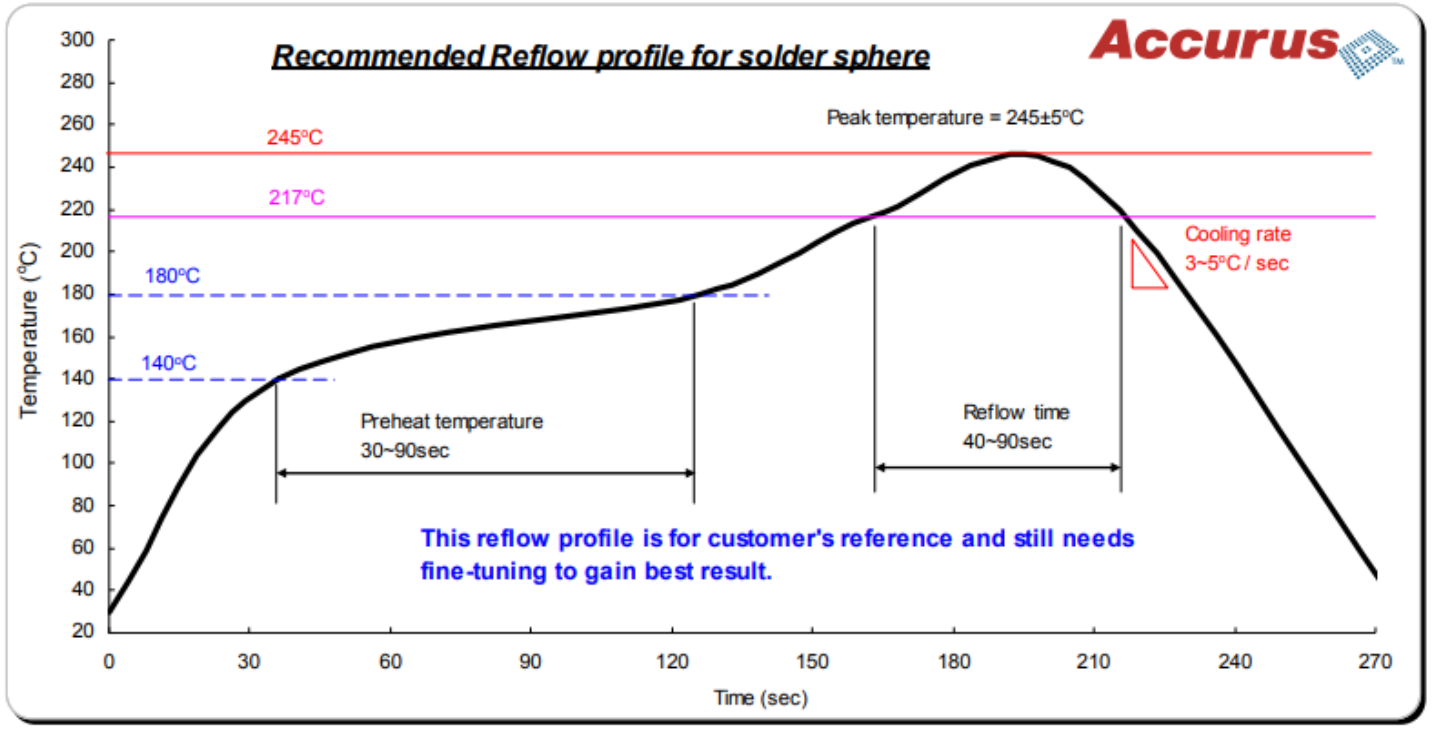
Solder Ball Spec-SAC266

Property	Test Method	Value
Melting Temperature	**Instrument: DSC (Differential Scanning Calorimeter), PERKIN ELMER PYRIS-6 DSC** Appropriately 2 mg of solder spheres were put in DSC with 5°C/min ramp up rate till DSC curve appears fully. 1% of curve area is defined as the solidus temperature and 99% of curve area is defined as the liquidus temperature.	Solidus temperature = 217 °C Liquidus temperature = 222 °C
Compositions	**Instrument: Composition Analyzes Machine, AES SpectroLAB F, Spectrometry (Spark-OES) instrument** Using AES (OES) method, elements were analyzed to determine the composition of sphere samples. The results were recorded in weight percentage.	Ag = 2.6 wt% Cu = 0.6 wt% Sn = Remained Other elements ①
Estimated Storage Life		1. 12 months @ 30°C max / 60%RH max

Solder Ball Spec-SAC266

REFLOW PROCESS GUIDELINES

Following figure is a typical reflow profile③ for this product to joint on most electronic devices.



STORAGE AND HANDLING

This product is supplied in a range of jar sizes (For more detail information, please contact our sales office.), and must be stored @ 30°C max / 60%RH max. If storage temperature is lower than operation temperature, jar must be completely thawed before opening. This product can be used after opening the jars without any preparation.

Suggestions & Conclusions

WLCSP Usage Suggestions:

1. To achieve better electrical performance, WLCSP use bare die package. So chips should be avoid collision and high stress during SMT and assembly process.
2. The connection between WLCSP and PCB is through soldering balls. the reflow parameter setting can refer to recommended solder ball reflow process setting.
3. The selection of nozzle for different chip sizes can refer to below table (if customers need):

Chip Size	External Diameter of Nozzle(mm)	Internal Diameter of Nozzle(mm)	Suction
0.67x0.67x0.425	0.76	0.35	<80cN
0.67x1.02x0.35	0.76	0.35	<80cN
0.77x0.77x0.46	0.76	0.35	<80cN
0.97x0.97x0.55	0.76	0.35	<80cN
0.97x1.47x0.55	1.02	0.5	<80cN
1.17x1.97x0.55	1.02	0.5	<80cN
1.27x1.27x0.55	1.02	0.5	<80cN
1.27x1.67x0.55	1.02	0.5	<80cN
1.77x2.17x0.623	1.27	0.6	<80cN

Conclusions:

- To have smooth produce in SMT and assembly, the related process parameters need to be adjusted.
- GLF always devote to provide the excellent products and fully support customers to solve problems and gives good advice to support customers' improvement.

Thank You

Jie Fu Microelectronics （Sichuan）Co., Ltd
15F, Tower B,JIC, No.669 Wan Xiang Nan Road, Hi-Tech District, Chengdu
Tel: 028-64109903