

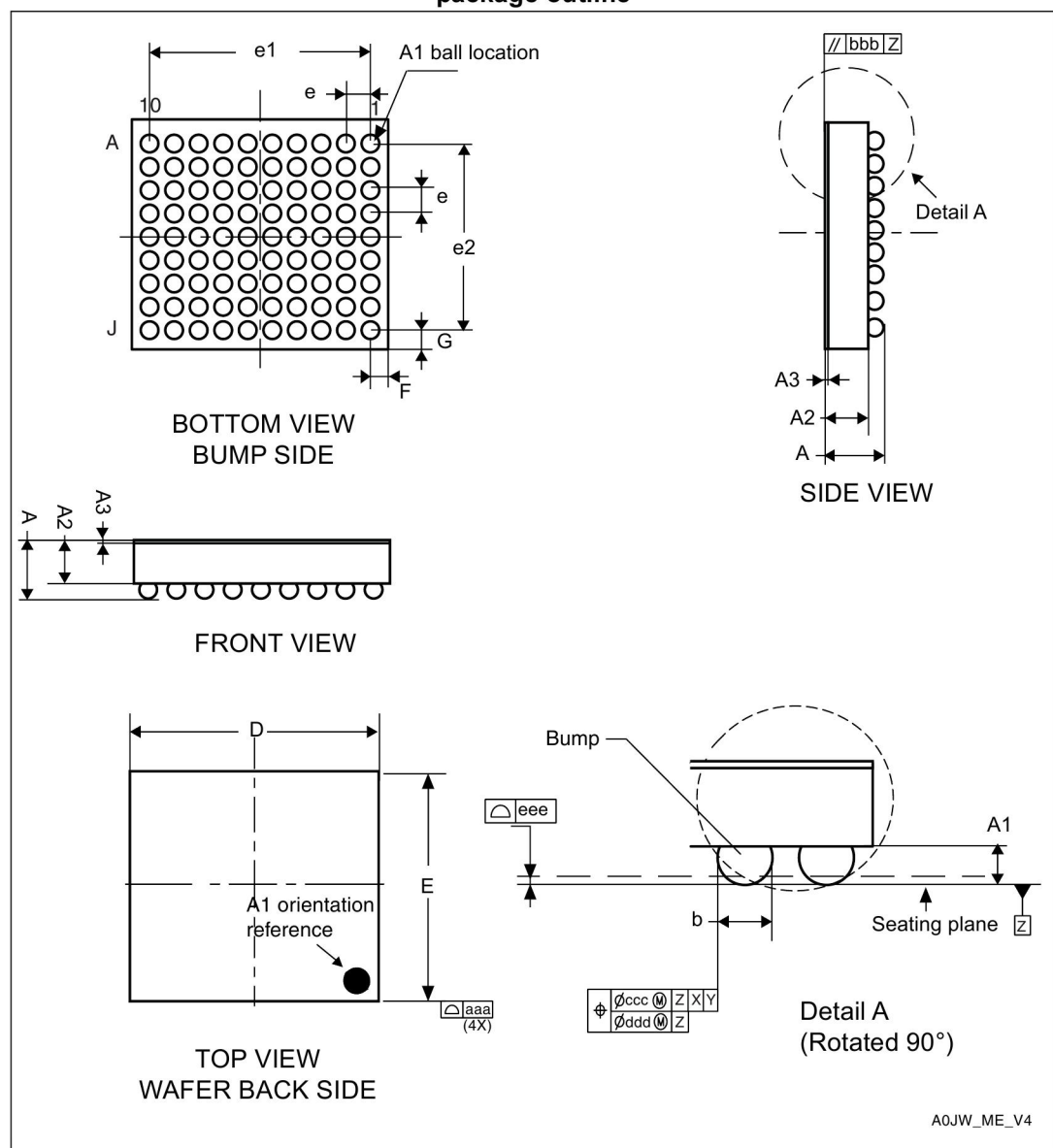
6 Package characteristics

6.1 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK[®] packages, depending on their level of environmental compliance. ECOPACK[®] specifications, grade definitions and product status are available at: www.st.com. ECOPACK[®] is an ST trademark.

6.1.1 WLCSP90 package mechanical data

Figure 75. WLCSP90 - 4.223 x 3.969 mm, 0.400 mm pitch wafer level chip scale package outline



1. Drawing is not to scale.

Table 90. WLCSP90 - 4.223 x 3.969 mm, 0.400 mm pitch wafer level chip scale package mechanical data

Symbol	millimeters			inches ⁽¹⁾		
	Typ	Min	Max	Typ	Min	Max
A	0.540	0.600	0.585	0.0207	0.0219	0.0230
A1	-	0.190	-	-	0.0069	-
A2	-	0.380	-	-	0.0150	-
A3 ⁽²⁾	-	0.025	-	-	0.0010	-
b ⁽³⁾	0.240	0.270	0.300	0.0087	0.0098	0.0110
D	4.188	4.223	4.258	0.1008	0.1022	0.1036
E	3.934	3.969	4.004	0.1115	0.1129	0.1143
e	-	0.400	-	-	0.0157	-
e1	-	3.600	-	-	0.0787	-
e2	-	3.200	-	-	0.0787	-
F	-	0.3115	-	-	0.0117	-
G	-	0.3845	-	-	0.0171	-
aaa	-	-	0.100	-	-	0.0039
bbb	-	-	0.100	-	-	0.0039
ccc	-	-	0.100	-	-	0.0039
ddd	-	-	0.050	-	-	0.0020
eee	-	-	0.050	-	-	0.0020

1. Values in inches are converted from mm and rounded to 4 decimal digits.

2. Back side coating.

3. Dimension is measured at the maximum bump diameter parallel to primary datum Z.

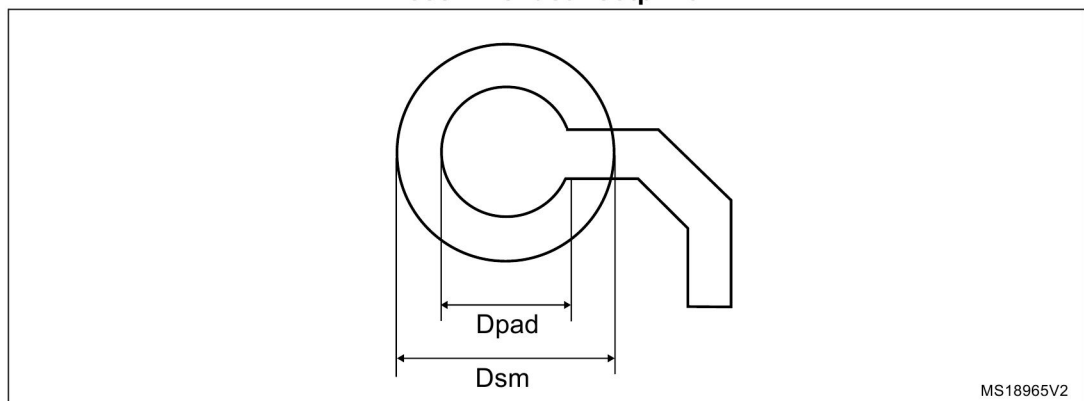
Figure 76. WLCSP90 - 4.223 x 3.969 mm, 0.400 mm pitch wafer level chip scale recommended footprint

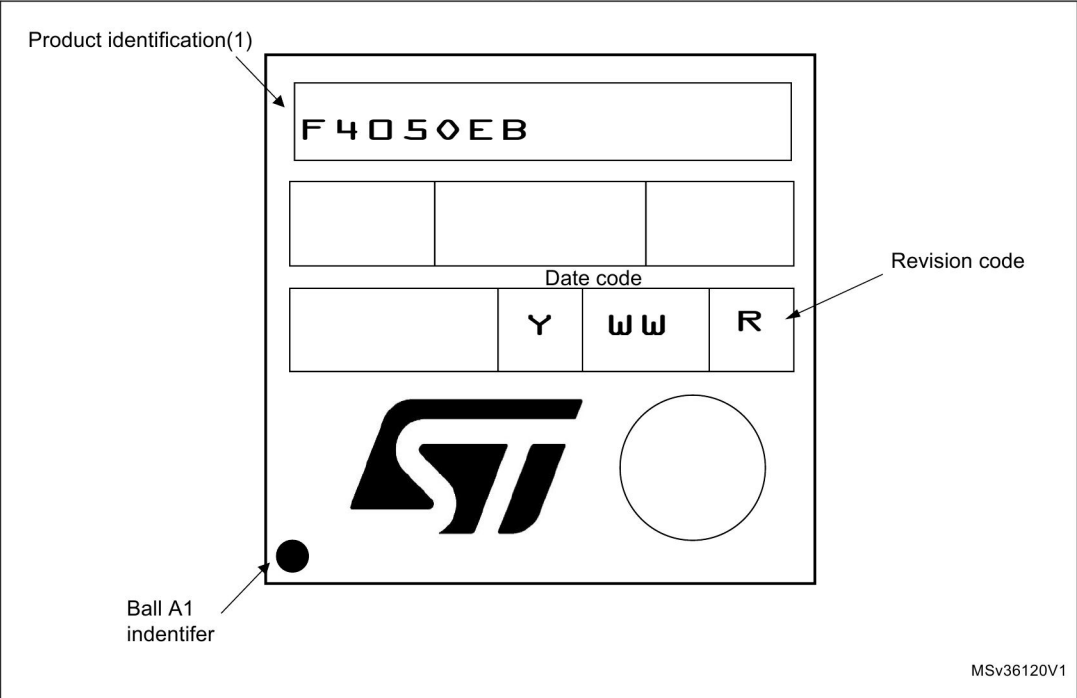
Table 91. WLCSP90 recommended PCB design rules

Dimension	Recommended values
Pitch	0.4 mm
Dpad	260 µm max. (circular) 220 µm recommended
Dsm	300 µm min. (for 260 µm diameter pad)
PCB pad design	Non-solder mask defined via underbump allowed

Device marking for WLCSP90

The following figure gives an example of topside marking and ball A1 position identifier location.

Figure 77. WLCSP90 marking example (package top view)



1. Parts marked as “ES”, “E” or accompanied by an Engineering Sample notification letter, are not yet qualified and therefore not yet ready to be used in production and any consequences deriving from such usage will not be at ST charge. In no event, ST will be liable for any customer usage of these engineering samples in production. ST Quality has to be contacted prior to any decision to use these Engineering Samples to run qualification activity.