



Long-Term Support
World Class Quality

Low Pin Count RAM Solution
Targeting IoT, Automotive, Industrial & Other Applications

SerialRAM

8Mb, 16Mb, 32Mb
in Production
64Mb, 128Mb
in Planning

OctalRAM

64Mb, 128Mb, 256Mb, 512Mb
in Production
32Mb, 1Gb
in Planning

HyperRAM™

64Mb, 128Mb, 256Mb, 512Mb
in Production
32Mb, 1Gb
in Planning

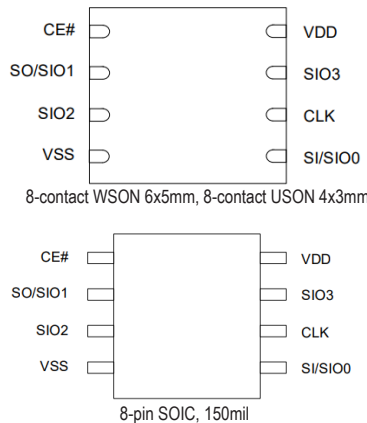
QUADRAM

8Mb, 16Mb, 32Mb
in Production
64Mb, 128Mb
in Planning

Serial SRAM

512Kb, 1Mb, 2Mb, 4Mb
in Production

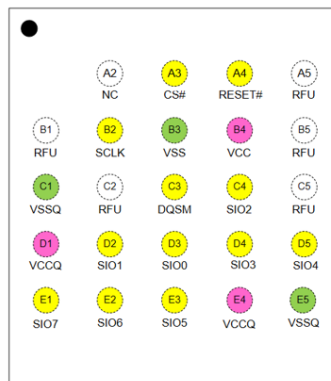
	Serial RAM
Densities	8Mb, 16Mb, 32Mb
Packages	8-Pin SOIC , 8-pin USON, 8-Pin WSON
Temperature	-40 to 85°C; -40 to 105°C
On-Chip ECC	Not Supported
Speed	104MHz [VDD = 1.7V - 1.95V] and [VDD = 2.7V - 3.6V]



Serial RAM Overview

- SPI [Serial Peripheral Interface] Compatible Bus: SPI[x1] / SDI[x2] / SQI[x4] mode
- Very Low Bus Signal Count: 6 pins for x4 IO ; CS#, SCK, SIO0 - SIO3 or 4 pins for x1/x2 IO : CS#, SCK, SI[SIO0], SO[SIO1]
- Very Simple Commands [7 commands]: Read/Write Memory, Read /Write Register, Enter SDI [x2]/SQI mode[x4], and Return to SPI mode [x1]

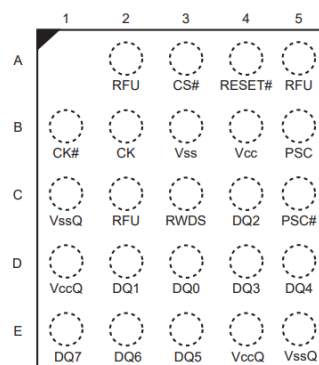
	Octal RAM
Densities	64Mb, 128Mb, 256Mb
Packages	24-ball BGA
Temperature	-40 to 85°C; -40 to 105°C, -40 to 125°C [64Mb, 128Mb]
On-Chip ECC	On Chip ECC [2-bit detection, 1-bit correction] with optional ERR signal [64Mb, 128Mb]
Speed	200MHz [VDD = 1.7V - 1.95V] 166MHz [VDD = 2.7V - 3.6V]



Octal RAM Overview

- DRAM technology based solution with Hidden Refresh and OPI [Octal Peripheral Interface] Protocol
- Very Low Signal Count: 11[12] pins for Functions and 8 I/O. [Optional ERR# pin for 64Mb and 128Mb ECC products]
- Variable Latency or Fixed Latency, Burst Read/Write Operation and features Read Data Training [16-bit Pattern for Training Purpose].

	HyperRAM™
Densities	64Mb, 128Mb, 256Mb
Packages	24-ball BGA
Temperature	-40 to 85°C; -40 to 105°C ; -40 to 125°C [64Mb, 128Mb]
On-Chip ECC	On Chip ECC [2-bit detection, 1-bit correction] with optional ERR signal [64Mb, 128Mb]
Speed	200MHz [VDD = 1.7V - 1.95V] 166MHz [VDD = 2.7V - 3.6V]



HyperRAM™ Overview

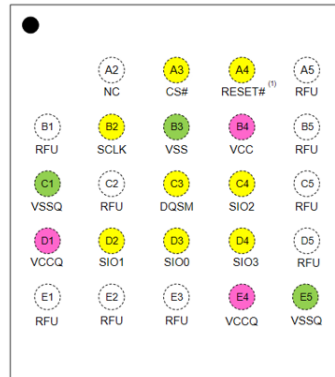
- HyperRAM™ memory is DRAM based memory with HyperBus™ Interface
- Very Low Signal count (Address, Command, and Data through 8 DQ pins)
- Hidden Refresh operation



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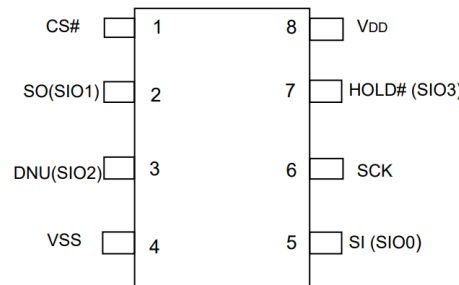
	QUAD RAM
Densities	8Mb, 16Mb, 32Mb
Packages	24-ball BGA
Temperature	-40 to 85°C; -40 to 105°C, -40 to 125°C (8Mb, 16Mb)
On-Chip ECC	On Chip ECC (2-bit detection, 1-bit correction) with optional ERR signal in (8Mb, 16Mb)
Speed	200MHz (VDD = 1.7V - 1.95V) 133MHz (VDD = 2.7V - 3.6V)



QUAD RAM Overview

- Quad DDR [x4 xSPI] Interface: Command [1 byte] = SDR, Address [2-byte] & Data = DDR
- Low Signal Counts: 7 Signal pins [CS#, SCLK, DQSM, SIO0~SIO3]
- Configurable Wrapped Burst Length: 16, 32, 64, and 128

	Serial SRAM
Densities	512Kb, 1Mb, 2Mb, 4Mb
Packages	8-Pin SOIC
Temperature	-40 to 85°C; -40 to 105°C
On-Chip ECC	Not Supported
Speed	30MHz (VDD = 1.65V - 2.2V) 45MHz (VDD = 2.2V - 3.6V)



Serial SRAM Overview

- SPI [Serial Peripheral Interface] Compatible Bus: SPI[x1] / SDI[x2] / SQI[x4] mode
- Minimum four Signal Pins for 4Mb [x1]: SI, SO, CK, CS#
- Random Read/Write Operation with Ultra Low Standby Current

Low Pin Count RAM Solutions

Low Pin Count	512Kb	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb	128Mb	256Mb	512Mb	1Gb
Serial SRAM	✓	✓	✓	✓								
Serial/QUAD RAM [SPI/QPI]					✓ ECC	✓ ECC	✓	✓	✓			
HyperRAM							✓ ECC	✓ ECC	✓ ECC	✓	✓	✓
OctalRAM							✓ ECC	✓ ECC	✓ ECC	✓	✓	✓

Industrial & Automotive Temperature Grade, Long Term Support, Lead or RoHS [Lead Free]

STATUS Production Sampling Roadmap Under Consideration

ECC : On-chip Error Correcting Code is an available option