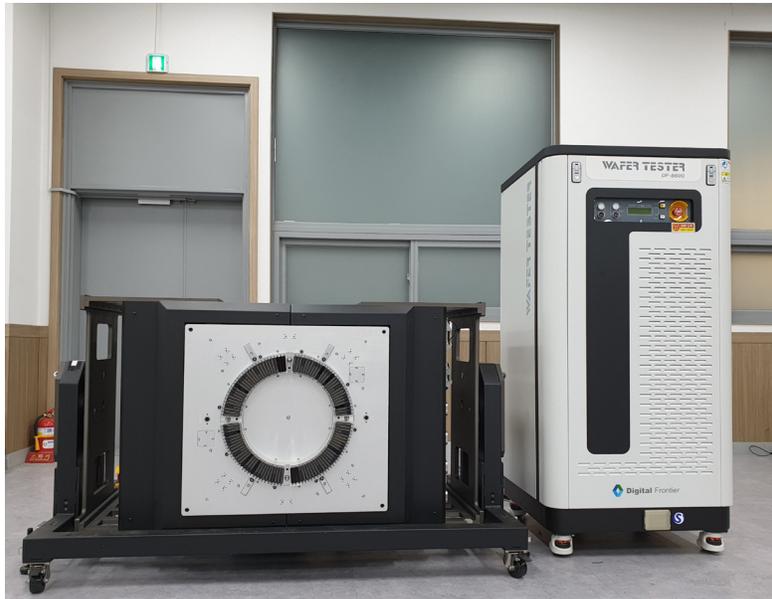


## Digital Frontier

*Creating High-Performance Automatic Test Equipment for Semiconductor Production*



*Digital Frontier develops high-performance automatic test equipment for the semiconductor industry.*

### Challenge

- Develop test equipment with low power consumption, robust performance, and small size

### Solution

- **MAX9972**

### Benefits

- Met performance and size requirements and resolved thermal issues

Digital Frontier, based in Suwon, South Korea, develops high-performance automatic test equipment (ATE) for reliable and economical semiconductor production. Byoung Gi Kim, the chief technology officer on the company's R&D team, is responsible for identifying technical trends and verifying customer requirements. The company, which uses these insights in its product development efforts, aims to become the world's leading tester supplier, providing competitive pricing and timely support for its customers' technical requirements.

# CUSTOMER SUCCESS STORY: DIGITAL FRONTIER



*"Maxim provides highly integrated functions and performance that our customers require with a reasonable price."*

**Byoung Gi Kim, CTO, R&D, Digital Frontier**

## Challenges

Digital Frontier's NAND flash wafer tester tests and compares the output signals from the buffer to the design under test (DUT), the semiconductor device to be inspected. When developing a wafer tester for a particular customer, Digital Frontier strived to reduce the equipment's size and also lower its power consumption in order to meet its customer's specifications. As such, the company sought an ATE driver that could address any thermal challenges with the equipment while also enabling robust performance.

## Solution and Benefits

Digital Frontier found its solution in Maxim's **MAX9972** quad, ultra-low-power, 300Mbps ATE driver/comparator. For each of its four channels, the MAX9972 pin-electronics IC includes a three-level pin driver, a window comparator, a passive load, and force-and-sense Kelvin-switched parametric measurement unit (PMU) connections. The driver provides a -2.2V to +5.2V voltage range, while the window comparator features 500MHz equivalent input bandwidth and programmable output voltage levels. It has low power dissipation at 325mW/channel (typ) in a small footprint (four channels in 0.3in<sup>2</sup>).

Using the MAX9972 in its NAND flash wafer tester, Digital Frontier was able to reduce the equipment size and decrease its power consumption. Up to 36 boards can be built into one machine, and 36 MAX9972 ICs are built into a single board. The IC's offset gain calibration function helped to minimize offset errors, and the devices enabled the robust performance that the company's customer expected. "The MAX9972 enabled us to resolve critical thermal issues in our ATE equipment," said Kim. "Maxim provides highly integrated functions and performance that our customers require with a reasonable price."

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