SQRAM DDR5

Next-generation DRAM solutions

A study by Gartner indicates that there were 20.4 ~ 31 billion IoT devices online as of 2020. About 74% of data will need analysis and processing at the edge by 2022.

ADVANTECH
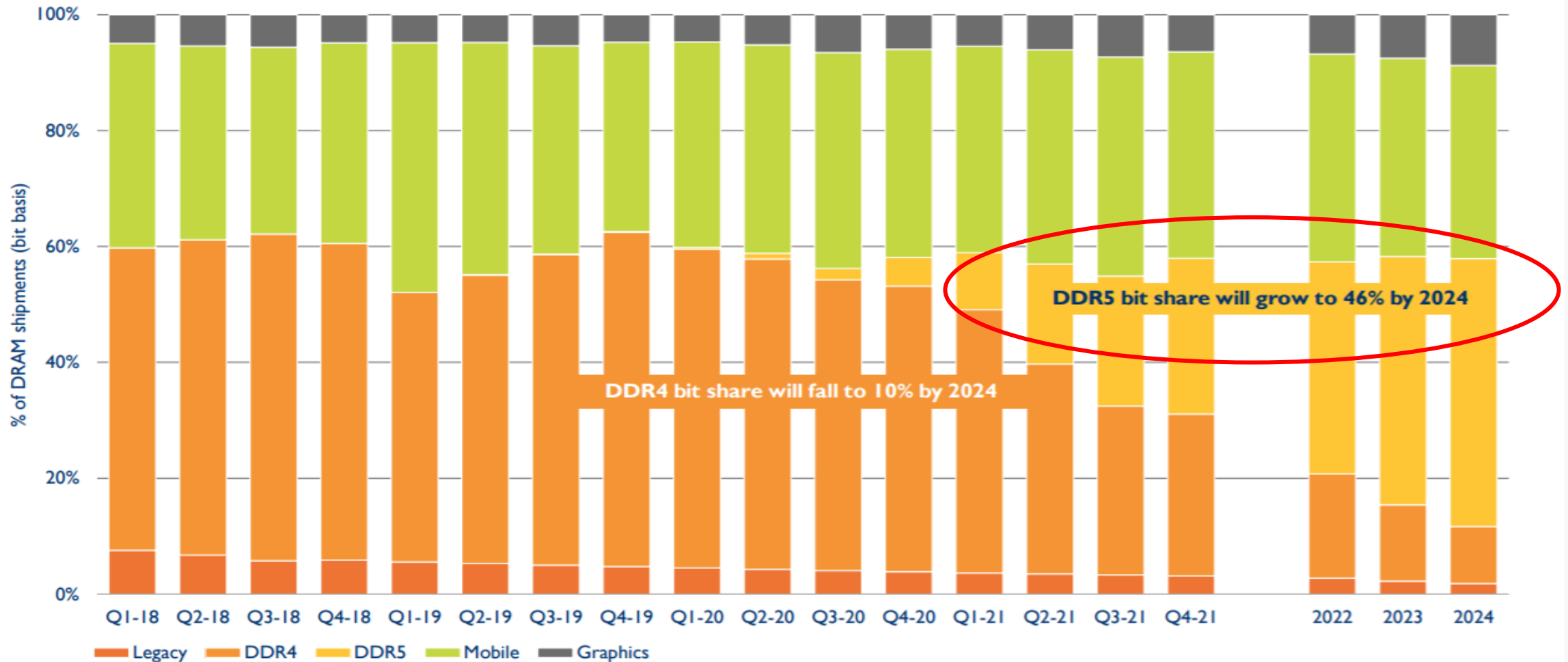*Enabling an Intelligent Planet*

Embrace the AIoT Future

The growing use of high performance IoT and edge computing devices comes with demands for remote management, industrial-grade data storage, and memory solutions at the cloud and the edge. This unprecedented growth in data is driving a system evolution.

AI frameworks have created an AI hardware market dominated by GPUs and CPUs. Indeed, empowering top-of-the line AI software in this end-user vertical market necessitates advanced computing power, large storage capacities, and parallel processing capabilities. These capabilities augment new-generation platform big data transfer rates and processing speeds, while improving their capacity.

DDR5 will be introduced in 2021

Innovative DDR5 technology supports greater process efficiency by delivering a two-fold increase in speed and improved power management. DDR5 is considered a next generation solution, and will likely be ubiquitous by 2024.

DDR5 bit share will grow to 46% by 2024

DDR4 bit share will fall to 10% by 2024

Industrial SQRAM Advantages

Reliability and Compatibility

Verified via rigorous WT cycle, and long time burn-in tests

- Compatibility test
- Rigorous burn-in program
- 100% screening test

Quality

Strict production flow control and test program guarantee reliability

- Solder inspection
- First article review for every lot
- DRAM information program
- 100% vibration test for SQRAM
- High-low temp. cycling test
- 12hr burn-in test
- Quality checking

Customization

Adaptable to diverse, harsh environment applications

- Side fill protection
- Conformal coating
- Optimized clock timing addresses compatibility issues

Global Service

Dedicated technical support team

- Design-in consulting
- Local support
- Dedicated technical team
- IC vendor backup

Longevity

3 years longevity lifetime warranty

- Longevity support for legacy RAM technology

SQRAM delivers reliability, compatibility, and compliance with JEDEC standards

Protection against shock, drops, and vibration
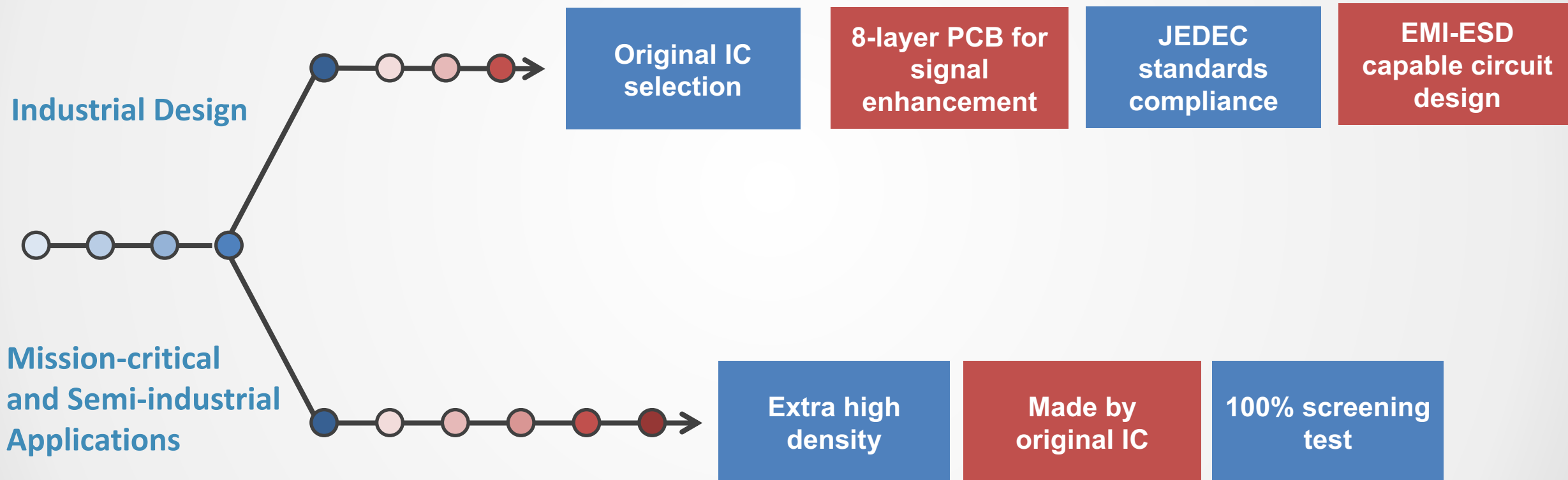
Reliable Storage in Harsh Environments

Advantech's 256/512GB extended temperature SSD empowers railway-monitoring consoles by improving in-vehicle computers with EMI/ES, enabling faster delivery, and providing 3 years of longevity support.
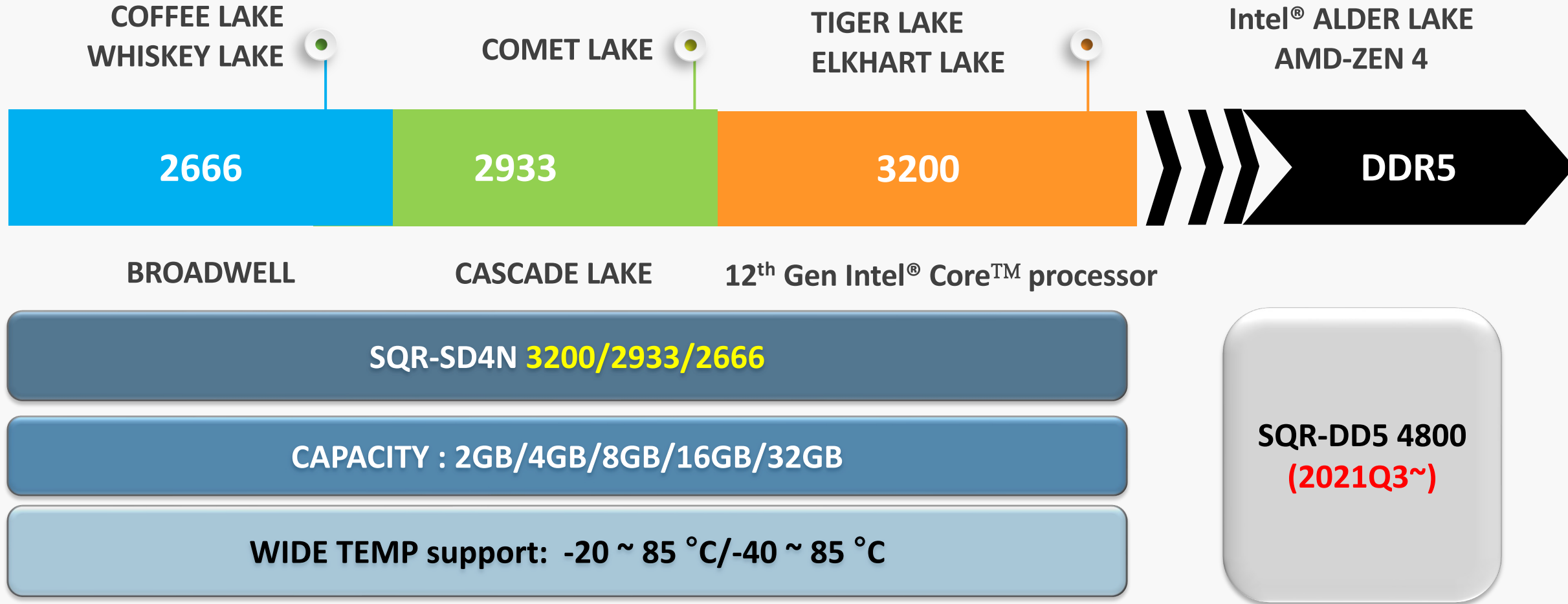
Ruggedized SQRAM Solutions

SQRAM industrial memory modules deliver reliability and endurance to mission-critical applications. They support wide operating temperatures and 100% quality control required by industrial-grade memory applications.

Industrial Design

| Original IC selection | 8-layer PCB for signal enhancement | JEDEC standards compliance | EMI-ESD capable circuit design |

Mission-critical and Semi-industrial Applications

| Extra high density | Made by original IC | 100% screening test |

Reliable Storage in Harsh Environments

SQRAM Roadmap

COFFEE LAKE
WHISKEY LAKE

COMET LAKE

TIGER LAKE
ELKHART LAKE

Intel® ALDER LAKE
AMD-ZEN 4

2666

2933

3200

DDR5

BROADWELL

CASCADE LAKE

12th Gen Intel® Core™ processor

SQR-SD4N **3200/2933/2666**

CAPACITY : 2GB/4GB/8GB/16GB/32GB

WIDE TEMP support: -20 ~ 85 °C/-40 ~ 85 °C

SQR-DD5 4800
(2021Q3~)

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Solution Comparison Table

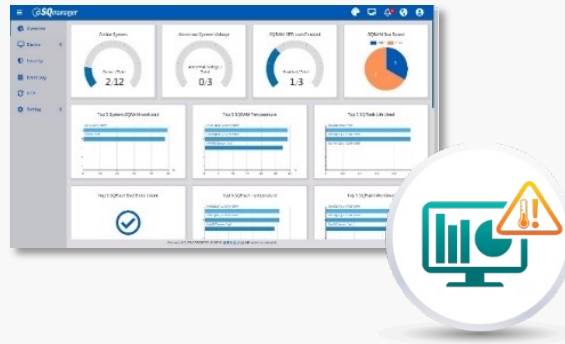| Feature	DDR4	DDR5	DDR5 Advantages
Speed(MT/s)	3200	4800	**Faster data transfer rates**
Voltage	1.2V	1.1V	**Voltage supply reduction**
Power management	On motherboard	On DIMM PMIC	**Improved power efficiency**
Channel architecture	72bit data channel 1 channel per DIMM	40bit data channel 2 channels per DIMM	**Higher memory efficiency**
ECC	ECC	On-die ECC	**Improved reliability**
Max. die density	16Gb	64Gb	**Higher capacity DIMMs**

SQR-SD5N Features

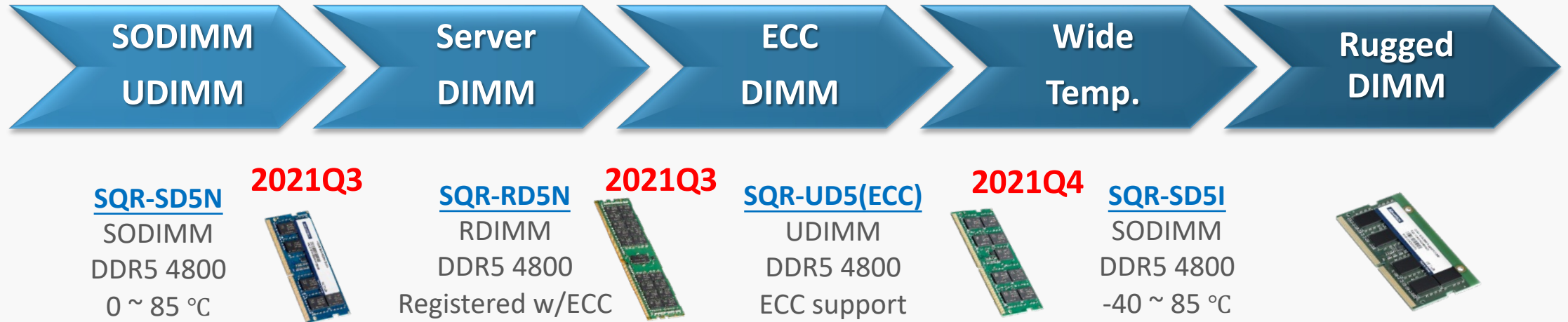## Secure

DRAM parameter
setting lock

Intelligent

- Multiple form factors
- Compatible with Advantech motherboards
- Software integration

Robust

- Extended operating temperatures
- Heatsink solution
- Rugged DIMM design

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Advantech SQR DDR5 Development Schedule

SODIMM UDIMM → **Server DIMM** → **ECC DIMM** → **Wide Temp.** → **Rugged DIMM**

2021Q3

SQR-SD5N
SODIMM
DDR5 4800
0 ~ 85 ℃

2021Q3

SQR-RD5N
RDIMM
DDR5 4800
Registered w/ECC

SQR-UD5(ECC)
UDIMM
DDR5 4800
ECC support

2021Q4

SQR-SD5I
SODIMM
DDR5 4800
-40 ~ 85 ℃

Data Center   *MRI/CT Analysis*   *AI Edge Computing*   *Defense*

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Ask the Experts!

What SQR DDR5 form factors are available?

SQR offers SODIMM(SQR-SD5N), UDIMM(SQR-UD5N), RDIMM(SQR-RD5N), and Rugged DIMM(SQR-YD5N).

Is there any wide temperature DDR5 solution?

Yes, SQR provides extended temperature solutions for critical applications. Advantech platforms adhere to a wide temperature -40 ~ 85 °C test program that ensures reliability and stability.

What are the test environments and programs?

SQR-SD5N underwent testing at Advantech's in house QA LAB. This comprised thermal simulation tests, strict power on/off tests, burn-in tests, and server chamber tests using both 12th Gen Intel® platforms and Advantech P/S series platforms.

Pres Lee
Manager
SQ Product Division

Vicky Su
Product Manager
SQRAM

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Ask the Experts!

How does Advantech ensure the compatibility of SQR DDR5 modules?

Numerous compatibility tests ensure SQRAM DDR5 series compatibility, reliability, and quality. SQR solutions are tested with numerous Advantech platforms — including our selection of industrial embedded motherboards, enterprise series workstations, critical transportation fanless box PCs, and medical solutions designed for diverse vertical markets.

Pres Lee
Manager
SQ Product Division

Vicky Su
Product Manager
SQRAM

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Our Commitment to Premium Quality and Longevity

SQFlash and SQRAM are verified with Advantech platforms, and fully tested for compatibility and reliability in harsh-usage environments. These solutions provide 3-year longevity and a minimum 15-month lifecycle that accommodates design-in schedules for embedded projects.

Take the Next Step

Advantech offers a complete selection of storage modules that provide seamless product integrations that build systems faster. For more information on how Advantech helps businesses solve tough storage problems, visit:

http://sqflash.advantech.com/

Advantech Corporation