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RH3480 Solid-State Data Recorder
3U SRIO VPX Radiation Tolerant SSDR

Compact, high performance solution for radiation intense environments

- Proven reliability to enable on-orbit sensor data processing and storage
- High-performance system efficiently transfers significantly more data in less time
- Application-specific customization expedites schedules and minimizes full-system design costs
- Built-in error correction and NAND defect mitigation

The RH3480 SSDR is purpose-built to withstand harsh, radiation intense environments such as those found in LEO satellites and in certain industrial or medical settings. Designed in a compact 3U form factor, the RH3480 is the highest density SSDR available on the market, serving industry needs for reliable, SWaP-optimized storage solutions as edge applications advance. Plus, the RH3480 offers long-term data integrity with the most powerful error correction code (ECC) available.

FEATURES

480 GB large geometry, industrial-grade SLC NAND flash memory

Dual-Host (2 hosts with 4-Lanes each) and Dual-Port (1 host with 8-Lanes)

All components radiation tolerant by design (except NAND) at > 100 krad

Proprietary horizontal Reed-Solomon algorithm for error correction

Designed for fault tolerance with multiple failed NAND flash devices

VPX compatible, VITA 48.2 or 78 (100 x 220mm size) compliant, P2 unpopulated

Ruggedized construction and assembly

Operation and Reliability

Linear and host-addressable operating modes

ECC fully corrects 5 in every 16 host data bytes

Automatic retirement of failed blocks

Abrupt power interruption protection

NAND defect mitigation for factory defects and bad blocks discovered during burn-in

Hot-swap device

Full drive erase in < 30 seconds

Performance

SRIO interface running at 3.125 Gbps

Dual-Port writes 18.4 Gbps, reads 16 Gbps

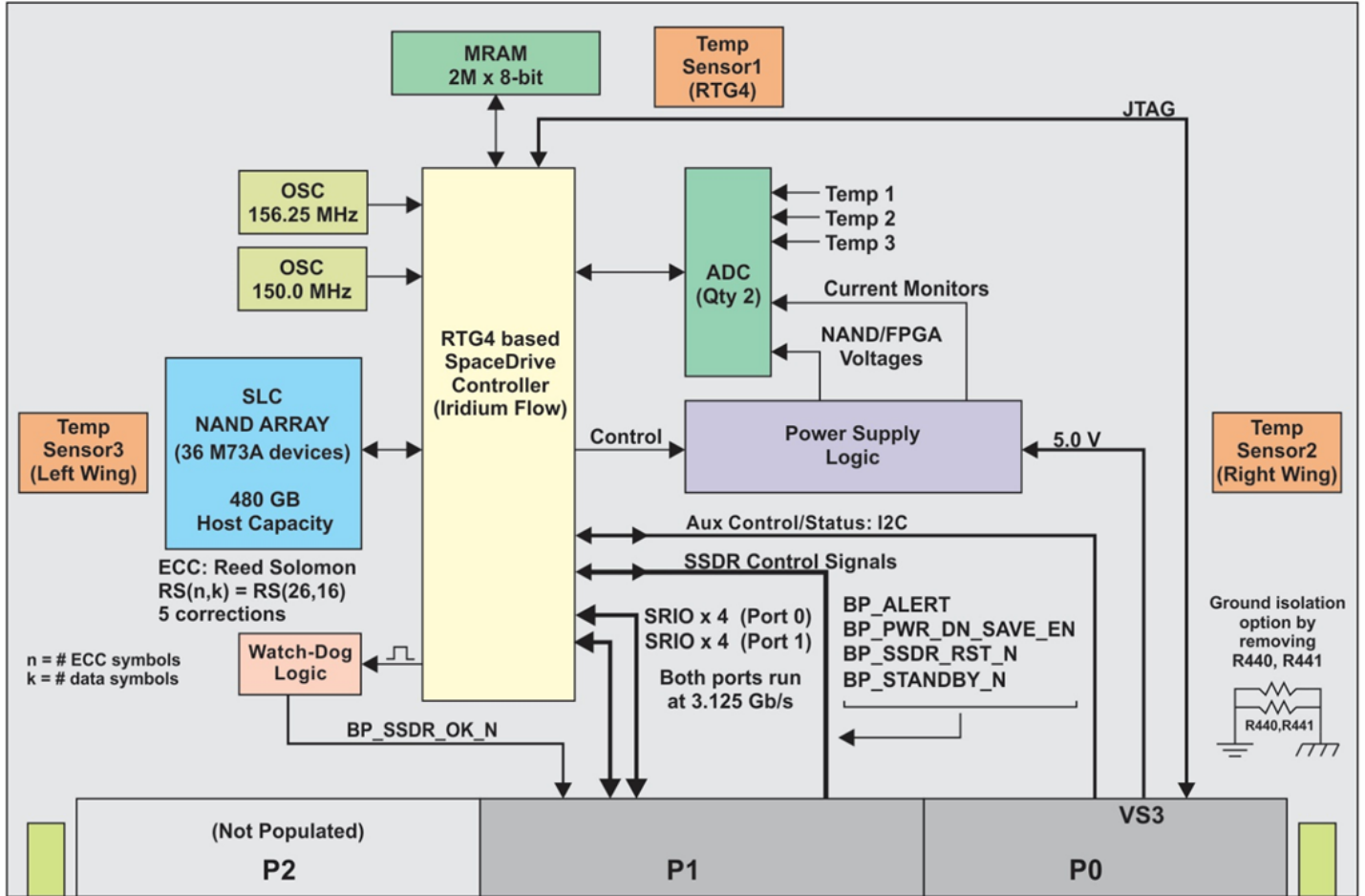Dual-Host writes 9.2 Gbps, reads 8 Gbps

Package

3U form factor, 160 x 100mm or 100 x 220mm size, 1" pitch

6U form factor, 233 x 160mm or 233 x 220mm size, 1" pitch

Weighs < 750 grams

Microprocessor and software free

480 GB capacity guaranteed constant across life

16 Gbps twin port SRIO 3U SSDR configuration

Applications

LEO satellites

Nuclear industry

Medical industry

High-altitude aircraft

Airborne weapons

Mission-critical ground computing subsystems

Missiles

Launch vehicles

Scientific missions

Radiation Tolerance

Total ionizing dose (TID) > 100 krad (all components except NAND)

SLC NAND TID > 30 krad

RTG-4-based NAND processor and controller

Configuration upsets immunity to LET > 103 MeV.cm^2/mg

Single-event latch-up (SEL) immunity to LET > 103 MeV.cm^2/mg

Registers SEU rate < 10-12 errors/ bit-day (GEO solar min)

Single-event transient (SET) upset rate < 10-8 errors/bit-day (GEO solar min)

TID > 100 krad

Environmental

Operating temperature: –40°C to 72°C

Storage temperature: –55°C to 105°C

Vibration: 3 axis, 16 Grms

Shock: 18 total (3+, 3- per axis)

Power

4.5V to 5.5V (5V target)

7W idle, 25W at full performance

VPX Connectors

Smith's KVPX series

TE connectivity multigig RT 2-R series

PART NUMBERING

Note: Dashes in part number are required

RH 3 480 N M 2 S - 0 0 0 I XX - 0X

1. Product Series, RH = Mercury Systems, radiation tolerant
2. Form Factor, 3 = PCB uses a 3U VITA 48.2/78 form factor
3. Host Capacity, 480 = 480 GB of host accessible capacity
4. Encryption, N = No encryption
5. Media Manufacturer, M = Micron
6. Media Type, 2 = 1-Bit SLC NAND, 32-GBit M73A die
7. Media Operating Mode, S = SLC mode
8. Customizable Features 1
   0 = Digital ground isolated from chassis/enclosure ground (preferred)
   1 = Digital ground connected to chassis/enclosure ground
9. Customizable Features 2 (VPX levered form factor)
   0 = 3U 160 mm, 1 = 6U 160 mm, 2 = 3U 220 mm, 3 = 6U 220 mm
   Contact sales for other form factors: 280 mm, 340 mm, and leverless
10. Customizable Features 3
    0 = Smith's VPX connectors, 1 = TE connectivity multigig RT 2-R VPX connectors
11. Operating Temperature, I = Industrial grade components
12. Design Generation Data, 12 = Generation 1 design derivation
13. Attribute Data

	Construction	Interface Structure	Interface Type	Grade
-01	Leaded (L)	8 Lanes (8)	SRIO (SR)	Eng Dev Unit (EDU)
-02	Leaded (L)	8 Lanes (8)	SRIO (SR)	Flight Unit (FLT)
-05	Leaded (L)	4 Lanes Host 1 & 2 (DH4)	SRIO (SR)	Eng Dev Unit (EDU)
-06	Leaded (L)	4 Lanes Host 1 & 2 (DH4)	SRIO (SR)	Flight Unit (FLT)

Example Part Number: RH3480NM2S-000I12-01 (480 GB EDU with isolated ground and Smith's connectors)

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