Product Catalogue 2014

Innodisk Embedded Solutions
Flash, DRAM Storage and Peripheral Products

innodisk

SATADOM-MV
3ME Series
Industrial

innodisk

Innodisk is a service driven provider of flash memory and DRAM products for the industrial and enterprise applications. With satisfied customers across the embedded, aerospace and defense, cloud storage markets and more, we have set ourselves apart with a commitment to dependable products and unparalleled service. This has resulted in products including embedded peripherals designed to supplement existing industrial solutions and high IOPS flash arrays for industrial and enterprise applications. The expanded business lines are leading our next step in being a comprehensive solution and service provider in industrial storage industry.

Absolute Service

Service is not just what we do. It's who we are.

Absolute Service is our pledge and our guide. It infuses everything we do at Innodisk.

Absolute Service is our promise to deliver the most comprehensive service in every situation. It's the philosophy that guides us in all interactions with our customers and business partners. It's the spirit of friendliness and enthusiasm that fills each member of the Innodisk team.

Absolute Service is our absolute commitment to our customers..

iSLC Your New Choice for SSDs
A cost-effective solution comparable to SLC

iSLC is our exclusive technology, which is designed to outdo the endurance, performance and reliability onto superior-MLC solutions. Through the use of flash management algorithms, iSLC improves SSD endurance up to 30,000 times, increasing lifespans to at least 10 times longer than consumer-MLC solutions. In addition, iSLC improves the performance of solid state drives, with similar read/write performance of SLC-based solutions, and with data quality that is on par with SLC technologies.

Why do we recommend you to choose our iSLC?

- Performance and data quality congruent to SLC
- Lifespan 10 times longer than MLC
- Half or less cost than SLC

Suitable Lifespan For Your Application

SSDs with iSLC can sustain 32GB capacity drive writes per day for over 7 years, delivering a lifespan that is suitable for industrial and enterprise applications.

	Year
SLC(100K) (Old Gen.)	27.4
SLC(60K) (New Gen.)	16.4
iSLC(30K)	7.6
MLC(3K)	0.8

Over 7 years lifespan

Notes: The iSLC lifespan is based on flash quality & Innodisk L² algorithm.

A Commitment to Technical Innovation

Innodisk continues to bring the most innovative products to a range of industries by developing outstanding proprietary technologies. Here are just few examples of Innodisk's breakthroughs and innovations.

Pin 7

Pin 7 is a Serial ATA device-to-host connection technology. It eliminates the need for power cables, making SSDs more shock-resistant and better suited for extreme environments. Pin 7 is the choice for system integrators who require flexibility, reliability, and space-maximization in the design of their systems. Pin 7 technology is used in Innodisk's SATADOM series, which is featured in Intel's Romley server boards and is currently the smallest flash storage device available.

iSMART

iSMART is a powerful, easy-to-use SSD and HDD health monitoring tool. It allows system integrators to track important disk information, such as temperature, storage space, bad blocks, lifespan, and firmware, all under one platform. With iSMART, system integrators can better manage disk usage and know exactly when to replace a disk, before the end of its life cycle.

iCell

iCell is a smart data protection technology that is built into Innodisk's SSDs. iCell is crucial for mission-critical applications, where working under extreme conditions and without backup power is unavoidable. Our iCell technology provides a mechanism to instantaneously discharge data stored in temporary volatile DRAM buffers to flash storage, to ensure the safety of data during power failures.

i Data Guard

Innodisk's iData Guard is a comprehensive data protection mechanism that functions before and after a sudden power outage to the SSD. Low-power detection terminates data writing before an abnormal power-off, while table-remapping after power-on deletes corrupt data and maintains data integrity. Innodisk's iData Guard provides effective power cycling management, preventing data stored in flash from degrading with use.

Thermal Sensor

Innodisk's Thermal Sensor is a robust heat and workload management technology that is built into our DRAM modules and flash storage. It is a crucial solution for industrial & aerospace and defense applications, which are often susceptible to extreme heat and performance stress. Innodisk's Thermal Sensors help to lower the working temperature while distributing workloads, which prevents modules from overworking and overheating, and greatly enhances system performance and system stability.

Garbage Collection/ TRIM

Innodisk's Garbage Collection/TRIM technology is used to maintain data consistency and perform continual data cleansing on SSDs. It runs as a background process, freeing up valuable controller resources while sorting good data into available blocks, and deleting bad blocks. It also significantly reduces write operations to the drive, thereby increasing the SSD's speed and lifespan. With Innodisk Garbage Collection/TRIM technology, an SSD's health and performance is optimized.

Our Focus

Innodisk focuses on providing reliable memory products and technologies for mission-critical applications. We understand the importance of quality in industrial embedded flash and DRAM storage products . So, we manufacture all of our products in our own purpose-built memory production facility. And to meet the individual needs of each application, our experienced in-house firmware development team delivers fast turnaround and knowledgable support whenever firmware customization is required.

Industrial/Embedded

Our products can be found in a wide range of industrial/embedded applications, from automation, telecommunications, and medical equipment to transportation. We also offer product customization to suit various working conditions and temperatures.

Industrial/Embedded

Cloud Computing

Cloud Computing

Our comprehensive server-grade storage products are designed to support different levels and scales of cloud computing and high-performance computing server applications. Our products can be customized to meet specific needs, such as higher speed, higher density, or lower power consumption.
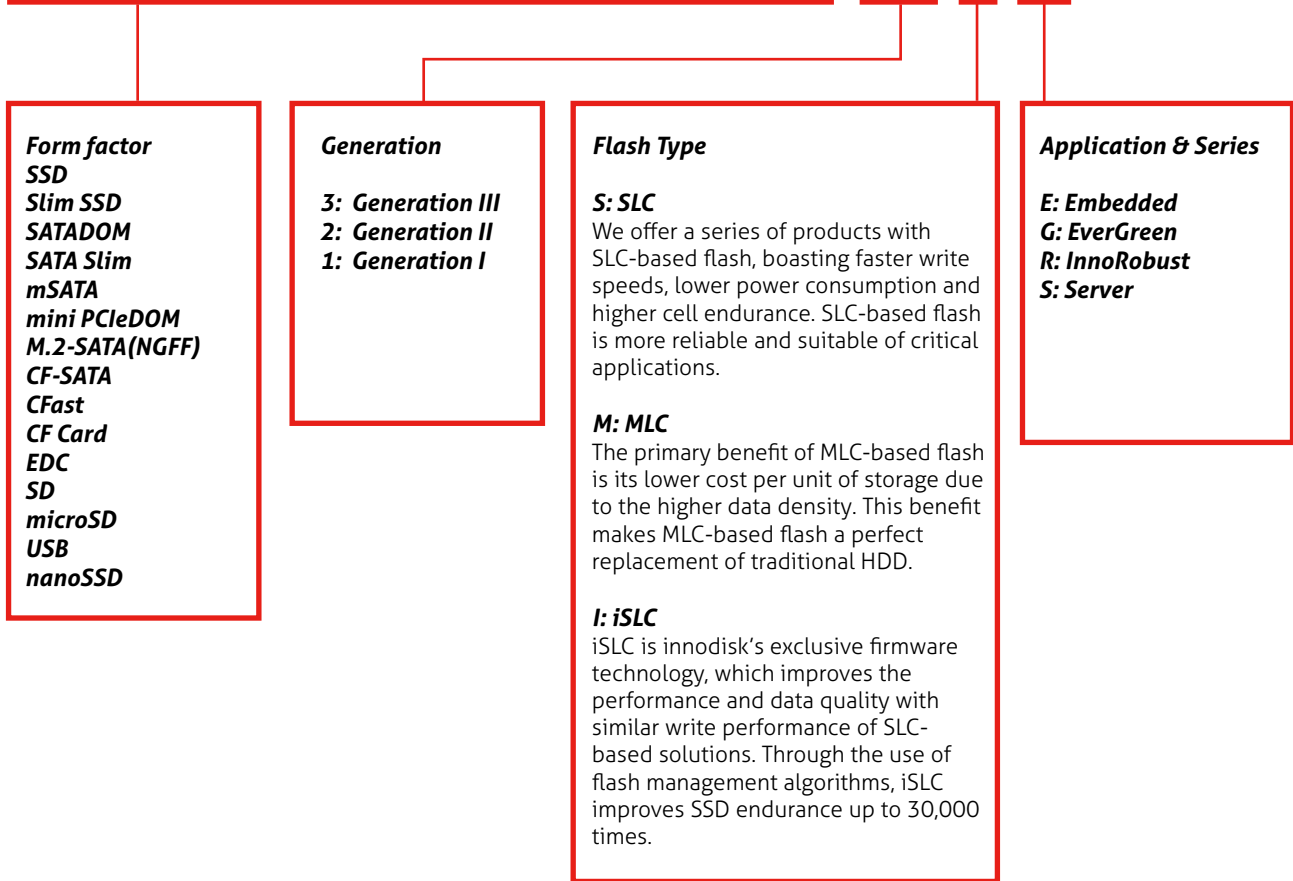
Aerospace and Defense

When it comes to aerospace and defense applications, we offer some of the most rugged and robust memory products in the market. Our products not only meet the industries' stringent standards but also exceed many critical performance requirements, such as reliability and data security.

Aerospace and Defense

New Flash Product Naming Rule

2.5" SATA SSD 3IE

Form factor
SSD
Slim SSD
SATADOM
SATA Slim
mSATA
mini PCIeDOM
M.2-SATA(NGFF)
CF-SATA
CFast
CF Card
EDC
SD
microSD
USB
nanoSSD

Generation

3: Generation III
2: Generation II
1: Generation I

Flash Type

S: SLC
We offer a series of products with SLC-based flash, boasting faster write speeds, lower power consumption and higher cell endurance. SLC-based flash is more reliable and suitable of critical applications.

M: MLC
The primary benefit of MLC-based flash is its lower cost per unit of storage due to the higher data density. This benefit makes MLC-based flash a perfect replacement of traditional HDD.

I: iSLC
iSLC is innodisk's exclusive firmware technology, which improves the performance and data quality with similar write performance of SLC-based solutions. Through the use of flash management algorithms, iSLC improves SSD endurance up to 30,000 times.

Application & Series

E: Embedded
G: EverGreen
R: InnoRobust
S: Server

G: EverGreen
EverGreen Series is applied with an evolved L^2 Architecture which significantly improves SSD random data transfer rate and lifespan. These features are suitable for specific applications and are best suited for data file sizes smaller than or equal to 128KBytes. When used in that way, EverGreen lifespan can be extended over 30 times than general MLC-based SSD.

R: InnoRobust
InnoRobust series meets all of today's aerospace and defense application requirements. InnoRobust storage products are fully compliant with aerospace and defense standards,including MIL-STD-810F/G and MIL-I-46058C. InnoRobust products are fully protected against heat, dust, extreme temperatures, shock, vibration, and other environmental stresses. We also deliver industry-leading data protection technologies to keep sensitive information secure.

E: Embedded
Embedded series is the best solution for the industrial embedded system because it offers reliability, high performance and long endurance. We offer complete form factors to fulfill customer and business needs , including 2.5" SSD, 1.8" SSD, SAT.ADOM, mSATA, SATA Slim, SATADOM, iCF & CFast, EDC, and SD.

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Flash Memory

Innodisk flash memory products are designed to be highly reliable and stable, and provide longer life cycles for the embedded and industrial systems in which they are used. Innodisk offers the industry's widest selection of flash memory form factors, including standard 1.8" and 2.5" Industrial SSDs, SATADOM—the smallest high-speed SATA storage in the industry, CompactFlash Cards, mSATA , SATA Slim, and USB Flash Drives. Our products are available in single-layer cell (SLC) and multi-layer cell (MLC) flash types.
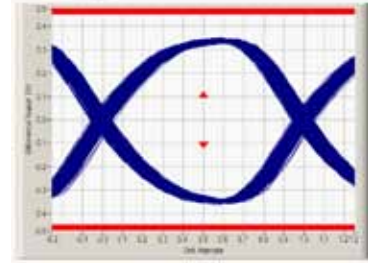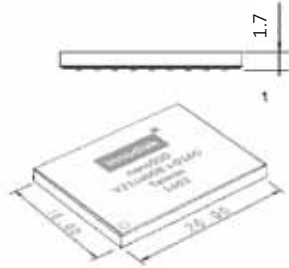
nanoSSD

The Innodisk nanoSSD is an integrated SATA storage device. It combines Innodisk's ID106 NAND flash controller and latest NAND flash in a JEDEC MO-276(SATA µSSD) form factor with one single ball grid array (BGA) package, which makes nanoSSD within a tiny dimension, and very easy to design in. The Innodisk nanoSSD , supporting SATA III 6.0Gbp/s , offers excellent high data transfer rates, along with lower power consumption. It is an ideal solution for any kind of miniaturization applications.

Benefits of nanoSSD

• Chip type, easy to design in without mechanical interference
• SATA interface, highly compatible with x86 system
• Excellent data transfer rates
• Fully compliant with industrial standard
• Suitable for ultra-thin or compact system
• Zero peripheral circuit

Features

• Integrated NAND Flash controller with Flash in a single chip
• Compliant with JEDEC MO-276 (SATA µSSD) specification
• Adopted SATA III interface with BGA package
• Intelligent Flash management & real time garbage collection

The Innodisk nanoSSD SATA Eye Pattern
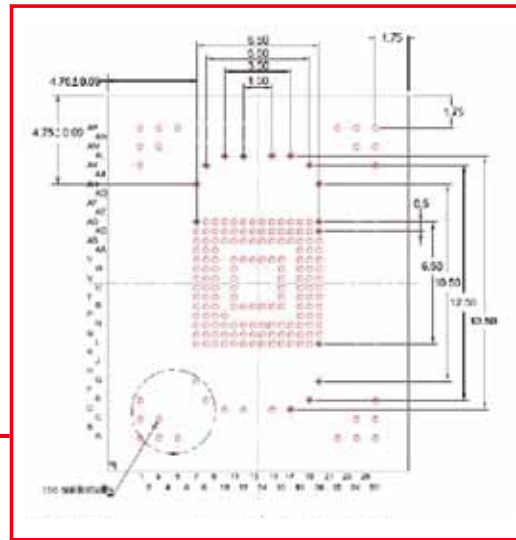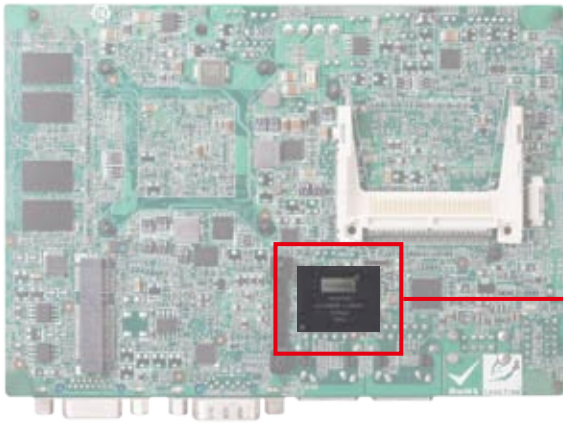
The Innodisk nanoSSD mechanical drawing

Model Name	nanoSSD 3IE	nanoSSD 3SE	nanoSSD 3ME
Key Features	1. Using BGA package to make controller and flash as single chip 2. Adopt SATA III interface,well Compatibility 3. Complaint with JEDEC MO-276 SPEC		
Interface	SATA III 6.0Gb/s		
Flash Type	iSLC	SLC	MLC
Capacity	8~32GB	2~16GB	8~64GB
Max. Channel	4		
Sequential R/W (MB/sec, max.)	480/300	TBD	480/150
Max. Power Consumption	0.99W (300mA x 3.3v)		
Thermal Sensor	N		
External DRAM Buffer	N		
iCell	N		
TRIM	N		
ATA Security	Y		
S.M.A.R.T	Y		
Dimension (WxLxH/mm)	16.0 x 20.0 x 1.7		
Environment	Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours		
Standard Temp. OP (0°C~+70°C)	DHNSD-XXXD062C***	DENSD-XXXD06SC***	DENSD-XXXD06SC***
Wide Temp. OP (-40°C~+85°C)	DHNSD-XXXD062W***	DENSD-XXXD06SW***	DENSD-XXXD06SW***
Note	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code)		

SSD

Innodisk SSDs bring a whole new level of high performance to memory storage. Our wide selection of SSDs are designed for different applications, including industrial/embedded, enterprise server, aviation, defense, and other semi-industrial applications, such as thin clients, POS, and kiosk. Our SSDs come in iSLC, SLC and MLC types, and support PATA/IDE 44 pin, SATA II (3.0Gb/s), and SATA III (6.0Gb/s).

Model Name	2.5" SATA SSD 3IE	2.5" SATA SSD 3SE-P	2.5 SATA SSD 3SE	2.5" SATA SSD 3SR-P
Key Features	1. Cost-effective industrial Flash with iSLC 2. Lifespan 10 times longer than MLC 3. Performance and data quality congruent to SLC	1. Built-in DRAM buffer 2. Intelligent error recovery system 3. Excellent data transfer speed 4. iData Guard protection	1. Intelligent error recovery system 2. Excellent data transfer speed 3. iData Guard protection	1. Compliant with MIL-STD-810-F/G 2. HW/SW Data Security (QEraser/ Destroy/ SEraser/ Write Protect) 3. iCell supported, 100% data protection
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	iSLC	SLC	SLC	SLC
Capacity	8GB-256GB	8GB-256GB	8GB-256GB	8GB-256GB
Max. Channel	4	4	4	4
Sequential R/W (MB/sec, max.)	500/420	470/340	490/430	490/340
Max. Power Consumption	4.3W (5V x 870mA)	3.15W (5Vx630mA)	2.75W (5Vx550mA)	3.25W (5Vx650mA)
Thermal Sensor	STD : N , W/T : Y			
External DRAM Buffer	N	Y	N	Y
iCell	N	Optional	N	Y
TRIM	N	Y	N	Y
ATA Security	Y	Y	Y	Y
S.M.A.R.T	Y	Y	Y	Y
Dimension (WxLxH/mm)	69.8 x 100.1 x 6.8	69.8 X 99.8 X 9.2	69.8 X 99.8 X 9.2	69.8 X 99.8 X 9.2
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours			
Standard Temp. OP (0°C~+70°C)	DHS25-XXXD062C***	DES25-XXXD67SC***(P)	DES25-XXXD06SC***	DRS25-XXXD67SC***
Wide Temp. OP (-40°C~+85°C)	DHS25-XXXD062W***	DES25-XXXD67SW***(P)	DES25-XXXD06SW***	DRS25-XXXD67SW***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash			

Model Name	2.5" SATA SSD 3ME	2.5" SATA SSD 3MR-P	2.5" SATA SSD 3MG-P
Key Features	1. 7mm height mechanical design 2. Low power consumption 3. Budget - friendly MLC-based solution	1. Compliant with MIL-STD-810-F/G 2. HW/SW Data Security (QEraser/ Destroy/ SEraser/ Write Protect) 3. iCell supported, 100% data protection	1. EverGreen L² architecture 2. 7mm height mechanical design 3. Excellent random performance
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	MLC	MLC	MLC
Capacity	8GB-512GB	32GB-512GB	8GB-512GB
Max. Channel	4	4	4
Sequential R/W (MB/sec, max.)	470/260	510/340	460/240
Max. Power Consumption	4.3W (5V x 870mA)	5W (5V x 1A)	5W (5V x 1A)
Thermal Sensor	STD : N , W/T : Y		
External DRAM Buffer	N	Y	Y
iCell	N	Y	Optional
TRIM	N	Y	Y
ATA Security	Y	Y	Y
S.M.A.R.T	Y	Y	Y
Dimension (WxLxH/mm)	69.8 x 100.1 x 6.8	69.8 x 99.8 x 9.2	69.8 x 100.1 x 6.8
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million		
Standard Temp. OP (0°C~+70°C)	DES25-XXXD06%C*** DES25-XXXD07%C***	DRS25-XXXD67SC***	DGS25-XXXD67%C***(P)
Wide Temp. OP (-40°C~+85°C)	DES25-XXXD06%W*** DES25-XXXD07%W***	DRS25-XXXD67SW***	DGS25-XXXD67%W***(P)
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type		

Model Name	Slim SSD 3ME	1.8" SATA SSD 3SR-P
Key Features	1.8" housing, 50% space saving	1. Compliant with MIL-STD-810-F/G 2. SW Data Security (QEraser/Destroy/SEraser/Write Protect)
Interface	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**
Flash Type	MLC	SLC
Capacity	8GB~ 128GB	8GB~ 256GB
Max. Channel	4	4
Sequential R/W (MB/sec, max.)	460/160	490/340
Max. Power Consumption	1.6W(5V x 310mA)	3W (5V x 600mA)
Thermal Sensor	STD : N , W/T : Y	
External DRAM Buffer	N	Y
iCell	N	N
TRIM	N	Y
ATA Security	Y	Y
S.M.A.R.T	Y	Y
Dimension (WxLxH/mm)	69.8 x 50.0 x 9.0	54.0 x 78.5 x 5.0
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million	
Standard Temp. OP (0°C~+70°C)	DEMLM-XXXD07%C***	DRS18-XXXD67SC***
Wide Temp. OP (-40°C~+85°C)	DEMLM-XXXD07%W***	DRS18-XXXD67SW***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type	

What is iCell?

Innodisk's R&D team has developed iCell Technology into several SSD drives. iCell Technology ensures reliable and accurate data transfers, even in the event of an abnormal power failure.

What is TRIM?

SSDs are made up of millions of NAND flash cells. They can be written into groups called pages (generally 4KB in size) but can only be erased in larger groups called blocks (generally 128 pages or 512KB). The addresses of the deleted files, or HDD formats are sent along with the TRIM command to the SSD's controller so the drive can function optimally. TRIM commands clean up garbage data on the SSD that can slow performance down. The TRIM command is generally sent from the OS when the system is idle this cleans up the blocks with data that need to be erased so that the drive can perform like new.

SATADOM

Innodisk's Serial ATA Disk on Module (SATADOM) is the world's smallest form factor with exclusive Pin 7 VCC built-in, which simplifies motherboard design. Since it has no external cables, it is more robust and enhances the disk functions of various industrial and enterprise applications. Innodisk's SATADOM also supports the SATA II and SATA III interface with faster data transfer rates and is available in capacities ranging from 512MB up to 128GB.

SATADOM advantage

- Smallest high speed SATA storage, supports low profile 1U Rack-mounted
- Up to 128GB, great for SATA storage device
- Reliable industrial grade quality
- No moving parts for better vibration and shock resistance
- Custom Firmware service available
- Qualified by Intel, Supermicro...etc.
- Available in Standard & Industrial temperature

Recommendation for Pin7 VCC issues

Innodisk suggests that customers who want to use products with the Pin7 VCC feature do so as a design-in feature, including a fuse circuit to prevent over-current issues. We recommend our reference circuit to protect the motherboard and device by using either a "POWER SWITCH" or "JUMPER + FUSE"

*Warning DO NOT lay out 5V VCC on the SATA socket directly.
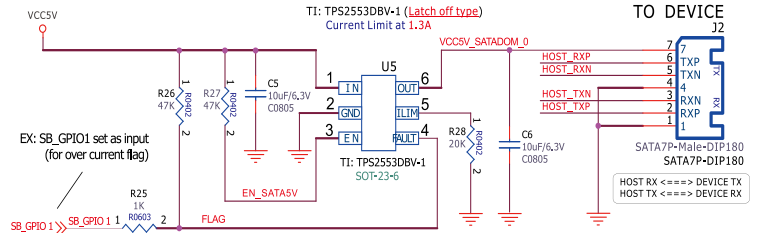
Pin7 VCC MB Reference Circuit Design

Model Name	SATADOM-ML 3IE	SATADOM-MV 3IE	SATADOM-SL 3IE	SATADOM-SV 3IE
Key Features	1. Vertical and low-profile design for 1U server 2. Cost-effective industrial Flash with iSLC 3. Write protect 4. Lifespan 10 times longer than MLC 5. Performance and data quality congruent to SLC	1. Vertical version 2. Cost-effective industrial Flash with iSLC 3. Lifespan 10 times longer than MLC 4. Performance and data quality congruent to SLC	1. Vertical and low-profile design for 1U server 2. Cost-effective industrial Flash with iSLC 3. Best boot drive solution 4. Lifespan 10 times longer than MLC 5. Performance and data quality congruent to SLC	1. Cost-effective industrial Flash with iSLC 2. Lifespan 10 times longer than MLC 3. Performance and data quality congruent to SLC
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	iSLC	iSLC	iSLC	iSLC
Capacity	8GB-64GB	8GB-64GB	4GB-32GB	4GB-32GB
Max. Channel	4	4	2	2
Sequential R/W (MB/sec, max.)	500/300	470/220	300/190	300/190
Max. Power Consumption	2.79W (5V x 558mA)	1W (5V x 200mA)	0.65W (5V x 125mA)	0.65W (5V x 125mA)
Thermal Sensor	STD : N , W/T : Y			
External DRAM Buffer	N	N	N	N
iCell	N	N	N	N
TRIM	N	N	N	N
ATA Security	Y	Y	Y	Y
S.M.A.R.T	Y	Y	Y	Y
Dimension (WxLxH/mm)	35.5 x 30 x 9.5	25.3x41.5x6.8	32.9x29.5x8	20.9x39.5x8.1
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million			
Standard Temp. OP (0°C~+70°C)	DHSML-XXXD062C***(F)	DHSMV-XXXD062C***(F)	DEDDL-XXXD072C***(F)	DESSV-XXXD072C***(F)
Wide Temp. OP (-40°C~+85°C)	DHSML-XXXD062W***(F)	DHSMV-XXXD062W***(F)	DESSL-XXXD072W***(F)	DESSV-XXXD072W***(F)
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type			

Model Name	SATADOM-ML 3SE-P	SATADOM-ML 3SE	SATADOM-MH 3SE
Key Features	1. Vertical and low-profile design for 1U server 2. High IOPS 3. Write protect 4. High performance SATADOM	1. Vertical and low-profile design for 1U server 2. Write protect 3. High performance SATADOM	1. Low-profile design 2. Write protect 3. High performance SATADOM
Interface	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**
Flash Type	SLC	SLC	SLC
Capacity	8GB-64GB	8GB-64GB	4GB-32GB
Max. Channel	4	4	2
Sequential R/W (MB/sec, max.)	480/240	480/240	300/130
Max. Power Consumption	2.79W (5Vx558mA)	2.79W (5Vx558mA)	1.8W (5Vx360mA)
Thermal Sensor	STD : N , W/T : Y		
External DRAM Buffer	Y	N	N
iCell	N	N	N
TRIM	Y	N	N
ATA Security	Y	Y	Y
S.M.A.R.T	Y	Y	Y
Dimension (WxLxH/mm)	35.5 x 30 x 9.5	35.5 x 30 x 9.5	40.0 x 30.0 x 12.3
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million		
Standard Temp. OP (0°C~+70°C)	DESML-XXXD67SC***(F)	DESML-XXXD06SC***(F)	DESMH-XXXD07SC***(F)
Wide Temp. OP (-40°C~+85°C)	DESML-XXXD67SW***(F)	DESML-XXXD06SW***(F)	DESMH-XXXD07SW***(F)
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type		

Model Name	SATADOM-SL 3SE	SATADOM-SV 3SE	SATADOM-SH 3SE	SATADOM-SH Type D 3SE
Key Features	1. Vertical and low-profile design for 1U server 2. Best boot drive solution 3. Lower power consumption	1. Vertical version 2. Anti-vibration mechanical design	1. Low profile horizontal design 2. Only expose 12mm height on the motherboard when applying in practical	Low profile horizontal design
Interface	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**
Flash Type	SLC	SLC	SLC	SLC
Capacity	512MB-32GB	512MB-32GB	512MB-32GB	512MB-32GB
Max. Channel	2	2	2	2
Sequential R/W (MB/sec, max.)	300/130	300/130	300/130	300/130
Max. Power Consumption	0.65W (5V x 130mA)	0.65W (5V x 130mA)	0.65W (5V x 130mA)	0.65W (5V x 130mA)
Thermal Sensor	STD : N , W/T : Y			
External DRAM Buffer	N	N	N	N
iCell	N	N	N	N
TRIM	N	N	N	N
ATA Security	Y	Y	Y	Y
S.M.A.R.T	Y	Y	Y	Y
Dimension (WxLxH/mm)	32.9 x 29.5 x 8	20.9 x 39.5 x 7.9	18.0 x 30.3 x 12.5	30.3 x 20.3 x 12.05
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95° CMTBF: >3 million hours			
Stantard Temp. OP (0°C~+70°C)	DESSL-XXXD07*C***(F)	DESSV-XXXD07SC***(F)	DESSH-XXXD07*C***(F)	DESSF-XXXD07*C***(F)
Wide Temp. OP (-40°C~+85°C)	DESSL-XXXD07*W***(F)	DESSV-XXXD07SW***(F)	DESSH-XXXD07*W***(F)	DESSF-XXXD07*W***(F)
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type			

Model Name	SATADOM-ML 3MG-P	SATADOM-ML 3ME	SATADOM-MV 3ME	SATADOM-MH 3ME
Key Features	1. Vertical and low-profile design for 1U server 2. High IOPS 3. Write protect 4. High performance SATADOM	1. Vertical and low-profile design for 1U server 2. Write protect 3. High performance SATADOM	1. Vertical version 2. Write protect 3. Anti-vibration mechanical design	1. Low-profile design 2. Write protect
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	MLC	MLC	MLC	MLC
Capacity	16GB-128GB	16GB-128GB	16GB-128GB	8GB-128GB
Max. Channel	4	4	4	2
Sequential R/W (MB/sec, max.)	500/160	500/160	460/160	300/150
Max. Power Consumption	2.79W (5V x 558mA)	2.79W (5V x 558mA)	1W (5V x 200mA)	2W (5Vx400mA)
Thermal Sensor	STD : N , W/T : Y			
External DRAM Buffer	Y	N	N	N
iCell	N	N	N	N
TRIM	Y	N	N	N
ATA Security	Y	Y	Y	Y
S.M.A.R.T	Y	Y	Y	Y
Dimension (WxLxH/mm)	35.5 x 30 x 9.5	35.5 x 30 x 9.5	25.3 X 41.5X 6.8	40.0 X 30.0 X12.3
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million			
Standard Temp. OP (0°C~+70°C)	DGSML-XXXD67%C***(F)	DESML-XXXD06%C***(F)	DESMV-XXXD07%C***(F) DESMV-XXXD06%C***(F)	DESMH-XXXD07%C***(F)
Wide Temp. OP (-40°C~+85°C)	DGSML-XXXD67%W***(F)	DESML-XXXD06%W***(F)	DESMV-XXXD07%W***(F) DESMV-XXXD06%W***(F)	DESMH-XXXD07%W***(F)
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type			

Model Name	SATADOM-SL 3ME	SATADOM-SV 3ME	SATADOM-SH 3ME	SATADOM-SH Type D 3ME
Key Features	1. Vertical and low-profile design for 1U server 2. Best boot drive solution 3. Lower power consumption	1. Vertical version 2. Anti-vibration mechanical design	Low profile horizontal design	Low profile horizontal design
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	MLC	MLC	MLC	MLC
Capacity	4GB-64GB	4GB-32GB	4GB-32GB	4GB-32GB
Max. Channel	2	1	1	1
Sequential R/W (MB/sec, max.)	300/80	150/40	150/40	150/40
Max. Power Consumption	0.65W (5V x 125mA)	0.65W (5V x 125mA)	0.65W (5V x 125mA)	0.63W (5V x 126mA)
Thermal Sensor	STD : N , W/T : Y			
External DRAM Buffer	N	N	N	N
iCell	N	N	N	N
TRIM	N	N	N	N
ATA Security	Y	Y	Y	Y
S.M.A.R.T	Y	Y	Y	Y
Dimension (WxLxH/mm)	32.9 x 29.5 x 8	20.9 x 39.5 x 8.1	18.0 x 30.3 x 12.5	30.3 x 20.3 x12.05
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours			
Standard Temp. OP (0°C~+70°C)	DESSL-XXXD07%C***(F)	DESSV-XXXD07%C***(F)	DESSV-XXXD07%C***(F)	DESSF-XXXD07%C***(F)
Wide Temp. OP (-40°C~+85°C)	DESSL-XXXD07%W***(F)	DESSV-XXXD07%W***(F)	DESSV-XXXD07%W***(F)	DESSF-XXXD07%W***(F)
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type			

SATA Slim

The Innodisk SATA Slim is compliant with the JEDEC SFF-8156 standard form factor and ATA protocol. It does not require drivers, and can be configured as a boot device or a data storage device. It is also suitable for portable/hand-held devices, thin clients, and industrial applications that require the effective reduction of operation system boot time and power consumption. With a 7+15 pin SATA interface, the Innodisk SATA Slim supports most platforms with a standard SATA port.

Model Name	SATA Slim 3IE	SATA Slim 3SE-P	SATA Slim 3SE
Key Features	1. Cost-effective industrial Flash with iSLC 2. Lifespan 10 times longer than MLC 3. Performance and data quality congruent to SLC	1. Half Slim, space saving 2. High quality SLC-based solution 3. Excellent data transfer speed 4. Compatible with JEDEC MO297	1. Half Slim, space saving 2. High quality SLC-based solution 3. Compatible with JEDEC MO297
Interface	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**
Flash Type	iSLC	SLC	SLC
Capacity	4GB-128GB	4GB-128GB	4GB-128GB
Max. Channel	4	4	4
Sequential R/W (MB/sec, max.)	460/370	480/330	460/360
Max. Power Consumption	1.6W (5V x 315mA)	1.65W (5V x 330mA)	1.1W (5Vx220mA)
Thermal Sensor	STD : N , W/T : Y		
External DRAM Buffer	N	Y	N
iCell	N	N	N
TRIM	N	Y	N
ATA Security	Y	Y	Y
S.M.A.R.T	Y	Y	Y
Dimension (WxLxH/mm)	54.0 x 39.8 x 4.0	54.0 x 39.8 x 4.0	54.0 x 39.8 x 4.0
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours		
Standard Temp. OP (0°C~+70°C)	DHSLM-XXXD06SC***	DESLM-XXXD67SC***	DESLM-XXXD06SC***
Wide Temp. OP (-40°C~+85°C)	DHSLM-XXXD06SW***	DESLM-XXXD67SW***	DESLM-XXXD06SW***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type		

Model Name	SATA Slim 3MG-P	SATA Slim 3ME
Key Features	1. EverGreen L² architecture 2. Excellent data transfer speed 3. Compatible with JEDEC MO297	1. Half Slim,space saving 2. Budget -friendly MLC-based solution 3. Compatible with JEDEC MO297
Interface	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**
Flash Type	MLC	MLC
Capacity	8GB-256GB	8GB~ 128GB
Max. Channel	4	4
Sequential R/W (MB/sec, max.)	460/240	460/160
Max. Power Consumption	2.1W (5V x 428mA)	1.6W(5V x 315mA)
Thermal Sensor	STD : N , W/T : Y	
External DRAM Buffer	Y	N
iCell	N	N
TRIM	Y	N
ATA Security	Y	Y
S.M.A.R.T	Y	Y
Dimension (WxLxH/mm)	54.0 x 39.8 x 4.0	54.0 x 39.8 x 4.0
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours	
Standard Temp. OP (0°C~+70°C)	DGSLM-XXXD67%C***	DESLM-XXXD07%C*** DESLM-XXXD06%C***
Wide Temp. OP (-40°C~+85°C)	DGSLM-XXXD67%W***	DESLM-XXXD07%W*** DESLM-XXXD06%W***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type	

mSATA

mSATA, which is distinct from the micro connector, was announced by the Serial ATA International Organization on September 21, 2009. Applications include netbooks, portable devices and other devices that require a smaller solid-state drive. The connector is similar in appearance to a PCI Express Mini Card interface and is electrically compatible; however, the data signals need a connection to the SATA host controller instead of the PCI-express host controller. Innodisk's mSATA supports high-performance data transfer rates of 1.5 Gb/s, 3.0 Gb/s and 6.0 Gb/s.

Model Name	mSATA 3IE	mSATA 3SE-P	mSATA 3SE
Key Features	1. Cost-effective industrial Flash with iSLC 2. Lifespan 10 times longer than MLC 3. Performance and data quality congruent to SLC 4. Excellent data transfer speed	1. Excellent data transfer speed and IOPS 2. Support TRIM command 3. Built-in DRAM buffer	1. Excellent data transfer speed and IOPS 2. High quality SLC-based solution
Interface	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**
Flash Type	iSLC	SLC	SLC
Capacity	8GB~64GB	8GB~64GB	4GB~64GB
Max. Channel	4	4	4
Sequential R/W (MB/sec, max.)	460/ 350	490/260	510/250
Max. Power Consumption	1.1 W (3.3V x 335 mA)	1.2 W (3.3V x 360 mA)	1.1 W (3.3V x 319 mA)
Thermal Sensor	STD : N , W/T : Y		
External DRAM Buffer	N	Y	N
iCell	N	N	N
TRIM	N	Y	N
ATA Security	Y	Y	Y
S.M.A.R.T	Y	Y	Y
Dimension (WxLxH/mm)	29.8 x 50.8 x 4.4	29.8 x 50.8 x 4.4	29.8 x 50.8 x 4.4
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours***		
Standard Temp. OP (0°C~+70°C)	DHMSR-XXXD062C***	DEMSR-XXXD67SC***	DEMSR-XXXD06SC*** DEMSR-XXXD07SC***
Wide Temp. OP (-40°C~+85°C)	DHMSR-XXXD062W***	DEMSR-XXXD67SW***	DEMSR-XXXD06SW*** DEMSR-XXXD07SW***
Note	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G) ***= flash configuration (internal control code)%=Flash Type		

Model Name	mSATA 3ME	mSATA 3MG-P	mSATA mini 3IE	mSATA mini 3ME
Key Features	1. Excellent data transfer speed and IOPS 2. Budget- friendly MLC-based solution	1. EverGreen L² architecture 2. Intelligent error recovery system 3. Built-in DRAM buffer	1. Write protect 2. Performance and data quality congruent to SLC 3. Cost-effective industrial Flash with iSLC	1. Write protect 2. Half mSATA50% space saving 3.Low power consumption
Interface	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**	**SATA III 6.0Gb/s**
Flash Type	MLC	MLC	iSLC	MLC
Capacity	4GB-128GB	8MB-128GB	8G-32GB	4GB~64GB
Max. Channel	4	4	2	2
Sequential R/W (MB/sec, max.)	510/160	490/150	300/190	290/80
Max. Power Consumption	1.1W (3.3V x 335mA)	1.3W (3.3V x 390mA)	0.8W (3.3V x 240mA)	0.8W (3.3V x 240mA)
Thermal Sensor	STD : N , W/T : Y			
External DRAM Buffer	N	Y	N	N
iCell	N	N	N	N
TRIM	N	Y	N	N
ATA Security	Y	Y	Y	Y
S.M.A.R.T	Y	Y	Y	Y
Dimension (WxLxH/mm)	29.8 x 50.8 x 4.4	29.8 x 50.8 x4.4	29.8 x 26.8 x4.4	29.8 x 26.8 x 4.4
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours			
Standard Temp. OP (0°C~+70°C)	DEMSR-XXXD07%C*** DEMSR-XXXD06%C***	DGMSR-XXXD67%C***	DHMSM-XXXD07%C***	DEMSM-XXXD07%C***
Wide Temp. OP (-40°C~+85°C)	DEMSR-XXXD07%W*** DEMSR-XXXD06%W***	DGMSR-XXXD67%W***	DHMSM-XXXD07%W***	DEMSM-XXXD07%W***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type			

Mini PCIeDOM

The Innodisk Mini PCIeDOM is a Flash based disk module with standard Mini PCIe form factor, and PCI Express Gen.1 interface. It is suitable for board maker or SI to design in the product as a boot drive or a storage device. Meanwhile, it supports multiple operation systems and no driver needed, including Windows XP, Windows 7, and Linux based OS.

Model Name	Mini PCIeDOM 1SE	Mini PCIeDOM 1ME
Key Features	1. Standard PCIe Interface 2. Driver-less	1. Standard PCIe Interface 2. Driver-less
Interface	PCI Express Gen.1 x1	PCI Express Gen.1 x1
Flash Type	SLC	MLC
Capacity	4GB~64GB	8GB~128GB
Max. Channel	4	2
Sequential R/W (MB/sec, max.)	85/85	170/120
Max. Power Consumption	2.3 W (3.3V x 700 mA)	2 W (3.3V x 6200 mA)
Thermal Sensor	STD: N , W/T: Y	
External DRAM Buffer	N	N
iCell	N	N
TRIM	N	Y
ATA Security	Y	Y
S.M.A.R.T	Y	Y
Dimension (WxLxH/mm)	30 x 50.95 x 5	30 x 50.95 x 5
Environment	Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours	
Standard Temp. OP (0°C~+70°C)	DEEDM-XXXJ30AC***	DEEDM-XXXD07SC***
Wide Temp. OP (-40°C~+85°C)	DEEDM-XXXJ30AW***	DEEDM-XXXD07SW***
Note	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type	

Download our iSMART to monitor the health of storage

iSMART is a powerful, easy-to-use solid-state drive (SSD) and hard disk drive (HDD) health monitoring tool. It allows system integrators to track important disk information, such as temperature, storage space, bad blocks, lifespan, and firmware, all under one platform. With iSMART, system integrators can better manage disk usage and know exactly when to replace a disk, before the end of its life cycle.

Users can easily enable/disable write protect, ATA Security, quick erase, and power saving features in one button.

Performance/Alert page can show any installed disk's R/W performance and alert in time for abnormality.

The Lifespan graph helps user understand the expiry date of Innodisk own's products.

iSMART Status page can visualize how the devices utilize Wear Leveling mechanism.

M.2-SATA(NGFF)

M.2-SATA (NGFF) stands for Next Generation Form Factor, which is comprised of several interfaces and the corresponding system interconnect based on 67pin edge card connectors. The Innodisk M.2-SATA (NGFF) offers wide range capacities in several standard form factors to fulfill different applications, including type 2242, type 2260, type 2280, and 22110.

Benefits

- Small form factor, M.2 (S42) save about 40% PCB dimension compared to Mini PCIe form factor
- Innodisk's exclusive iData Guard ensures reliable data transfers in the event of an abnormal power failure
- Fully compliant with industrial standard
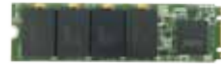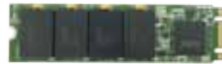- Suitable for ultra-thin or compact system

M.2-2242

Features

- Adopted SATA III 6.0 Gb/s interface, complaint with M.2 (NGFF) type 2242 and 2280
- Excellent data transfer speed in small form factor
- iCell technology for data protection
- Supports iSMART disk health monitoring

M.2-2280

Model Name	M.2 (S42) 3IE	M.2 (S42) 3SE	M.2-SATA(S42) 3ME
Key Features	1. Compliant with M2 (NGFF) Type 2242 2. Cost-effective industrial flash with iSLC 3. iData Guard protection	1. Compliant with M2 (NGFF) Type 2242 2. High quality SLC-based solution 3. iData Guard protection	1. Compliant with M2 (NGFF) Type 2242 2. Budget-friendly MLC-based solution 3. iData Guard protection
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	iSLC	SLC	MLC
Capacity	8GB~32GB	4GB~32GB	8GB~64GB
Max. Channel	2	2	2
Sequential R/W (MB/sec, max.)	300/190	300/130	300/70
Max. Power Consumption	0.5W (3.3V x 150mA)	0.5 W (3.3V x 150 mA)	0.5W (3.3V x 150 mA)
Thermal Sensor	STD : N , W/T : Y		
External DRAM Buffer	N	N	N
iCell	N	N	N
TRIM	N	N	N
ATA Security	Y	Y	Y
S.M.A.R.T	Y	Y	Y
Dimension (WxLxH/mm)	22.0 x 42.0 x3.4	22.0 x 42.0 x 3.4	22.0 x 42.0 x3.4
Environment	Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours		
Standard Temp. OP (0°C~+70°C)	DHM24-XXXD072C***	DEM24-XXXD07SC***	DEM24-XXXD07%C***
Wide Temp. OP (-40°C~+85°C)	DHM24-XXXD072W***	DEM24-XXXD07SW***	DEM24-XXXD07%W***
Note	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G) ***= flash configuration (internal control code) %=Flash Type		

Model Name	M.2 (S80) 3IE	M.2 (S80) 3SE	M.2 (S80) 3ME
Key Features	1. Compliant with M2 (NGFF) Type 2280 2. Cost-effective industrial flash with iSLC	1. Compliant with M2 (NGFF) Type 2280 2. High quality SLC-based solution	1. Compliant with M2 (NGFF) Type 2280 2. Budget-friendly MLC-based solution
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	iSLC	SLC	MLC
Capacity	32GB~256GB	32GB~256GB	64GB~512GB
Max. Channel	4	4	4
Sequential R/W (MB/sec, max.)	450/350	450/350	480/290
Max. Power Consumption	1.6W (3.3V x 467mA)	1.6W (3.3V x 467mA)	1.6W (3.3V x 467mA)
Thermal Sensor	STD : N , W/T : Y		
External DRAM Buffer	N	N	N
iCell	N	N	N
TRIM	N	N	N
ATA Security	Y	Y	Y
S.M.A.R.T	Y	Y	Y
Dimension (WxLxH/mm)	28.0 x 42.0 x3.4	28.0 x 42.0 x 3.4	28.0 x 42.0 x 3.4
Environment	Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours		
Standard Temp. OP (0°C~+70°C)	DHM28-XXXD62C***	DEM28-XXXD6SC***	DEM28-XXXD6%C***
Wide Temp. OP (-40°C~+85°C)	DHM28-XXXD62W***	DEM28-XXXD6SW***	DEM28-XXXD6%W***
Note	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G) ***= flash configuration (internal control code) %=Flash Type		

CF-SATA

The Innodisk CF-SATA has excellent data transfer speed and the same mechanical design as the CompactFlash card. It becomes compliant with the Serial ATA by extracting the unused pin from the CF50 pins and replacing it with the SATA interface. The CF-SATA is an iSLC flash type and has a thermal sensor built-in.

Model Name	CF-SATA 3IE
Key Features	1. Replaced solution of CF 50 pins with SATA signal 2. Cost effective industrial flash with iSLC
Interface	SATA III 6.0Gb/s
Connector	50pin CF connector
Flash Type	iSLC
Capacity	8GB~32GB
Max. Channel	2
Sequential R/W (MB/sec, max.)	310/180
Max. Power Consumption	1W (5V x 200mA)
External DRAM Buffer	N
iCell	N
TRIM	N
ATA Security	Y
S.M.A.R.T	Y
Dimension (WxLxH/mm)	42.8 x 36.4 x3.3
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours
Standard Temp. OP (0°C~+70°C)	DECFS-XXXD072C***
Wide Temp. OP (-40°C~+85°C)	DECFS-XXXD072W***
Note	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G) ***= flash configuration (internal control code) %=Flash Type

CFast

The Innodisk CFast is a small form factor card standard with high data storage capacity. It is suitable for semi-industrial applications. Compliant with the CFast 2.0 standard, it is designed with a 7+17 pin connector and is SATA compatible. The Innodisk CFast offers data transfer rates of sequential read up to 470 MB/sec. and of sequential write up to 280MB/sec.

Moedel Name	CFast 3IE	CFast 3SE	CFast 3ME
Key Features	1. Cost-effective industrial Flash with iSLC 2. Lifespan 10 times longer than MLC 3. Performance and data quality congruent to SLC 4. Wirte protect	1. Compliant with CFast 2.0 standard 2. Excellent data transfer speed 3. Wirte protect	1. Compliant with CFast 2.0 satndard 2. Budget friendly MLC-based solution 3. Wirte protect
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Connector	7+17pin	7+17pin	7+17pin
Flash Type	iSLC	SLC	MLC
Capacity	8GB~64GB	4GB~64GB	4GB~128GB
Max. Channel	2	4	2
Sequential R/W (MB/sec, max.)	310/280	470/250	300/150
Max. Power Consumption	1.1W (3.3V x 320mA)	1.1W (3.3V x 360mA)	1.1W (3.3V x 320mA)
Thermal Sensor	STD : N , W/T : Y		
External DRAM Buffer	N	N	N
iCell	N	N	N
TRIM	N	N	N
ATA Security	Y	Y	Y
S.M.A.R.T	Y	Y	Y
Dimension (WxLxH/mm)	42.8 x 36.4 x3.6	42.8 x 36.4 x3.6	42.8 x 36.4 x3.6
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours		
Standard Temp. OP (0°C~+70°C)	DHCFA-XXXD072C***	DECFA-XXXD07AC*** DECFA-XXXD06SC***	DECFA-XXXD07%C***
Wide Temp. OP (-40°C~+85°C)	DHCFA-XXXD072W***	DECFA-XXXD07AW*** DECFA-XXXD06SW***	DECFA-XXXD07%W***
Note	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28) ***= flash configuration (internal control code) % =Flash Type		

CF Card

Innodisk's Industrial CompactFlash Memory Card (iCF) complies with the PCMCIA* ATA standard. Designed to replace traditional rotating disk drives, Innodisk iCFs are embedded solid-state data storage systems that are designed for mobile computing and the industrial work place.

Model Name	iCF 9000	iCF 4000	iCF 1ME
Key Features	1. High sustained data transfer speed 2. Enhanced power cycling management	High quality SLC-based solution	1. Budget friendly MLC-based solution 2. Enhanced power cycling management
Interface	PATA	PATA	PATA
Connector	50pin CF connector	50pin CF connector	50pin CF connector
Flash Type	SLC	SLC	MLC
Capacity	1GB~64GB	128MB~8GB	4GB~128GB
Max. Channel	4	2	2
Sequential R/W (MB/sec, max.)	100/95	35/25	110/65
Max. Power Consumption	1.05W(5V x 210mA) 0.69W(3.3V x 210mA)	0.75W(5V x 150mA) 0.5W(3.3V x 150mA)	1.05w(5V x 150mA) 0.69W(3.3V x 150 mA)
Thermal Sensor	N	N	N
ATA Security	Y	Y	Y
S.M.A.R.T	Y	Y	Y
Dimension (WxLxH/mm)	42.8 x 36.4 x 3.3	42.8 x 36.4 x 3.3	42.8 x 36.4 x 3.3
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours		
Standard Temp. OP (0°C~+70°C)	DC1M-XXXD71%C***	DC1M-XXXD31C***	DECFC-XXXD53%C***
Wide Temp. OP (-40°C~+85°C)	DC1M-XXXD71%W***	DC1M-XXXD31W***	DECFC-XXXD53%W***
Note	PIO mode 0-6 UDMA mode 0-7	PIO mode 0-4 UDMA mode 0-4	PIO mode 0-6 UDMA mode 0-7
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28) ***= flash configuration (internal control code) % =Flash Type		

EDC

The Innodisk Embedded Disk Card (EDC) complies with PCMCIA* ATA standards and fits into all platforms with an IDE connector. The Innodisk Embedded Disk Card comes in capacities ranging from 128MB to 32GB and is available in 40-pin and 44-pin connector packages.

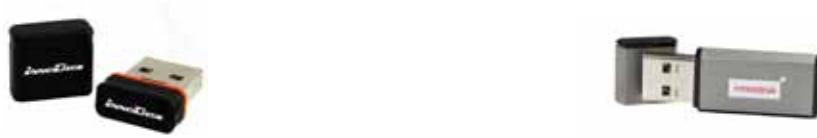| Model Name	EDC 4000 Vertical Type	EDC 4000 Horizontal Type	EDC 1ME Vertical Type	EDC 1ME Horizontal Type
Key Features	1. Dust prevention 2. High quality SLC-based solution	1. High quality SLC-based solution 2. Mounting hole supported	1. Budget- friendly MLC-based solution 2. High performacne PATA solution	1. Budget- friendly MLC-based solution 2. High performacne PATA solution
Connector	40/44 pin	40/44 pin	44 pin	44 pin
Interface	PATA	PATA	PATA	PATA
Flash Type	SLC	SLC	MLC	MLC
Capacity	128MB~8GB	128MB~8GB	4GB~32GB	4GB~64GB
Max. Channel	2	2	2	2
Sequential R/W (MB/sec, max.)	35/25	35/25	115/80	115/80
Max. Power Consumption	0.75W(5V x 150mA)/ 0.5W(3.3V x 150mA)	0.75W(5V x 150mA)/ 0.5W(3.3V x 150mA)	1.05W(5V x 150mA)/ 0.69W(3.3V x 150mA)	1.05W(5V x 150mA)/ 0.69W(3.3V x 150mA)
Thermal Sensor	N	N	N	N
External DRAM Buffer	N	N	N	N
ATA Security	Y	Y	Y	Y
S.M.A.R.T	Y	Y	Y	Y
Dimension (WxLxH/mm)	40 pin: 60.2 x 27.3 x 6.4 44 pin: 50.3 x 27.3 x 5.8	40 pin (A,B type): 55 x 32.4 x 12.9 40 pin (C,D type): 55 x 32.4 x 14.6 40 pin (E,F type): 55 x 32.4 x 18.3 44 pin (A,B type): 55 x 32.4 x 6.7 44 pin (C,D type): 55 x 32.4 x 9.6 44 pin (E,F type): 55 x 32.4 x 12.9	44 pin: 55.3 x 27.3 x 5.8	44 pin (A,B type): 55 x 32.4 x 6.7 44 pin (C,D type): 55 x 32.4 x 9.6 44 pin (E,F type): 55 x 32.4 x 12.9
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours			
Standard Temp. OP (0°C~+70°C)	DE0H-XXXD31C*** DE4H-XXXD31C***	DE0P%-XXXD31C*** DE4P%-XXXD31C***	DEE4H-XXXD53XC***	DEE4X-XXXD53XC***
Wide Temp. OP (-40°C~+85°C)	DE0H-XXXD31W*** DE4H-XXXD31W***	DE0P%-XXXD31W*** DE4P%-XXXD31W***	DEE4H-XXXD53XW***	DEE4X-XXXD53XW***
Note	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28) ***= flash configuration (internal control code) %=Horizontal type(A, B, C, D, E, F)			

SD/micro SD

Innodisk SD and microSD cards are single-level flash devices built for rugged applications in the embedded field. As an industrial-grade SD/microSD card, these cards deliver outstanding performance of up to 20MB per second as well as excellent endurance and reliability, especially compared to other cards used in the mobile market. The Innodisk SD and microSD cards are compatible with SD 2.0 standards and support SDHC Class 10. They also feature SMART technology, which monitors the reliability of these SD cards.

Model Name	Industrial micro SD Card	Industrial SD Card
Key Features	Enhanced power cycling management	1. Designed for industrial applications 2. High reliability 3. Customizeable 4. Power Fail mangement 5. Supported SPI mode
Interface	SD 1.01/2.00	SD 3.00
Flash Type	SLC	SLC/MLC
Capacity	1G~8GB	SLC: 128MB~32GB MLC: 4GB~64GB
Max. Channel	1	1
Sequential R/W (MB/sec, max.)	20/16	SLC: 35/25 MLC: 45/20
Max. Power Consumption	0.17W (3.3V x 50mA)	0.26W (3.3V x 77mA)
S.M.A.R.T	Y	Y
Dimension (WxLxH/mm)	11.0 x 15.0 x 1.0	24.0 x 32.0 x 2.1
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours	
Standard Temp. OP (-20°C~+85°C)	DS2M-XXXI81AC***	DESDC-XXXY81%C***
Wide emp. OP (-40°C~+85°C)	DS2M-XXXI81AW***	DESDC-XXXY81%W***
Note	XXX = density (02GB=02G, 04GB=04G, 08GB=08G) *** = flash configuration (internal control code) %=Flash Type	

USB

The Innodisk industrial-grade USB series is built using SLC NAND flash and features an attractive small form factor. It provides high-capacity flash memory storage while delivering faster data transmission with high reliability. It also complies with the high-speed USB 3.0 interface and is backward compatible with USB 1.1. The Innodisk USB series has a variety of special features, from plastic and metal housing to secure mounting holes to EDC choices.

Model Name	Industrial Nano USB	USB Drive 3SE	USB Drive 3ME
Key Features	1. Only expose 5mm height on the motherboard when applying in practical 2. Smallest USB Drive for industrial application 3. Very low power consumption	1. Metal housing to enhance ESD protection 2. 30μ golden finger for highly reliable data transfer quality	
Interface	USB 2.0	USB 3.0	
Connector	Type A	Type A	
Flash Type	SLC	SLC	MLC
Capacity	1GB~ 8GB	4GB-32GB	4GB~ 32GB
Max. Channel	1	1	1
Sequential R/W (MB/sec, max.)	19/17	100/90	100/50
Max. Power Consumption	0.45W (5V x 90mA)	0.70W (5V x 140mA)	
Dimension (WxLxH/mm)	15.4 x 19.4 x 6.9	16.5 x 45.8 x 7.4	
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours		
Standard Temp. OP (0°C~+70°C)	DEUN-XXXS23AC***	DEUA1-XXXI61SC***	
Wide Temp. OP (-40°C~+85°C)	DEUN-XXXS23AW***	DEUA1-XXXI61SW***	
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code)		

Model Name	USB Drive 2SE	USB Drive 2ME	USB EDC Horizontal 2SE	USB EDC Horizontal 2ME	USB EDC Vertical 2SE	USB EDC Vertical 2ME
Key Features	1. Metal housing to enhance ESD protection 2. 30μ golden finger for highly reliable data transfer quality		1. Supported mounting hole 2. 2.0/2.54 pin pitch		1. Very low profile 2. Low power consumption	
Interface	USB 2.0		USB 2.0		USB 2.0	
Connector	Type A		Standard,10pin, 2.54mm Low profile,10pin, 2.00mm		Standard, 10pin, 2.54mm	
Flash Type	SLC	MLC	SLC	MLC	SLC	MLC
Capacity	512MB~ 16GB	4GB~ 32GB	512MB~ 32GB	4G~ 64G	512MB-16GB	4GB-32GB
Max. Channel	1	1	1	1	1	1
Sequential R/W (MB/sec, max.)	28/24	26/10	28/24	26/10	28/24	26/10
Max. Power Consumption	0.85W (5V x 170mA)		0.85W (5V x 170mA)		0.85W (5V x 170mA)	
Dimension (WxLxH/mm)	16.5 x 45.8 x 7.4		26.6x36.9x7.4(Pin Pitch2.54) 26.6x36.9x4.4(Pin Pitch2.00)		15.2 x 34.1 x 6.4	
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours					
Standard Temp. OP (0°C~+70°C)	DEUA1-XXXI72AC***	DEUA1-XXXI72AC***	DEUH1-XXXI72AC*** DEUH2-XXXI72AC***	DEUH1-XXXI72AC*** DEUH2-XXXI72AC***	DEUV1-XXXI72AC***	DEUV1-XXXI72AC***
Wide Temp. OP (-40°C~+85°C)	DEUA1-XXXI72AW***	N	DEUH1-XXXI72AW*** DEUH2-XXXI72AW***	N	DEUV1-XXXI72AW***	N
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code)					

DRAM Modules

Innodisk's industrial-grade DRAM series is high-quality memory modules that have been specially designed and developed for industrial PCs and other PC-like applications. Our specialized firmware team is ready to provide system designers with a complete turn-key solution for any engineering requirements.

Innodisk's DRAM modules are categorized to meet different systems' needs, and support DDR3, DDR2, DDR, and SDRAM. Our DRAM modules are available in 4 product lines, including Embedded, Server, Wide Temperature, and Special Customized.

Innodisk's comprehensive range of DRAM modules specialized from Unbuffered DIMM, Unbuffered SO-DIMM, Unbuffered ECC DIMM, Unbuffered ECC SO-DIMM, Mini-DIMM and LR-DIMM, registered DIMM, and coated DRAM.

Embedded

Embedded Long-DIMM

Long-DIMM modules are general DRAM modules meant to be used as standard products for general embedded applications. These modules are compliant with JEDEC standards and available in DDR1, DDR2, and DDR3.

Series	Standard Solution	Standard Solution
Module Type	DDR3 LONG DIMM	DDR2 LONG DIMM
Frequency	1600Mhz/1333Mhz/1066Mhz	800Mhz/667Mhz/533Mhz/400Mhz
Capacity	1GB/2GB/4GB/8GB	512MB/1GB/2GB/4GB
Function	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	240pin	240pin
Width	64Bits	64Bits
Voltage	1.5V/1.35V	1.8V
PCB Height	1.18 Inches	1.18 Inches
Operation Temperature	0~85℃	0~85℃
Value-Added Service (*Optional)	*Conformal Coating	

Series	Standard Solution	Standard Solution
Module Type	DDR LONG DIMM	SDRAM LONG DIMM
Frequency	400Mhz/333Mhz/266MHZ	PC133/PC100
Capacity	256MB/512MB/1GB	128MB/256MB
Function	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	184pin	168pin
Width	64Bits	64Bits
Voltage	2.6V	3.3V
PCB Height	1.25 Inches	1.25 Inches
Operation Temperature	0~70℃	0~70℃
Value-Added Service (*Optional)	*Conformal Coating	

Embedded SO-DIMM

Small-outline DIMMs (SO-DIMM) modules are general DRAM modules meant to be usesd as standard products for embedded applications with limited space. These modules are compliant with JEDEC standards and help in eliminating the need for changing designs due to space issues.

Series	Standard Solution	Standard Solution
Module Type	DDR3 SODIMM	DDR2 SODIMM
Frequency	1600Mhz/1333Mhz/1066Mhz	800Mhz/667Mhz/533Mhz/400Mhz
Capacity	1GB/2GB/4GB/8GB	512MB/1GB/2GB/4GB
Function	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	204pin	200pin
Width	64Bits	64Bits
Voltage	1.5V/1.35V	1.8V
PCB Height	1.18 Inches	1.18 Inches
Operation Temperature	0~85℃	0~85℃
Value-Added Service (*Optional)	*Conformal Coating	

Series	Standard Solution	Standard Solution
Module Type	DDR SODIMM	SDRAM SODIMM
Frequency	400Mhz/333Mhz/266MHZ	PC133/PC100
Capacity	256MB/512MB/1GB	128MB/256MB/512MB
Function	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	200pin	144pin
Width	64Bits	64Bits
Voltage	2.6V	3.3V
PCB Height	1.25 Inches	1.25 Inches
Operation Temperature	0~70℃	0~70℃
Value-Added Service (*Optional)	*Conformal Coating	

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Embedded Low-Profile DIMM

Low-Profile DIMM modules are specialized for using in 1U systems, such as the blade server data center, where the system height is lower than 1.18 inches. The design of these modules improves air flow inside a compact system and reduces thermal impact.

Series	Very Low-Profile (VLP) Solution	Very Low-Profile (VLP) Solution	Very Low-Profile (VLP) Solution
Module Type	DDR3 LONG DIMM	DDR3 SODIMM	DDR2 LONG DIMM
Frequency	1600Mhz/1333Mhz/1066Mhz	1600Mhz/1333Mhz/1066Mhz	800Mhz/667Mhz/533Mhz/400Mhz
Capacity	1GB/2GB/4GB/8GB	1GB/2GB/4GB/8GB	1GB/2GB/4GB
Function	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	240pin	204pin	240pin
Width	64Bits	64Bits	64Bits
Voltage	1.5V/1.35V	1.5V/1.35V	1.8V
PCB Height	0.72 Inches	0.72 Inches	0.72 Inches
Operation Temperature	0 ~ 85℃	0 ~ 85℃	0 ~ 85℃
Value-Added Service (*Optional)	*Conformal Coating		

Series	Very Low-Profile (VLP) Solution	Very Low-Profile (VLP) Solution
Module Type	DDR LONG DIMM	SDRAM LONG DIMM
Frequency	400Mhz/333Mhz/266MHZ	PC133/PC100
Capacity	512MB	128MB/256MB
Function	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	184pin	168pin
Width	64Bits	64Bits
Voltage	2.6V	3.3V
PCB Height	0.72 Inches	0.72 Inches
Operation Temperature	0 ~ 70℃	0 ~ 70℃
Value-Added Service (*Optional)	*Conformal Coating	

Embedded Unbuffered DIMM with ECC

ECC modules are designed to detect and correct single-bit errors that occur during data storage and transmission. ECC modules use Hamming Code or Triple Modular Redundancy for error detection and correction, and manage error corrections on their own, without requesting that the data source resend original data.

Series	Unbuffered w/ECC Solution	Unbuffered w/ECC Solution
Module Type	DDR3 LONG DIMM	DDR3 SODIMM
Frequency	1600Mhz/1333Mhz/1066Mhz	1600Mhz/1333Mhz/1066Mhz
Capacity	1GB/2GB/4GB/8GB	1GB/2GB/4GB/8GB
Function	With ECC Unbuffered Memory	With ECC Unbuffered Memory
Pin Number	240pin	204pin
Width	72Bits	72Bits
Voltage	1.5V/1.35V	1.5V/1.35V
PCB Height	1.18 Inches	1.18 Inches
Operation Temperature	0~85℃	0~85℃
Golden finger 30μ"	√	√
Value-Added Service (*Optional)	*Conformal Coating	

Series	Unbuffered w/ECC Solution	Unbuffered w/ECC Solution	Unbuffered w/ECC Solution
Module Type	DDR2 LONG DIMM	DDR2 SODIMM	DDR LONG DIMM
Frequency	800Mhz/667Mhz/533Mhz/400Mhz	800Mhz/667Mhz/533Mhz/400Mhz	400Mhz/333Mhz/266MHZ
Capacity	1GB/2GB/4GB	512MB/1GB/2GB	512MB/1GB
Function	With ECC Unbuffered Memory	With ECC Unbuffered Memory(PLL)	With ECC Unbuffered Memory
Pin Number	240pin	200pin	184pin
Width	72Bits	72Bits	72Bits
Voltage	1.8V	1.8V	2.6V
PCB Height	1.18 Inches	1.18 Inches	1.25 Inches
Operation Temperature	0~85℃	0~85℃	0~70℃
Value-Added Service (*Optional)	*Conformal Coating		

Server

Server Registered DIMM

Registered DIMM modules are designed to ensure data integrity at both the device and system level of the server. In addition, all Innodisk Registered DIMM modules are tested for a 24-hour period in our purpose-built factory to ensure stable performance.

Series	Server Solution	Server Solution
Module Type	DDR3 LONG DIMM	DDR2 LONG DIMM
Frequency	1866Mhz/1600Mhz/1333Mhz/1066Mhz	800Mhz/667Mhz/533Mhz/400Mhz
Capacity	1GB/2GB/4GB/8GB/16GB/32GB/64GB	1GB/2GB/4GB
Function	Registered DIMM	Registered DIMM
Pin Number	240pin	240pin
Width	72Bits	72Bits
Voltage	1.5V/1.35V	1.8V
PCB Height	1.18 Inches	1.18 Inches
Operation Temperature	0~85℃	0~85℃
Golden finger 30μ"	√	√

Server LR-DIMM

Load-reduction DIMM modules are designed with a special buffer to reduce heavy-load data to single-load data (up to 8-rank DIMM). In addition, these modules allow more DIMMs to be added per channel in order to reduce power levels and increase memory capacity and system speed.

Series	Server Solution	Server Solution
Module Type	DDR3 Load reduced DIMM	DDR3 Load reduced DIMM
Frequency	1600Mhz/1333Mhz/1066Mhz	1333Mhz/1066Mhz
Capacity	16GB/32GB/64GB	64GB
Function	IMB	IMB
Pin Number	240pin	240pin
Width	72Bits	72Bits
Voltage	1.5V/1.35V	1.5V/1.35V
PCB Height	1.18 Inches	2.21 Inches
Operation Temperature	0~85℃	0~85℃
Golden finger 30μ"	√	√

Server Unbuffered DIMM with ECC

ECC modules are designed to detect and correct single-bit errors that occur during data storage and transmission. ECC modules use Hamming Code or Triple Modular Redundancy for error detection and correction, and manage error corrections on their own, without requesting that the data source resend original data.

Series	Unbuffered w/ECC Solution	Unbuffered w/ECC Solution
Module Type	DDR3 LONG DIMM	DDR3 SODIMM
Frequency	1600Mhz/1333Mhz/1066Mhz	1600Mhz/1333Mhz/1066Mhz
Capacity	1GB/2GB/4GB/8GB	1GB/2GB/4GB/8GB
Function	With ECC Unbuffered Memory	With ECC Unbuffered Memory
Pin Number	240pin	204pin
Width	72Bits	72Bits
Voltage	1.5V/1.35V	1.5V/1.35V
PCB Height	1.18 Inches	1.18 Inches
Operation Temperature	0～85℃	0～85℃
Golden finger 30μ"	√	√
Value-Added Service (*Optional)	*Conformal Coating	

Series	Unbuffered w/ECC Solution	Unbuffered w/ECC Solution	Unbuffered w/ECC Solution
Module Type	DDR2 LONG DIMM	DDR2 SODIMM	DDR LONG DIMM
Frequency	800Mhz/667Mhz/533Mhz/400Mhz	800Mhz/667Mhz/533Mhz/400Mhz	400Mhz/333Mhz/266MHZ
Capacity	1GB/2GB/4GB	512MB/1GB/2GB	512MB/1GB
Function	With ECC Unbuffered Memory	With ECC Unbuffered Memory(PLL)	With ECC Unbuffered Memory
Pin Number	240pin	200pin	184pin
Width	72Bits	72Bits	72Bits
Voltage	1.8V	1.8V	2.6V
PCB Height	1.18 Inches	1.18 Inches	1.25 Inches
Operation Temperature	0～85℃	0～85℃	0～70℃
Value-Added Service (*Optional)	*Conformal Coating		

Wide Temperature

Wide Temperature Unbuffered DIMM

Designed for industrial systems, Innodisk's Wide Temperature DRAM modules are best suited for applications that must work in extreme temperatures. These modules use industrial-grade SDRAM components with 30u" Gold finger to ensure that the memory maintains its high-quality signal, even at temperatures as low as -40ºC or as high as 85ºC.

Series	Wide Temperature	Wide Temperature	Wide Temperature
Module Type	DDR3 LONG DIMM	DDR2 LONG DIMM	DDR LONG DIMM
Frequency	1600Mhz/1333Mhz/1066Mhz	800Mhz/667Mhz/533Mhz/400Mhz	400Mhz/333Mhz/266MHZ
Capacity	1GB/2GB/4GB/8GB	512MB/1GB/2GB/4GB	512MB/1GB
Function	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	240pin	240pin	184pin
Width	64Bits	64Bits	64Bits
Voltage	1.5V/1.35V	1.8V	2.6V
PCB Height	1.18 Inches	1.18 Inches	1.18 Inches
Operation Temperature	-40~85℃	-40~85℃	-40~85℃
Golden finger 30μ"	√	√	√
Value-Added Service (*Optional)	*Conformal Coating		

Wide Temperature Unbuffered SO-DIMM

Designed for industrial systems, Innodisk's Wide Temperature DRAM modules are best suited for applications that must work in extreme temperatures. These modules use industrial-grade SDRAM components with 30u" gold finger to ensure that the memory maintains its high-quality signal, even at temperatures as low as -40ºC or as high as 85ºC.

Series	Wide Temperature	Wide Temperature	Wide Temperature
Module Type	DDR3 SODIMM	DDR2 SODIMM	DDR SODIMM
Frequency	1600Mhz/1333Mhz/1066Mhz	800Mhz/667Mhz/533Mhz/400Mhz	400Mhz/333Mhz/266MHZ
Capacity	1GB/2GB/4GB/8GB	512MB/1GB/2GB/4GB	512MB/1GB
Function	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	204pin	200pin	200pin
Width	64Bits	64Bits	64Bits
Voltage	1.5V/1.35V	1.8V	2.6V
PCB Height	1.18 Inches	1.18 Inches	1.18 Inches
Operation Temperature	-40~85℃	-40~85℃	-40~85℃
Golden finger 30μ"	√	√	√
Value-Added Service (*Optional)	*Conformal Coating		

Special / Customized

32-Bit

32-Bit DRAM modules are customized for the non-x86 design system and work especially well on Advanced RISC Machine (ARM) base tablet PCs and mobile devices.

Series	32 bits	32 bits
Module Type	DDR3 SODIMM	DDR2 SODIMM
Frequency	1600Mhz/1333Mhz/1066Mhz	800Mhz/667Mhz/533Mhz/400Mhz
Capacity	1GB/2GB/4GB	128MB/1GB/2GB
Function	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	204pin	200pin
Width	32Bits	32Bits
Voltage	1.5V/1.35V	1.8V
PCB Height	1.18 Inches	1.18 Inches
Operation Temperature	0～85℃	0～85℃
Value-Added Service (*Optional)	*Conformal Coating	

Rugged

Rugged DIMM modules are designed with a pair of mounting holes for more secure mounting on the CPU board. Resistant to shock and vibration, they allow stable system operation for automobile and harsh environment applications. In addition, these modules are compliant with JEDEC standards, with dimensions extended by 10 mm.

Series	Rugged DIMM (Wide Temp)	Rugged DIMM
Module Type	DDR2 SODIMM	DDR2 SODIMM
Frequency	800Mhz/667Mhz/533Mhz/400Mhz	800Mhz/667Mhz/533Mhz/400Mhz
Capacity	1GB/2GB	1GB/2GB
Function	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	200pin	200pin
Width	32Bits/64Bits	32Bits/64Bits
Voltage	1.8V	1.8V
PCB Height	1.57 Inches	1.57 Inches
Operation Temperature	-40～85℃	0～85℃
Golden finger 30μ"	√	√
Value-Added Service (*Optional)	*Conformal Coating / Wide Temperature	

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Mini DIMM

VLP Mini DIMM modules are designed with 17.9mm high dimensions specifically for networking applications. They are compliant with JEDEC standards and are designed to improve thermal resistance. With the ECC function, the VLP Mini DIMM also ensures that data is corrected when corrupted data bits are found during data retrieval.

Series	Mini DIMM-VLP	Mini DIMM-VLP
Module Type	DDR3 SODIMM	DDR3 SODIMM
Frequency	1600Mhz/1333Mhz/1066Mhz	1600Mhz/1333Mhz/1066Mhz
Capacity	1GB/2GB/4GB/8GB	1GB/2GB/4GB/8GB
Function	None ECC Unbuffered Memory	with ECC Unbuffered Memory
Pin Number	244pin	244pin
Width	64Bits	72Bits
Voltage	1.35V / 1.5V	1.35V / 1.5V
PCB Height	0.72 Inches	0.72 Inches
Operation Temperature	0~85℃	0~85℃
Golden finger 30μ"	√	√
Value-Added Service (*Optional)	*Conformal Coating	

Series	Mini R-DIMM-VLP	Mini R-DIMM
Module Type	DDR3 SODIMM	DDR3 SODIMM
Frequency	1600Mhz/1333Mhz/1066Mhz	1600Mhz/1333Mhz/1066Mhz
Capacity	1GB/2GB/4GB/8GB	1GB/2GB/4GB/8GB/16G
Function	Registered Memory	Registered Memory
Pin Number	244pin	244pin
Width	72Bits	72Bits
Voltage	1.35V / 1.5V	1.35V / 1.5V
PCB Height	0.72 Inches	1.18 Inches
Operation Temperature	0~85℃	0~85℃
Golden finger 30μ"	√	√
Value-Added Service (*Optional)	*Conformal Coating	

Single Side

Single Side modules are often used in small form factor (SFF) systems that require a high-density module to be installed in a strictly limited space. The Innodisk-designed low-profile PCB with a JEDEC standard connector requirement fits into any SFF system—something that most standard modules cannot do—without any modification to the hardware design. Single Side modules deliver excellent thermal resistance and help make systems more reliable.

Series	Single DIMM(Front Side)	Single DIMM(Back Side)
Module Type	DDR3 SODIMM	DDR3 SODIMM
Frequency	1600Mhz/1333Mhz/1066Mhz	1600Mhz/1333Mhz/1066Mhz
Capacity	1GB/2GB/4GB	1GB/2GB/4GB
Function	Non-ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	204pin	204pin
Width	64Bits	64Bits
Voltage	1.35V / 1.5V	1.35V / 1.5V
PCB Height	1.18 Inches	1.18 Inches
Operation Temperature	0~85℃	0~85℃
Value-Added Service (*Optional)	*Conformal Coating	

Registered SO-DIMM

Registered SO-DIMM modules are designed to ensure data integrity at both the device- and system level of server applications with space limitations. In addition, these modules are tested for a 24-hour period in our special-built factory to ensure stable performance.

Series	Registered SO-DIMM
Module Type	DDR3 SODIMM
Frequency	1600Mhz/1333Mhz/1066Mhz
Capacity	1GB/2GB/4GB/8GB/16GB
Function	Registered SO-DIMM Memory
Pin Number	204pin
Width	72Bits
Voltage	1.35V / 1.5V
PCB Height	1.18 Inches
Operation Temperature	0~85℃
Golden finger 30μ"	√
Value-Added Service (*Optional)	*Conformal Coating

Unbuffered SO-DIMM with ECC

ECC modules are designed to detect and correct single-bit errors that occur during data storage and transmission. These modules use Hamming Code or Triple Modular Redundancy for error detection and correction, and manage error corrections on their own, without requesting that the data source resend original data.

Series	Unbuffered w/ECC Solution
Module Type	DDR3 SODIMM
Frequency	1600Mhz/1333Mhz/1066Mhz
Capacity	1GB/2GB/4GB/8GB
Function	With ECC Unbuffered Memory
Pin Number	204pin
Width	72Bits
Voltage	1.5V/1.35V
PCB Height	1.18 Inches
Operation Temperature	0~85℃
Golden finger 30μ"	√
Value-Added Service (*Optional)	*Conformal Coating

Embedded Peripheral Modules

Embedded Peripheral Modules provide LAN, Serial Port, Storage and Display functionality to embedded systems. In order to enrich industrial customer's embedded solutions with flexibility at the best TCO (Total Cost of Ownership), we are dedicated to creating expandable, space-efficient signal conversion modules.

Innodisk is experienced with the most common signals, which include PCIe, USB, SATA, PATA, SD and Display and is able to provide this functionality in the wide range of space-saving form factors available today. Just like Innodisk's esteemed memory solutions, our Standard PCIe, mPCIe, 2.5" SSD, SATADIMM3 and M.2(NGFF) modules fit perfectly into any industrial system.

Mini PCIe (EMXX series)

Mini PCIe is a replacement for the Mini PCI form factor, based on the PCI Express(PCIe X 1) bus. Mini PCIe slots are common in Industrial PCs and handheld or portable devices. Innodisk provides a wide range of modules for PCIe converting to USB, SATA, SD, PATA and Display (Analog, TTL, LVDS, HDMI) signal.

Model Name	EMPP-0201	EMPS-2201	EMSS-32R1	EMPS-3401
Module Type	mPCIe to half mPCIe & USB Adaptor	mPCIe to mSATA mini & USB module	mSATA to dual SATA III RAID Module	mPCIe to four SATA III module
Key Features	1. mPCIe to half mPCIe card supported 2. USB A type & 2.54mm 5P header w/+5V supported 3. 30µ golden finger, 3 years warranty	1. mPCIe to mSATA mini card supported 2. USB A type & 2.54mm 5P header w/+5V supported 3. 30µ golden finger, 3 years warranty	1. mSATA to dual SATA III Port Multiplier supported 2. H/W RAID 0/1 over SATA supported 3. 30µ golden finger, 3 years warranty	1. mPCIe 2.0 to four SATA III ports 2. AHCI, Port-Multiplier supported 3. Low power consumption 4. 30µ golden finger, 3 years warranty
Form-Factor	mPCIe	mPCIe	mPCIe	mPCIe
Input I/F	PCIe, USB 2.0	PCIe, USB 2.0	SATA III	PCIe Express 2.0
Input Connector	mPCIe	mPCIe	mPCIe	mPCIe
Output I/F	PCIe, USB2.0	SATA II, USB 2.0	SATA III	PCI Express 2.0
Output connector	mPCIe x 1, USB A Type x 1	mPCIe x 1, USB A Type x 1	SATA 7 Pin x 2	SATA 7 Pin x 4
Bridge	None	JMB362	JMS562	Marvell 88SE9215
Dimensions(W*L*H/mm)	30 x 50.9 x 18.1	30 x 50.9 x 18.1	29.8 x 50.8 x 11.5	30 x 50.9 x 10.9
Temperature	STD temp: 0°~70°C	STD temp: 0°~70°C	STD temp: 0°~70°C	STD temp: 0°~70°C
Order Info.	EMPP-0201-C1	EMPS-2201-C1	EMSS-32R1-C1	EMPS-3401-C1

Model Name	EMUD-2201	EMP4-1101	EMPV-1201	EMPV-1202	EMPV-1203
Module Type	USB to SD/uSD module	mPCIe to PATA module	mPCIe to dual VGA & HDMI module	mPCIe to VGA & 18/24 bit LVDS module	mPCIe to dual VGA & 18/24 bit TTL module
Key Features	1. mPCIe F/F, USB 2.0 to alternative SD/uSD 2.0 2. Plug & Play, SD hot swappable 3. Ultra low power consumption 4. Wide temperature supported 5. 30µ golden finger, 3 years warranty.	1. mPCIe form factor with PATA 44pin connector 2. Ultra low power consumption 3. Excellent data transfer speed 4. 30µ golden finger, 3 years warranty.	1. mPCIe to dual VGA & HDMI Graphic Card 2. VGA Output: 1920x1080, up to 75Hz vertical rate 3. HDMI up to 1080p, Ultra low power consumption 4. Allow for 90º, 180º, and 270º rotation of on-screen images 5. 30µ golden finger, 3 years warranty	1. mPCIe to VGA & 18/24 bit LVDS Graphic Card 2. VGA Output: 1920x1080, up to 75Hz vertical rate 3. 18/24 bit LVDS supports up to 1600 x 1200 4. Allow for 90º, 180º, and 270º rotation of on-screen images 5. 30µ golden finger, 3 years warranty	1. mPCIe to dual VGA & 18/24 bit TTL Graphic Card 2. VGA Output: 1920x1080, up to 75Hz vertical rate 3. 18/24 bit TTL supports up to 1920 x 1440 4. Allow for 90º, 180º, and 270º rotation of on-screen images 5. 30µ golden finger, 3 years warranty
Form-Factor	mPCIe	mPCIe	mPCIe	mPCIe	mPCIe
Input I/F	PCIe, USB 2.0	PCI Express 1.0	PCI Express 1.0	PCI Express 1.0	PCI Express 1.0
Input Connector	mPCIe	mPCIe	mPCIe	mPCIe	mPCIe
Output I/F	SD 2.0	PATA	VGA x 2, HDMI	VGA, 18/24 bit LVDS	VGA x 2, 18/24 bit TTL
Output connector	SD x 1, uSD x 1 (alternative)	44pin header x 1	40pin 1.25mm x 2(40DP-1.25)	40pin 1.25mm x 1(40DP-1.25)	40pin 1.25mm x 2(40DP-1.25)
Bridge	GL823U	IDB368	SM750	SM750	SM750
Dimensions (W*L*H/mm)	30 x 50.9 x 5.6	30 x 50.9 x 9.5	31.5 x 50.9 x 8.2	30 x 50.9 x 8.2	31.5 x 50.9 x 8.2
Temperature	STD temp: 0°~70°C Wide temp: -40°~85°C	STD temp: 0°~70°C	STD temp: 0°~70°C	STD temp: 0°~70°C	STD temp: 0°~70°C
Order Info.	EMUD-2201-C1(Standard temp) EMUD-2201-C1-01 EMUD-2201-C1-02 EMUD-2201-W1(Wide temp) EMUD-2201-W1-01 EMUD-2201-W1-02	EMP4-1101-C1	EMPV-1201-C1	EMPV-1202-C1	EMPV-1203-C1

M.2(NGFF) (EGXX series)

M.2(NGFF) was introduced to Ultrabooks and Tablets by Intel. As a smaller and more flexible physical specification, it supports PCIe 3.0, USB 3.0 and SATA III which is suitable for general industrial applications. Innodisk M.2 SATA peripheral modules expand SATA connectivity and protect your data through built-in RAID functionality.

Model Name	EGSS-32R1	EGPS-3401
Module Type	M.2 2242 to SATA RAID Module	M.2 3042 to four SATA module
Key Features	1. M.2 to dual SATA III Port Multiplier supported 2. H/W RAID 0/1 over SATA supported 3. 30µ golden finger, 3 years warranty	1. M.2 to four SATA III ports supported 2. AHCI, Port-Multiplier supported 3. Low power consumption 4. 30µ golden finger, 3 years warranty
Form-Factor	M.2 2242-B-M	M.2 3042-B-M
Input I/F	SATA III	PCI Express 2.0
Input Connector	M.2 2242-B-M	M.2 3042-B-M
Output I/F	SATA III	SATA III
Output Connector	SATA 7 Pin x 2	SATA 7 Pin x 4
Bridge	JMS562	Marvell 88SE9215
Dimensions(W*L*H/mm)	22.0 x 42.0 x 11.0	30.0 x 42.0 x 11.0
Temperature	STD temp: 0°~70°C	STD temp: 0°~70°C
Order Info.	EGSS-32R1-C1	EGPS-3401-C1

Standard PCIe(ESXX series)

Standard PCI Express cards are frequently adopted in modern desktop and server systems. Innodisk's PCIe module expand SATA connectivity and protect the data through built-in RAID.

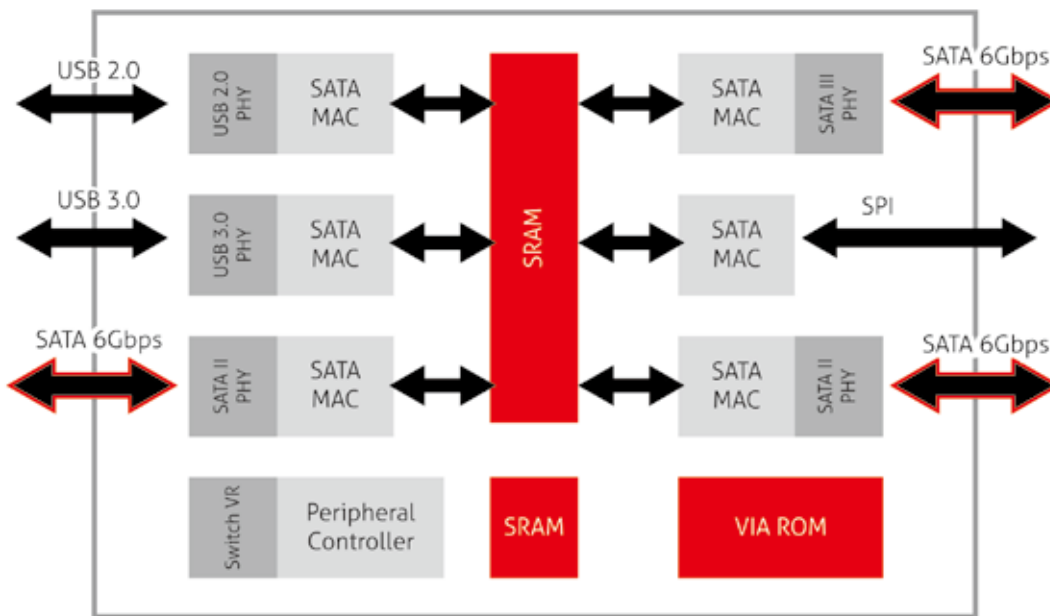| Model Name	ESXS-2301	ESPS-3401	ESSS-32R1
Module Type	Multipurpose PCIe to mSATA & M.2 card	PCIe to four SATA III Module	PCIe to dual mSATA RAID module
Key Features	1. Supports external SATA/USB cable to mSATA & M.2 2242/2260.(Front) 2. Supports mSATA via PCIe-to-SATA bridge.(Back) 3. Bootable w/o external power cable. 4. 30µ golden finger, 3 years warranty.	1. PCIe to four SATA III ports supported 2. AHCI, Port-Multiplier supported 3. Low power consumption 4. 30µ golden finger, 3 years warranty 5. Pin header for LED connection	1. PCIe to dual mSATA with RAID function supported 2. SATA to SATA III Port Multiplier supported 3. H/W RAID 0/1 over SATA supported 4. Excellent data transfer speed 5. 30µ golden finger, 3 years warranty
Form-Factor	STD PCIe	STD PCIe	STD PCIe
Input I/F	PCI Express 1.0, SATA II, USB 2.0	PCI Express 2.0	SATA III
Input Connector	mPCIe	PCIe x 1	SATA 7+15Pin
Output I/F	SATA II, USB 2.0	SATA III	SATA III
Output Connector	mPCIe, mSATA, M.2 x 1	SATA 7 Pin x 4, mSATA x 1	mSATA x 2
Bridge	JMB362	Marvell 88SE9215	JMS562
Dimensions(W*L*H/mm)	110.0 x 68.9 x 12.3	72.1 x 69.8 x 8.3	66.4 x 86.0 x 8.6
Temperature	STD temp: 0°~70°C	STD temp: 0°~70°C	STD temp: 0°~70°C
Order Info.	ESXS-2301-C1	ESPS-3401-C1	ESSS-32R1-C1

Others(E2XX and E3XX series)

Innodisk helps make the most of your system space. Our SATADIMM3 module, powered directly by the DIMM slot, can provide dual M.2 2280 SATA connectivity without needing external power. The 2.5" SSD module, providing expandability through dual M.2 2280/mSATA devices, and comes with optional RAID 0/1 function to ensure high-level data integrity for industrial environments.

Model Name	E2SS-32R1	E2SS-32R2	E3SS-32R1
Module Type	2.5" SSD to dual mSATA RAID Module	2.5" SSD to dual M.2 RAID Module	DDR3 to dual M.2 RAID Module
Key Features	1. 2.5" SSD to dual mSATA slots supported 2. SATA III to SATAIII Port Multiplier supports 3. H/W RAID 0/1 over SATA supported 4. Excellent data transfer speed 5. 30μ golden finger, 3 years warranty	1. 2.5" SSD to dual M.2 2280 slots supported 2. SATA III to SATA III Port Multiplier supported 3. H/W RAID 0/1 over SATA supported 4. Excellent data transfer speed 5. 30μ golden finger, 3 years warranty	1. DDR3 to dual M.2 Slots supported 2. SATA III to SATA III Port Multiplier supported 3. H/W RAID 0/1 over SATA supported 4. Power cable-less 5. 30μ golden finger, 3 years warranty
Form-Factor	2.5" SSD	2.5" SSD	DDR3 U-DIMM
Input I/F	SATA III	SATA III	SATA III
Input Connector	SATA 7+15 Pin	SATA 7+15 Pin	DDR3
Output I/F	SATA III	SATA III	SATA III
Output Connector	mSATA x 2	M.2 x 2	M.2 x 2
Bridge	JMS562	JMS562	JMS562
Dimensions(W*L*H/mm)	69.8 x 100.0 x 9.5	69.8 x 100.0 x 9.5	133.3 x 35.0 x 13.2
Temperature	STD temp: 0°~70°C	STD temp: 0°~70°C	STD temp: 0°~70°C
Order Info.	E2SS-32R1-C1	E2SS-32R2-C1	E3SS-32R1-C1

JMS 562 Block Diagram

JMS 562 Features :

· SATA 6Gbps.

· ATA/ATAPI packet command set.

· HW RAID0(Striping) and RAID1 (Spanning) over USB2.0 /USB3.0 /eSATA.

· RAID1 on-line/off-line rebuild

· Design for WinXP, Win 7, Win 8, Mac 10.3 or later versions.

· Related Products : EMSS-32R1, ESSS-32R1, ESSS-32R2, E2SS-32R1, E3SS-32R1, EGSS-32R1, E3SS-32R1.

Embedded Peripheral Modules Naming Rule

Model	Form Factor		Input signal		Output signal		-	Gen/type output	Output items	Feature	Series	-	Version type	Version
1	2		3		4		5	6	7	8	9	$\frac{1}{0}$	11	12
1	1		1		1		1	1	1	1	1	1	1	1
E	M		S		S			3	2	0	1	-	C	1
EP	2	2.5" SSD	1	DC out	1	DC out		0:Pass	1:1	0-9: normal	1-9		C: Commercial(0~70°)	1-9
	3	DDR3 DIMM	2	Series (232/422)	2	Series (232/422)		1:Gen1	2:2	R=Raid(E**S)	A-Z		W: Industrial(-40~85°)	A-Z
	D	Dongle	4	IDE/PATA	4	IDE/PATA		2:Gen2	3:3				K: Coating +(0~70°)	
	G	M.2(NGFF)	5	LTP (Parallel)	5	LTP (Parallel)		3:Gen3	4:4				T: Coating+(-40~85°)	
	H	mPCIe Half	A	SAS	A	SAS		A~Z: TBD	A~Z:TBD				E: OEM	
	L	PCIe Low profile			B	Blue Tooth		X:Multi	X:Multi				D: ODM	
	M	mPCIe/ mSATA	C	CAN Bus	C	CAN Bus		G:Giga LAN					0: STD but Extend	
	S	PCIe Standard	D	SD/SDIO	D	SD/SDIO								
	X	Multi	I	GPIO/DIO	I	GPIO/DIO								
	Z	Others	L	LAN (Parallel)	L	LAN								
	P	Power Module	P	PCIe	P	PCIe								
			S	SATA	S	SATA								
					T	Touch								
			U	USB	U	USB								
			V	VGA/ Display	V	VGA/ Display								
			X	Multi	X	Multi								
			Z	Others	Z	Others								

Embedded Peripheral Product Matrix

F/F				Output								
				PCIe	SATA	PATA 44P	USB	SD	VGA Display	LAN	Touch	Serial 232/422
mPCIe/mSATA	Input	PCIe		EMPP-0201	EMPS-3401 EMPS-2201 EMPS-3201	EMP4-1101	EMPU-3401		EMPV-1201 EMPV-1202 EMPV-1203	EMPL-G101 EMPL-G201		EMP3-2201 EMP2-2401
		SATA			EMSS-32R1							
		USB						EMUD-2201			EMUT-1201	
PCIe Standard		PCIe		ESXX-XX01 ESXS-2301 ESPP-2401	ESXX-XX01 ESXS-2301 ESPS-3401	ESXX-XX01			ESPS-1201	ESPL-G201		ESP3-2401
		SATA			ESXS-2301							
		USB					ESXS-2301					
M.2(NGFF)		PCIe			EGPS-3401	EGP4-1101	EGPU-3201		EGPV-1201	EGPL-G201		EGP2-2201 EGP2-2401
		SATA			EGSS-32R1							
		USB									EGUT-1201	
2.5		SATA			E2SS-32R1 E2SS-32R2							
DDR3		SATA			E3SS-32R1							

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