# Memory Brochure
# 2025

D0101; Rev1.1; 9/2025

# Table of Contents





D0101; Rev1.1; 9/2025

# GSI's Vanguard Rad-Hard SRAMs

GSI Technology's inaugural projects in the Aerospace and Defense industry are groups of Radiation-Hardened and Radiation-Tolerant synchronous SRAMs:

- **A family of SigmaQuad-II+ products**: available in 288Mb, 144Mb, and 72Mb densities, x18 and x36 configurations, On-Die Termination (ODT), and up to 350 MHz performance

- **A family of SyncBurst & NBT products**: available in 144Mb, 72Mb, and 36Mb densities, x18 and x36 configurations, and up to 333 MHz performance

These Rad-Hard SRAMs are expected to serve as a critical element for advanced systems that leverage leading-edge FPGAs, ADCs, and DACs; but until now lacked the high density, high performance, and power efficiency that our outstanding memory products bring. These devices are qualified to Class-Q and Class-V levels to meet the rigorous requirements of aerospace and defense customers.

For our satellite and defense customers that have been anxiously awaiting an alternative to current Rad-Hard memory solutions, our Rad-Hard SRAMs leverage our proven commercial technology and architecture with radiation-hardening, creating an efficient, high performance, leading-edge memory at the 40nm technology node.

For less robust applications, GSI offers Radiation-Tolerant SRAMs, as well.

For more information, contact us at **aerospace@gsitechnology.com**.

**Note:**
GE and GD packages are 6/6 RoHS-compliant. Contact your local sales representative for E or D package (leaded version) availability.



D0101; Rev1.1; 9/2025

# Radiation-Hardened SRAM Offerings

**TID = 200 krads (Si), SEL Immunity = 77 MeV-cm2/mg**

## Rad-Hard SigmaQuad-II+™ (In Production)

| GSI P/N | Density | Config | Burst Length | Read Latency | ODT | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | CCGA (CE) | LGA (LE) |
| GS82612QT37yy-###a<br>GS82612QT19yy-###a | 288Mb | 8M x 36<br>16M x 18 | 2 | 2.0 | Weak/Strong | 350/250<br>(Military Temp) | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | ● | ● |
| GS81332QT37yy-###a<br>GS81332QT19yy-###a | 144Mb | 4M x 36<br>8M x 18 | 2 | 2.0 | Weak/Strong | 350/250<br>(Military Temp) | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | ● | ● |
| GS8692QT37yy-###a<br>GS8692QT19yy-###a | 72Mb | 2M x 36<br>4M x 18 | 2 | 2.0 | Weak/Strong | 350/250<br>(Military Temp) | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | ● | ● |
| GS82612DT37yy-###a<br>GS82612DT19yy-###a | 288Mb | 8M x 36<br>16M x 18 | 4 | 2.0 | Weak/Strong | 350/250<br>(Military Temp) | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | ● | ● |
| GS81332DT37yy-###a<br>GS81332DT19yy-###a | 144Mb | 4M x 36<br>8M x 18 | 4 | 2.0 | Weak/Strong | 350/250<br>(Military Temp) | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | ● | ● |
| GS8692DT37yy-###a<br>GS8692DT19yy-###a | 72Mb | 2M x 36<br>4M x 18 | 4 | 2.0 | Weak/Strong | 350/250<br>(Military Temp) | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ V | ● | ● |

* yy = Package Designator; ### = Speed Bin Designator. Alpha character at the end of the PN denotes qualification nomenclature (S = Eng Sample; V = Class-V; Q = Class-Q.)

## Rad-Hard No Bus Turnaround (Built Upon Request)

| GSI P/N | Density | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage | 100 QFP |
|---|---|---|---|---|---|---|
| | | | | | | QFP (CQ) |
| GS81320Z36yy-###a<br>GS81320Z18yy-###a | 144Mb | 4M x 36<br>8M x 18 | 333/250<br>(Military Temp) | 2.5 | 2.5 V/3.3 V $V_{DD}$<br>2.5 V/3.3 V $V_{DDQ}$ | ● |
| GS8680Z36yy-###a<br>GS8680Z18yy-###a | 72Mb | 2M x 36<br>4M x 18 | 333/250<br>(Military Temp) | 2.5 | 2.5 V/3.3 V $V_{DD}$<br>2.5 V/3.3 V $V_{DDQ}$ | ● |
| GS8360Z36yy-###a<br>GS8360Z18yy-###a | 36Mb | 1M x 36<br>2M x 18 | 333/250<br>(Military Temp) | 2.5 | 2.5 V/3.3 V $V_{DD}$<br>2.5 V/3.3 V $V_{DDQ}$ | ● |

* yy = Package Designator; ### = Speed Bin Designator. Alpha character at the end of the PN denotes qualification nomenclature (S = Eng Sample; V = Class-V; Q = Class-Q.)

| Rad-Hard Synchronous Burst (Built Upon Request) | | | | | | |
|---|---|---|---|---|---|---|
| GSI P/N | Density | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage | 100 QFP |
| | | | | | | QFP (CQ) |
| GS8132036yy-###a<br>GS8132018yy-###a | 144Mb | 4M x 36<br>8M x 18 | 333/250<br>(Military Temp) | 2.5 | 2.5 V/3.3 V $V_{DD}$<br>2.5 V/3.3 V $V_{DDQ}$ | ● |
| GS868036yy-###a<br>GS868018yy-###a | 72Mb | 2M x 36<br>4M x 18 | 333/250<br>(Military Temp) | 2.5 | 2.5 V/3.3 V $V_{DD}$<br>2.5 V/3.3 V $V_{DDQ}$ | ● |
| GS836036yy-###a<br>GS836018yy-###a | 36Mb | 1M x 36<br>2M x 18 | 333/250<br>(Military Temp) | 2.5 | 2.5 V/3.3 V $V_{DD}$<br>2.5 V/3.3 V $V_{DDQ}$ | ● |

* yy = Package Designator; ### = Speed Bin Designator. Alpha character at the end of the PN denotes qualification nomenclature (S = Eng Sample; V = Class-V; Q = Class-Q.)

# Radiation-Tolerant SRAM Offerings

**TID = 50 krads (Si), SEL Immunity = 42 MeV-cm2/mg**

| Rad-Tolerant SigmaQuad-II+™ (In Production) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| GSI P/N | Density | Config | Burst Length | Read Latency | ODT | Speed (MHz) | Voltage | 165 BGA |
| | | | | | | | | LBGA (RE) |
| GS82582QT37yy-###<br>GS82582QT19yy-### | 288Mb | 8M x 36<br>16M x 18 | 2 | 2.0 | Weak/Strong | 350/250<br>(Military Temp) | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | ● |
| GS81302QT37yy-###<br>GS81302QT19yy-### | 144Mb | 4M x 36<br>8M x 18 | 2 | 2.0 | Weak/Strong | 350/250<br>(Military Temp) | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | ● |
| GS8662QT37yy-###<br>GS8662QT19yy-### | 72Mb | 2M x 36<br>4M x 18 | 2 | 2.0 | Weak/Strong | 350/250<br>(Military Temp) | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | ● |
| GS82582DT37yy-###<br>GS82582DT19yy-### | 288Mb | 8M x 36<br>16M x 18 | 4 | 2.0 | Weak/Strong | 350/250<br>(Military Temp) | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | ● |
| GS81302DT37yy-###<br>GS81302DT19yy-### | 144Mb | 4M x 36<br>8M x 18 | 4 | 2.0 | Weak/Strong | 350/250<br>(Military Temp) | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | ● |
| GS8662DT37yy-###<br>GS8662DT19yy-### | 72Mb | 2M x 36<br>4M x 18 | 4 | 2.0 | Weak/Strong | 350/250<br>(Military Temp) | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | ● |

* yy = Package Designator; ### = Speed Bin Designator.



D0101; Rev1.1; 9/2025

## Rad-Tolerant No Bus Turnaround (Built Upon Request)

| GSI P/N | Density | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage | 100 TQFP |
|---|---|---|---|---|---|---|
| | | | | | | TQFP (RT) |
| GS81280Z36yy-###a<br>GS81280Z18yy-###a | 144Mb | 4M x 36<br>8M x 18 | 333/250<br>(Military Temp) | 2.5 | 2.5 V/3.3 V $V_{DD}$<br>2.5 V/3.3 V $V_{DDQ}$ | ● |
| GS8640Z36yy-###a<br>GS8640Z18yy-###a | 72Mb | 2M x 36<br>4M x 18 | 333/250<br>(Military Temp) | 2.5 | 2.5 V/3.3 V $V_{DD}$<br>2.5 V/3.3 V $V_{DDQ}$ | ● |
| GS8320Z36yy-###a<br>GS8320Z18yy-###a | 36Mb | 1M x 36<br>2M x 18 | 333/250<br>(Military Temp) | 2.5 | 2.5 V/3.3 V $V_{DD}$<br>2.5 V/3.3 V $V_{DDQ}$ | ● |

* yy = Package Designator; ### = Speed Bin Designator.

## Rad-Tolerant Synchronous Burst (Built Upon Request)

| GSI P/N | Density | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage | 100 TQFP |
|---|---|---|---|---|---|---|
| | | | | | | TQFP (RT) |
| GS8128036yy-###a<br>GS8128018yy-###a | 144Mb | 4M x 36<br>8M x 18 | 333/250<br>(Military Temp) | 2.5 | 2.5 V/3.3 V $V_{DD}$<br>2.5 V/3.3 V $V_{DDQ}$ | ● |
| GS864036yy-###a<br>GS864018yy-###a | 72Mb | 2M x 36<br>4M x 18 | 333/250<br>(Military Temp) | 2.5 | 2.5 V/3.3 V $V_{DD}$<br>2.5 V/3.3 V $V_{DDQ}$ | ● |
| GS832036yy-###a<br>GS832018yy-###a | 36Mb | 1M x 36<br>2M x 18 | 333/250<br>(Military Temp) | 2.5 | 2.5 V/3.3 V $V_{DD}$<br>2.5 V/3.3 V $V_{DDQ}$ | ● |

* yy = Package Designator; ### = Speed Bin Designator.

# Standard Military Temperature SRAMs

## SigmaQuad™ SRAMs

| 144Mb SigmaQuad-IVe | | | | | |
|---|---|---|---|---|---|
| **GSI P/N** | **Config** | **Speed (MHz)** | **Voltage** | **Package*** | **Features** |
| GS81314LD36GK-120M<br>GS81314LD18GK-120M | 4M x 36<br>8M x 18 | 1200 | 1.25 ~ 1.3 V $V_{DD}$<br>1.2 ~ 1.3 V $V_{DDQ}$<br>HSTL I/O | 260 BGA | **SigmaQuad-IVe Burst of 4**<br>**Read Latency = 6**<br>**On-Die Termination Option**<br>**Multi-Bank, ECCRAM™** |
| GS81314LQ36GK-120M<br>GS81314LQ18GK-120M | 4M x 36<br>8M x 18 | 1200 | 1.25 ~ 1.3 V $V_{DD}$<br>1.2 ~ 1.3 V $V_{DDQ}$<br>HSTL I/O | 260 BGA | **SigmaQuad-IVe Burst of 2**<br>**Read Latency = 6**<br>**On-Die Termination Option**<br>**Multi-Bank, ECCRAM™** |
| GS81314LD37GK-800M<br>GS81314LD19GK-800M | 4M x 36<br>8M x 18 | 800 | 1.25 ~ 1.3 V $V_{DD}$<br>1.2 ~ 1.3 V $V_{DDQ}$<br>HSTL I/O | 260 BGA | **SigmaQuad-IVe Burst of 4**<br>**Read Latency = 5**<br>**On-Die Termination Option**<br>**Single-Bank, ECCRAM™** |
| GS81314LQ37GK-800M<br>GS81314LQ19GK-800M | 4M x 36<br>8M x 18 | 800 | 1.25 ~ 1.3 V $V_{DD}$<br>1.2 ~ 1.3 V $V_{DDQ}$<br>HSTL I/O | 260 BGA | **SigmaQuad-IVe Burst of 2**<br>**Read Latency = 5**<br>**On-Die Termination Option**<br>**Single-Bank, ECCRAM™** |

**Note:**
GK package is 6/6 RoHS-compliant. Contact your local sales representative for K package (leaded version) availability.



D0101; Rev1.1; 9/2025

## 288Mb SigmaQuad-IIIe

| GSI P/N | Config | Speed (MHz) | Voltage | Package* | Features |
|---|---|---|---|---|---|
| GS82583ED36GK-625M<br>GS82583ED18GK-625M | 8M x 36<br>16M x 18 | 625 | 1.3 V $V_{DD}$<br>1.2V/1.3 V/1.5 V $V_{DDQ}$ | 260 BGA | SigmaQuad-IIIe Burst of 4<br>Read Latency = 3<br>On-Die Termination Option |
| GS82583EQ36GK-450M<br>GS82583EQ18GK-450M | 8M x 36<br>16M x 18 | 450 | 1.3 V $V_{DD}$<br>1.2V/1.3 V/1.5 V $V_{DDQ}$ | 260 BGA | SigmaQuad-IIIe Burst of 2<br>Read Latency = 3<br>On-Die Termination Option |

## 144Mb SigmaQuad-IIIe

| GSI P/N | Config | Speed (MHz) | Voltage | Package* | Features |
|---|---|---|---|---|---|
| GS81313LD36GK-714M<br>GS81313LD18GK-714M | 4M x 36<br>8M x 18 | 714 | 1.25 ~ 1.3 V $V_{DD}$<br>1.2 ~ 1.3 V $V_{DDQ}$<br>HSTL I/O | 260 BGA | SigmaQuad-IIIe Burst of 4<br>Read Latency = 3<br>On-Die Termination Option<br>ECCRAM™ |
| GS81313LQ36GK-714M<br>GS81313LQ18GK-714M | 4M x 36<br>8M x 18 | 714 | 1.25 ~ 1.3 V $V_{DD}$<br>1.2 ~ 1.3 V $V_{DDQ}$<br>HSTL I/O | 260 BGA | SigmaQuad-IIIe Burst of 2<br>Read Latency = 3<br>On-Die Termination Option<br>ECCRAM™ |

## 72Mb SigmaQuad-IIIe

| GSI P/N | Config | Speed (MHz) | Voltage | Package* | Features |
|---|---|---|---|---|---|
| GS8673ED36BGK-625M<br>GS8673ED18BGK-625M | 2M x 36<br>4M x 18 | 625 | 1.35 V $V_{DD}$<br>1.2 V/1.5 V $V_{DDQ}$ | 260 BGA | SigmaQuad-IIIe Burst of 4<br>Read Latency = 3<br>On-Die Termination Option<br>ECCRAM™ |
| GS8673EQ36BGK-625M<br>GS8673EQ18BGK-625M | 2M x 36<br>4M x 18 | 625 | 1.35 V $V_{DD}$<br>1.2 V/1.5 V $V_{DDQ}$ | 260 BGA | SigmaQuad-IIIe Burst of 2<br>Read Latency = 3<br>On-Die Termination Option<br>ECCRAM™ |

**Note:**
GK package is 6/6 RoHS-compliant. Contact your local sales representative for K package (leaded version) availability.

## 288Mb SigmaQuad-II+

| GSI P/N | Config | Speed (MHz) | Voltage | Package* | Features |
|---|---|---|---|---|---|
| GS82582D38GE-500M<br>GS82582D20GE-500M | 8M x 36<br>16M x 18 | 500 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(15 x 17 mm) | SigmaQuad-II+ Burst of 4<br>Read Latency = 2.5<br>On-Die Termination Option |
| GS82582Q37GE-375M<br>GS82582Q19GE-375M | 4M x 36<br>8M x 18 | 375 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(15 x 17 mm) | SigmaQuad-II+ Burst of 2<br>Read Latency = 2.0<br>On-Die Termination Option |

## 288Mb SigmaQuad-II

| GSI P/N | Config | Speed (MHz) | Voltage | Package* | Features |
|---|---|---|---|---|---|
| GS82582D36GE-375M<br>GS82582D18GE-375M | 8M x 36<br>16M x 18 | 375 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ V | 165 BGA<br>(15 x 17 mm) | SigmaQuad-II+ Burst of 4 |
| GS82582Q36GE-333M<br>GS82582Q18GE-333M | 4M x 36<br>8M x 18 | 333 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(15 x 17 mm) | SigmaQuad-II+ Burst of 2 |

## 144Mb SigmaQuad-II+

| GSI P/N | Config | Speed (MHz) | Voltage | Package* | Features |
|---|---|---|---|---|---|
| GS81302D38AGD-550M<br>GS81302D20AGD-550M | 4M x 36<br>8M x 18 | 550 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II+ Burst of 4<br>Read Latency = 2.5<br>On-Die Termination Option |
| GS81302Q37AGD-400M<br>GS81302Q19AGD-400M | 4M x 36<br>8M x 18 | 400 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II+ Burst of 2<br>Read Latency = 2.0<br>On-Die Termination Option |

## 144Mb SigmaQuad-II

| GSI P/N | Config | Speed (MHz) | Voltage | Package* | Features |
|---|---|---|---|---|---|
| GS81302D36AGD-375M<br>GS81302D18AGD-375M | 4M x 36<br>8M x 18 | 375 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II Burst of 4 |
| GS81302Q36AGD-375M<br>GS81302Q18AGD-375M | 4M x 36<br>8M x 18 | 375 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II Burst of 2 |



D0101; Rev1.1; 9/2025

## 72Mb SigmaQuad-II+

| GSI P/N | Config | Speed (MHz) | Voltage | Package* | Features |
|---|---|---|---|---|---|
| GS8662D38CGD-550M<br>GS8662D20CGD-550M | 2M x 36<br>4M x 18 | 550 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II+ Burst of 4<br>Read Latency = 2.5<br>On-Die Termination Option |
| GS8662D38BD-450M<br>GS8662D20BD-450M<br>GS8662D11BD-450M<br>GS8662D06BD-450M | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 450 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II+ Burst of 4<br>Read Latency = 2.5<br>On-Die Termination Option |
| GS8662Q37BD-333M<br>GS8662Q19BD-333M<br>GS8662Q10BD-333M<br>GS8662Q07BD-333M | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 333 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II+ Burst of 2<br>Read Latency = 2.0<br>On-Die Termination Option |

## 72Mb SigmaQuad-II

| GSI P/N | Config | Speed (MHz) | Voltage | Package | Features |
|---|---|---|---|---|---|
| GS8662D36BD-350M<br>GS8662D18BD-350M<br>GS8662D09BD-350M<br>GS8662D08BD-350M | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 350 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II Burst of 4 |
| GS8662Q36BD-333M<br>GS8662Q18BD-333M<br>GS8662Q09BD-333M<br>GS8662Q08BD-333M | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 333 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II Burst of 2 |

## 36Mb SigmaQuad-II+

| GSI P/N | Config | Speed (MHz) | Voltage | Package | Features |
|---|---|---|---|---|---|
| GS8342D38BD-500M<br>GS8342D20BD-500M<br>GS8342D11BD-500M<br>GS8342D06BD-500M | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 500 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II+ Burst of 4<br>Read Latency = 2.5<br>On-Die Termination Option |
| GS8342Q37BD-333M<br>GS8342Q19BD-333M<br>GS8342Q10BD-333M<br>GS8342Q07BD-333M | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 333 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II+ Burst of 2<br>Read Latency = 2.0<br>On-Die Termination Option |

| 36Mb SigmaQuad-II | | | | | |
|---|---|---|---|---|---|
| **GSI P/N** | **Config** | **Speed (MHz)** | **Voltage** | **Package** | **Features** |
| GS8342D36BD-350M<br>GS8342D18BD-350M<br>GS8342D09BD-350M<br>GS8342D08BD-350M | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 350 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II Burst of 4 |
| GS8342Q36BD-333M<br>GS8342Q18BD-333M<br>GS8342Q09BD-333M<br>GS8342Q08BD-333M | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 333 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II Burst of 2 |

**Note:**
GE and GD packages are 6/6 RoHS-compliant. Contact your local sales representative for E or D package (leaded version) availability.



D0101; Rev1.1; 9/2025

# SigmaDDR™ SRAMs

| 288Mb SigmaDDR-IIIe | | | | | |
|---|---|---|---|---|---|
| **GSI P/N** | **Config** | **Speed (MHz)** | **Voltage** | **Package*** | **Features** |
| GS82583ET36GK-625M<br>GS82583ET18GK-625M | 8M x 36<br>16M x 18 | 625 | 1.3 V $V_{DD}$<br>1.2 V/1.3 V/1.5 V $V_{DDQ}$ | 260 BGA | DDR-IIIe Burst of 2<br>Read Latency = 3<br>On-Die Termination Option |
| **144Mb SigmaDDR-IIIe** | | | | | |
| **GSI P/N** | **Config** | **Speed (MHz)** | **Voltage** | **Package** | **Features** |
| GS81313LT36GK-714M<br>GS81313LT18GK-714M | 4M x 36<br>8M x 18 | 714 | 1.25 ~ 1.3 V $V_{DD}$<br>1.2 ~ 1.3 V $V_{DDQ}$<br>HSTL I/O | 260 BGA | DDR-IIIe Burst of 2<br>Read Latency = 3<br>On-Die Termination Option<br>ECCRAM™ |
| **72Mb SigmaDDR-IIIe** | | | | | |
| **GSI P/N** | **Config** | **Speed (MHz)** | **Voltage** | **Package*** | **Features** |
| GS8673ET36BHK-550M<br>GS8673ET18BHK-550M | 2M x 36<br>4M x 18 | 550 | 1.35 V $V_{DD}$<br>1.2 V/1.5 V $V_{DDQ}$ | 260 BGA | DDR-IIIe Burst of 2<br>Read Latency = 3<br>On-Die Termination Option<br>ECCRAM™ |

**Note:**
**GK package is 6/6 RoHS-compliant. Contact your local sales representative for K package (leaded version) availability. HK package is 5/6 RoHS-compliant with leaded package balls and lead-free die bumps.**

## 288Mb SigmaDDR-II+

| GSI P/N | Config | Speed (MHz) | Voltage | Package* | Features |
|---|---|---|---|---|---|
| GS82582T38GE-500M<br>GS82582T20GE-500M | 8M x 36<br>16M x 18 | 500 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(15 x 17 mm) | SigmaQuad-II+ Burst of 2<br>Read Latency = 2.0<br>On-Die Termination Option |

## 144Mb SigmaDDR-II+

| GSI P/N | Config | Speed (MHz) | Voltage | Package* | Features |
|---|---|---|---|---|---|
| GS81302T38AGD-550M<br>GS81302T20AGD-550M | 4M x 36<br>8M x 18 | 550 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | DDR-II+ Burst of 2<br>Read Latency = 2.5<br>On-Die Termination Option |

## 144Mb SigmaDDR-II

| GSI P/N | Config | Speed (MHz) | Voltage | Package | Features |
|---|---|---|---|---|---|
| GS81302T36E-350M<br>GS81302T18E-350M<br>GS81302T09E-350M<br>GS81302T08E-350M | 4M x 36<br>8M x 18<br>16M x 9<br>16M x 8 | 350 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(15 x 17 mm) | DDR-II Burst of 2 |

## 72Mb SigmaDDR-II+

| GSI P/N | Config | Speed (MHz) | Voltage | Package | Features |
|---|---|---|---|---|---|
| GS8662T38CGD-550M<br>GS8662T20CGD-550M | 2M x 36<br>4M x 18 | 550 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | SigmaQuad-II+ Burst of 2<br>Read Latency = 2.5<br>On-Die Termination Option |
| GS8662T38BD-450M<br>GS8662T20BD-450M<br>GS8662T11BD-450M<br>GS8662T06BD-450M | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 450 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | DDR-II+ Burst of 2<br>Read Latency = 2.5 |

## 72Mb SigmaDDR-II

| GSI P/N | Config | Speed (MHz) | Voltage | Package | Features |
|---|---|---|---|---|---|
| GS8662T36BD-350M<br>GS8662T18BD-350M<br>GS8662T09BD-350M<br>GS8662T08BD-350M | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 350 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | DDR-II Burst of 2 |



D0101; Rev1.1; 9/2025

## 36Mb SigmaDDR-II+

| GSI P/N | Config | Speed (MHz) | Voltage | Package | Features |
|---|---|---|---|---|---|
| GS8342T38BD-500M<br>GS8342T20BD-500M<br>GS8342T11BD-500M<br>GS8342T06BD-500M | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 500 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | **DDR-II+ Burst of 2**<br>**Read Latency = 2.5**<br>**On-Die Termination Option** |

## 36Mb SigmaDDR-II

| GSI P/N | Config | Speed (MHz) | Voltage | Package | Features |
|---|---|---|---|---|---|
| GS8342T36BD-350M<br>GS8342T18BD-350M<br>GS8342T09BD-350M<br>GS8342T08BD-350M | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 350 | 1.8 V $V_{DD}$<br>1.5 V/1.8 V $V_{DDQ}$ | 165 BGA<br>(13 x 15 mm) | **DDR-II Burst of 2** |

**Note:**
GE and GD packages are 6/6 RoHS-compliant. Contact your local sales representative for E and D package (leaded version) availability.

# No Bus Turnaround (NBT™) SRAMs

## 288Mb NBT

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage Options | | Package* | Features |
|---|---|---|---|---|---|---|---|
| | | | | $V_{DD}$ | $V_{DDQ}$ | | |
| GS82564Z36GB-333M<br>GS82564Z18GB-333M | 8M x 36<br>16M x 18 | 333 | 2.5–3.0 | 2.5/3.3 V | 2.5/3.3 V | 119 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS82564Z36GD-333M<br>GS82564Z18GD-333M | 8M x 36<br>16M x 18 | 333 | 2.5–3.0 | 2.5/3.3 V | 2.5/3.3 V | 165 BGA<br>(13 x 15 mm) | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |

## 144Mb NBT

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage Options | | Package* | Features |
|---|---|---|---|---|---|---|---|
| | | | | $V_{DD}$ | $V_{DDQ}$ | | |
| GS81282Z36GB-333M<br>GS81282Z18GB-333M | 4M x 36<br>8M x 18 | 333 | 2.5–3.0 | 2.5/3.3 V | 2.5/3.3 V | 119 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS81282Z36GD-333M<br>GS81282Z18GD-333M | 4M x 36<br>8M x 18 | 333 | 2.5–3.0 | 2.5/3.3 V | 2.5/3.3 V | 165 BGA<br>(13 x 15 mm) | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |

## 72Mb NBT

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage Options | | Package | Features |
|---|---|---|---|---|---|---|---|
| | | | | $V_{DD}$ | $V_{DDQ}$ | | |
| GS8642Z36B-250M<br>GS8642Z18B-250M | 2M x 36<br>4M x 18 | 250 | 2.3–3.5 | 2.5/3.3 V | 2.5/3.3 V | 119 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS8642Z72C-250M | 1M x 72 | 250 | 2.3–3.5 | 2.5/3.3 V | 2.5/3.3 V | 209 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |

**Note:**
1. GB and GD packages are 6/6 RoHS-compliant. Contact your local sales representative for B and D package (leaded version) availability.



D0101; Rev1.1; 9/2025

# No Bus Turnaround (NBT™) SRAMs

## 36Mb NBT

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage Options | | Package* | Features |
|---|---|---|---|---|---|---|---|
| | | | | $V_{DD}$ | $V_{DDQ}$ | | |
| GS8322Z36AB-375M<br>GS8322Z18AB-375M | 1M x 36<br>2M x 18 | 375 | 2.5–4.0 | 2.5/3.3 V | 2.5/3.3 V | 119 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS8322Z36AD-375M<br>GS8322Z18AD-375M | 1M x 36<br>2M x 18 | 375 | 2.5–4.0 | 2.5/3.3 V | 2.5/3.3 V | 165 BGA<br>(13 x 15 mm) | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS8322Z72C-225M | 512K x 72 | 225 | 2.5–4.0 | 2.5/3.3 V | 2.5/3.3 V | 209 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |

## 18Mb NBT

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage Options | | Package* | Features |
|---|---|---|---|---|---|---|---|
| | | | | $V_{DD}$ | $V_{DDQ}$ | | |
| GS8162Z36DB-375M<br>GS8162Z18DB-375M | 512K x 36<br>1M x 18 | 375 | 2.5–3.8 | 2.5/3.3 V | 2.5/3.3 V | 119 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS8162Z36DD-375M<br>GS8162Z18DD-375M | 512K x 36<br>1M x 18 | 375 | 2.5–3.8 | 2.5/3.3 V | 2.5/3.3 V | 165 BGA<br>(13 x 15 mm) | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS8162Z72CC-300M | 256K x 72 | 300 | 2.8–3.8 | 2.5/3.3 V | 2.5/3.3 V | 209 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |

## 9Mb NBT

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage Options | | Package | Features |
|---|---|---|---|---|---|---|---|
| | | | | $V_{DD}$ | $V_{DDQ}$ | | |
| GS882Z36CB-300M<br>GS882Z18CB-300M | 256K x 36<br>512K x 18 | 300 | 2.3–3.8 | 2.5/3.3 V | 2.5/3.3 V | 119 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS882Z36CD-300M<br>GS882Z18CD-300M | 256K x 36<br>512K x 18 | 300 | 2.3–3.8 | 2.5/3.3 V | 2.5/3.3 V | 165 BGA<br>(13 x 15 mm) | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |

**Note:**
1. GB and GD packages are 6/6 RoHS-compliant. Contact your local sales representative for B and D package (leaded version) availability.

# Synchronous Burst SRAMs

## 288Mb SyncBurst

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage Options | | Package* | Features |
|---|---|---|---|---|---|---|---|
| | | | | $V_{DD}$ | $V_{DDQ}$ | | |
| GS8256436GB-333M<br>GS8256418GB-333M | 8M x 36<br>16M x 18 | 333 | 2.5–3.0 | 2.5/3.3 V | 2.5/3.3 V | 119 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS8256436GD-333M<br>GS8256418GD-333M | 8M x 36<br>16M x 18 | 333 | 2.5–3.0 | 2.5/3.3 V | 2.5/3.3 V | 165 BGA<br>(13 x 15 mm) | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |

## 144Mb SyncBurst

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage Options | | Package* | Features |
|---|---|---|---|---|---|---|---|
| | | | | $V_{DD}$ | $V_{DDQ}$ | | |
| GS8128236GB-333M<br>GS8128218GB-333M | 4M x 36<br>8M x 18 | 333 | 2.5–3.0 | 2.5/3.3 V | 2.5/3.3 V | 119 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS8128236GD-333M<br>GS8128218GD-333M | 4M x 36<br>8M x 18 | 333 | 2.5–3.0 | 2.5/3.3 V | 2.5/3.3 V | 165 BGA<br>(13 x 15 mm) | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |

## 72Mb SyncBurst

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage Options | | Package | Features |
|---|---|---|---|---|---|---|---|
| | | | | $V_{DD}$ | $V_{DDQ}$ | | |
| GS864236B-250M<br>GS864218B-250M | 2M x 36<br>4M x 18 | 250 | 2.3–3.5 | 2.5/3.3 V | 2.5/3.3 V | 119 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS864272C-250M | 1M x 72 | 250 | 2.3–3.5 | 2.5/3.3 V | 2.5/3.3 V | 209 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |

**Note:**
1. GB and GD packages are 6/6 RoHS-compliant. Contact your local sales representative for B and D package (leaded version) availability.



D0101; Rev1.1; 9/2025

## 36Mb SyncBurst

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage Options | | Packages | Features |
|---|---|---|---|---|---|---|---|
| | | | | $V_{DD}$ | $V_{DDQ}$ | | |
| GS832236AB-375M<br>GS832218AB-375M | 1M x 36<br>2M x 18 | 375 | 2.5–4.0 | 2.5/3.3 V | 2.5/3.3 V | 119 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS832236AD-375M<br>GS832218AD-375M | 1M x 36<br>2M x 18 | 375 | 2.5–4.0 | 2.5/3.3 V | 2.5/3.3 V | 165 BGA<br>(13 x 15 mm) | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS832272C-225M | 512K x 72 | 225 | 2.5–4.0 | 2.5/3.3 V | 2.5/3.3 V | 209 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |

## 18Mb SyncBurst

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage Options | | Packages | Features |
|---|---|---|---|---|---|---|---|
| | | | | $V_{DD}$ | $V_{DDQ}$ | | |
| GS816272CC-200M | 256K x 72 | 200 | 2.8–3.8 | 2.5/3.3 V | 2.5/3.3 V | 209 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS816236DB-375M<br>GS816218DB-375M | 512K x 36<br>1M x 18 | 375 | 2.5–3.8 | 2.5/3.3 V | 2.5/3.3 V | 119 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS816236DD-375M<br>GS816218DD-375M | 512K x 36<br>1M x 18 | 375 | 2.5–3.8 | 2.5/3.3 V | 2.5/3.3 V | 165 BGA<br>(13 x 15 mm) | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |

## 9Mb SyncBurst

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | Voltage Options | | Packages | Features |
|---|---|---|---|---|---|---|---|
| | | | | $V_{DD}$ | $V_{DDQ}$ | | |
| GS88236CB-300M<br>GS88218CB-300M | 256K x 36<br>512K x 18 | 300 | 2.5–3.8 | 2.5/3.3 V | 2.5/3.3 V | 119 BGA | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |
| GS88236CD-300M<br>GS88218CD-300M | 256K x 36<br>512K x 18 | 300 | 2.5–3.8 | 2.5/3.3 V | 2.5/3.3 V | 165 BGA<br>(13 x 15 mm) | JTAG; FLXDrive™;<br>Pipeline and Flow Through modes |

## GSI's Legacy SRAM Offerings

Since 1995, GSI Technology has been designing, developing, and marketing a broad range of high performance memory products for networking, military, medical, automotive and other applications. We specialize in memory products featuring very high transaction rates, high density, low latency, high bandwidth, fast clock access times, and low power consumption. We offer unusually long product support life cycles, short lead times, the largest high performance memory product portfolio in the market and complete pre and post-sale support.

GSI Technology offers both Static Random Access Memory products (SRAMs) and Low Latency DRAM products (LLDRAM). GSI's SRAMs utilize world-class, low power CMOS process technologies down to 40 nanometer. Our Low Latency DRAM product line is fabricated using a 72nm DRAM process technology. Most GSI products are specifically recommended for use with a variety of host devices, such as NPUs and FPGAs.



D0101; Rev1.1; 9/2025

# SigmaQuad-IVe™ SRAMs

GSI's 4th Generation SigmaQuad™ SRAMs are our highest performance synchronous memories. They come in a 144Mb density with up to a 1333 MHz operating frequency, and are suitable for a variety of applications, including packet processing and image processing.

SigmaQuad SRAMs are synchronous memories with separate read and write data buses. “Quad” refers to their ability to transfer 4 beats of data (2 beats per data bus) in a single clock cycle.

GSI Technology IVe customers have access to a free SRAM Controller IP for Xilinx FPGAs.

***GSI offers all products in lead-free (6/6 RoHS compliant) packages; therefore, only these products are listed. Leaded (5/6 RoHS-compliant) packages are still available for our 65nm and 90nm product families. Please contact your local sales representative if you are interested in a 5/6 part.**

## 144Mb SigmaQuad-IVe™ ECCRAM™ Multi-Bank

| GSI P/N | Config | Burst Length | Read Latency | ODT Weak/Strong/None | Speed (MHz) | Voltage | 260 BGA (GK) |
|---|---|---|---|---|---|---|---|
| GS81314LQ36yy-###<br>GS81314LQ18yy-### | 4M x 36<br>8M x 18 | 2 | 6 | ● | 1333/1200/1066 | $V_{DD}$—1.3 V<br>$V_{DDQ}$—1.2 V | ● |
| GS81314LD36yy-###<br>GS81314LD18yy-### | 4M x 36<br>8M x 18 | 4 | 6 | ● | 1333/1200/1066 | $V_{DD}$—1.3 V<br>$V_{DDQ}$—1.2 V | ● |

## 144Mb SigmaQuad-IVe™ ECCRAM™ Single-Bank

| GSI P/N | Config | Burst Length | Read Latency | ODT Weak/Strong/None | Speed (MHz) | Voltage | 260 BGA (GK) |
|---|---|---|---|---|---|---|---|
| GS81314LQ37yy-###<br>GS81314LQ19yy-### | 4M x 36<br>8M x 18 | 2 | 5 | ● | 933/800 | $V_{DD}$—1.3 V<br>$V_{DDQ}$—1.2 V | ● |
| GS81314LD37yy-###<br>GS81314LD19yy-### | 4M x 36<br>8M x 18 | 4 | 5 | ● | 933/800 | $V_{DD}$—1.3 V<br>$V_{DDQ}$—1.2 V | ● |

# SigmaQuad-IIIe™ SRAMs

GSI's 3rd Generation SigmaQuad™ SRAMs are high performance memories with a powerful combination of capacity and transaction rate capability.

SigmaQuad SRAMs are synchronous memories with separate read and write data buses. “Quad” refers to their ability to transfer 4 beats of data (2 beats per data bus) in a single clock cycle.

GSI Technology IIIe customers have access to a free SRAM Controller IP for Xilinx FPGAs.

***GSI offers all products in lead-free (6/6 RoHS compliant) packages; therefore, only these products are listed. Leaded (5/6 RoHS-compliant) packages are still available for our 65nm and 90nm product families. Please contact your local sales representative if you are interested in a 5/6 part.**

| 288Mb SigmaQuad-IIIe™ | | | | | | | |
|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Burst Length | Read Latency | ODT<br>Weak/Strong/None | Speed (MHz) | Voltage | 260 BGA (GK) |
| GS82583EQ36yy-###<br>GS82583EQ18yy-### | 8M x 36<br>16M x 18 | 2 | 3 | • | 500/450/400 | $V_{DD}$—1.3 V<br>$V_{DDQ}$—1.2 V/1.5 V | • |
| GS82583ED36yy-###<br>GS82583ED18yy-### | 8M x 36<br>16M x 18 | 4 | 3 | • | 675/625/550/500 | $V_{DD}$—1.3 V<br>$V_{DDQ}$—1.2 V/1.5 V | • |
| **144Mb SigmaQuad-IIIe™ ECCRAMs™** | | | | | | | |
| GSI P/N | Config | Burst Length | Read Latency | ODT<br>Weak/Strong/None | Speed (MHz) | Voltage | 260 BGA (GK) |
| GS81313LQ36yy-###<br>GS81313LQ18yy-### | 4M x 36<br>8M x 18 | 2 | 3 | • | 800/714/600 | $V_{DD}$—1.3 V<br>$V_{DDQ}$—1.2 V | • |
| GS81313LD36yy-###<br>GS81313LD18yy-### | 4M x 36<br>8M x 18 | 4 | 3 | • | 833/714/625 | $V_{DD}$—1.3 V<br>$V_{DDQ}$—1.2 V | • |





D0101; Rev1.1; 9/2025

## 72Mb SigmaQuad-IIIe™ ECCRAMs™ (Rev. B)

| GSI P/N | Config | Burst Length | Read Latency | ODT | Speed (MHz) | Voltage | 260 BGA (GK) |
|---|---|---|---|---|---|---|---|
| | | | | Weak/Strong/None | | | |
| GS8673EQ36Byy-###<br>GS8673EQ18Byy-### | 2M x 36<br>4M x 18 | 2 | 3 | ● | 675/625/550/500 | $V_{DD}$—1.35 V<br>$V_{DDQ}$—1.2 V/1.5 V | ● |
| GS8673ED36Byy-###<br>GS8673ED18Byy-### | 2M x 36<br>4M x 18 | 4 | 3 | ● | 675/625/550/500 | $V_{DD}$—1.35 V<br>$V_{DDQ}$—1.2 V/1.5 V | ● |

## 72Mb SigmaQuad-IIIe™ ECCRAMs™—For Use with the GSI Memory Controller IP (Rev. B)

| GSI P/N | Config | Burst Length | Read Latency | ODT | Speed (MHz) | Voltage | 260 BGA (GK) |
|---|---|---|---|---|---|---|---|
| | | | | Weak/Strong/None | | | |
| GS8673EQ36Byy-###S<br>GS8673EQ18Byy-###S | 2M x 36<br>4M x 18 | 2 | 3 | ● | 725/625/550 | $V_{DD}$—1.35 V<br>$V_{DDQ}$—1.2 V/1.5 V | ● |
| GS8673ED36Byy-###S<br>GS8673ED18Byy-###S | 2M x 36<br>4M x 18 | 4 | 3 | ● | 725/625/550 | $V_{DD}$—1.35 V<br>$V_{DDQ}$—1.2 V/1.5 V | ● |

SigmaQuad-IIIe and ECCRAMs are trademarks of GSI Technology.

# SigmaQuad-II+™ and SigmaQuad-II™ SRAMs

GSI SigmaQuad™ SRAMs are the preferred choice in leading edge applications from data packet statistics to radar signature processing.

SigmaQuad SRAMs are synchronous memories with separate read and write data buses. “Quad” refers to their ability to transfer 4 beats of data (2 beats per data bus) in a single clock cycle.

GSI’s SigmaQuad devices are compatible with all competitor Quad Data Rate SRAMs.

GSI Technology II+ customers have access to a free SRAM Controller IP for Xilinx FPGAs.

*GSI offers all products in lead-free (6/6 RoHS compliant) packages; therefore, only these products are listed. Leaded (5/6 RoHS-compliant) packages are still available for our 65nm and 90nm product families. Please contact your local sales representative if you are interested in a 5/6 part.

**288Mb SigmaQuad-II+™ and SigmaQuad-II™**

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS82582QT38yy-###<br>GS82582QT20yy-### | 8M x 36<br>16M x 18 | 2 | 2.5 | ● | | 500/450/400/375 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS82582Q38yy-###<br>GS82582Q20yy-### | 8M x 36<br>16M x 18 | 2 | 2.5 | | ● | 500/450/400/375 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS82582DT38yy-###<br>GS82582DT20yy-### | 8M x 36<br>16M x 18 | 4 | 2.5 | ● | | 550/500/450/400 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS82582D38yy-###<br>GS82582D20yy-### | 8M x 36<br>16M x 18 | 4 | 2.5 | | ● | 550/500/450/400 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS82582QT37yy-###<br>GS82582QT19yy-### | 8M x 36<br>16M x 18 | 2 | 2.0 | ● | | 400/375/333/300 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS82582Q37yy-###<br>GS82582Q19yy-### | 8M x 36<br>16M x 18 | 2 | 2.0 | | ● | 400/375/333/300 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS82582DT37yy-###<br>GS82582DT19yy-### | 8M x 36<br>16M x 18 | 4 | 2.0 | ● | | 450/400/375/333 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS82582D37yy-###<br>GS82582D19yy-### | 8M x 36<br>16M x 18 | 4 | 2.0 | | ● | 450/400/375/333 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |



D0101; Rev1.1; 9/2025

## 288Mb SigmaQuad-II+™ and SigmaQuad-II™ (Continued)

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS82582Q36yy-###<br>GS82582Q18yy-### | 8M x 36<br>16M x 18 | 2 | 1.5 | n/a | n/a | 357/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS82582D36yy-###<br>GS82582D18yy-### | 8M x 36<br>16M x 18 | 4 | 1.5 | n/a | n/a | 400/375/333/<br>300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |

## 144Mb SigmaQuad-II+™ and SigmaQuad-II™
(Rev. A)

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS81302QT38Ayy-###<br>GS81302QT20Ayy-### | 4M x 36<br>8M x 18 | 2 | 2.5 | ● | | 500/450/400 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS81302Q38Ayy-###<br>GS81302Q20Ayy-### | 4M x 36<br>8M x 18 | 2 | 2.5 | | ● | 500/450/400 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS81302DT38Ayy-###<br>GS81302DT20Ayy-### | 4M x 36<br>8M x 18 | 4 | 2.5 | ● | | 633/550/500/450 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS81302D38Ayy-###<br>GS81302D20Ayy-### | 4M x 36<br>8M x 18 | 4 | 2.5 | | ● | 633/550/500/450 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS81302QT37Ayy-###<br>GS81302QT19Ayy-### | 4M x 36<br>8M x 18 | 2 | 2.0 | ● | | 450/400/375/333 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS81302Q37Ayy-###<br>GS81302Q19Ayy-### | 4M x 36<br>8M x 18 | 2 | 2.0 | | ● | 450/400/375/333 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS81302DT37Ayy-###<br>GS81302DT19Ayy-### | 4M x 36<br>8M x 18 | 4 | 2.0 | ● | | 450/400/375/333 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS81302D37Ayy-###<br>GS81302D19Ayy-### | 4M x 36<br>8M x 18 | 4 | 2.0 | | ● | 450/400/375/333 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |

## 144Mb SigmaQuad-II+™ and SigmaQuad-II™ (Rev. A) (Continued)

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS81302Q36Ayy-###<br>GS81302Q18Ayy-### | 4M x 36<br>8M x 18 | 2 | 1.5 | n/a | n/a | 400/375/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS81302D36Ayy-###<br>GS81302D18Ayy-### | 4M x 36<br>8M x 18 | 4 | 1.5 | n/a | n/a | 400/375/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |

## 144Mb SigmaQuad-II+™ and SigmaQuad-II™

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS81302Q10yy-###<br>GS81302Q07yy-### | 16M x 9<br>16M x 8 | 2 | 2.0 | | ● | 318/300/250/200 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS81302D11yy-###<br>GS81302D06yy-### | 16M x 9<br>16M x 8 | 4 | 2.5 | | ● | 500/450/400/350 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS81302D10yy-###<br>GS81302D07yy-### | 16M x 9<br>16M x 8 | 4 | 2.0 | | ● | 450/400/375/333/300 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS81302Q09yy-###<br>GS81302Q08yy-### | 16M x 9<br>16M x 8 | 2 | 1.5 | n/a | n/a | 300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS81302D09yy-###<br>GS81302D08yy-### | 16M x 9<br>16M x 8 | 4 | 1.5 | n/a | n/a | 375/350/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |



D0101; Rev1.1; 9/2025

## 72Mb SigmaQuad-II+™ and SigmaQuad-II™
(Rev. C)

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS8662DT38Cyy-###<br>GS8662DT20Cyy-### | 2M x 36<br>4M x 18 | 4 | 2.5 | ● | | 633/550/500 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662D38Cyy-###<br>GS8662D20Cyy-### | 2M x 36<br>4M x 18 | 4 | 2.5 | | ● | 633/550/500 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662QT38Cyy-###<br>GS8662QT20Cyy-### | 2M x 36<br>4M x 18 | 2 | 2.5 | ● | | 500/450/400 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662Q38Cyy-###<br>GS8662Q20Cyy-### | 2M x 36<br>4M x 18 | 2 | 2.5 | | ● | 500/450/400 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |

SigmaQuad-II and SigmaQuad-II+ products are pin and function compatible with QDR-II™ and QDR-II+™ products, respectively.
SigmaQuad, SigmaQuad-II, and SigmaQuad-II+ are trademarks of GSI Technology.
All other trademarks belong to their respective holders.

## 72Mb SigmaQuad-II+™ and SigmaQuad-II™
(Rev. B)

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS8662DT38Byy-###<br>GS8662DT20Byy-###<br>GS8662DT11Byy-###<br>GS8662DT06Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 4 | 2.5 | ● | | 550/500/450/400/350 (x18/x36)<br>500/450/400/350 (x8/x9) | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662D38Byy-###<br>GS8662D20Byy-###<br>GS8662D11Byy-###<br>GS8662D06Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 4 | 2.5 | | ● | 550/500/450/400/350 (x18/x36)<br>500/450/400/350 (x8/x9) | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |

## 72Mb SigmaQuad-II+™ and SigmaQuad-II™ (Rev. B) (Continued)

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS8662QT37Byy-###<br>GS8662QT19Byy-###<br>GS8662QT10Byy-###<br>GS8662QT07Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 2 | 2.0 | ● | | 357/333/300/ 250/200 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662Q37Byy-###<br>GS8662Q19Byy-###<br>GS8662Q10Byy-###<br>GS8662Q07Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 2 | 2.0 | | ● | 357/333/300/ 250/200 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662DT37Byy-###<br>GS8662DT19Byy-###<br>GS8662DT10Byy-###<br>GS8662DT07Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 4 | 2.0 | ● | | 450/400/350/333/300 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662D37Byy-###<br>GS8662D19Byy-###<br>GS8662D10Byy-###<br>GS8662D07Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 4 | 2.0 | | ● | 450/400/350/333/300 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662Q36Byy-###<br>GS8662Q18Byy-###<br>GS8662Q09Byy-###<br>GS8662Q08Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 2 | 1.5 | n/a | n/a | 357/333/300/250/200 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662D36Byy-###<br>GS8662D18Byy-###<br>GS8662D09Byy-###<br>GS8662D08Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 4 | 1.5 | n/a | n/a | 400/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |

SigmaQuad-II and SigmaQuad-II+ products are pin and function compatible with QDR-II™ and QDR-II+™ products, respectively.
SigmaQuad, SigmaQuad-II, and SigmaQuad-II+ are trademarks of GSI Technology.
All other trademarks belong to their respective holders.



D0101; Rev1.1; 9/2025

## 36Mb SigmaQuad-II+™ and SigmaQuad-II™
(Rev. B)

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS8342DT38Byy-###<br>GS8342DT20Byy-###<br>GS8342DT11Byy-###<br>GS8342DT06Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 4 | 2.5 | ● | | 550/500/450/400/350 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8342D38Byy-###<br>GS8342D20Byy-###<br>GS8342D11Byy-###<br>GS8342D06Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 4 | 2.5 | | ● | 550/500/450/400/350 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8342QT37Byy-###<br>GS8342QT19Byy-###<br>GS8342QT10Byy-###<br>GS8342QT07Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 2 | 2.0 | ● | | 357/333/300/250/200 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8342Q37Byy-###<br>GS8342Q19Byy-###<br>GS8342Q10Byy-###<br>GS8342Q07Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 2 | 2.0 | | ● | 357/333/300/250/200 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8342DT37Byy-###<br>GS8342DT19Byy-###<br>GS8342DT10Byy-###<br>GS8342DT07Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 4 | 2.0 | | ● | 450/400/350/333/300 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8342D37Byy-###<br>GS8342D19Byy-###<br>GS8342D10Byy-###<br>GS8342D07Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 4 | 2.0 | | ● | 450/400/350/333/300 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8342Q36Byy-###<br>GS8342Q18Byy-###<br>GS8342Q09Byy-###<br>GS8342Q08Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 2 | 1.5 | n/a | ● n/a | 357/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8342D36Byy-###<br>GS8342D18Byy-###<br>GS8342D09Byy-###<br>GS8342D08Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 4 | 1.5 | n/a | ● n/a | 400/350/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |

SigmaQuad-II and SigmaQuad-II+ products are pin and function compatible with QDR-II™ and QDR-II+™ products, respectively.
SigmaQuad, SigmaQuad-II, and SigmaQuad-II+ are trademarks of GSI Technology.
All other trademarks belong to their respective holders.

# SigmaDDR-IIIe™ SRAMs

GSI's 3rd Generation SigmaDDR SRAMs are high performance memories with a powerful combination of capacity and transaction rate capability.

SigmaDDR SRAMs are synchronous memories with a common read and write data bus. "DDR" refers to their ability to transfer 2 beats of data on the data bus in a single clock cycle.

GSI Technology IIIe customers have access toa  free SRAM Controller IP for Xilinx FPGAs.

***GSI offers all products in lead-free (6/6 RoHS compliant) packages; therefore, only these products are listed. Leaded (5/6 RoHS-compliant) packages are still available for our 65nm and 90nm product families. Please contact your local sales representative if you are interested in a 5/6 part.**

| 288Mb SigmaDDR-IIIe™ | | | | | | | |
|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Burst Length | Read Latency | ODT Weak/Strong/None | Speed (MHz) | Voltage | 260 BGA (GK) |
| GS82583ET36yy-###<br>GS82583ET18yy-### | 8M x 36<br>16M x 18 | 2 | 3 | ● | 675/625/550/500 | $V_{DD}$—1.3 V<br>$V_{DDQ}$—1.2 V/1.5 V | ● |
| **144Mb SigmaDDR-IIIe™ ECCRAMs™** | | | | | | | |
| GSI P/N | Config | Burst Length | Read Latency | ODT Weak/Strong/None | Speed (MHz) | Voltage | 260 BGA (GK) |
| GS81313LT36yy-###<br>GS81313LT18yy-### | 4M x 36<br>8M x 18 | 2 | 3 | ● | 833/714/625 | $V_{DD}$—1.3 V<br>$V_{DDQ}$—1.2 V | ● |
| **72Mb SigmaDDR-IIIe™ ECCRAMs™ (Rev. B)** | | | | | | | |
| GSI P/N | Config | Burst Length | Read Latency | ODT Weak/Strong/None | Speed (MHz) | Voltage | 260 BGA (GK) |
| GS8673ET36Byy-###<br>GS8673ET18Byy-### | 2M x 36<br>4M x 18 | 2 | 3 | ● | 675/625/550/500 | $V_{DD}$—1.35 V<br>$V_{DDQ}$—1.2 V/1.5 V | ● |

SigmaDDR-IIIe and ECCRAMs are trademarks of GSI Technology.

| 72Mb SigmaDDR-IIIe™ ECCRAMs™—For Use with the GSI Memory Controller IP (Rev. B) | | | | | | | |
|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Burst Length | Read Latency | ODT<br>Weak/Strong/None | Speed (MHz) | Voltage | 260 BGA (GK) |
| GS8673ET36Byy-###S<br>GS8673ET18Byy-###S | 2M x 36<br>4M x 18 | 2 | 3 | ● | 725/625/550 | $V_{DD}$—1.35 V<br>$V_{DDQ}$—1.2 V/1.5 V | ● |

SigmaDDR-IIIe and ECCRAMs are trademarks of GSI Technology.

# SigmaDDR-II+™ and SigmaDDR-II™ SRAMs

GSI SigmaDDR SRAMs are the preferred choice in leading edge applications from data packet statistics to radar signature processing.

SigmaDDR SRAMs are synchronous memories with a common read and write data bus. “DDR” refers to their ability to transfer 2 beats of data on the data bus in a single clock cycle.

GSI’s SigmaDDR devices are compatible with all competitor Double Data Rate SRAMs.

GSI Technology II+ customers have access to a free SRAM Controller IP for Xilinx FPGAs.

***GSI offers all products in lead-free (6/6 RoHS compliant) packages; therefore, only these products are listed. Leaded (5/6 RoHS-compliant) packages are still available for our 65nm and 90nm product families. Please contact your local sales representative if you are interested in a 5/6 part.**

## SigmaDDR-II+ and SigmaDDR-II SRAMs

| 288Mb SigmaDDR-II+™ | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS82582TT38yy-###<br>GS82582TT20yy-### | 8M x 36<br>16M x 18 | 2 | 2.5 | ● | | 550/500/450/400 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS82582T38yy-###<br>GS82582T20yy-### | 8M x 36<br>16M x 18 | 2 | 2.5 | | ● | 550/500/450/400 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS82582TT37yy-###<br>GS82582TT19yy-### | 8M x 36<br>16M x 18 | 2 | 2.0 | ● | | 450/400/375/333 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS82582T37yy-###<br>GS82582T19yy-### | 8M x 36<br>16M x 18 | 2 | 2.0 | | ● | 450/400/375/333 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |

SigmaDDR-II and SigmaDDR-II+ products are pin and function compatible with DDR II CIO™ and DDR II+ CIO™ products, respectively.

| 144Mb SigmaDDR-II+™ (Rev. A) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS81302TT38Ayy-###<br>GS81302TT20Ayy-### | 4M x 36<br>8M x 18 | 2 | 2.5 | ● | | 633/550/500/450 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS81302T38Ayy-###<br>GS81302T20Ayy-### | 4M x 36<br>8M x 18 | 2 | 2.5 | | ● | 633/550/500/450 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS81302TT37Ayy-###<br>GS81302TT19Ayy-### | 4M x 36<br>8M x 18 | 2 | 2.0 | ● | | 450/400/350/333 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS81302T37Ayy-###<br>GS81302T19Ayy-### | 4M x 36<br>8M x 18 | 2 | 2.0 | | ● | 450/400/350/333 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |

SigmaDDR-II and SigmaDDR-II+ products are pin and function compatible with DDR II CIO™ and DDR II+ CIO™ products, respectively.
SigmaDDR-II and SigmaDDR-II+ are trademarks of GSI Technology.
All other trademarks belong to their respective holders.

| 144Mb SigmaDDR-II+™and SigmaDDR-II™ | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS81302TT11yy-###<br>GS81302TT06yy-### | 16M x 9<br>16M x 8 | 2 | 2.5 | ● | | 500/450/400/350 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS81302T11yy-###<br>GS81302T06yy-### | 16M x 9<br>16M x 8 | 2 | 2.5 | | ● | 500/450/400/350 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS81302TT10yy-###<br>GS81302TT07yy-### | 16M x 9<br>16M x 8 | 2 | 2.0 | ● | | 450/400/350/333/300 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS81302T10yy-###<br>GS81302T07yy-### | 16M x 9<br>16M x 8 | 2 | 2.0 | | ● | 450/400/350/333/300 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |

## 144Mb SigmaDDR-II+™ and SigmaDDR-II™

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS81302T36yy-###<br>GS81302T18yy-###<br>GS81302T09yy-###<br>GS81302T08yy-### | 4M x 36<br>8M x 18<br>16M x 9<br>16M x 8 | 2 | 1.5 | n/a | n/a | 375/350/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |
| GS81302R36yy-###<br>GS81302R18yy-###<br>GS81302R09yy-###<br>GS81302R08yy-### | 4M x 36<br>8M x 18<br>16M x 9<br>16M x 8 | 4 | 1.5 | n/a | n/a | 375/350/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |

SigmaDDR-II and SigmaDDR-II+ products are pin and function compatible with DDR II CIO™ and DDR II+ CIO™ products, respectively.
SigmaDDR-II and SigmaDDR-II+ are trademarks of GSI Technology.
All other trademarks belong to their respective holders.

## 72Mb SigmaDDR-II+™ and SigmaDDR-II™ (Rev. C)

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak /None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS8662TT38Cyy-###<br>GS8662TT20Cyy-### | 2M x 36<br>4M x 18 | 2 | 2.5 | ● | | 633/550/500 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662T38Cyy-###<br>GS8662T20Cyy-### | 2M x 36<br>4M x 18 | 2 | 2.5 | | ● | 633/550/500 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |

SigmaDDR-II and SigmaDDR-II+ products are pin and function compatible with DDR II CIO™ and DDR II+ CIO™ products, respectively.
SigmaDDR-II and SigmaDDR-II+ are trademarks of GSI Technology.
All other trademarks belong to their respective holders.

## 72Mb SigmaDDR-II+™and SigmaDDR-II™ (Rev. B)

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak /None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS8662TT38Byy-###<br>GS8662TT20Byy-###<br>GS8662TT11Byy-###<br>GS8662TT06Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 2 | 2.5 | ● | | 550/500/450/400/350 (x18/x36)<br>500/450/400/350 (x8/x9) | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662T38Byy-###<br>GS8662T20Byy-###<br>GS8662T11Byy-###<br>GS8662T06Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 2 | 2.5 | | ● | 550/500/450/400/350 (x18/x36)<br>500/450/400/350 (x8/x9) | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662TT37Byy-###<br>GS8662TT19Byy-###<br>GS8662TT10Byy-###<br>GS8662TT07Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 2 | 2.0 | ● | | 450/400/350/333/300 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662T37Byy-###<br>GS8662T19Byy-###<br>GS8662T10Byy-###<br>GS8662T07Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 2 | 2.0 | | ● | 450/400/350/333/300 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662T36Byy-###<br>GS8662T18Byy-###<br>GS8662T09Byy-###<br>GS8662T08Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 2 | 1.5 | n/a | n/a | 400/350/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8662R36Byy-###<br>GS8662R18Byy-###<br>GS8662R09Byy-###<br>GS8662R08Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 4 | 1.5 | n/a | n/a | 400/350/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |

SigmaDDR-II and SigmaDDR-II+ products are pin and function compatible with DDR II CIO™ and DDR II+ CIO™ products, respectively.
SigmaDDR-II and SigmaDDR-II+ are trademarks of GSI Technology.
All other trademarks belong to their respective holders.

| 36Mb SigmaDDR-II+™and SigmaDDR-II™ (Rev. B) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS8342TT38Byy-###<br>GS8342TT20Byy-###<br>GS8342TT11Byy-###<br>GS8342TT06Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 2 | 2.5 | ● | | 550/500/450/400/350 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8342T38Byy-###<br>GS8342T20Byy-###<br>GS8342T11Byy-###<br>GS8342T06Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 2 | 2.5 | ● | | 550/500/450/400/350 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8342TT37Byy-###<br>GS8342TT19Byy-###<br>GS8342TT10Byy-###<br>GS8342TT07Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 2 | 2.0 | ● | | 450/400/350/333/300 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8342T37Byy-###<br>GS8342T19Byy-###<br>GS8342T10Byy-###<br>GS8342T07Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 2 | 2.0 | | ● | 450/400/350/333/300 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8342T36Byy-###<br>GS8342T18Byy-###<br>GS8342T09Byy-###<br>GS8342T08Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 2 | 1.5 | n/a | n/a | 400/350/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |
| GS8342R36Byy-###<br>GS8342R18Byy-###<br>GS8342R09Byy-###<br>GS8342R08Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 4 | 1.5 | n/a | n/a | 400/350/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |

SigmaDDR-II and SigmaDDR-II+ products are pin and function compatible with DDR II CIO™ and DDR II+ CIO™ products, respectively.
SigmaDDR-II and SigmaDDR-II+ are trademarks of GSI Technology.
All other trademarks belong to their respective holders.

# SigmaSIO DDR-II SRAMs

## 288Mb SigmaSIO DDR-II™

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS82582S36yy-###<br>GS82582S18yy-### | 8M x 36<br>16M x 18 | 2 | 1.5 | n/a | n/a | 400/375/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |

## 144Mb SigmaSIO DDR-II™ (Rev. A)

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS81302S36Ayy-###<br>GS81302S18Ayy-### | 4M x 36<br>8M x 18 | 2 | 1.5 | n/a | n/a | 400/375/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |

## 144Mb SigmaSIO DDR-II™

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS81302S09yy-###<br>GS81302S08yy-### | 16M x 9<br>16M x 8 | 2 | 1.5 | n/a | n/a | 375/350/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | | ● |

## 72Mb SigmaSIO DDR-II™ (Rev. B)

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS8662S36Byy-###<br>GS8662S18Byy-###<br>GS8662S09Byy-###<br>GS8662S08Byy-### | 2M x 36<br>4M x 18<br>8M x 9<br>8M x 8 | 2 | 1.5 | n/a | n/a | 400/350/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |

## 36Mb SigmaSIO DDR-II™ (Rev. B)

| GSI P/N | Config | Burst Length | Read Latency | ODT | | Speed (MHz) | Voltage | 165 BGA | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Weak/ Strong | Weak/ None | | | 13 x 15 mm (GD) | 15 x 17 mm (GE) |
| GS8342S36Byy-###<br>GS8342S18Byy-###<br>GS8342S09Byy-###<br>GS8342S08Byy-### | 1M x 36<br>2M x 18<br>4M x 9<br>4M x 8 | 2 | 1.5 | n/a | n/a | 400/350/333/300/250 | $V_{DD}$—1.8 V<br>$V_{DDQ}$—1.5 V/1.8 V | ● | |

SigmaSIO DDR-II™ products are pin and function compatible with DDR II SIO™ products.
SigmaSIO DDR-II is a trademarks of GSI Technology.
All other trademarks belong to their respective holders.

D0101; Rev1.1; 9/2025

# No Bus Turnaround (NBT)™ SRAMs

**GSI No Bus Turnaround (NBT)™ SRAMs have been the workhorses for midrange data acquisition designs for over 15 years and are available in a huge assortment of densities, packages, and design options. These SRAMs also come with the best long-term memory IC support plan in the business.**

**NBT SRAMs are synchronous, burst-capable memories with a simplified interface that is designed to use a data bus's maximum bandwidth. NBT devices do not require "turnaround" cycles (idle clock cycles between a read and write operation).**

**NBT SRAMs are used in networking, industrial, automotive, and medical imaging applications where a mid-range performance point (typically a 333–166 MHz clock rate) is required.**

***GSI offers all products in lead-free (6/6 RoHS compliant) packages; therefore, only these products are listed. Leaded (5/6 RoHS-compliant) packages are still available for our 65nm and 90nm product families. Please contact your local sales representative if you are interested in a 5/6 part.**

## No Bus Turnaround (NBT™) SRAMs

**288Mb (2-Die Module)**

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | BGA | | | | TQFP | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | JTAG | FLXDrive™ |
| GS82564Z36yy-###<br>GS82564Z18yy-### | 8M x 36<br>16M x 18 | 400/333/<br>250/200 | 2.5–3.0 | 2.5/3.3 | ● | ● | | | | ● | ● | ● |
| GS82564Z36yy-###V<br>GS82564Z18yy-###V | 8M x 36<br>16M x 18 | 333/<br>250/200 | 2.5–3.0 | 1.8/2.5 | ● | ● | | | | ● | ● | ● |

**144Mb**

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | BGA | | | | TQFP | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | JTAG | FLXDrive™ |
| GS81282Z36yy-###<br>GS81282Z18yy-### | 4M x 36<br>8M x 18 | 400/333/<br>250/200 | 2.5–3.0 | 2.5/3.3 | ● | ● | | | | ● | ● | ● |
| GS81280FZ36yy-###<br>GS81280FZ18yy-### | 4M x 36<br>8M x 18 | 6.5 (ns) | n/a | 2.5/3.3 | | | | | ● | FT Only | | |
| GS81280Z36yy-###<br>GS81280Z32yy-###<br>GS81280Z18yy-### | 4M x 36<br>4M x 32<br>8M x 18 | 400/333/<br>250/200 | 2.5–3.0 | 2.5/3.3 | | | | | ● | ● | ● | |
| GS81282Z36yy-###V<br>GS81282Z18yy-###V | 4M x 36<br>8M x 18 | 333/<br>250/200 | 2.5–3.0 | 1.8/2.5 | ● | ● | | | | ● | ● | ● |

| 144Mb (Continued) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | |
| | | | | | BGA | | | | TQFP | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | JTAG | FLXDrive™ |
| GS81280Z36yy-###V<br>GS81280Z32yy-###V<br>GS81280Z18yy-###V | 4M x 36<br>4M x 32<br>8M x 18 | 333/<br>250/200 | 2.5–3.0 | 2.5/3.3 | | | | | ● | ● | ● | |

| 72Mb | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | |
| | | | | | BGA | | | | TQFP | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | JTAG | FLXDrive™ |
| GS8642Z72yy-###<br>GS8642Z36yy-###<br>GS8642Z18yy-### | 1M x 72<br>2M x 36<br>4M x 18 | 300/250/200/167 | 2.3–3.5 | 2.5/3.3 | ● | | | ● | | ● | ● | ● |
| GS8640FZ36yy-###<br>GS8640FZ32yy-###<br>GS8640FZ18yy-### | 2M x 36<br>2M x 32<br>4M x 18 | 6.5 (ns) | n/a | 2.5/3.3 | | | | | ● | FT Only | | |
| GS8640Z36yy-###<br>GS8640Z32yy-###<br>GS8640Z18yy-### | 2M x 36<br>2M x 32<br>4M x 18 | 300/250/200/167 | 2.3–3.5 | 2.5/3.3 | | | | | ● | ● | ● | |
| GS8642Z72yy-###V<br>GS8642Z36yy-###V<br>GS8642Z18yy-###V | 1M x 72<br>2M x 36<br>4M x 18 | 250/200/167 | 3.0–3.5 | 1.8/2.5 | ● | | | ● | | ● | ● | ● |
| GS864036yy-###V<br>GS864032yy-###V<br>GS864018yy-###V | 2M x 36<br>2M x 32<br>4M x 18 | 250/200/167 | 3.0–3.5 | 1.8/2.5 | | | | | ● | ● | ● | |
| GS864436yy-###V<br>GS864418yy-###V | 2M x 36<br>4M x 18 | 250/225/200/<br>166/150/133 | 2.5–4.0 | 1.8/2.5 | | | ● | | | ● | ● | ● |

## 36Mb (Rev. A)

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | BGA | | | | TQFP | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | JTAG | FLXDrive™ |
| GS8322Z36Ayy-###<br>GS8322Z18Ayy-### | 1M x 36<br>2M x 18 | 400/375/333/<br>250/200/150 | 2.5–3.8 | 2.5/3.3 | ● | ● | | | | ● | ● | ● |
| GS8321Z36Ayy-###<br>GS8321Z32Ayy-###<br>GS8321Z18Ayy-### | 1M x 36<br>1M x 32<br>2M x 18 | 400/375/333/<br>250/200/150 | 2.5–3.8 | 2.5/3.3 | | ● | | | | ● | ● | |
| GS8320Z36Ayy-###<br>GS8320Z18Ayy-### | 1M x 36<br>2M x 18 | 400/375/333/<br>250/200/150 | 2.5–3.8 | 2.5/3.3 | | | | | ● | ● | | |
| GS8322Z36Ayy-###V<br>GS8322Z18Ayy-###V | 1M x 36<br>2M x 18 | 333/250/<br>200/150 | 3.0–3.8 | 1.8/2.5 | ● | ● | | | | ● | ● | ● |
| GS8321Z36Ayy-###V<br>GS8321Z32Ayy-###V<br>GS8321Z18Ayy-###V | 1M x 36<br>1M x 32<br>2M x 18 | 333/250/<br>200/150 | 3.0–3.8 | 1.8/2.5 | | ● | | | | ● | ● | |
| GS8320Z36Ayy-###V<br>GS8320Z18Ayy-###V | 1M x 36<br>2M x 18 | 333/250/<br>200/150 | 3.0–3.8 | 1.8/2.5 | | | | | ● | ● | | |

## 36Mb (Original Rev.)

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | BGA | | | | TQFP | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | JTAG | FLXDrive™ |
| GS8322Z72yy-### | 512K x 72 | 250/225/200/166/<br>150/133 | 3.0–4.0 | 2.5/3.3 | | | | ● | | ● | ● | ● |
| GS8322Z72yy-###V | 512K x 72 | 250/225/200/166/<br>150/133 | 3.0–4.0 | 1.8/2.5 | | | | ● | | ● | ● | ● |

## 18Mb (Rev. D)

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | BGA | | | | TQFP | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | JTAG | FLXDrive™ |
| GS8162Z36Dyy-###<br>GS8162Z18Dyy-### | 512K x 36<br>1M x 18 | 400/375/333/<br>250/200/150 | 2.5–3.8 | 2.5/3.3 | ● | ● | | | | ● | ● | ● |
| GS8161Z36Dyy-###<br>GS8161Z32Dyy-###<br>GS8161Z18Dyy-### | 512K x 36<br>512K x 32<br>1M x 18 | 400/375/333/<br>250/200/150 | 2.5–3.8 | 2.5/3.3 | | ● | | | ● | ● | ● | |
| GS8160Z36Dyy-###<br>GS8160Z18Dyy-### | 512K x 36<br>1M x 18 | 400/375/333/<br>250/200/150 | 2.5–3.8 | 2.5/3.3 | | | | | ● | ● | | |
| GS8162Z36Dyy-###V<br>GS8162Z18Dyy-###V | 512K x 36<br>1M x 18 | 333/250/<br>200/150 | 3.0–3.8 | 1.8/2.5 | ● | ● | | | | ● | ● | ● |
| GS8161Z36Dyy-###V<br>GS8161Z32Dyy-###V<br>GS8161Z18Dyy-###V | 512K x 36<br>512K x 32<br>1M x 18 | 333/250/<br>200/150 | 3.0–3.8 | 1.8/2.5 | | ● | | | ● | ● | ● | |
| GS8160Z36Dyy-###V<br>GS8160Z18Dyy-###V | 512K x 36<br>1M x 18 | 333/250/<br>200/150 | 3.0–3.8 | 1.8/2.5 | | | | | ● | ● | | |

## 18Mb (Rev. C)

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | BGA | | | | TQFP | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | JTAG | FLXDrive™ |
| GS8162Z72Cyy-### | 256K x 72 | 333/300/250/<br>200/150 | 2.8–3.8 | 2.5/3.3 | | | | ● | | ● | ● | ● |
| GS8162Z72Cyy-###V | 256K x 72 | 250/200/150 | 3.0–3.8 | 1.8/2.5 | | | | ● | | ● | ● | ● |

| 9Mb (Rev. C) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | |
| | | | | | BGA | | | | TQFP | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | JTAG | FLXDrive™ |
| GS882Z36Cyy-###<br>GS882Z18Cyy-### | 256K x 36<br>512K x 18 | 333/300/250/<br>200/150 | 2.5–3.8 | 2.5/3.3 | ● | ● | | | | ● | ● | ● |
| GS881Z36Cyy-###<br>GS881Z32Cyy-###<br>GS881Z18Cyy-### | 256K x 36<br>256K x 32<br>512K x 18 | 333/300/250/<br>200/150 | 2.5–3.8 | 2.5/3.3 | | ● | | | ● | ● | ● | |
| GS880Z36Cyy-###<br>GS880Z18Cyy-### | 256K x 36<br>512K x 18 | 333/300/250/<br>200/150 | 2.5–3.8 | 2.5/3.3 | | | | | ● | ● | | |
| GS882Z36Cyy-###V<br>GS882Z18Cyy-###V | 256K x 36<br>512K x 18 | 250/200/150 | 3.0–3.8 | 1.8/2.5 | ● | ● | | | | ● | ● | ● |
| GS881Z36Cyy-###V<br>GS881Z32Cyy-###V<br>GS881Z18Cyy-###V | 256K x 36<br>256K x 32<br>512K x 18 | 250/200/150 | 3.0–3.8 | 1.8/2.5 | | ● | | | ● | ● | ● | |
| GS880Z36Cyy-###V<br>GS880Z18Cyy-###V | 256K x 36<br>512K x 18 | 250/200/150 | 3.0–3.8 | 1.8/2.5 | | | | | ● | ● | | |

| 4Mb (Rev. C) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ & $V_{DDQ}$ | Packages | | | | | Features | | |
| | | | | | BGA | | | | TQFP | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | JTAG | FLXDrive™ |
| GS842Z36Cyy-###<br>GS842Z18Cyy-### | 128K x 36<br>256K x 18 | 250/200/166/<br>150/100 | 3.2–4.5 | 3.3<br>2.5/3.3 | ● | | | | | ● | ● | ● |
| GS841Z36Cyy-###<br>GS841Z18Cyy-### | 128K x 36<br>256K x 18 | 250/200/166/<br>150/100 | 3.2–4.5 | 3.3<br>2.5/3.3 | | | | | ● | ● | ● | |
| GS840Z36Cyy-###<br>GS840Z18Cyy-### | 128K x 36<br>256K x 18 | 250/200/166/<br>150/100 | 3.2–4.5 | 3.3<br>2.5/3.3 | | | | | ● | ● | | |

# Synchronous Burst (SyncBurst™) SRAMs

**GSI SyncBurst™ SRAMs have been the workhorses for midrange data acquisition designs for over 15 years and are available in a huge assortment of densities, packages and design options. These SRAMs also come with the best long-term memory IC support plan in the business. SyncBurst SRAMs provide a "burst" of 2 to 4 words in response to a single clock signal.**

**SyncBurst SRAMs are used in networking, industrial, automotive and medical imaging applications where a mid-range performance point (typically a 333–166 MHz clock rate) is required.**

***GSI offers all products in lead-free (6/6 RoHS compliant) packages; therefore, only these products are listed. Leaded (5/6 RoHS-compliant) packages are still available for our 65nm and 90nm product families. Please contact your local sales representative if you are interested in a 5/6 part.**

## Synchronous Burst (SyncBurst™) SRAMs

| 288Mb (2-Die Module) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | | | |
| | | | | | BGA | | | | TQFP | | | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | SCD | DCD | JTAG | FLXDrive™ |
| GS8256436yy-###<br>GS8256418yy-### | 8M x 36<br>16M x 18 | 400/333/<br>250/200 | 2.5–3.0 | 2.5/3.3 | ● | ● | | | | ● | | ● | ● | ● |
| GS8256436yy-###V<br>GS8256418yy-###V | 8M x 36<br>16M x 18 | 333/<br>250/200 | 2.5–3.0 | 1.8/2.5 | ● | ● | | | | ● | | ● | ● | ● |
| **144Mb** | | | | | | | | | | | | | | | |
| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | | | |
| | | | | | BGA | | | | TQFP | | | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | SCD | DCD | JTAG | FLXDrive™ |
| GS8128236yy-###<br>GS8128218yy-### | 4M x 36<br>8M x 18 | 400/333/<br>250/200 | 2.5–3.0 | 2.5/3.3 | ● | ● | | | | ● | ● | ● | ● | ● |
| GS81280E36yy-###<br>GS81280E32yy-###<br>GS81280E18yy-### | 4M x 36<br>4M x 32<br>8M x 18 | 400/333/<br>250/200 | 2.5–3.0 | 2.5/3.3 | | | | | ● | ● | | ● | | |
| GS81280F36yy-###<br>GS81280F18yy-### | 4M x 36<br>8M x 18 | 6.5 (ns) | n/a | 2.5/3.3 | | | | | ● | FT Only | | | | |
| GS8128036yy-###<br>GS8128032yy-###<br>GS8128018yy-### | 4M x 36<br>4M x 32<br>8M x 18 | 400/333/<br>250/200 | 2.5–3.0 | 2.5/3.3 | | | | | ● | ● | ● | | | |
| GS8128236yy-###V<br>GS8128218yy-###V | 4M x 36<br>8M x 18 | 333/<br>250/200 | 2.5–3.0 | 1.8/2.5 | ● | ● | | | | ● | ● | ● | ● | ● |
| GS81280E36yy-###V<br>GS81280E32yy-###V<br>GS81280E18yy-###V | 4M x 36<br>4M x 32<br>8M x 18 | 333/<br>250/200 | 2.5–3.0 | 2.5/3.3 | | | | | ● | ● | | ● | | |

| 144Mb (Continued) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | | | |
| | | | | | BGA | | | | TQFP | | | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | SCD | DCD | JTAG | FLXDrive™ |
| GS8128036yy-###V<br>GS8128032yy-###V<br>GS8128018yy-###V | 4M x 36<br>4M x 32<br>8M x 18 | 333/<br>250/200 | 2.5–3.0 | 2.5/3.3 | | | | | ● | ● | ● | | | |

| 72Mb | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | | | |
| | | | | | BGA | | | | TQFP | | | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | SCD | DCD | JTAG | FLXDrive™ |
| GS864272yy-###<br>GS864236yy-###<br>GS864218yy-### | 1M x 72<br>2M x 36<br>4M x 18 | 300/250/200/167 | 2.3–3.5 | 2.5/3.3 | ● | | | ● | | ● | ● | ● | ● | ● |
| GS8640E36yy-###<br>GS8640E32yy-###<br>GS8640E18yy-### | 2M x 36<br>2M x 32<br>4M x 18 | 300/250/200/167 | 2.3–3.5 | 2.5/3.3 | | | | | ● | ● | | ● | | |
| GS8640F36yy-###<br>GS8640F32yy-###<br>GS8640F18yy-### | 2M x 36<br>2M x 32<br>4M x 18 | 6.5 (ns) | n/a | 2.5/3.3 | | | | | ● | FT Only | | | | |
| GS864036yy-###<br>GS864032yy-###<br>GS864018yy-### | 2M x 36<br>2M x 32<br>4M x 18 | 300/250/200/167 | 2.3–3.5 | 2.5/3.3 | | | | | ● | ● | ● | | | |
| GS864436yy-###<br>GS864418yy-### | 2M x 36<br>4M x 18 | 250/225/200/<br>166/150/133 | 2.5–4.0 | 2.5/3.3 | | | ● | | | ● | ● | ● | ● | ● |
| GS864272yy-###V<br>GS864236yy-###V<br>GS864218yy-###V | 1M x 72<br>2M x 36<br>4M x 18 | 250/200/167 | 3.0–3.5 | 1.8/2.5 | ● | | | ● | | ● | ● | ● | ● | ● |
| GS8640E36yy-###V<br>GS8640E32yy-###V<br>GS8640E18yy-###V | 2M x 36<br>2M x 32<br>4M x 18 | 250/200/167 | 3.0–3.5 | 1.8/2.5 | | | | | ● | ● | | ● | | |
| GS864036yy-###V<br>GS864032yy-###V<br>GS864018yy-###V | 2M x 36<br>2M x 32<br>4M x 18 | 250/200/167 | 3.0–3.5 | 1.8/2.5 | | | | | ● | ● | ● | | | |
| GS864436yy-###V<br>GS864418yy-###V | 2M x 36<br>4M x 18 | 250/225/200/<br>166/150/133 | 2.5–4.0 | 1.8/2.5 | | | ● | | | ● | ● | ● | ● | ● |

| 36Mb (Rev. A) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | | | |
| | | | | | BGA | | | | TQFP | | | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | SCD | DCD | JTAG | FLXDrive™ |
| GS832236Ayy-###<br>GS832218Ayy-### | 1M x 36<br>2M x 18 | 400/375/333/<br>250/200/150 | 2.5–3.8 | 2.5/3.3 | ● | ● | | | | ● | ● | ● | ● | ● |
| GS8321E36Ayy-###<br>GS8321E32Ayy-###<br>GS8321E18Ayy-### | 1M x 36<br>1M x 32<br>2M x 18 | 400/375/333/<br>250/200/150 | 2.5–3.8 | 2.5/3.3 | | ● | | | | ● | | ● | ● | |
| GS832136Ayy-###<br>GS832132Ayy-###<br>GS832118Ayy-### | 1M x 36<br>1M x 32<br>2M x 18 | 400/375/333/<br>250/200/150 | 2.5–3.8 | 2.5/3.3 | | ● | | | | ● | | | ● | |
| GS8320E36Ayy-###<br>GS8320E32Ayy-###<br>GS8320E18Ayy-### | 1M x 36<br>1M x 32<br>2M x 18 | 400/375/333/<br>250/200/150 | 2.5–3.8 | 2.5/3.3 | | | | | ● | ● | | ● | | |
| GS8320F36Ayy-###<br>GS8320F32Ayy-###<br>GS8320F18Ayy-### | 1M x 36<br>1M x 32<br>2M x 18 | 6.5 (ns) | n/a | 2.5/3.3 | | | | | ● | **FT Only** | | | | |
| GS832036Ayy-###<br>GS832032Ayy-###<br>GS832018Ayy-### | 1M x 36<br>1M x 32<br>2M x 18 | 400/375/333/<br>250/200/150 | 2.5–3.8 | 2.5/3.3 | | | | | ● | ● | ● | | | |
| GS832236Ayy-###V<br>GS832218Ayy-###V | 1M x 36<br>2M x 18 | 333/250/200/150 | 3.0–3.8 | 1.8/2.5 | ● | ● | | | | ● | ● | ● | ● | ● |
| GS8321E36Ayy-###V<br>GS8321E32Ayy-###V<br>GS8321E18Ayy-###V | 1M x 36<br>1M x 32<br>2M x 18 | 333/250/200/150 | 3.0–3.8 | 1.8/2.5 | | ● | | | | ● | | ● | ● | |
| GS832136Ayy-###V<br>GS832132Ayy-###V<br>GS832118Ayy-###V | 1M x 36<br>1M x 32<br>2M x 18 | 333/250/200/150 | 3.0–3.8 | 1.8/2.5 | | ● | | | | ● | | | ● | |
| GS8320E36Ayy-###V<br>GS8320E32Ayy-###V<br>GS8320E18Ayy-###V | 1M x 36<br>1M x 32<br>2M x 18 | 333/250/200/150 | 3.0–3.8 | 1.8/2.5 | | | | | ● | ● | | ● | | |
| GS832036Ayy-###V<br>GS832032Ayy-###V<br>GS832018Ayy-###V | 1M x 36<br>1M x 32<br>2M x 18 | 333/250/200/150 | 3.0–3.8 | 1.8/2.5 | | | | | ● | ● | ● | | | |

## 36Mb (Original Rev.)

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | BGA | | | | TQFP | | | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | SCD | DCD | JTAG | FLXDrive™ |
| GS832272yy-### | 512K x 72 | 250/225/200/ 166/150/133 | 3.0–4.0 | 2.5/3.3 | | | | ● | | ● | ● | ● | ● | ● |
| GS832272yy-###V | 512K x 72 | 250/225/200/ 166/150/133 | 3.0–4.0 | 1.8/2.5 | | | | ● | | ● | ● | ● | ● | ● |

## 18Mb (Rev. D)

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | BGA | | | | TQFP | | | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | SCD | DCD | JTAG | FLXDrive™ |
| GS816236Dyy-### GS816218Dyy-### | 512K x 36 1M x 18 | 400/375/333/ 250/200/150 | 2.5–3.8 | 2.5/3.3 | ● | ● | | | | ● | ● | ● | ● | ● |
| GS8161E36Dyy-### GS8161E32Dyy-### GS8161E18Dyy-### | 512K x 36 512K x 32 1M x 18 | 400/375/333/ 250/200/150 | 2.5–3.8 | 2.5/3.3 | | ● | | | ● | ● | | ● | ● | |
| GS816136Dyy-### GS816132Dyy-### GS816118Dyy-### | 512K x 36 512K x 32 1M x 18 | 400/375/333/ 250/200/150 | 2.5–3.8 | 2.5/3.3 | | ● | | | ● | ● | | | ● | |
| GS8160E36Dyy-### GS8160E32Dyy-### GS8160E18Dyy-### | 512K x 36 512K x 32 1M x 18 | 400/375/333/ 250/200/150 | 2.5–3.8 | 2.5/3.3 | | | | | ● | ● | | ● | | |
| GS8160F36Dyy-### GS8160F32Dyy-### GS8160F18Dyy-### | 512K x 36 512K x 32 1M x 18 | 6.5/7.5 (ns) | n/a | 2.5/3.3 | | | | | ● | FT Only | | | | |
| GS816036Dyy-### GS816032Dyy-### GS816018Dyy-### | 512K x 36 512K x 32 1M x 18 | 400/375/333/ 250/200/150 | 2.5–3.8 | 2.5/3.3 | | | | | ● | ● | ● | | | |
| GS816236Dyy-###V GS816218Dyy-###V | 512K x 36 1M x 18 | 333/250/200/150 | 3.0–3.8 | 1.8/2.5 | ● | ● | | | | ● | ● | ● | ● | ● |
| GS8161E36Dyy-###V GS8161E32Dyy-###V GS8161E18Dyy-###V | 512K x 36 512K x 32 1M x 18 | 333/250/200/150 | 3.0–3.8 | 1.8/2.5 | | ● | | | ● | ● | | ● | ● | |
| GS816136Dyy-###V GS816132Dyy-###V GS816118Dyy-###V | 512K x 36 512K x 32 1M x 18 | 333/250/200/150 | 3.0–3.8 | 1.8/2.5 | | ● | | | ● | ● | | | ● | |

## 18Mb (Rev. D) (Continued)

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | BGA | | | | TQFP | | | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | SCD | DCD | JTAG | FLXDrive™ |
| GS8160E36Dyy-###V<br>GS8160E32Dyy-###V<br>GS8160E18Dyy-###V | 512K x 36<br>512K x 32<br>1M x 18 | 333/250/200/150 | 3.0–3.8 | 1.8/2.5 | | | | | ● | ● | | ● | | |
| GS816036Dyy-###V<br>GS816032Dyy-###V<br>GS816018Dyy-###V | 512K x 36<br>512K x 32<br>1M x 18 | 333/250/200/150 | 3.0–3.8 | 1.8/2.5 | | | | | ● | ● | ● | | | |

## 18Mb (Rev. C)

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | BGA | | | | TQFP | | | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | SCD | DCD | JTAG | FLXDrive™ |
| GS816272Cyy-### | 256K x 72 | 333/300/250/<br>200/150 | 2.8–3.8 | 2.5/3.3 | | | | ● | | ● | ● | ● | ● | ● |
| GS816272Cyy-###V | 256K x 72 | 250/200/150 | 3.0–3.8 | 1.8/2.5 | | | | ● | | ● | ● | ● | ● | ● |
| GS816273Cyy-### | 256K x 72 | 333/300/250/<br>200/150 | 2.3–2.5 | 2.5/3.3 | | | | ● | | PL Only | ● | ● | ● | ● |
| GS816273Cyy-###V | 256K x 72 | 250/200/150 | 2.5 | 1.8/2.5 | | | | ● | | PL Only | ● | ● | ● | ● |

## 9Mb (Rev. C)

| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | BGA | | | | TQFP | | | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | SCD | DCD | JTAG | FLXDrive™ |
| GS88236Cyy-###<br>GS88218Cyy-### | 256K x 36<br>512K x 18 | 333/300/250/<br>200/150 | 2.5–3.8 | 2.5/3.3 | ● | ● | | | | ● | ● | ● | ● | ● |
| GS881E36Cyy-###<br>GS881E32Cyy-###<br>GS881E18Cyy-### | 256K x 36<br>256K x 32<br>512K x 18 | 333/300/250/<br>200/150 | 2.5–3.8 | 2.5/3.3 | | ● | | | ● | ● | | ● | ● | |

| 9Mb (Rev. C) (Continued) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | | | |
| | | | | | BGA | | | | TQFP | | | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | SCD | DCD | JTAG | FLXDrive™ |
| GS88136Cyy-###<br>GS88132Cyy-###<br>GS88118Cyy-### | 256K x 36<br>256K x 32<br>512K x 18 | 333/300/250/<br>200/150 | 2.5–3.8 | 2.5/3.3 | | ● | | | ● | ● | | | ● | |
| GS880E36Cyy-###<br>GS880E32Cyy-###<br>GS880E18Cyy-### | 256K x 36<br>256K x 32<br>512K x 18 | 333/300/250/<br>200/150 | 2.5–3.8 | 2.5/3.3 | | | | | ● | ● | | ● | | |
| GS880F36Cyy-###<br>GS880F32Cyy-###<br>GS880F18Cyy-### | 256K x 36<br>256K x 32<br>512K x 18 | 4.5/5/5.5/<br>6.5/7.5 (ns) | n/a | 2.5/3.3 | | | | | ● | FT Only | ● | | | |
| GS88036Cyy-###<br>GS88032Cyy-###<br>GS88018Cyy-### | 256K x 36<br>256K x 32<br>512K x 18 | 333/300/250/<br>200/150 | 2.5–3.8 | 2.5/3.3 | | | | | ● | ● | ● | | | |
| GS88237Cyy-### | 256K x 36 | 333/300/250/200 | 2.0–2.7 | 2.5/3.3 | ● | | | | | PL Only | ● | ● | ● | ● |
| GS88037Cyy-### | 256K x 36 | 333/300/250/200 | 2.0–2.7 | 2.5/3.3 | | | | | ● | PL Only | ● | | | |
| GS88236Cyy-###V<br>GS88218Cyy-###V | 256K x 36<br>512K x 18 | 250/200/150 | 3.0–3.8 | 1.8/2.5 | ● | ● | | | | ● | ● | ● | ● | ● |
| GS881E36Cyy-###V<br>GS881E32Cyy-###V<br>GS881E18Cyy-###V | 256K x 36<br>256K x 32<br>512K x 18 | 250/200/150 | 3.0–3.8 | 1.8/2.5 | | ● | | | ● | ● | | ● | ● | |
| GS88136Cyy-###V<br>GS88132Cyy-###V<br>GS88118Cyy-###V | 256K x 36<br>256K x 32<br>512K x 18 | 250/200/150 | 3.0–3.8 | 1.8/2.5 | | ● | | | ● | ● | | | ● | |
| GS880E36Cyy-###V<br>GS880E32Cyy-###V<br>GS880E18Cyy-###V | 256K x 36<br>256K x 32<br>512K x 18 | 250/200/150 | 3.0–3.8 | 1.8/2.5 | | | | | ● | ● | | ● | | |
| GS880F36Cyy-###V<br>GS880F32Cyy-###V<br>GS880F18Cyy-###V | 256K x 36<br>256K x 32<br>512K x 18 | 5.5/6.5/7.5 (ns) | n/a | 1.8/2.5 | | | | | ● | FT Only | ● | | | |
| GS88036Cyy-###V<br>GS88032Cyy-###V<br>GS88018Cyy-###V | 256K x 36<br>256K x 32<br>512K x 18 | 250/200/150 | 3.0–3.8 | 1.8/2.5 | | | | | ● | ● | ● | | | |
| GS88237Cyy-###V | 256K x 36 | 333/300/<br>250/200 | 2.5 | 1.8/2.5 | ● | | | | | PL Only | ● | ● | ● | ● |
| GS88037Cyy-###V | 256K x 36 | 333/300/<br>250/200 | 2.5 | 1.8/2.5 | | | | | ● | PL Only | ● | | | |

| 4Mb (Rev. C) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GSI P/N | Config | Speed (MHz) | Pipeline tKQ (ns) | $V_{DD}$ $V_{DDQ}$ | Packages | | | | | Features | | | | |
| | | | | | BGA | | | | TQFP | | | | | |
| | | | | | 119 (GB) | 165 (GD) | 165 (GE) | 209 (GC) | 100 (GT) | FT/PL | SCD | DCD | JTAG | FLXDrive™ |
| GS84036Cyy-###<br>GS84032Cyy-###<br>GS84018Cyy-### | 128K x 36<br>128K x 32<br>256K x 18 | 250/200/166/150 | 2.5–3.8 | 3.3<br>2.5/3.3 | ● | | | | ● | ● | ● | | | |

# Low Latency DRAMs (LLDRAMs)

**GSI's 2nd generation Low Latency DRAM (LLDRAM II) is an ideal solution for advanced data networking applications. It offers an eight-bank memory array architecture for high transaction rates, a simplified address interface, and double data rate transfers. The result is a device that can maintain near-100% bus utilization for many networking tasks.**

**GSI's LLDRAM devices are ideal for 10GbE, 40GbE and 100GbE packet buffering, lookup tables, and inspection tasks. A variety of Network Processors and high performance FPGAs are already equipped with RAM ports ready to host LLDRAM II devices.**

**Drop-in compatible with RLDRAM 2 (Reduced Latency DRAM)**

- 533 MHz DDR interface (1.067Gbit/s/pin)
- Common (x36) I/O
- 8-bank architecture
- 15 ns tRC
- Single-cycle (SRAM-like) address load

**A complete set of design options:**

- Configurable read/write latencies & cycle times
- Configurable burst lengths (2/4/8)
- On-Die Input Termination
- IEEE 1149.1 boundary scan
- Traditional multiplexed address bus option for backward compatibility

| 288Mb LLDRAM II | | | | | | | |
|---|---|---|---|---|---|---|---|
| GSI P/N | Config | $V_{EXT}$ and $V_{DD}$ Voltage | I/O Voltage | I/O | | Speed (MHz) | 144 mBGA (GL) |
| | | | | Common | Separate | | |
| GS4288C36yy-### | 8M x 36 | $V_{EXT}$—2.5 V<br>$V_{DD}$—1.8 V | 1.5 and 1.8 V HSTL | ● | | 533/400/300 | ● |