

# **DRF3182**

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

Ideal solution for highperformance 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.

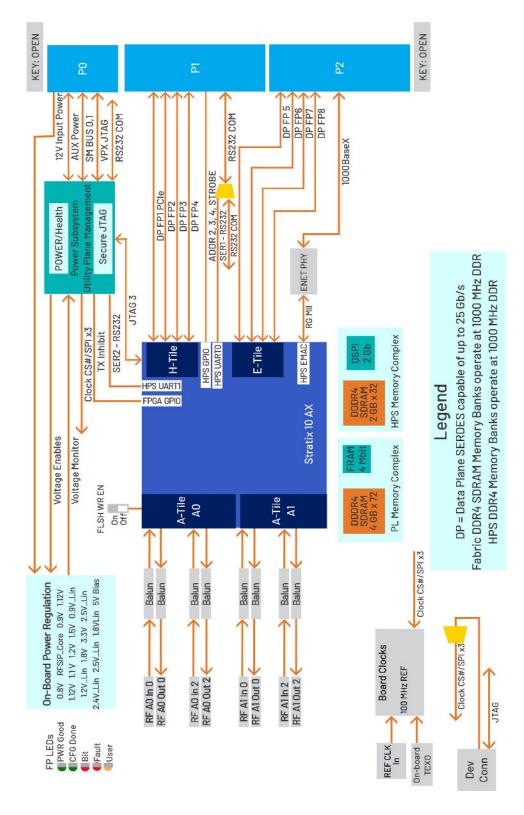
## **ADVANCED FPGA FUNCTIONALITY**

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**



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#### **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**

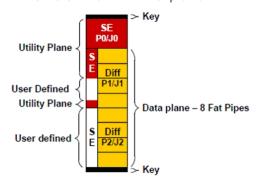
Class B

## Data Planes

PCIe Gen 3 support and/or VITA 49.2

## Backplane Interface

SLT3-SWH-8F-14.4.2 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 ftStorage: 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<br>DRF3182 | L3/conduction-cooled OVPX<br>with front I/O.<br>4 x 10-bit, 51.2 GSPS ADCs,<br>4 x 10-bit, 51.2 GSPS DACs,<br>Intel Stratix 10 RFSIP,<br>4 GB DDR4 SDRAM. |

## mercury

#### Corporate Headquarters

50 Minuteman Road Andover, MA 01810 USA

- **+1 978.967.1401** tel
- **+1 866.627.6951** tel
- +1 978.256.3599 fax

## International Headquarters Mercury International

Avenue Eugène-Lance, 38 PO Box 584 CH-1212 Grand-Lancy 1 Geneva, Switzerland

+41 22 884 5100 tel

#### Learn more

Visit: mrcy.com/go/MPDRF3182 For technical details, contact: mrcy.com/go/CFDRF3182











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