TUSB9261 DEMO Board Guide

User's Guide

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TUSB9261 DEMO Board Block Diagram

Figure 1 represents the block diagram of the TUSB9261 DEMO Board. The board is designed to be powered from either a 12-V DC wall-wart (not supplied) or via USB cable power.

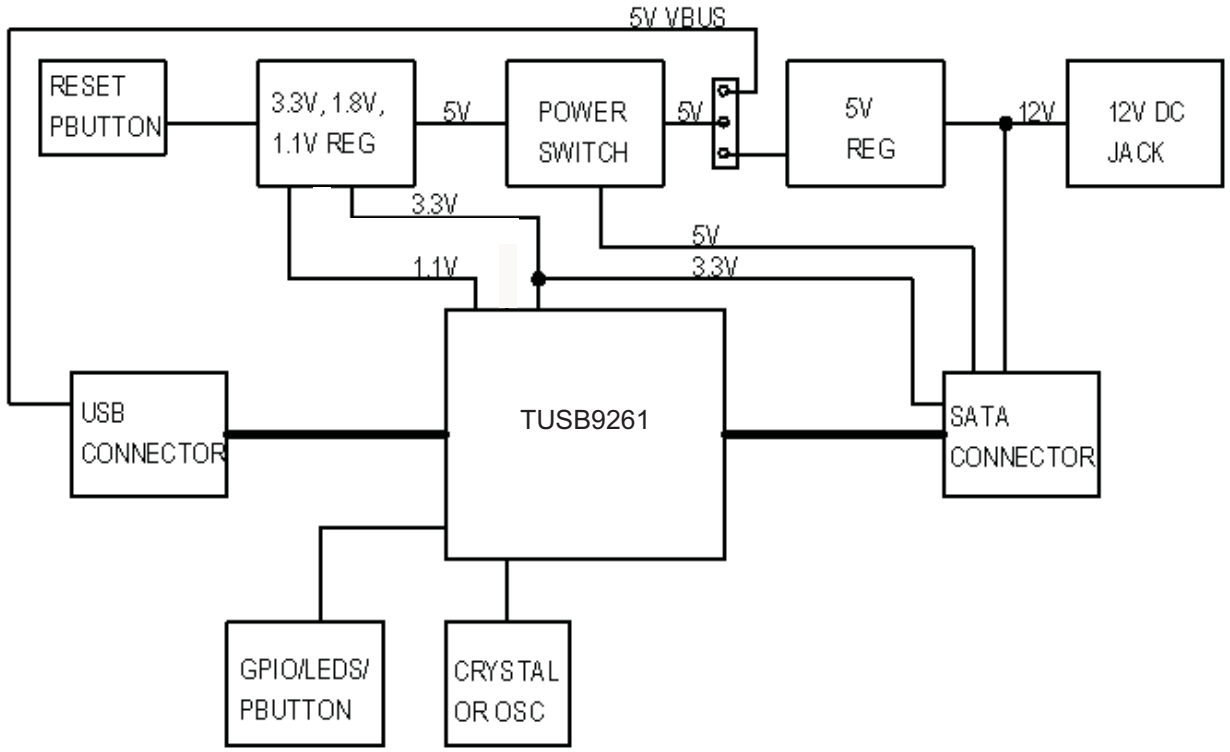

Figure 1. Figure 1. DEMO Board Block Diagram

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Component Location

Figure 2 shows the general location of major components on the TUSB9261 DEMO Board.

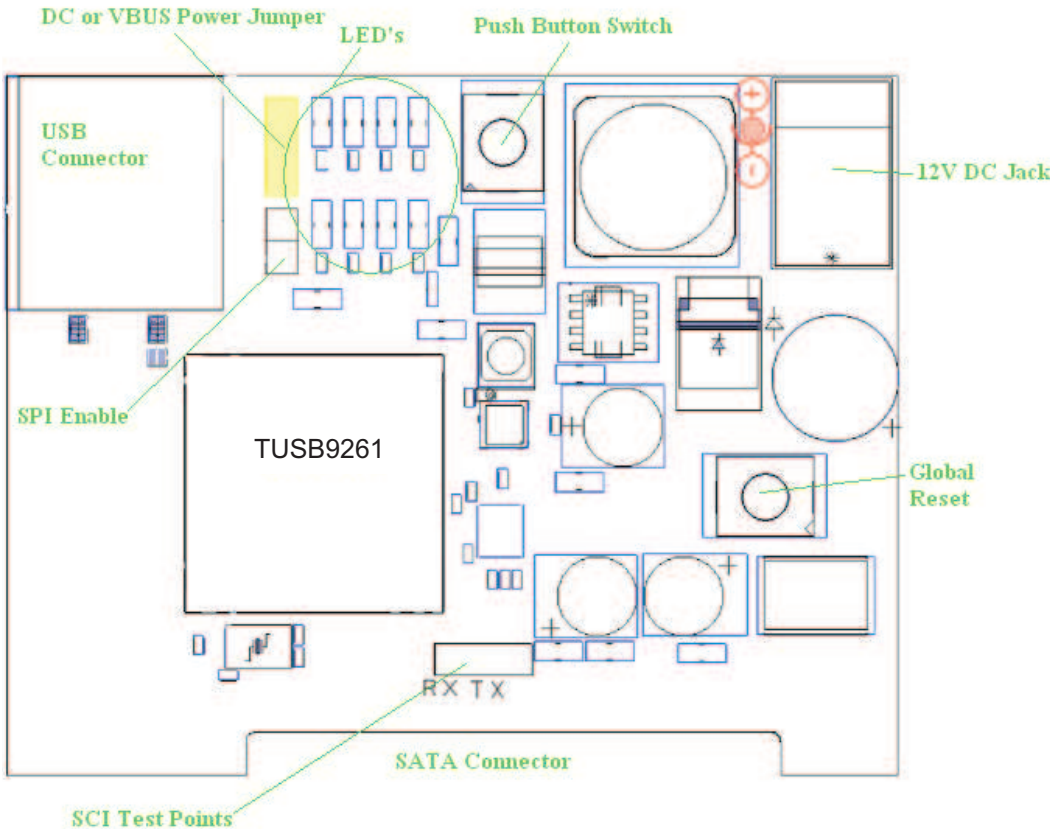

Figure 2. Figure 2. Component Location

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12-V DC Jack

The DEMO Board can operate from a standard DC jack for connecting an external 12-V wall-wart. The wall-wart should be rated for 12 V with at least a 2-A current rating. The tip of the DC jack has positive polarity. A wall-wart is not supplied with this reference design demonstration module, leaving it capable of bus power mode by default. In this mode, only Solid State Drives will work. If other higher current hard drives are to be used a wall-wart will have to be used.

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Cable Power vs. Self Power

The DEMO Board can be configured to operate off of cable power or use the 12-V wall-wart. To configure the board to use cable power jumper J4 must have a jumper placed across pins 1 and 2. When configured for cable power mode only 5-V and 3.3-V are available at the SATA connector. Therefore only SATA devices such as SSD drives may operate in this mode.

For self power mode J4 must have a jumper placed across pins 2 and 3. In this mode any SATA device can operate since 12 V, 5 V, and 3.3 V are available at the SATA connector.

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Power Switch

The DEMO Baord uses a TI TPS2561 power switch. This switch serves two purposes. It limits the amount of in-rush current on VBUS and it allows power to the SATA connector to be switched via the TUSB9261. The switch is controlled via GPIO10 from the TUSB9261 and power faults can be monitored by GPIO11. By default the DEMO Board is configured to always apply power to the SATA connector and power faults are not monitored.

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3.3-V and 1.1-V Regulator

The DEMO Board utilizes a TI TPS650061 regulator to power the TUSB9261 and associated circuitry.

1 Push Button Reset

Connected to the TPS650061 is a push button (SW2) that can be used to reset the TUSB9261 to its default state. When pressed the global reset terminal (GRST#) on the TUSB9261 will be driven low.

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SPI

The TUSB9261 supports a SPI interface connected to a SPI flash device. The flash device is used to hold the firmware for the TUSB9261.

For normal SPI operation a jumper on J13 must be populated. For reprogramming of the SPI flash device it may be necessary to temporally remove J13. Refer to the TUSB9260 Flash Burner User Guide (SLLU125) for more information about programming the SPI flash.

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Crystal or Oscillator Support

The TUSB9261 DEMO can support either a crystal or oscillator reference clock. By default the board is configured to use a 25-MHz crystal. To use an oscillator R23 and R37 need to be populated with a 0-Ω resistor. C17 and C19 need to be de-populated. The crystal or oscillator should be rated for 1.8 V with PPM of ±100 or better. The frequency of the clock is configurable via resistors R10-R13. Table 1 shows how to populate resistors R10-R13 for desired clock frequency.

Table 1. Table 1. Frequency Select Map

FREQUENCY (MHz)	R10	R11	R12	R13
20		POP		POP
25	POP			POP
30		POP	POP	
40	POP		POP	

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GPIOs/LEDs/PBUTTON

1 GPIO LEDs

Each GPIO is connected to an LED on the DEMO Board. The LEDs are located along the top side of the board (D1 – D8). The LEDs are for test purposes and can be used to indicate device operational states. This is firmware dependent.

2 PWM LEDs

Each PWM is connected to an LED (D3 and D6) on the DEMO Board. PWM LEDs are for test purposes and can be used to indicate hard drive activity or USB activity. This is firmware dependent.

3 GPIO Push Button

There is one GPIO configurable push button (SW1) on the DEMO Board. This push button is connected to GPIO3. This is firmware dependent.

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Default GPIO/PWM Configures States

Table 2 shows the factory default programmed settings for the GPIO and PWM terminals used on the PDK.

Table 2. Table 2. GPIO and PWM Factory Default Settings

GPIO	LED NO.	DEFAULT FUNCTION	DESCRIPTION
0	D1	SW_HB	Software Heartbeat: Flashes to indicate firmware is executing
1	D4	PWR_STATE_0	Power State bit 0 - See Table 3
2	D2	HS_FS_SUSPEND#	High Speed / Full Speed Suspend: Indicates when USB2 high speed or full speed is in the suspended state
3		PBUTTON#	Push Button: Input terminal connected to active low push button
4		SELF_PWR	Bus or Self-powered indicator input - HIGH when self-powered
5	D7	PWR_STATE_1	Power State bit 1 - See Table 3
6	D5	HS_FS_CONNECT#	High Speed / Full Speed Connect: Indicates when a high speed or full speed connection is established
7	D8	SS_CONNECT#	SuperSpeed Connect: Indicates when a SuperSpeed connection has been established
8		UART Tx	Debug port is not pinned out on the TUSB9261DEMO.
9		UART Rx	Debug port is not pinned out on the TUSB9261DEMO.
10		SATA_EN	Used to control power to SATA connector via option resistors R34 and R35.
11		FAULT#	Indicates a power fault
PWM	**LED NO.**	**DEFAULT FUNCTION**	**DESCRIPTION**
0	D3	HDD_ACT#	Disk Activity and Device ON (blink rate varies depending on USB connection speed)
1	D6	MISC_LED0#	

Table 3. Link Power Status

GPIO1	GPIO5	LINK POWER STATUS
Off	Off	U0: Active
On	Off	U1: Idle, fast exit
Off	On	U2: Idle, slow Exit
On	On	U3: Suspend

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Troubleshooting Tips for Windows

If the hard drive can be seen in Device Manager but does not show up in Windows Explorer (as seen below) you may need to partition and format the hard drive. This is typical of a new or corrupted hard drive.

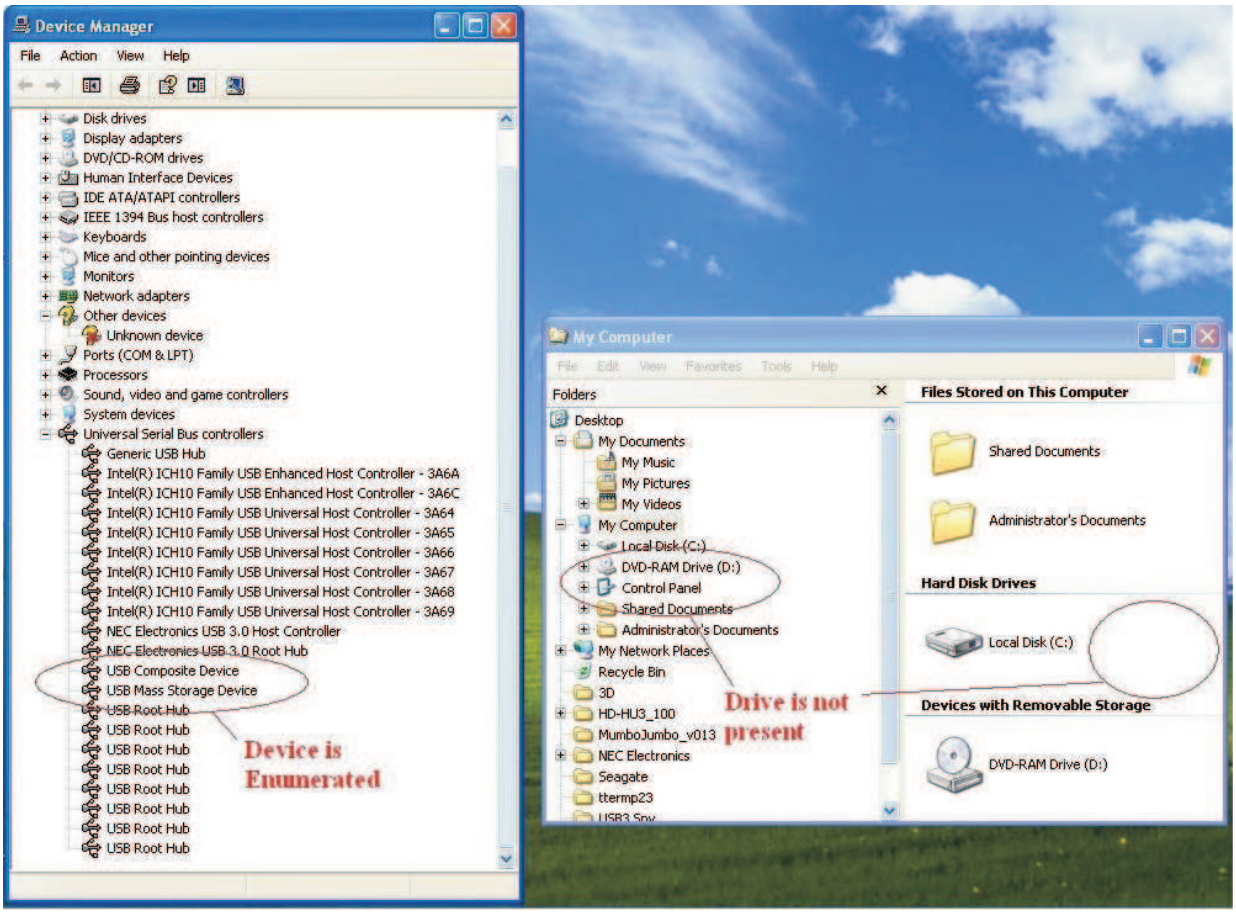

Figure 3. Windows Troubleshooting

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1 Step 1

In the Control Panel, open Administrative Tools → Computer Management. Under Storage, click on Disk Management.

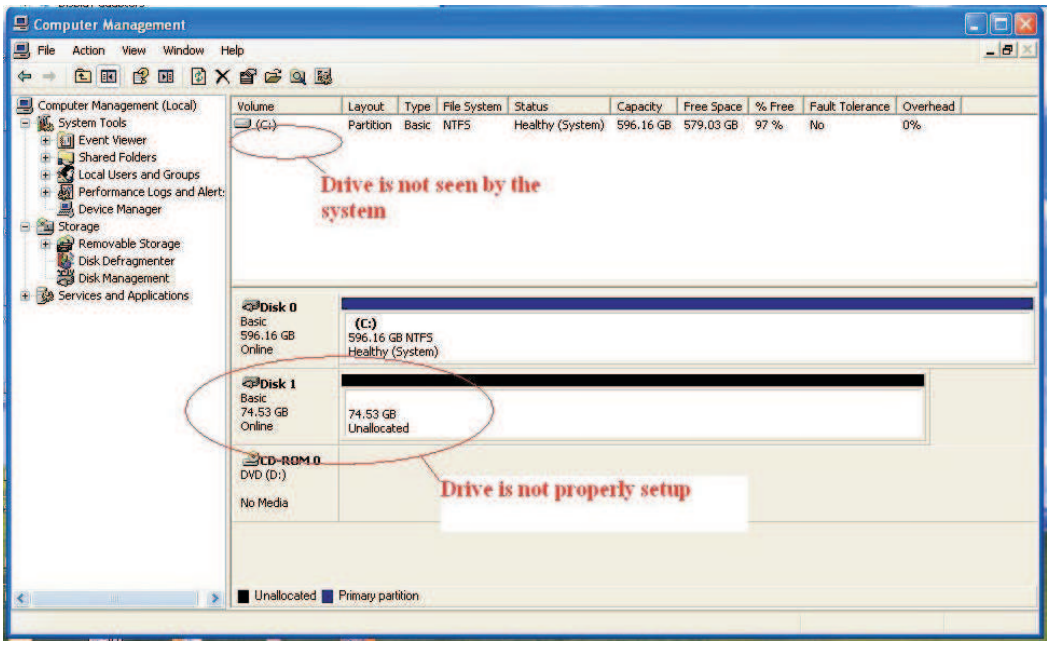

Figure 4. Disk Management

2 Step 2

If you can see the unallocated disk, right click and select New Partition. Follow the Wizard to create a Primary Partition. Make sure to select the “Perform Quick Format” check box.

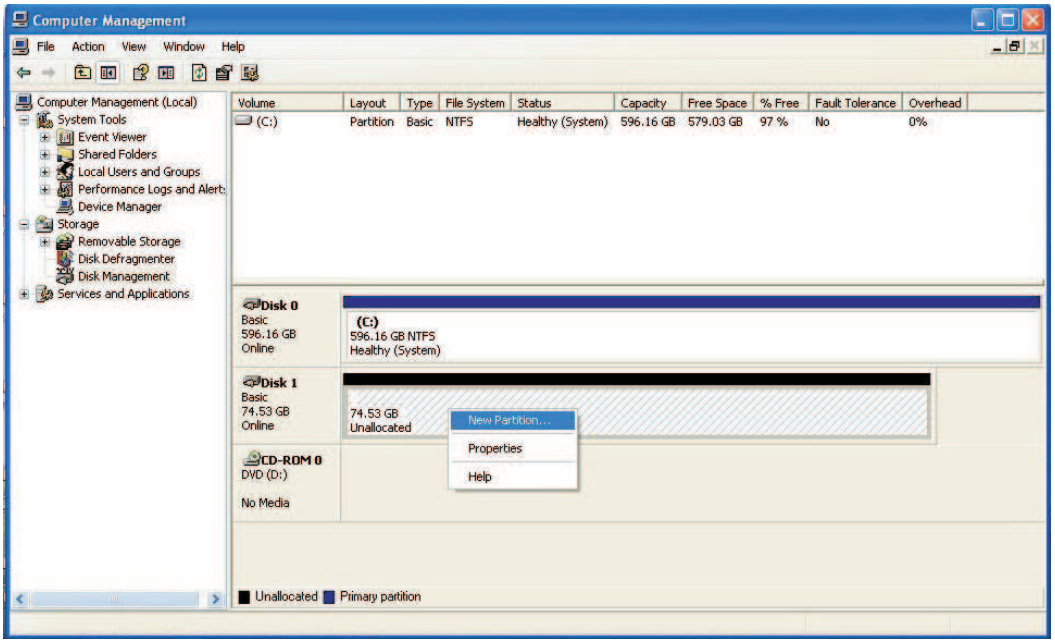

Figure 5. Primary Partition

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Once the disk is properly partitioned and formatted, it will appear as Healthy.

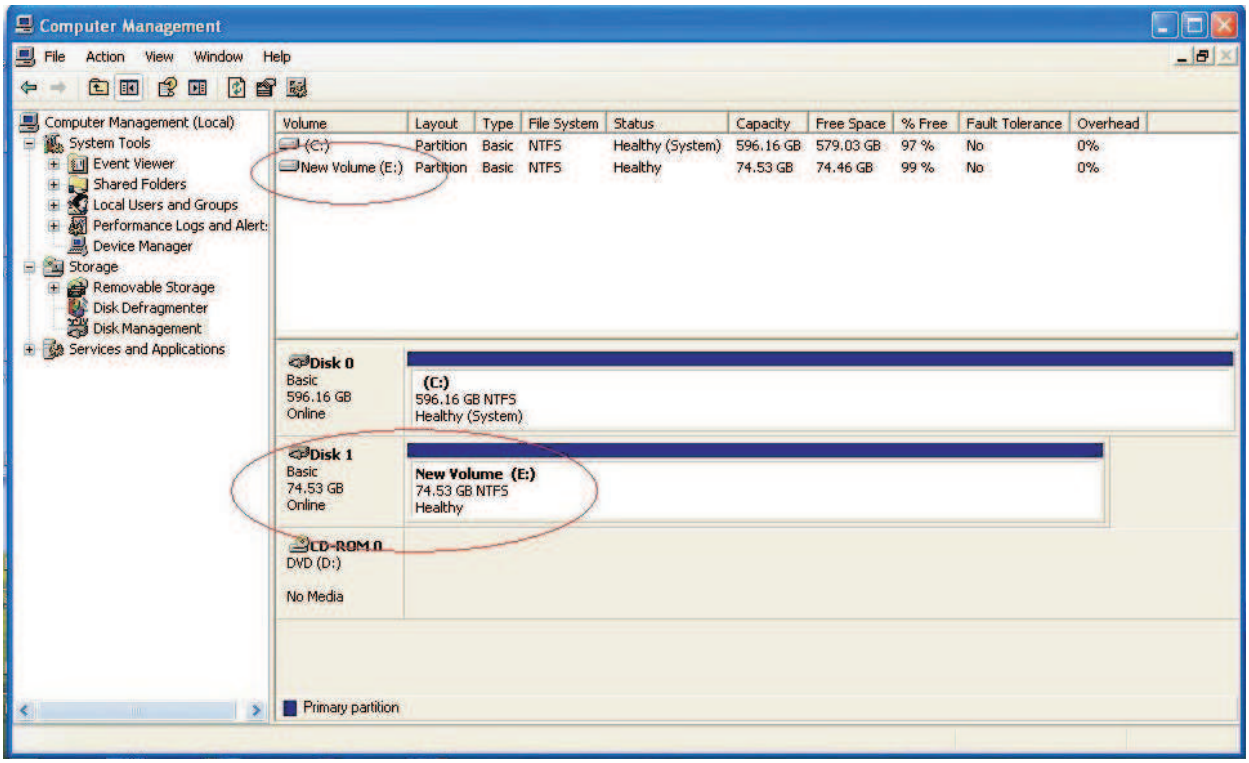

Figure 6. Healthy Disk Status

It will then appear as a drive in Windows Explorer.

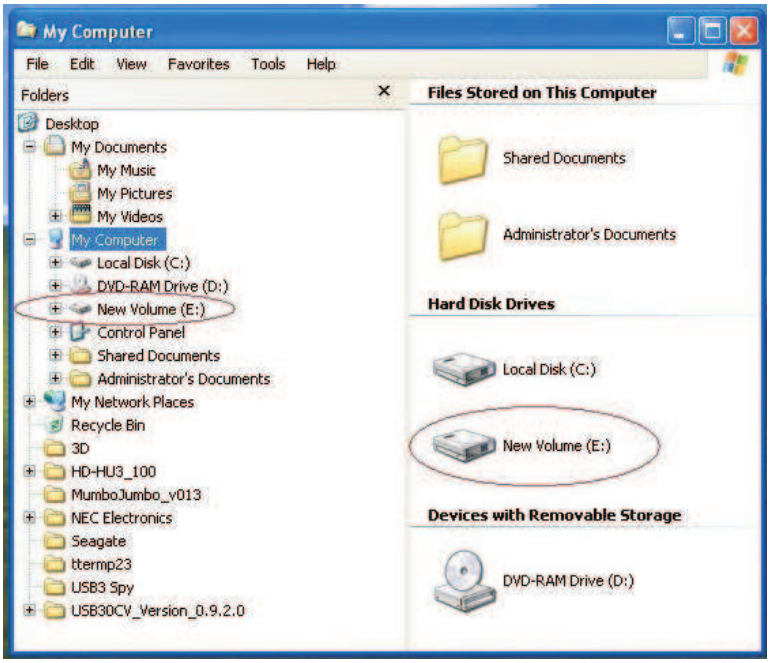

Figure 7. Drive in Windows Explorer

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TUSB9261 DEMO Board Schematic

See following pages.

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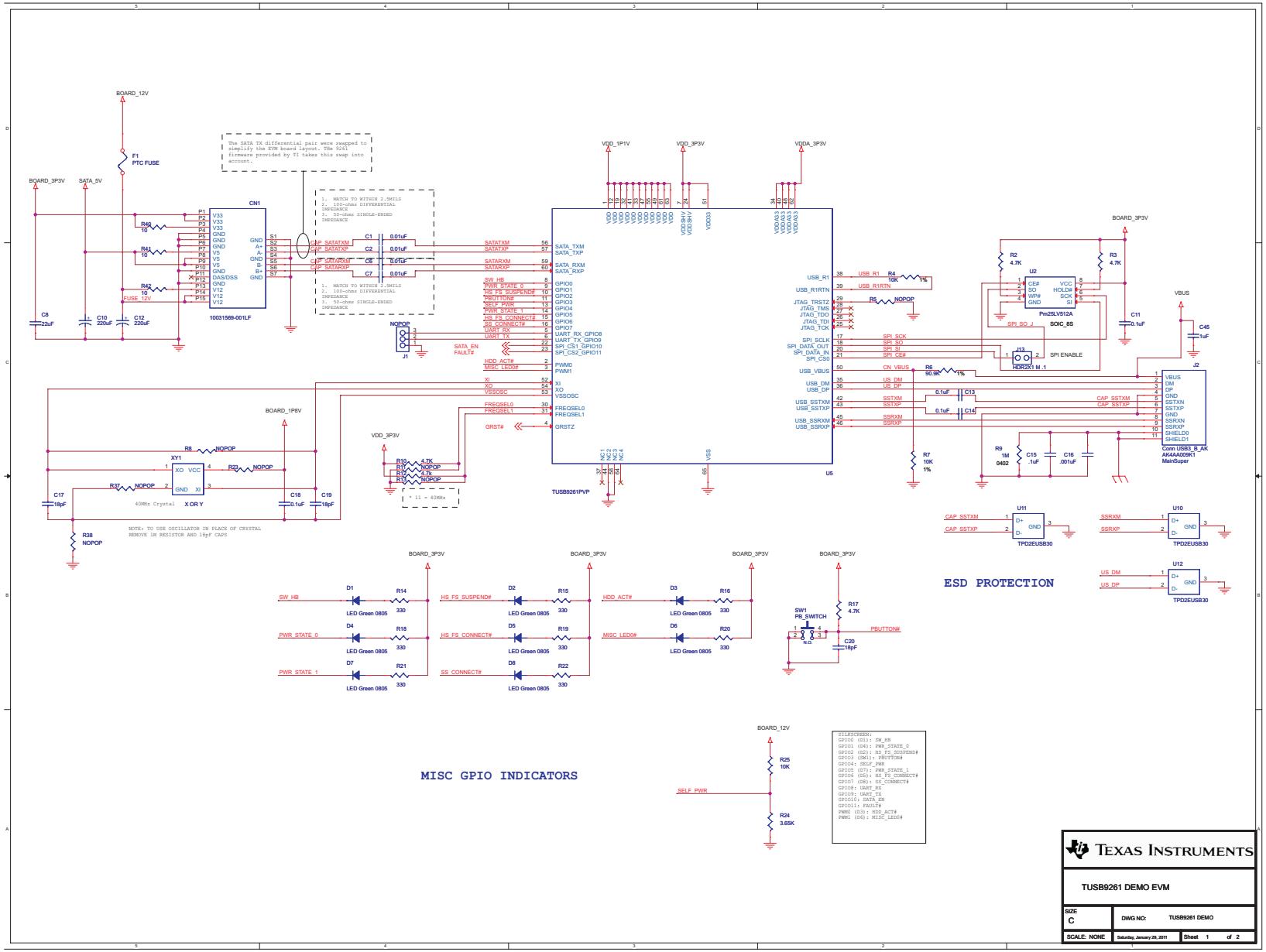

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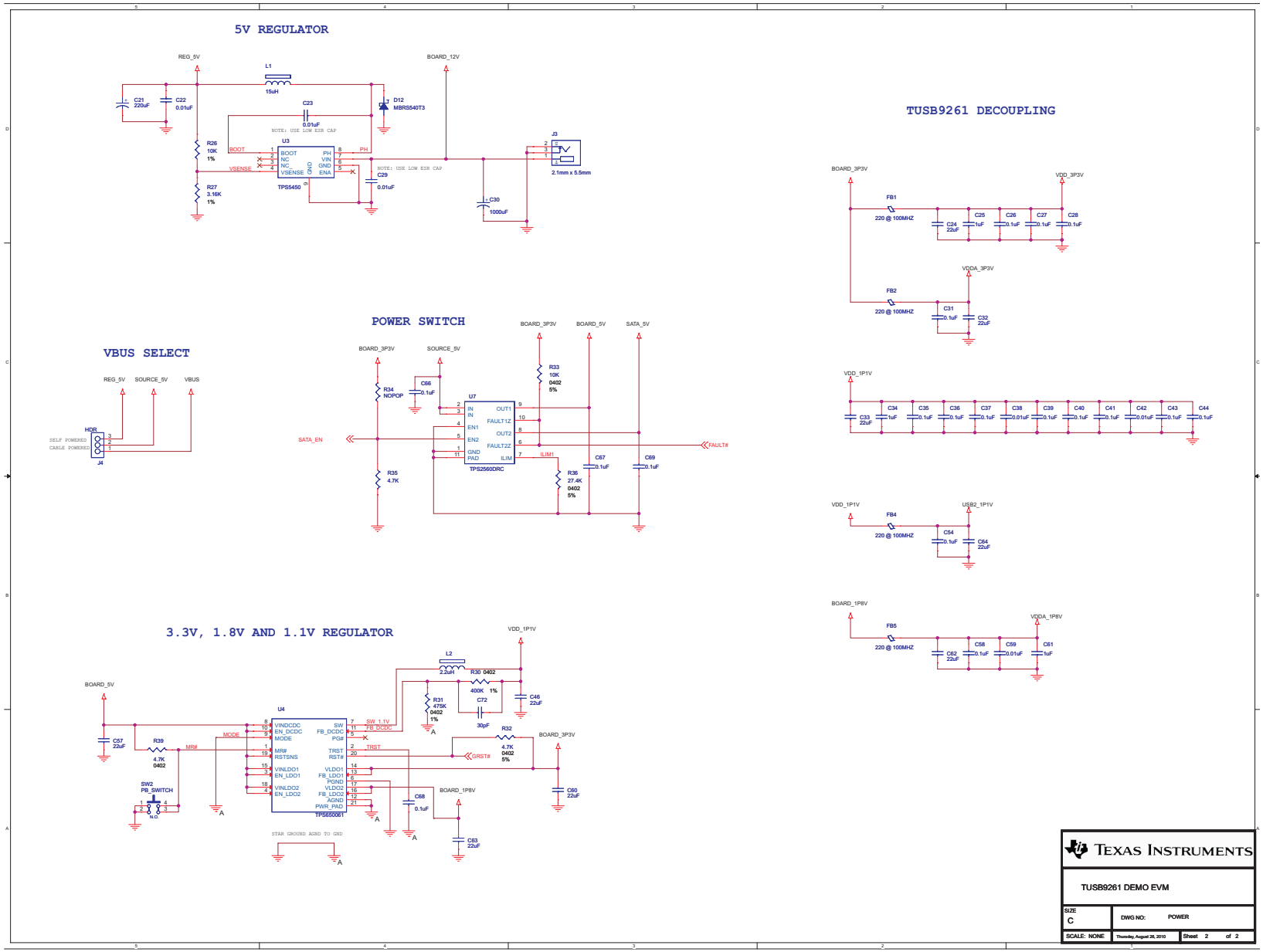

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