

Success Story - They Chose Apacer

Challenges

- Operation in wide temperature ranges
- Drastic changes in temperature, i.e. 10°C up or down in one minute

Solutions

- 2.5" SSD SM23D-25

Value-added technologies

- **Hardware:**
Component customization
Thermal shock testing
- **Firmware:**
Firmware customization

The Customer and the Application: Industrial Computers For Defense

Our customer is a globally competitive defense manufacturer in the US, offering robust industrial computers with rugged designs. Their latest product's exact nature was highly classified, but the client knew it was going to require SSDs that were tougher than most.



Challenges

The customer had initially tested some SSDs that had been designed to survive temperature changes from -40 to 85°C. However, they also knew they needed products that could function smoothly even when the temperature changed drastically within that range – for example, as much as 10 degrees up or down in one minute. And they knew that not all wide-temperature SSDs could survive these kinds of thermal shock tests.

They contacted Apacer to see if we could create a device that would meet these requirements, because they knew we had the testing equipment and the extensive firmware customization experience that this project would require.

Apacer's team went straight into action.

Solutions and Technologies

After selecting an existing product (2.5" SSD SM23D-25) from our extensive range of SSDs, Apacer's hardware customization team tackled the problem. They analyzed the voltage ripple on the SSD, and found that while it was good enough for the vast majority of applications, a reduction in voltage fluctuation would provide even greater stability. They then upgraded certain regulators and capacitors. Tests then proved that the voltage ripple was significantly reduced, by over 50% in one element and 65% in another. This meant voltage overall was much more stable and resistant to sudden swings in temperature.

Next up was Apacer's firmware customization team. They modified the SSD's firmware so that it would more frequently perform handshaking checks with the host. This ensured that a connection with the host was constantly confirmed, even when drastic temperature changes took place – greatly reducing the chance of the host losing contact with the SSD, and making data loss much less likely.

Finally the updated SSDs were subjected to stringent thermal shock tests that precisely emulated the punishing temperature swings that our client had laid down. They passed the tests with flying colors.

Results and Benefits:

The client received our first shipment of updated SSDs, and reported that they also passed their internal tests. Their final product became a hot item in the defense industry, famed for its reliability. And what's more, we incorporated the knowledge gleaned from this experience into our technology base. Apacer now applies stringent thermal shock tests to our DefensePro products so that they will be able to survive similarly drastic temperature changes. And we look forward to conducting similar customization and product tests for buyers like you.

Additional Support



Longevity

Fixed BOM solution,
EOL & LTB notice



Strong customization capabilities

Strong HW/FW
engineering know-how



Service

Real-time and responsive
after-sales service