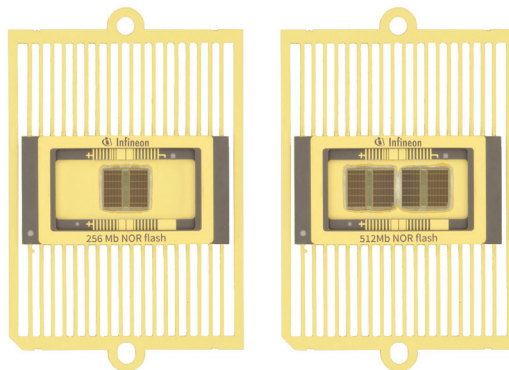


## Product brief

# HiRel non-volatile NOR Flash

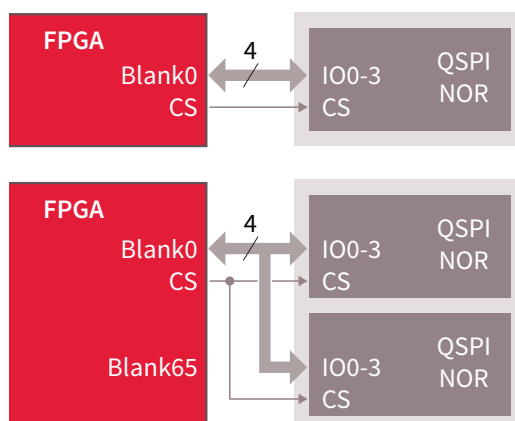
Infineon's HiRel memories perform in the most extreme environments



## 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.



## 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-cm<sup>2</sup>/mg (85°C)
- > SEU <1e<sup>-16</sup> 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

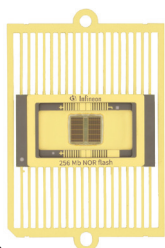
## Aerospace portfolio

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 features

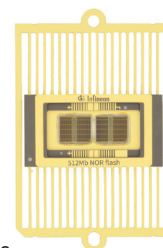
### CYRS16B256

- > 256-Mbit density
- > QSPI interface
- > 1000 program/sector erase endurance cycles
- > >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 ms (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 cycles
- > >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 ms (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](#)

## Parts list

Density	Description	Infineon P/N	Operating temperature [°C]	Qual level	TID <sup>1)</sup>	SEL <sup>2)</sup>	SEU <sup>3)</sup>	SEU <sup>4)</sup>	SEFI <sup>5)</sup>
256-Mbit	Quad SPI NOR Flash	CYRS16B256-133FZMB	-55 to +125	QML-V (equivalent)	Unbiased: 125 (read)/50 (write) Biased: 30 (read)/20 (write)	>60	<1 x 10 <sup>-16</sup>	>60	>28
		CYPT16B256-133FZMB	-55 to +125	PROTOTYPE	–	–	–	–	–
		CYRS16B256-1X18M	-55 to +125	QML-V die (equivalent)	Unbiased: 125 (read)/50 (write) Biased: 30 (read)/20 (write)	>60	<1 x 10 <sup>-16</sup>	>60	>28
		CYRS16B256-1WWI	-55 to +125	QML-V wafer (equivalent)	Unbiased: 125 (read)/50 (write) Biased: 30 (read)/20 (write)	>60	<1 x 10 <sup>-16</sup>	>60	>28
512-Mbit	Dual quad SPI NOR Flash	CYRS16B512-133FZMB	-55 to +125	QML-V (equivalent)	Unbiased: 125 (read)/50 (write) Biased: 30 (read)/20 (write)	>60	–	>60	>28
		CYPT16B512-133FZMB	-55 to +125	PROTOTYPE	–	–	–	–	–

1) Total Ionizing Dose [Krad (Si)]

2) Single Event Latchup MeV.cm<sup>2</sup>/mg [LET] @ 95°C

3) Single Event Upset [err/bit.dy]

4) Single Event Upset Threshold MeV.cm<sup>2</sup>/mg [LET]

5) Single Event Functional Interrupt MeV.cm<sup>2</sup>/mg [LET]

Published by  
Infineon Technologies AG  
81726 Munich, Germany

© 2021 Infineon Technologies AG.  
All Rights Reserved.

### Please note!

This Document is for information purposes only and any information given herein shall in no event be regarded as a warranty, guarantee or description of any functionality, conditions and/or quality of our products or any suitability for a particular purpose. With regard to the technical specifications of our products, we kindly ask you to refer to the relevant product data sheets provided by us. Our customers and their technical departments are required to evaluate the suitability of our products for the intended application.

We reserve the right to change this document and/or the information given herein at any time.

### Additional information

For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices, please contact your nearest Infineon Technologies office ([www.infineon.com](http://www.infineon.com)).

### Warnings

Due to technical requirements, our products may contain dangerous substances. For information on the types in question, please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by us in a written document signed by authorized representatives of Infineon Technologies, our products may not be used in any life-endangering applications, including but not limited to medical, nuclear, military, life-critical or any other applications where a failure of the product or any consequences of the use thereof can result in personal injury.