DRF3182

3U VPX, 4Rx/4Tx, 51.2 GSPS Direct RF module with Intel® Stratix® 10 AX-Series SoC FPGA

Ideal solution for high-performance applications with SWAP constraints

- Flexible compute, high-speed connectivity and frequency agility for radar, EW, and test and measurement applications
- Integrated, advanced data converters
- Fast sample rate providing high instantaneous bandwidths
- Heterogeneous integration

The DRF3182 3U OpenVPX board is a 4Rx/4Tx, ultra-high-speed data converter ideal for directly digitizing HF signals in radar, communications, and electronic warfare systems. The DRF3182's advanced capability removes the need to implement RF to IF down conversion prior to digitization. The integrated data capture capability, combined with powerful processing from Intel's 14 nm Intel Stratix 10 FPGA, make it uniquely suited for high-performance applications with size, weight, and power constraints.

The advanced data converter technology included in the DRF3182 provides frequency agility (tuning across the band) to enable systems to rapidly respond to an ever-changing spectral environment. State-of-the-art on-chip interconnections and packaging technologies provide lower latency and power than serial interfaces which use discrete transceivers. The four Rx and four Tx interfaces on the front panel of the module, combined with eight fat pipes to P1 and P2, provide impressive ingress/egress bandwidth in a small, 3U form factor.
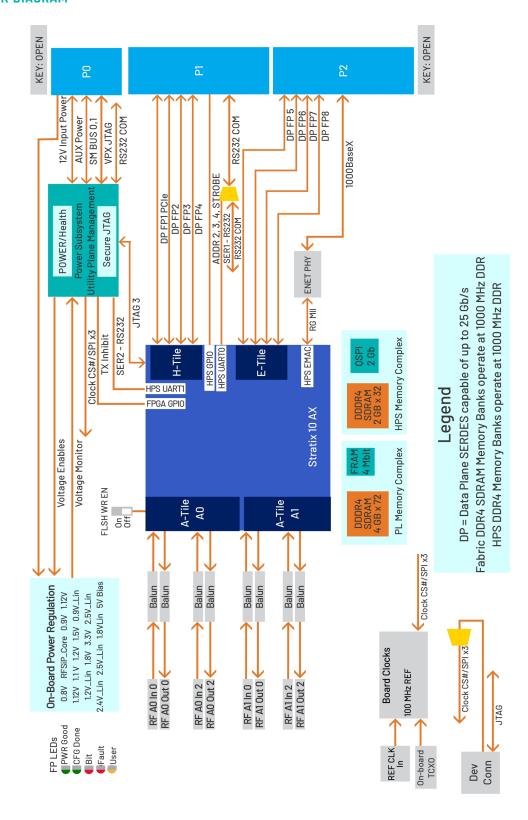
ADVANCED FPGA FUNCTIONALITY

Mercury's processing modules are built around our EchoCore® FPGA IP to provide basic infrastructure functionality right out of the box. Mercury facilitates the re-use of common IP across FPGAs to optimize time-to-market and reduce development time. EchoCore IP allows customers to focus on their application while building upon the groundwork provided.

Mercury simplifies application integration by providing a standard control plane interface using AvalonMM control plane connectivity. Mercury uses a simple AvalonSteam interface for our data plane interfaces. Our customers can choose their tool of choice, such as vendor-specific IPs, HLS, or RTL to generate signal processing algorithms. The cores are then instantiated into a reserved user block and compiled into the FPGAs.

DRF3182 BLOCK DIAGRAM

SPECIFICATIONS

3U OpenVPX Packaging

1 inch pitch

OpenVPX (VITA 65) encompasses: VITA 46.0, 46.3, 46.4, 46.6, 46.11 and VITA 48.1, 48.2 (REDI)
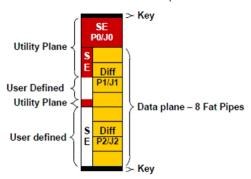
Ejectors

Class B

Data Planes

PCIe Gen 3 support and/or VITA 49.2

Backplane Interface

SLT3-SWH-8F-14.14.2 slot profile

Processor

Intel® Stratix® 10 AX-Series SoC FPGA

2753 logic elements

Quad core ARM processor

244 MB of on-chip memory

Memory

4 GB DDR4 Total: 2 GB for FPGA fabric, 2 GB for HPS

Data Converters

ADC: Four 10-bit ADC channels up to 51.2 GSPS

DAC: Four 10-bit ADC channels up to 51.2 GSPS

Programmable tunable Digital Up/Down Converters (two per port)

High instantaneous bandwidth allowing large portions of spectrum to be directly digitized

VITA 46.11 IPMI controller

Sensor interface to monitor temperature, voltage

Power sequencing

Secure JTAG

Manufactured in an AS9100D facility

Product Environmental Qualification Levels

Conduction-cooled, Rugged L3

Temperature:

- Operating: -40° C to +60° C (at module edge)

- Storage: -55° C to +105° C

- Max Rate of Change: 10° C/min

Humidity:

- Operating: 5 to 95%, non-condensing

- Storage: 100% condensing

Altitude:

- Operating: 0 to 60,000 ft

- Storage: 0 to 70,000 ft

Vibration:

- Random: 0.1 g 2/Hz; 5 to 2000 Hz, 1 hr/axis

- Sine 10G peak; 5 to 2000 Hz, 1 hr/axis

- Shock z-axis: 50 g; x and y-axes: 80 g; (11 ms, 1/2-sine pulse, 3 positive, 3 negative)

Salt/Fog: Contact factory

VITA 47: Contact factory

ORDERING INFORMATION

Part number: 910-92081-03

Model	Description
Ensemble DRF3182	L3/conduction-cooled OVPX with front I/O. 4 x 10-bit, 51.2 GSPS ADCs, 4 x 10-bit, 51.2 GSPS DACs, Intel Stratix 10 RFSIP, 4 GB DDR4 SDRAM.

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Learn more

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