SAMSUNG

Intel-Samsung HBM sync meeting
WW20

2023 | Memory Division

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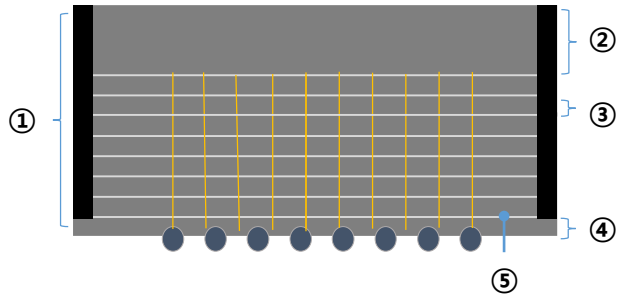
[HBM4] Package size (Z height)

1. **Needs to consider to release total thickness over 775um even with HCB**
2. **Considerations**
   1) To meet total thickness 720um? → Check possibility to release total thickness over 775um
   2) To make top die thickness over 150um – Top die crack risk during assembly
   3) To make midcore thickness of 8H, 12H, 16H all same – TSV, FAB process efficiency
3. **Case3 mid core 33um might have critical risks**
   1) Key condition of HCB technique is die warpage when attaching die-die
   2) Thinner core die causes critical reliability issues such as mechanical vulnerability of each dies(reliability), refresh characteristics, die to die noise, EMI issues

<HBM Stack figure>



[um]	12H			16H		
	Case1	Case2	Case3	Case1	Case2	Case3
	TCB	HCB		TCB	HCB	
① Total Thickness	720	720	720	880	775 +-25	720
② Top Core Thickness	160	242	286	154	145	150
③ Mid Core Thickness	37	37	33	37	37	33
④ Buffer Die Thickness	60	60	60	60	60	60
⑤ Joint Gap Height	7	1	1	7	1	1

*red text means challengeable or things need to align

END