HYPERTEC
MAKING IT PERFORM

FIRESTORM *ENTERPRISE* SSD

Enterprise class mobile storage





SandForce DRIVEN™ By LSI

Hypertec Firestorm Enterprise SSDs are designed to bring enterprise class storage to mobile PC users and intensive enterprise storage aplications. It delivers superior reliability, durability, performance and power efficiency - keeping PCs working reliably in the toughest conditions.

Firestrom Enterprise SSDs utilise the LSI® SandForce® SF-2582 controller - the second generation of LSI SandForce Enterprise Flash Storage Processors (FSPs) - continue accelerating SSD deployment in I/O intensive enterprise storage applications.

Features

- LS DuraWrite™ architecture extends endurance of SSDs.
- Intelligent block management and wear levelling.
- Advanced Read Disturb Management.
- Intelligent 'Recycling' for advanced free-space management (garbage collection).
- RAISE™ (Redundant Array of Independant Silicon Elements) technology.
- Intelligent data retention optimisation.
- S.M.A.R.T (Self-monitoring, analysis & reporting technology) command set.
- Capacity: 50GB to 400GB.
- SATA 2.6 compliant 3Gb/s and 1.5 Gb/s support.
- Native commnd queing (up to 32 commands).
- Sequential READ/WRITE: up to 550MB/s @128K.
- Random READ/WRITE: up to 60K IOPs @4K.

Endurance and Longevity

While new generations of NAND flash memory are being developed on smaller silicon geometries to reach higher densities and reduce the cost of flash memory, their overall endurance is dropping at a very high rate. The LSI DuraWrite™ architeture optimises writes to the flash memory and implements highly intelligent block management and wear levelling to increase the overall endurance and reliability of the complete SSD.

Hypertec Enterprise SSDs utilise eMLC and SLC NAND with higher P/E cycles to further enhance durability.

Performance

SSDs greatly outperform traditional HDDs, with advanced high-speed SATA, SAS and PCIe interfaces being implemented in newer systems to remove performance bottlenecks. Hypertec Enterprise SSDs deliver performance that maximises the throughput of a SATA 6GB/s interface with balanced read/write speeds, keeping enterprise class system performance highly effective.

Security

Data security is becoming a critical component in the digital age. Hypertec Enterprise SSDs feature high-level security protocols for the safety of data stored in flash memory. DuraClass technology automatically stores data in a highly secure AES-128 hardware encrypted format.

Data Protection and Reliability

Hypertec Enterprise SSDs provide up to 100x greater data protection than leading enterprise HDDs. This is achieved by combining a superior, higher-level BCH ECC algorithm (with up to 55 bits/512 byte sector protection) and the unique LSI RAISE™ (Redundant Array of Independent Silicon Elements) technology. RAISE technology provides the protection and reliability of RAID on a single drive without the 2x write overhead of parity.

Security

- 128-bit AES compliant Data Encryption
- User Selectable Password (if BIOS enabled)
- Secure Erase (Factory Reset - ATA)

Features

- Ultra-efficient Block Managememt & Wear Levelling
- Advanced Read Disturb Management
- Intelligent 'Recycling' for advanced free space management
- RoHS compliant package
- TRIM Command Support
- Temperature Management
- No External DRAM
- SATA 3.0 Compliant
  - SATA 6.0Gb/s with 3Gb/s and 1.5Gb/s support
- ATA modes supported
  - PIO models 3 and 4
  - Multiword DMA modes 0,1,2
  - Ultra DMA modes 0, 1, 2, 3, 4, 5, 6
- Industry standard, 512-byte sector size support
- Hot-plug capable
- Native command queing support with 32 command slot support
- ATA8-ACS2 command set support
- Secure erase (data page) command set
- S.M.A.R.T. (Self-monitoring, analysis and reporting technology) command set
- Capacity: 50GB to 400GB
- Performance (lifetime)
  - Sequential READ: up to 550MB/s @ 128K
  - Sequential WRITE: up to 550MB/s @ 128K
  - Random READ: up to 60K IOPs @ 4K
  - Random WRITE: up to 60K IOPs @ 4K
- Endurance: Total bytes written (TBW)
  - Up to 2.8 PB

Reliability

- MTBF(PoH): 1.5 million device hours
- Up to 24 9-bit Symbols Correction per 512
- 9-bit Symbol
- Static and dynamic wear leveling
- Field-upgradeable firmware
- Non-recoverable Read Errors: (Less than 1 Sector per bits read 10^16
- Lower power consumption: <4W (AVE)

Mechanical / Electrical

- Standard SATA connector
- 5V power (+/- 10%)
- 2.5-inch drive: 100mm 6 69.75mm
- 9.5mm thickness
- Weight: 81g

Environmental

- Operating temperature: 0° to 70°C
- Humidity (operating): 5% to 95% RH
- Shock and vibe
- 1500G/0.5ms
- 2-500Hz at 3.1G

1. Typical I/O perofrmance numbers as measured using Iometer with a queue depth of 32 and write cache enabled. 2. The product shall achieve a mean time between failure (MTBF) OF 2.0 million hours, which are based on population statistics that are not relevant to individual units. 3. 1GB = 1 billion bytes (1000). 4. Synchronous flash may be ONFI or Toggle.

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