Greenliant™

Product Description

The NANDrive™ family consists of high-performance, fully integrated embedded solid state drives (SSDs). These products integrate an ATA controller with one or more NAND flash die in a multi-chip package. With its small form factor and widely adopted industry-standard ATA/IDE interface, PATA NANDrive has revolutionized how embedded system designers utilize NAND flash devices. Its built-in microcontroller and flash file management firmware replace the need for host-side Flash File System (FFS) and Memory Technology Driver (MTD) software.

PATA NANDrive provides complete IDE hard disk drive (HDD) functionality and compatibility in a ball grid array (BGA) package for easy, space-saving and cost-effective mounting to a system motherboard. It is an ideal replacement for CompactFlash card and HDD designs that require smaller, higher security and more reliable data storage.

www.NANDrive.com

Key Features

One of the Industry's Smallest SSDs
- 12mm x 24mm 91-ball LBGA package
- 14mm x 24mm 91-ball LBGA/BGA package

Industry Standard ATA/IDE Interface
- Host Interface: 8- or 16-bit access
- Supports up to PIO Mode-6
- Supports up to Multi-Word DMA Mode-4
- Supports up to Ultra DMA Mode-6

Multi-tasking Technology Increases Performance
- Fast, Sustained Read Performance (Flash to Host), up to 50 MB/sec
- Fast, Sustained Write Performance (Host to Flash), up to 39 MB/sec

Power Management
- Reduces power consumption by putting unused circuitry into sleep mode without host intervention
- Zero wake-up latency

Pre-programmed Firmware in Embedded SuperFlash® Memory
- Implements advanced wear leveling to maximize product lifespan
- Configurable algorithms support global and group wear leveling
- Executes industry standard ATA/IDE commands
- Embedded flash file system for seamless capacity upgrade with no change to host software

Robust Power-Down Data Protection
- Prevents data corruption when power is lost or unstable

Built-in ECC
- Uses advanced hardware engine to correct bit errors

Expanded Data Protection
- WP#/PD# pin configurable by firmware for prevention of data overwrites
- Added data security through user-selectable protection zones and security erase/purge commands

S.M.A.R.T. Commands
- Enables alerts indicating the remaining product life

Multiple Densities with Same Pin-out
- 512 MB, 1 GB, 2 GB, 4 GB, 8 GB, 16 GB, 32 GB
- 1mm ball spacing enables use of lower cost PCBs

Commercial and Industrial Temperatures
- Commercial operation: 0°C to +70°C
- Industrial operation: -40°C to +85°C

Applications

— *Set-top box / Net-top box*
— *GPS and telematics*
— *In-vehicle infotainment*
— *Video conferencing*
— *Tablet PC / Smartbook / Netbook*
— *Multi-function printer*
— *Point of Sale terminal*
— *VoIP system / PBX*
— *Wireless base station*
— *Router / Gateway / Switch*
— *Server / Network-attached storage*
— *Industrial PC / Single-board computer*
— *Ultrasound and medical imaging*
— *Industrial automation & control*
— *Test & measurement instrumentation*
— *Video surveillance / ID terminal*

Greenliant Systems
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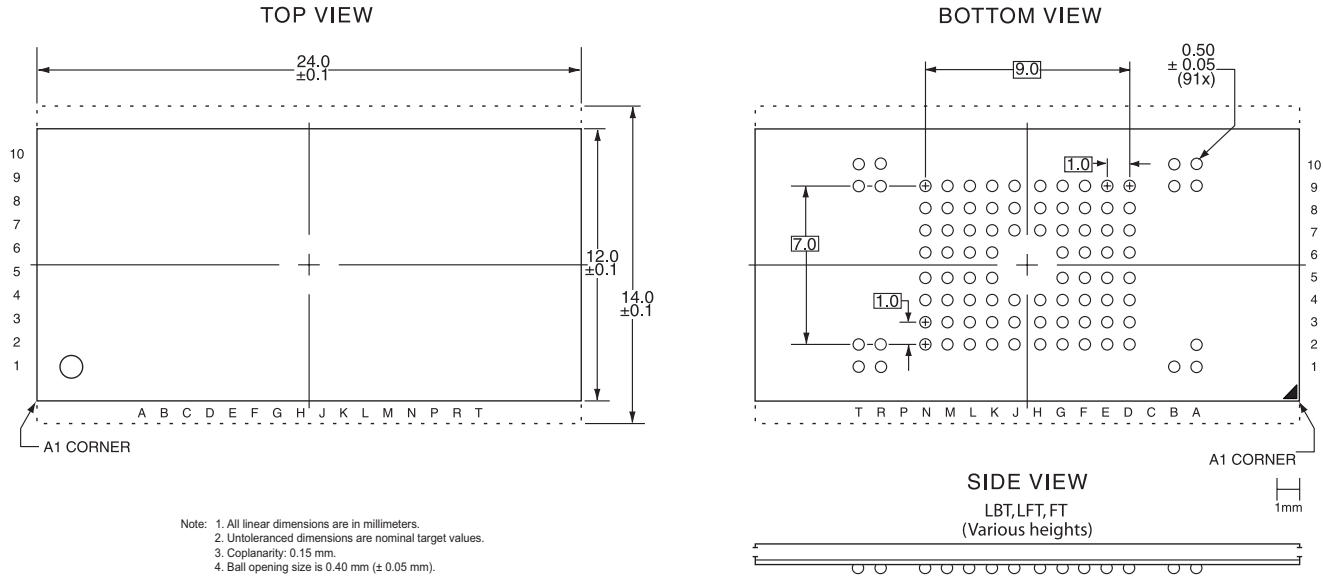Santa Clara, CA 95054 USA
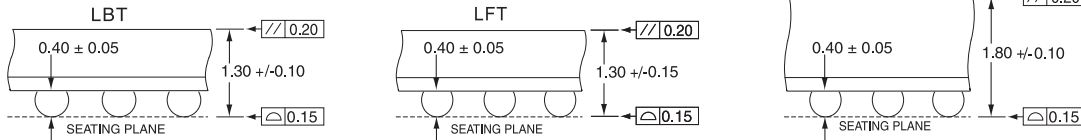Tel. 1-408-200-8000
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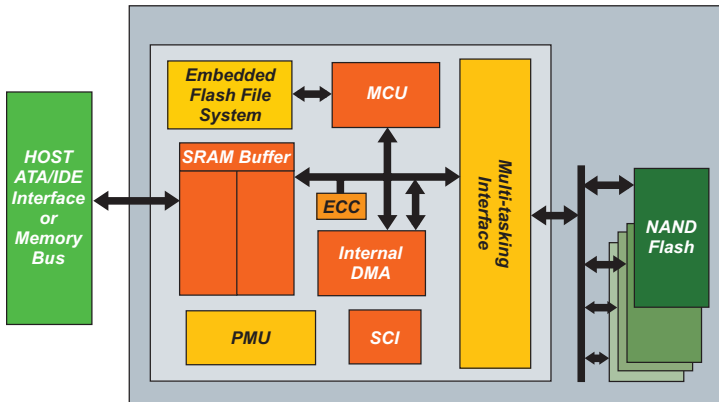
PATA NANDrive Package Diagrams

91-ball BGA package
LBT is 12mm x 24mm
FT and LFT are 14mm x 24mm
Pb-free (RoHS compliant)

TOP VIEW

24.0 ±0.1

12.0 ±0.1

14.0 ±0.1

10 9 8 7 6 5 4 3 2 1

A B C D E F G H J K L M N P R T

A1 CORNER

Note: 1. All linear dimensions are in millimeters.
2. Untoleranced dimensions are nominal target values.
3. Coplanarity: 0.15 mm.
4. Ball opening size is 0.40 mm (± 0.05 mm).

BOTTOM VIEW

0.50 ± 0.05 (91x)

9.0

1.0

7.0

1.0

10 9 8 7 6 5 4 3 2 1

T R P N M L K J H G F E D C B A

A1 CORNER

SIDE VIEW
LBT, LFT, FT
(Various heights)

1mm

DETAIL VIEW

LBT
0.40 ± 0.05
// 0.20
1.30 +/-0.10
▱ 0.15
SEATING PLANE

LFT
0.40 ± 0.05
// 0.20
1.30 +/-0.15
▱ 0.15
SEATING PLANE

FT
0.40 ± 0.05
// 0.20
1.80 +/-0.10
▱ 0.15
SEATING PLANE

PATA NANDrive Block Diagram

HOST ATA/IDE Interface or Memory Bus

Embedded Flash File System

MCU

SRAM Buffer

ECC

Internal DMA

Multi-tasking Interface

PMU

SCI

NAND Flash

Product Lineup

85 Series PATA NANDrive			
Capacity	NAND Type	Temp. Range	Package
512 MB	SLC	Industrial	12 x 24 x 1.4mm LBGA
1 GB	SLC	Industrial	12 x 24 x 1.4mm LBGA
2 GB	MLC	Commercial	12 x 24 x 1.4mm LBGA
2 GB	SLC	Industrial	14 x 24 x 1.9mm BGA
4 GB	MLC	Commercial	14 x 24 x 1.45mm LBGA
4 GB	SLC	Industrial	14 x 24 x 1.9mm BGA
8 GB	MLC	Commercial	14 x 24 x 1.45mm LBGA
8 GB	SLC	Industrial	14 x 24 x 1.9mm BGA
16 GB	MLC	Commercial	14 x 24 x 1.9mm BGA
32 GB*	MLC	Commercial	14 x 24 x 1.9mm BGA

*under development

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For more information please contact your local Greenliant Sales Representative.
See the "Sales" page of www.Greenliant.com for complete listings.