



TOSHIBA

Toshiba IR Day 2019

Electronic Devices & Storage Solutions

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November 14, 2019

Forward-looking Statements

- This presentation contains forward-looking statements concerning future plans, strategies, and the performance of Toshiba Group.
- These statements are not historical facts; rather, they are based on assumptions and judgments formed by the management of Toshiba Group in light of currently available information. They include items that have not been finally decided at this point and future plans that are yet to be confirmed or that require further consideration.
- Since Toshiba Group promotes business in various market environments in many countries and regions, its activities are subject to a number of risks and uncertainties that are, without limitation, related to economic conditions, worldwide mega-competition in the electronics business, customer demand, foreign currency exchange rates, tax rules, regulations, geopolitical risk, natural disasters and other factors. Toshiba therefore wishes to caution readers that actual results might differ from expectations. Please refer to the annual securities report (*Yuukashoken houkokusho*) for FY2018 and the quarterly securities report (*shihanki houkokusho*) for the second quarter of FY2019 (both issued in Japanese only) for detailed information on Toshiba Group's business risk.
- Toshiba's fiscal year (FY) runs from April 1 to March 31. All figures are consolidated totals for 12 months, unless otherwise stated.
- Results in segments have been reclassified to reflect the current organizational structure, unless otherwise stated.

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03 Actions to Achieve the Goals of the SDGs

01

Business Plan

Updates from the Toshiba Next Plan



Four businesses secure profitable growth

Semiconductors

Discrete semiconductors
System LSIs

HDDs

Client HDDs
Enterprise HDDs

Semiconductor Production Equipment^{*1}

Mask writers, etc.

Materials & Devices^{*2}

SiN^{*3} substrates, etc.

Strong business structure resistant to market fluctuations

Proactive development that anticipate customer needs

Innovation to be “a driving force to change the world”

^{*1} NuFlare Technology (NFT)

^{*2} Toshiba Materials, Toshiba Hokuto Electronics

^{*3} Silicon Nitride

**Channel resources to focus products, enhance competitiveness
to increase profitability**

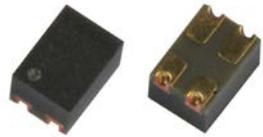
Key Strategies

- **Channel resources to focus products to quickly turn around the System LSI business**
- **Continue strategic investments in Power Devices, large-density Nearline HDDs and SiN Substrates**
- **Continue to launch value-added products for future growth**
- **Strengthen core earning power**

Electronic Devices & Storage Solutions High Market Share Products

Competitive products that lead the way in world markets

Semicon Optocouplers



24 % *1

Semicon Linear image sensors



About **70** % *2

NFT E-beam mask writers (single-beam)



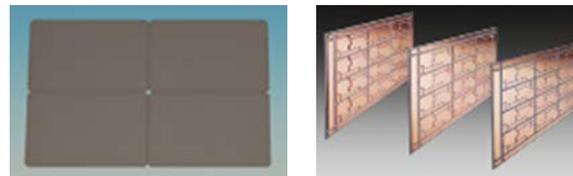
Over **90** % *2

HDD Mobile HDDs



No. 1 (36%) *3

Materials & Devices SiN substrates



about **60** % *2

Source

*1 Gartner "Market Share: Semiconductors by End Market, Worldwide, 2018", Andrew Norwood, Ben Lee et al., 8 April 2019 (Optocouplers = Coupler)

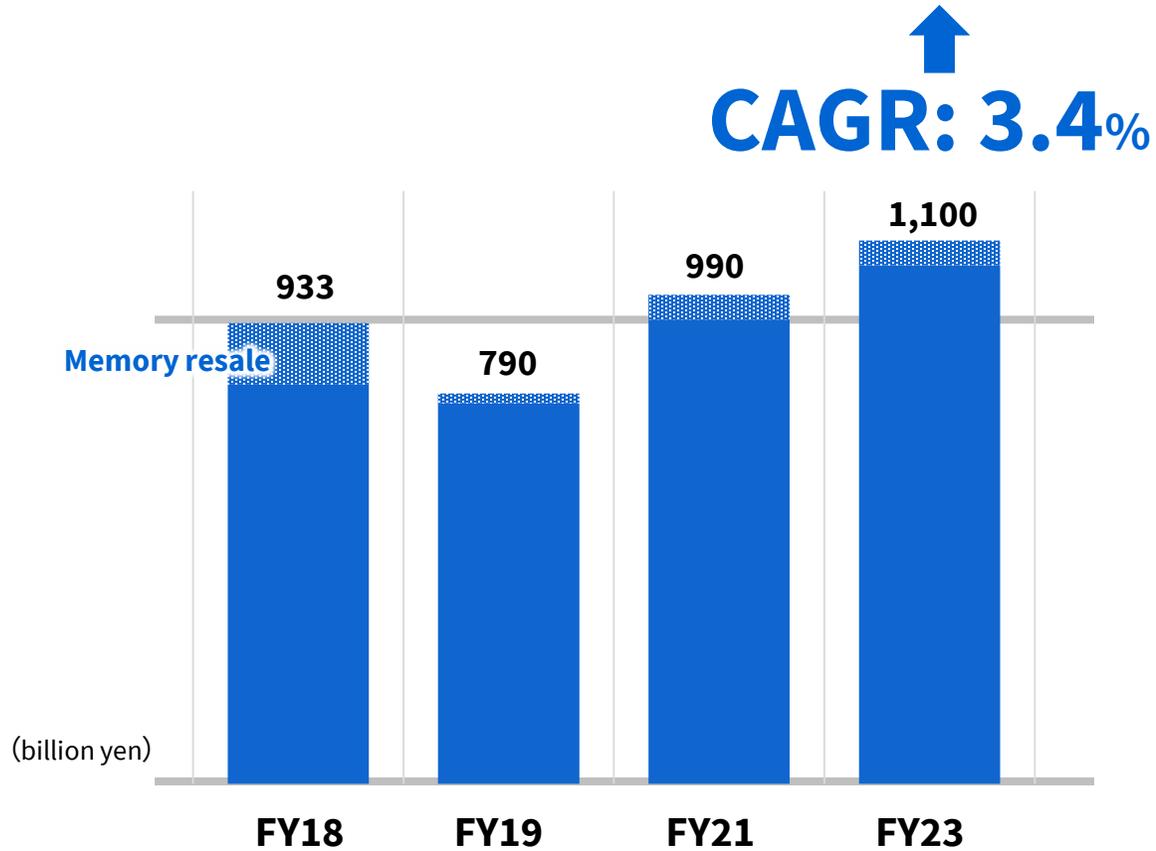
*2 Toshiba Electronic Devices & Storage, FY18

*3 Techno System Research, July-September'2019

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Electronic Devices & Storage Solutions Business Plan (Net Sales)

Aim for annual sales of over 1 trillion yen by FY23



FY23

Net Sales Target

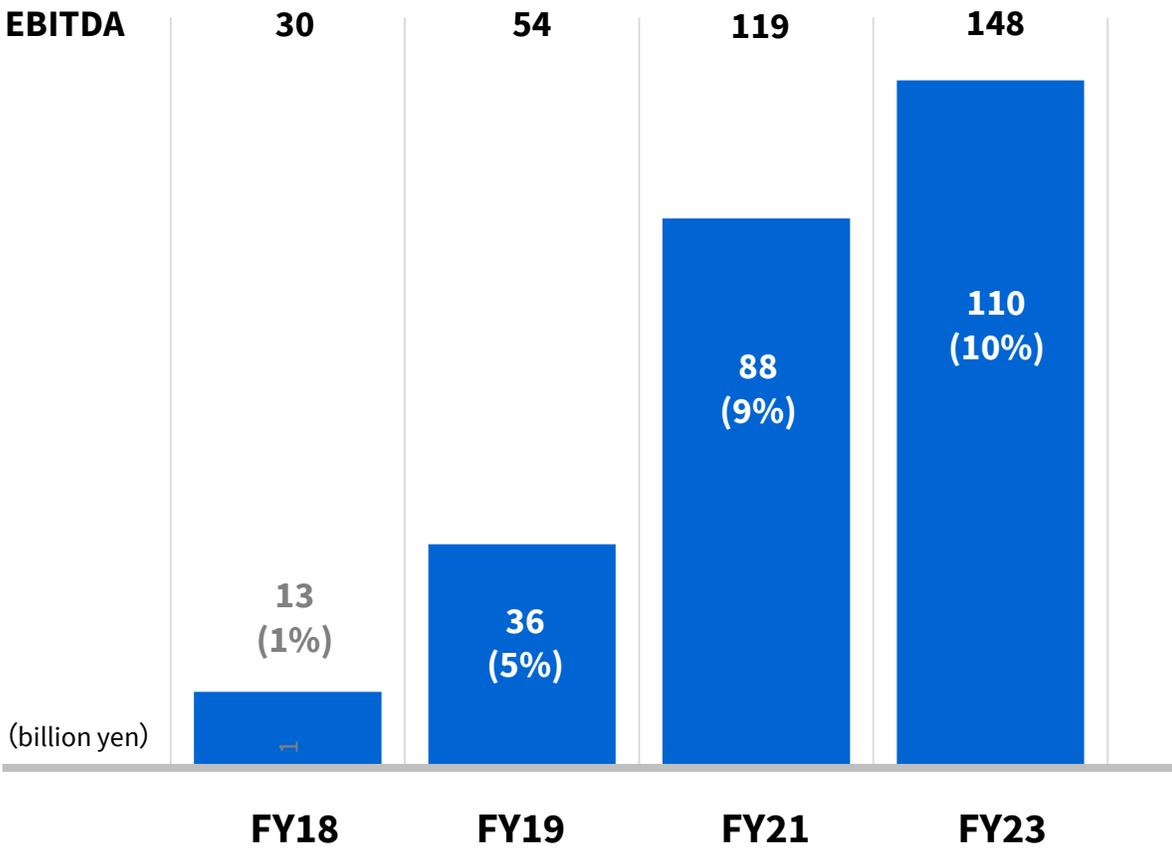
1,100
billion yen

Growth products

Power devices Visconti Image recognition processors Nearline HDDs

Electronic Devices & Storage Solutions Business Plan (Op. Incomes)

Complete business restructuring in FY19; enhance earning power



FY23

Operating Income Target

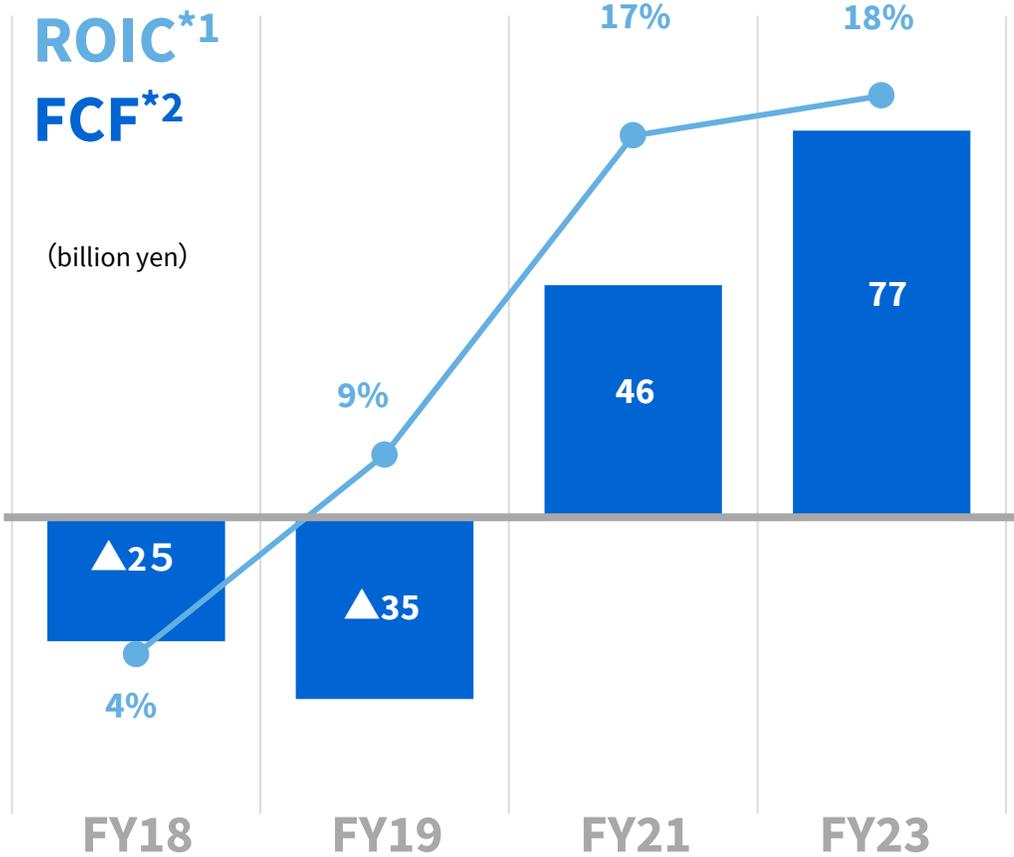
110 billion yen

ROS

10 %

Electronic Devices & Storage Solutions Business Plan (ROIC, FCF)

Secure positive free cash flow from FY21 onwards



FY23

ROIC*

18 %

FCF**

77 billion yen

Special factors:

- * FY18: Impairment of NFT's goodwill, FY19: Restructuring costs, etc.
- ** Shift of cash inflows, Japanese Subcontract Act, etc.

*1 Return on Invested Capital *2 Free Cash Flow

Net Sales, Operating Income and EBITDA Summary

as of November, 2018

		FY18	FY19	FY21	(billion yen)
Electronic Devices & Storage	Net Sales	870	860	940	
	Op. Income	29	58	82	
	EBITDA	51	82	111	

as of November, 2019

		FY18 Actual	FY19	FY21	(billion yen)
Electronic Devices & Storage	Net Sales	933	790	990	
	Op. Income	13	36	88	
	EBITDA	30	54	119	

Net Sales, Operating Income and EBITDA Summary (Semiconductors)

as of November, 2018

		FY18	FY19	FY21	(billion yen)
Semiconductors	Net Sales	366	380	420	
	Op. Income	16	36	51	
	EBITDA	34	55	73	

as of November, 2019

		FY18 Actual	FY19	FY21	(billion yen)
Semiconductors	Net Sales	354	320	420	
	Op. Income	* 0	22	51	
	EBITDA	14	35	73	

* Includes Impairment of NFT's goodwill (9.8 billion yen)

Net Sales, Operating Income and EBITDA Summary (HDDs & Others)

as of November, 2018

HDDs & Others		FY18	FY19	FY21	(billion yen)
Net Sales		505	480	520	
Op. Income		13	22	31	
EBITDA		17	27	38	

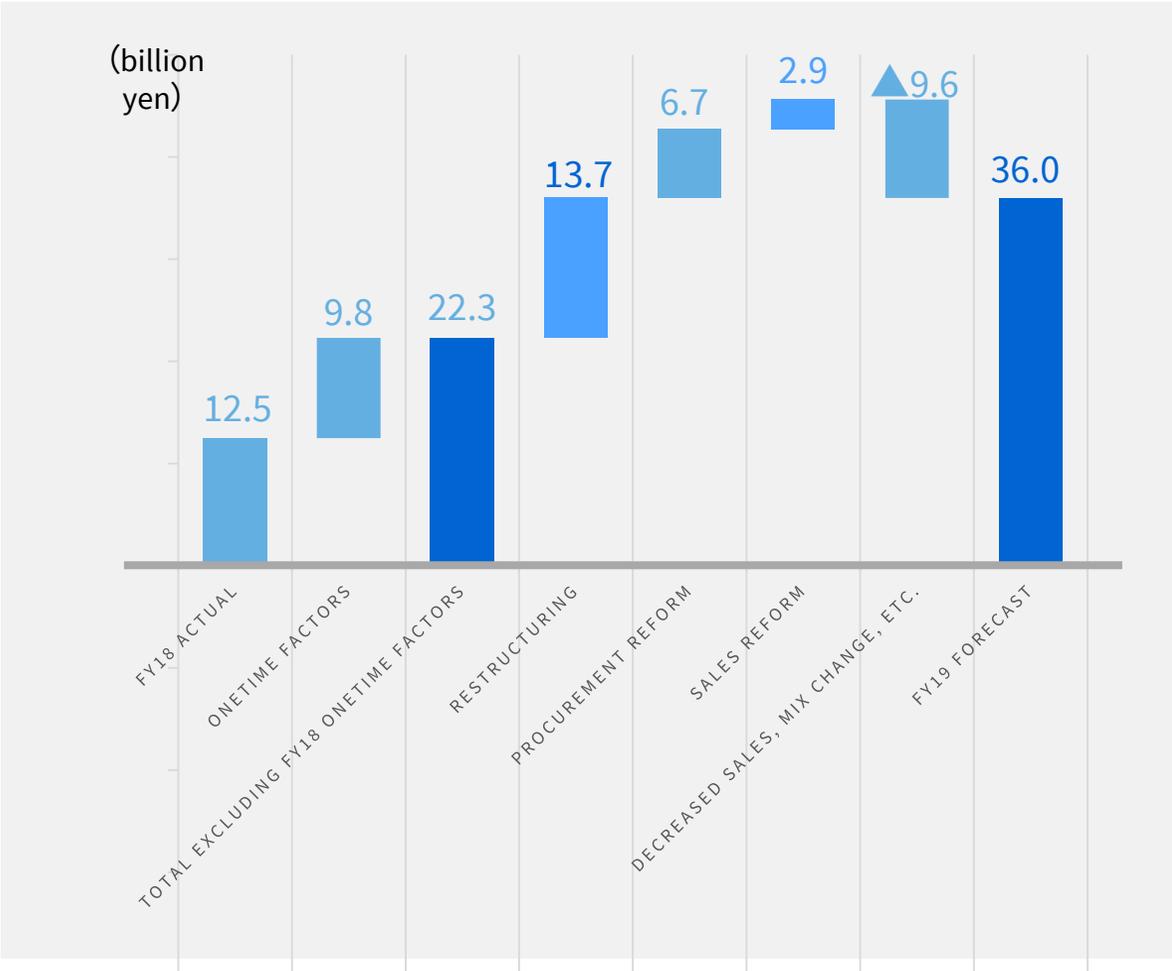
as of November, 2019

HDDs & Others		FY18 Actual	FY19	FY21	(billion yen)
Net Sales		578	470	570	
Op. Income		12	* 14	37	
EBITDA		16	19	46	

* Includes restructuring costs (6.5 billion yen)

Operating Income Improvement Plan, FY18 to FY19

Turn around System LSI business, even though tough business conditions continue



FY19 Forecast
36 billion yen

Business restructuring

- Early retirement program (414 people)
- Transfers to other divisions (about 220 people)
- Optimize R&D expenses

Improve product mix

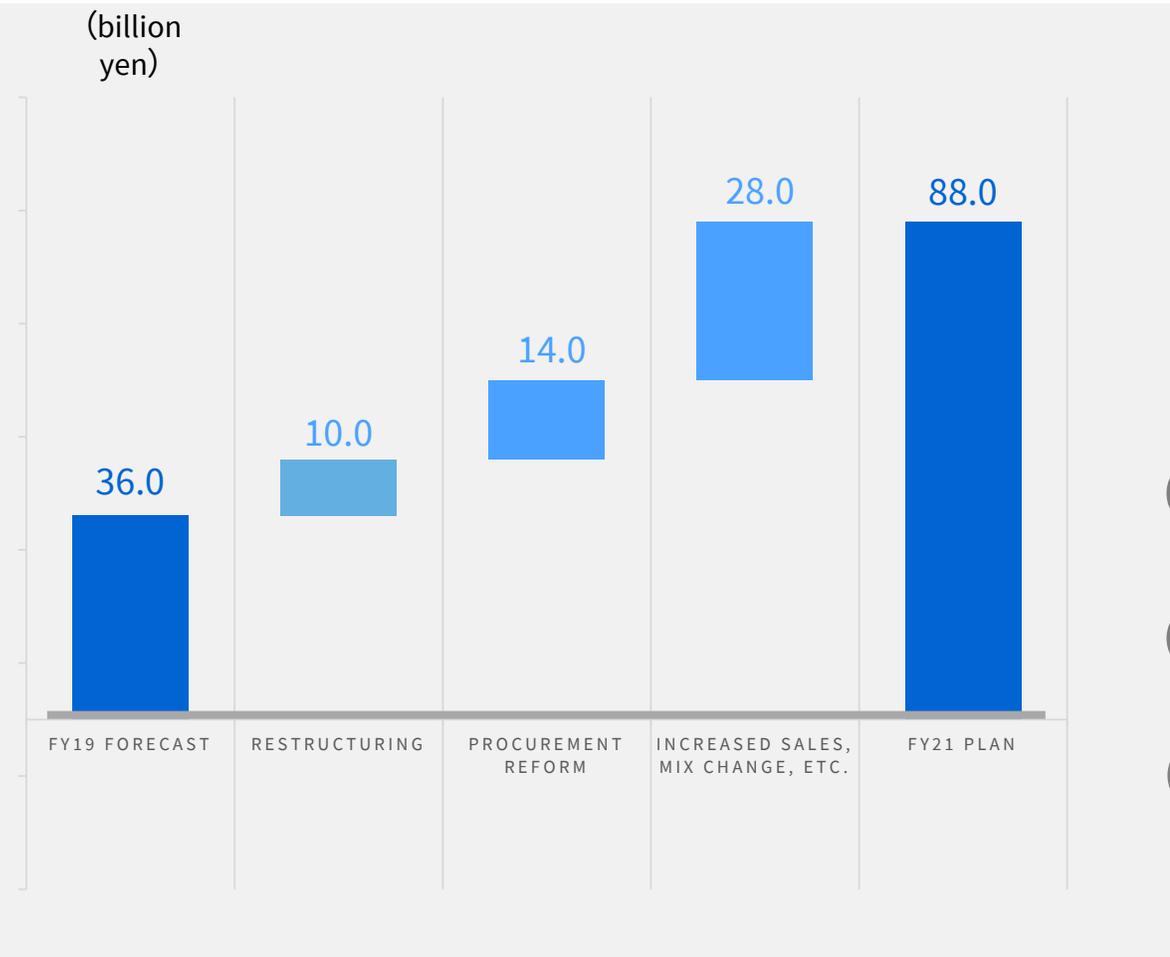
- Minimize low profitability & loss making businesses, especially Logic LSIs

Procurement and sales reform

- Promote cost reduction; negotiate price increases and discontinuations

Operating Income Improvement Plan, FY19 to FY21

Pursue stable profitability through product competitiveness, broader product offering and increased production capability



FY21 Plan

88

billion yen

Discrete Semiconductor

- Enhance production capacity for power devices, realize further growth and increased profits

System LSI

- Maximize results of business restructuring; minimize low profitability & loss making businesses

HDD

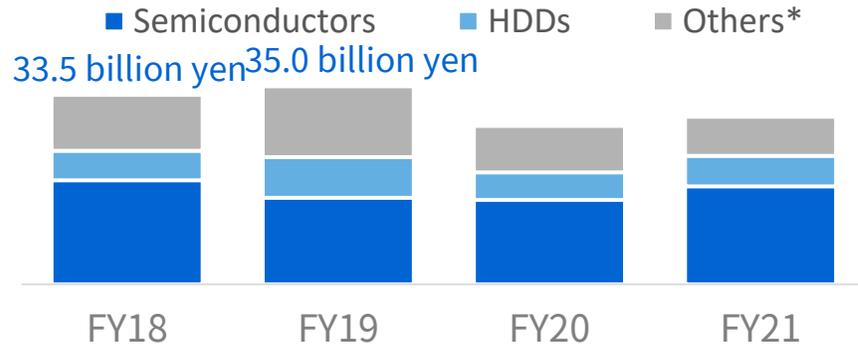
- Enhance earning power by increasing Nearline HDD sales

Capital Expenditure and R&D Expense

Keep an eye on market conditions, review capex plan flexibly;
continue strategic investments in growing businesses—
Power devices, Nearline HDDs, Materials, etc.

Capex (Commitment base)

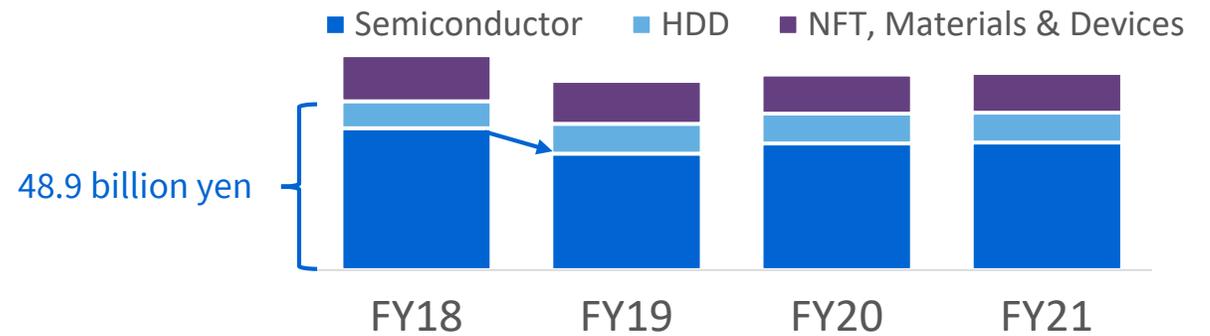
Continue strategic investments in Power devices, etc.



Semiconductors		
Discrete Semiconductor	Kaga	8-inch wafer fab
	Himeji	SiC 6-inch wafer fab
HDDs & Others		
HDD	Philippines	Nearline production
Materials & Devices	Yokoyama, etc.	SiN substrate production

R&D Expense

Streamline System LSI expenses



Semiconductors	
Discrete	Power devices (MOSFETs, SiC, etc.)
System LSI	Automotive digital LSI (next gen Visconti, etc.)
HDDs & Others	
HDD	Nearline HDD future generation technologies (assist technology, etc.)
Materials & Devices	SiN substrates, etc.

Semiconductors

- The macro-market remains unclear due to the US-China trade dispute
- There have been signs of recovery since summer, especially for smart phones, but demand for industrial and automotive devices remains slow
- The non-memory semiconductor market is expected to shrink 3.0% YoY, the first negative growth since FY15
- Growth in demand for power devices is weaker than anticipated
- Full recovery cannot be expected at the beginning of FY20

HDDs

- Investments by hyperscalers started to pick up in Q1; some of them restarted component purchases
- Projection of 2H market recovery remains unchanged
- US operators continue investments for 5G and various new services starts

Progress in System LSI Business Restructuring

In line with the May plan; turn around the business within FY19

1. Streamline R&D expenses

- ✓ Screen development items
- ✓ Absorb outsourcing

2. Product mix optimization

(minimize low profitability & loss making businesses)

- ✓ Screen new design wins
- ✓ Negotiate price increases and discontinuations

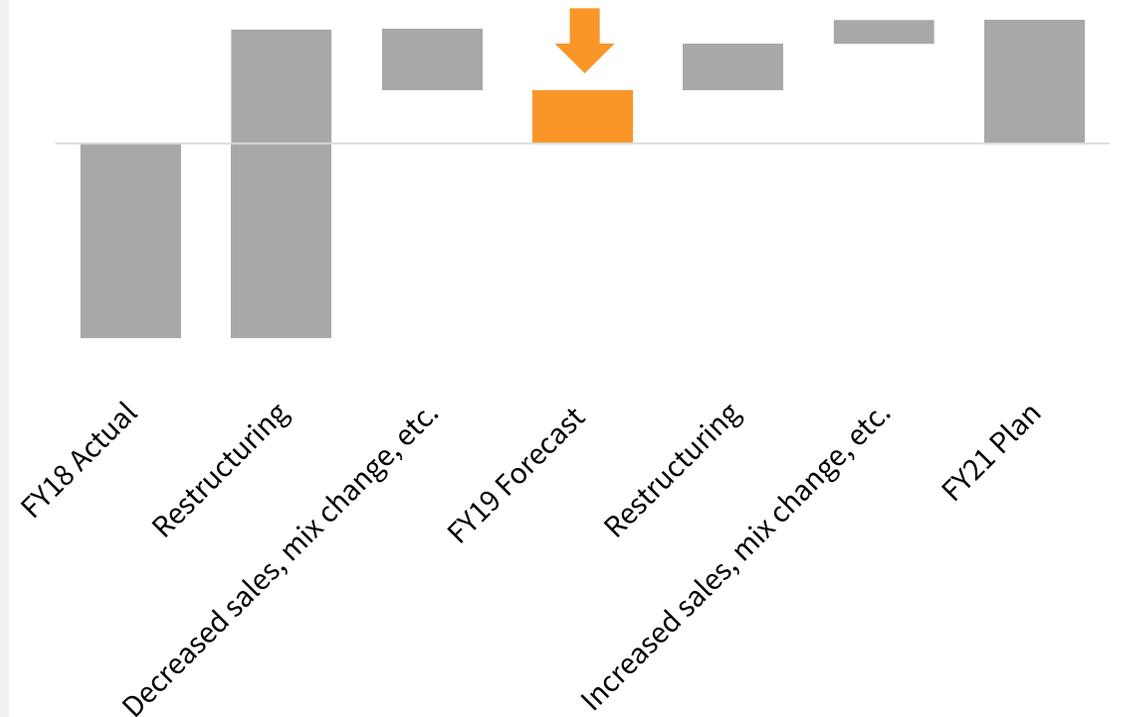
3. Headcount optimization

- ✓ Early retirement program (414 people)
- ✓ Transfers to other divisions (about 220 people)

4. Others

- ✓ Continue bonus cuts
- ✓ Improve utilization at Japan Semiconductor Corp. (increase power devices production)

Improve operating income



02

Growth Strategies

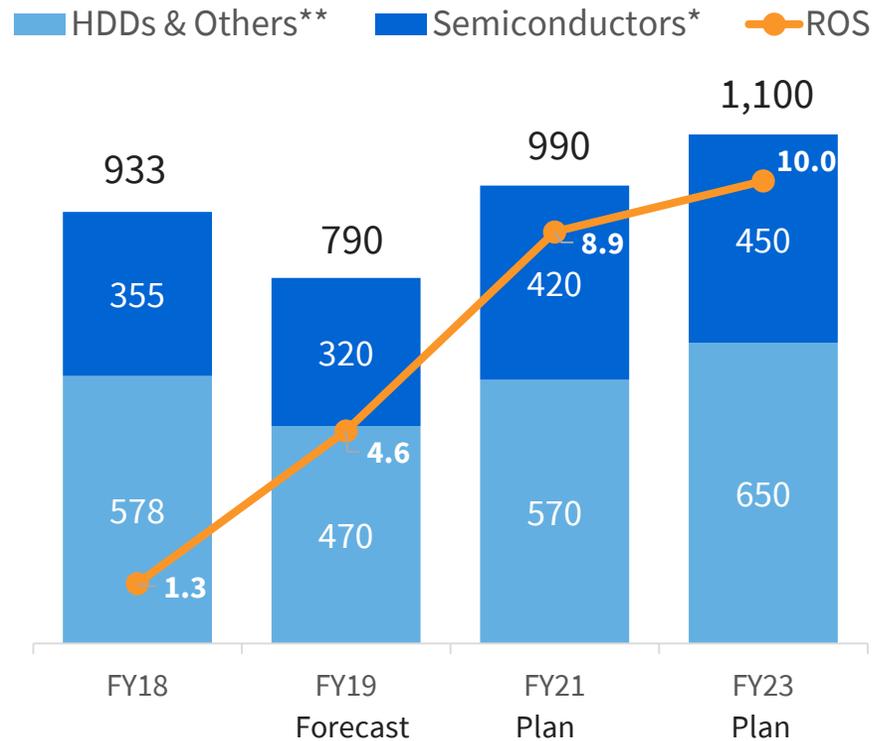


Net Sales and Operating Income Plan

(FY19 Q2 financial release, Nov. 13, 2019)

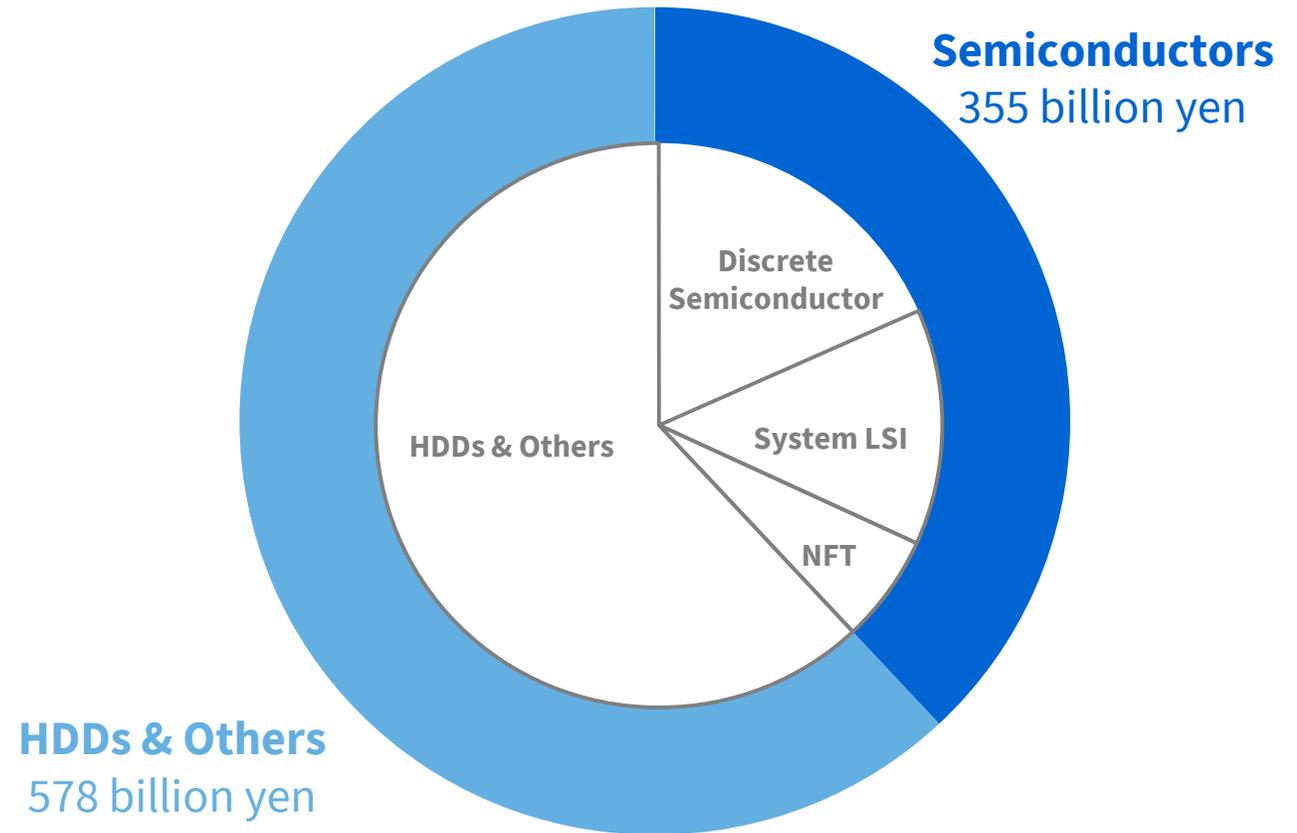
Net sales and operating income

(billion yen)



* Discrete Semiconductor, System LSI, NFT
 ** HDD, Materials & Devices, Memory resale, etc.

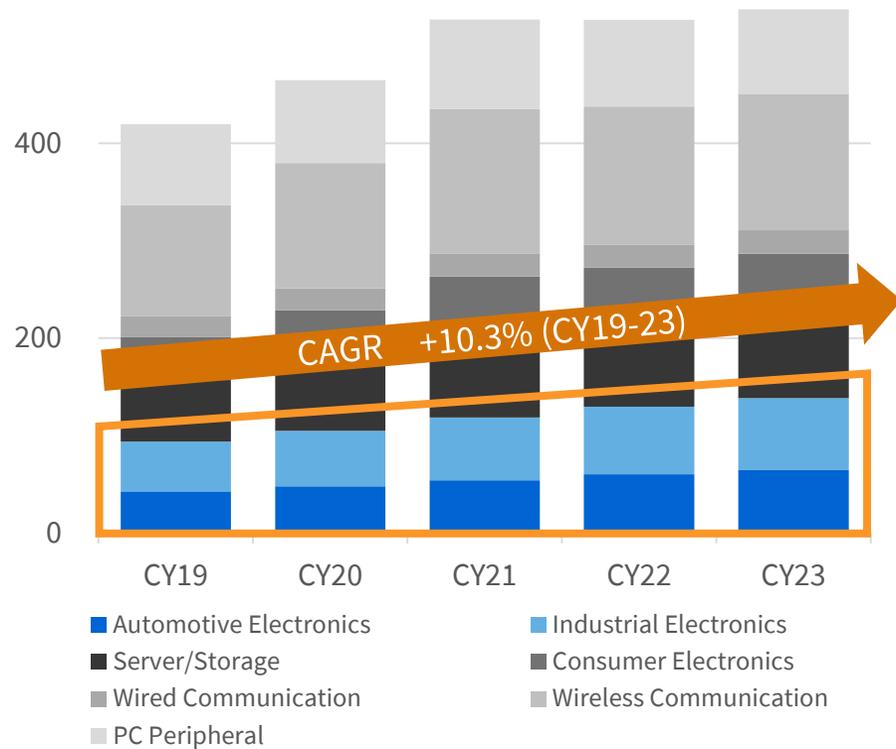
Sales mix (FY18 Actual)



Semiconductor Overview

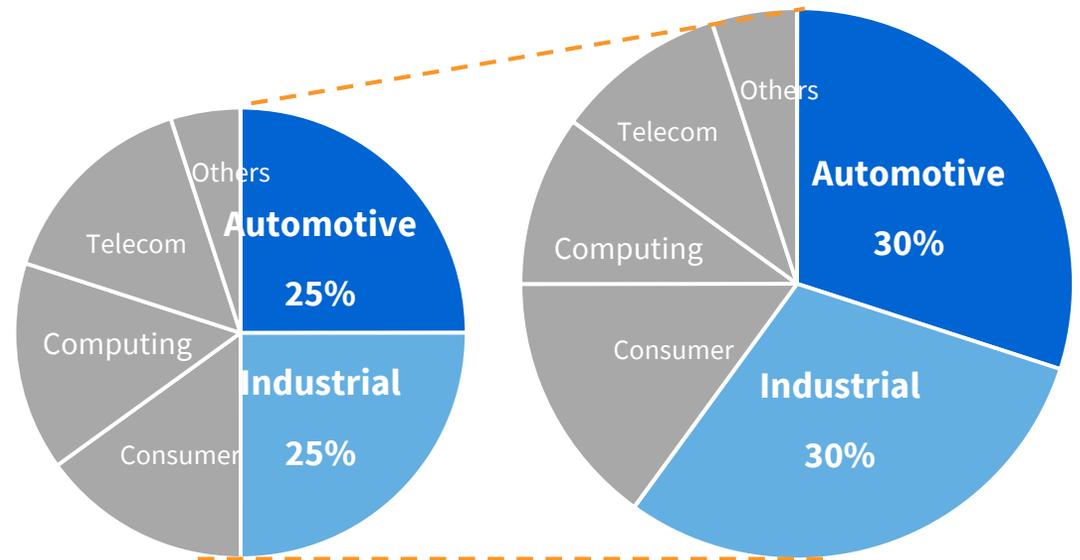
Worldwide Semiconductor Market by Application

(US\$B)



Source: Gartner "Semiconductor Forecast Database, Worldwide, 2Q19 Update", Nolan Reilly, Ben Lee et al., 30 September 2019
 (*)PC Peripheral=Except for "Server" and "Storage" from "Data Processing Electronics"
 Chart created by Toshiba Electronic Devices & Storage Corporation based on Gartner research.

Sales Mix (Discrete Semiconductors and System LSIs total)



FY18 Actual

Sales by region: Overseas 50%
Japan 50%

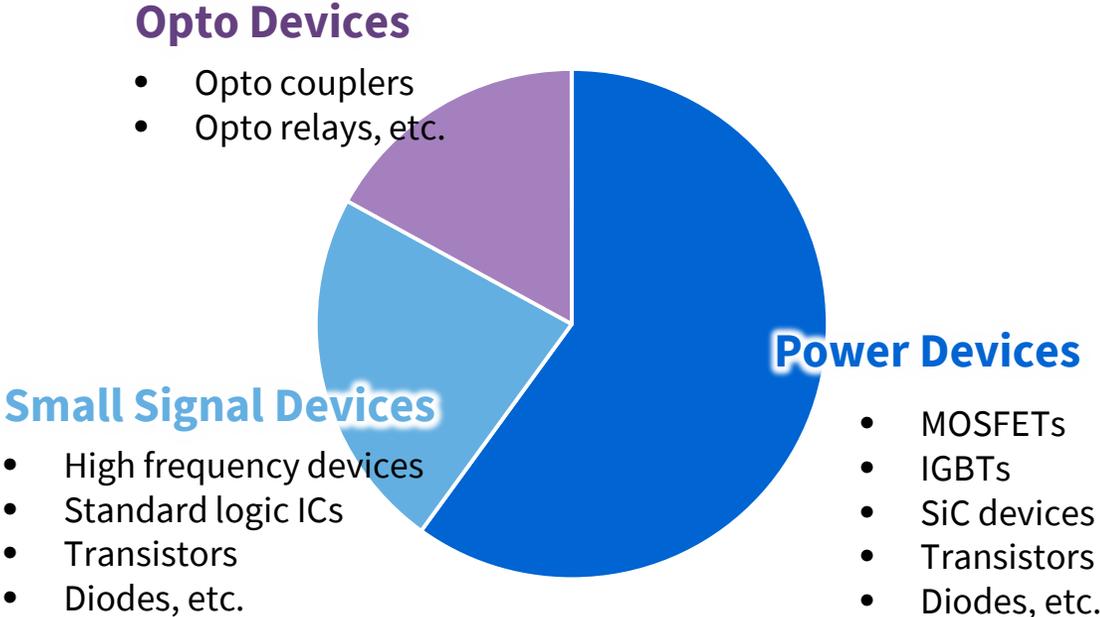
FY21 Plan

Sales by region: Overseas 50%
Japan 50%

Semiconductor Growth Strategy: Discrete Semiconductors, 1/2

Continue strategic investments to satisfy healthy demand, especially in automotive

Sales mix (FY18 Actual)



Kaga, Japan
Increasing 8-inch wafer fab capacity **1.5x times** from FY17 to FY20



Prachin Buri, Thailand
Increasing assembly capacity for opto and small signal devices



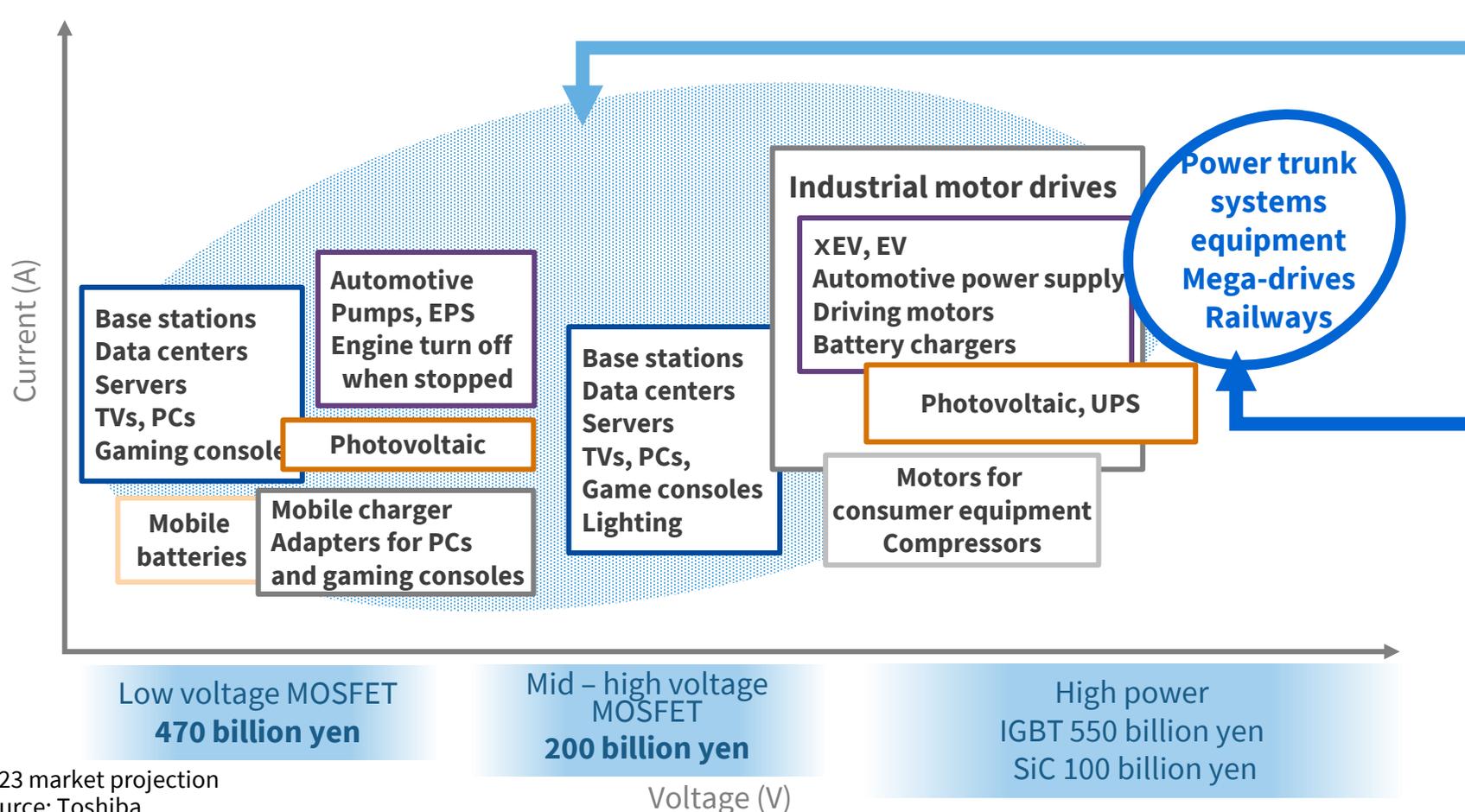
Himeji, Japan
Increasing assembly capacity: **establishing** SiC wafer fab



Expand Discrete semiconductor production at Japan Semiconductor Corp.

Semiconductor Growth Strategy: Discrete Semiconductors, 2/2

Silicon: Market sees steady growth
SiC: Becoming more popular thanks to demands for smaller devices that consume less energy; be sure to be ready before the market is established



Applications Silicon remains dominant

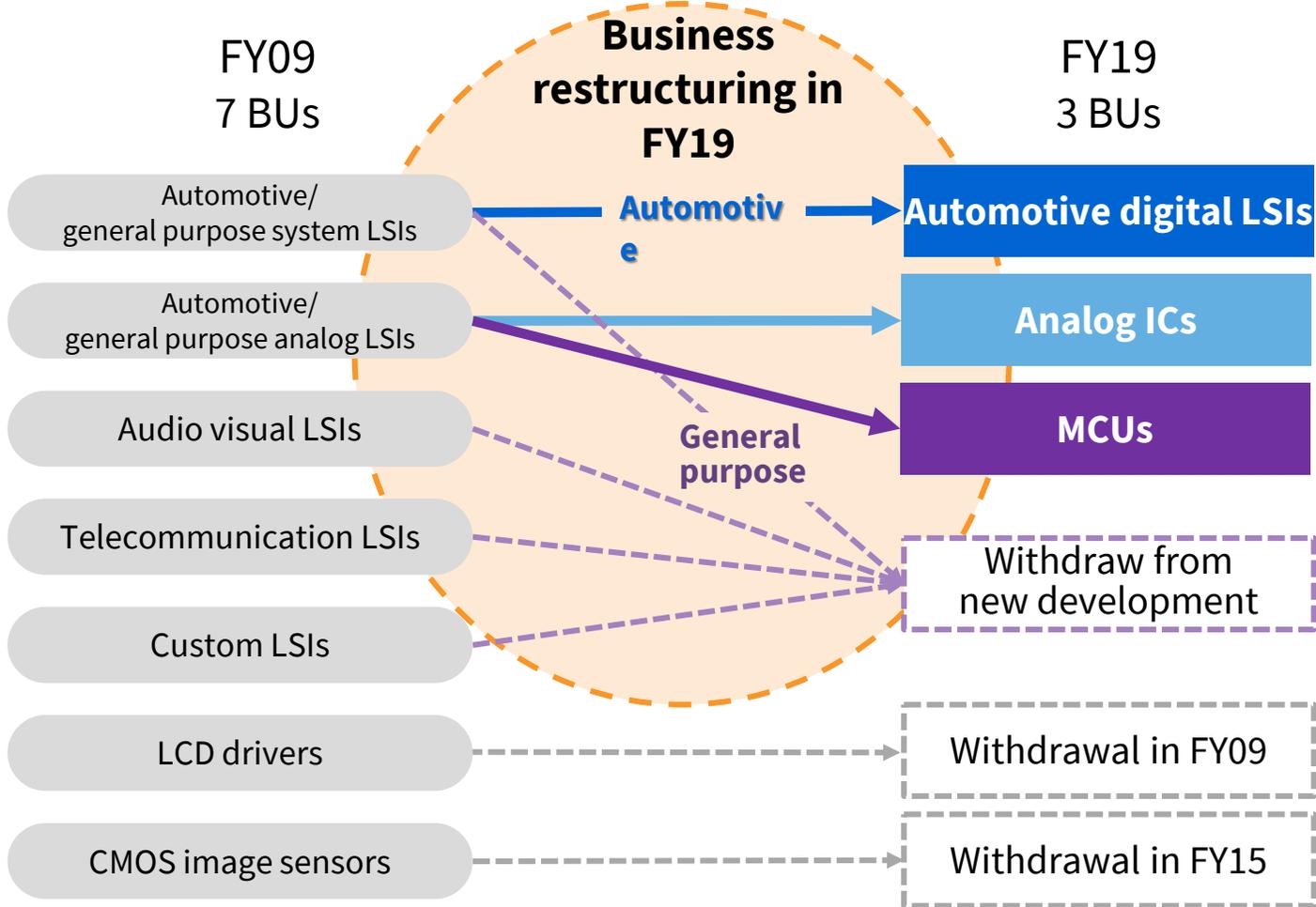
- Increasing production capacity at Kaga
- Expanding production at Japan Semiconductor Corp.
- 300mm process development

Applications SiC is preferred for securing smaller equipment, lower energy consumption

- 6-inch production lines established at Himeji
- Expanding, mainly for railways
- New products available in FY22

Semiconductor Growth Strategy: System LSI, 1/2

Shifting focus from consumer and telecoms to industrial and automotive; narrow down product offering to bring System LSI back to the black

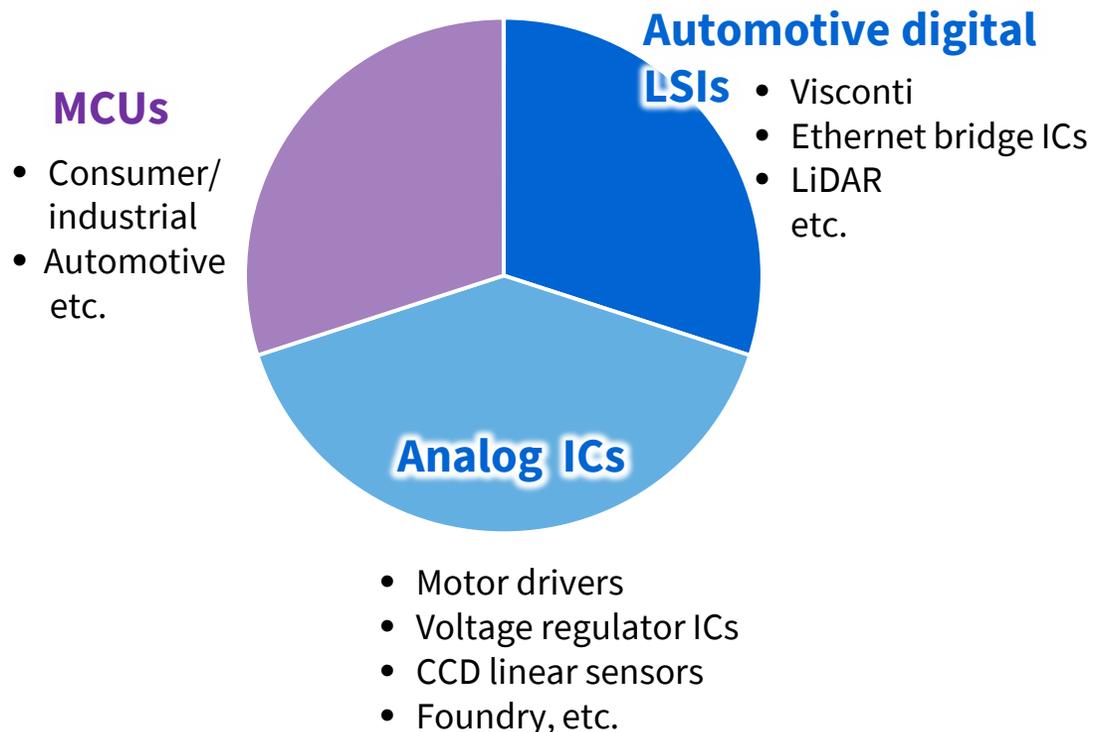


Supports automotive and/or existing customers only
Shift development resources to Analog ICs and MCUs

Semiconductor Growth Strategy: System LSI, 2/2

Further focus on automotive digital LSIs, analog ICs and MCUs;
Attach high priority to automotive and industrial markets where we can utilize
our strengths, including high performance, high reliability

Sales Mix (FY18 Actual)



Automotive digital LSIs

- Focus on Visconti, Ethernet bridge ICs and LiDAR
- Established a dedicated Visconti team

Analog ICs

- Focus on motor controllers
- Strengthen foundry business

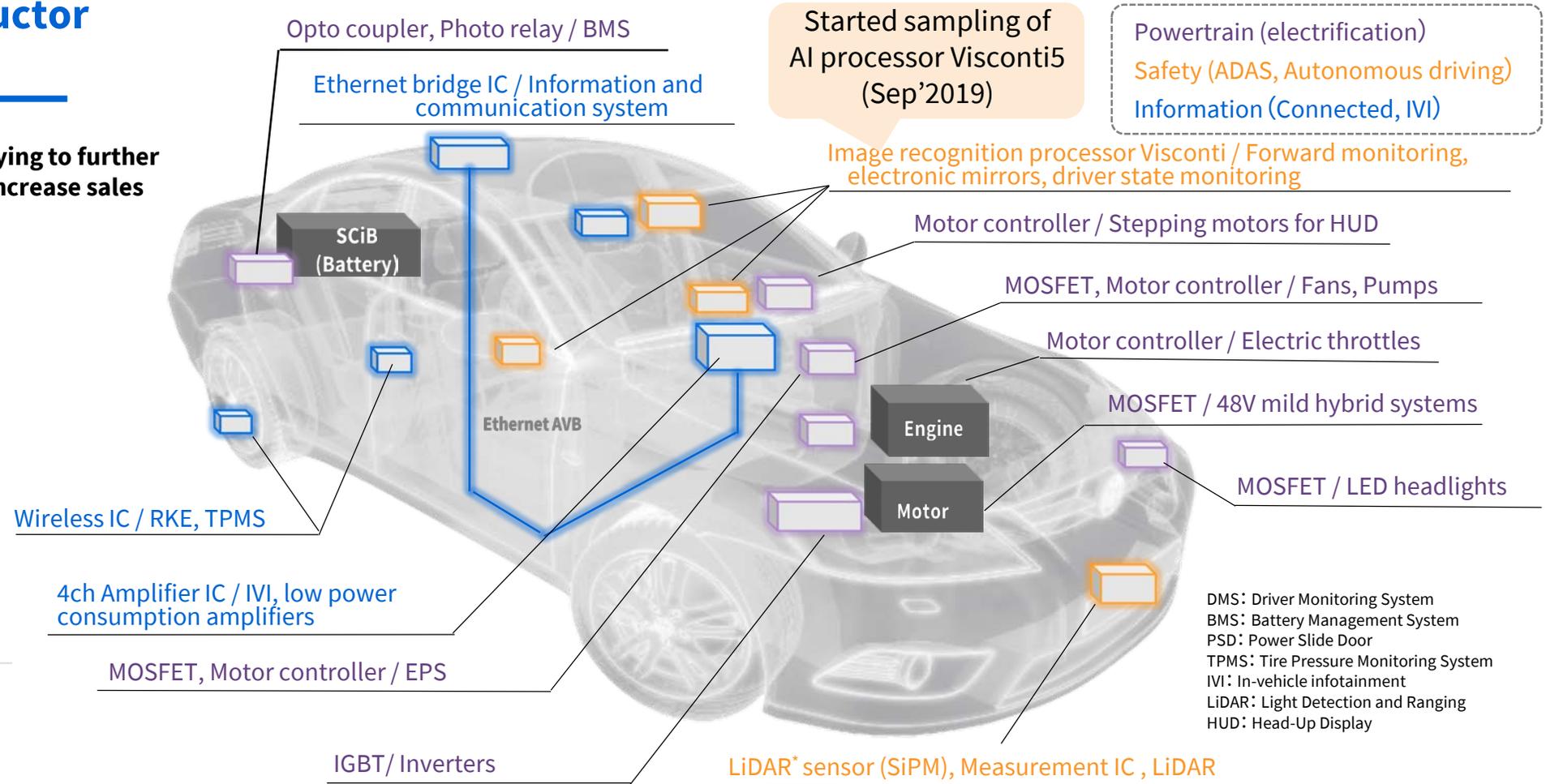
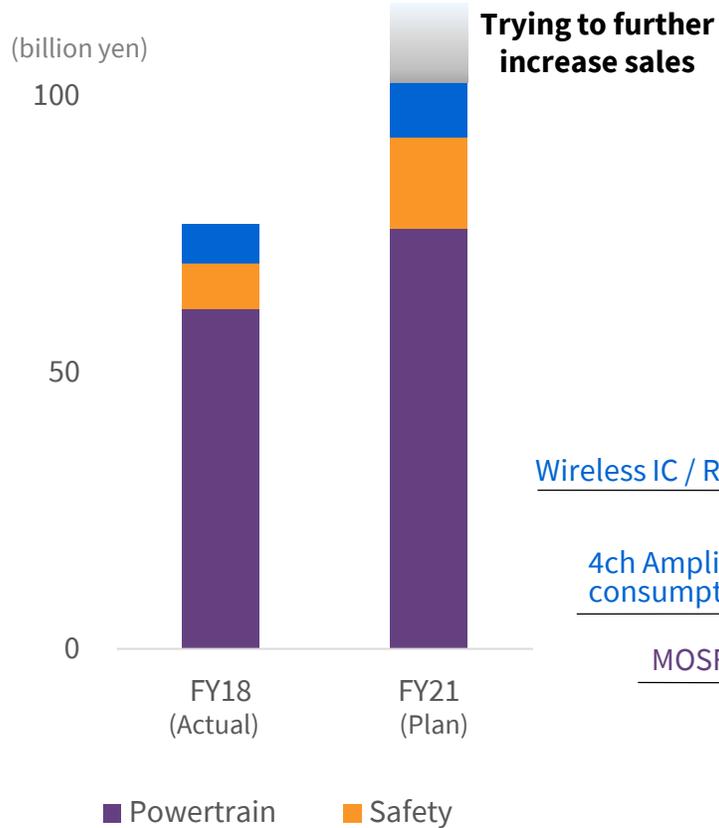
MCUs

- Widen product offering;
add high-performance products and entry models
- Enhance strengths, including security features

Semiconductor Growth Strategy: Automotive Semiconductors

Use core strengths in rapidly growing automotive semiconductor market to increase sales

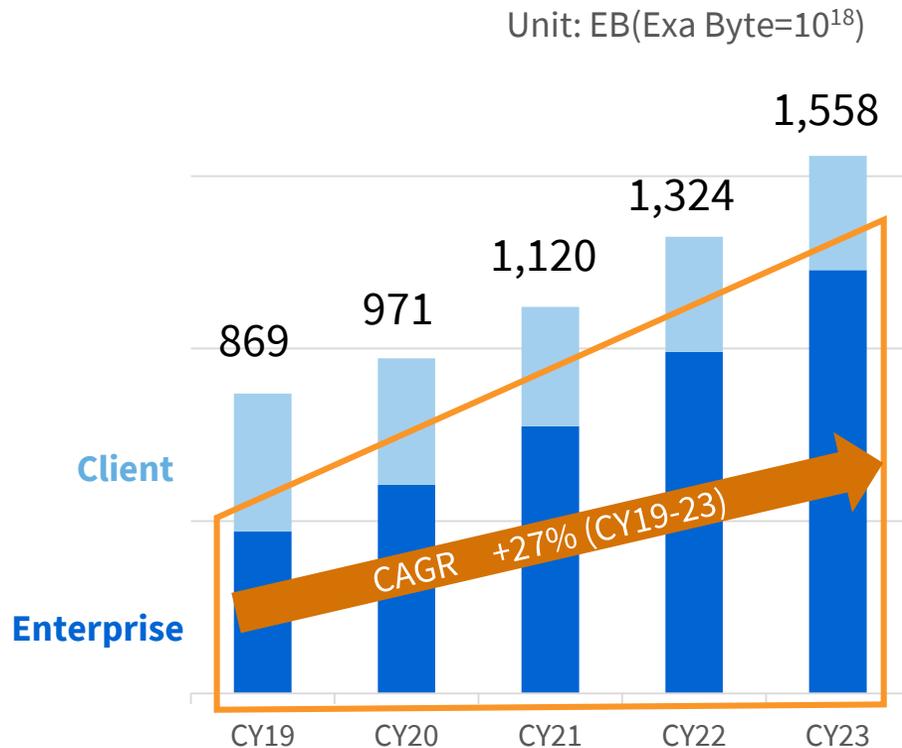
Automotive Semiconductor Sales Plan



HDDs & Others Overview: HDD

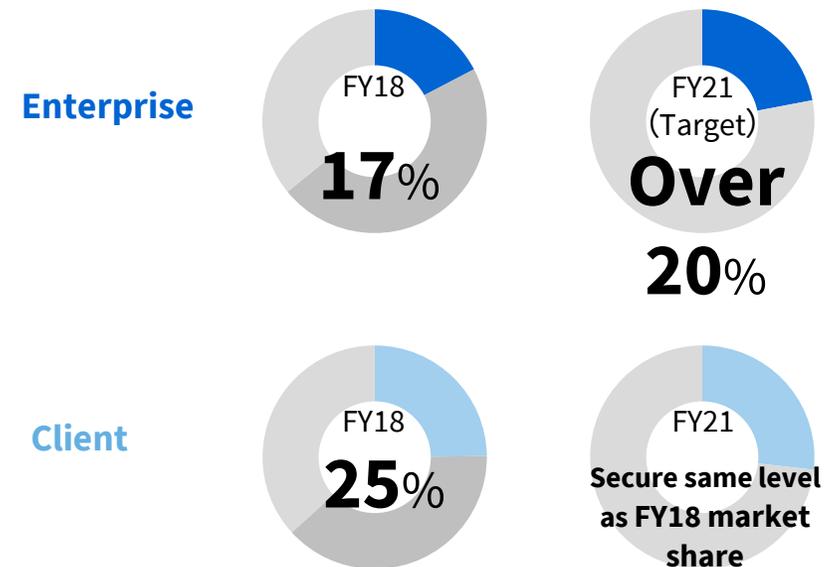
Increase share to 20% in the growing Nearline market by FY21

HDD Market Projection (density base)



Source: Techno System Research

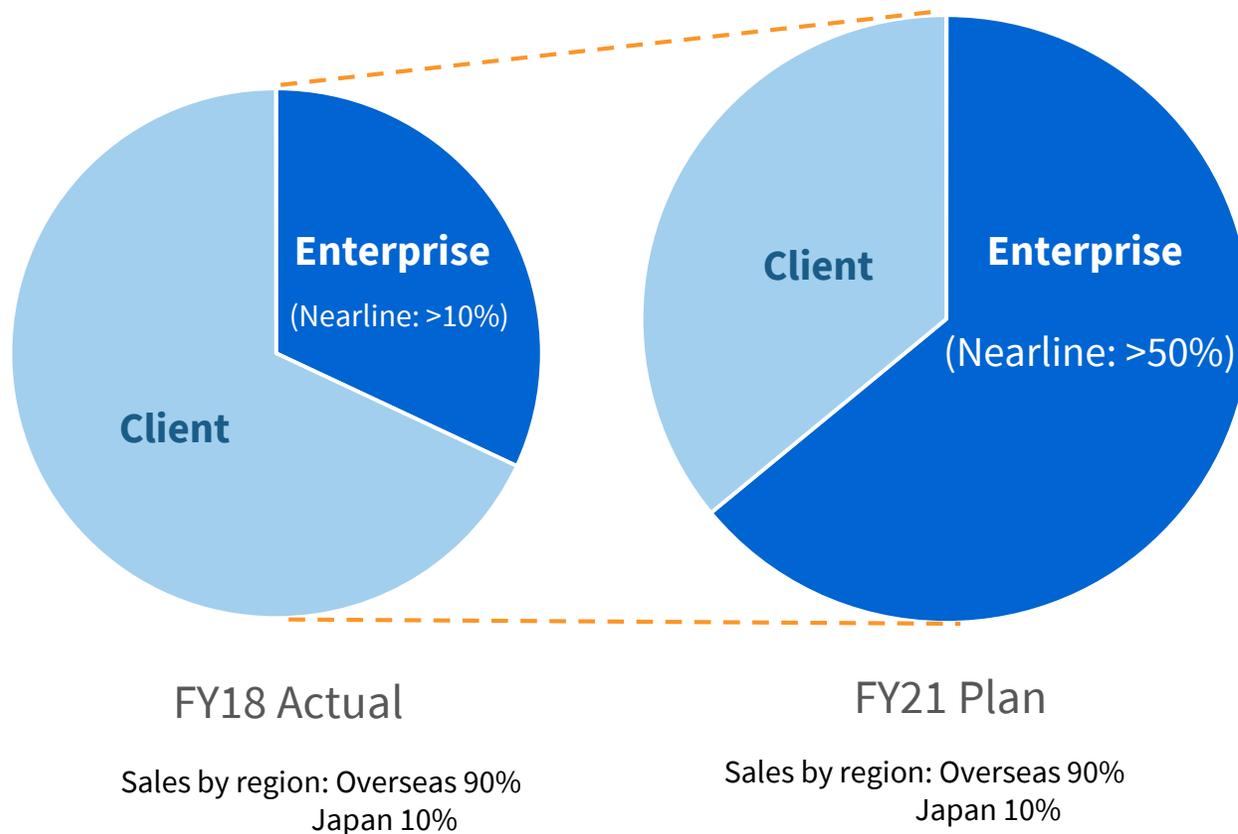
Market Share (unit base)



Source: Techno System Research

HDDs & Others Growth Strategy: HDD

Sales Mix



Strategies for focus areas and growing markets

Nearline

- Continue to develop large density drives for hyperscalers
- Launch competitive products for small and mid-sized data center customers
- Enhance production capability

Surveillance camera market

- Widen product offering

China and Asian markets

- Strengthen customer support and sales schemes
- Deepen collaboration with Chinese data center customers



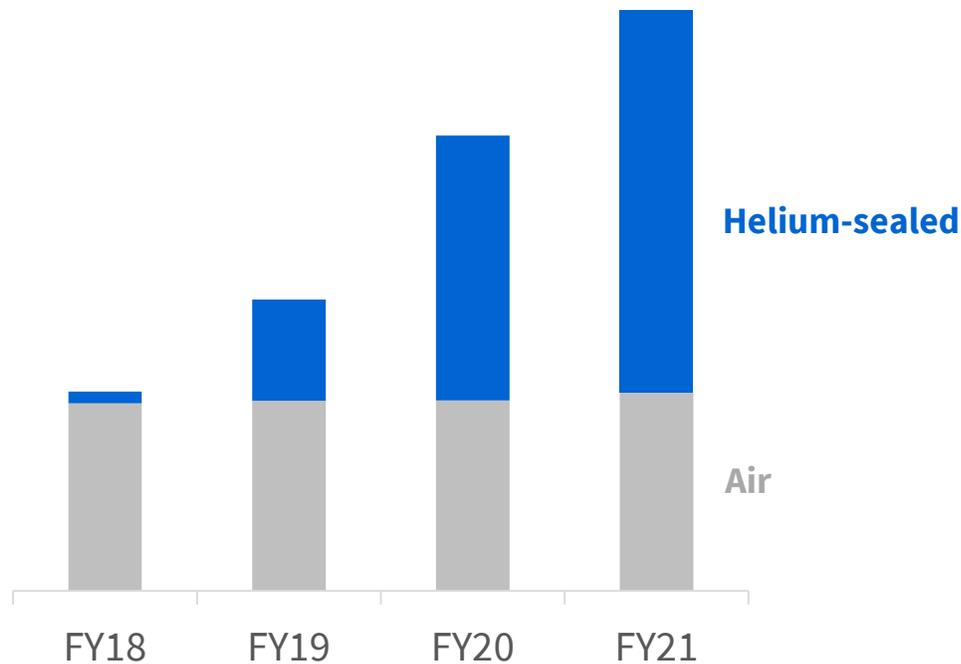
World's* first 9-disk HDD

* Source: Toshiba Electronic Devices & Storage Corp., as of December, 2017, for 3.5-inch, 26.1mm high form factor drives

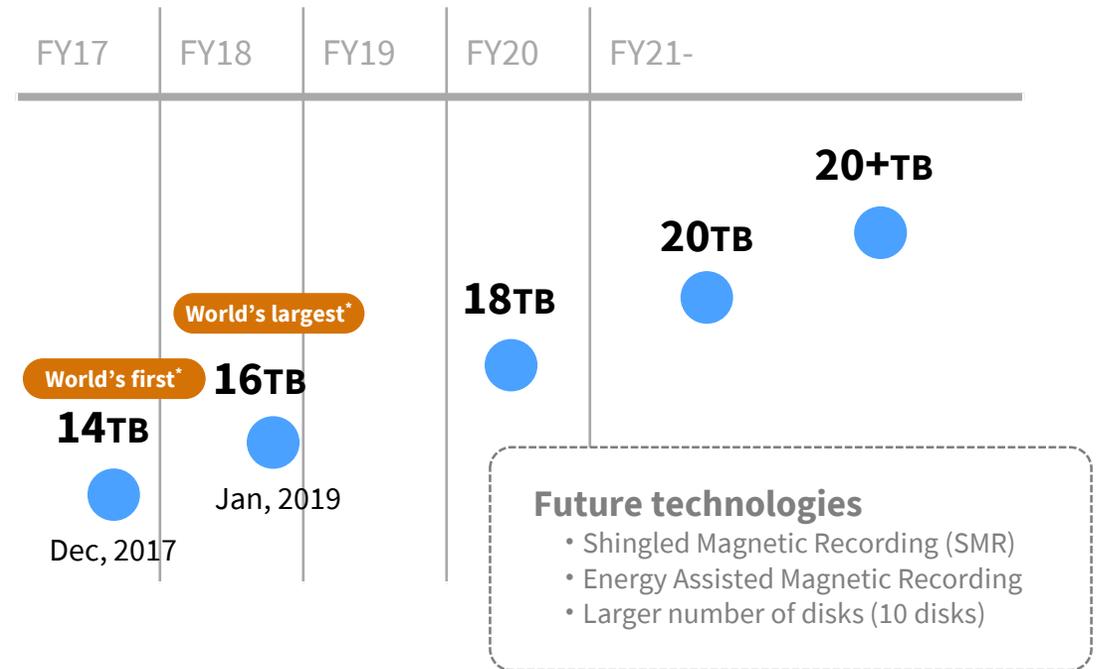
HDDs & Others Growth Strategy: HDD, 2/2

Retain leadership in large density drive development to win hyperscalers' demand

Nearline HDD Sales Plan (Unit base)



He-sealed Nearline HDD Development Roadmap



* Source: Toshiba Electronic Devices & Storage Corp., 14TB: as of December 2017; 16TB: as of January 2019

Objectives of Privatization of NuFlare Technology, Inc.

Create synergy, enhance corporate value by accelerating and strengthening development

Strengthen cooperative development

- Complete development and launch multi-beam mask writers ASAP
The market is shifting to multi-beam
→ Accelerate joint development of key devices that autonomously control the On-fff status of enormous beams
- Enhance competitiveness of epitaxial reactors
Essential for production of SiC power devices, a future focus
→ Bring Toshiba Electronic Devices & Storage's expertise as a user into development

Maintain core earning power

- Effective use of management resources; Maximize monetization of development results
- More flexible and speedier decision-making

03

Actions to Achieve the Goals of the SDGs



Actions to Achieve the Goals of the SDGs

Make negative impacts positive, or at least minimize them

Actions to enhance positive impacts on achieving the SDG goals

Won “2018 Japan’s Environment Minister Prize” (Japan Semiconductor Corp.)

Promote environmental communications, foster environment-related human resources



Provide environmental classes to nearby elementary schools (Himeji, Japan)



Contribute to energy saving

- **Power MOSFET**
For AC/DC conversion and voltage conversion, etc. Contributes to lower equipment power consumption
- **SiN bearing ball**
Higher strength, hardness and friction resistance, and lighter than steel; helps to conserve energy. Used for wind power generation and applications in harsh environment.



Contributes to a safe and secure society

Image recognition processor Visconti
Notifies drivers of dangers, contributes to safer driving and reduces traffic accidents

Procurement

Manufacturing

Logistics

Usage

Disposal



Appropriate labor environments

Receive **RBA-VAP audits** that evaluate conformity to the RBA Codes of Conduct – Philippines’ HDD factory



Reduce disposal of packing materials

Use paper void fillers and returnable pallets to reduce waste and weight



Contributes to energy saving a data centers

He-sealed large density Nearline HDDs
Helium reduces resistance and secures lower energy consumption



Conserve water resources

Make water even cleaner than before and release to rivers by Semiconductor factories – Japan Semiconductor Corp. Oita Operations



Reduction in CO2 emissions in logistics

Unify warehouses; make packing materials lighter and smaller; consolidate shipments; encourage customers to follow minimum ordering quantity requests

Contributions from manufacturing

Contributions from products

Actions to mitigate negative impacts on achieving the SDG goals



Our Semiconductor and Storage products will always be a driving force to change the world

Toshiba Electronic Devices and Storage, together with our customers, will accelerate our future journey.

We aim to be a company that will be chosen for our pioneering technology and spirit embedded in our products.



**Committed to People,
Committed to the Future.**

TOSHIBA

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