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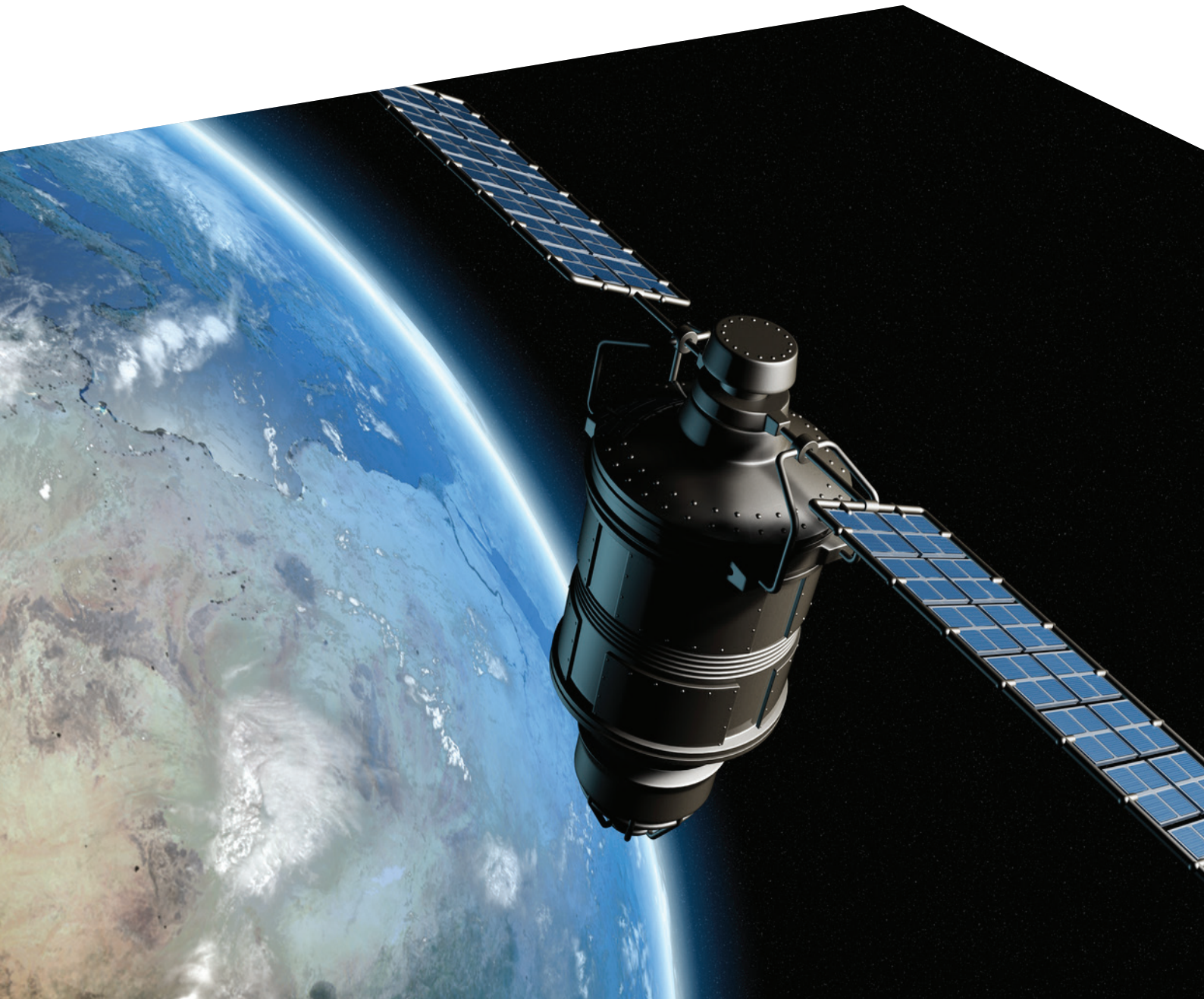
Infineon offers the highest performing memory for space applications

QML-V qualified 144 Mbit and 72 Mbit SRAM memories



Industry leading radiation hardened SRAMs for extreme environments

The worldwide leader in SRAMs now offers high performance, radiation hardened memories for space applications. Infineon's rad hard 144 Mbit and 72 Mbit QDR®-II+ synchronous SRAMs deliver radiation immunity high enough to withstand constant cosmic radiation bombardment in outer space. These memories are QML Class V certified, the most stringent industry standard, making them the most reliable memory chips on the market. Operating two independent DDR data ports at 250 MHz increases throughput by eliminating turnaround delay on common I/O devices. Infineon rad hard QDR®-II+ SRAMs are the highest throughput memory on the market, and are ideally suited for deployment in space-bound systems.

Infineon enables computing in orbit and beyond

Rad hard QDR®-II+ sync SRAMs are ideal for space applications, such as satellite-based networking and reconfigurable computing. Previous generation satellites relied on ASICs to perform key functions, which complicated update and servicing procedures. Newer FPGA based systems allow for remote re-configurability, and Infineon's QDR®-II+ sync SRAMs plays a pivotal role in such systems. The rad hard sync SRAMs can act as a cache for FPGA systems requiring high performance for real-time mathematical operations. Our rad hard QDR®-II+ SRAMs boast an industry leading throughput of 36 Gbps on a single chip to enable high performance in extreme radiation environments. High radiation tolerance, coupled with standard error mitigation techniques, enable the most reliable space computing systems on the market.

Applications

- Radar (SAR, LiDAR, SWOT)
- Satellite based networking
- Satellite imaging
- Command and data handling (C&DH)
- Telemetry and tracking
- Attitude and orbit control (AOC)



Key features

- 144 Mbit and 72 Mbit densities
- x18 and x36 data bus width
- 2 and 4 word burst lengths
- 2 cycle read latency
- 250 MHz max frequency / 36 Gbps throughput
- 2 independent unidirectional data ports for concurrent r/w transactions
- Output impedance matching input (ZQ) matches the device outputs to system data bus impendance
- Memory core bit-interleaving to eliminate multi-bit soft errors
- 1.5 V to 1.8 V HSTL I/O signaling standards
- 1.7 V to 1.9 V operating voltage range
- -55°C to +125°C military temperature grade
- Controller RTL IP cores with embedded EDAC are available for Xilinx and Microchip FPGAs
- QML-V qualified

Radiation performance

- TID: 300 krad(Si) 72 Mbit; 200 krad(Si) 144 Mbit
- SEL: 120 MeV.cm2/mg @ 125°C
- SEU: < 1.34 e-7 err/bit.dy (geo sync-solar min) 72 Mbit; < 3.34 e-7 err/bit.dy (geo sync-solar min) 144 Mbit
- SEFI: Immune 120 LET

Space

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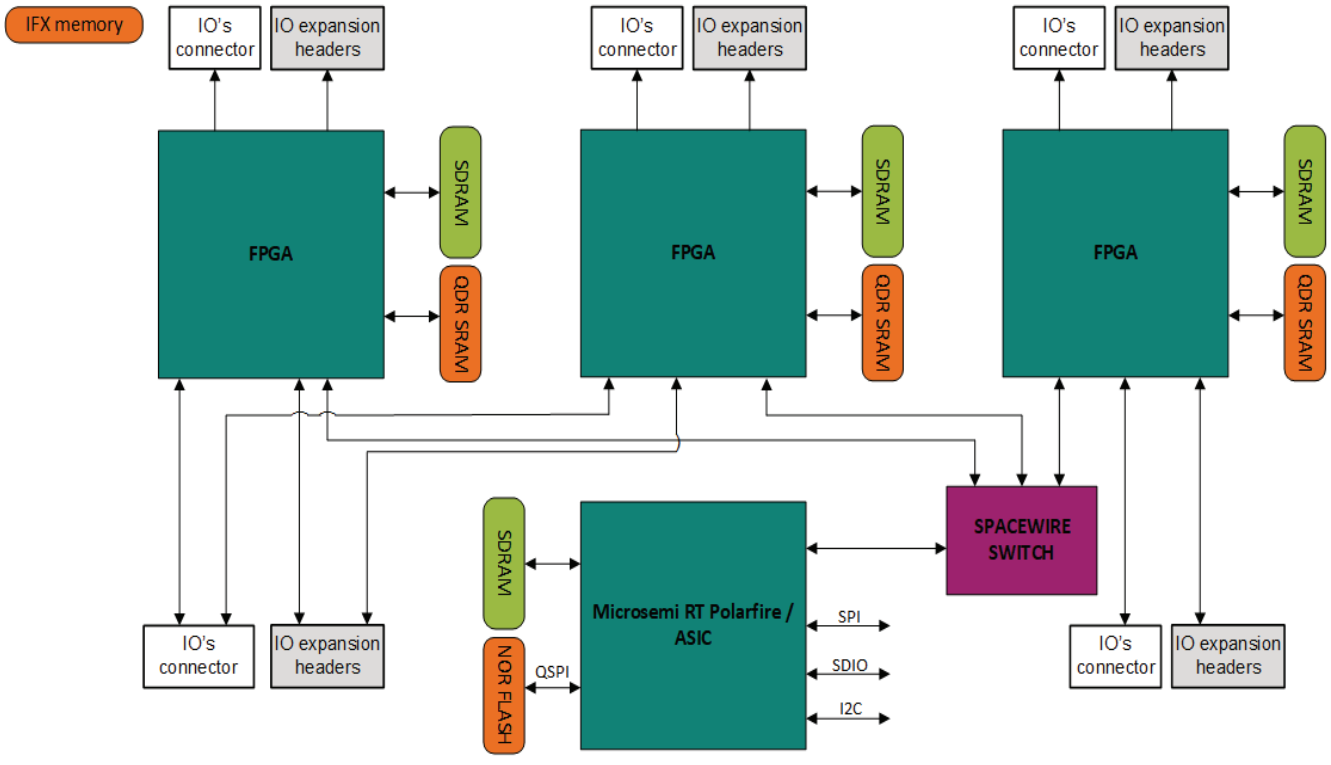
Block diagram



Elevating mission-critical applications

The QDR®-II+ SRAM architecture provides a low latency and random memory access capability needed for high performance applications such as external cache memories. Infineon's QDR®-II+ Sync SRAM family provides the Random Transaction Rate (RTR) necessary to break system bottlenecks. Our state-of-the-art RADSTOP™ technology enables radiation hardening through best-in-class proprietary design and process hardening techniques.

Products

Density	Part Number	Description	Operating Temp	Qual Level	TID [krad(Si)]	SEL [LET]	SEU [err/dev.day]	SEFI [LET]	PD [rad(Si)/s]
72 Mbit	CYPT1542AV18-250GCMB	72M QDR II+ x18 BURST of 2 Prototype	-55°C to 125°C	Prototype	—	—	—	—	—
	5962F1120101VXA	72M QDR II+ x18 BURST of 2 DLAM QML V	-55°C to 125°C	QML-V	300	>120 (125°C)	<1.34e-7	Immune 120	>2e9
	CYPT1543AV18-250GCMB	72M QDR II+ x18 BURST of 4 Prototype	-55°C to 125°C	Prototype	—	—	—	—	—
	5962F1120102VXA	72M QDR II+ x18 BURST of 4 DLAM QML V	-55°C to 125°C	QML-V	300	>120 (125°C)	<1.34e-7	Immune 120	>2e9
	CYPT1543AV18-1X24M	72M QDR II+ Prototype DIE	-55°C to 125°C	Prototype	—	—	—	—	—
	CYPT1544AV18-250GCMB	72M QDR II+ x36 BURST of 2 Prototype	-55°C to 125°C	Prototype	—	—	—	—	—
	5962F1120201VXA	72M QDR II+ x36 BURST of 2 DLAM QML V	-55°C to 125°C	QML-V	300	>120 (125°C)	<1.34e-7	Immune 120	>2e9
	CYPT1545AV18-250GCMB	72M QDR II+ x36 BURST of 4 Prototype	-55°C to 125°C	Prototype	—	—	—	—	—
	5962F1120202VXA	72M QDR II+ x36 BURST of 4 DLAM QML V	-55°C to 125°C	QML-V	300	>120 (125°C)	<1.34e-7	Immune 120	>2e9
144 Mbit	CYPT2642KV18-250GCMB	144M QDR II+ x18 BURST of 2 Prototype	-55°C to 125°C	Prototype	—	—	—	—	—
	5962R1821401VXF	144M QDR II+ x18 BURST of 2 DLAM QML V	-55°C to 125°C	QML-V	200	>120 (125°C)	<3.34e-7	Immune 120	>1e9
	CYPT2643KV18-250GCMB	144M QDR II+ x18 BURST of 4 Prototype	-55°C to 125°C	Prototype	—	—	—	—	—
	5962R1821402VXF	144M QDR II+ x18 BURST of 4 DLAM QML V	-55°C to 125°C	QML-V	200	>120 (125°C)	<3.34e-7	Immune 120	>1e9
	CYPT2643KV18-1X24M	144M QDR II+ Prototype DIE	-55°C to 125°C	QML-V	200	>120 (125°C)	<3.34e-7	Immune 120	>1e9
	CYPT2644KV18-250GCMB	144M QDR II+ x36 BURST of 2 Prototype	-55°C to 125°C	Prototype	—	—	—	—	—
	5962R1821501VXF	144M QDR II+ x36 BURST of 2 DLAM QML V	-55°C to 125°C	QML-V	200	>120 (125°C)	<3.34e-7	Immune 120	>1e9
	CYPT2645KV18-250GCMB	144M QDR II+ x36 BURST of 4 Prototype	-55°C to 125°C	Prototype	—	—	—	—	—
	5962R1821502VXF	144M QDR II+ x36 BURST of 4 DLAM QML V	-55°C to 125°C	QML-V	200	>120 (125°C)	<3.34e-7	Immune 120	>1e9
	CYPT1642KV18-250GCMB	144M QDR II+ x18 BURST of 2 Prototype w/o ODT	-55°C to 125°C	Prototype	—	—	—	—	—
	5962R1821403VXF	144M QDR II+ x18 BURST of 2 DLAM QML V w/o ODT	-55°C to 125°C	QML-V	200	>120 (125°C)	<3.34e-7	Immune 120	>1e9
	CYPT1643KV18-250GCMB	144M QDR II+ x18 BURST of 4 Prototype w/o ODT	-55°C to 125°C	Prototype	—	—	—	—	—
	5962R1821404VXF	144M QDR II+ x18 BURST of 4 DLAM QML V w/o ODT	-55°C to 125°C	QML-V	200	>120 (125°C)	<3.34e-7	Immune 120	>1e9
	CYPT1644KV18-250GCMB	144M QDR II+ x36 BURST of 2 Prototype w/o ODT	-55°C to 125°C	Prototype	—	—	—	—	—
	5962R1821503VXF	144M QDR II+ x36 BURST of 2 DLAM QML V w/o ODT	-55°C to 125°C	QML-V	200	>120 (125°C)	<3.34e-7	Immune 120	>1e9
	CYPT1645KV18-250GCMB	144M QDR II+ x36 BURST of 4 Prototype w/o ODT	-55°C to 125°C	Prototype	—	—	—	—	—
	5962R1821504VXF	144M QDR II+ x36 BURST of 4 DLAM QML V w/o ODT	-55°C to 125°C	QML-V	200	>120 (125°C)	<3.34e-7	Immune 120	>1e9

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Published by
International Rectifier HiRel Products, Inc.
An Infineon Technologies Company
El Segundo, California 90245 USA

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Public
Date: 02/2025

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