CAVU
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OBC PolarFire

Optimized Visibility Solution for Launch Vehicle

Flexible, high-performance onboard computing and video solution for launch vehicle and space applications

Technical Spec

- Single 4K / Double FullHD Camera Conectivity
- Robust Data Handling
- Mission-Ready Interfaces
- **MIPI CSI-2 Protocol:** Supporting Configurations of 1, 2, 4, or 8 Data Lanes, With Increased Lane Count Allowing Higher Throughput.

Flexibility to customize interfaces

Spacewire, SpaceFibre, RS422, RS485, SPI, etc. Available in customized enclosure and connector options

Testing and Qualification

Thermal cycling, vibration, radiation tolerance levels

Operating System & Software Support

open-source C libraries and Board Support Packages

Storage Interface

Upto 1TB of Double Redundant Storage with upto 500MB/s throughput

ENVIRONMENT

- **Radiation Hardness:**
  - Total Ionizing Dose: 30Krad (Si)/yr
  - Latch-up Immune
  - SEE @ 60MeV
- **Temperature & Pressure:** -40 °C to +85 °C @ 10^{-8} bar
- **Shocks:** 2000g, 2000-10000Hz
- **Random Vibrations:** 14g(RMS) 3-Axis, 20~2000Hz

CAVU-OBC_Polar-L-v2024.1

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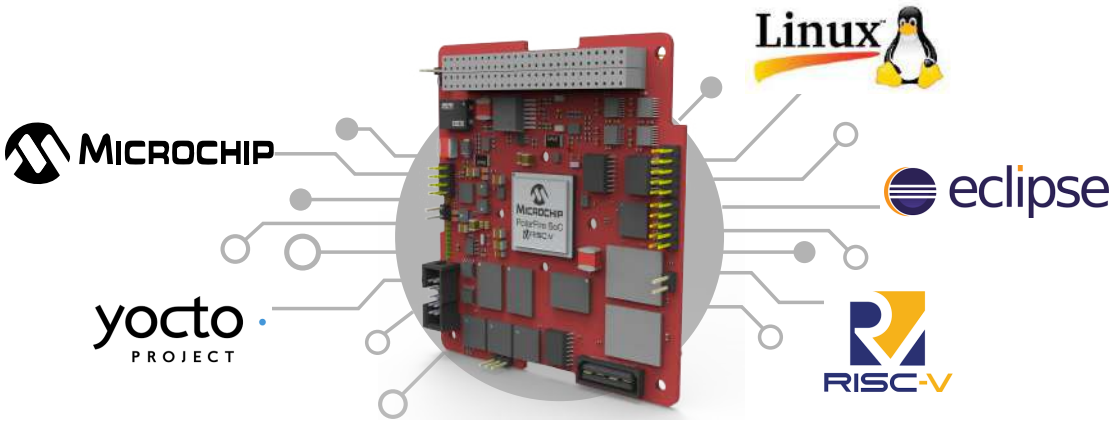
Launch vehicle onboard computer

Power Supply

- Customized Inputs from +5VDC upto +48VDC
- **Power Consumption:** <5W

Data Compression

- Robust data compression capabilities with support for H.264 encoding, allowing efficient management of high-resolution video and data streams. It supports variable bit rates and configurable compression ratios, making it adaptable to different mission requirements and bandwidth constraints. This flexibility ensures optimal data storage and transmission while maintaining high performance in real-time space applications.



Key Features

- SEU Immune PolarFire SoC FPGA Platform
- More Than 4000DMIPS Processing Power
- Low Power FPGA Design
- Large RAM with ECC Protection
- Radiation-Immune MRAM/FRAM Memories
- **Extensive OS Support:** e.g. Linux, INTEGRIRTY, FreeBSD
- Complete Connectivity Solutions

Special Features

- On-Board Current & Temperature Monitoring
- On-Board Watchdog
- Double Redundant DC-DC
- TMR and Double Redundant Storage Options
- NRE-Free Customization

MEMORY

- **RAM:** 2GB or 4GB with ECC Protection
- **ROM:** Tripple 16Mb or 32Mb MRAM (Total 48Mb or 96Mb)
- **Nonvolatile Storage:** 64GB Flash via Dual 32GB eMMC
- **QSPI Flash:** Double 512Mb (Total 1Gb)
- **EEPROM:** I2C/SPI FRAM & MRAM
- **MicroSD Card Slot:** For Development and Debug

PROCESSOR

- Microchip PolarFire SoC Flash Based FPGA SoC
- Quad 64-bit RISC-V on FPGA +1 RISC-V Monitoring Core
- 660MHz per Core, More Than Total 4000DMIPS
- Optional 32-bit RISC-V Soft Cores

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