

VOLKH

PROCESSING PLATFORM



Infinity Avionics Volkh processor is a reconfigurable processing platform for nanosatellites which can be used as an on-board computer as well as a payload processor. Unique FPGA based architecture enables reconfiguring communication interfaces and GPIOs based on system requirements and avoids hardware obsolescence due to changing engineering requirements throughout missions.

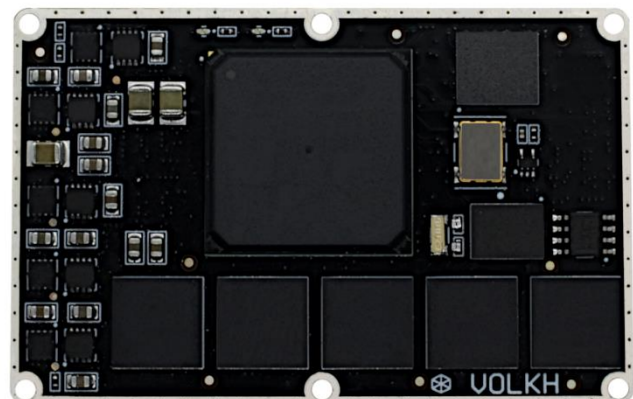
FPGA SoC based processor comes in a small form factor and enhances its flexibility as a platform/payload processor. Infinity Volkh PC-104 baseboard can be used to integrate Volkh processor into PC-104 based platforms.

In-orbit re-programmability of the Volkh processor enables the ability to rectify hardware/software faults during missions. Additionally, the feature enables the utilization of different firmware based on mission stages and power requirements.

Volkh processor comes with a range of data storage options including SEU tolerant MRAM and low power DDR memory.

MAIN FEATURES

- SmartFusion 2 SOC with Cortex M3 Processor
- SEU immune 8 MB NVM MRAM with 2 MB MRAM for ECC codes
- SEU Immune 256kB internal e-NVM and 64kB internal SRAM
- 1 Gbit low power DDR volatile memory
- 1 Gbit SPI Flash as reconfiguration memory and general-purpose store
- Latch-up protection on all power supplies
- 20 MHz external oscillator, 32kHz RTC oscillator plus 2 internal clock sources
- On-orbit reprogrammable
- 80+ user configurable GPIO at 3V3, 2V5 (configurable to 1V8 as well)
- Form factor: 45mm x 70mm card with high density interconnect (HDI)
- Space qualified to NASA GEVS standard
- Flight heritage since 2020



General Specifications

Processor	SmartFusion 2 SoC
Memory Options	
MRAM	8 MB
Flash	1 Gbit
LPDDR	1 Gbit
Processor Clock Options	
External	20 MHz
RTC	32 kHz
Internal	Configurable
Input Voltage	5 V
Input Power (with DDR)	750 mW to 1 W
Input Power (DDR controller disabled)	500 mW
Operating Temperature Range	-40° C to 85° C

Interfaces and Drivers

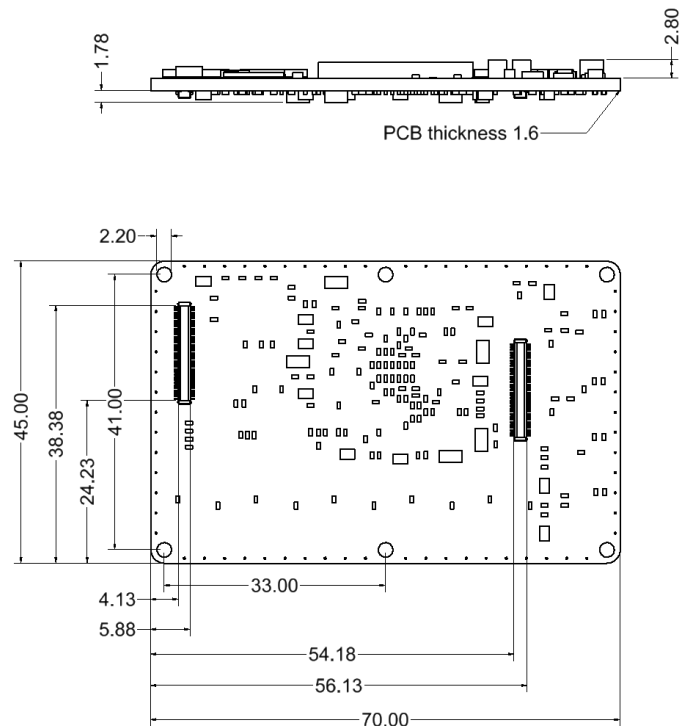
Interfaces*	UART I2C SPI LVDS CAN USB ULPI CUSTOM
Operating Systems	FreeRTOS
Programming/ Debug	JTAG

* interfaces are reconfigurable and number of available interfaces are only limited by available interfacing pins

Size and Weight

Mass	21 g
Length	70 mm
Width	45 mm
Total Height	6.18 mm

All dimensions are in mm



Space Qualification

Vibration	GEVS standard
Thermal Vacuum Cycling	-20° C to 75° C
Flight Heritage	Since 2020 Q1