PRODUCT BRIEF

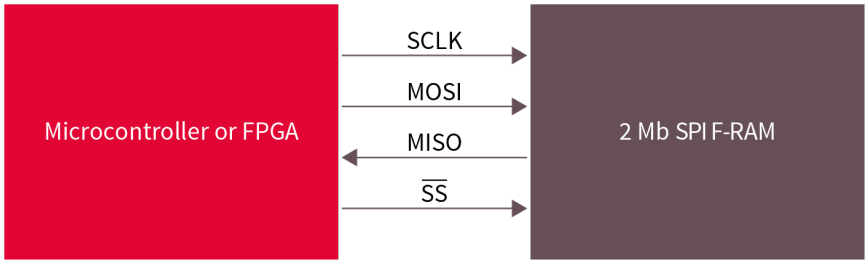
# Rad hard non-volatile SPI F-RAM

## Infineon's HiRel memories perform in extreme conditions

Infineon offers the industry's first radiation hardened, highly reliable, small footprint, 2 Mb non-volatile Serial Peripheral Interface (SPI) Ferroelectric RAM (F-RAM). The industry standard Serial Peripheral Interface (SPI) is simple to use with broad ecosystem support and the F-RAM supports a 16-pin ceramic SOP package. Our radiation hardened SPI F-RAM memory is ideal for data storage for sensors and instruments, data logging for calibration data for satellites and processor boot code applications.

Our rad hard SPI F-RAM's virtually infinite endurance, instant non-volatile write technology, greater than 100-year data retention and immune to Single Event Upsets (SEU) is the highest reliable, non-volatile memory for space applications and is a direct replacement for serial flash and EEPROMs.

**Datalogger for satellite calibration data**




### Key features

**Ultimate reliability**
- DLAM QML-V
- QCI, datapacks
- RHA, WLAT

**Product features**
- 2 Mb densities
- 25 MHz SPI data interface
- TID > 150 Krad (Si)
- SEL > 114 MeV.cm$^2$/mg
- SEFI < 1.34 x 10-4 err/dev.day
- SEU immune
- MIL temperature grade
- 16-pin ceramic SOP
- DLAM QML-V certified

**Key applications**
- Data logging for calibration data for satellites
- Data storage for sensors and instruments
- Secure encryption key storage

**Differentiated memory portfolio**
- Performance
- Density
- Reliability
- Longevity


Commercial aviation | Space | Defense technology

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### Radiation hardened memories

Infineon's HiRel rad hard memory products portfolio consists of the world's most-reliable non-volatile memory and offers a wide selection of NOR flash, F-RAM, and SRAM solutions that enhance overall system computing limits, while providing Size, Weight and Power (SWaP) benefits with greater design flexibility to satisfy the needs of today's advanced space systems and beyond.

### Key features

CYRS15B102Q

- 2 Mb density
- SPI interface operating up to 25 MHz
- Infineon instant non-volatile write technology
- 10-trillon read/write cycle endurance
- 120 years data retention at +85°C
- 2.0–3.6 V operating voltage range
- Low operating current (10 mA max)
- –55°C to +125°C military temperature grade
- 16-pin ceramic SOP
- DLAM QML-V qualified
- Radiation performance
  - TID: > 150 Krad (Si)
  - SEL: > 114 MeV.cm$^2$/mg [LET] @ 115°C
  - SEU: immune
  - SEFI: < 1.34 x 10$^{-4}$ err/dev.day

Support: www.infineon.com/hirelmemory

## Parts list

| Density | Description | Infineon P/N | Operating temp | Qual. level | TID[1] | SEL[2] | SEU[3] | SEFI[4] |
|---|---|---|---|---|---|---|---|---|
| 2 Mb | SPI F-RAM | CYPT15B102Q-GGMB | -55°C to 125°C | PROTOTYPE | – | – | – | – |
| | | 5962R1821601VXC | -55°C to 125°C | DLAM QML-V | 150 Krad (Si) | >114 | Immune | 1.34 x 10$^{-4}$ |
| | | CYRS15B102Q-1X11I | INDUSTRIAL | PROTOTYPE | > 150 Krad (Si) | >114 | Immune | 1.34 x 10$^{-4}$ |

1) Total Ionizing Dose [Krad (Si)]
2) Single Event Latchup MeV.cm$^2$/mg [LET] @ 115°C
3) Single Event Upset
4) Single Event Functional Interrupt err/device-day

www.infineon.com/hirel

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