WINTEC
INDUSTRIES

# EMBEDDED OEM

www.wintecind.com

## Product Catalog 2012

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# About Wintec Industries

## Quick Facts

Established: 1988
Corporate Headquarters: 675 Sycamore Drive, Milpitas, California, 95035 USA
Worldwide Branch Locations:
— United States: Los Angeles, CA
— Taiwan: Taoyuan
— China: Hong Kong, Shenzhen

## Who We Are

Wintec Industries is built upon a culture of hard work, opportunity creation, and delivery of our commitments. Proudly recognized as a globally diverse company, we continually strive to be a leader in innovative business practices as well as a responsible member of our global community and our environment.

Wintec's Embedded OEM division provides a wide range of standard and custom hardware designs, mechanical molding, and manufacturing services to OEM customers. From concept to final product delivery, we provide outstanding team level support in Sales, Engineering, Production, Quality Assurance, and Logistics. Through teamwork and communication, our goal is to achieve the highest level of customer satisfaction and to build long-term relationships that enable successful engineering projects and customer design wins.

Wintec Industries is a WMBE (Women Minority Business Enterprise) and a certified ISO 9001-2000 company located in the heart of the Silicon Valley. Our core products and services include the design and manufacturing of Flash products and DRAM modules in a large assortment of technologies and form factors. Our products are certified from industry standards committees such as, JEDEC (Joint Electron Device Engineering Council, CFA (Compact Flash Association), and the SD Association (Secure Digital). Our experience in product design and successful fulfillment of customer product needs span over 22 years.

## Quality Policy

Wintec's quality policy is the backbone upon which our products and services are built. Our 90,000 sq. ft. facility is ISO 9001:2008 certified and equipped with state of the art manufacturing and testing machinery. In addition, our products are manufactured with components that have passed a stringent AVL (Approved Vendor List) and qualification process. Through our quality policy we are committed to providing outstanding products and services to our customers. Our quality themes outline the direction of our daily work and also our long term goals.

- Customer Satisfaction
- Consistency in the Manufacturing Process
- Continual Improvement in all Business practices

It is the job of each and every Wintec employee to uphold the quality policy and it is the unwavering commitment of our employees to fulfill our quality policy that drives the success of our products and services.

## Special Thanks

Thank you to all Wintec customers for your support and partnership through the years. We look forward to leading the way in this continuously changing and challenging industry and the exciting opportunities ahead. Thank you again for your partnerships and commitment to building long lasting relationships!

# Flash Products

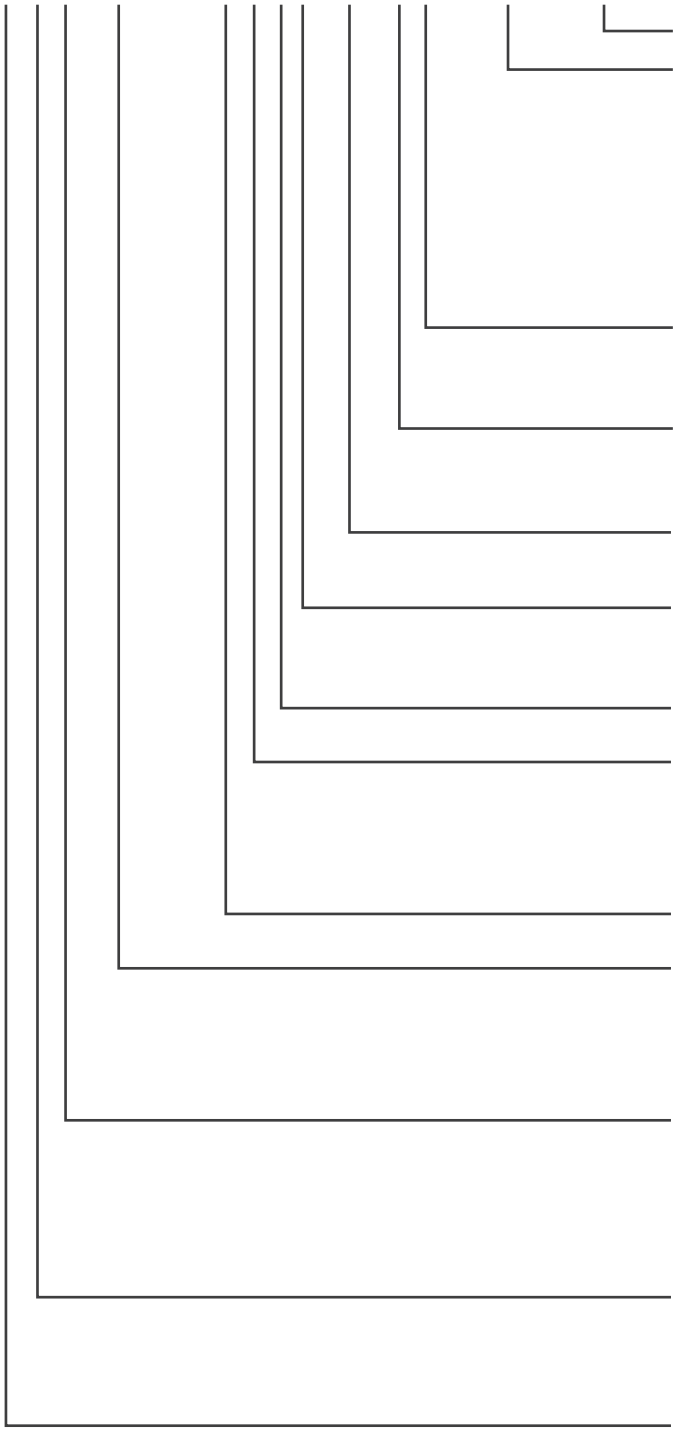
As digital technology has grown and evolved in the business and home entertainment environment, Flash products have become a key technology for the transfer and storage of data. These non-volatile Flash products have no moving parts, and provide significant advantages over traditional storage media in terms of usability, form factor, power, and endurance.

Wintec Flash Products provide a wide variety of easy-to-integrate Flash solutions for industry standard applications and highly customized design projects. Our Flash products are designed to provide the highest quality, reliability, and performance. We achieve this standard by carefully matching components, such as Flash Controllers and NAND Flash, in the optimal configuration to meet the needs of the target application.

This section outlines the Flash products for embedded applications such as military, industrial PC's, casino gaming, POS, telecommunication, networking, and utility devices.

# Flash Product Naming Guide

## W7CF032G1DAI-H41PM-4Q2.01



**Firmware Revisions**

**Flash Component Configuration**

001 = 1 NAND Flash
01D = 1 NAND Flash, Dual Die, 1-CE
002 = 2 NAND Flash, Single Die 1-CE
02D = 2 NAND Flash, Dual Die, 1-CE
2Q2 = 2 NAND Flash, Quad Die, 2-CE
2P4 = 2 NAND Flash, Dual Stacked, 4-CE
4D2 = 4 NAND Flash, Dual Die, 2-CE
4Q2 = 4 NAND Flash, Quad Die, 2-CE
4P4 = 4 NAND Flash, Dual Stack Package, 4-CE

**NAND Flash & Die Revision**

x = Die Revision, e.g. M-Die, A-Die
Px = Samsung Mx = Micron
Hx = Hynix Ix = Intel

**Program Mode**

0 = PIO Mode
1 = DMA / UDMA Enabled
2 = UDMA disabled, MDMA Enabled

**Controller Manufacturer**

Hx = Hyperstone Controller
Sx = SMI Controller

**Temperature Rating**

None = Commercial Temp (0°C to +70°C)
I = I-Temp (-40°C to +85°C)
SD Extended Temp (-25°C to +85°C)

**A = Form-Factor**

**Device ID**

X = Removable
T = Fixed Disk
D = Dual ID
(True IDE = fixed, PC Card
Memory Mode = removable)

**Configuration**

1 = Standard Configuration H = SDHC

**Density**

M = Megabyte G = Gigabyte

| | | |
|---|---|---|
| 064 = 64 | 512 = 512 | 004 = 4 |
| 128 = 128 | 001 = 1 | 008 = 8 |
| 256 = 256 | 002 = 2 | 016 = 16 |

**Flash Product Type**

CF = Compact Flash Card
SD = Secure Digital Card
US = USB Flash Drive
EU = Embedded USB Flash Drive
MU = Mini USB Flash Drive
CT = CFast Card

**NAND Flash Type**

2 = MLC NAND Flash
4 = MLC NAND Flash w/Custom Configuration
7 = SLC NAND Flash
8 = SLC NAND Flash w/Custom Configuration

**W = Wintec OEM Product**

# CompactFlash® Cards

Wintec's Embedded OEM division offers three distinctive series of Compact Flash cards. H2 and H4 series CF cards are manufactured with a powerful 32 bit RISC controller paired with SLC NAND Flash. The dedicated controller is optimized for Flash management with superior wear leveling, ECC and bad block management. With background operations that track erase counts, the card can prioritize new writes to blocks with lower wear, and relocates static data to blocks with higher wear. Our H series CF cards are available in Industrial I-Temp (-40° C to +85° C) or standard Commercial Temp (0° C to +70° C). Our H series CF cards have a proven track record in harsh environments, telecommunications, networks/ routers, gaming, POS, and can be customized according to customer needs.

S4 and S2 series CF cards are targeted towards commercial grade applications. The dedicated controller is paired with MLC NAND Flash under the same strict controlled BOM requirements and specifications. Wintec's S series CF cards are ideal for high performance or cost sensitive applications.


## H4 Series

| General | Performance and Reliability |
|---|---|
| • CF Card Type I<br>• Density 256MB - 32GB<br>• 32-bit RISC/DSP controller<br>• Large internal SRAM provides firmware flexibility<br>• Specialized for High-Reliability<br>• Dual Voltage supports at 3.3V or 5V with Internal voltage detector<br>• 20 Kbyte internal Boot ROM and 32 Kbyte internal SRAM<br>• RoHS 6/6 and CFA 4.1 compliant | • Industrial Wear leveling – includes Static Block Management<br>• Spares & Bad Block Management<br>• On-Board ECC capable of correcting 4 random bytes per 512 bytes sector with additional CRC for dynamic error checking<br>• Harsh Environment Tolerance<br>• 10-year Date Retention<br>• Low Power Consumption<br>• Industrial I-Temp -40°C to +85°C<br>• Enterprise/Commercial Temp 0°C to +70° C |


## H2 Series

| General | Performance and Reliability |
|---|---|
| • CF Card Type I<br>• Density 256MB - 8GB<br>• 32-bit RISC/DSP controller<br>• Large internal SRAM provides firmware flexibility<br>• Specialized for High-Reliability<br>• Dual Voltage supports at 3.3V or 5V with Internal voltage detector<br>• 20 Kbyte internal Boot ROM and 32 Kbyte internal SRAM<br>• RoHS 6/6 and CFA 4.1 compliant | • Industrial Wear leveling – includes Static Block Management<br>• Spares & Bad Block Management<br>• On-Board ECC capable of correcting 4 random bytes per 512 bytes sector with additional CRC for dynamic error checking<br>• Harsh Environment Tolerance<br>• 10-year Date Retention<br>• Low Power Consumption<br>• Industrial I-Temp -40°C to +85°C<br>• Enterprise/Commercial Temp 0°C to +70° C |

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## S4 Series

| General | Performance and Reliability |
|---|---|
| • CF Card Type I<br>• Density 8GB to 128GB<br>• High performance: UDMA4 and sustained read up to 42MB/s<br>• Dual Voltage supports at 3.3V or 5V, and with Internal voltage detector<br>• RoHS 6/6 and CFA 4.1 compliant | • Industrial Wear leveling – includes Static Block Management<br>• Spares & Bad Block Management<br>• On-Board ECC capable of correcting up to 15bits per 512 byte sector.<br>• Up to10-year Date Retention<br>• Low Power Consumption<br>• Commercial Temp 0°C to +70°C |


## S2 Series

| General | Performance and Reliability |
|---|---|
| • CF Card Type I<br>• Density 8GB to 128GB<br>• High performance: UDMA4 and sustained read up to 40MB/s<br>• Dual Voltage supports at 3.3V or 5V, and with Internal voltage detector<br>• RoHS 6/6 and CFA 4.1 compliant | • Industrial Wear leveling – includes Static Block Management<br>• Spares & Bad Block Management<br>• On-Board ECC capable of correcting up to 13bits per 24 byte sector.<br>• Up to10-year Date Retention<br>• Low Power Consumption<br>• Commercial Temp 0°C to +70°C |

## CompactFlash® Cards — H4 Series

Industrial / Enterprise Grade

| Density | Part Number | CF Card Type | Temperature | NAND Type |
|---|---|---|---|---|
| 128MB | W7CF128M1vA(I)-H41Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 256MB | W7CF256M1vA(I)-H41Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 512MB | W7CF512M1vA(I)-H41Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 1GB | W7CF001G1vA(I)-H41Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 2GB | W7CF002G1vA(I)-H41Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 4GB | W7CF004G1vA(I)-H41Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 8GB | W7CF008G1vA(I)-H41Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 16GB | W7CF016G1vA(I)-H41Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 32GB | W7CF032G1vA(I)-H41Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |

## CompactFlash® Cards — H2 Series

Industrial / Enterprise Grade

| Density | Part Number | CF Card Type | Temperature | NAND Type |
|---|---|---|---|---|
| 64MB | W7CF064M1vA(I)-H20Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 128MB | W7CF128M1vA(I)-H20Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 256MB | W7CF256M1vA(I)-H20Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 512MB | W7CF512M1vA(I)-H20Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 1GB | W7CF001G1vA(I)-H20Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 2GB | W7CF002G1vA(I)-H20Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 4GB | W7CF004G1vA(I)-H20Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |
| 8GB | W7CF008G1vA(I)-H20Px-yyy.zz | Type I | 0°C to +70°C (-40°C to +85°C I-Temp) | SLC |

## CompactFlash® Cards — S4 Series

Commercial Grade

| Density | Part Number | CF Card Type | Temperature | NAND Type |
|---|---|---|---|---|
| 4GB | W2CF004G1vA-S41Px-yyy.zz | Type I | 0°C to +70°C | MLC |
| 8GB | W2CF008G1vA-S41Px-yyy.zz | Type I | 0°C to +70°C | MLC |
| 16GB | W2CF016G1vA-S41Px-yyy.zz | Type I | 0°C to +70°C | MLC |
| 32GB | W2CF032G1vA-S41Px-yyy.zz | Type I | 0°C to +70°C | MLC |
| 64GB | W2CF064G1vA-S41Px-yyy.zz | Type I | 0°C to +70°C | MLC |
| 128GB | W2CF128G1vA-S41Px-yyy.zz | Type I | 0°C to +70°C | MLC |

Refer to footnotes on the bottom of page 8 for suffix Px-yyy.zz explanation.

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# CompactFlash® Cards — S2 Series

## Commercial Grade

| Density | Part Number | CF Card Type | Temperature | NAND Type |
|---|---|---|---|---|
| 4GB | W7CF004G1vA-H41Px-yyy.zz | Type I | 0˚C to +70˚C | MLC |
| 8GB | W7CF008G1vA-H41Px-yyy.zz | Type I | 0˚C to +70˚C | MLC |
| 16GB | W7CF016G1vA-H41Px-yyy.zz | Type I | 0˚C to +70˚C | MLC |
| 32GB | W7CF032G1vA-H41Px-yyy.zz | Type I | 0˚C to +70˚C | MLC |
| 64GB | W7CF064G1vA-H41Px-yyy.zz | Type I | 0˚C to +70˚C | MLC |

(I) = Industrial Temp. (-40˚C to +85˚C)
(v) = Disk/Interface Options
- D: Dual ID (True IDE = Fixed, PC Card Mode)
- X: Removable
- T: Fixed Disk True ID

(x) = Component Flash Die Revision
- A: A-Die
- B: B-Die

(yyy) = Component Flash Configuration
- 001: 1 NAND Flash, Single Die, 1-CE
- 01D: 1 NAND Flash, Dual Die 1-CE
- 002: 2 NAND Flash, Single Die, 1-CE
- 2Q2: 2 NAND Flash, Quad Die 2-CE
- 4D2: 4 NAND Flash, Dual Die, 2-CE
- 4Q2: 4 NAND Flash, Quad Die 2-CE

(zz) = Firmware Revision
Please check with factory representative for current firmware revision

# CFast Cards

CFast is a next generation technology built upon the basics of standard CompactFlash cards. CFast has been gaining the interest of design engineers to be included on next generation platforms because the CFast rapid SATA interface offers a solution that can eliminate data bandwidth bottlenecks in industrial applications. CFast paired with SLC NAND Flash can also increase overall system performance and raise the level of reliability.

CFast is particularly well suited for industrial environments, such as, military, mining applications, network equipment, monitoring equipment, surveilance systems, POS systems, and gaming systems, because of it's robust form factor, industrial grade components, and no moving parts. Wintec CFast cards are offered in Industrial I-Temp (-40°C to +85°C), and Enterprise (0°C to +70°C) versions when paired with SLC Flash, in addition to a Commercial Grade version that is paired with MLC Flash.  All Wintec CFast cards are manufactured and programmed under strict locked BOM and firmware specifications.


## SM2242 Series

| General | Performance and Reliability |
|---|---|
| • CF Card Type SATA-II<br>• Density 4GB – 64GB<br>• SLC / MLC<br>• Power Supply (3.3Vcc +/-5%)<br>• Specialized for High-Reliability<br>• SATA-II 3.0Gbps interface backward compatible w/ SATA-I 1.5Gbps<br>• RoHS 6/6 | • Industrial Wear leveling – includes Static Block Management<br>• Data Integrity under power-cycling<br>• High reliability with built in ECC<br>• Harsh Environment Tolerance<br>• 10-year Date Retention and with Unlimited Reads<br>• Low Power Consumption<br>• Enterprise/Commercial Temp 0°C to +70° C<br>• No moving parts |

# CFast Cards — SM2242 Series

## Enterprise Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 4GB | W7CT004G1vA-uu1Px-yyy.zz | SATA-II 3Gb/s | 0˚C to +70˚C | SLC |
| 8GB | W7CT008G1vA-uu1Px-yyy.zz | SATA-II 3Gb/s | 0˚C to +70˚C | SLC |
| 16GB | W7CT016G1vA-uu1Px-yyy.zz | SATA-II 3Gb/s | 0˚C to +70˚C | SLC |
| 32GB | W7CT032G1vA-uu1Px-yyy.zz | SATA-II 3Gb/s | 0˚C to +70˚C | SLC |

## Commercial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 8GB | W2CT008G1vA-uu1Px-yyy.zz | SATA-II 3Gb/s | 0˚C to +70˚C | MLC |
| 16GB | W2CT016G1vA-uu1Px-yyy.zz | SATA-II 3Gb/s | 0˚C to +70˚C | MLC |
| 32GB | W2CT032G1vA-uu1Px-yyy.zz | SATA-II 3Gb/s | 0˚C to +70˚C | MLC |
| 64GB | W2CT064G1vA-uu1Px-yyy.zz | SATA-II 3Gb/s | 0˚C to +70˚C | MLC |

(v) = Disk/Interface Options
- D: Dual ID (True IDE = Fixed, PC Card Mode)
- X: Removable
- T: Fixed Disk True ID

(uu) = Controller Brand Name and Version

(x) = Component Flash Die Revision
- A: A-Die
- B: B-Die
- C: C-Die

(yyy) = Component Flash Configuration
- 002 = 2 NAND Flash, Single Die, 1-CE
- 02D = 2 NAND Flash, Dual Die, 1-CE
- 2Q2 = 2 Nand Flash, Quad Die, 2-CE
- 2P4 = 2 NAND Flash, Dual Stacked, 4-CE
- 4D2 = 4 NAND Flash, Dual Die, 2-CE
- 4Q2 = 4 NAND Flash, Quad Die, 2-CE
- 4P4 = 4 NAND Flash, Dual Stack Package, 4-CE

(zz) = Firmware Revision
Please check with factory representative for current firmware revision

# Secure Digital Cards

Secure Digital (SD) cards are a small form factor, non-volatile, removable memory storage solution that has no moving mechanical parts. Wintec's Industrial Grade S6 series cards (Extended Temp -25°C to +85°C) are designed, manufactured, and tested to perform exceptionally well in demanding and harsh environments. They are built with Single Level Cell (SLC) NAND Flash and are paired with a Hyperstone S6 32-bit RISC/DSP controller. The S6 Industrial and Enterprise grade SD cards employ a variety of sophisticated error checking and Flash management utilities that allow for maximum reliability and endurance. Enterprise level SD cards are built with SLC NAND Flash and are geared towards telecomunications equipment and data-logging applications.

Additionally, Wintec offers the S3 series SD cards that are manufactured with MLC NAND Flash. S3 series CF Cards are great for consumer grade products that require high performance together with the reliability and consistency achieved through the strict locked BOM and locked firmware policy.


## H6 Series

| General | Performance and Reliability |
|---|---|
| • Density 256MB – 8GB<br>• 32-bit RISC/DSP controller<br>• SLC NAND Flash<br>• Specialized for High-Reliability<br>• Power Supply (3.3Vcc +/- 5%)<br>• SD 1.01, 1.10, and 2.0 (SDHC) compliant<br>• RoHS 6/6 | • Industrial Wear leveling<br>• Interleaving, cache, and multi-plane programming<br>• 2 times 4KB large page buffers per channel achieving optimal performance SLC Flash chips with 4KB page size<br>• Harsh Environment Tolerance<br>• 10-year Date Retention<br>• Power loss protection<br>• Extended Temp (-25°C to +85°C)<br>• Enterprise/Commercial Temp 0°C to +70° C<br>• Dual channel direct flash memory access (DFA) |


## S3 Series

| General | Performance and Reliability |
|---|---|
| • Density 4GB – 64GB<br>• 32-bit RISC/DSP controller<br>• MLC NAND Flash<br>• Power Supply (3.3Vcc +/- 5%)<br>• SD 1.01, 1.10, and 2.0 (SDHC) Standard compliant<br>• RoHS 6/6 | • Sophisticated Wear leveling<br>• Hardware BCH Engine, Configurable ECC up to 40-bit<br>• Supports interleaving / multi plane operation |

# Secure Digital Cards — H6 Series

## Industrial Grade — Extended Temp

| Density | Part Number | Temperature | NAND Type |
|---|---|---|---|
| 256MB | W7SD256M1XAI-H60Px-yyy.zz | -25˚C to +85˚C | SLC |
| 512MB | W7SD512M1XAI-H60Px-yyy.zz | -25˚C to +85˚C | SLC |
| 1GB | W7SD001G1XAI-H60Px-yyy.zz | -25˚C to +85˚C | SLC |
| 2GB | W7SD002G1XAI-H60Px-yyy.zz | -25˚C to +85˚C | SLC |
| 4GB | W7SD004G1XAI-H60Px-yyy.zz | -25˚C to +85˚C | SLC |
| 8GB | W7SD008G1XAI-H60Px-yyy.zz | -25˚C to +85˚C | SLC |

## Enterprise Grade

| Density | Part Number | Temperature | NAND Type |
|---|---|---|---|
| 128MB | W7SD128M1XA-H60Px-yyy.zz | 0˚C to +70˚C | SLC |
| 256MB | W7SD256M1XA-H60Px-yyy.zz | 0˚C to +70˚C | SLC |
| 512MB | W7SD512M1XA-H60Px-yyy.zz | 0˚C to +70˚C | SLC |
| 1GB | W7SD001G1XA-H60Px-yyy.zz | 0˚C to +70˚C | SLC |
| 2GB | W7SD002G1XA-H60Px-yyy.zz | 0˚C to +70˚C | SLC |
| 4GB | W7SD004G1XA-H60Px-yyy.zz | 0˚C to +70˚C | SLC |
| 8GB | W7SD008G1XA-H60Px-yyy.zz | 0˚C to +70˚C | SLC |

# Secure Digital Cards — S3 Series

## Commercial Grade

| Density | Part Number | Temperature | NAND Type |
|---|---|---|---|
| 4GB | W2SD004GHXA-S30Px-yyy.zz | 0˚C to +70˚C | MLC |
| 8GB | W2SD008GHXA-S30Px-yyy.zz | 0˚C to +70˚C | MLC |
| 16GB | W2SD016GHXA-S30Px-yyy.zz | 0˚C to +70˚C | MLC |
| 32GB | W2SD032GHXA-S30Px-yyy.zz | 0˚C to +70˚C | MLC |
| 64GB | W2SD064GHXA-S30Px-yyy.zz | 0˚C to +70˚C | MLC |

(x) = Component Flash Die Revision
A: A-Die
B: B-Die

(yyy) = Component Flash Configuration
002: 2 NAND Flash Chip, Single Die, 1-CE
02D: 2 NAND Flash Chip, Dual Die, 1-CE
2Q2: 2 NAND Flash Chip, Quad Die, 2-CE
2P4: 2 NAND Flash Chip, Dual Stack Package, 4-CE

(zz) = Firmware Revisions
Please check with factory representative for current firmware revision

# USB Flash Drives

USB Flash drives have become the storage medium of choice for temporary data storage, file transport, and file sharing in Industrial, Enterprise and Commercial user environments. Wintec manufactures USB Flash drives that are compatible with Windows 7, Vista, XP, 2000 and ME based systems, in additon to MAC OS 9.0 or later and Linux Kernel 2.4.2 or later. They are capable of operating in low-speed, full-speed, and high-speed modes and are manufactured ensure the best performance, endurance, and data integrity. Wintec Industrial grade USB Flash drive options include enhanced ESD protection and AES 128/256 bit encryption, making them an ideal solution for data-logging and for use as data recovery media in Industrial and Enterprise applications. Wintec also offers programming and branding customization options for OEM customers.

## W7US Series

| General | Performance and Reliability |
|---|---|
| • Density 512MB – 16GB<br>• USB 2.0<br>• SLC/MLC NAND Flash<br>• Specialized for High-Reliability<br>• LED activity indicator<br>• RoHS 6/6 | • ECC engine capable of correcting 15 symbols per 528 byte sector<br>• 10-Year Data Retention<br>• Enhanced ESD protection: 8KV contact, 15KV Air<br>• Dual Channel Flash Memory with data transfer rate up to 30MB/sec<br>• Static and Dynamic Wear-leveling<br>• Industrial I-Temp -40˚C to +85˚C<br>• Enterprise Temp 0°C to +70°C |

## W7MU Series

| General | Performance and Reliability |
|---|---|
| • Density 512MB – 16GB<br>• USB 2.0<br>• SLC NAND Flash<br>• Reliable and Durable<br>• RoHS 6/6 | • ECC engine capable of correcting 15 symbols per 528 byte sector<br>• 10-Year Data Retention<br>• Single Channel Flash Memory with data transfer rate up to 18MB/sec<br>• Static and Dynamic Wear-leveling<br>• Temp 0°C to +70°C |

## W2MU Series

| General | Performance and Reliability |
|---|---|
| • Density 512MB – 8GB<br>• USB 2.0<br>• MLC NAND Flash<br>• User Friendly<br>• RoHS 6/6 | • ECC engine capable of correcting 8 symbols per 528 byte sector<br>• 10-Year Data Retention<br>• Single Channel Flash Memory with data transfer rate up to 15MB/sec<br>• Static and Dynamic Wear-leveling<br>• Temp 0°C to +70°C |

## USB Flash Drive — W7US Series

### Industrial Grade — I-Temp / Enterprise Grade

| Density | Part Number | USB Type | Temperature | NAND Type |
|---|---|---|---|---|
| 512MB | W7US512M1vA(I)-S2xx-yyy.zz | USB2.0 | 0°C to +70°C (-40°C to +85°C) | SLC |
| 1GB | W7US001G1vA(I)-S2xx-yyy.zz | USB2.0 | 0°C to +70°C (-40°C to +85°C) | SLC |
| 2GB | W7US002G1vA(I)-S2xx-yyy.zz | USB2.0 | 0°C to +70°C (-40°C to +85°C) | SLC |
| 4GB | W7US004G1vA(I)-S2xx-yyy.zz | USB2.0 | 0°C to +70°C (-40°C to +85°C) | SLC |
| 8GB | W7US008G1vA(I)-S2xx-yyy.zz | USB2.0 | 0°C to +70°C (-40°C to +85°C) | SLC |
| 16GB | W7US016G1vA(I)-S2xx-yyy.zz | USB2.0 | 0°C to +70°C (-40°C to +85°C) | SLC |

## USB Flash Drive — W7MU Series

### Enterprise Grade

| Density | Part Number | USB Type | ECC | Temperature | NAND Type |
|---|---|---|---|---|---|
| 512MB | W7MU512M1vA-S2xx-yyy.zz | USB2.0 | 15/48 Bit | 0°C to +70°C | SLC |
| 1GB | W7MU001G1vA-S2xx-yyy.zz | USB2.0 | 15/48 Bit | 0°C to +70°C | SLC |
| 2GB | W7MU002G1vA-S2xx-yyy.zz | USB2.0 | 15/48 Bit | 0°C to +70°C | SLC |
| 4GB | W7MU004G1vA-S2xx-yyy.zz | USB2.0 | 15/48 Bit | 0°C to +70°C | SLC |
| 8GB | W7MU008G1vA-S2xx-yyy.zz | USB2.0 | 15/48 Bit | 0°C to +70°C | SLC |
| 16GB | W7MU016G1vA-S2xx-yyy.zz | USB2.0 | 15/48 Bit | 0°C to +70°C | SLC |

## USB Flash Drive — W2MU Series

### Enterprise Grade

| Density | Part Number | USB Type | ECC | Temperature | NAND Type |
|---|---|---|---|---|---|
| 512MB | W7MU512M1vA-S2xx-yyy.zz | USB2.0 | 48 Bit | 0°C to +70°C | SLC |
| 1GB | W7MU001G1vA-S2xx-yyy.zz | USB2.0 | 48 Bit | 0°C to +70°C | SLC |
| 2GB | W7MU002G1vA-S2xx-yyy.zz | USB2.0 | 48 Bit | 0°C to +70°C | SLC |
| 4GB | W7MU004G1vA-S2xx-yyy.zz | USB2.0 | 48 Bit | 0°C to +70°C | SLC |
| 8GB | W7MU008G1vA-S2xx-yyy.zz | USB2.0 | 48 Bit | 0°C to +70°C | SLC |

### Commercial Grade

| Density | Part Number | USB Type | ECC | Temperature | NAND Type |
|---|---|---|---|---|---|
| 512MB | W2MU512M1vA-S2xx-yyy.zz | USB2.0 | 15 Bit | 0°C to +70°C | MLC |
| 1GB | W2MU001G1vA-S2xx-yyy.zz | USB2.0 | 15 Bit | 0°C to +70°C | MLC |
| 2GB | W2MU002G1vA-S2xx-yyy.zz | USB2.0 | 15 Bit | 0°C to +70°C | MLC |
| 4GB | W2MU004G1vA-S2xx-yyy.zz | USB2.0 | 15 Bit | 0°C to +70°C | MLC |
| 8GB | W2MU008G1vA-S2xx-yyy.zz | USB2.0 | 15 Bit | 0°C to +70°C | MLC |

(v) = Disk/Interface Options
- X: Removable
- T: Fixed Disk True ID

(xx) = NAND Flash Manufacturer and Die Revision
- P = Samsung — A: A-Die
- M = Micron — B: B-Die
- I = Intel — C: C-Die

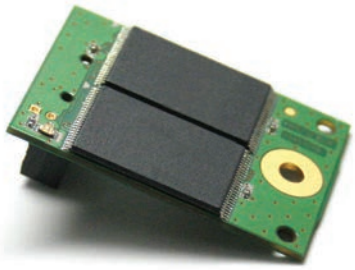
(yyy) = Component Flash Configuration
- 001: 1 NAND Flash Chip, Single Die, 2-CE
- 01D: 1 NAND Flash Chip, Dual Die 1-CE
- 002: 2 NAND Flash Chip, Single Die 1-CE
- 02D: 2 NAND Flash Chip, Dual Die, 1-CE
- 2Q2: 2 NAND Flash Chip, Quad Die 2-CE

(zz) = Firmware Revisions
- Please check with factory representative for current firmware revision

# Embedded USB Flash

Embedded USB Flash is an ideal data storage and bootable device for any embedded system. They easily fit into any platform with a standard 10-pin USB connector and can be firmly secured into place using the mounting hole for enhanced ruggedness. Wintec offers embedded USB Flash in Dual channel and Single channel configurations that are fully USB 2.0 compatible with data transfer rate performance up to 20MB/s. Wintec drives are outstandingly reliable with the use of Single Level Cell (SLC) NAND Flash combined with the advanced Flash management of a dedicated controller.

The embedded USB W7EU (SLC) and W2EU (MLC) series offer low power consumption in either 5V or 3.3V configurations. Either series can be customized to fit specific project needs and are available in 10-pin 2x5 connectors with two pin pitches of either 2.54mm or 2.0mm with an array of header profile options to fit most board layouts. Most commonly used in network switches, gaming systems, POS, TV set-top boxes, Wintec Embedded USB Flash drives are a compact, high performing, reliable, and durable embedded solution.



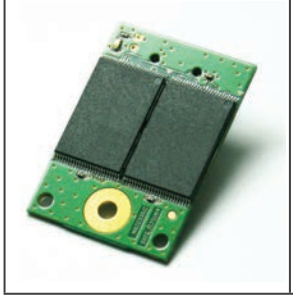
## Dual Channel

| General | Performance and Reliability |
|---|---|
| • Density 512MB – 16GB | • Low Power consumption |
| • USB 2.0 | • ESD Protection |
| • SLC / MLC NAND Flash | • Capable of with standing high impact and vibration shocks |
| • Various 5 or 10-pin USB connector form-factors | • Error Correction 8, 15 and 24 bit / 528 Block |
| • 5V Standard operational voltage, 3.3V optional | • Static and dynamic wear-leveling |
| • RoHS 6/6 | • Industrial I-Temp -40°C to +85°C |
| | • Enterprise/Commercial Temp 0°C to +70° C |

## Single Channel

| General | Performance and Reliability |
|---|---|
| • Density 512MB – 16GB | • Low Power consumption |
| • USB 2.0 | • ESD Protection |
| • SLC / MLC NAND Flash | • Capable of with standing high impact and vibration shocks |
| • Various 5 or 10-pin USB connector form-factors | • Error Correction 13/24/48bit per 1KB |
| • 5V Standard operational voltage, 3.3V optional | • Static and dynamic wear-leveling |
| • RoHS 6/6 | • Industrial I-Temp -40°C to +85°C |
| | • Enterprise/Commercial Temp 0°C to +70° C |

## Form-Factor Controllers

| Dual Channel | Single Channel | Right Angle Connector | Low Profile | High Profile |
|---|---|---|---|---|
|  |  |  |  |  |

# Embedded USB — Dual Channel / Single Channel

## Industrial Grade – I-Temp

| Density | Part Number | USB Type | Temperature | NAND Type |
|---|---|---|---|---|
| 512MB | W7EU512Mtuvl-ww0xx-yyy.zz | USB2.0 | -40˚C to +85˚C | SLC |
| 1GB | W7EU001Gtuvl-ww0xx-yyy.zz | USB2.0 | -40˚C to +85˚C | SLC |
| 2GB | W7EU002Gtuvl-ww0xx-yyy.zz | USB2.0 | -40˚C to +85˚C | SLC |
| 4GB | W7EU004Gtuvl-ww0xx-yyy.zz | USB2.0 | -40˚C to +85˚C | SLC |
| 8GB | W7EU008Gtuvl-ww0xx-yyy.zz | USB2.0 | -40˚C to +85˚C | SLC |
| 16GB | W7EU016Gtuvl-ww0xx-yyy.zz | USB2.0 | -40˚C to +85˚C | SLC |

## Enterprise Grade

| Density | Part Number | USB Type | Temperature | NAND Type |
|---|---|---|---|---|
| 512MB | W7EU512Mtuv-ww0xx-yyy.zz | USB2.0 | 0˚C to +70˚C | SLC |
| 1GB | W7EU001Gtuv-ww0xx-yyy.zz | USB2.0 | 0˚C to +70˚C | SLC |
| 2GB | W7EU002Gtuv-ww0xx-yyy.zz | USB2.0 | 0˚C to +70˚C | SLC |
| 4GB | W7EU004Gtuv-ww0xx-yyy.zz | USB2.0 | 0˚C to +70˚C | SLC |
| 8GB | W7EU008Gtuv-ww0xx-yyy.zz | USB2.0 | 0˚C to +70˚C | SLC |
| 16GB | W7EU016Gtuv-ww0xx-yyy.zz | USB2.0 | 0˚C to +70˚C | SLC |

## Commercial Grade

| Density | Part Number | USB Type | Temperature | NAND Type |
|---|---|---|---|---|
| 512MB | W2EU512Mtuv-ww0xx-yyy.zz | USB2.0 | 0˚C to +70˚C | MLC |
| 1GB | W2EU001Gtuv-ww0xx-yyy.zz | USB2.0 | 0˚C to +70˚C | MLC |
| 2GB | W2EU002Gtuv-ww0xx-yyy.zz | USB2.0 | 0˚C to +70˚C | MLC |
| 4GB | W2EU004Gtuv-ww0xx-yyy.zz | USB2.0 | 0˚C to +70˚C | MLC |
| 8GB | W2EU008Gtuv-ww0xx-yyy.zz | USB2.0 | 0˚C to +70˚C | MLC |
| 16GB | W2EU016Gtuv-ww0xx-yyy.zz | USB2.0 | 0˚C to +70˚C | MLC |

(t) = Configuration Options
- 1: Default (w/LED) 5V standard
- B: Mini Embedded USB 5V only
- D: Standard Configuration 3.3V only
- L: Standard Configuration — Dual Voltage (Pin 9=3.3V)
- M: Mini Configuration — Dual Voltage (Pin 5 = 3.3V)

(u) = Disk/Interface Options
- X: Default Removable
- T: Optional — Fixed

(v) = Connector Options
- C: 2mm pitch, Low Profile
- D: 2.54mm pitch, Standard Profile
- E: 2.54mm pitch, High Profile
- F: 2.54mm pitch, Right Angle
- G: 2.54mm pitch, Low Profile

(ww) = Controller Options
- S2: SMI3252
- S4: SMI3254
- S5: SMI3255

(xx) = NAND Flash Manufacturer and Die Revision
- Px: Samsung
- Mx: Micron
- Ix: Intel

(yyy) = Component Flash Configuration
- 001: 1 NAND Flash Chip
- 1Q2: 1 NAND Flash, Quad Die, 2-CE
- 002: 2 NAND Flash Chip
- 2D2: 2 NAND Flash, Dual Die, 2-CE
- 2Q2: 2 NAND Flash, Quad Die, 2-CE

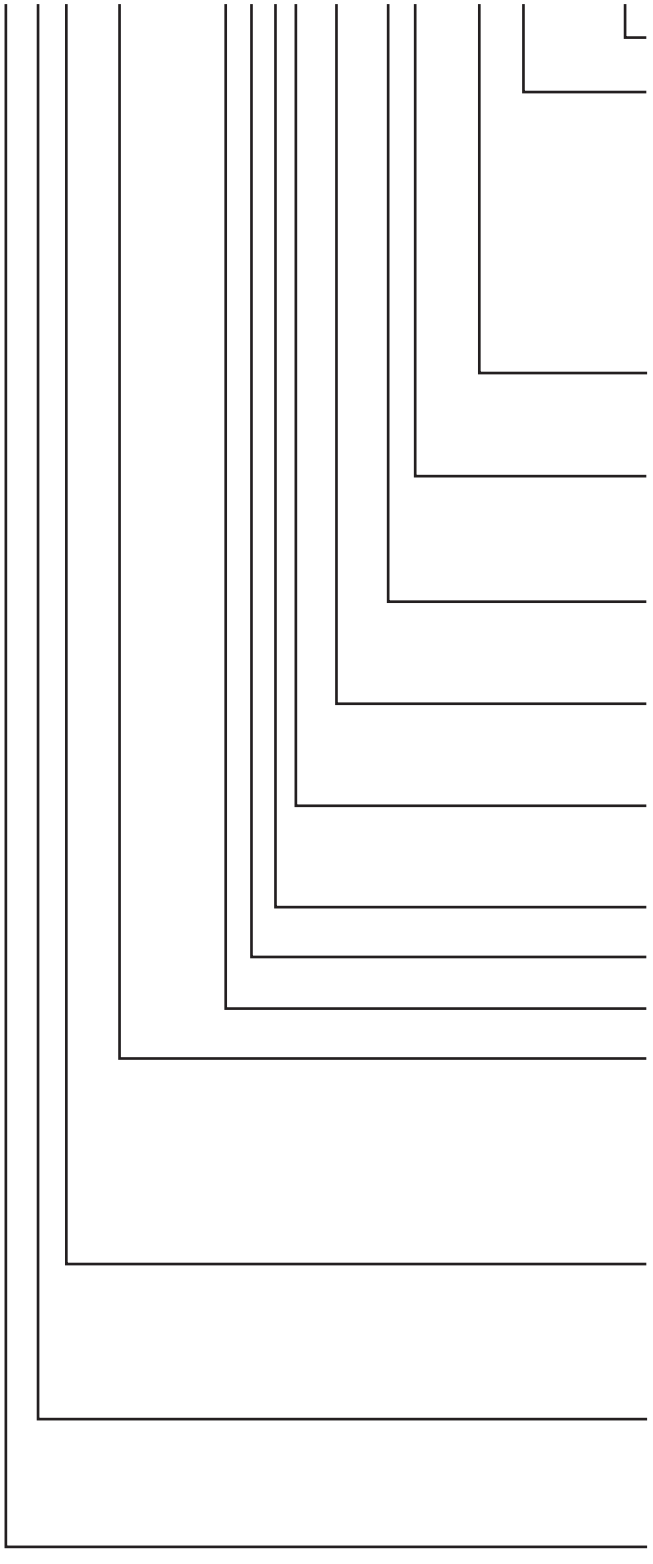
(zz) = Firmware Revisions
- Please check with factory representative for current firmware revision

# Solid State Drives

Solid State Drives are the cutting edge technology that is on course to replace traditional Hard Drives. SSD's feature increased read and write performance and have no moving parts, which allows for better endurance and reliability, even in harsh environments. Wintec Industries offers three product grades — Industrial, Enterprise and Commercial — to suit every customer, with SLC NAND flash for Industrial and Enterprise grades or MLC NAND Flash for Commercial grade products. The challenge presented in demanding applications such as data storage, high-end servers and video editing are a perfect application for SSD due to dedicated flash management and wear-levelling capabilities. Other applications, such as POS, casino gaming, automotive, security surveillance, military, multimedia entertainment sets, and more applications can benefit from the advanced features of SSD technology.

# Solid State Drive Naming Guide

## W7SS120G1TAI-D11MA2-BD2.A2



**Firmware Revision**

**Flash Component Configuration**
4D2 = 4 NAND Flash, Dual Die 2-CE
4Q2 = 4 NAND Flash, Quad Die, 2-CE
08D = 8 NAND Flash, Dual Die 1-CE
8Q2 = 8 NAND Flash, Quad Die, 2-CE
AS2 = 10 NAND Flash, Single Die, 2-CE
AQ4 = 10 NAND Flash, Quad Die 4-CE
BD2 = 16 NAND Flash, Dual Die, 2-CE
BQ4 = 16 NAND Flash, Quad Die, 4-CE
BO4 = 16 NAND Flash, Octal Die, 4-CE
CD2 = 20 NAND Flash, Quad Die, 4-CE

**Geometry**
(blank) = 4x nm and higher
3 = 3x nm
2 = 2x nm

**NAND Flash & Die Revision**
x = Die Revision, e.g. M-Die, A-Die

| | |
|---|---|
| Px = Samsung | Mx = Micron |
| Hx = Hynix | Ix = Intel |

**Program Mode**
1 = SATA-II
2 = PATA (DMA / UDMA Enabled)

**Controller Manufacturer**

| | |
|---|---|
| Dx = SandForce | Ex = EastWho |
| Jx = JMicron | Sx = SMI |

**Temperature Rating**
I = Temp -40° C to +85° C
None = Commercial Temp 0° C to 70° C

**Form Factor**
A = 2.5" B = 3.5" C = 1.8"

**T = Fixed Disk**

**1 = Standard Configuration**

**Density**
G = Gigabyte

| | | |
|---|---|---|
| 001 = 1 | 032 = 32 | 160 = 160 |
| 002 = 2 | 050 = 50 | 200 = 200 |
| 004 = 4 | 064 = 64 | 240 = 240 |
| 008 = 8 | 100 = 100 | 480 = 480 |
| 016 = 16 | 120 = 120 | |
| 025 = 25 | 128 = 128 | |

**SSD Type**
DM = Disk On Module
ES = Embedded SATA
SS = Solid-State-Drive (SATA-II or PATA)
ZF = Zero-Insertion-Force

**NAND Flash Type**
2 = MLC NAND Flash
4 = MLC NAND Flash w/Custom Configuration
7 =SLC NAND Flash
8 = SLC NAND Flash w/Custom Configuration

**W = Wintec OEM Product**

# 2.5" SATA SSD

Wintec Industries SSD products are designed to fulfill Industrial, Enterprise, and Commercial market segments. Wintec SATA-II and SATA-III 2.5" SSDs (also backwards compatible to SATA-I) are manufactured with SLC or MLC NAND Flash paired with a dedicated controller.


## SATA-II EWS-800 series

| General | Performance and Reliability |
|---|---|
| • Density 32GB-512GB (Also available in 40GB, 80GB,160GB, 320GB,400GB)<br>• Eastwho EWS-800 controller<br>• DRAM cache buffer<br>• MLC NAND Flash memory<br>• SMART Attribute support<br>• Windows 7 TRIM support<br>• RoHS 6/6 | • Sequential Read and Write 200MBps/110MBps<br>• 15K IOPS Random Read (4K transfers)<br>• 10K (burst)/1K (sustained) IOPS Random Write (4K transfers)<br>• ECC with BCH: Up to 40 bits correctable per 512B sector<br>• AES 128/256 engine with ECB/XTS encryption mode.<br>• Robust on Fragmentation and sudden Power Off Recovery<br>• Commercial (0°C to +70°C) |


## SATA-II JM-612 series

| General | Performance and Reliability |
|---|---|
| • Density 32GB-512GB<br>• DRAM cache buffer<br>• MLC NAND Flash memory<br>• SMART Attribute support<br>• Windows 7 TRIM support<br>• RoHS 6/6 | • High Performance 230MB/s Seq. Read<br>• High Performance 130MB/s Seq. Write<br>• Random Read: 10,000 IOPS at 4KB transfer<br>• 1K (sustained) IOPS Random Write (4K transfers)<br>• ECC with BCH: Up to 24 bits correctable per 1K sector<br>• Enhanced endurance by dynamic/static wear leveling<br>• Commercial (0°C to +70°C) |


## SATA-II SF-1222 series

| General | Performance and Reliability |
|---|---|
| • Density 32GB – 512GB<br>• Solid-State-Drive SATA-II<br>• SLC / MLC NAND Flash<br>• SMART Command support<br>• SATA 2.6 Compliant 3Gbs and 1.5Gbs support<br>• RoHS 6/6 | • Sequential Maximum read/write up to 285MBs / 275MBs<br>• Random Read IOPS: 30,000<br>• Random Write IOPS: 30,000 burst/10, 000 sustained<br>• ECC Recovery: Up to 24 bytes correctable per 512-byte sector<br>• Data Encryption 128-bit AES (optional disk password) / RAISE Support<br>• Industrial I-Temp (-40°C to +85°C)<br>• Enterprise / Commercial (0°C to +70°C) |

Continued on the next page ➤


## SATA-III SF-2281 series

| General | Performance and Reliability |
|---|---|
| • Density 32GB-512GB<br>• SandForce SF-2281 controller with internal cache buffer<br>• SLC / MLC NAND Flash<br>• RAISE provides RAID-like protection<br>• SMART Attribute support<br>• Minimum over-provision available<br>• RoHS 6/6 | • Sequential Read and Write 500MBps/500MBps<br>• 60K IOPS Random Read (4K transfers)<br>• 20K IOPS Random Write (4K transfers)<br>• ECC with BCH: Up to 55 bits correctable per 512B sector<br>• TCG compliant Opal Self Encrypting Drive (SED)<br>• AES 128/256 engine with double encryption<br>• DuraClass technology extends SSD endurance<br>• Commercial (0°C to +70°C) |


## SATA-III SF-2382 series

| General | Performance and Reliability |
|---|---|
| • Density 32GB-256GB<br>• SLC NAND Flash Memory<br>• SandForce SF-2382 controller with internal cache buffer<br>• RAISE provides RAID-like protection<br>• Extended SMART Attribute support<br>• RoHS 6/6 | • Sequential Read and Write 500MBps/500MBps<br>• 60K IOPS Random Read (4K transfers)<br>• 20K IOPS Random Write (4K transfers)<br>• ECC with BCH: Up to 55 bits correctable per 512B sector<br>• TCG compliant Opal Self Encrypting Drives<br>• AES 128/256 engine with double encryption<br>• DuraClass technology extends SSD endurance<br>• Military Security Erase options<br>• Industrial I-Temp (-40°C to 85°C) |


## SATA-III SF-2582 series

| General | Performance and Reliability |
|---|---|
| • Density 32GB-512GB<br>• eMLC/SLC NAND Flash Memory<br>• SandForce SF-2582 controller with internal cache buffer<br>• Power Fail protection with Tantalum caps which provides full I-temp operating temperature<br>• No degradation on Power Fail circuitry over time<br>• RAISE provides RAID-like protection<br>• Extended SMART Attribute support<br>• RoHS 6/6 | • Sequential Read and Write 500MBps/500MBps<br>• 60K IOPS Random Read (4K transfers)<br>• 30K IOPS Random Write (4K transfers)<br>• ECC with BCH: Up to 55 bits correctable per 512B sector<br>• TCG compliant Opal Self Encrypting Drives<br>• AES 128/256 engine with double encryption<br>• DuraClass technology extends SSD endurance<br>• Military Security Erase options<br>• Industrial I-Temp (-40°C to 85°C) |

## 2.5" SATA-II SSD EWS-800 series

### Commercial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 32GB | W2SS032G1TA-E21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |
| 40GB | W2SS040G1TA-E21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |
| 64GB | W2SS064G1TA-E21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |
| 80GB | W2SS080G1TA-E21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |
| 128GB | W2SS128G1TA-E21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |
| 160GB | W2SS160G1TA-E21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |
| 256GB | W2SS256G1TA-E21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |
| 320GB | W2SS320G1TA-E21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |
| 512GB | W2SS512G1TA-E21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |

## 2.5" SATA-II SSD JM-612 series

### Commercial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 32GB | W2SS032G1TA-J21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |
| 64GB | W2SS064G1TA-J21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |
| 128GB | W2SS128G1TA-J21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |
| 256GB | W2SS256G1TA-J21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |
| 512GB | W2SS512G1TA-J21xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C | MLC |

## 2.5" SATA-II SSD SF-1222 series

### Industrial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 32GB | W7SS025G1TA(I)-D11xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C (-40°C to +85°C) | SLC/MLC |
| 64GB | W7SS050G1TA(I)-D11xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C (-40°C to +85°C) | SLC/MLC |
| 128GB | W7SS100G1TA(I)-D11xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C (-40°C to +85°C) | SLC/MLC |
| 256GB | W2SS200G1TA(I)-D11xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C (-40°C to +85°C) | SLC/MLC |
| 512GB | W7SS400G1TA(I)-D11xxx-yyy.zz | SATA-II / 3.0Gbps | 0°C to +70°C (-40°C to +85°C) | MLC |

Refer to footnotes on the bottom of page 22 for suffix xx-yyy.zz explanation.

## 2.5" SATA-III SSD SF-2281 series

### Commercial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 32GB | W2SS025G1TA-D41xxx-yyy.zz | SATA-III / 6.0Gbps | 0°C to +70°C | SLC/MLC |
| 64GB | W2SS060G1TA-D41xxx-yyy.zz | SATA-III / 6.0Gbps | 0°C to +70°C | SLC/MLC |
| 128GB | W2SS120G1TA-D41xxx-yyy.zz | SATA-III / 6.0Gbps | 0°C to +70°C | SLC/MLC |
| 256GB | W2SS240G1TA-D41xxx-yyy.zz | SATA-III / 6.0Gbps | 0°C to +70°C | SLC/MLC |
| 512GB | W2SS480G1TA-D41xxx-yyy.zz | SATA-III / 6.0Gbps | 0°C to +70°C | MLC |

## 2.5" SATA-III SSD SF-2382 series

### Industrial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 32GB | W7SS025G1TAI-D51xxx-yyy.zz | SATA-III / 6.0Gbps | -40°C to +85°C | SLC |
| 64GB | W7SS050G1TAI-D51xxx-yyy.zz | SATA-III / 6.0Gbps | -40°C to +85°C | SLC |
| 128GB | W7SS100G1TAI-D51xxx-yyy.zz | SATA-III / 6.0Gbps | -40°C to +85°C | SLC |
| 256GB | W2SS200G1TAI-D51xxx-yyy.zz | SATA-III / 6.0Gbps | -40°C to +85°C | SLC |

## 2.5" SATA-III SSD SF-2582 series

### Industrial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 32GB | W7SS025G1TAI-D61xxx-yyy.zz | SATA-III / 6.0Gbps | -40°C to +85°C | SLC/eMLC |
| 64GB | W7SS050G1TAI-D61xxx-yyy.zz | SATA-III / 6.0Gbps | -40°C to +85°C | SLC/eMLC |
| 128GB | W7SS100G1TAI-D61xxx-yyy.zz | SATA-III / 6.0Gbps | -40°C to +85°C | SLC/eMLC |
| 256GB | W2SS200G1TAI-D61xxx-yyy.zz | SATA-III / 6.0Gbps | -40°C to +85°C | SLC/eMLC |
| 512GB | W2SS400G1TAI-D61xxx-yyy.zz | SATA-III / 6.0Gbps | -40°C to +85°C | eMLC |

(xx) = NAND Flash Manufacturer and Die Revisions
- P: Samsung
- M: Micron
- I: Intel
- M: M-Die
- A: A-Die
- B: B-Die

(yyy) = Component Flash Configuration
- 08D: 8 NAND Flash, Dual Die, 1-CE
- 8Q2: 8 NAND Flash, Quad Die, 2-CE
- AQ4: 12 NAND Flash, Quad Die, 2-CE
- BQ2: 16 NAND Flash, Quad Die, 2-CE
- BP4: 16 NAND Flash, Dual Stack package, 2-CE

(zz) = Firmware Revisions
Please check with factory representative for current firmware revision

# 1.8" micro SATA SSD

Originally targeted for notebook applications, the Slim 1.8” micro SATA drive has also become popular with enterprise and embedded application developers for use in 1U appliance servers, networking appliances, and set-top boxes. Wintec offers Slim 1.8” micro SATA SSDs with SLC Flash up to 128GB and MLC Flash based drives up to 256GB. The JM612 series are high-peformance drives with read speeds up to 190MB/s and write speeds up to 110MB/s.


## JM612 series

**General**

- Density 32GB – 128GB
- Solid-State-Drive SATA-II
- SLC / MLC NAND Flash
- SMART Command Support
- DRAM cache buffer
- SATA 2.6 Compliant 3Gbs and 1.5Gbs support
- RoHS 6/6

**Performance and Reliability**

- Sequential Maximum read/write up to 190MBs / 110MBs
- Random Read IOPS: 10,000
- BCH ECC correction 16/24 per 1K sector
  Enhanced endurance by dynamic/static wear leveling
- Commercial (0°C to +70°C)

## 1.8" microSATA SSD JM612 series

Commercial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 32GB | W2SS032G1TC-J21xx-yyy.zz | SATA-II (3.0Gbs) | 0˚C to +70˚C | SLC/MLC |
| 64GB | W2SS064G1TC-J21xx-yyy.zz | SATA-II (3.0Gbs) | 0˚C to +70˚C | SLC/MLC |
| 128GB | W2SS128G1TC-J21xx-yyy.zz | SATA-II (3.0Gbs) | 0˚C to +70˚C | SLC/MLC |

(xx) = NAND Flash Manufacturer and Die Revisions
P: Samsung M: M-Die
M: Micron A: A-Die
I: Intel B: B-Die

(yyy) = Component Flash Configuration
08D: 8 NAND Flash, Dual Die, 1-CE
8Q2: 8 NAND Flash, Quad Die, 2-CE
AQ4: 12 NAND Flash, Quad Die, 4-CE
BQ2: 16 NAND Flash, Quad Die, 2-CE
BP4: 16 NAND Flash, Dual Stack package, 4-CE

(zz) = Firmware Revisions
Please check with factory representative for current firmware revision

# 2.5" PATA SSD

Wintec has designed and manufactured low and high density PATA SSDs that are available in Industrial, Enterprise, and Commercial grades. The high performance EWS-720 series PATA SSD 44-pin ATA/IDE form factor features an 8MB DRAM cache buffer and high speed DMA capabilities with read speeds of up to 125MB/s and write speeds of up to 110MB/s.


## EWS-720 Series

| General | Performance and Reliability |
|---|---|
| • Density 8GB – 128GB | • Sustained Read/Write 125MBs/110MBs |
| • Solid-State-Drive PATA | • 4K Random Read: 4800 IOPs |
| • SLC / MLC NAND Flash | • Fast 4K Random WR: 400 IOPs |
| • 32 bit high speed controller | • Selectable Master/Slave Setting |
| • 8MB Cache Buffer | • 18-Bit BCH ECC engine |
| • Compliant with ATA-7 specification | • 2 Way Wear-Leveling and 2 Channel Internal Parallelism |
| • RoHS 6/6 | • Commercial (0°C to +70°C) |

## 2.5" PATA SSD EWS720 Series

### Enterprise Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 8GB | W7SS008G1TA-E12xx-yyy.zz | 44-pin ATA/IDE | 0˚C to +70˚C | SLC |
| 16GB | W7SS016G1TA-E12xx-yyy.zz | 44-pin ATA/IDE | 0˚C to +70˚C | SLC |
| 32GB | W7SS032G1TA-E12xx-yyy.zz | 44-pin ATA/IDE | 0˚C to +70˚C | SLC |
| 64GB | W7SS064G1TA-E12xx-yyy.zz | 44-pin ATA/IDE | 0˚C to +70˚C | SLC |

### Commercial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 8GB | W2SS008G1TA-E12xx-yyy.zz | 44-pin ATA/IDE | 0˚C to +70˚C | MLC |
| 16GB | W2SS016G1TA-E12xx-yyy.zz | 44-pin ATA/IDE | 0˚C to +70˚C | MLC |
| 32GB | W2SS032G1TA-E12xx-yyy.zz | 44-pin ATA/IDE | 0˚C to +70˚C | MLC |
| 64GB | W2SS064G1TA-E12xx-yyy.zz | 44-pin ATA/IDE | 0˚C to +70˚C | MLC |
| 128GB | W2SS128G1TA-E12xx-yyy.zz | 44-pin ATA/IDE | 0˚C to +70˚C | MLC |


Refer to footnotes on the bottom of page 23 for suffix xx-yyy.zz explanation.

# 1.8" ZIF PATA SSD

ZIF (Zero-Insertion-Force) 40-pin PATA Solid State Drives are a fully integrated, robust, and reliable high-performance storage and backup solution in a Slim 1.8” 40-pin form factor. The high-performance EWS-720 series ZIF SSD 40-pin ATA/IDE has extra features including an 8MB cache buffer and High Speed Ultra DMA support that enhances read speeds up to 125MB/s and write speeds up to 110MB/s.


## EWS-720 Series

| General | Performance and Reliability |
|---|---|
| • Density 4GB – 64GB<br>• ZIF (Zero-Insertion-Force) 40-pin PATA SSD<br>• SLC / MLC NAND Flash<br>• 32 bit High speed controller<br>• 8MB Cache Buffer<br>• Compliant with ATA-7 specification<br>• RoHS 6/6 | • Sustained Raad/Write 125MBs/50MBs<br>• Fast 4K Random Read:4800 IOPs<br>• Fast 4K Random Write: 300 IOPs<br>• Selectable Master/Slave Setting<br>• 4 to 18-Bit BCH ECC engine<br>• 2 Way Wear-Leveling and 2 Channel Internal Parallelism<br>• Industrial I-Temp (-40°C to +85°C)<br>• Enterprise / Commercial (0°C to +70°C) |

## 1.8" ZIF PATA SSD EWS-720 Series

Enterprise Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 4GB | W7ZF004G1TA-E12xx-yyy.zz | 40-pin ZIF | 0˚C to +70˚C | SLC |
| 8GB | W7ZF008G1TA-E12xx-yyy.zz | 40-pin ZIF | 0˚C to +70˚C | SLC |
| 16GB | W7ZF016G1TA-E12xx-yyy.zz | 40-pin ZIF | 0˚C to +70˚C | SLC |
| 32GB | W7ZF032G1TA-E12xx-yyy.zz | 40-pin ZIF | 0˚C to +70˚C | SLC |

Commercial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 8GB | W2ZF008G1TA-E12xx-yyy.zz | 40-pin ZIF | 0˚C to +70˚C | MLC |
| 16GB | W2ZF016G1TA-E12xx-yyy.zz | 40-pin ZIF | 0˚C to +70˚C | MLC |
| 32GB | W2ZF032G1TA-E12xx-yyy.zz | 40-pin ZIF | 0˚C to +70˚C | MLC |
| 64GB | W2ZF064G1TA-E12xx-yyy.zz | 40-pin ZIF | 0˚C to +70˚C | MLC |

Refer to footnotes on the bottom of page 23 for suffix xx-yyy.zz explanation.

# Embedded Solid State Drives

Wintec Industries offers three distinct SSD products in small form factors that are ideal for embedded system hardware designs. The PATA DOM (Disk-On-Module) features a 40-pin IDE/ATA connector, while the Embedded SATA DOM has a compact 7-pin SATA connector that supports SATA-II speeds of up to 3.0Gbps. For high density and high performance requirements the Embedded Slim SATA is a perfect solution with read speeds of up to 110MB/s and write speeds of up to 100MB/s. All Wintec Embedded SSD drives are available in Industrial I-Temp, Enterprise, and Commercial grades.

## Embedded-DOM 40-pin IDE/PATA SSD

| General | Performance and Reliability |
|---|---|
| • Density 512MB – 32GB<br>• DOM (Disk-On-Module) 40-pin/44-pin IDE/PATA SSD<br>• SLC / MLC NAND Flash<br>• Low Power 5V Standard, (optional 3.3V)<br>• Compliant with ATA-7 Specifications<br>• RoHS 6/6 | • Sustained Read/Write 40MBs/30MBs<br>• 32 Bit High Speed Controller<br>• Selectable Master/Slave Setting<br>• Hardware 13/24 -Bit BCH ECC engines capable of correcting 24-bit errors per 1024 byte data<br>• High Endurance, capable of withstanding high impact and vibration shock<br>• Enterprise / Commercial (0°C to +70°C) |

## Embedded-DOM 7-pin SATA SSD

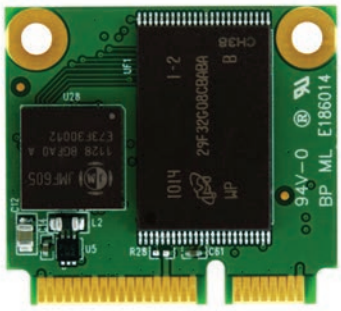
| General | Performance and Reliability |
|---|---|
| • Density 2GB – 128GB<br>• DOM (Disk-On-Module) 7-pin SATA-II SSD<br>• SLC / MLC NAND Flash<br>• SATA-II speeds 3.0Gbs and backward compatible SATA-I 1.5Gbs<br>• Compliant with ATA/ATAPI-7 and SATA 2.6<br>• ROHs c compliant | • Sustained Read/Write 70/20 MB/s<br>• JMicron 605 controller<br>• No Moving parts<br>• ECC Engine: Up to 24 bits correctable per 1KB sector<br>• High Endurance, capable of withstanding high impact and vibration shock<br>• Enterprise / Commercial (0°C to +70°C) |

## Embedded-Slim SATA SSD

| General | Performance and Reliability |
|---|---|
| • Density 8GB – 128GB<br>• Slim SATA-II SSD<br>• SLC/MLC NAND Flash<br>• SATA-II speeds 3.0Gbs and backward compatible SATA-I 1.5Gbs<br>• Compliant with ATA/ATAPI-7 and SATA 2.6<br>• ROHs c compliant | • Sustained Read/Write 160/100 MB/sec<br>• JMicron 605 controller<br>• No Moving parts<br>• ECC Engine: Up to 24 bits correctable per 1KB sector<br>• High Endurance, capable of withstanding high impact and vibration shock<br>• Enterprise / Commercial (0°C to +70°C) |

## Half Size mini PCI-E mSATA — SM6x1 Series

| General | Performance and Reliability |
|---|---|
| • Embedded SATA-II Device<br>• Densities from 4GB to 64GB<br>• SATA-II (3.0 Gbps) interface<br>• SATA-I (1.5 Gbps) backwards compatible<br>• High-Performance SMI iSSD GX device | • Seq. Read Performance 60 MB/s<br>• Seq. Write Performance 35 MB/s<br>• Advanced Wear leveling & Block Management<br>• SMART feature and data security support<br>• SSDLifeGuardTM and SSDLifeSaverTM for SSD life monitoring and extension<br>• 15-bit/512B data error checking and correcting capability<br>• Operating temperature 0°C to 70°C |



## Half Size mini PCI-E mSATA — JM605 Series

| General | Performance and Reliability |
|---|---|
| • Embedded SATA-II Device<br>• Densities from 4GB to 64GB<br>• SATA-II (3.0 Gbps) interface<br>• SATA-I (1.5 Gbps) backwards compatible | • Seq. Read Performance 70 MB/s<br>• Seq. Write Performance 20 MB/s<br>• Random Read performance 5K IOPS at 4KB transfer<br>• Advanced Wear leveling & Block Management<br>• SMART and TRIM Support<br>• Commercial (0°C to +70°C) |

## Full Size mini PCI-E mSATA — SF-2181 Series

| General | Performance and Reliability |
|---|---|
| • Densities from 32GB-128GB<br>• SandForce SF-2181 controller with internal cache buffer<br>• SATA-II (3.0 Gbps) backwards compatible<br>• High-Performance SLC or MLC NAND Flash memory<br>• Intelligent Block Management & Wear Leveling<br>• Intelligent Data Retention optimization | • Ultra High Performance 235MB/s Seq. Read<br>• Ultra High Performance 225MB/s Seq. Write<br>• Random Read: 5,000 IOPS at 4KB transfer<br>• Random Write: 4,500 IOPS at 4KB transfer<br>• Powerful ECC Engine: Up to 55 bits correctable per 512B sector<br>• Automatic encryption (AES-256) and optional password security<br>• MTTF: 2,000,000 operating hours. |

## Full Size mini PCI-E mSATA — JM605 Series

| General | Performance and Reliability |
|---|---|
| • Embedded SATA-II Device<br>• Densities from 32GB to 128GB<br>• SATA-II (3.0 Gbps) interface<br>• SATA-I (1.5 Gbps) backwards compatible<br>• JMicron 605 controller<br>• High-Performance SLC or MLC NAND Flash memory | • Seq. Read Performance 160 MB/s<br>• Seq. Write Performance 80 MB/s<br>• Bad Block Management & Wear Leveling<br>• ECC Engine: Up to 24 bits correctable per 1KB sector<br>• Operating temperature 0°C to 70°C |

## Embedded-DOM 44-pin/40-pin IDE/PATA SSD

### Enterprise Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 512MB | W7DM512M1TA-S11xx-yyy.zz | 44-pin/40-pin ATA/IDE | -40˚C to +85˚C | SLC |
| 1GB | W7DM001G1TA-S11xx-yyy.zz | 44-pin/40-pin ATA/IDE | -40˚C to +85˚C | SLC |
| 2GB | W7DM002G1TA-S11xx-yyy.zz | 44-pin/40-pin ATA/IDE | -40˚C to +85˚C | SLC |
| 4GB | W7DM004G1TA-S11xx-yyy.zz | 44-pin/40-pin ATA/IDE | -40˚C to +85˚C | SLC |
| 8GB | W7DM008G1TA-S11xx-yyy.zz | 44-pin/40-pin ATA/IDE | -40˚C to +85˚C | SLC |
| 16GB | W7DM016G1TA-S11xx-yyy.zz | 44-pin/40-pin ATA/IDE | -40˚C to +85˚C | SLC |

### Enterprise Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 512MB | W2DM512M1TA-S11xx-yyy.zz | 44-pin/40-pin ATA/IDE | 0˚C to +70˚C | MLC |
| 1GB | W2DM001G1TA-S11xx-yyy.zz | 44-pin/40-pin ATA/IDE | 0˚C to +70˚C | MLC |
| 2GB | W2DM002G1TA-S11xx-yyy.zz | 44-pin/40-pin ATA/IDE | 0˚C to +70˚C | MLC |
| 4GB | W2DM004G1TA-S11xx-yyy.zz | 44-pin/40-pin ATA/IDE | 0˚C to +70˚C | MLC |
| 8GB | W2DM008G1TA-S11xx-yyy.zz | 44-pin/40-pin ATA/IDE | 0˚C to +70˚C | MLC |
| 16GB | W2DM016G1TA-S11xx-yyy.zz | 44-pin/40-pin ATA/IDE | 0˚C to +70˚C | MLC |
| 32GB | W2DM032G1TA-S11xx-yyy.zz | 44-pin/40-pin ATA/IDE | 0˚C to +70˚C | MLC |

## Embedded-DOM 7-pin SATA SSD

### Enterprise Grade

| Density | Part Number | Interface | Channels | Temperature | NAND Type |
|---|---|---|---|---|---|
| 2GB | W7DM002G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 2, 4 | 0˚C to +70˚C | SLC |
| 4GB | W7DM004G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 2, 4 | 0˚C to +70˚C | SLC |
| 8GB | W7DM008G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 2, 4 | 0˚C to +70˚C | SLC |
| 16GB | W7DM016G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 2, 4 | 0˚C to +70˚C | SLC |
| 32GB | W7DM032G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 2, 4 | 0˚C to +70˚C | SLC |
| 64GB | W7DM064G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 2, 4 | 0˚C to +70˚C | SLC |
| 128GB | W7DM128G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 4 | 0˚C to +70˚C | SLC |

### Commercial Grade

| Density | Part Number | Interface | Channels | Temperature | NAND Type |
|---|---|---|---|---|---|
| 2GB | W2DM002G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 2, 4 | 0˚C to +70˚C | MLC |
| 4GB | W2DM004G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 2, 4 | 0˚C to +70˚C | MLC |
| 8GB | W2DM008G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 2, 4 | 0˚C to +70˚C | MLC |
| 16GB | W2DM016G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 2, 4 | 0˚C to +70˚C | MLC |
| 32GB | W7DM032G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 2, 4 | 0˚C to +70˚C | MLC |
| 64GB | W2DM064G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 2, 4 | 0˚C to +70˚C | MLC |
| 128GB | W2DM128G1TC-J51xx-yyy.zz | 7-pin SATA-II / 3.0Gbs | 4 | 0˚C to +70˚C | MLC |

Refer to footnotes on the bottom of page 29 for suffix xxyzz explanation.

## Embedded-Slim SATA SSD

### Enterprise Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 8GB | W7ES008G1TA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 16GB | W7ES016G1TA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 32GB | W7ES032G1TA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |

### Commercial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 8GB | W2ES008G1TA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 16GB | W2ES016G1TA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 32GB | W2ES032G1TA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 64GB | W2ES064G1TA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 128GB | W2ES128G1TA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |

## Half Size mini PCI-E mSATA — SM6x1 Series

### Enterprise Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 4GB | W7EM004G1XA-S61G8-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 8GB | W7EM008G1XA-S61GA-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 16GB | W7EM016G1XA-S61GB-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 32GB | W7EM032G1XA-S61GC-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 64GB | W7EM064G1XA-S61GB-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |

### Commercial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 4GB | W2EM004G1XA-S61G8-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 8GB | W2EM008G1XA-S61GA-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 16GB | W2EM016G1XA-S61GB-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 32GB | W2EM032G1XA-S61GC-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 64GB | W2EM064G1XA-S61GB-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |

(xx) = NAND Flash Manufacturer and Die Revisions
- P: Samsung
- M: Micron
- I: Intel
- M: M-Die
- A: A-Die
- B: B-Die

(yyy) = Component Flash Type
- 001: 1 NAND Flash
- 01D: 1 NAND Flash, Dual Die, 1-CE
- 002: 2 NAND Flash, Single Die, 1-CE
- 02D: 2 NAND Flash, Dual Die, 1-CE
- 2Q2: 2 NAND Flash, Quad Die, 2-CE
- 4D2: 4 NAND Flash, Dual Die, 2-CE
- 4Q2: 4 NAND Flash, Quad Die, 2-CE

(zz) = Firmware Revisions
Please check with factory representative for current firmware revision

## Half Size mini PCI-E mSATA — JM605 Series

### Enterprise Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 4GB | W7EM004G1XA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 8GB | W7EM008G1XA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 16GB | W7EM016G1XA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 32GB | W7EM032G1XA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 64GB | W7EM064G1XA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |

### Commercial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 4GB | W2EM004G1XA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 8GB | W2EM008G1XA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 16GB | W2EM016G1XA-J51xx-yyy.zz | **SATA-II / 3.0Gbs** | 0˚C to +70˚C | MLC |
| 32GB | W2EM032G1XA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 64GB | W2EM064G1XA-J51xx-yyy.zz | **SATA-II / 3.0Gbs** | 0˚C to +70˚C | MLC |

## Full Size mini PCI-E mSATA — SF-2181 Series

### Enterprise Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 32GB | W7EM032G1XB-D31xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 64GB | W7EM064G1XB-D31xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 128GB | W7EM128G1XB-D31xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |

### Commercial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 32GB | W2EM032G1XA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 64GB | W2EM064G1XA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 128GB | W2EM128G1XA-J51xx-yyy.zz | **SATA-II / 3.0Gbs** | 0˚C to +70˚C | MLC |

## Full Size mini PCI-E mSATA — JM605 Series

### Enterprise Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 32GB | W2EM032G1XB-D31xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 64GB | W2EM064G1XB-D31xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |
| 128GB | W2EM128G1XB-D31xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | SLC |

### Commercial Grade

| Density | Part Number | Interface | Temperature | NAND Type |
|---|---|---|---|---|
| 32GB | W2EM032G1XA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 64GB | W2EM064G1XA-J51xx-yyy.zz | SATA-II / 3.0Gbs | 0˚C to +70˚C | MLC |
| 128GB | W2EM128G1XA-J51xx-yyy.zz | **SATA-II / 3.0Gbs** | 0˚C to +70˚C | MLC |

Refer to footnotes on the bottom of page 29 for suffix xxyzz explanation.

# DRAM Modules

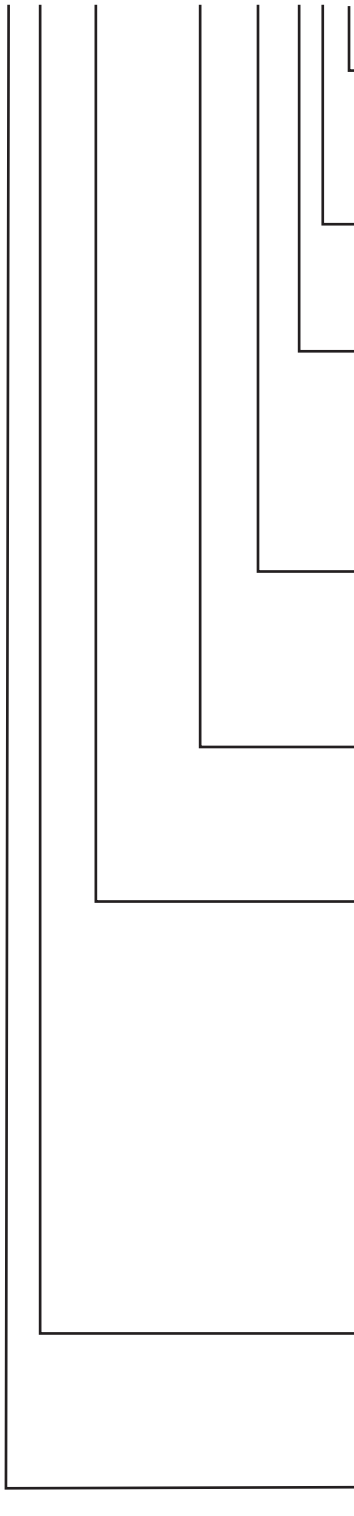
The increasing demand for timely data processing and information storage continues to push the limits of today's computing and storage systems. Greater emphasis is being placed on DRAM density, bandwidth, and lower power consumption in data servers, switches, and embedded systems. Wintec offers a complete line-up of DRAM modules, ensuring that system designers have a variety of solutions to configure and build their optimal system solution. Whether it is leading edge DDR3 product such as LRDIMM or legacy SDR module, Wintec will have the right solution in different form factors and low power options. In addition Wintec also has VLP and miniDIMM options to meet the challenges of compact embedded system designs. Wintec has the right memory solution to fit each design project and customization opportunities for unique applications. Wintec memory modules are manufactured to JEDEC standard specifications and are tested through a rigorous series of test procedures to ensure only the highest quality products are provided to our customers.

Wintec Industries Embedded OEM division provides memory solutions from power saving DDR3L/DDR3 to legacy SDR technology. In this section you will find a wide selection of module technologies and various form factors.

# DRAM Module Naming Guide

## DDR3

### WL3REV91G13ISE



**Die Revision**

M = M-Die C = C-Die
A = A-Die D = D-Die
B = B-Die

**DRAM Manufacturer**

S = Samsung H = Hynix
M = Micron E = Elpida

**Module Latency**

I = CL6 N = CL11
J = CL7 P = CL13
L = CL9

Note: Latency will be specified only on non-register (No Buffer) DIMMs

I = Inphi D = IDT M = Montage

Note: For Registered DIMM this will be used for register identification

**Module Speed**

80 = 800Mbs @ CL6 16 = 1600Mbs @ CL11
10 = 1066Mbs @CL7 18 = 1866Mbs @ CL13
13 = 1333Mbs @ CL9

Note: For Registered DIMM latency will not be specified using additional letter.

**Module Density**

(0)1G =1GB (0)8G = 8GB
(0)2G = 2GB (1)6G = 16GB
(0)4G = 4GB 3(2)G = 32GB

Note: For V L DIMM (0 )(1) (2 )w ll be ignored.

**Module Type**

UE V( 8 =2 4U0 buffered ECC, X 8 Ch pos1 ,8 R an k
UE V( 9 =2 4U0 buffered ECC, X 8Ch pos 9, -R an k
UN(V 8 =2 4U0 buffered bn E CC, X 8Ch pos 8, -R an k
UN(V 6 =2 4U0 buffered bn E CC, X 8 Ch pos1 ,6 R an k
R EV( 8 =2 4R0egis ered ECC, X 8 Ch pos1 ,8 R an k
R EV( 9 =2 4R0egis ered ECC, X 8Ch pos 9, -R an k
R EV( 6 =2 4R0egis ered ECC, X 8 Ch pos8 ,6 R an k
R EV( 4 =2 4R0egis ered ECC, X 4 Ch pos1 ,8 R an k
R EV( 3 =2 4R0egis ered ECC, X 4 Ch pos8 ,6 R an k
S EV( 8 =2 0S4O-D MM ECC, X 8 Ch pos1 ,8 R an k
S EV( 9 =2 0S4O-D MM ECC, X 8Ch pos 9, -R an k
S EV( 8 =2 0S4O-D MM bn E CC, X 8Ch pos 8, -R an k
S EV( 6 =2 0S4O-D MM bn E CC, X 8 Ch pos1 ,6 R an k

Note: For Stan ard DIMM (V) w ll be ign ored. Min R DIMM w ll us e(NE), Mini UDIMM (OE), LRDIMM (DE), SO-RDIMM (AE).

**Device Type**

(I)D 3 =1 . 5 V D D R 3 S D R A M
(I)L 3 =1 . 3 5 V D D R 3 S D R A M

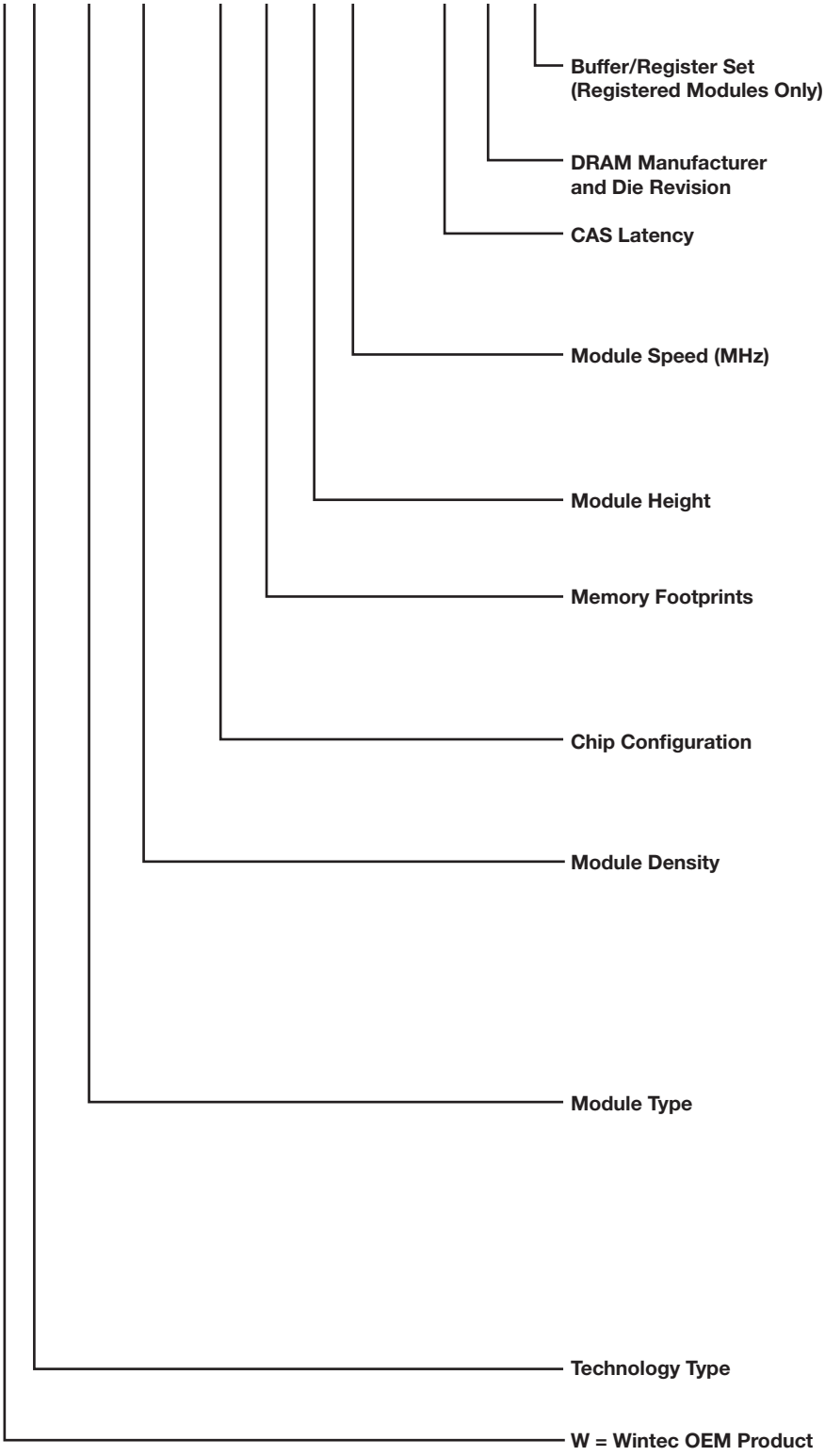
Note: For I-Temp DRAM use (ID) or (IL)

**W = Wintec OEM Product**

# DRAM Module Naming Guide

## DDR2, DDR, SDR, Specialty

### WD3RE08GX418V-1333L-PEI



**Buffer/Register Set (Registered Modules Only)**
I = Inphi L = Intel
D = IDT

**DRAM Manufacturer and Die Revision**
P = Samsung H = Micron A = A-Die C = C-Die
C = Hynix J = Nanya B = B-Die D = D-Die
E = Elpidia I = ISSI

**CAS Latency**
A = CL 2 B = CL 2.5 C = CL 3
G = CL 5 I = CL 6 J = CL 7
K = CL 8 L = CL 9 N = CL 11
E = CL4

**Module Speed (MHz)**
1600 (DDR3) 1333 (DDR3) 1066 (DDR3)
800 (DDR3/DDR2) 667 (DDR2) 533 (DDR2)
400 (DDR2/DDR) 333 (DDR) 266 (DDR)
133 (SDR) 100 (SDR)

**Module Height**
U = Ultra Low Profile
V = Very wL ow Profile
None = Standard height PCB

**Memory Footprints**
02 = 2-Chip 04 = 4-Chip
05 =5-Chip (ECC) 08 = 8-Chip
09 = 9-Chip (ECC) 16 = 16-Chip
18 = 18-Chip (ECC) 32 = 32-Chip
36 = 36-Chip (ECC) 72 = 72-Chip (ECC)

**Chip Configuration**
X4 = x4 Mono Die H8 = x8 Stack Die
X8 = x8 Mono Die Q4 = x4 Quad Die x4
X16 = x16 Mono Die Q8 = x8 Quad Die x8
D4 = x4 Dual/Twin Die D8 = x8 Dual/Twin Die

**Module Density**
G = Gigabyte
M = Megabyte

064 = 64 128 = 128 256 = 256
512 = 512 001 = 1 002 = 2
004 = 4 008 = 8 016 = 16

**Module Type**
**RE = Registered ECCModule**
**LE = Low Power Registered ECC (DDR3L)**
**UE = Unbuffered ECC**
**UN = Unbuffered Non-ECC**
**AE = Registered ECC SODIMM**
**SE = Unbuffered ECC SODIMM**
**SN = Unbuffered Non-ECC SODIMM**
**OE = Unbuffered ECC MiniDIMM**
**NE = MiniDIMM Registerd-ECC**
**PE=Unbuffered ECC SODIMM w/PLL**

**Technology Type**
D3 = DDR3 D1 = DDR
D2 = DDR2 **SD = SDR**

**W = Wintec OEM Product**

# DDR3

The development of DDR3 technology has improved speed and bandwidth and has lower power consumption than DDR2. DDR3 has become the mainstream memory technology for server and notebook applications. As DDR3 technology has matured, more applications are taking advantage of the increased density and performance of DDR3 in new system designs. Wintec DDR3 modules are available in 1.5V (DDR3) and 1.35V (DDR3L) with speeds of 800MHz to 1600MHz.

## 240-pin DIMM - Registered ECC

DDR3 240-pin Registered-ECC (Error Correcting-Code) modules are available in standard speeds of up to 1600MHz. Targeted at high end server type applications, DDR3 and DDR3L Registered ECC modules provide superior data integrity and throughput for data intensive and mission critical applications. Low Power DDR3L continues the trend of making systems greener by reducing the total power consumption of the system, particularly in data centers and other high data traffic environments with a large total memory requirement. Wintec Industries offers DDR3 Registered modules in standard 1.181" or VLP (Very-Low-Profile) 0.74" form-factors.

## 240-pin DIMM - Unbuffered ECC / Non-ECC

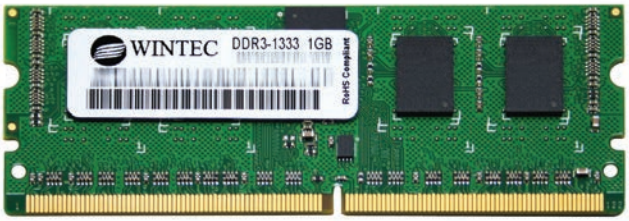
DDR3 Unbuffered-ECC modules. are often used in applications such as non-mission critical servers, networking Hubs/Routers and embedded applications that handle less data traffic than systems requiring registered DIMMs, while providing the reassurance of data integrity through the ECC function. Doubling the throughput of previous generation DDR2 modules, DDR3 is ideal for the latest generation of applications and systems demanding high performance. . UDIMM (Unbuffered non-ECC) offers the same advantage to consumer applications such as PC, Gaming machines and POS terminals. These modules are available in standard 1.181" or VLP (Very-Low-Profile) 0.74" form-factor.

## 240-pin DIMM - LRDIMM

LR-DIMM (Load Reduced DIMM) is the latest evolution of memory modules designed to alleviate some of the issues faced by datacenters, to allow for greater scalability in both capacity and bandwidth while leveraging low cost mainstream DDR3 DRAM devices. The LR-DIMM's isolation memory buffer expands the concept of buffering to include data signals, thereby reducing the load on the memory controller.  Rank Multiplication enables more ranks of DRAM to be populated on the memory module and seamlessly accessed by the CPU memory controller, thereby allowing for higher capacities.


## 204-Pin SODIMM - Registered ECC / Unbuffered ECC / Non-ECC

Engineers designing small form-factor high-end systems have a number of concerns such as module density and power usage. DDR3 SODIMM technology provides a perfect solution. Embedded applications such as PC104 Boards and mini ITX boards are the primary market that will use advanced DDR3 technology ECC SODIMM modules taking full use of its features such as low-power consumption, faster and higher bandwidth. SO-RDIMMs offer the benefits of standard DDR3 Registered DIMMs which can handle larger amounts of data traffic, in the compact form factor favored by system designers dealing with space constraints. Unbuffered Non-ECC are geared for consumer applications such as Notebook/Laptop and are continuing to grow in demand.




## 244-Pin MiniDIMM - Registered ECC

The benefits from DDR3 technology such as increased bandwidth, performance and density and reduced total power consumption are key elements of the next generation of embedded systems. 244-pin Mini-RDIMM is a unique product mainly installed in customized applications such as networking systems, routers and hubs that are installed in mission critical or 24/7 data intensive operations. VLP options are available to provide the perfect solution for systems that have extremely tight space constraints, providing the optimum reliability and memory density with the minimum space requirements.


## 244-Pin MiniDIMM - Unbuffered ECC

Similar to Mini-RDIMM modules, the 244-pin Unbuffered ECC MiniDIMM modules are used in less data intensive applications, with data integrity remaining a key component in compact network equipment systems and other similar products.

# DDR3 — 240-Pin Registered-ECC DIMMs

## Standard Profile (1.181") with Nominal Voltage (1.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD3RE901Gxxyzz | 1-Rank | 128x72 | 128Mx8 | 1.5V |
| 2GB | WD3RE802Gxxyzz | 2-Rank | 256x72 | 128Mx8 | 1.5V |
| | WD3RE902Gxxyzz | 1-Rank | 256x72 | 256Mx8 | 1.5V |
| | WD3RE402Gxxyzz | 1-Rank | 256x72 | 256Mx4 | 1.5V |
| 4GB | WD3RE404Gxxyzz | 1-Rank | 512x72 | 512Mx4 | 1.5V |
| | WD3RE804Gxxyzz | 2-Rank | 512x72 | 256Mx4 | 1.5V |
| | WD3RE304Gxxyzz | 2-Rank | 512x72 | 256Mx4 | 1.5V |
| 8GB | WD3RE308Gxxyzz | 2-Rank | 1024x72 | 512Mx4 | 1.5V |
| | WD3RE608Gxxyzz | 4-Rank | 1024x72 | 256Mx8 | 1.5V |
| | WD3RE408Gxxyzz | 1-Rank | 1024x72 | 1024Mx4 | 1.5V |
| | WD3RE808Gxxyzz | 2-Rank | 1024x72 | 512Mx8 | 1.5V |

## Very Low Profile (0.74") with Nominal Voltage (1.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD3REV91Gxxyzz | 1-Rank | 128x72 | 128Mx8 | 1.5V |
| 2GB | WD3REV82Gxxyzz | 2-Rank | 256x72 | 128Mx8 | 1.5V |
| | WD3REV92Gxxyzz | 1-Rank | 256x72 | 256Mx8 | 1.5V |
| | WD3REV42Gxxyzz | 1-Rank | 256x72 | 256Mx4 | 1.5V |
| 4GB | WD3REV44Gxxyzz | 1-Rank | 512x72 | 512Mx4 | 1.5V |
| | WD3REV84Gxxyzz | 2-Rank | 512x72 | 256Mx8 | 1.5V |
| | WD3REV94Gxxyzz | 1-Rank | 512x72 | 512Mx8 | 1.5V |
| 8GB | WD3REV48Gxxyzz | 1-Rank | 1024x72 | 1024Mx4 | 1.5V |
| | WD3REV88Gxxyzz | 2-Rank | 1024x72 | 512Mx8 | 1.5V |

## Standard Profile (1.181") with Low Voltage (1.35V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD3LE901Gxxyzz | 1-Rank | 128x72 | 128Mx8 | 1.35V |
| 2GB | WD3LE802Gxxyzz | 2-Rank | 256x72 | 128Mx8 | 1.35V |
| | WD3LE902Gxxyzz | 1-Rank | 256x72 | 256Mx8 | 1.35V |
| | WD3LE402Gxxyzz | 1-Rank | 256x72 | 256Mx4 | 1.35V |
| 4GB | WD3LE404Gxxyzz | 1-Rank | 512x72 | 512Mx4 | 1.35V |
| | WD3LE804Gxxyzz | 2-Rank | 512x72 | 256Mx8 | 1.35V |
| | WD3LE304Gxxyzz | 2-Rank | 512x72 | 256Mx4 | 1.35V |
| 8GB | WD3LE308Gxxyzz | 2-Rank | 1024x72 | 512Mx4 | 1.35V |
| | WD3LE608Gxxyzz | 4-Rank | 1024x72 | 256Mx8 | 1.35V |
| | WD3LE408Gxxyzz | 1-Rank | 1024x72 | 1024Mx4 | 1.35V |
| | WD3LE808Gxxyzz | 2-Rank | 1024x72 | 512Mx8 | 1.35V |

Refer to footnotes on the bottom of page 39 for suffix xxyzz explanation.

### Very Low Profile (0.74") with Low Voltage (1.35V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD3LEV91Gxxyzz | 1-Rank | 128x72 | 128Mx8 | 1.35V |
| 2GB | WD3LEV82Gxxyzz | 2-Rank | 256x72 | 128Mx8 | 1.35V |
| | WD3LEV92Gxxyzz | 1-Rank | 256x72 | 256Mx8 | 1.35V |
| | WD3LEV42Gxxyzz | 1-Rank | 256x72 | 256Mx4 | 1.35V |
| 4GB | WD3LEV44Gxxyzz | 1-Rank | 512x72 | 512Mx4 | 1.35V |
| | WD3LEV84Gxxyzz | 2-Rank | 512x72 | 256Mx4 | 1.35V |
| | WD3LEV94Gxxyzz | 1-Rank | 512x72 | 512Mx8 | 1.5V |
| 8GB | WD3LEV48Gxxyzz | 1-Rank | 1024x72 | 1024Mx4 | 1.35V |
| | WD3LEV88Gxxyzz | 2-Rank | 1024x72 | 512Mx8 | 1.35V |

## DDR3 — 240-Pin Unbuffered-ECC DIMMs

### Standard Profile (1.181") with Nominal Voltage (1.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD3UE901Gxxyzz | 1-Rank | 128x72 | 128Mx8 | 1.5V |
| 2GB | WD3UE802Gxxyzz | 2-Rank | 256x72 | 128Mx8 | 1.5V |
| | WD3UE902Gxxyzz | 1-Rank | 256x72 | 256Mx8 | 1.5V |
| 4GB | WD3UE804Gxxyzz | 2-Rank | 512x72 | 256Mx8 | 1.5V |
| 8GB | WD3UE408Gxxyzz | 1-Rank | 1024x72 | 1024Mx4 | 1.5V |
| | WD3RE808Gxxyzz | 2-Rank | 1024x72 | 512Mx4 | 1.5V |

### Very Low Profile (0.74") with Nominal Voltage (1.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD3UEV91Gxxyzz | 1-Rank | 128x72 | 128Mx8 | 1.5V |
| 2GB | WD3UEV82Gxxyzz | 2-Rank | 256x72 | 128Mx8 | 1.5V |
| | WD3UEV92Gxxyzz | 1-Rank | 256x72 | 256Mx8 | 1.5V |
| 4GB | WD3UEV84Gxxyzz | 2-Rank | 512x72 | 256Mx8 | 1.5V |
| | WD3UEV94Gxxyzz | 1-Rank | 256x72 | 256Mx8 | 1.5V |
| 8GB | WD3UEV88Gxxyzz | 2-Rank | 1024x72 | 512x8 | 1.5V |

## DDR3 — 240-Pin DIMM-Unbuffered Non-ECC

### Standard Profile (1.181") with Nominal Voltage (1.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD3UN801Gxxyzz | 1-Rank | 128x64 | 128Mx8 | 1.5V |
| 2GB | WD3UN602Gxxyzz | 2-Rank | 256x64 | 128Mx8 | 1.5V |
| | WD3UN802Gxxyzz | 1-Rank | 256x64 | 256Mx8 | 1.5V |
| 4GB | WD3UN604Gxxyzz | 2-Rank | 512x64 | 256Mx8 | 1.5V |
| | WD3UN804Gxxyzz | 1-Rank | 512x72 | 512x8 | 1.5V |
| 8GB | WD3UN608Gxxyzz | 1-Rank | 1024x72 | 1024Mx4 | 1.5V |

Refer to footnotes on the bottom of page 39 for suffix xxyzz explanation.

## DDR3 — 240-Pin LR-DIMM

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| **Standard Profile (1.181") with Nominal Voltage (1.5V)** | | | | | |
| 8GB | WD3DE608Gxxyzz | 4-Rank | 1024x72 | 256x8 | 1.5V |
| 16GB | WD3DE616Gxxyzz | 4-Rank | 2048x72 | 512x8 | 1.5V |
| 32GB | WD3DED32Gxxyzz | 4-Rank | 4096x72 | 2Gx4 DDP | 1.5V |
| **Standard Profile (1.181") with Low Voltage (1.35V)** | | | | | |
| 8GB | WL3DE608Gxxyzz | 4-Rank | 1024x72 | 256x8 | 1.35V |
| 16GB | WL3DE616Gxxyzz | 4-Rank | 2048x72 | 512x8 | 1.35V |
| 32GB | WL3DED32Gxxyzz | 4-Rank | 4096x72 | 2Gx4 DDP | 1.35V |

## DDR3 — 204-Pin SODIMM-Registered ECC

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| **Standard Profile (1.181") with Nominal Voltage (1.5V)** | | | | | |
| 1GB | WD3AE901Gxxyzz | 1-Rank | 128x72 | 128Mx8 | 1.5V |
| 2GB | WD3AE802Gxxyzz | 2-Rank | 256x72 | 128x8 | 1.5V |
| | WD3AE902Gxxyzz | 1-Rank | 256x72 | 256x8 | 1.5V |
| 4GB | WD3AE804Gxxyzz | 2-Rank | 512x72 | 256x8 | 1.5V |
| | WD3AE904Gxxyzz | 1-Rank | 512x72 | 512x8 | 1.5V |

## DDR3 — 204-Pin SODIMM-Unbuffered ECC

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| **Standard Profile (1.181") with Nominal Voltage (1.5V)** | | | | | |
| 1GB | WD3SE901Gxxyzz | 1-Rank | 128x72 | 128Mx8 | 1.5V |
| 2GB | WD3SE802Gxxyzz | 2-Rank | 256x72 | 128x8 | 1.5V |
| | WD3SE902Gxxyzz | 1-Rank | 256x72 | 256x8 | 1.5V |
| 4GB | WD3SE804Gxxyzz | 2-Rank | 512x72 | 256x8 | 1.5V |
| | WD3SE904Gxxyzz | 1-Rank | 512x72 | 512x8 | 1.5V |
| 8GB | WD3SE808Gxxyzz | 2-Rank | 1024x72 | 512x8 | 1.5V |

Refer to footnotes on the bottom of page 39 for suffix xxyzz explanation.

## DDR3 — 204-Pin SODIMM-Unbuffered Non-ECC

### Standard Profile (1.181") with Nominal Voltage (1.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD3SN801Gxxyzz | 1-Rank | 128x64 | 128Mx8 | 1.5V |
| 2GB | WD3SN602Gxxyzz | 2-Rank | 256x72 | 128x8 | 1.5V |
| | WD3SN802Gxxyzz | 1-Rank | 256x72 | 256x8 | 1.5V |
| 4GB | WD3SN604Gxxyzz | 2-Rank | 512x72 | 256x8 | 1.5V |
| | WD3SN804Gxxyzz | 1-Rank | 512x72 | 512x8 | 1.5V |
| 8GB | WD3SN608Gxxyzz | 2-Rank | 1024x72 | 512x8 | 1.5V |

## DDR3 — 244-Pin MiniDIMM-Registered ECC

### Standard Profile (1.181") with Nominal Voltage (1.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD3NE901Gxxyzz | 1-Rank | 128x72 | 128Mx8 | 1.5V |
| 2GB | WD3NE902Gxxyzz | 1-Rank | 256x72 | 256Mx8 | 1.5V |
| 4GB | WD3NE904Gxxyzz | 1-Rank | 512x72 | 512Mx8 | 1.5V |

### Very Low Profile (0.74") with Nominal Voltage (1.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD3NEV91Gxxyzz | 1-Rank | 128x72 | 128Mx8 | 1.5V |
| 2GB | WD3NEV92Gxxyzz | 1-Rank | 256x72 | 256Mx8 | 1.5V |
| 4GB | WD3NEV904Gxxyzz | 1-Rank | 512x72 | 512Mx8 | 1.5V |

## DDR3 — 244-Pin MiniDIMM-Unbuffered ECC

### Standard Profile (1.181") with Nominal Voltage (1.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD3OE901Gxxyzz | 1-Rank | 128x72 | 128Mx8 | 1.5V |
| 2GB | WD3OE902Gxxyzz | 1-Rank | 256x72 | 256Mx8 | 1.5V |
| 4GB | WD3OE904Gxxyzz | 1-Rank | 512x72 | 512Mx8 | 1.5V |

### Very Low Profile (0.74") with Nominal Voltage (1.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD3OEV91Gxxyzz | 1-Rank | 128x72 | 128Mx8 | 1.5V |
| 2GB | WD3OEV92Gxxyzz | 1-Rank | 256x72 | 256Mx8 | 1.5V |
| 4GB | WD3OEV94Gxxyzz | 1-Rank | 512x72 | 512Mx8 | 1.5V |

(xx) = Modules Speed (MHz)
10: 1066Mbs @ CL7 16: 1600Mbs @ CL11
13: 1333Mbs @ CL9 18: 1866Mbs @ CL13

(y) = Module Latency (For Unbuffered / Overclocked Modules)
I: CL6 J: CL7 K: CL8
L: CL9 M: CL10 N: CL11

(y) = Register Vendor (For Registered Modules)
I: Inphi M: Montage D: IDT L: Intel

(zz) = DRAM Manufacturer and Die Revision
S: Samsung M: M-Die
M: Micron A: A-Die
H: Hynix B: B-Die
E: Elpida C: C-Die

# DDR2

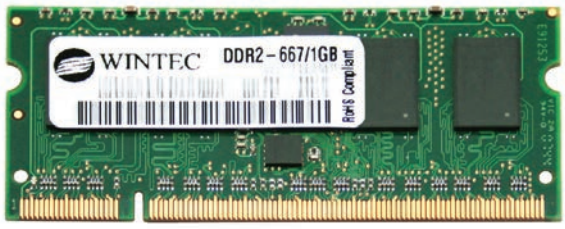
DDR2 technology is considered an evolutionary upgrade over DDR memory technology because DDR2 is able to transfer twice the amount of bits of information per data transfer over previous generation DDR. Another major advancement in DDR2 over DDR is the use of the FBGA (Fine Ball Grid Array) method of packaging, which allows for higher memory densities, better electrical an thermal properties, in a considerably smaller IC packages. DDR2 memory is available in different form factors made to suit a variety of systems and applications. DDR2 speeds range from 400MHz to 800MHz and are typically available in capacities from 1GB up to 8GB.


## 240-Pin DIMM-Registered ECC

DDR2 240-pin Registered-ECC modules continue to be one of the most popular module selections for OEM and Embedded hardware developers. Registered-ECC memory modules increase the reliability of high-speed data access, bringing more stability and scalability to applications such as data storage and servers with 24/7 data intensive operations. Wintec Industries offers DDR2 Registered modules in standard height 1.181" or VLP (Very-Low-Profile) 0.72". These are customizable according to customer project needs.

## 240-Pin DIMM-Unbuffered ECC / Non-ECC

DDR2 UDIMM-ECC modules are the counterpart of Registered-ECC and are often used in applications such as non-mission critical servers, networking hubs/routers and embedded applications that handle less data traffic than systems requiring registered DIMMs, while providing the reassurance of data integrity through the ECC function. UDIMM (Unbuffered non-ECC) offers a lower cost alternative for consumer applications such as PC, Kiosk and POS terminals.




## 200-Pin SODIMM-Registered ECC

SO-RDIMM modules provide a small form factor solution for telecommunications and similar applications that handle large amounts of data. Data Integrity is assured through the Register and ECC function.


## 200-Pin SODIMM-Unbuffered ECC / Non-ECC

Embedded applications such as non-critical or low traffic networking equipment can take advantage of the ECC function of compact SOCDIMMs. The Unbuffered-Non ECC SODIMM is geared for consumer applications such as Notebook / Laptop.


## 244-Pin MiniDIMM-Registered ECC

Unbuffered ECC MiniDIMMs provide excellent data integrity through th ECC function, similar to MiniRDIMM. Applications that do not require address parity can benefit from Unbuffered ECC MiniDIMMs.


## 244-Pin MiniDIMM-Unbuffered ECC

MiniDimm/ECC gives excellent data integrity through the ECC function, similar to miniRDIMM, applications that do not require address parity can benefit from unbuffered-ECC MiniDimm module.

# DDR2 — 240-Pin DIMM-Registered ECC

## Standard Profile (1.181") with Nominal Voltage (1.8V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD2RE01GX809-xxxx-yyz | 1-Rank | 128x72 | 128Mx8 | 1.8V |
| | WD2RE01GX418-xxxx-yyz | 1-Rank | 128x72 | 128Mx4 | 1.8V |
| 2GB | WD2RE02GX818-xxxx-yyz | 2-Rank | 256x72 | 128Mx8 | 1.8V |
| 4GB | WD2RE04GX418-xxxx-yyz | 1-Rank | 512x72 | 512Mx4 | 1.8V |
| | WD2RE04GX436-xxxx-yyz | 2-Rank | 512x72 | 256Mx4 | 1.8V |
| | WD2RE04GX818-xxxx-yyz | 4-Rank | 512x72 | 128Mx8 | 1.8V |
| 8GB | WD2RE08GX436-xxxx-yyz | 2-Rank | 1024x72 | 512Mx4 | 1.8V |
| | WD2RE08GX836-xxxx-yyz | 4-Rank | 1024x72 | 256Mx8 | 1.8V |

## Very Low Profile (0.72") with Nominal Voltage (1.8V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD2RE01GX809V-xxxx-yyz | 1-Rank | 128x72 | 128Mx8 | 1.8V |
| | WD2RE01GX418V-xxxx-yyz | 1-Rank | 128x72 | 128Mx4 | 1.8V |
| 2GB | WD2RE02GX818V-xxxx-yyz | 2-Rank | 256x72 | 128Mx8 | 1.8V |
| 4GB | WD2RE04GX418V-xxxx-yyz | 1-Rank | 512x72 | 512Mx4 | 1.8V |
| | WD2RE04GX818V-xxxx-yyz | 2-Rank | 512x72 | 256Mx8 | 1.8V |
| 8GB | WD2RE08GX818V-xxxx-yyz | 2-Rank | 1024x72 | 512Mx8 | 1.8V |

(xxxx) = Modules Speed (MHz) and CAS Latency
- 800I: 800MHz CL6
- 800G : 800MHz CL5
- 667G : 667MHz CL5
- 533E : 533MHz CL4

(yy) = DRAM Manufacturer and Die Revision
- P: Samsung — A: A-Die
- H: Micron — B: B-Die
- C: Hynix — C: C-Die

(z) = Buffer / Register set (Only applies to Registered/Buffered modules)
- I: Inphi
- D: IDT
- L: Intel

# DDR2 — 240-Pin DIMM-Unbuffered ECC

## Standard Profile (1.181") with Nominal Voltage (1.8V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD2UE01GX809-xxxx-yy | 1-Rank | 128x72 | 128Mx8 | 1.8V |
| 2GB | WD2UE02GX818-xxxx-yy | 2-Rank | 256x72 | 128Mx8 | 1.8V |
| 4GB | WD2UE04GX818-xxxx-yy | 2-Rank | 512x72 | 256Mx8 | 1.8V |
| 8GB | WD2UE08GX818-xxxx-yy | 2-Rank | 1024x72 | 512Mx8 | 1.8V |

## Very Low Profile (0.72") with Nominal Voltage (1.8V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD2UE01GX809V-xxxx-yy | 1-Rank | 128x72 | 128Mx8 | 1.8V |
| 2GB | WD2UE02GX818V-xxxx-yy | 2-Rank | 256x72 | 128Mx8 | 1.8V |
| | WD2UE02GX809V-xxxx-yy | 1-Rank | 256x72 | 256Mx8 | 1.8V |
| 4GB | WD2UE04GX818V-xxxx-yy | 2-Rank | 512x72 | 256Mx8 | 1.8V |
| | WD2UE04GX809V-xxxx-yy | 1-Rank | 512x72 | 512Mx8 | 1.8V |

# DDR2 — 240-Pin DIMM-Unbuffered Non-ECC

## Standard Profile (1.181") with Nominal Voltage (1.8V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD2UN01GX808-xxxx-yy | 1-Rank | 128x64 | 128Mx8 | 1.8V |
| 2GB | WD2UN02GX816-xxxx-yy | 2-Rank | 256x64 | 128Mx8 | 1.8V |
| | WD2UN02GX808-xxxx-yy | 1-Rank | 256x64 | 256Mx8 | 1.8V |
| 4GB | WD2UN04GX818-xxxx-yy | 2-Rank | 512x64 | 256Mx8 | 1.8V |

(xxxx) = Modules Speed (MHz) and CAS Latency
- 800I: 800MHz CL6
- 800G : 800MHz CL5
- 667G : 667MHz CL5
- 533E : 533MHz CL4

(yy) = DRAM Manufacturer and Die Revision

| | |
|---|---|
| P: Samsung | A: A-Die |
| H: Micron | B: B-Die |
| C: Hynix | C: C-Die |

(z) = Buffer / Register set (Only applies to Registered/Buffered modules)
- I: Inphi
- D: IDT
- L: Intel

## DDR2 — 200-Pin SODIMM-Registered ECC

Standard Profile (1.181") with Nominal Voltage (1.8V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD2AE01GX809-xxxx-yyz | 1-Rank | 128x72 | 128Mx8 | 1.8V |
| 2GB | WD2AE02GX809-xxxx-yyz | 1-Rank | 256x72 | 256Mx8 | 1.8V |
| 4GB | WD2AE04GX809-xxxx-yyz | 2-Rank | 512x72 | 512Mx8 | 1.8V |

## DDR2 — 200-Pin SODIMM-Unbuffered ECC

Standard Profile (1.181") with Nominal Voltage (1.8V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD2SE01GX809-xxxx-yy | 1-Rank | 128x72 | 128Mx8 | 1.8V |
| 2GB | WD2SE02GX818-xxxx-yy | 2-Rank | 256x72 | 128Mx8 | 1.8V |
| | WD2SE02GX809-xxxx-yy | 1-Rank | 256x72 | 256Mx8 | 1.8V |
| 4GB | WD2SE04GX818-xxxx-yy | 2-Rank | 512x72 | 256Mx8 | 1.8V |

## DDR2 — 200-Pin SODIMM-Unbuffered Non-ECC

Standard Profile (1.181") with Nominal Voltage (1.8V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD2SN01GX808-xxxx-yy | 1-Rank | 128x64 | 128Mx8 | 1.8V |
| 2GB | WD2SN02GX816-xxxx-yy | 2-Rank | 256x64 | 128Mx8 | 1.8V |
| | WD2SN02GX808-xxxx-yy | 1-Rank | 256x64 | 256Mx8 | 1.8V |
| 4GB | WD2SN04GX816-xxxx-yy | 2-Rank | 512x64 | 256Mx8 | 1.8V |
| | WD2SN04GX808-xxxx-yy | 1-Rank | 512x64 | 512Mx8 | 1.8V |

(xxxx) = Modules Speed (MHz) and CAS Latency
- 800I: 800MHz CL6
- 800G : 800MHz CL5
- 667G : 667MHz CL5
- 533E : 533MHz CL4

(yy) = DRAM Manufacturer and Die Revision
- P: Samsung — A: A-Die
- H: Micron — B: B-Die
- C: Hynix — C: C-Die

(z) = Buffer / Register set (Only applies to Registered/Buffered modules)
- I: Inphi
- D: IDT
- L: Intel

# DDR2 — 244-Pin MiniDIMM-Registered ECC

## Standard Profile (1.181") with Nominal Voltage (1.8V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD2NE01GX809-xxxx-yyz | 1-Rank | 128x72 | 128Mx8 | 1.8V |
| 2GB | WD2NE02GX818-xxxx-yyz | 2-Rank | 256x72 | 128Mx8 | 1.8V |
| | WD2NE02GX809-xxxx-yyz | 1-Rank | 256x72 | 256Mx8 | 1.8V |
| 4GB | WD2NE04GX818-xxxx-yyz | 2-Rank | 512x72 | 256Mx8 | 1.8V |
| | WD2NE04GX809-xxxx-yyz | 1-Rank | 512x72 | 512Mx8 | 1.8V |
| | WD2NE04GX809-xxxx-yyz | 2-Rank | 512x72 | 512Mx8 | 1.8V |

## Very Low Profile (0.72") with Nominal Voltage (1.8V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD2NE01GX809V-xxxx-yy | 1-Rank | 128x72 | 128Mx8 | 1.8V |
| 2GB | WD2NE02GX809V-xxxx-yy | 1-Rank | 256x72 | 256Mx8 | 1.8V |

# DDR2 — 244-Pin MiniDIMM-Unbuffered ECC

## Standard Profile (1.181") with Nominal Voltage (1.8V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD2OE01GX809-xxxx-yy | 1-Rank | 128x72 | 128Mx8 | 1.8V |
| 2GB | WD2OE02GX809-xxxx-yy | 1-Rank | 256x72 | 256Mx8 | 1.8V |

## Low Profile (0.72") with Nominal Voltage (1.8V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 1GB | WD2OE01GX809V-xxxx-yy | 1-Rank | 128x72 | 128Mx8 | 1.8V |
| 2GB | WD2OE02GX809V-xxxx-yy | 1-Rank | 256x72 | 256Mx8 | 1.8V |

(xxxx) = Modules Speed (MHz) and CAS Latency
- 800I: 800MHz CL6
- 800G : 800MHz CL5
- 667G : 667MHz CL5
- 533E : 533MHz CL4

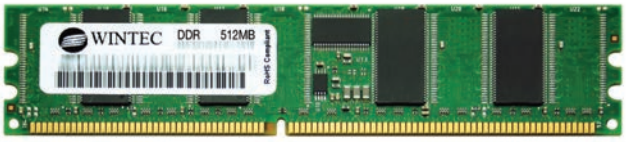
(yy) = DRAM Manufacturer and Die Revision

| | |
|---|---|
| P: Samsung | A: A-Die |
| H: Micron | B: B-Die |
| C: Hynix | C: C-Die |

(z) = Buffer / Register set (Only applies to Registered/Buffered modules)
- I: Inphi
- D: IDT
- L: Intel

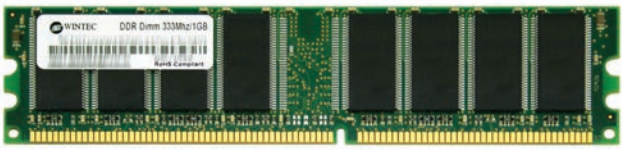
# DDR

DDR modules remain a popular solution in embedded and OEM markets due to longer product life-cycles. DDR (Double Data Rate) technology was an advancement over SDRAM memory because of the ability of DDR to double the data throughput by using both the rising and falling edge of the clock signal for data transfers. DDR uses 2.5V power and is available in speeds of up to 400MHz. Wintec offers a complete line-up of DDR memory modules with continued support to sustain long term customer projects.



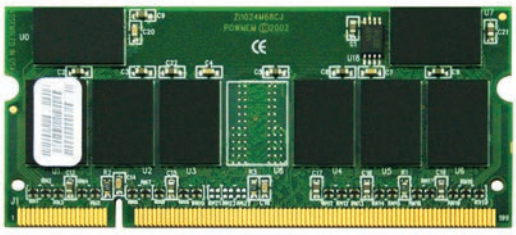

## 184-Pin DIMM-Registered ECC

DDR RDIMMs are designed and programmed specifically to handle high end server applications, due to their superior ability to handle increased data loads while assuring data integrity.



## 184-Pin DIMM-Unbuffered ECC / Unbuffered Non-ECC

DDR Unbuffered modules remain a popular presence in the OEM and embedded markets for  less data intensive system requirements, taking advantage of a mature and stable product, unbuffered and Unbuffered ECC DIMMs serve the needs of embedded applications such as POS and kiosk systems.



## 200-Pin SODIMM-Unbuffered ECC / Unbuffered Non-ECC

Designed for Notebook and small form factor appliances such as routers, networks, 1U servers and POS that uses embedded boards.DDR SODIMMs continue to be a reliable and stable solution for embedded systems.

## DDR — 184-Pin DIMM-Registered ECC

### Standard Profile (1.2") with Nominal Voltage (2.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 512MB | WD1RE512X809-xxxx-yyz | 1-Rank | 64x72 | 64Mx8 | 2.5V |
| | WD1RE512X818-xxxx-yyz | 2-Rank | 64x72 | 32Mx8 | 2.5V |
| 1GB | WD1RE01GX818-xxxx-yyz | 2-Rank | 128x72 | 64Mx8 | 2.5V |

### Standard Profile (0.72") with Nominal Voltage (2.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 512GB | WD1RE512X818V-xxxx-yyz | 2-Rank | 64x72 | 32Mx8 | 2.5V |
| 1GB | WD1RE01GX818V-xxxx-yyz | 2-Rank | 128x72 | 64Mx8 | 2.5V |

## DDR — 184-Pin DIMM-Unbuffered ECC

### Standard Profile (1.2") with Nominal Voltage (2.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 512MB | WD1UE512X809-xxxx-yy | 1-Rank | 64x72 | 64Mx8 | 2.5V |
| | WD1UE512X818-xxxx-yy | 2-Rank | 64x72 | 32Mx8 | 2.5V |
| 1GB | WD1UE01GX818-xxxx-yy | 2-Rank | 128x72 | 64Mx8 | 2.5V |

## DDR — 184-Pin DIMM-Unbuffered Non-ECC

### Standard Profile (1.25") with Nominal Voltage (2.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 256MB | WD1UN256X808-xxxx-yy | 1-Rank | 32x64 | 32Mx8 | 2.5V |
| 512MB | WD1UN512X808-xxxx-yy | 1-Rank | 64x64 | 64Mx8 | 2.5V |
| | WD1UN512X816-xxxx-yy | 2-Rank | 64x64 | 32Mx8 | 2.5V |
| 1GB | WD1UN01GX816-xxxx-yy | 2-Rank | 128x64 | 64Mx8 | 2.5V |

(xxxx) = Module speed (MHz) and Cas Latency
- 266A: 266Mhz CL2
- 333B: 333Mhz CL2.5
- 400C: 400Mhz CL3

(yy) = DRAM Manufacturer and Die Revision
- P: Samsung
- H: Micron
- C: Hynix
- A: A-Die
- B: B-Die
- C: C-Die

(z) = Buffer / Register set (Only applies to Registered/Buffered modules)
- I: Inphi
- D: IDT/ICS
- L: Intel

## DDR — 200-Pin SODIMM-Unbuffered ECC

Standard Profile (1.25") with Nominal Voltage (2.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 256MB | WD1SE256X809-xxxx-yy | 1-Rank | 32x72 | 32Mx8 | 2.5V |
| 512MB | WD1SE512X809-xxxx-yy | 1-Rank | 64x72 | 64Mx8 | 2.5V |
| | WD1SE512X818-xxxx-yy | 2-Rank | 64x72 | 32Mx8 | 2.5V |
| 1GB | WD1SE01GX818-xxxx-yy | 2-Rank | 128x72 | 64Mx8 | 2.5V |

## DDR — 200-Pin SODIMM-Unbuffered Non-ECC

Standard Profile (1.25") with Nominal Voltage (2.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 256MB | WD1SN256X808-xxxx-yy | 1-Rank | 32x64 | 32Mx8 | 2.5V |
| 512MB | WD1SN512X808-xxxx-yy | 1-Rank | 64x64 | 64Mx8 | 2.5V |
| | WD1SN512X816-xxxx-yy | 2-Rank | 64x64 | 32Mx8 | 2.5V |
| 1GB | WD1SN01GX816-xxxx-yy | 2-Rank | 128x64 | 64Mx8 | 2.5V |

(xxxx) = Module speed (MHz) and Cas Latency
- 266A: 266Mhz CL2
- 333B: 333Mhz CL2.5
- 400C: 400Mhz CL3

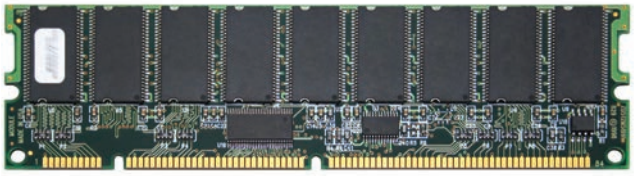
(yy) = DRAM Manufacturer and Die Revision

| | |
|---|---|
| P: Samsung | A: A-Die |
| H: Micron | B: B-Die |
| C: Hynix | C: C-Die |

(z) = Buffer / Register set (Only applies to Registered/Buffered modules)
- I: Inphi
- D: IDT/ICS
- L: Intel

# SDR

SDR memory modules continue to receive legacy support and have proven to be reliable and robust solutions for industrial embedded systems. SDR memory modules are able to accept one command and transfer one bit of data per clock cycle at clock frequencies of 100MHz and 133Mhz. Wintec offers SDR memory modules in a variety of form factors to meet customer application needs. In addition, Wintec also offers Standard 168-pin modules as Registered ECC or Unbuffered non-ECC modules.



## 168-Pin Registered-ECC (RDIMM)

Designed for critical data storage and high-end server applications. Combination of parity address and ECC makes this module one of the best memory's delivering data integrity and reliability has ensured that SDR Registered modules continue to be supported for high end legacy products.


## 168-Pin Unbuffered-ECC / UDIMM

SDR unbuffered modules remain a popular presence in the OEM and embedded markets for  less data intensive product requirements, taking advantage of a mature and stable product, unbuffered and unbuffered with ECC DIMMs serve the needs of industrial embedded applications such as POS and kiosk systems.


## 144-Pin R-SODIMM / SODIMM-ECC / U-SODIMM

SDR SODIMMs are space saving modules widely used in Notebook / Laptop and embedded small form-factor PC and mini-ITX boards.

## SDR — 168-Pin DIMM-Registered ECC

Standard Profile (1.0") with Nominal Voltage (3.3V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 128MB | WSDRE128X809-xxxx-yyz | 1-Rank | 16x72 | 16Mx8 | 3.3V |
| 256MB | WSDRE256X809-xxxx-yyz | 1-Rank | 32x72 | 32Mx8 | 3.3V |
| 512MB | WSDRE512X809-xxxx-yyz | 1-Rank | 64x72 | 64Mx8 | 3.3V |
| | WSDRE512X818-xxxx-yyz | 2-Rank | 64x72 | 32Mx8 | 3.3V |
| 1GB | WSDRE01GX818-xxxx-yyz | 2-Rank | 128x72 | 64Mx8 | 3.3V |

## SDR — 168-Pin DIMM-Unbuffered ECC

Standard Profile (1.0") with Nominal Voltage (3.3V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 128MB | WSDUE128X809-xxxx-yy | 1-Rank | 16x72 | 16Mx8 | 3.3V |
| 256MB | WSDUE256X809-xxxx-yy | 1-Rank | 32x72 | 32Mx8 | 3.3V |
| 512MB | WSDUE512X809-xxxx-yy | 1-Rank | 64x72 | 64Mx8 | 3.3V |
| | WSDUE512X818-xxxx-yy | 2-Rank | 64x72 | 32Mx8 | 3.3V |
| 1GB | WSDUE01GX818-xxxx-yy | 2-Rank | 128x72 | 64Mx8 | 3.3V |

## SDR — 168-Pin DIMM-Unbuffered Non-ECC

Standard Profile (1.0") with Nominal Voltage (3.3V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 128MB | WSDUN128X808-xxxx-yy | 1-Rank | 16x64 | 16Mx8 | 3.3V |
| 256MB | WSDUN256X808-xxxx-yy | 1-Rank | 32x64 | 32Mx8 | 3.3V |
| 512MB | WSDUN512X808-xxxx-yy | 1-Rank | 64x64 | 64Mx8 | 3.3V |
| | WSDUN512X816-xxxx-yy | 2-Rank | 64x64 | 32Mx8 | 3.3V |
| 1GB | WSDUN01GX816-xxxx-yy | 2-Rank | 128x64 | 64Mx8 | 3.3V |

## SDR — 144-Pin SODIMM-Unbuffered Non-ECC

Standard Profile (1.0") with Nominal Voltage (3.3V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 128MB | WSDSN128X808-xxxx-yy | 1-Rank | 16x64 | 16Mx8 | 3.3V |
| 256MB | WSDSN256X808-xxxx-yy | 1-Rank | 32x64 | 32Mx8 | 3.3V |
| 512MB | WSDSN512X808-xxxx-yy | 1-Rank | 64x64 | 64Mx8 | 3.3V |
| | WSDSN5121X816-xxxx-yy | 2-Rank | 64x64 | 32Mx8 | 3.3V |
| 1GB | WSDSN01GX816-xxxx-yy | 2-Rank | 128x64 | 64Mx8 | 3.3V |

(xxxx) = Module speed (MHz) and Cas Latency
100A: 100Mhz CL2
133C: 133Mhz CL3

(yy) = DRAM Manufacturer and Die Revision
P: Samsung — A: A-Die
H: Micron — B: B-Die
C: Hynix — C: C-Die

(z) = Buffer / Register set
(Only applies to Registered/Buffered modules)
P: Pericom
S: Silego
T: TI

# Specialty — 32 Bit DIMM

32 bit specialty DIMMs are most commonly used as printer memory, but they also have a strong niche in the embedded market for space constrained systems that require a 32 bit memory interface. Wintec offers 32 bit specialty DIMMs in JEDEC standard 144 pin DDR2, 100pin DDR, and SDR modules.


## 32 Bit DIMM

Specialty 32 bit DIMMs present an attractive option for embedded systems which require a 32 bit memory interface but still want to enjoy the benefits of memory modules over embedding DRAM on the board. 32 bit DIMMs eliminate the need for costly custom solutions as they are available as JEDEC standard 144 Pin DDR2 and 100 Pin DDR and SDR modules.

## DDR2 — 144-Pin DIMM-Unbuffered 32-Bit

Standard Profile (1.18") with Nominal Voltage (1.8V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 512MB | WD2HN512X804-xxxx-yy | 1-Rank | 64x8 | 128Mx8 | 1.8V |
| | WD2HN512X808-xxxx-yy | 2-Rank | 64x8 | 64Mx8 | 1.8V |
| 1GB | WD2HN01GX808-xxxx-yy | 2-Rank | 128x8 | 128Mx8 | 1.8V |

## DDR — 100-Pin DIMM-Unbuffered 32-Bit

Standard Profile (1.2") with Nominal Voltage (2.5V)

| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 128MB | WD1HN128X804-xxxx-yy | 1-Rank | 16x8 | 32Mx8 | 2.5V |
| 256MB | WD1HN256X804-xxxx-yy | 1-Rank | 32x8 | 64Mx8 | 2.5V |
| 512MB | WD1HN512X808-xxxx-yy | 2-Rank | 64x8 | 64Mx8 | 2.5V |

## SDR — 100-Pin DIMM-Unbuffered 32-Bit

Standard Profile (1.2") with Nominal Voltage (3.3V)

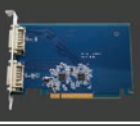
| Density | Part Number | Rank | DIMM Config | Component Config | Voltage |
|---|---|---|---|---|---|
| 128MB | WSDHN128X808-xxxx-yy | 2-Rank | 16x8 | 16Mx8 | 3.3V |
| 256MB | WSDHN256X808-xxxx-yy | 2-Rank | 32x8 | 32Mx8 | 3.3V |

Refer to footnotes on the bottom of pages 46, 48 and 51 for DDR2, DDR and SDR suffix xxxx-yyz explanation.

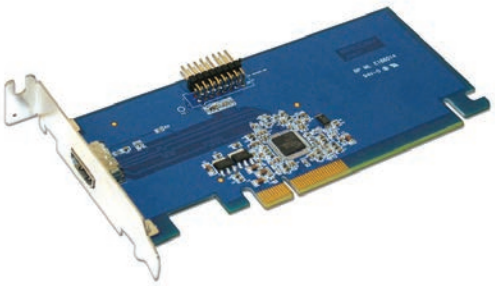
# ADD2 Video Cards

## HDMI Cards

The HDMI PCI-e adapter card provides HDMI output for PCs with motherboards based on an Intel chipset with Graphics Media Accelerator 3000 or 3100. Video and sound can be delivered from the computer directly to the display in a single cable. The on-board HDMI interface chip converts the SDVO signals from the Intel integrated graphics processor into TMDS signals and also combines digital audio into the same TMDS signals. The chip also supports HDCP, which is a protection requirement for digital media.



# ADD2 Video Cards



## HDMI Cards

| Key Features | Applications/Platforms |
|---|---|
| • HDMI 1.2 compliant output through a Type A 19-pin connector<br>• HDCP 1.2<br>• Dolby 7.1 Audio Surround Sound<br>• Support Intel SDVO 1.1 specifications<br>• RoHS compliant<br>• Low Power<br>• Low Profile | • Multimedia PC<br>• Home Theater Entertainment Center<br>• Corporate Conference Presentations<br>• Supports High Definition video players e.g. Blu-Ray |

## HDMI Cards

### Standard

| Part Number | Form Factor | Video Output | Connector | Required Cable | FCC Certified |
|---|---|---|---|---|---|
| **WAAD0010HDM-SLP+** | Low Profile | HDMI w/HDCP | HDMI | Std. DVI | Yes |
| **WAAD0010HDM-S+** | Full Height | HDMI w/HDCP | HDMI | Std. DVI | Yes |

# Modems

## Embedded Modem

Embedded Modem modules offer a simple and effective solution for embedded developers that are looking to add data transmission capabilities to their applications. Wintec Embedded Modem modules are an attractive addition to the toolkit of any embedded developer with features such as compact form factor, low power usage, and high environmental tolerance certified by relevant bodies including FCC and CTR21.

## USB Hardware Modem

USB Hardware Modems provide data transmission capabilities through a dedicated micro-controller and DAA through a standard Type A USB connector. The modems provide data rates from 300bps to 56Kbps and fax data transfer rates at 14.4Kbps.

## USB Soft Modem

Wintec USB Software based USB modems are a cost effective data transmission solution. Software USB modems use the host system through dedicated drivers to handle most of the tasks typically handled by hardware based modems.

Modems 55

# Modems

## SL-SU Series

| General | Reliability |
|---|---|
| • 24-pin DIP Small form-factor 1.4”x0.9” | • Low power consumption 26mA at 3.3V supply |
| • Dual-in-line (DIP) | • Built-in Safety Devices |
| • Parallel Phone detection and caller ID Detection | • Over-Voltage and Current Protection: 70V and 200mA |
| • Compliance to Global Telephone Standards (FCC, CTR21) | • 5.0V Tolerant I/O at Modem Interface to Host Power-Down Mode |
| • Automatic baud rate detection | • Hardware escape and interrupt |
| | • AT command support |

## SLM Series

| General | Reliability |
|---|---|
| • 24-pin DIP Small form-factor 2.0” x 1.0” | • Low power consumption 26mA at 3.3V supply |
| • Dual-in-line (DIP) | • Built-n Safety Devices |
| • Parallel Phone detection and caller ID Detection | • Over-Voltage and Current Protection: 70V and 200mA |
| • Compliance to Global Telephone Standards (FCC, CTR21) | • 5.0V Tolerant I/O at Modem Interface to Host Power-Down Mode |
| • Automatic baud rate detection | • Hardware escape and interrupt |
| • Serial and Parallel mode support | • AT command support |

## USB Modem (Hardware/Software)

| General | Reliability |
|---|---|
| • USB 2.0 | • ECC V.42 / MNP2-4 |
| • 56Kbps / 48Kbps (V.92) | • Send and Receive serial data at max 12Mb/s rate. |
| • 14.4Kbps Fax (T.31/V.17) | • FIFO memory provides better throughput |
| • RoHS Compliant | • Robust ring detection |
| • FCC Certified | |
| • Supports Windows 98/2000/XP/Vista/7 and Linux | |

## Modem — SL-SU Series

### Standard

| Part Number | Maximum Speed | Error Correction Support | Data Compression Support | RoHS Compliant 6/6 | FCC Certified |
|---|---|---|---|---|---|
| SL2404SU | 2.4Kbps (V.22bis) | V.42 | V.42bis | Yes | Yes |
| SL2415SU | 14.4Kbps (V.32bis) | V.42 / MNP2-4 | V.42bis / MNP5 | Yes | Yes |
| SL2434SU | 33.6Kbps (V.34) | V.42 / MNP2-4 | V.42bis/ MNP5 | Yes | Yes |
| SL2457SU | 56Kbps/33.6Kbps (V.90) | V.42 / MNP2-4 | V.42bis/ MNP5 | Yes | Yes |
| SL2493SU | 56Kbps/48Kbps (V.92) | V.42 / MNP2-4 | V.42bis/ MNP5 | Yes | Yes |

## Modem — SLM Series

### Standard and I-Temp

| Part Number | Maximum Speed | Error Correction Support | Data Compression Support | RoHS Compliant 6/6 | FCC Certified |
|---|---|---|---|---|---|
| SLM2404(-I) | 2.4Kbps (V.22bis) | V.42 | V.42bis | Yes | Yes |
| SLM2415(-I) | 14.4Kbps (V.32bis) | V.42 / MNP2-4 | V.42bis / MNP5 | Yes | Yes |
| SLM2434(-I) | 33.6Kbps (V.34) | V.42 / MNP2-4 | V.42bis/ MNP5 | Yes | Yes |
| SLM2457(-I) | 56Kbps/33.6Kbps (V.90) | V.42 / MNP2-4 | V.42bis/ MNP5 | Yes | Yes |
| SLM2493(-I) | 56Kbps/48Kbps (V.92) | V.42 / MNP2-4 | V.42bis/ MNP5 | Yes | Yes |

## Modem — USB Modem

### Hardware

| Part Number | Maximum Speed | Error Correction Support | Data Compression Support | RoHS Compliant 6/6 | FCC Certified |
|---|---|---|---|---|---|
| WUMHV92-A1CN.01-xxx | 56Kbps/48Kbps (V.92)<br>14.4Kbps Fax (T.31/V.17) | V.42 / MNP2-4 | V.44 / V.42 / MNP5 | Yes | Yes |

### Software

| Part Number | Maximum Speed | Error Correction Support | Data Compression Support | RoHS Compliant 6/6 | FCC Certified |
|---|---|---|---|---|---|
| WUMSV92-E1LS.01-xxx | 56Kbps/48Kbps (V.92)<br>14.4Kbps Fax (T.31/V.17) | V.42 / MNP2-4 | V.44 / V.42 / MNP5 | Yes | Yes |

# OEM Services

Wintec Industries Embedded OEM division offers customers a full service design, engineering, and manufacturing resource for OEM system designs. We start working with our customers beginning with the early stages of the initial requirements. Engineers and developers work closely with our customers throughout the entire design and development process. Our electronic and electrical design options offer the flexibility that our customers seek by applying the most current technologies to fulfill customer project requirements.

A vital section of Wintec's services is our testing capabilities. We offer customized testing solutions for a variety of applications. As a leading DRAM Memory Module, Flash product, and Solid State Drive manufacturer, we place a substantial emphasis on our testing and quality control procedures. Wintec Industries employs a policy of 100% individual mainboard testing for all of our products. We utilize X-ray technologies, heat chambers, and diagnostic machinery, including AOI and dedicated burn-in chambers, to ensure that only the highest quality memory products are delivered to our customers.

Our manufacturing base, located in Milpitas, California, offers our customers a significant advantage in time to market, plus the capabilities to provide quick and clear communication and updates. We specialize in both standard and customized manufacturing options. Our packaging design capabilities provide customers a start-to-finish solution from conception to delivery. From initial PCB layout to the final programming and packaging of products, the services and solutions that are available from Wintec Industries provides customers with the widest array of options.

Wintec Industries Embedded OEM division has extensive experience in creating customized products, labeling, serialization, software and disk imaging. With full FAE support offered for all Wintec products and services, our experienced team ensures that our customers will receive the most complete solutions.

## Thank You

# Wintec Embedded OEM Division

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