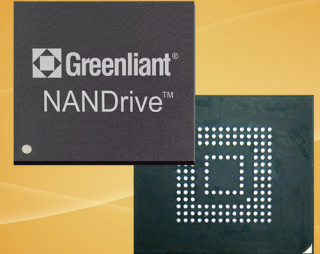# Greenliant®

eMMC NANDrive™

85VM Series   Product Brief

Product Description

The eMMC NANDrive™ family of embedded solid state drives (SSDs) integrate Greenliant's advanced eMMC controller with one or more NAND flash die in a multi-chip package. eMMC NANDrive is available with 1-bit-per-cell (SLC), 2-bit-per-cell (MLC) or 3-bit-per-cell (TLC) NAND to meet customer requirements for lifespan, endurance and performance. Greenliant's high-reliability SLC NANDrive products use industry leading EnduroSLC™ Technology to address the most demanding embedded applications.

Ideal for automotive, industrial, medical, video and networking applications, eMMC NANDrive is compatible with NXP, NVIDIA, TI, Intel, AMD and other popular chipsets. It operates between -40 and +85 degrees Celsius, giving customers data storage that can withstand extreme conditions. Available in both 100-ball and 153-ball packages and in multiple capacities, these space-saving products are designed with enhanced data integrity and security features.

Greenliant® NANDrive™

www.NANDrive.com

Key Features

Industry Standard eMMC Interface
- Supports JEDEC eMMC 5.1 (JESD84-B51)
- Backward compatible with previous eMMC versions

Wide Range of Products
- Available in multiple NAND configurations to meet endurance, data retention requirements
- SLC NANDrive SSDs with 75K, 150K, 400K endurance enabled by Greenliant's proprietary EnduroSLC Technology

Power Management
- Immediately disables unused circuitry without host intervention
- Power interrupt data protection
- Integrated voltage detector

Latency Management
- Reduces latencies due to background operation during time critical read/write operations

High Performance
- Sequential Read / Write Performance* up to 139 MB/sec / 227 MB/sec
- Supports HS200 / HS400 modes
- Clock speed up to 200 MHz
- Supports Dual Data Rate (DDR) modes
- High Priority Interrupt (HPI) helps prioritize important host requests
- *VX Series measured in HS400 mode

Robust Firmware
- Implements advanced global and group wear leveling to maximize product lifespan
- Embedded flash file system (FFS) enables seamless capacity migrations with no change to host software

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

Bad Block Management
- Replaces bad blocks with spare blocks in the NAND flash before uncorrectable errors occur
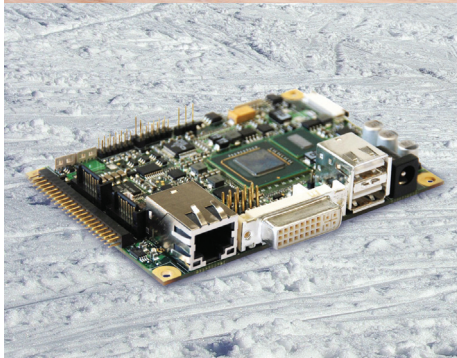
Data Security
- Permanent, temporary and power-on write protection for entire device and specific partition
- Enhanced write protection
- Supports RPMB / Sanitize / TRIM for sensitive data protection

Package and Capacity Options
- 100-ball BGA package with 1mm ball pitch: 2 GB - 8 GB
- 153-ball BGA package with .5mm ball pitch: 2 GB - 64 GB

Industrial and Wide Temperatures
- Industrial operation: -40°C to +85°C
- Wide operation: -25°C to +85°C

Applications

— *In-vehicle infotainment*
— *GPS and telematics*
— *Data recorder*
— *Video conferencing*
— *Tablet PC*
— *Multi-function printer*
— *Point-of-Sale terminal*
— *VoIP system / PBX*
— *Wireless base station*
— *Router / Gateway / Switch*
— *Set-top box*
— *Industrial PC / Single-board computer*
— *Ultrasound and medical imaging*
— *Industrial automation and control*
— *Test and measurement equipment*
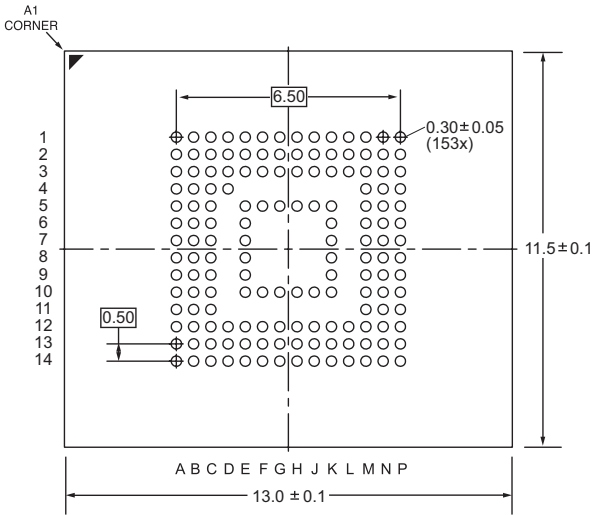— *Video surveillance / ID terminal*

Greenliant
3970 Freedom Circle, Suite 100
Santa Clara, CA 95054 USA
Tel. 1-408-200-8000
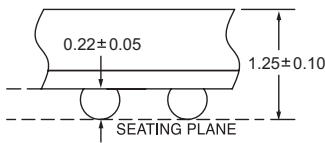Fax 1-408-200-8099

www.Greenliant.com

eMMC NANDrive Package Diagrams

153-ball LFBGA / TFBGA package
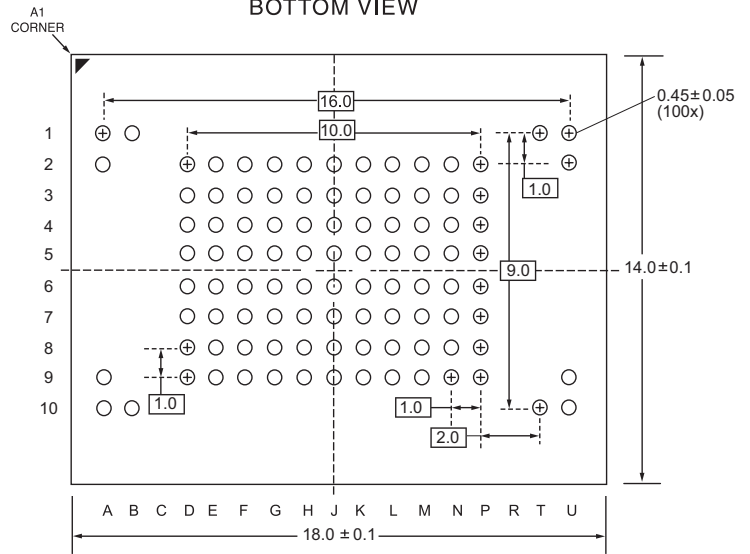11.5mm x 13mm x 1.35mm / 1.00mm
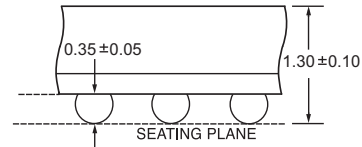Pb-free (RoHS compliant)

BOTTOM VIEW

DETAIL VIEW

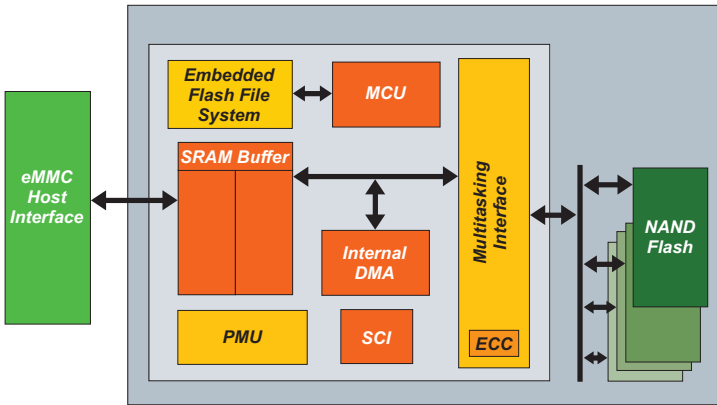## 100-ball LBGA package
14mm x 18mm x 1.40mm
Pb-free (RoHS compliant)

BOTTOM VIEW

DETAIL VIEW

eMMC NANDrive Block Diagram

eMMC Product Lineup

85VM Series eMMC NANDrive			
Product Series / Capacity	NAND Configuration / Endurance	Package Type	Temperature Range
EX 2 GB – 4 GB 2 GB – 32 GB	1-bit-per-cell SLC NAND / 75K, 150K, 400K P/E cycles*	100-ball LBGA 153-ball LFBGA	Industrial -40°C to +85°C
MX 8 GB 8 GB – 64 GB	2-bit-per-cell MLC NAND / 5K P/E cycles	100-ball LBGA 153-ball LFBGA	Industrial -40°C to +85°C
VX 16 GB – 64 GB	3-bit-per-cell TLC NAND / 3K P/E cycles	153-ball TFBGA	Wide -25°C to +85°C

*Designed with Greenliant's advanced EnduroSLC Technology
400K endurance offered up to 16GB

EnduroSLC™

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WeChat ID: Greenliant

NANDrive FAQs: www.greenliant.com/nandrive-faqs
Long-Term Availability: www.greenliant.com/support/#LTA-program

For more information, contact your Greenliant representative: www.greenliant.com/sales

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