



# 1H23 Investor Conference

Aug. 4<sup>th</sup>, 2023

**winbond**  
We Deliver

- We have made forward-looking statements in this presentation. Our forward-looking statements contain information regarding, among other things, our financial condition, future expansion plans and business strategies. We have based these forward-looking statements on our current expectations and projections about future events. Although we believe that these expectations and projections are reasonable, such forward-looking statements are inherently subject to risks, uncertainties and assumptions about us.
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## **01** Financial Results

Chih-Chung Chou - CFO

## **02** Business Recap & Outlook

James Chen - President

## **03** Q & A

James Chen & Chih-Chung Chou



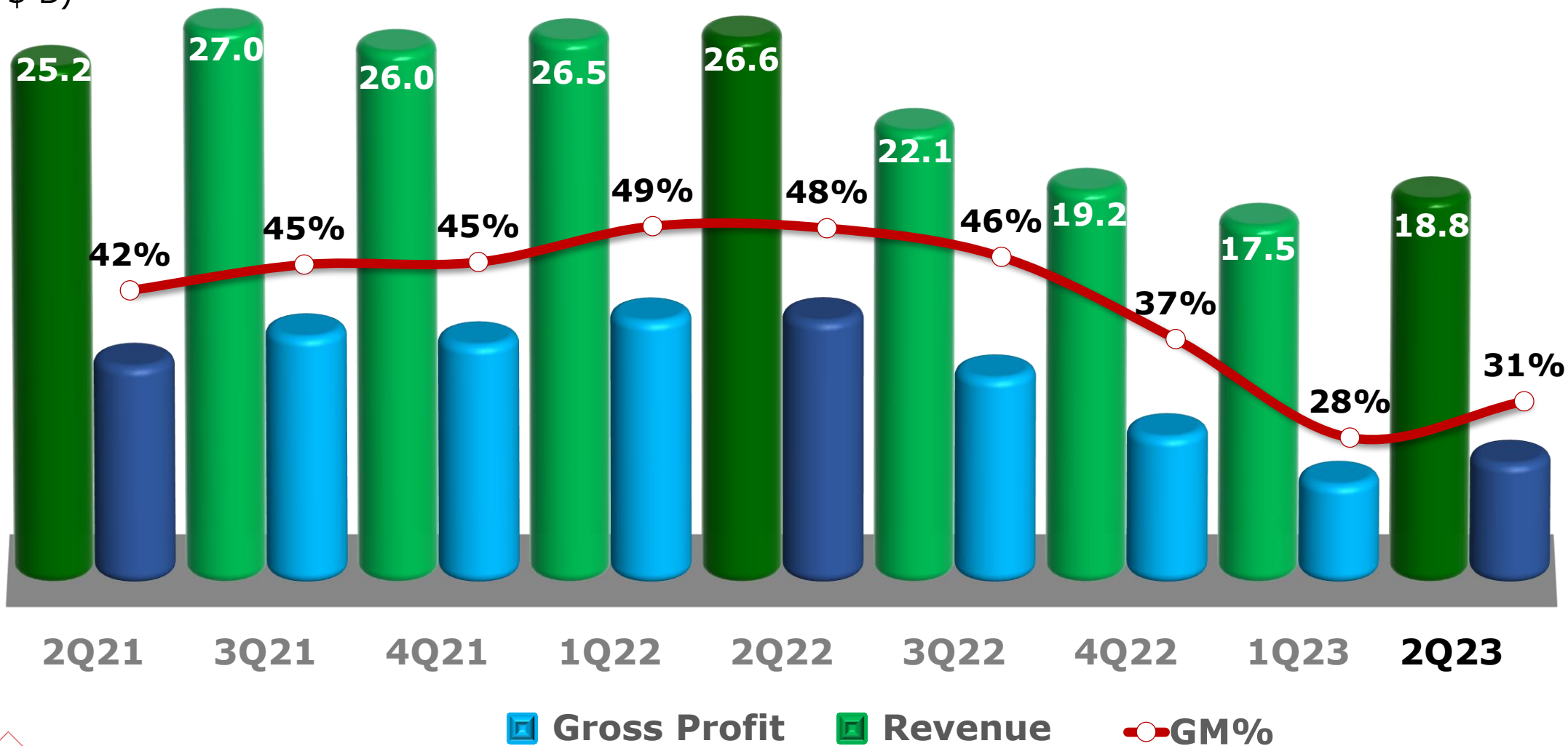
# Financial Results

# Statement of Comprehensive Income - Consolidated

Unit: NT\$ M	2Q23	1Q23	QoQ	1H23	1H22	YoY
<b>Net Sales</b>	18,811	17,516	1,295	36,327	53,161	(16,834)
<b>Gross Profit</b>	5,894	4,859	1,035	10,753	25,765	(15,012)
<b>Gross Margin</b>	31%	28%	+3 ppts	30%	49%	-19 ppts
<b>Operating Income</b>	(310)	(1,101)	791	(1,411)	12,104	(13,515)
<b>Net Non-Operating Income (Loss)</b>	520	193	327	713	1,361	(648)
<b>Income Tax Benefit (Expense)</b>	360	224	136	584	(2,503)	3,087
<b>Net Income (Loss)</b>	570	(684)	1,254	(114)	10,962	(11,076)
<b>Earnings Per Share (Unit: NT\$)</b>	0.09	(0.25)	0.34	(0.16)	2.44	(2.60)
<b>EBITDA</b>	2,662	1,807	855	4,469	17,363	(12,894)

# Revenue and GM Trend – Consolidated

(NT\$ B)



Gross Profit    Revenue    GM%

# Balance Sheet - Consolidated

Unit: NT\$ M

	Jun. 30, '23	%	Dec. 31, '22	%	Jun. 30, '22	%
<b>Cash</b>	17,640	10%	20,403	11%	26,419	15%
<b>Inventory(Net)</b>	22,383	12%	21,448	12%	18,816	10%
<b>Property, Plant, Equipment and ROU</b>	94,456	52%	97,829	53%	91,601	51%
<b>Total Assets</b>	180,863	<b>100%</b>	184,165	<b>100%</b>	179,088	<b>100%</b>
<b>L/T Liability</b>	42,470	24%	44,247	24%	30,614	18%
<b>Total Liabilities</b>	84,676	<b>47%</b>	81,431	<b>44%</b>	85,109	<b>48%</b>
<b>Shareholders' Equity</b>	96,187	<b>53%</b>	102,734	<b>56%</b>	93,979	<b>52%</b>
<b>Debt / Equity Ratio</b>	0.88		0.79		0.91	
<b>Current Ratio</b>	2.04		2.47		1.62	

# Statement of Cash Flow – Consolidated

Unit: NT\$ M	2Q23	1Q23	QoQ	1H23	1H22	YoY
<b>Operating Cash Flow</b>	(396)	489	(885)	93	11,799	(11,706)
Depreciation & Amortization	2,972	2,908	64	5,880	5,259	621
<b>Investing Cash Flow</b>	(2,130)	(2,561)	431	(4,691)	(25,288)	20,597
CAPEX	(2,145)	(2,465)	320	(4,610)	(24,960)	20,350
<b>Financing Cash Flow</b>	2,226	(46)	2,272	2,180	8,885	(6,705)
<b>Net Change</b>	(489)	(2,274)	1,785	(2,762)	(4,495)	1,733
<b>Cash &amp; Equivalents</b>	17,640	18,129	(489)	17,640	26,419	(8,779)

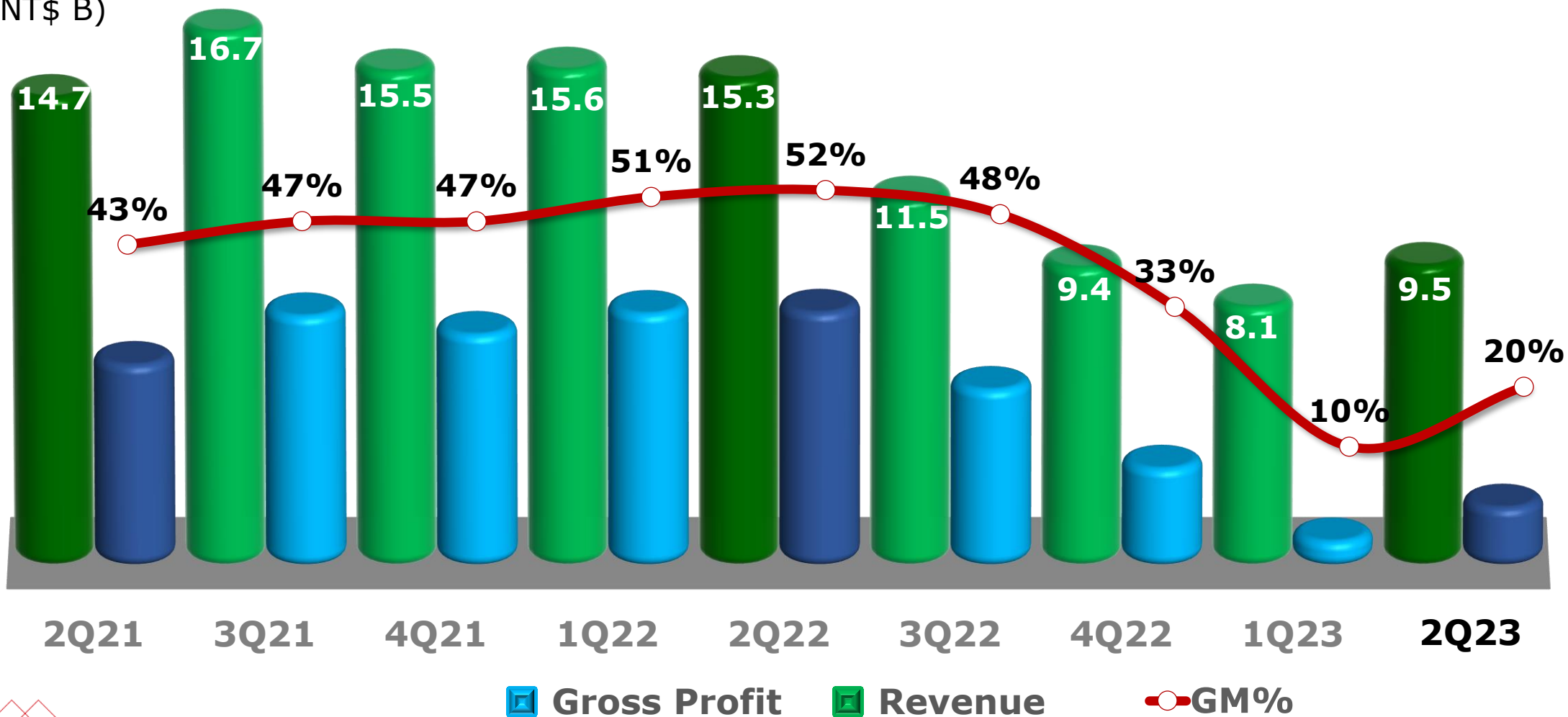


# Memory Business Performance (1)

<b>Unit: NT\$ M</b>	<b>2Q23</b>	<b>1Q23</b>	<b>QoQ</b>	<b>1H23</b>	<b>1H22</b>	<b>YoY</b>
<b>Net Sales</b>	9,455	8,148	1,307	17,603	30,862	(13,259)
<b>Cost of Goods Sold</b>	7,611	7,370	242	14,981	14,940	41
<b>Gross Profit</b>	1,844	778	1,065	2,622	15,922	(13,300)
<b>Gross Margin</b>	20%	10%	+10 pts	15%	52%	-37 pts
<b>Operating Expense</b>	2,745	2,418	328	5,163	6,528	(1,365)
<b>Operating Income</b>	(902)	(1,639)	739	(2,541)	9,394	(11,935)
<b>Operating Income Margin</b>	-10%	-20%	+10 pts	-14%	30%	-44 pts

# Memory Business Performance (2)

(NT\$ B)



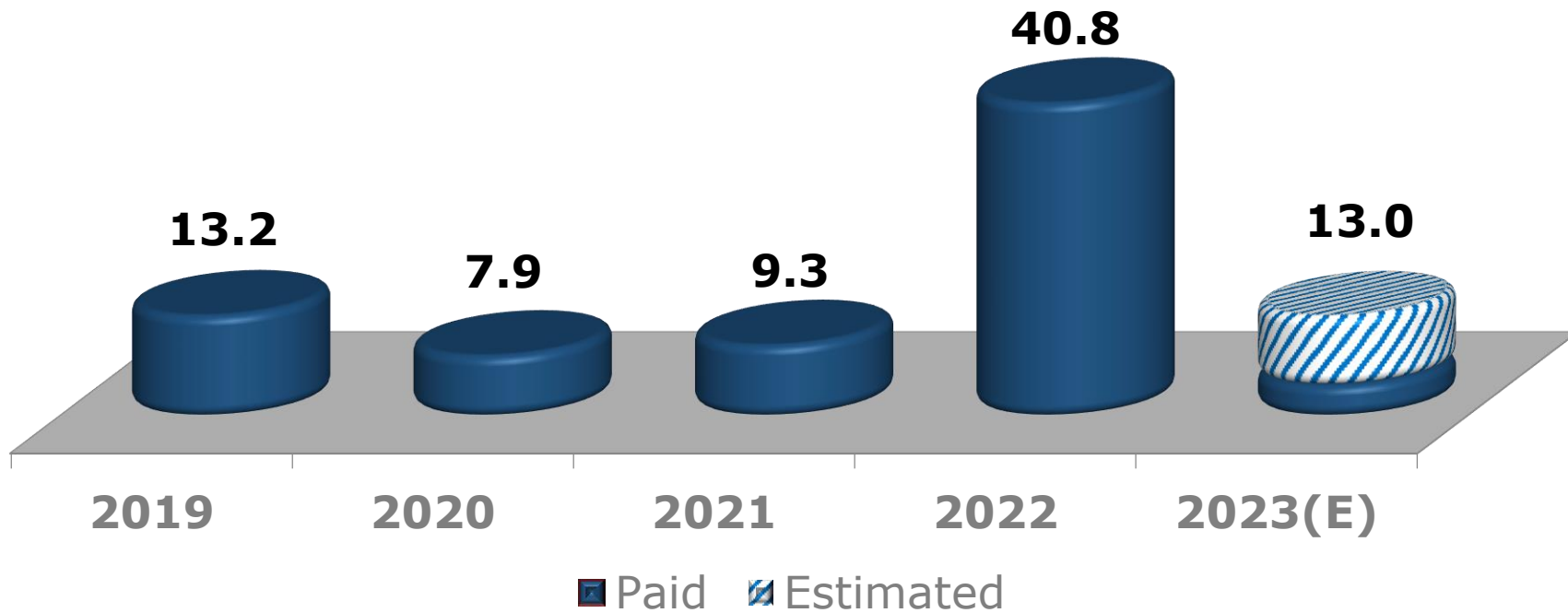
Gross Profit    Revenue    GM%

Unit: NT\$ M	2Q23	1Q23	QoQ	1H23	1H22	YoY
<b>Net Sales</b>	8,953	8,956	(3)	17,909	21,903	(3,994)
<b>Gross Profit</b>	3,622	3,611	11	7,233	9,391	(2,158)
<b>Gross Margin</b>	40%	40%	+0 pts	40%	43%	-3 pts
<b>Operating Income</b>	458	368	90	826	2,742	(1,916)
<b>Net Non-Operating Income (Loss)</b>	122	365	(243)	487	434	53
<b>Income Tax Benefit (Expense)</b>	(138)	(61)	(77)	(199)	(613)	414
<b>Net Income (Loss)</b>	442	672	(230)	1,114	2,563	(1,449)
<b>Earnings Per Share (Unit: NT\$)</b>	1.05	1.60	(0.55)	2.65	6.10	(3.45)

Unit: NT\$ M	Jun. 30, '23	%	Dec. 31, '22	%	Jun. 30, '22	%
<b>Cash</b>	9,035	25%	10,398	28%	11,350	31%
<b>Inventory(Net)</b>	8,431	24%	8,459	23%	7,407	20%
<b>Property, Plant, Equipment and ROU</b>	7,620	21%	8,186	22%	7,411	20%
<b>Total Assets</b>	35,709	<b>100%</b>	36,852	<b>100%</b>	36,315	<b>100%</b>
<b>L/T Liability</b>	1,357	4%	1,429	4%	1,500	4%
<b>Total Liabilities</b>	20,397	<b>57%</b>	19,286	<b>52%</b>	21,037	<b>58%</b>
<b>Shareholders' Equity</b>	15,312	<b>43%</b>	17,566	<b>48%</b>	15,278	<b>42%</b>
<b>Debt / Equity Ratio</b>	1.33		1.10		1.38	
<b>Current Ratio</b>	1.87		2.20		1.99	

# Memory CAPEX

(NT\$ B)



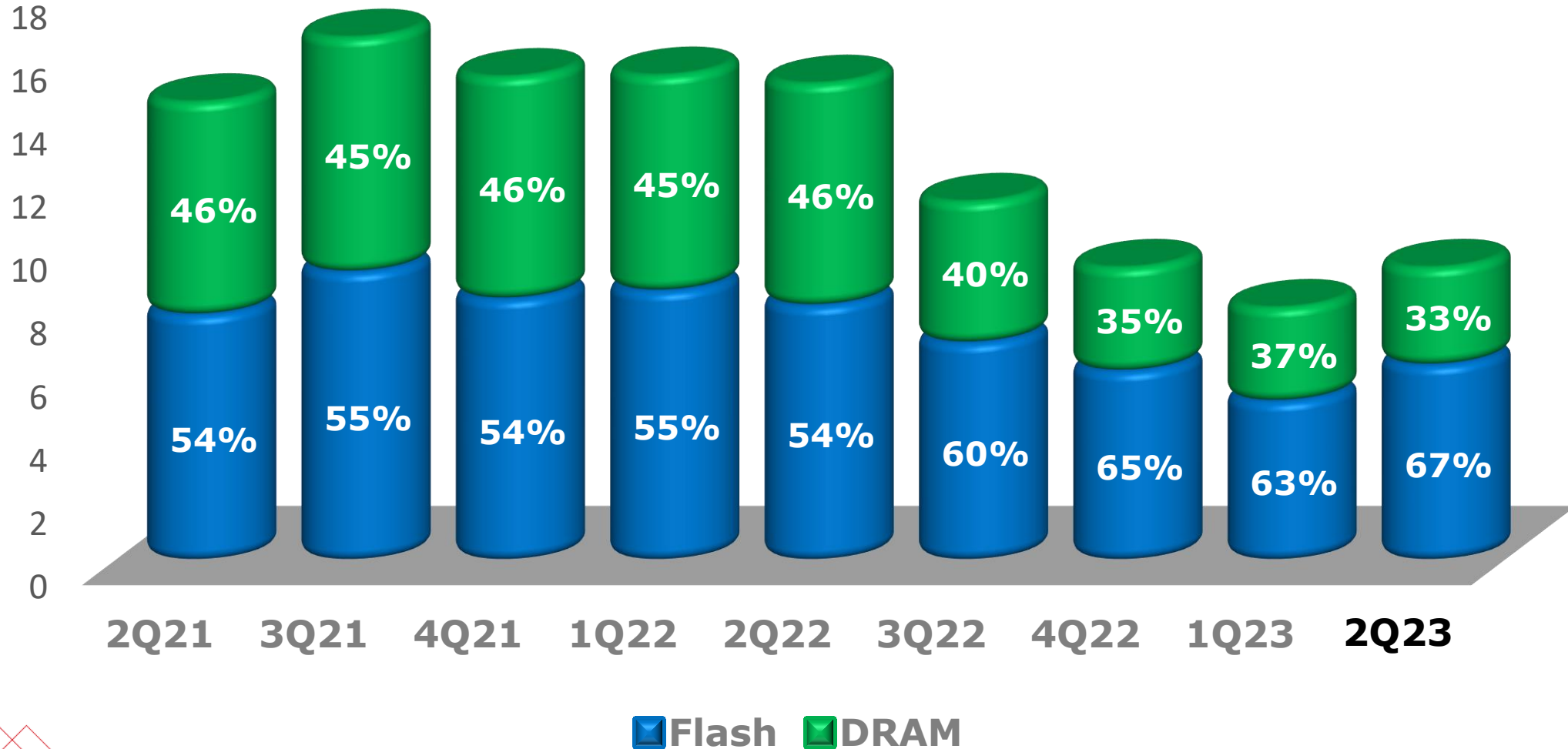
Cash Basis, as of Aug. 4<sup>th</sup>, 2023



# **Business Recap & Outlook**

# Memory Business Revenue Breakdown by Product

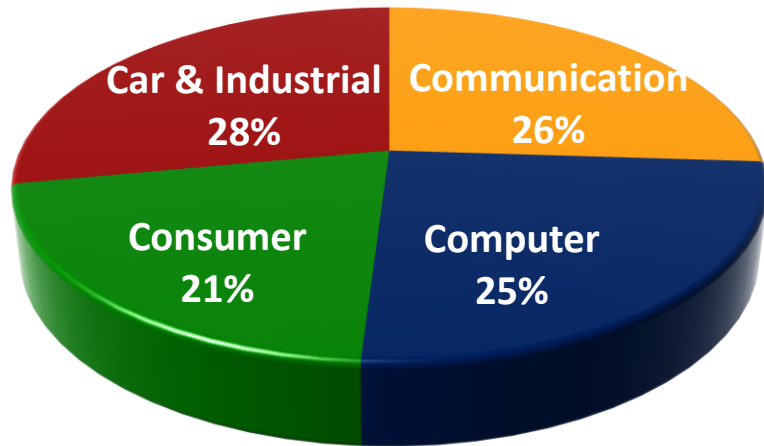
(NT\$ B)



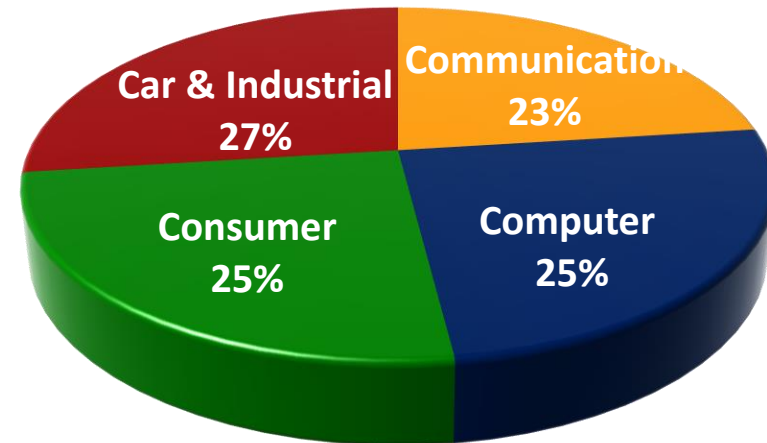
Flash DRAM

# Memory Business Revenue Breakdown by Application

**1Q23**

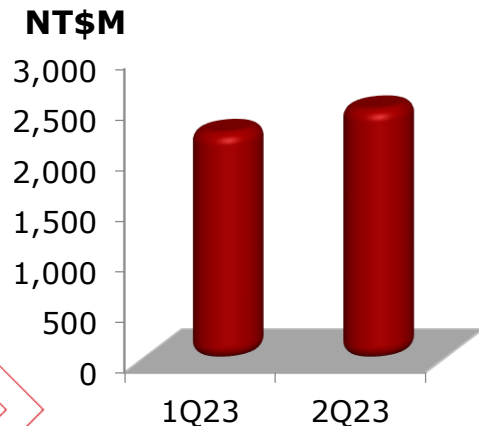


**2Q23**

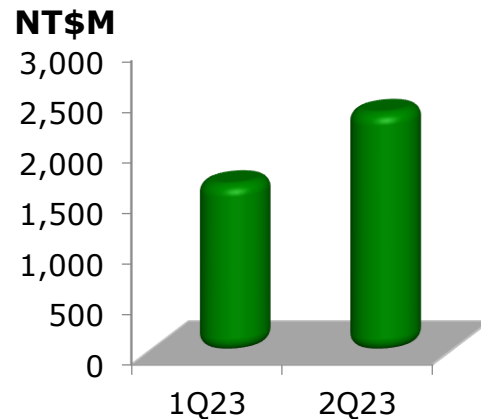


Note: Rev excluded foundry and others

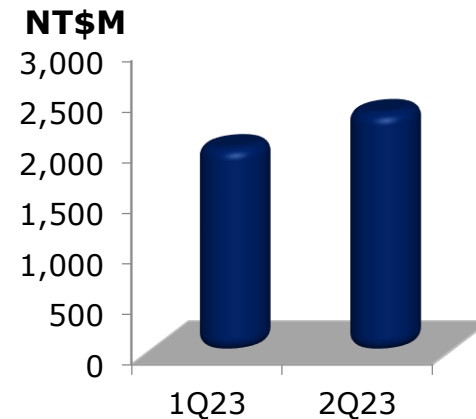
**Car & Industrial**  
QoQ +10%



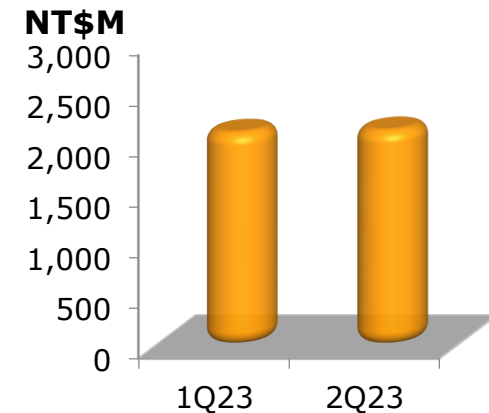
**Consumer**  
QoQ +43%



**Computer**  
QoQ +17%



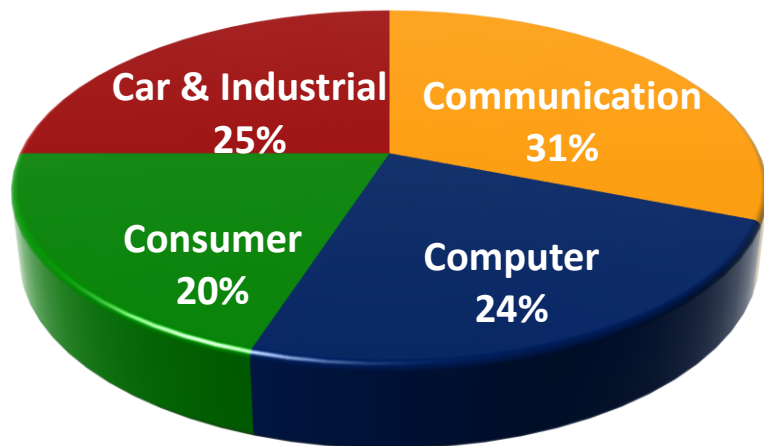
**Communication**  
QoQ +1%



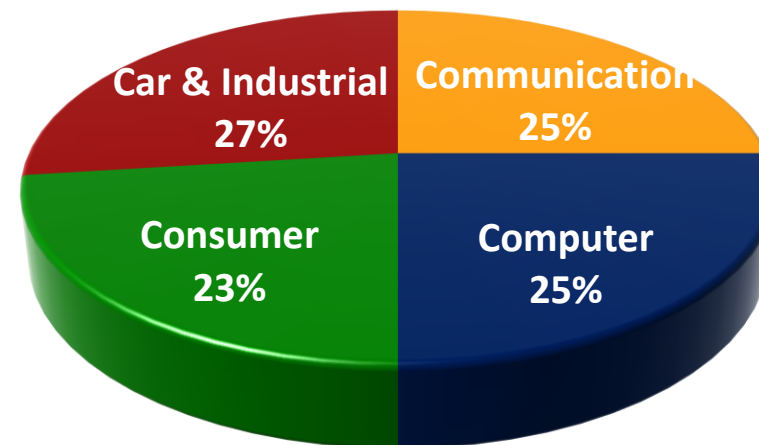


# Memory Business Revenue Breakdown by Application

**1H22**

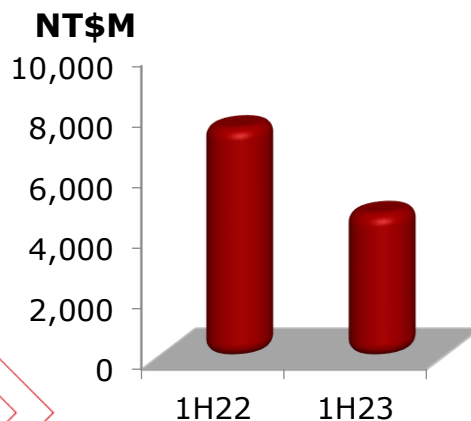


**1H23**

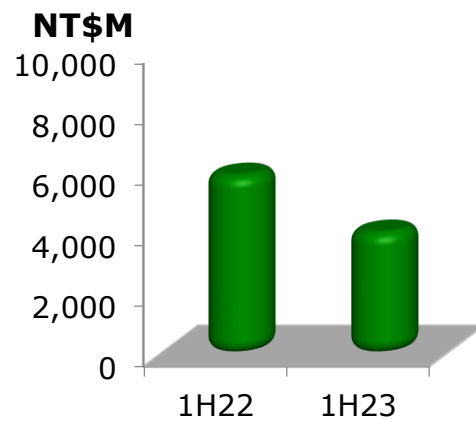


Note: Rev excluded foundry and others

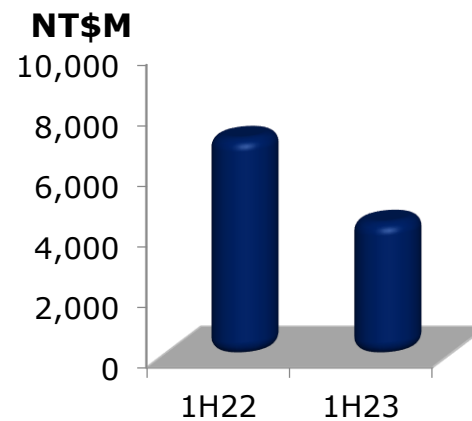
**Car & Industrial**  
YoY -37%



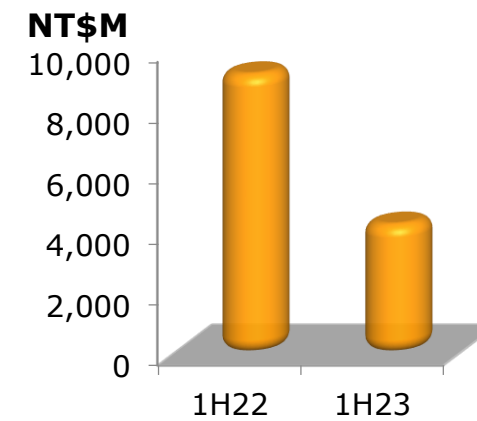
**Consumer**  
YoY -32%



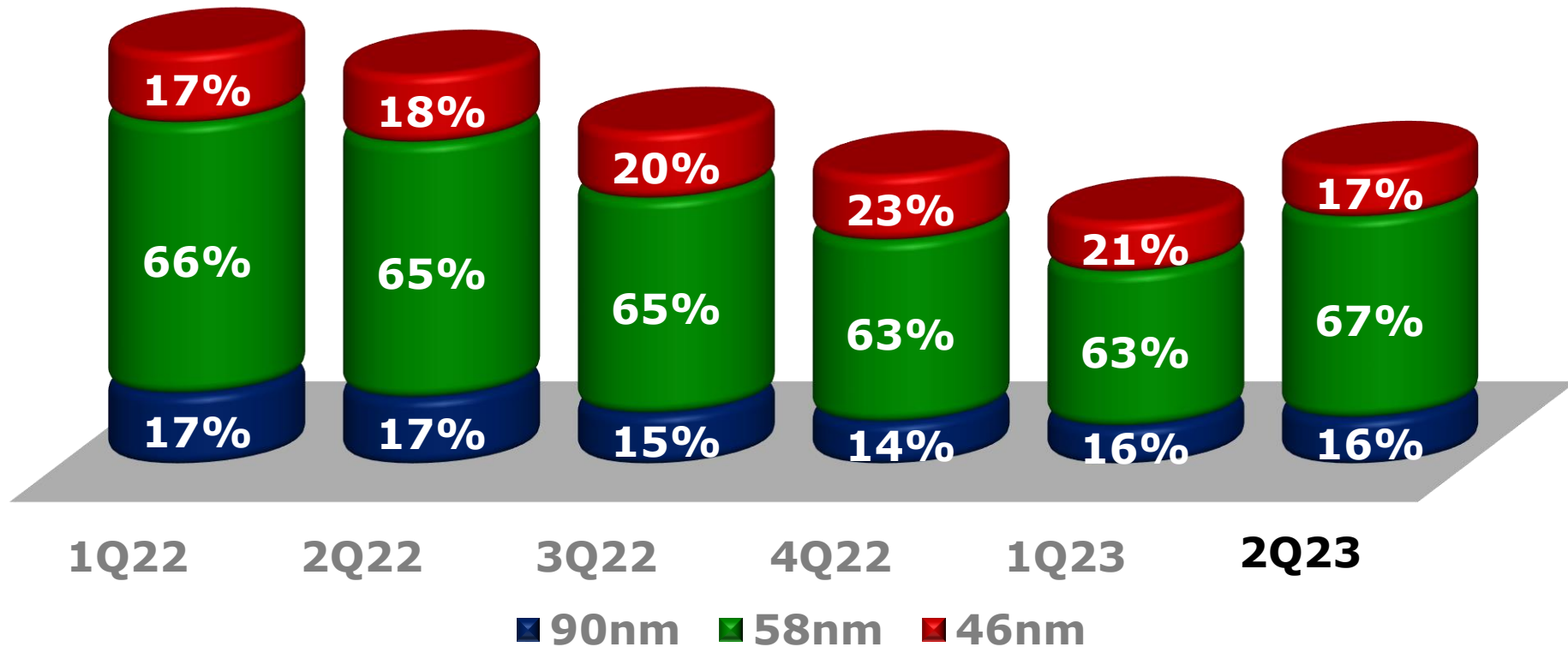
**Computer**  
YoY -39%



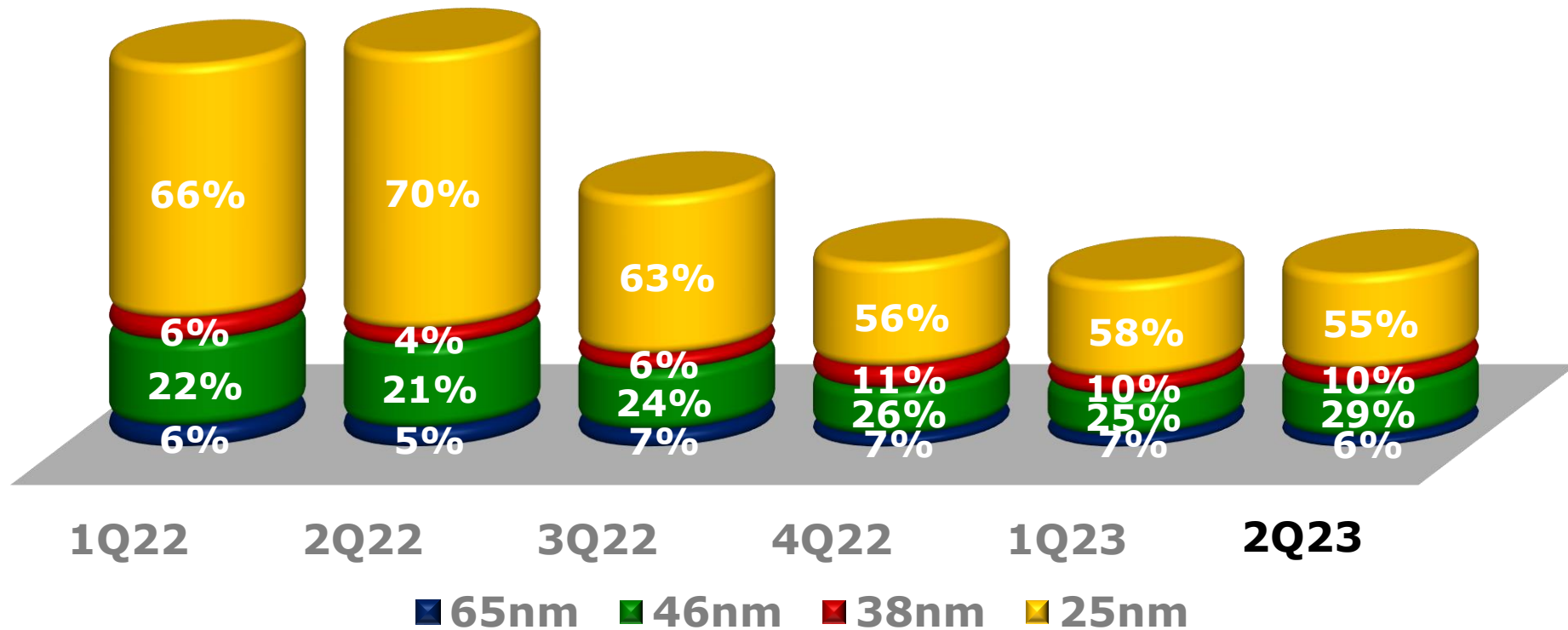
**Communication**  
YoY -54%



- ❑ 1H23 revenue decreased by 32% YoY
- ❑ 1H23 NOR business bit shipment decreased by high-teens% YoY
- ❑ 1H23 density  $\geq 64\text{Mb}$  NOR revenue contributed 65% of total NOR revenue
- ❑ 1H23 record high quantity shipment in SLC NAND business



- ❑ 1H23 revenue decreased by 56% YoY
- ❑ 1H23 bit shipment decreased by mid-twenties% YoY
- ❑ 25Snm production starts contribute to DRAM revenue in 2023



## ❑ Code Storage Flash

- ❖ Demand across multiple apps is recovering, except smartphone and data center
- ❖ Increasing demand in high density Flash
- ❖ No increase in supply from major suppliers

## ❑ Specialty DRAM

- ❖ Still in the mode of inventory digestion, but supply has been constrained
- ❖ Demand returns gradually in networking, PC and TV
- ❖ AI and HPC are boosting demand of High Bandwidth Memory, which will help the recovery of specialty DRAM market

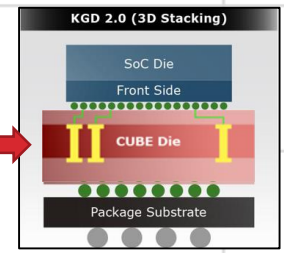
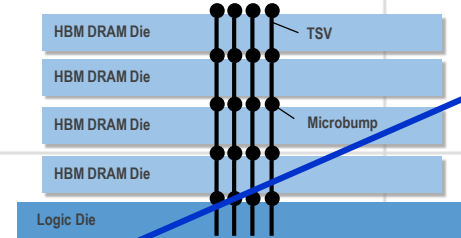
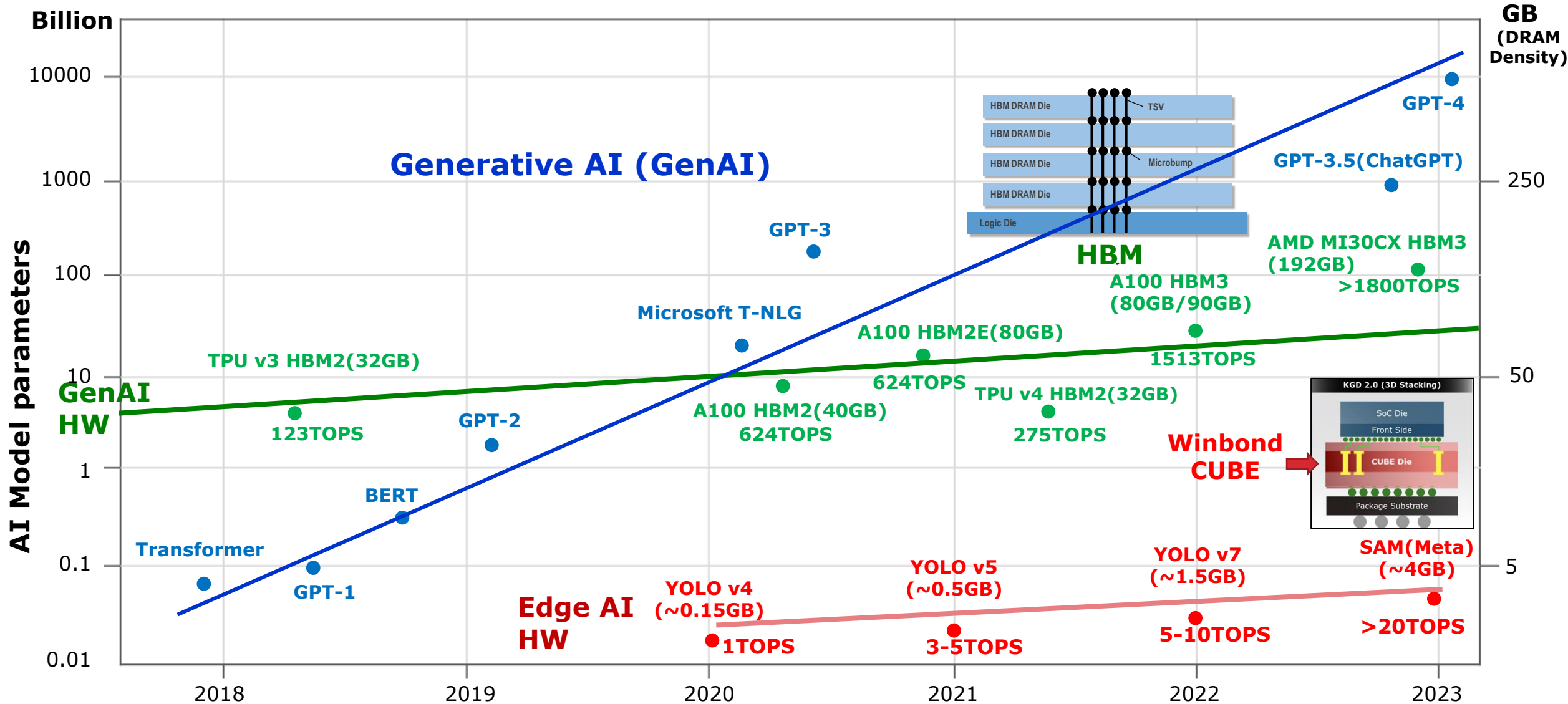
### ❑ Overall Market

- ❖ Economic risks remain as high inflation in USA and slow economy recovery in China
- ❖ Short visibility on end market demand
- ❖ Demand outlook in memory remains healthy and promising, driven by multiple fast growing applications, such as AI, autonomous vehicles, 5G and IoT

### ❑ Winbond Business

- ❖ Fab capacity utilization is gradually improving
- ❖ Target to release 45nm NOR and 20nm DRAM (equivalent to Micron 1x) soon
- ❖ Ramping up KH Fab capacity to 14K wpm in early 2024
- ❖ Introduced "**CUBE**" platform for AI applications, and Joined UCIE Consortium

# AI Model Parameters vs DRAM size

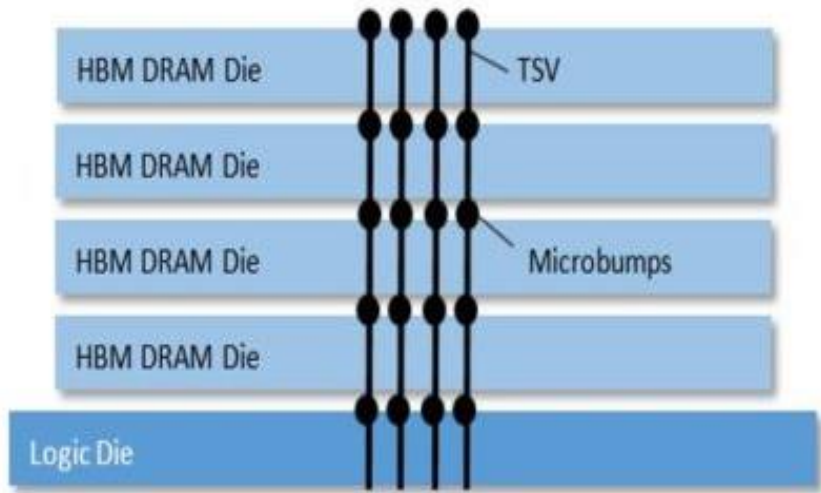


- GPT: Generative Pre-Training Transformer
- YOLO (You Only Look Once): The most popular AI mode for Image Object detection
- SAM (Segmentation Anything Model): Meta's powerful AI model for Image segmentation

- HBM: High Bandwidth Memory
- TOPS: Tera Operations Per Second

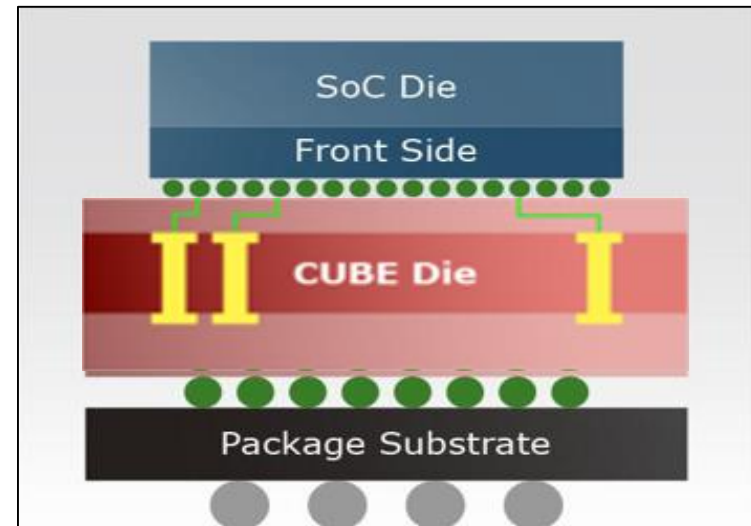
# HBM and CUBE

Item	HBM1	HBM2	HBM2E	HBM3	CUBEx
Stack height	4HI	8HI	8HI/12HI	8HI/12HI/16HI	1 - 4HI
I/O Transfer rates	1 Gbps	2.4 Gbps	3.6 Gbps	6.4 Gbps	500M-2 Gbps
Overall package bandwidth	128 GB/s	256 GB/s	460 GB/s	819 GB/s	Up to 1024 GB/s
Package capacity	4GB	8GB	16GB/24GB	16GB/24GB/32GB	0.5 - 4GB
I/O number(R+W)	1024	1024	1024	1024	256-1024
Power / bit	6pJ/ bit	<5pJ/ bit	<5pJ/ bit	<4pJ/ bit	<1pJ/bit
Application	AI / Machine Learning in data center, HPC, accelerator system				SoC L4, AI NMC, AR/VR,...

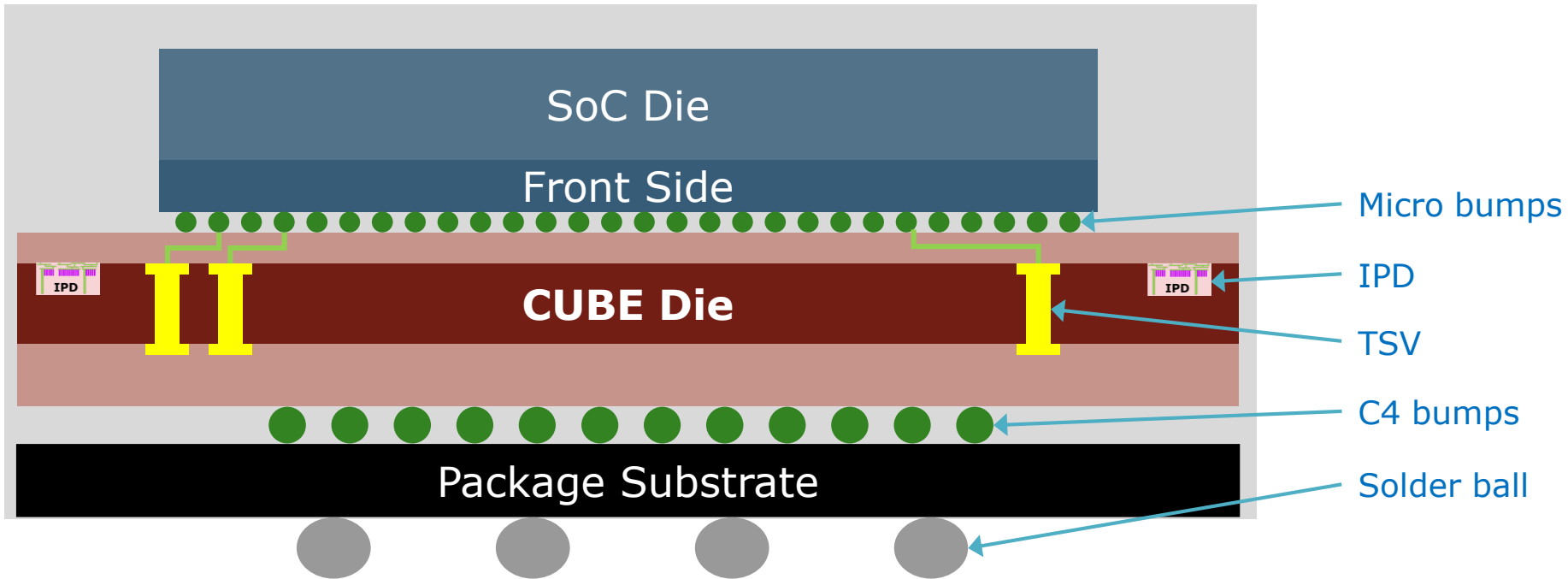


Source: Synopsys

HBM



# CUBE: Customized Ultra Bandwidth Element



(Example of CUBE application, schematic diagrams are not drawn to the scale.)

## □ CUBE benefit:

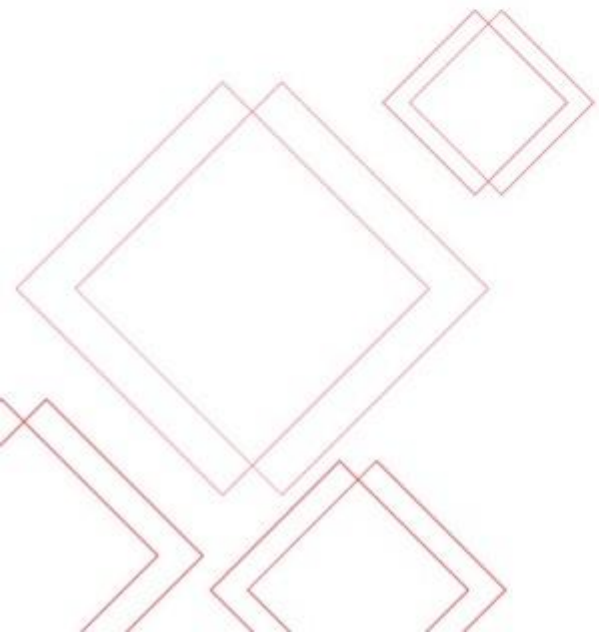
- ◆ SoC on top die, better power dissipation
- ◆ SoC w/o TSV, better system cost
- ◆ 3D stacking for small form factor on Edge AI device
- ◆ Value-added:
  - CUBE acts as DRAM + Si-Cap + Si-Interposer

### Note:

- SoC: System on Chip
- IPD: Integrated passive Device like Si-Cap (Silicon Capacitor)
- TSV: Through Silicon Via
- C4: Controlled Collapse of Chip Connection



# Q & A





***Thank you***