PRODUCT BRIEF

HiRel non-volatile rad tol NOR Flash

Infineon's HiRel memories perform in the most extreme environments

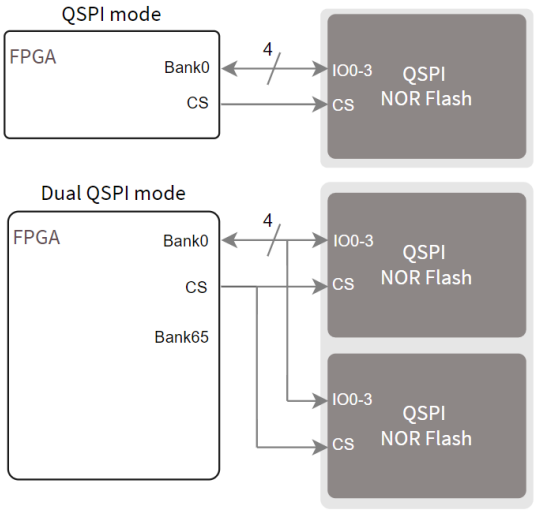
Overview

Infineon's offers the industry's highest performance, low-pin-count, radiation tolerant 256-Mbit and 512-Mbit serial NOR Flash memories. The industry standard Quad Serial Peripheral Interface (QSPI) is simple to use with broad ecosystem support. The radiation tolerant NOR Flash family offers high densities coupled with the flexibility and fast performance required by high reliability applications. Our radiation tolerant NOR Flash products, provide an ideal storage solution for systems with limited space, low signal pin count requirements, low power and offer flexibility, reliability, and performance well beyond ordinary serial flash devices.

Our HiRel radiation tolerant NOR Flash memories are ideal for platforms requiring reliable, secure and robust memory solutions in a ceramic package, and well suited for high-performance FPGA and processor code storage microcontrollers serving aerospace applications. The single chip select enables simple configuration solutions for FPGA's for the 256-Mbit NOR Flash device. The dual QSPI 512-Mbit NOR enables separate access to either 256-Mbit tile inside the same package which allows several boot configurations such as a backup boot image or high speed dual quad x8 configuration loading.

Space memory portfolio

Infineon's HiRel memory products portfolio consists of the world's most-reliable nonvolatile memory and offers a wide selection of NOR Flash, F-RAM, nvSRAM and SRAM memories that provide design options and flexibility while reducing system cost in applications such as radar, electronic warfare, avionics and defense systems.



Key benefits

Certified reliability
- QML-V (equivalent)
- QCI, datapacks
- RHA, WLAT

Product features
- 256-Mbit, 512-Mbit densities
- 133 MHz SDR
- QSPI/dual QSPI
- TID 30 krad(Si) (biased)/ 125 krad(Si) (unbiased)
- SEL >60 MeV·cm²/mg (85°C) up to 8.5 × 10^6 ions/cm²
- SEU <1e^{-16} upsets/bit-day
- Military temperature grade
- 36-lead ceramic flat pack

Key applications
- FPGA configuration image storage
- Microcontroller data storage

Differentiated memory portfolio
- Performance
- Density
- Reliability
- Longevity

Commercial aviation | Space | Defense technology

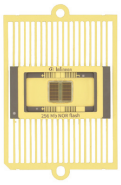
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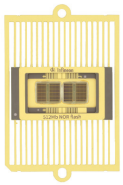
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Key features



CYRS16B256

- 256-Mbit density
- QSPI interface
- 1000 program/sector erase endurance cycle
- >20-year data retention at +125°C
- SDR clock rate: 133 MHz QIO
- DDR clock rate: 66 MHz QIO
- Program time (256 Byte): 0.30 ms (typical)
- Sector erase time (64 KByte): 270 mx (typical)
- 2.7-3.6 V supply voltage
- -55 to +125°C military temperature grade
- 36-pin ceramic flat pack
- QML-V qualification (equivalent)



CYRS16B512

- 512-Mbit density
- Dual QSPI interface
- 1000 program/sector erase endurance cycle
- >20-year data retention at +125°C
- SDR clock rate: 133 MHz QIO
- DDR clock rate: 66 MHz QIO
- Program time (256 Byte): 0.30 ms (typical)
- Sector erase time (64 KByte): 270 mx (typical)
- 2.7-3.6 V supply voltage
- -55 to +125°C military temperature grade
- 36-pin ceramic flat pack
- QML-V qualification (equivalent)

Technical support

Infineon datasheet

256 Mb RadTol Serial NOR Flash, 512 Mb RadTol Serial NOR Flash

Product table

Density	Description	Infineon P/N	Operating temperature	Qual level	TID[1]	SEL[2]	SEU[3]	SEU[4]	SEFI[5]
256-Mbit	Quad SPI NOR Flash	CYRS16B256-133FZMB	-55 to +125°C	QML-V (equivalent)	Unbiased: 125 (read)/50 (write) Biased: 30 (read)/20 (write)	>60	<1x10^{-16}	>60	>28
		CYPT16B256-133FZMB	-55 to +125°C	Prototype	–	–	–	–	–
		CYRS16B256-1X18M	-55 to +125°C	QML-V die (equivalent)	Unbiased: 125 (read)/50 (write) Biased: 30 (read)/20 (write)	>60	<1x10^{-16}	>60	>28
		CYRS16B256-1WWI	-55 to +125°C	QML-V wafer (equivalent)	Unbiased: 125 (read)/50 (write) Biased: 30 (read)/20 (write)	>60	<1x10^{-16}	>60	>28
512-Mbit	Dual quad SPI NOR Flash	CYRS16B512-133FZMB	-55 to +125°C	QML-V (equivalent)	Unbiased: 125 (read)/50 (write) Biased: 30 (read)/20 (write)	>60	–	>60	>28
		CYPT16B512-133FZMB	-55 to +125°C	Prototype	–	–	–	–	–

1) Total Ionizing Dose [krad(Si)]
2) Single Event Latchup MeV·cm²/mg (85°C) up to 8.5 × 10⁶ ions/cm²
3) Single Event Upset [err/bit.dy]
4) Single Event Upset Threshold MeV.cm²/mg[LET]
5) Single Event Functional Interrupt MeV.cm²/mg[LET]

www.infineon.com/hirelmemory

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

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Public
Document number: B119-|1184-V1-7600-NA-EC
Date: 09/ 2023

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