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NewSpace rad tolerant memories

For Low Earth Orbit



NewSpace memory solutions

As Low Earth Orbit (LEO) applications and constellations have become increasingly popular, Infineon's radiation tolerant solutions are designed with size, weight, power, and cost (SWaP-c) considerations in mind, making them well-suited for NewSpace applications. Infineon has decades of experience in both automotive and space electronics, which has resulted in a portfolio of rad tolerant components to support LEO satellite bus platform and payload operations.

Infineon's NewSpace memory solutions offer the right balance between cost, reliability, and radiation performance. Included in this radiation tolerant family are F-RAM, Pseudo SRAM, and NOR Flash devices designed to meet the requirements of shorter mission life, high redundancy, mega-constellations.

F-RAMs

The low-power, small-footprint rad tolerant F-RAMs offer instant non-volatility and virtually unlimited endurance without compromising on speed or energy-efficiency. Our devices enable the capture and preservation of critical data when power is interrupted. The NewSpace rad tolerant F-RAMs come in two options. The first has a density of 2 Mb, with an SPI interface in an 8-pin SOIC package. The second also has a density of 2 Mb, but it offers a parallel interface in a 44-pin TSOP II package. Both forms of F-RAM have a MIL-temp range of -55°C to 125°C with a TID rating of 50 krad(Si).





NOR Flash

Infineon offers two rad tolerant NOR Flash devices, catering to the needs of LEO space missions. The first device has a density of 256 Mb, featuring a QSPI interface and a 16-pin SOIC package. It operates within a temperature range of -40°C to 125°C and boasts a TID rating of 30 krad(Si). The second device has a higher density of 512 Mbit, packaged in a 100-TQFP package, and operates within a wider temperature range of -55°C to 125°C, with a TID rating of 100 krad(Si). Both devices are ideal for various applications, including FPGA configuration image storage and standalone boot code for microprocessors in LEO payload applications.





Pseudo SRAM (pSRAM)

Infineon's rad tolerant Pseudostatic RAM (pSRAM) supports densities of 256 Mbit and 512 Mbit and offered with a HYPERBUS™ or Octal SPI (xSPI) interface option in a 24-ball FBGA package. Its temperature range starts at -40°C to 125°C, with a TID rating of 100 krad(Si). An optimal expansion memory choice, these pSRAM memories externally act like a serial SRAM with reliable DRAM memory as a back-end storage element. The device's hybrid sleep mode and partial-array-refresh help conserve energy. A high throughput up to 3.2 Gbps maximizes system performance by enabling a high read/write bandwidth. Our memories' low pin-count simplifies overall design and reduces system cost



Key features

High Reliability

- Optimized for LEO missions and constellations

Wide temperature range (°C)

- F-RAM: -55°C to 125°C
- NOR Flash: -40°C to 125°C/ -55°C to 125°C
- pSRAm: -40°C to 125°C

Radiation tolerant

- F-RAM: TID of 50 krad(Si)
- NOR Flash: TID of 30/100 krad(Si)
- pSRAM: TID of 100 krad(Si)

Key benefits

- Single lot date code
- 100% electrical testing
- Guranteed TID radiation performance

Parts list

Product	Density	Interface	Part Number	Description	Package	Temp Range	TID Rating
F-RAM	2 Mbit	SPI (x1)	CYEL15B102Q-SXM	2 Mbit, SPI, F-RAM	8-pin SOIC	-55°C to 125°C	50 krad(Si)
	2 Mbit	Parallel (128K x 16)	CYEL15B102N-SZ60XM	2 Mbit, parallel, F-RAM	44-pin TSOP II	-55°C to 125°C	50 krad(Si)
	256 Kbit	Serial I2C	CYEL15B256J-SXE	256 Kbit, I2C, F-RAM	8-pin SOIC	-40°C to 125°C	50 krad(Si)
NOR Flash	256 Mbit	QSPI (x4)	CYEL16B256-133SXE	256 Mbit, QSPI, NOR Flash	16-pin SOIC	-40°C to 125°C	30 krad(Si)
	512 Mbit	QSPI (x4)	CYEL17B512-133AZM	512 Mbit, QSPI, NOR Flash	100-pin TQFP	-55°C to 125°C	100 krad(Si)
	1 Gbit	QSPI	CYEL17B01G-133AZM	1 Gbit, QSPI, rad tol NOR Flash	100-pin TQFP	-55°C to 125°C	100 krad(Si)
Pseudo SRAM (pSRAM)	256 Mbit	Serial (x8)	CYEL18V2562-200BKXE	256 Mbit, 1.8 V, HYPERBUS pSRAM	24-ball FBGA	-40°C to 125°C	100 krad(Si)
	512 Mbit	Serial (x8)	CYEL18V5122-200BKXE	512 Mbit, 1.8 V, HYPERBUS pSRAM	24-ball FBGA	-40°C to 125°C	100 krad(Si)
	256 Mbit	Serial (x8)	CYEL18V2563-200BKXE	256 Mbit, 1.8 V, XSPI pSRAM	24-ball FBGA	-40°C to 125°C	100 krad(Si)
	512 Mbit	Serial (x8)	CYEL18V5123-200BKXE	512 Mbit, 1.8 V, xSPI pSRAM	24-ball FBGA	-40°C to 125°C	100 krad(Si)

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Infineon offers its toll-free **0800/4001** service hotline as one central number, available 24/7 in English, Mandarin and German.

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