

PATA NANDrive™ Socket Board User Guide

Rev 01.000

**Greenliant Systems
Proprietary and Confidential
04/15/2011**

Application Note

April 2011

Disclaimer

By downloading and using these files, you agree:

1. The information delivered hereunder ("Information") is confidential to Greenliant Systems. You may use the Information only to generate or produce a reference PCB ("Product"), or a Modified Product, as defined below. The Information is delivered as is. Greenliant Systems makes no warranty express or implied, with respect to the use, merchantability, or fitness for purpose of the Information, the Product or the Modified Product. Further, Greenliant Systems disclaims any patent infringement liability arising out of, resulting from, or in connection with the use of the Information, the Product, or the Modified Product, or the use of the Information, the Product or the Modified Product, in combination with any other component, products or process. In no event shall Greenliant Systems be liable for any incidental or consequential damages with regard to the Information, the Product, or the Modified Product.
2. You will not sell or otherwise commercially exploit the Product. You will have the right to use the Information to generate or produce a reference PCB in which at least all references to Greenliant Systems markings, logos and part numbers are removed ("Modified Product"), and have the right to commercially exploit the Modified Product.
3. The unauthorized use, disclosure or duplication of the Information or the Product will result in irreparable harm to Greenliant Systems for which legal damages would be an inadequate remedy. Accordingly, in the event of unauthorized use, disclosure or duplication, Greenliant Systems will be entitled to injunctive relief in addition to any other rights or remedies it may have at law or equity.
4. All Intellectual Property rights residing or subsisting in the Information or the Product belongs to Greenliant Systems.

Identification and Warnings of Safety Hazards

Greenliant uses the following system to identify the severity of the hazards associated with this product:

"DANGER" Imminently hazardous situation that, if not avoided, will result in death or serious injury.

"WARNING" Potentially hazardous situation that, if not avoided, could result in death or serious injury.

"CAUTION" Potentially hazardous situation that, if not avoided, may result in minor or moderate injury or property damage.

Table of Contents

1 Introduction..... 5

1.1 Socket Board Styles 5

1.2 Board Layout 5

2 Installation 8

2.1 Socket Board-to-ATA Platform Connection and Setup 8

2.2 Detect the Device 8

2.3 Add a New Drive 9

2.3.1 To add a drive in Windows XP: 9

2.3.2 To connect as a physical drive: 10

2.3.3 To connect as an OS-partitioned drive: 11

2.3.4 To add a drive in DOS: 11

3 Schematic..... 12

Application Note

April 2011

Revision History

Number	Description	Date
01.000	Converted to Greenliant format	04/15/2011

1 Introduction

The NANDrive™ integrated circuit (IC) is a high-performance, fully-integrated, embedded flash solid-state drive. It combines an integrated ATA Controller and NAND Flash in a multi-chip package. This product is ideal for solid-state mass storage applications offering new and expanded functionality while enabling cost-effective designs.

The NANDrive Socket Board is a platform for the NANDrive and is useful in situations where soldering the NANDrive device is impractical. Typical applications for the NANDrive Socket Board are device evaluation, updating firmware on multiple devices, and copying images from one device to another.

The NANDrive Socket Board features:

- NANDrive mounting socket (LBTE or LFTE/FTE package)
- ATA connector (40 pin or 44 pin)
- Power LED
- NANDrive DASP activity LED
- Master/Slave select
- Cable Select and CSEL control
- SCI Port connect for firmware status monitoring
- WP#_PD# NANDrive function assert jumper

1.1 Socket Board Styles

The NANDrive Socket Board is available in four styles. Match the socket board to your NANDrive device. For NANDrive devices using the 12 mm x 24 mm LBTE package, you must use one of the LBTE socket boards. For NANDrive devices using the 14 mm x 24 mm LFTE or FTE package, you must use one of the LFTE/FTE socket boards.

Table 1: Board Styles

Board Style	Connector Style	Greenliant Part Number
LBTE Socket Board For 12 mm x 24 mm package	40-pin ATA	GLS85LD0000-00-0N-40ST-K
	44-pin ATA	GLS85LD0000-00-0N-44ST-K
LFTE/FTE Socket Board For 14 mm x 24 mm package	40-pin ATA	GLS85LD0000-00-0N-40SF-K
	44-pin ATA	GLS85LD0000-00-0N-44SF-K

1.2 Board Layout

The LBTE and LFTE/FTE Socket Boards are available with either a 40-pin ATA or 44-pin ATA connector. See Figures 1 through 3 for board details and Table 2 for pin descriptions.

Application Note

April 2011

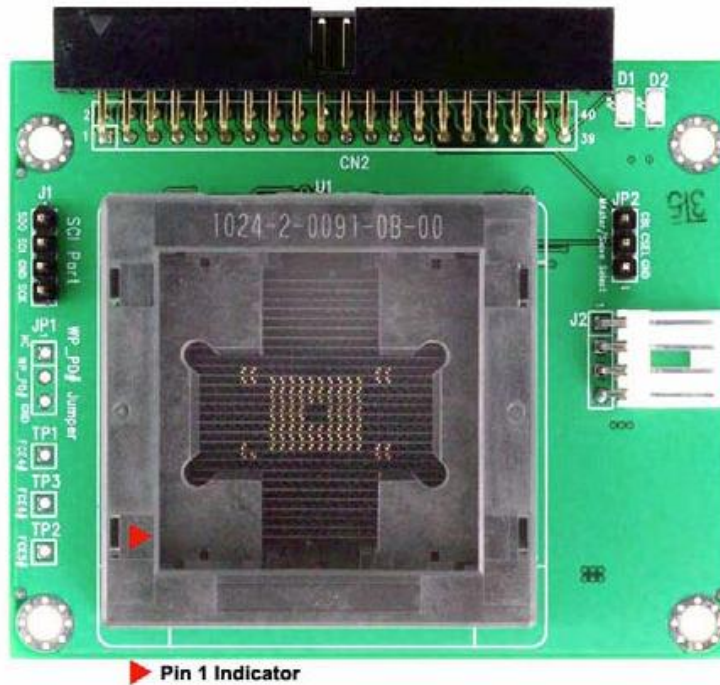


Figure 1: NANDrive Socket Board, 40-pin Connector

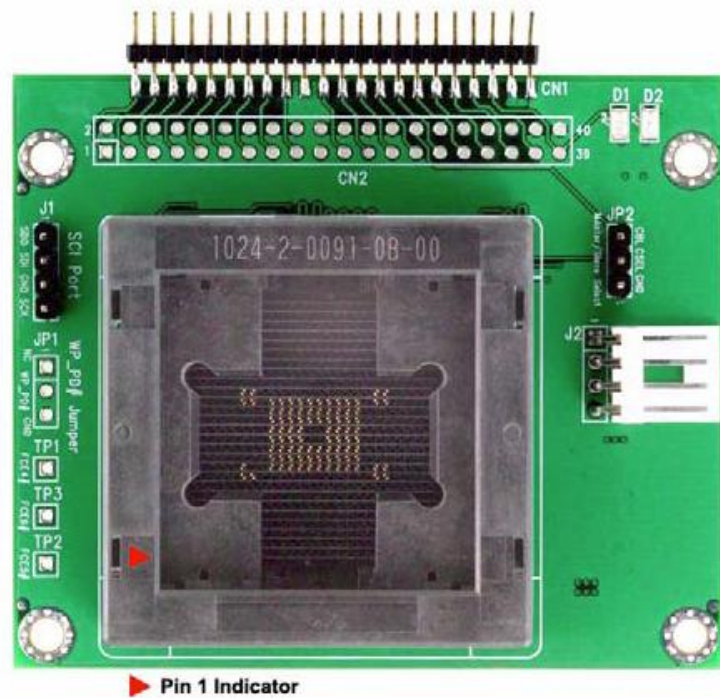


Figure 2: NANDrive Socket Board, 44-pin Connector

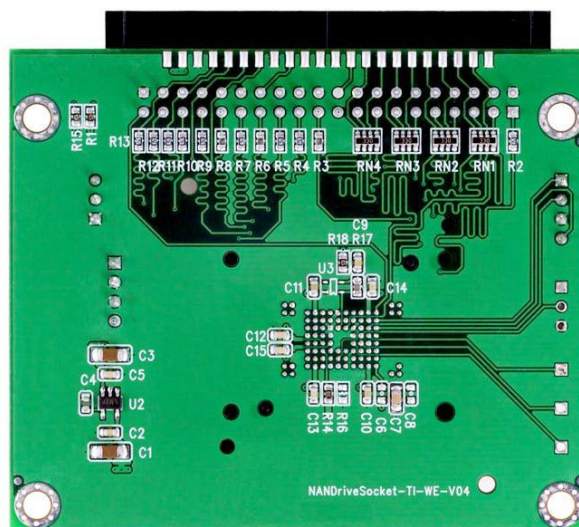


Figure 3: Bottom View (All NANDrive Socket Board Styles)

Table 2: Board Components and Options

Symbol	Description	Notes
CN1	ATA Connector	44-pin
CN2	ATA Connector	40-pin
J1	4-pin SCI Port Header	Monitors firmware activity
J2	4-pin Power Connector	J2.1 = +5V (or 3.3V) J2.2, J2.3 = GND J2.4 = NC
JP1	Write-Protection or Power-Down Configuration Jumper	Either function is enabled by connecting Pin 2 to Pin 3. Pin 2 default is Write-Protection, but can be defined as Power-Down using software.
JP2	Master/Slave selector	Pins 1 and 2 shorted = Master mode Pins 2 and 3 shorted = Cable select No pins shorted = Slave mode
D1	Green LED	Indicates Read/Write activity. Connected to device DASP pin.
D2	Red LED	Indicates power is on
R2-R13	ATA Signal Termination Resistor	82 Ohms
RN1-RN4	ATA Data Signal Termination Resistor	33 Ohms
U1	NANDrive Device BGA Socket	BGA Socket (LBTE or LFTE/FTE Style)
U2	3.3V Regulator	TC1185-3.3VCT713
TP1-TP3	Firmware Test Pins	FCE4#, FCE5#, FCE6#

Application Note

April 2011

2 Installation

Perform these two tasks to install the evaluation board:

- 1 Connect the NANDrive socket board to an ATA platform.
- 2 Configure the socket board to your system.

2.1 Socket Board-to-ATA Platform Connection and Setup

The evaluation board connects to a variety of ATA platforms. The method of connection is determined by the style of the NANDrive socket board and the ATA platform type.

CAUTION: Static electricity can damage electronic devices. To prevent static damage, discharge static electricity before you touch any electronic components.

Connection

To connect the board to your system:

1. Disconnect power to the ATA platform.

CAUTION: Ensure that power is disconnected before connecting /disconnecting the socket board to the ATA platform. Failure to do so can result in damage to the socket board or the ATA Platform.

2. If your socket board has a 40-pin ATA connector, connect the peripheral power cable to J2 on the socket board. If your socket board has a 44-pin connector, no additional connections are required because the power is applied to the board through the 44-pin connector.

Note: Power applied to pin J2.1 is connected directly to the NANDrive VDDQ, and to VDD via a 3.3V voltage regulator. The voltage that drives the ATA connector must be the same voltage as the power to the J1 connector.

- 3 Typically, the 40-pin socket board is connected to the system using a standard PC IDE cable. The 44-pin socket board is connected to the system by using either a mating 44-pin connection or by using a 44-pin to 40-pin converter board with power connectivity.

Setup

Once the power connection has been made to the NANDrive Socket Board, you are ready to set up the socket board for your particular use.

1. Set JP2 to either Master or Slave on the evaluation board. If another device uses the same IDE cable as the NANDrive, one device must be set as Master and the other as Slave.
2. Configure JP1 to either WP (Write Protect) or PD (Power Down) functionality by issuing a specific ATA command. See any NANDrive product Data Sheet.
3. Insert the NANDrive into the socket board, mating the 3-ball pattern on the bottom of the NANDrive to the 3-ball pattern on the socket.
4. Connect power to the ATA platform.

2.2 Detect the Device

When you power on the PC, the BIOS should detect and report the correct density of the NANDrive attached to the evaluation board. If the BIOS does not detect the NANDrive, contact Greenliant for assistance.

2.3 Add a New Drive

Consult the PC's user manual for specific instructions on how to add a new drive. Below are the directions for Windows XP and DOS systems.

The NANDrive can be installed as either a physical drive or as an OS-partitioned drive. When configured as a physical drive, do not access the drive through the OS. When configured as an OS-partitioned drive, access the drive through the OS.

2.3.1 To add a drive in Windows XP:

1. Right-click on **My Computer**.
2. Select **Manage** from the drop-down list. This will open the **Computer Management** interface as shown in Figure 4.

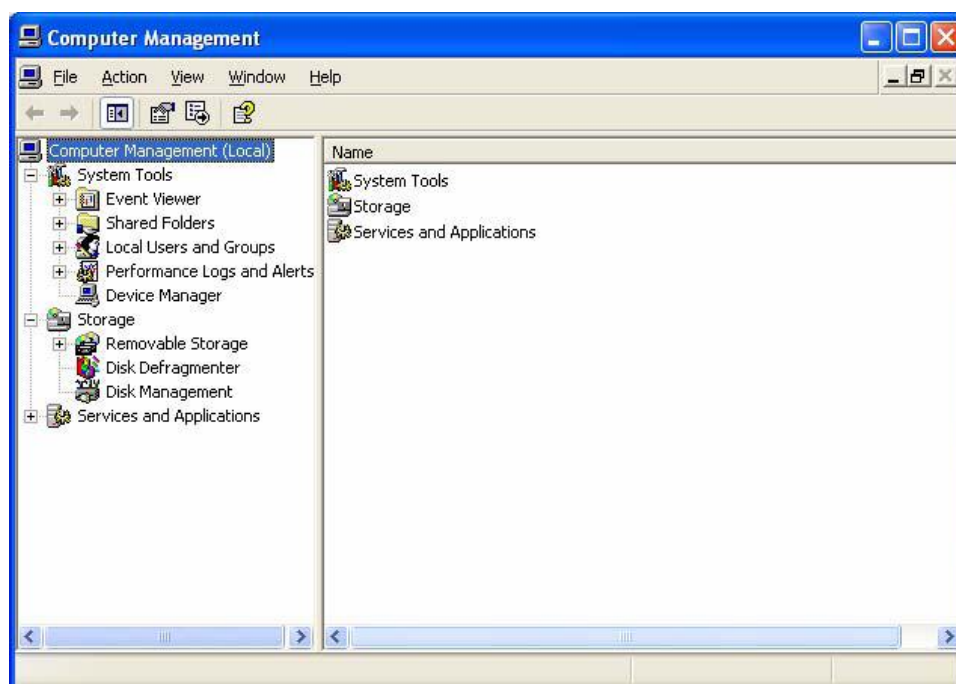


Figure 4: Computer Management Interface

3. In the left-hand pane of the **Computer Management** interface, click on **Device Manager**. The NANDrive will appear in the right-hand window under **Disk Drives**. See Figure 5.

Application Note

April 2011

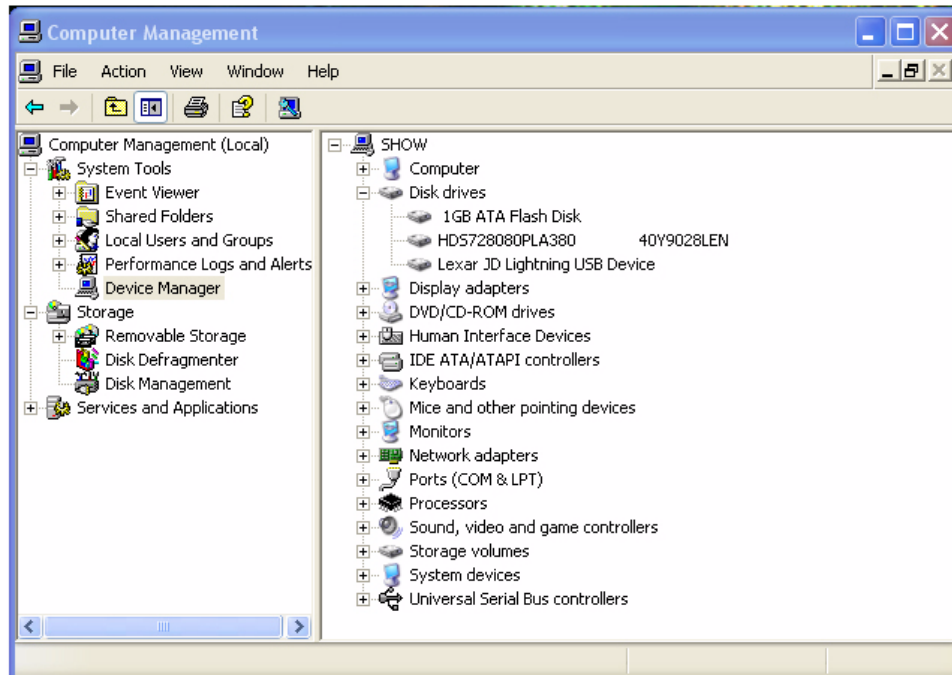


Figure 5: Device Manager

4. In the left-hand pane, click on **Disk Management**. Choose if you want to connect the NANDrive as a physical drive or as a partitioned drive. Follow the appropriate directions below.

2.3.2 To connect as a physical drive:

1. Right-click on the NANDrive icon in the right-hand pane. See Figure 6.
2. Select **Delete Partition**. The label for the NANDrive will change to “unallocated” and the drive will not show up as a resource under **My Computer**.

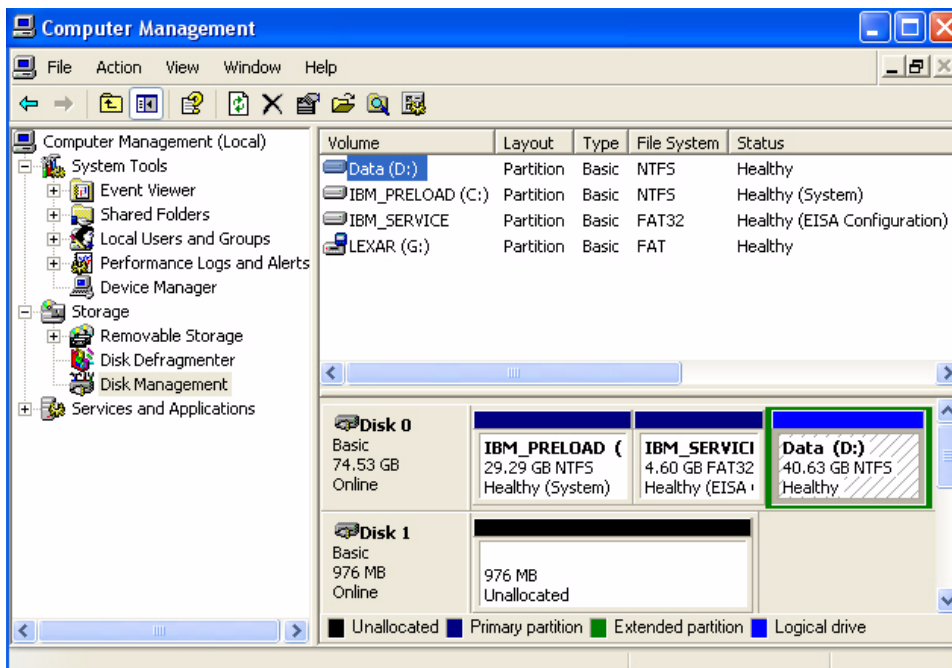


Figure 6: Connect as a Physical Drive

2.3.3 To connect as an OS-partitioned drive:

1. Right-click on the **NANDrive** icon in the right-hand pane. See Figure 7.
2. Select **New Partition**. Follow the prompts to add a new partition. The NANDrive will now show up as a drive-lettered resource under **My Computer**.

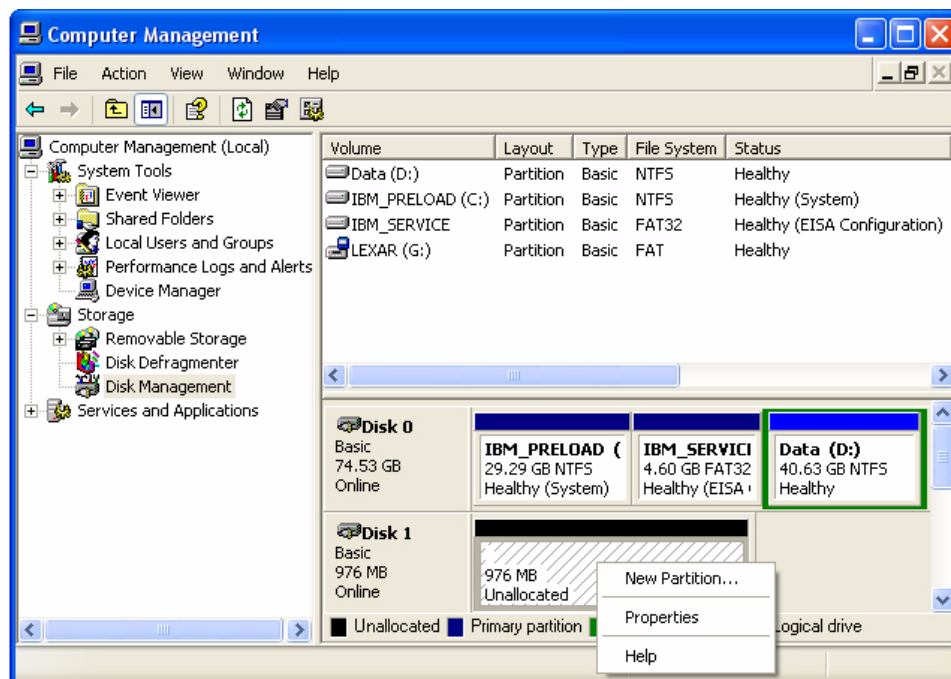


Figure 7: OS-Partitioned Drive

3. Go to **My Computer** to confirm that the NANDrive is connected in your chosen configuration.

2.3.4 To add a drive in DOS:

1. Type FDISK.exe. This will create a partition.
2. Type FORMAT.exe. This will format the new partition.

Application Note

April 2011

3 Schematic

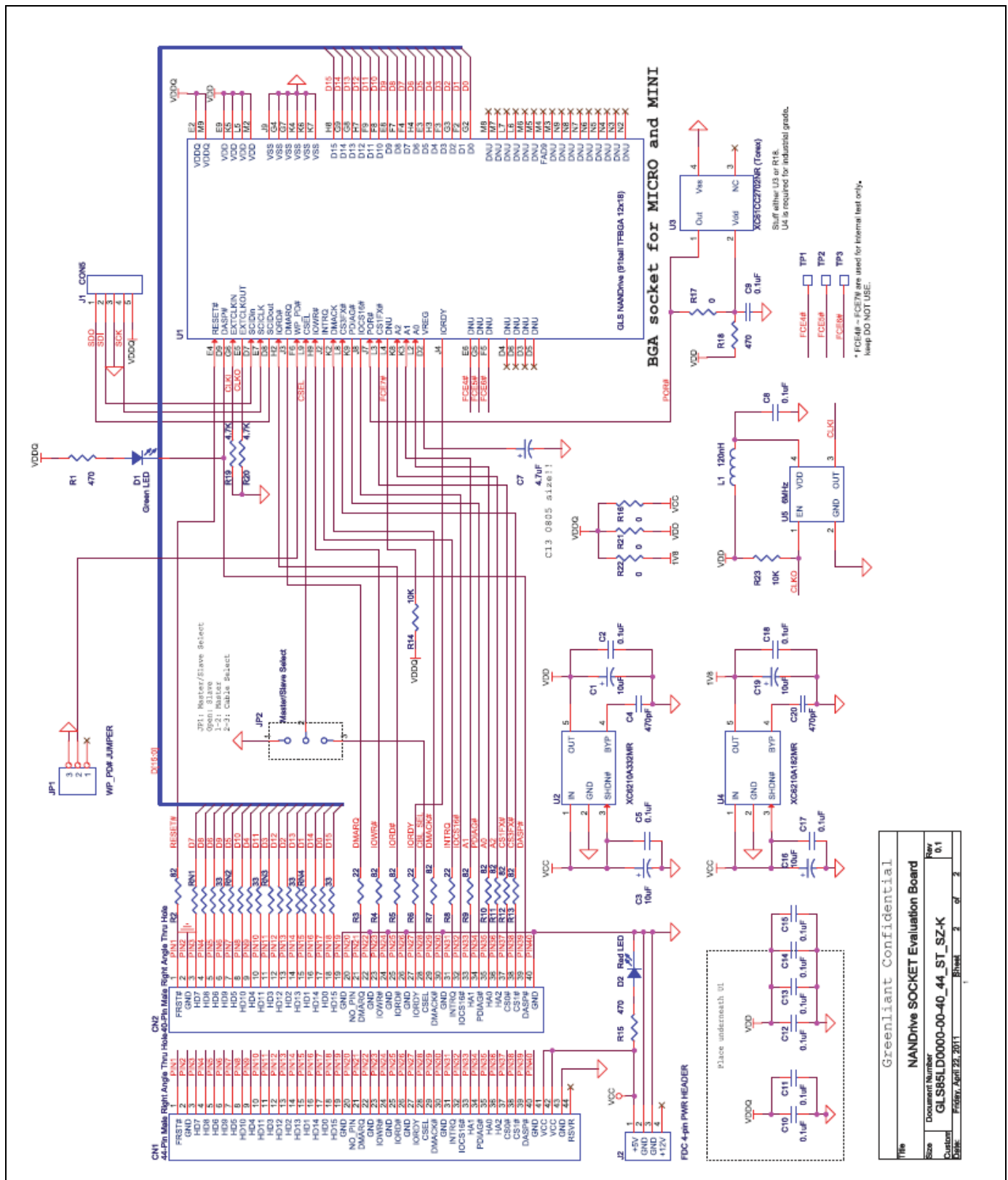


Figure 8: Evaluation Board Schematic