CAVU
AEROSPACE UK

Spacecraft Onboard Computers

OBC1

Satellite OnBoard Computer (OBC)

PIONEERING SPACECRAFT COMPUTING

The CAVU OBC-1 is a cutting-edge, FPGA-based satellite computing system that stands as a testament to advancements in space technology. It's meticulously designed to ensure reliability and efficiency, making it an indispensable tool for critical space missions.

KEY FEATURES

- Single Board Flash Based FPGA Computer
- Scalable to more than 1 Board as Redundant
- Up to 3 Selectable Boot Regions from Bootloader
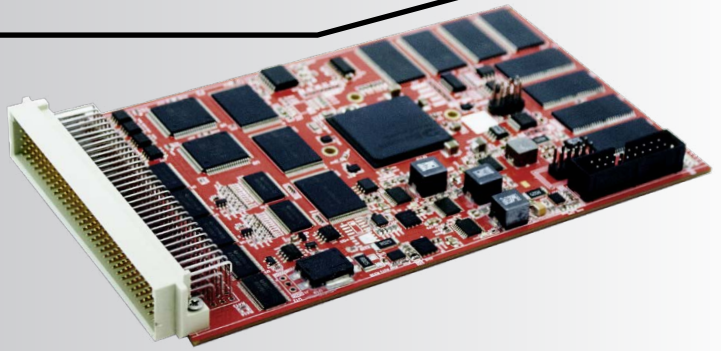- Fully Customizable

INTELLIGENT REDUNDANCY

The system's architecture is flexible, allowing it to be easily scaled up with the same module to create a redundant satellite computer, thereby enhancing its robustness and reliability.
This means that if one module fails, the other can seamlessly take over its functions, ensuring uninterrupted operation of your satellite system.

The system is designed to resist space hazards like radiation, cosmic rays, and solar flares using Microchip/Microsemi SmartFusion2 Flash Based FPGA, which is SEU immune and consumes less power than conventional SRAM based FPGA architectures.

ADVANCED SATELLITE COMMAND CONTROL

The OBC-1 module compatible with a wide range of sensors and actuators, providing precise control over satellite systems. It supports various interfaces and 100 GPIOs & 32CH ADCs, making it a comprehensive solution for AOCS (Attitude and Orbit Control System) and Power Management computing requirements.

The module offers high levels of control and adaptability, allowing customization to meet specific demands. The company takes pride in offering OBC-1, one of the most advanced technologies available in the satellite industry.

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SPECIFICATIONS

SPECIAL FEATURES

Expected Life-time:
   3-5 years in LEO
On-Board Current & Temperature Monitoring
On-Board Watchdog
Triple Real Time Clock
Hot Redundant On-Board Voltage Converters

PROCESSOR

ARM Cortex-M3 on FPGA
Microchip/Microsemi SmartFuion2 Flash Based FPGA
FPU on FPGA Upon Request
150 DMIPS @ 128MHz
SoftConsole or Keil Programming and Debug via JTAG

MEMORY

RAM:
   80Mbits MRAM 40 bits width (64Mbits+16Mbits ECC)
ROM:
   48Mbits MRAM (Configurable as Triple 16Mbits)
Nonvolatile Flash Memory:
   Total 96Gbit SLC NAND Flash (Triple 32G)
   256K Serial FRAM
   256M Serial NOR

INTERFACES

DIGITAL/ANALOG

Digital Outputs (5V/3.3V)	70
Digital Inputs (5V/3.3V)	30
16bits Analog to Digital Converter (-10V ~ +10V)	32
12bits Digital to Analog Converter (0V~5V)	2

SERIAL

CAN2.0 Up to 1Mbps	4
Full-Duplex RS422	1
Half-Duplex RS485	2
RS232	1
I2C	1
SPI	1

ENVIRONMENT

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

BUDGET

Dimensions:
   160x100mm
Mass:
   75gr
Power Supply:
   5V ±5%
Power Consumption:
   1W ~ 2W

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