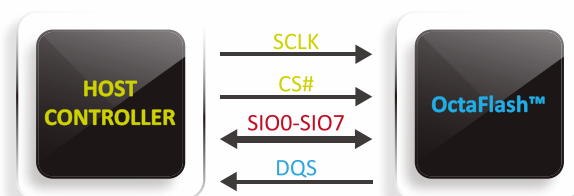# MACRONIX

Octabus Family

The new-generation Macronix OctaBus Memory is a portfolio of extreme speed memory products built on Serial Peripheral Interface (SPI) and command protocol, providing extendable I/O capability. Expanding from current Quad I/O to OctaFlash™ (8 I/O) will efficiently broaden our Serial NOR Flash throughput. Macronix OctaBus Memory (8 I/O) also retains the user interface compatible with the ordinary single I/O Serial NOR Flash, which can sustain users' experience in using Serial NOR Flash with minimum efforts.

This breakthrough product incorporates flash memory to the high performance, low pin count solutions. The OctaBus extended SPI Flash to 8 l/O interface, meanwhile support JEDEC standard-JESD251 and JESD216 specification. The extreme 250MH frequency and DTR operation, enhances the Flash data throughput from existing 100MB/s up to 500MB/s, dramatically improving system performance.

Function Safety Certification

OctaFlash™ family provides functional safety features

- Functional Safety ISO26262 ASIL B Compliant & ASIL D Ready
- Data Integrity Features
  - ✓ ECC : Single-bit Error Corrects and Double-bit Error Detected (SECDED).
  - ✓ Data Transmission Errors : Parity check for command/address/data bus over the flash interface.
  - ✓ ECS (Error Corrected Signal) : H/W pin to provide error bits status.
  - ✓ ECC Status Register : Fully record the data integrity checking result.

HOST CONTROLLER — SCLK, CS#, SIO0-SIO7, DQS → **OctaFlash™**

/ **OctaBus™ Interface** /

OctaFlash™

OctaFlash™ solution is designed to meet the growing demand for "instant-on" performance and real-time system responsiveness in automotive, industrial and consumer applications. Macronix's OctaFlash™ provides ultra-high performance through operating at frequencies up to 250MHz with a fast latency access time of 80 nanoseconds (ns), sequential byte reads as fast as 2ns and a maximum read throughout of 500 megabytes per second (MB/s).

MXIC

MACRONIX INTERNATIONAL CO., LTD.

Concurrent-Operation OctaFlash™ Memory

Macronix's concurrent-operation OctaFlashTM family offers a multi-bank architecture with concurrent operation. This provides the possibility to allow read access from one memory bank while simultaneously writing to another memory bank.

This is an ideal solution for Over-The-Air (OTA) update applications, enabling systems to continue operating during the OTA update process; furthermore, systems can also 'roll back' to the previous version of firmware in the event of OTA failure or if there is any data corruption experienced.

Macronix OctaFlash™ Solutions

Density	Voltage	Part Number	Grade
2Gb	1.8V	MX66UM2G45G	-40°C – +85/105°C
	3V	MX66LM2G45G	-40°C – +85/105°C
1Gb	1.8V	MX66UM1G45G	-40°C – 85/105/125°C
	3V	MX66LM1G45G	-40°C – +85/105/125°C
512Mb	1.8V	MX25UM51245G	-40°C – +85/105/125°C
	3V	MX25LM51245G	-40°C – +85/105/125°C
256Mb	1.8V	MX25UM25645G	-40°C – +85/105/125°C
	3V	MX25LM25645G	-40°C – +85/105/125°C

Maronix Concurrent-operation OctaFlash™ Solution

Density	Voltage	Part Number
2Gb	1.8V	MX66UW2G45G
	3V	MX66LW2G45G
1Gb	1.8V	MX66UW1G45G
	3V	MX66LW1G45G
512Mb	1.8V	MX25UW51245G
	3V	MX25LW51245G
256Mb	1.8V	MX25UW25645G
	3V	MX25LW25645G
128Mb	1.8V	MX25UW12845G
64Mb	1.8V	MX25UW6445G

Applications

- Automotive Cluster
- Automotive ADAS
- Car Infotainment
- Data Communication Module
  (Telematics, Emergency)
- Digital Camera
- Smart Home Appliances, Speaker

8X I/O DTR 250MHz — 500 MB/s

QSPI DTR 100MHz — 100 MB/s

SPI SPR 33MHz — 15 MB/s

0.00   Throughout (MB/s)