

# MAXIM

## DS33M30 Demo Kit

### General Description

The DS33M30 demo kit (DK) is an easy-to-use evaluation board for the DS33M30 Ethernet-over-SONET/SDH devices. Maxim's ChipView software is provided with the demo kit, giving point-and-click access to configuration and status registers from a Windows®-based PC. On-board LEDs indicate receive loss-of-signal, queue overflow, Ethernet link, Tx/Rx, and interrupt status.

Windows is a registered trademark of Microsoft Corp.

### Demo Kit Contents

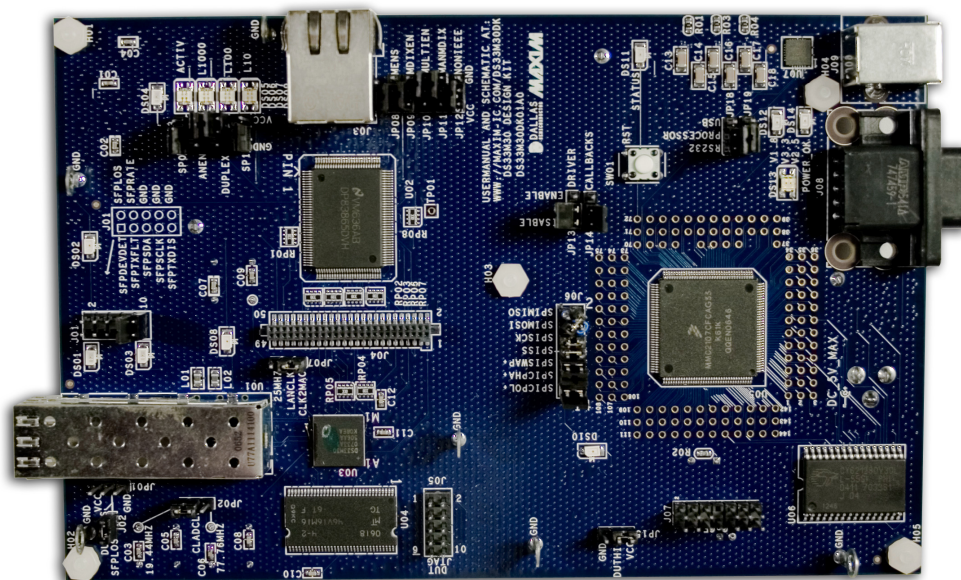
DS33M30DK Board  
 CD Including:  
 ChipView Software  
 DS33M30 Definition Files  
 DS33M30DK Data Sheet  
 DS33M30 Data Sheet

### Features

- ◆ Demonstrates Key Functions of DS33M30 Ethernet Transport Chipset
- ◆ Includes Ethernet PHY Supporting Gigabit Mode
- ◆ Includes Optical SFP Module for SONET/SDH Interface
- ◆ Network Connectors, Transformers, and Termination Ease Connectivity
- ◆ Careful Layout Provides Signal Integrity
- ◆ On-Board Processor and ChipView Software Provide Point-and-Click Access to the DS33M30 Register Set
- ◆ All System Side and Overhead Pins are Easily Accessible for External Data Source/Sink
- ◆ Easy-to-Read Silkscreen Labels Identify the Signals Associated with All Connectors, Jumpers, and LEDs

### Ordering Information

| PART      | TYPE                 |
|-----------|----------------------|
| DS33M30DK | Demo Kit for DS33M30 |



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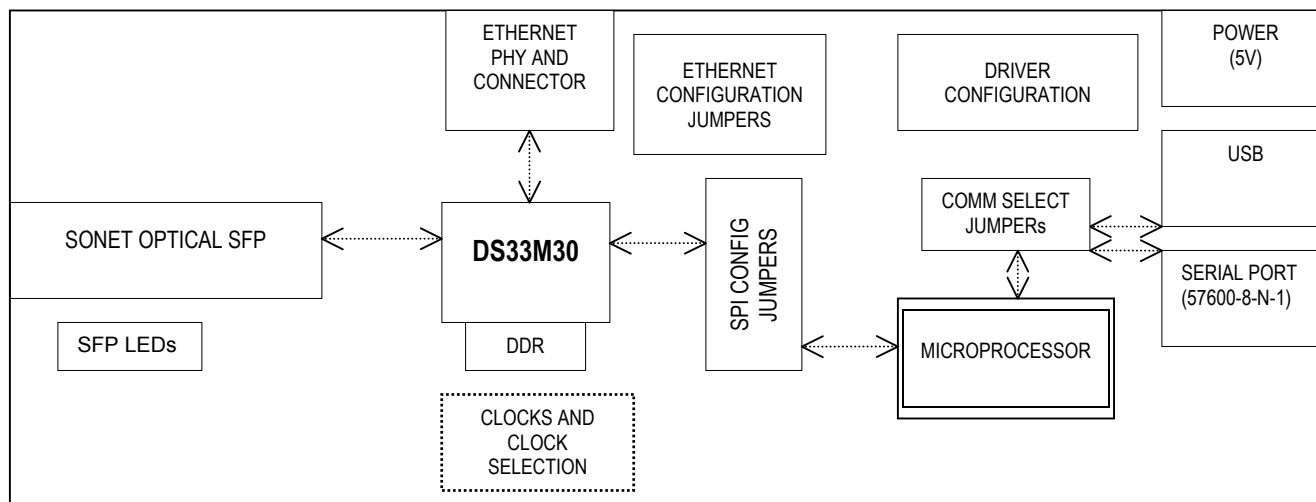
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## 1. Board Floorplan

Figure 1-1. DS33M30DK Board Floorplan



## 2. PCB Errata

DS33M30DK02A0 errata:

- ◆ Silkscreen for JP08 should designate the jumper function as Mac clock enable. Instead it designates the function as MDIX enable
- ◆ Silkscreen for JP09 should designate the jumper function as MDIX enable. Instead it designates the function as Mac clock enable.
- ◆ SRAM devices U06 and UB09 have been reworked to connect pin 1 and pin 2. On the PCB this appears as a solder bridge between pin 1 and pin 2. This has been done to allow either a 128K\*8 or a 512k\*8 SDRAM to be installed and used as a 128K\*8 device.

### 3. File Locations

This demo kit relies upon several supporting files, which are provided on the CD and are available as a zip file from the Maxim website [www.maxim-ic.com/DS33M30DK](http://www.maxim-ic.com/DS33M30DK). All locations are given relative to the directory in the CD/zip file called “\_def\_ini\_DS33M30”.

**Table 3-1. Definition and Configuration Files**

| FILE NAME                                                                                                                                                                        | FILE USAGE                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| .\_DS33M_GlobalSonet.def                                                                                                                                                         | Top level definition file to select in ChipView's register mode. This file will autoload the remaining definition files for the DS33M30 when parallel mode is used. |
| .\ds33M_BufferMan.def<br>.\ds33M_EncapDecap.def<br>.\ds33M_GlobalEth.def<br>.\ds33M_group.def<br>.\ds33M_LanSubscriber.def<br>.\DS33M_serial_1234.def                            | DS33M30 dependent files. These are called by _DS33M_GlobalSonet.def file, which is listed above.                                                                    |
| .\m30_rx_tx_simulation 19mhz.mfg<br>.\m30_STS3c_bert_LoopTime.mfg<br>.\m30_STS3c_SONET_Loopback.mfg<br>.\_m30_STS3c_Ethernet_Loopback.mfg<br>.\_m30_STS3c_GFPNull_NoScramble.mfg | Files for manually configuring the DS33M30.                                                                                                                         |

### 4. Basic Operation

**Note:** In the following sections, software-related items are identified by bolding. Text in **bold** refers to items directly from the EV kit software. Text in **bold and underlined** refers to items from the Windows operating system.

#### 4.1 Powering Up the Demo Kit

- Connect PCB power jack to the wall adapter.
- Connect RS-232 serial cable, or USB cable between the host PC and demo kit.
- Verify that the jumpers are configured as described in [Table 5-1](#).

##### 4.1.1 General

- Upon power-up the power LEDs (DS13, DS12, DS14 green) will be lit.
- PHY LINK LED should be lit if an Ethernet cable is connected. Note that there are three link LEDs, as the DS33M30 is a Gigabit mode device. The L1000 LED should be lit the L100 and L10 LEDs should not be lit.

Following are several basic system initializations.

#### 4.2 Basic DS33M30 Initialization

This section covers two basic methods for configuring the DS33M30.

1. Device Driver-Based Configuration: (Note: The DS33M3001A0 board revision does not come loaded with device drivers.) If the pins J20.1+J20.2 are jumpered, the device driver autoconfigures the DS33M30 upon power-up. This enables traffic to pass from the Ethernet port to the serial port. Consult the device driver documentation for further details. To load the GUI interface for the device drivers, go to the ChipView register mode **Tools** menu and select **Tools→Plugins→DS33M30/M33 Device Driver Demo**.
2. Register-Based Configuration: EoS VC3 with two ports assigned to VCG1.
  - a. Remove jumper J20.1+J20.2 to disable device drivers and reset the board.
  - b. Launch ChipView.exe and select **Register View**.

- c. When prompted for a definition file, pick the file named **\_DS33M30\_GlobalMicroport.def**. Several additional definition files will load.
- d. Go to the **File** menu and select **File→Memory Config File→Load .MFG file**. When prompted, select the file named **\_m30\_STS3c\_GFPNull\_NoScramble.mfg**.

#### 4.2.1 Additional Configuration for DS33M30

- Using either a patch or crossover cable, connect the Ethernet connector to an ordinary PC or network test equipment. This should cause the link LED to turn on.
- Place a loopback connector at the SONET network side; the optical LOS LEDs should go out.
- At this point any packets sent to the DS33M30 are echoed back. Incoming packets (i.e., ping) should cause the Activity LED to blink.
- Note that ChipView.exe display settings can be changed using the **Options→Settings** menu.

#### 4.3 Monitor and Capture Ethernet Traffic

- Although ping is mentioned, it is **not** the recommended frame source for testing. The ping command goes through the computer's TCP/IP stack and sometimes is not sent out the PC's network connector (i.e., if the PC's ARP cache is out of date). Additionally, ping requires two PCs, as a Windows PC with only one adapter cannot ping itself (i.e., a local ping gets sent to 'local host' instead of out the connector). With that said, ping is still a valuable test once the prototyping stage is complete.
- Generation and capture of arbitrary (raw) packets can be accomplished using **CommView**. A full-featured demo is available at [www.tamos.com/products/commview](http://www.tamos.com/products/commview).
- Wireshark (formerly Ethereal) is a free packet capture utility. Download is available at [www.wireshark.org](http://www.wireshark.org).
- Adding additional Ethernet ports to a PC is rather simple when a USB-to-Ethernet adapter is used. This allows for end-to-end testing using a single PC. When using two adapters, the PC has a different IP address for each adapter. Test equipment allows selection of either adapter. Operating system-based network traffic is sent out the default adapter, which usually is the adapter that has recently had connection to a live network.

### 5. Jumpers and Connectors

Jumpers and connectors are listed in [Table 5-1](#). They are listed in order of appearance on the PCB from left to right, top to bottom (as viewed with SONET connector on the left side of the board).

**Table 5-1. Jumpers and Connectors**

| SILKSCREEN REFERENCE | FUNCTION                 | BASIC SETTING                   | SCHEMATIC PAGE | DESCRIPTION                                                                                                                                              |
|----------------------|--------------------------|---------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| J03                  | Ethernet Connection      | Connected                       | 14             | Connect to Gigabit Ethernet source.                                                                                                                      |
| JP06 + JP03          | Bias PHY Speed1 + Speed0 | Jumper P2+3(high)<br>P2+1 (low) | 14             | If auto negotiation is enabled this setting advertises capability for 1000 speeds. If auto negotiation is disabled then this setting forces 1000Mb mode. |
| JP04                 | Bias PHY ANEN            | Jumper P2+3 (high)              | 14             | Jumper P2+3 to enable auto negotiation.                                                                                                                  |
| JP05                 | Bias PHY Duplex          | Jumper P2+3 (high)              | 14             | Jumper P2+3 to enable full duplex, Jumper P1.2 to force half duplex.                                                                                     |
| JP09                 | Bias PHY MdxEn           | Jumper P2+1 (high)              | 14             | P2+3 disables pair swap mode, P2+1 enables pair swap mode.                                                                                               |
| JP08                 | Bias PHY MacClkEn        | Jumper P2+3 (low)               | 14             | P2+3 PHY clock to mac output is disabled, P1+2 PHY clock to mac output is enabled. Mac clock only needs to be enabled in Gigabit mode.                   |

| SILKSCREEN REFERENCE | FUNCTION            | BASIC SETTING                    | SCHEMATIC PAGE | DESCRIPTION                                                                                                             |
|----------------------|---------------------|----------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------|
| DS05                 | LED activity        | --                               | 14             | Flashes for PHY Tx-Rx activity.                                                                                         |
| DS06<br>DS07<br>DS09 | LED link speed      | DS06 should be lit (when linked) | 14             | LED to indicate link speed: 1000, 100, or 10Mbps. Only DS06 should be lit since the DS33M30 is GMII only.               |
| J04                  | PHY test points     | --                               | 12             | PHY test points. The connector pinout is compatible with existing PHY cards, but cannot be used with U04 on the board.  |
| JP13 JP14            | Runtime options     | NA                               | 11             | Currently the device drivers do not fit in flash, and are not loaded to the DK.                                         |
| DS11                 | Status              | —                                | 11             | LED kit status, not lit.                                                                                                |
| J03                  | USB                 | —                                | 11             | USB interface. See folder marked USBdrivers_CP210x for drivers.                                                         |
| J04                  | RS232 DB9 connector | —                                | 11             | RS-232 DB-9 connector, operates in ASCII mode at 57.6K,8,N,1.                                                           |
| JP18<br>JP19         | Comm Port           | Jumper P1+2<br>P1+2              | 11             | Jumper pins 1+2 to select the RS232 transceiver. Jumper pins 2+3 to select the USB to serial converter.                 |
| SW01                 | Reset               | —                                | 7              | System Reset button.                                                                                                    |
| J06                  | SPI                 | All jumpered                     | 6              | SPI™ bias and data pins. Control by external processor is possible after removing CS, MISO, MOSI, and SCK               |
| JP15                 | HIZ                 | Jumper P2+3                      | 6              | Dut three-state control.                                                                                                |
| J07                  | Software Debug      | —                                | 11             | ONcE EBDI.                                                                                                              |
| JP07                 | Clock select        | Jumper P2+1                      | 4              | Clock selection for PHY and Ethernet side of DS33M30.                                                                   |
| JP02                 | Clock select        | Jumper P1+2                      | 4              | Clad clock selection, Jumper P1+2 to drive with 19.44MHz. Jumper P2+3 to drive with 77.76MHz clock.                     |
| DS08                 | DS33M30 Int         | —                                | 9              | LED, lit when DS33M30 Interrupt is asserted.                                                                            |
| J01                  | SFP test points     | Jumper P9+10                     |                | Test points for SFP module.                                                                                             |
| DS01                 | SFP MOD0            | —                                | 2              | Lit when a SFP module is installed.                                                                                     |
| DS03                 | SFP TXDISABLE       | —                                | 2              | Lit when Tx is enabled.                                                                                                 |
| DS02                 | SFP LOS             | —                                | 2              | Lit when fiber optic cable is removed.                                                                                  |
| J02<br>JP01          | SFP LOS/M33 LOS     | Jumper                           | 2              | Jumper J02 to connect SFP LOS to DS33M30 LOS. If J02 is removed, then JP01 can be used to pull DS33M30 LOS high or low. |
| U01                  | SFP                 | Installed                        | 2              | SFP module.                                                                                                             |
| J05                  | JTAG                | —                                | 6              | DS33M30 JTAG.                                                                                                           |

SPI is a trademark of Motorola, Inc.

## **6.    *Line-Side Connections***

The DS33M30DK has one optical port and one Ethernet port.

## **7.    *Microcontroller***

The microcontroller has factory-installed firmware in on-chip nonvolatile memory. This firmware translates memory access requests from the RS-232 serial port into register accesses on the DS33M30 and the FPGAs.

## **8.    *Power-Supply Connectors***

Connect a 5.0V wall adapter to the PCB power jack. LED DS1 provides indications that a 5.0V supply is connected properly. The board power supplies (3.3V, 2.5V, and 1.8V) are regulated to supply proper voltages to various circuits on the board.

## **9.    *Connecting to a Computer***

Both USB and serial modes are supported.

To connect through a RS-232 serial port, set jumpers JP25 and JP26 jumpers to pins 1+2, identified in the silkscreen as RS232,PROCESSOR. Connect a standard DB-9 serial cable between the serial port on the DS33M30DK and an available serial port on the host computer. The host computer must be a Windows-based PC. Be sure the cable is a standard straight-through cable rather than a null-modem cable. Null-modem cables prevent proper operation.

To connect through USB, set jumpers JP25 and JP26 jumpers to pins 3+2, identified in the silkscreen as USB, PROCESSOR. Connect a USB cable between the DS33M30DK USB connector and the PC. The host computer must be a Windows-based PC, which should automatically recognize the device as a virtual com port and assign the device drivers. If drivers are not automatically assigned, direct the **New Hardware** wizard to the driver files on the CD in the folder marked **USBdrivers\_CP210x**.

## **10. Installing and Running the Software**

ChipView is a general-purpose program that supports a number of Maxim demo kits. To install the ChipView software, run Chipview.msi from the disk included in the DS33M30DK box or from the zip file downloadable on our website at [www.maxim-ic.com/DS33M30DK](http://www.maxim-ic.com/DS33M30DK).

After installation, run the ChipView program with the DS33M30DK board powered up and connected to the PC. If the default installation options were used, one easy way to run ChipView is to click the **Start** button on the Windows toolbar and select **Programs→ChipView→ChipView**. In the opening screen, click the **Register View** button. Select the correct serial port in the **Port Selection** dialog box, then click **OK**.

Next, the **Definition File Assignment** window appears. This window has subwindows to select definition files for up to four separate boards on other Maxim evaluation platforms. In the active subwindow, select the **\_DS33M\_GlobalSonet.def** definition file from the list shown, or browse to find it in another directory. Press the **Continue** button.

After selecting the definition file, the main part of the ChipView window displays the DS33M30's register map. To select a register, click on it in the register map. When a register is selected, the full name of the register and its bit map are displayed at the bottom of the ChipView window. Bits that are logic 0 are displayed in white, while bits that are logic 1 are displayed in green.

The ChipView software supports the following actions:

- **Toggle a bit.** Select the register in the register map and then click the bit in the bit map.
- **Write a register.** Select the register, click the **Write** button, and enter the value to be written.
- **Write all registers.** Click the **Write All** button and enter the value to be written.
- **Read a register.** Select the register in the register map and click the **Read** button.
- **Read all registers.** Click the **Read All** button.

## 11. Address Map

SPI mode address space begins at 0x0.

**Table 11-1. Address Map**

| OFFSET | DEVICE  | DESCRIPTION       |
|--------|---------|-------------------|
| 0X0000 | DS33M30 | DS33M30 registers |

## 12. Additional Information/Resources

### 12.1 DS33M30 Information

For more information about the DS33M30, refer to the DS33M30 data sheet at [www.maxim-ic.com/DS33M30](http://www.maxim-ic.com/DS33M30).

### 12.2 DS33M30DK Information

For more information about the DS33M30DK, refer to the DS33M30DK Quick View page at [www.maxim-ic.com/DS33M30DK](http://www.maxim-ic.com/DS33M30DK).

### 12.3 Technical Support

For additional technical support, submit your questions at [www.maxim-ic.com/support](http://www.maxim-ic.com/support).

### 13. Component List

| DESIGNATION                                                                                                                                                                                                                                                                                                         | DESCRIPTION                                              | SUPPLIER                | PART           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------|----------------|
| C01, C03, C05, C06, C09, C11, CB11, CB12, CB15, CB16, CB17, CB19, CB20, CB24, CB39, CB44, CB45, CB48, CB56, CB57, CB60, CB66, CB71, CB74, CB75, CB88, CB97, CB101, CB112                                                                                                                                            | L_0603 CERAM .1uF 16V 20% X7R                            | AVX                     | 0603YC104MAT   |
| Component listing on next line, begins with C02                                                                                                                                                                                                                                                                     | 0603 CERAM 4.7uF 6.3V MULTILAYER                         | Digi-Key                | ECJ-1VB0J475M  |
| C02, C04, C07, CB05, CB07, CB18, CB21, CB22, CB25, CB31, CB32, CB33, CB35, CB38, CB42, CB43, CB46, CB47, CB49, CB50, CB51, CB53, CB55, CB61, CB62, CB63, CB64, CB67, CB68, CB70, CB72, CB73, CB76, CB77, CB78, CB79, CB80, CB81, CB83, CB84, CB86, CB89, CB90, CB94, CB95, CB103, CB105, CB109, CB110, CB116, CB121 |                                                          |                         |                |
| C08, C10, C12, CB04, CB08, CB09, CB10, CB14, CB30, CB40, CB65, CB85, CB107                                                                                                                                                                                                                                          | L_0603 CERAM .01uF 50V 10% X7R                           | AVX                     | 06035C103KAT   |
| C1, C13, C14, C15, C16, C17, C18, CB120, CB23, CB27, CB28, CB29, CB41, CB87, CB98, CB106                                                                                                                                                                                                                            | 1206 CERAM 10uF 10V 20%                                  | Panasonic               | ECJ-3YB1A106M  |
| CB01, CB02, CB03, CB13, CB111                                                                                                                                                                                                                                                                                       | D CASE TANT 470uF 6.3V 20%                               | KEM                     | T491D477M006AS |
| CB06, CB26, CB34, CB36, CB37, CB52, CB54, CB58, CB59, CB69, CB82, CB91, CB92, CB93, CB96, CB102, CB108, CB114, CB115                                                                                                                                                                                                | 0603 CERAM .1uF 16V 10%                                  | Panasonic               | ECJ-1VB1C104K  |
| CB104, CB117                                                                                                                                                                                                                                                                                                        | L_1206 CERAM 1uF 16V 10%                                 | Panasonic               | ECJ-3YB1C105K  |
| CB113                                                                                                                                                                                                                                                                                                               | 1206 CERAM 4.7uF 25V 10% X5R                             | Panasonic               | ECJ-3YB1E475K  |
| CB99, CB100, CB118, CB119                                                                                                                                                                                                                                                                                           | L_D CASE TANT 68uF 16V 20%                               | Panasonic               | ECS-T1CD686R   |
| DB01                                                                                                                                                                                                                                                                                                                | SCHOTTKY DIODE, 1 AMP 40 VOLT                            | International Rectifier | 10BQ040        |
| DS01, DS03, DS11, DS04, DS12, DS14                                                                                                                                                                                                                                                                                  | L_LED, GREEN, SMD                                        | Panasonic               | LN1351C        |
| DS02, DS08, DS10                                                                                                                                                                                                                                                                                                    | L_LED, RED, SMD                                          | Panasonic               | LN1251C        |
| DS05, DS06, DS07, DS09                                                                                                                                                                                                                                                                                              | LED, GREEN/GREEN, SMD                                    | LUMEX                   | 67-1362-1-ND   |
| DS13                                                                                                                                                                                                                                                                                                                | LED, RED/GREEN, SMD                                      | LITEON                  | 160-1172-1-ND  |
| GND_TP01, GND_TP02, GND_TP03, GND_TP04, GND_TP05, GND_TP06, GND_TPB01, GND_TPB02, GND_TPB03                                                                                                                                                                                                                         | STANDARD GROUND CLIP                                     | KEYSTONE                | 4954           |
| H01, H02, H03, H04, H05, H08                                                                                                                                                                                                                                                                                        | KIT, 4-40 HARDWARE, .50 NYLON STANDOFF AND NYLON HEX-NUT | Labstock                | 4-40KIT4       |
| J01                                                                                                                                                                                                                                                                                                                 | TERMINAL STRIP, 10 PIN, DUAL ROW, VERT                   | Digi-Key                | S2012-05-ND    |
| J02, JB01                                                                                                                                                                                                                                                                                                           | 100 MIL 2 POS JUMPER                                     | Labstock                | NA             |
| J03                                                                                                                                                                                                                                                                                                                 | CONNECTOR, SINGLE LEVEL, GIGABIT RJ-45, 10 PIN           | Halo Electronics        | HFJ11-1G02E    |

|                                                                                    |                                                                                                                                                                                                 |           |                    |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------|
| J04                                                                                | PLUG, SMD, 50 PIN, 2 ROW VERTICAL                                                                                                                                                               | Samtec    | SFM-125-L2-S-D-LC  |
| J05                                                                                | L_TERMINAL STRIP, 10 PIN, DUAL ROW, VERT                                                                                                                                                        | Samtec    | TSW-105-07-T-D     |
| J06                                                                                | HEADER, 14 PIN, DUAL ROW, VERT                                                                                                                                                                  | Samtec    | HDR-TSW-107-14-T-D |
| J07                                                                                | 100 MIL 2*7 POS JUMPER                                                                                                                                                                          | Labstock  | NA                 |
| J08                                                                                | L_CONN, DB9 RA, LONG CASE                                                                                                                                                                       | AMP       | 747459-1           |
| J09                                                                                | TYPE B SINGLE RT ANGLE, BLACK                                                                                                                                                                   | Digi-Key  | WM17108-ND         |
| JB02                                                                               | CONN 2.1MM/5.5MM PWRJACK RT ANGLE PCB, closed frame, high current 24VDC@5A also requires 5V ACDC adapter INPUT 100-240VAC 50-60HZ 0.6A OUTPUT DC 5V 2.6A. PN DMS050260-P5P-SZ. MODEL 3Z-161WP05 | CUI, INC  | PJ-002AH           |
| JP01, JP02, JP03, JP04, JP05, JP06, JP07, JP08, JP09, JP13, JP14, JP15, JP18, JP19 | 100 MIL 3 POS JUMPER                                                                                                                                                                            | Labstock  | NA                 |
| L01, L02                                                                           | 1uH $\pm 10\%$ 0805 Multilayer Ceramic 400 mA                                                                                                                                                   | TDK       | GLF2012T1R0M       |
| L1                                                                                 | FERRITE 3A 100 OHM AT 100 MHZ 1206 SMD                                                                                                                                                          | Steward   | HI1206N101R-10     |
| R01, R03, R04, RB19                                                                | RES 0603 0.0 Ohm 1/16W 5%                                                                                                                                                                       | Panasonic | ERJ-3GEY0R00V      |
| R02                                                                                | RES 0603 1.0M Ohm 1/16W 5%                                                                                                                                                                      | Panasonic | ERJ-3GEYJ105V      |
| RB01, RB18, RB03, RB20, RB22                                                       | RES 0603 330 Ohm 1/16W 5%                                                                                                                                                                       | Panasonic | ERJ-3GEYJ331V      |
| RB02, RB04, RB12, RB13, RB14                                                       | RES 0603 30 Ohm 1/16W 5%                                                                                                                                                                        | Panasonic | ERJ-3GEYJ300V      |
| RB05                                                                               | RES 0603 2.2K Ohm 1/16W 5%                                                                                                                                                                      | Panasonic | ERJ-3GEYJ222V      |
| RB06, RB07, RB16                                                                   | RES 0603 2.0K Ohm 1/16W 5%                                                                                                                                                                      | Panasonic | ERJ-3GEYJ202V      |
| RB08                                                                               | RES 0603 100 Ohm 1/16W 1%                                                                                                                                                                       | Panasonic | ERJ-3EKF1000V      |
| RB09, RB11                                                                         | RES 0603 1.00K Ohm 1/16W 1%                                                                                                                                                                     | Panasonic | ERJ-3EKF1001V      |
| RB15                                                                               | RES 0603 9.76K Ohm 1/16W 1%                                                                                                                                                                     | Panasonic | ERJ-3EKF9761V      |
| RB17, RB21                                                                         | L_RES 0603 10K Ohm 1/16W 5%                                                                                                                                                                     | Panasonic | ERJ-3GEYJ103V      |
| RP01, RP02, RP03, RP04, RP05, RP06, RP07, RP08, RPB12                              | RESISTOR, 4 PACK, 30 OHM 5PCT QUAD 0603                                                                                                                                                         | Panasonic | EXB-V8V300JX       |
| RPB01, RPB07, RPB20, RPB24                                                         | RESISTOR, 4 PACK, 330 OHM 5PCT QUAD 0603                                                                                                                                                        | Panasonic | EXB-V8V331JX       |

|                                                                                           |                                                                |                        |                       |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------------|------------------------|-----------------------|
| RPB02, RPB08, RPB11, RPB17, RPB19                                                         | RESISTOR, 4 PACK, 1K OHM 5PCT QUAD 0603                        | Panasonic              | EXB-V8V102JX          |
| RPB03, RPB04, RPB13, RPB15, RPB18, RPB21, RPB22, RPB23, RPB25, RPB26, RPB27, RPB28, RPB29 | RESISTOR, 4 PACK, 10K OHM 5PCT QUAD 0603                       | Panasonic              | EXB-V8V103JX          |
| RPB05, RPB06, RPB14                                                                       | RESISTOR, 4 PACK, 2.2K OHM 5PCT QUAD 0603                      | Panasonic              | EXB-V8V222JX          |
| RPB09, RPB10                                                                              | RESISTOR, 4 PACK, 50 OHM 2PCT QUAD 0603                        | KOA                    | CN1J4TTD500G          |
| SW01                                                                                      | SWITCH MOM 4PIN SINGLE POLE                                    | Panasonic              | EVQPAE04M             |
| TP01                                                                                      | TEST POINT, 1 PLATED HOLE, DO NOT STUFF                        | Labstock               | NA                    |
| U01                                                                                       | SFP host / receptacle                                          | PARTS_KIT              | SFP_HOST-TYCO         |
| U02                                                                                       | GIG PHYTER V, 10/100/1000 ETHERNET PHYSICAL LAYER, 128 PIN QFP | National Semiconductor | DP83865DVH            |
| U03                                                                                       | ETHERNET EXTENSION DEVICE                                      | Dallas Semiconductor   | DS33M30               |
| U04                                                                                       | DOUBLE DATA RATE (DDR) SDRAM 2-2-2 TIMING 256MBITX16 TSSOP     | MICRON                 | MT46V16M16TG-75E      |
| U05                                                                                       | MMC2107 PROCESSOR                                              | Motorola               | MMC2107               |
| U06, UB09                                                                                 | CYPRESS SRAM, LAB STOCK                                        | Labstock               | NA                    |
| U07                                                                                       | IC, SINGLE-CHIP USB TO UART BRIDGE, 28 PIN QFN                 | SIL                    | CP2101                |
| U1                                                                                        | SPI SERIAL EEPROM 8M 8 PIN SOIC 3.3V                           | Atmel                  | AT26DF081A            |
| UB01                                                                                      | IC, LINEAR REG 1.5W, 2.5V or Adj, 1A, 16TSSOP-EP               | Maxim                  | MAX1793EUE-25         |
| UB02                                                                                      | IC, LINEAR REG 1.5W, 1.8V or Adj, 1A, 16TSSOP-EP               | Maxim                  | MAX1793EUE-18         |
| UB03                                                                                      | MICROPROCESSOR VOLTAGE MONITOR, 3.08V RESET, 4PIN SOT143       | Maxim                  | MAX811TEUS-T          |
| UB04, UB05, UB07                                                                          | IC, LINEAR REG 1.5W, 3.3V or Adj, 1A, 16TSSOP-EP               | Maxim                  | MAX1793EUE-33         |
| UB06                                                                                      | HIGH SPEED BUFFER                                              | FAIRCHILD              | NC7SZ86               |
| UB08                                                                                      | Dual RS-232 transceivers with 3.3V/5V internal capacitors      | MAXIM                  | MAX3233E              |
| XB01                                                                                      | XTAL LOW PROFILE 8.0MHZ                                        | ECL                    | EC1-8.000M            |
| YB01                                                                                      | OSCILLATOR, CRYSTAL CLOCK, 3.3V - 19.44 MHZ                    | SaRonix                | SOCKET+NTH089A3-19.44 |

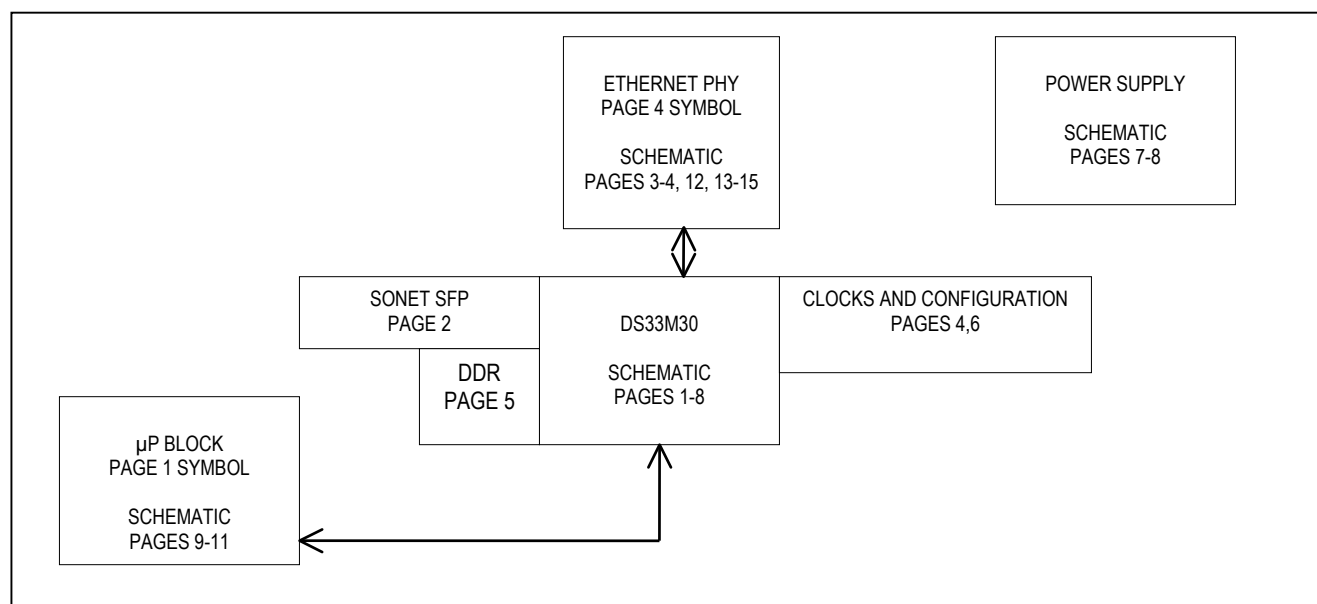
|      |                                                                |         |                             |
|------|----------------------------------------------------------------|---------|-----------------------------|
| YB02 | SOCKETED<br>OSCILLATOR, CRYSTAL<br>CLOCK, 3.3V - 25.000<br>MHZ | SaRonix | NTH089AA3-<br>25.000+SOCKET |
| YB03 | OSCILLATOR, CRYSTAL<br>CLOCK, 3.3V - 77.76 MHZ                 | SaRonix | SOCKET+NTH089A3-<br>77.7600 |

## 14. Schematics

The DS33M30DK schematics are featured in the following pages. The schematic contains three hierarchical blocks: Microcontroller, Ethernet PHY, and Ethernet Test Points.

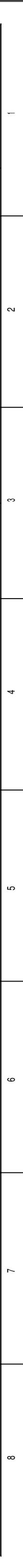
All signals inside a hierarchy block are local, with exception for  $V_{CC}$  and ground. In-port and out-port connectors are used to allow signals inside a hierarchy block to become accessible as pins on the hierarchy blocks symbol. From here blocks are wired together as if they were ordinary components. [Figure 14-1](#) shows the system diagram in terms of hierarchical blocks with schematic page numbers given for each functional block.

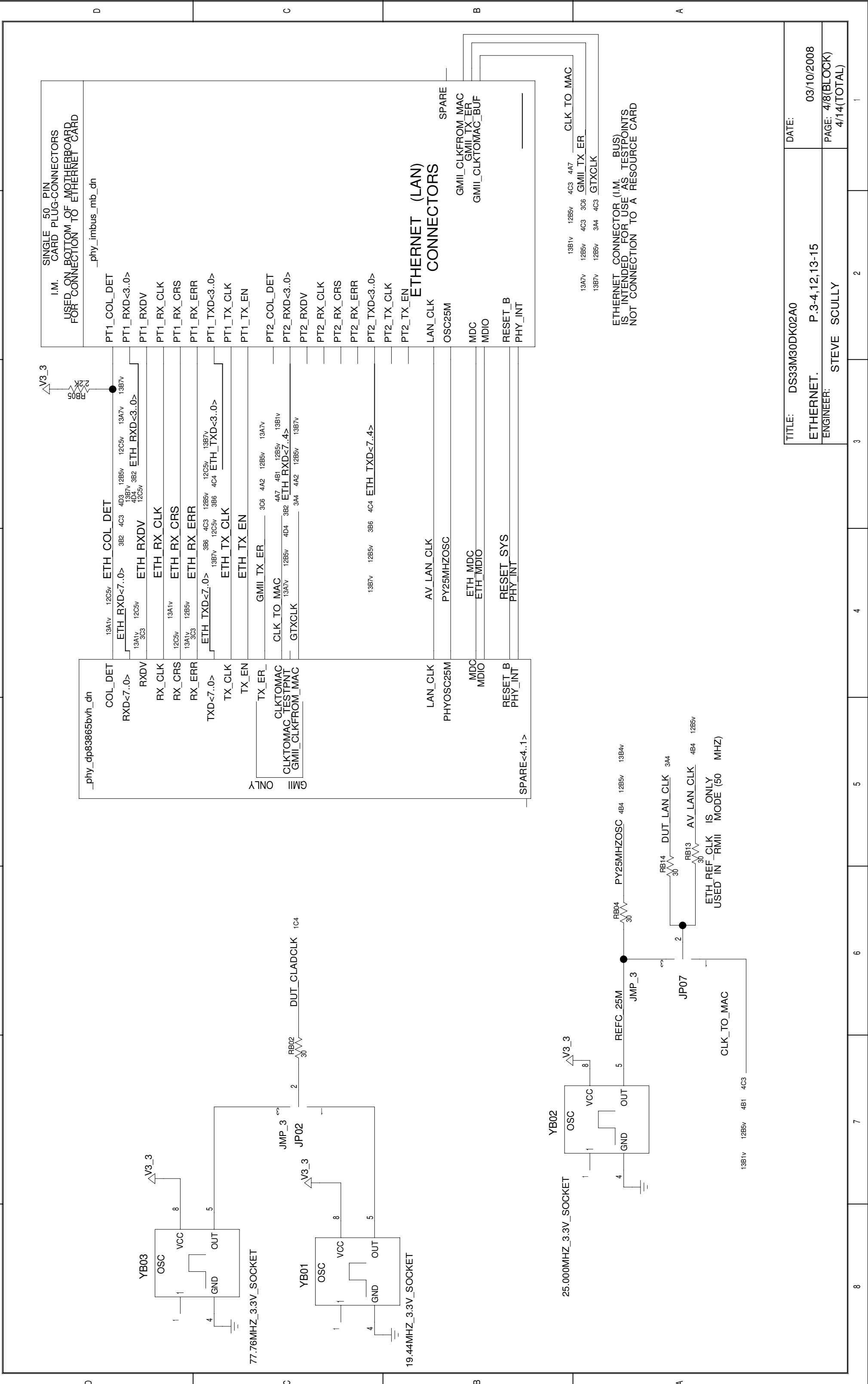
Figure 14-1. DS33M30 PCB Layout and Schematic Hierarchy Block Page Listing

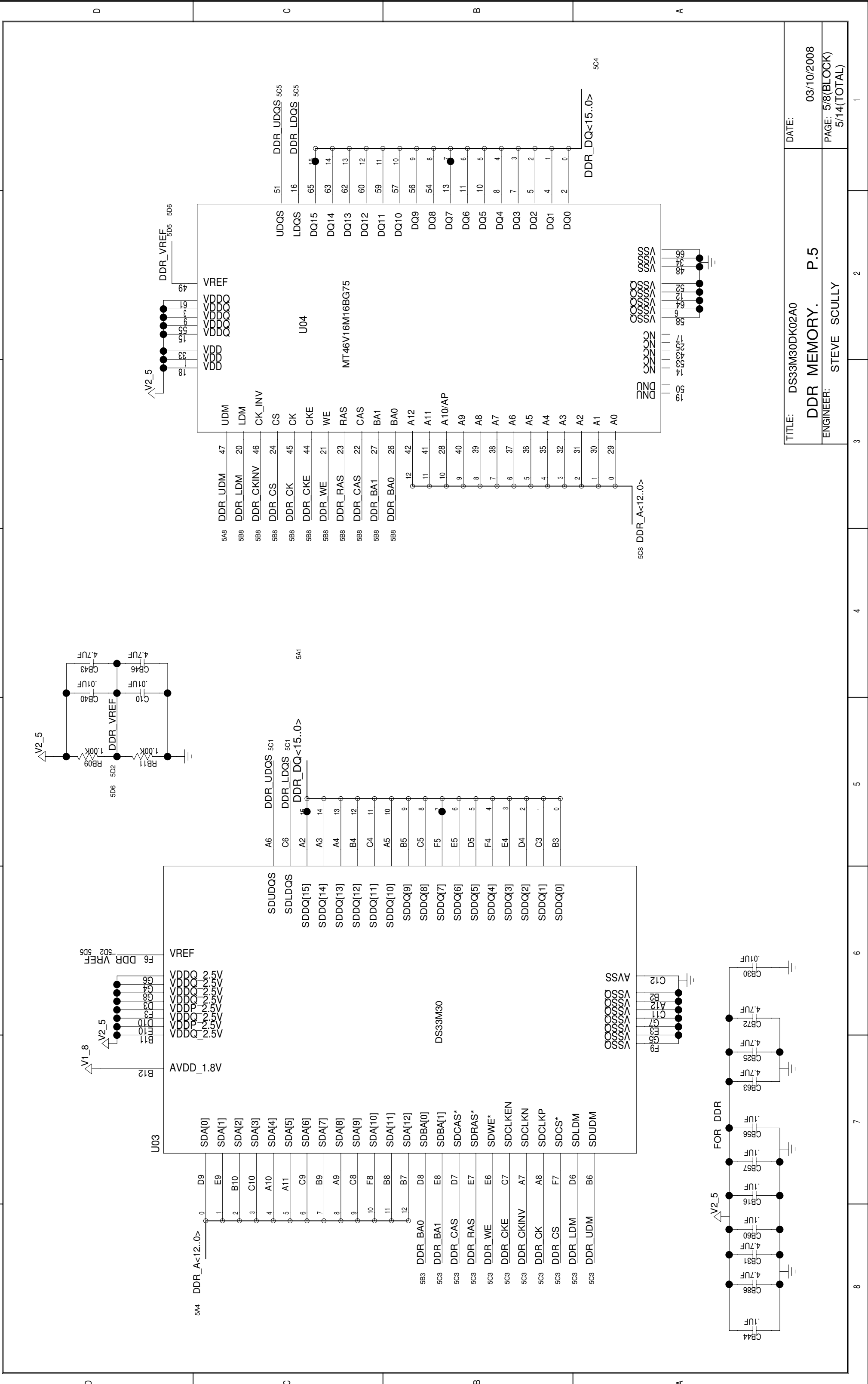


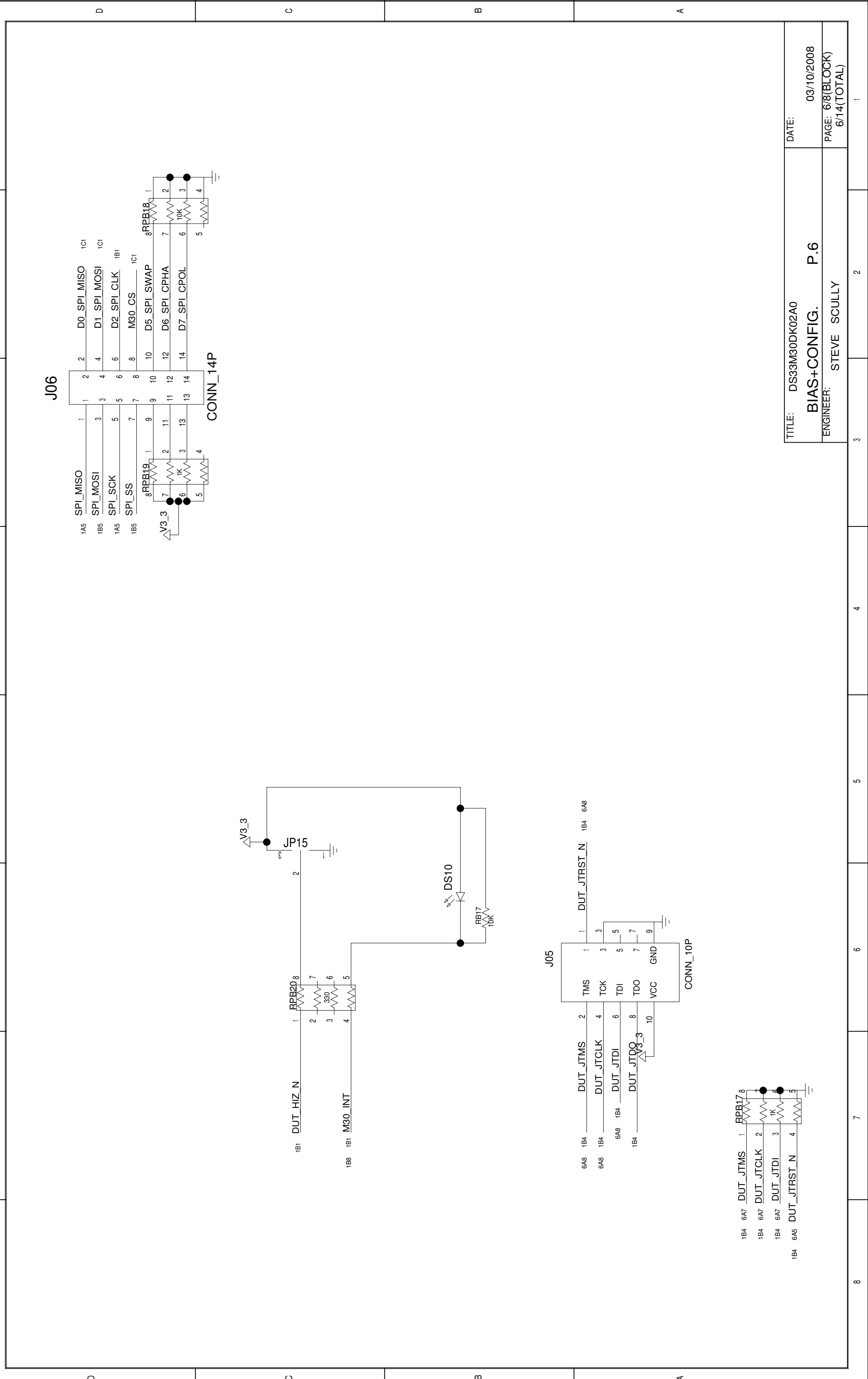


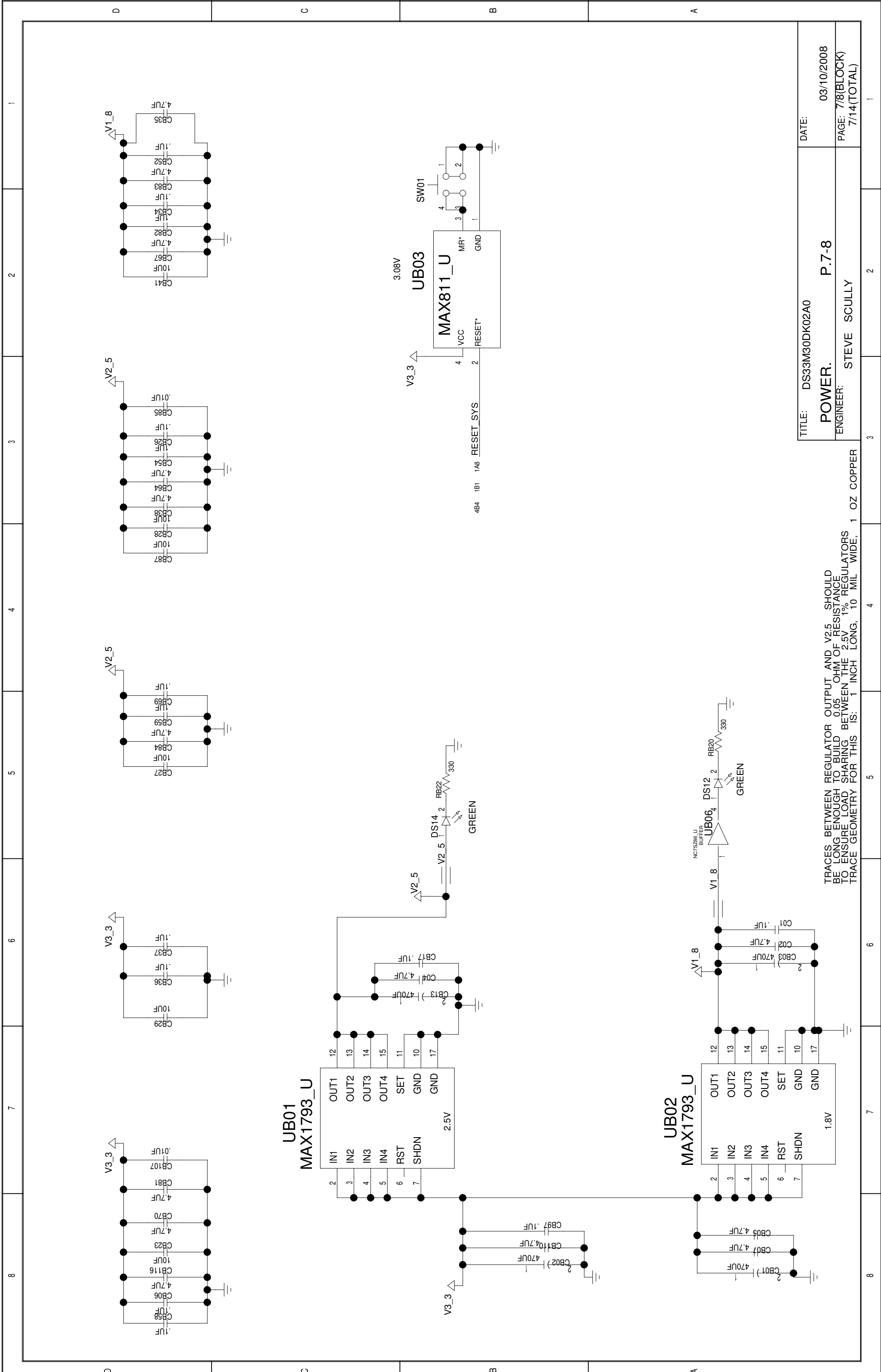






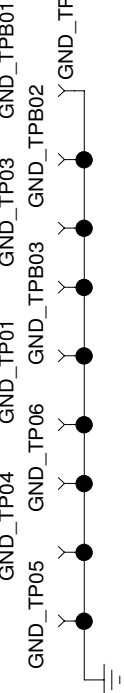
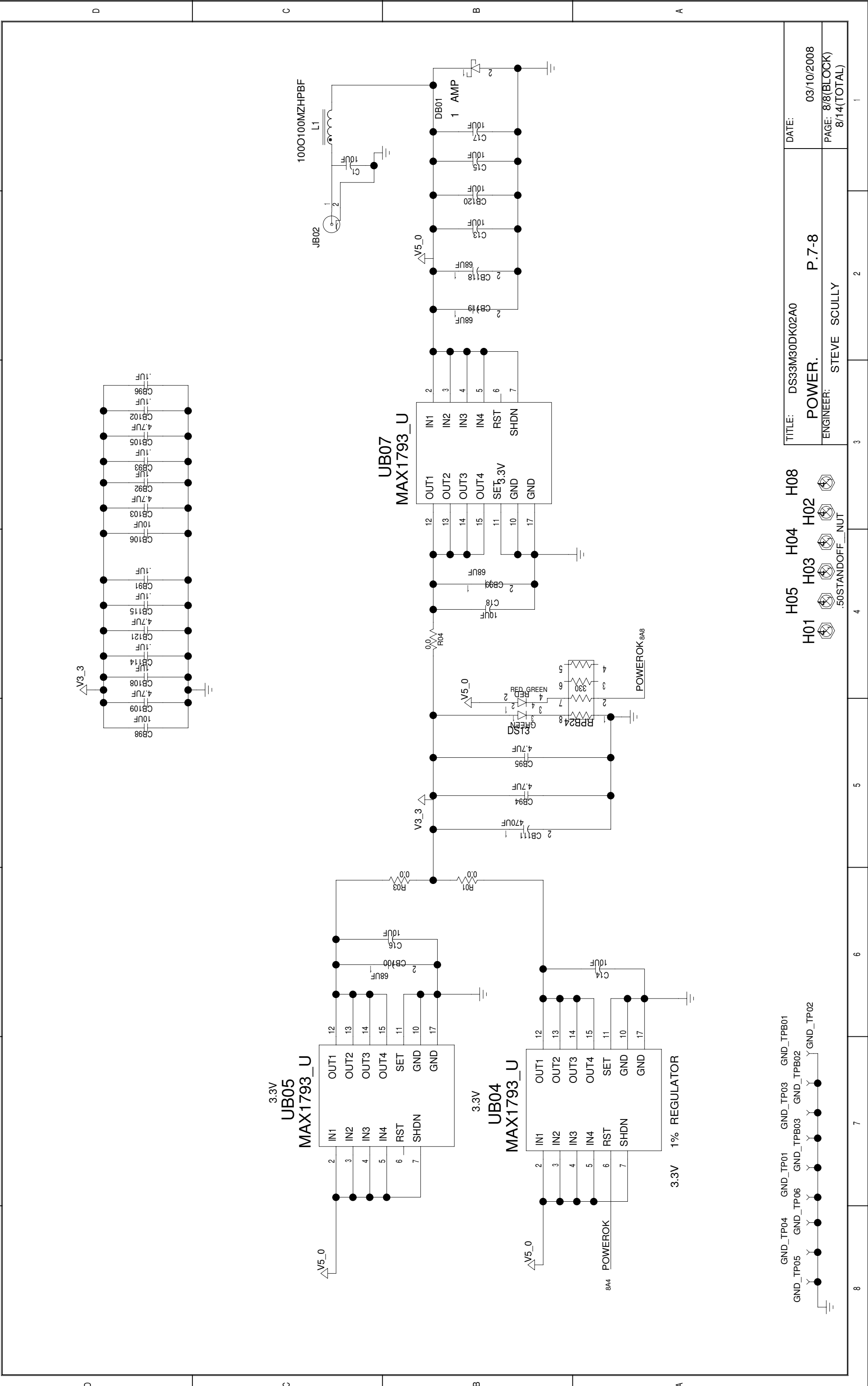




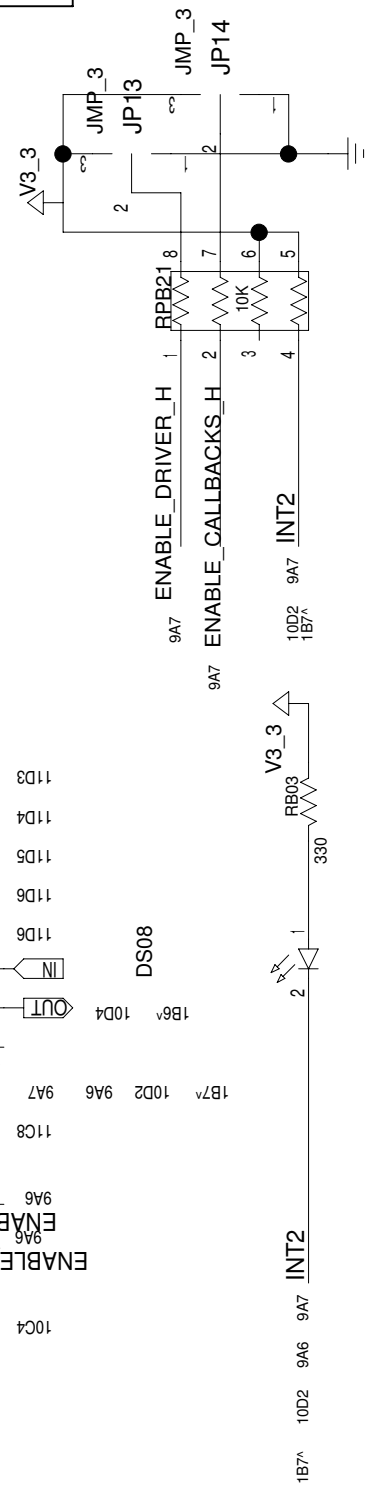
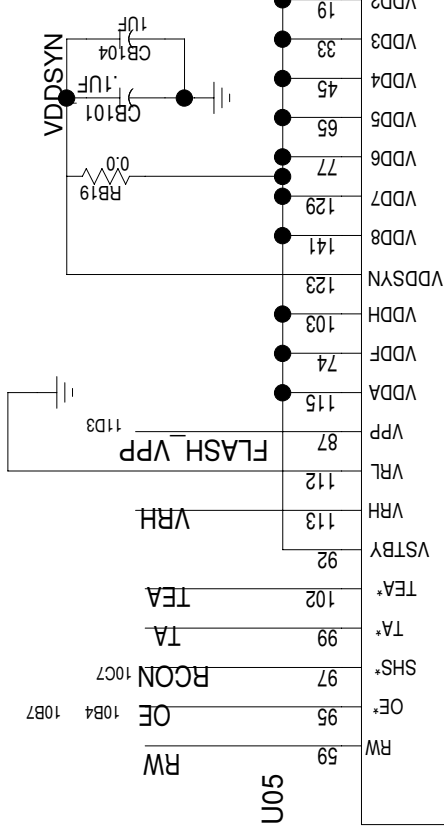
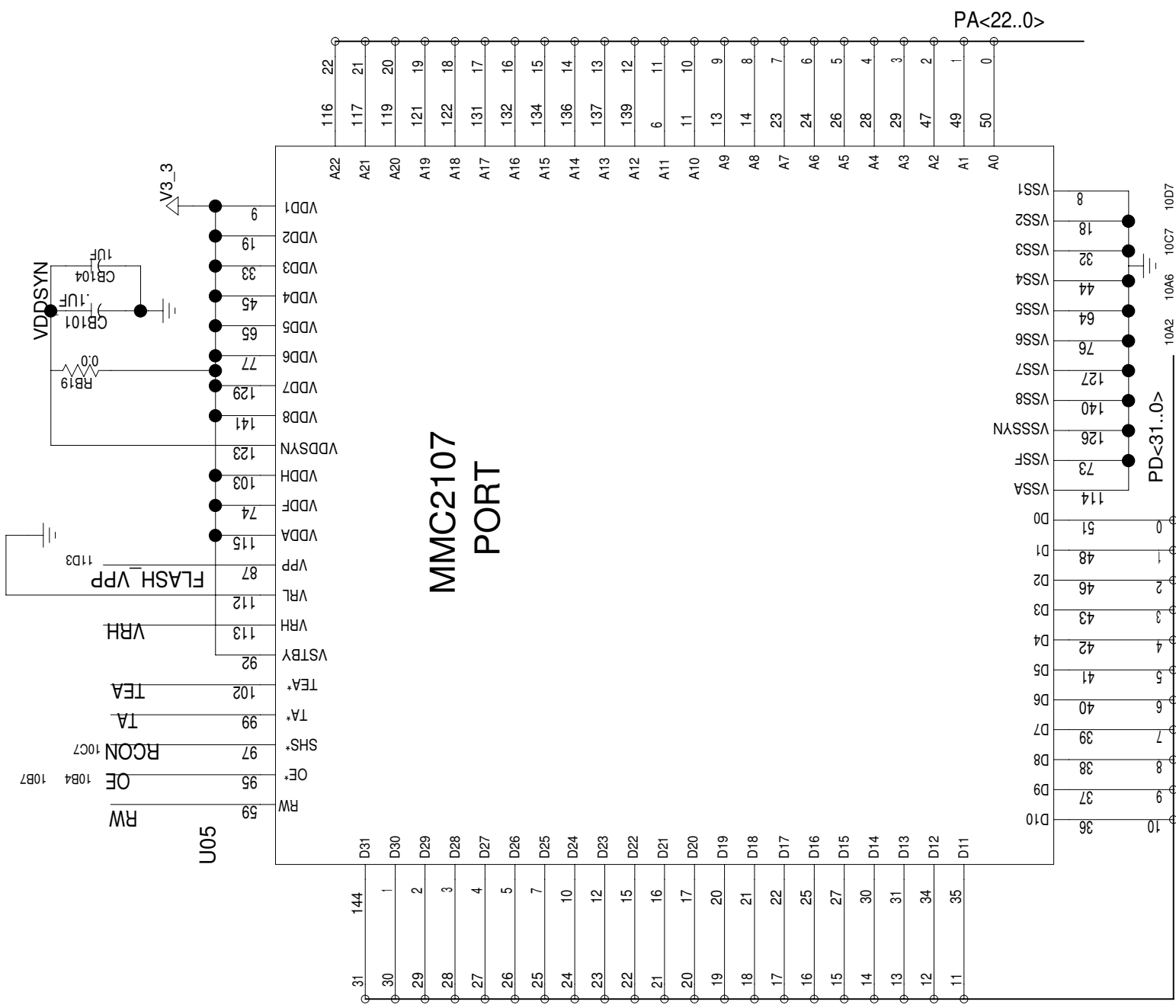


TRACES BETWEEN REGULATOR OUTPUT AND V2.5 SHOULD  
BE LONG ENOUGH TO BUILD 0.05 OHM OF RESISTANCE  
TO ENSURE LOAD SHARING BETWEEN THE 2.5V 1% REGULATORS  
TRACE GEOMETRY FOR THIS IS: 1 INCH LONG, 10 MIL WIDE, 1 OZ COPPER

|           |               |       |             |
|-----------|---------------|-------|-------------|
| TITLE:    | DS33M30DK02A0 | DATE: | 03/10/2008  |
| ENGINEER: | STEVE SCULLY  | PAGE: | 7/8(BLOCK)  |
|           |               |       | 7/14(TOTAL) |



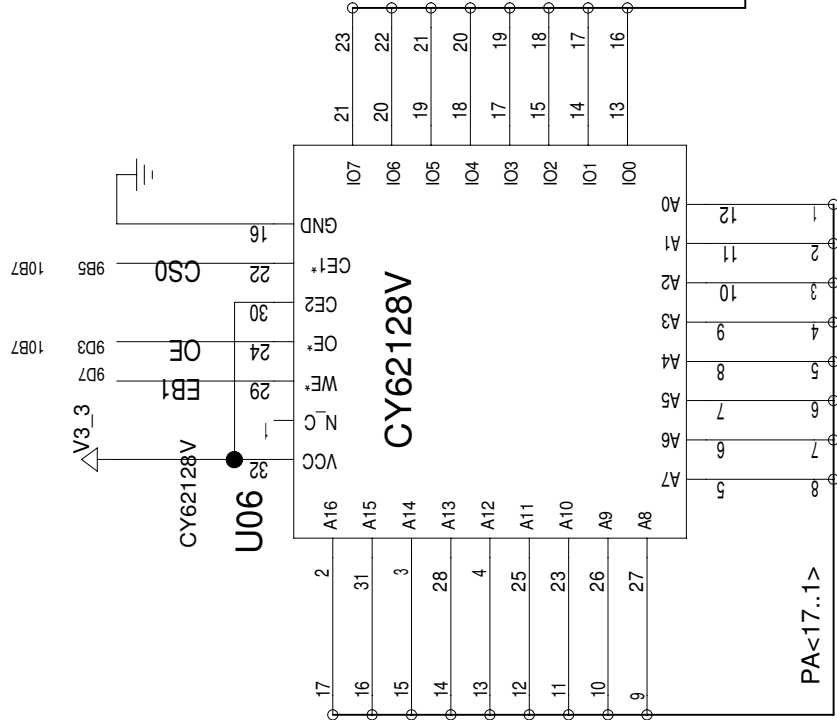
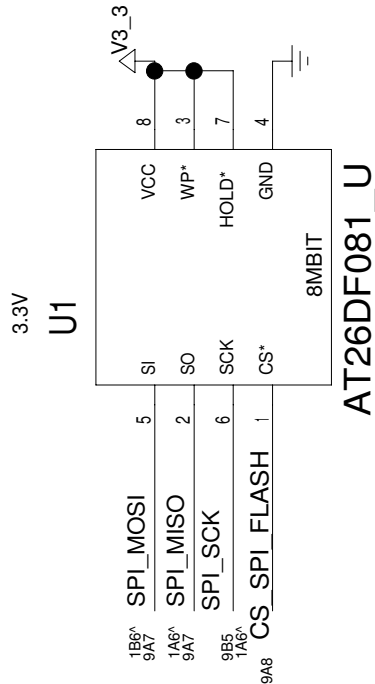
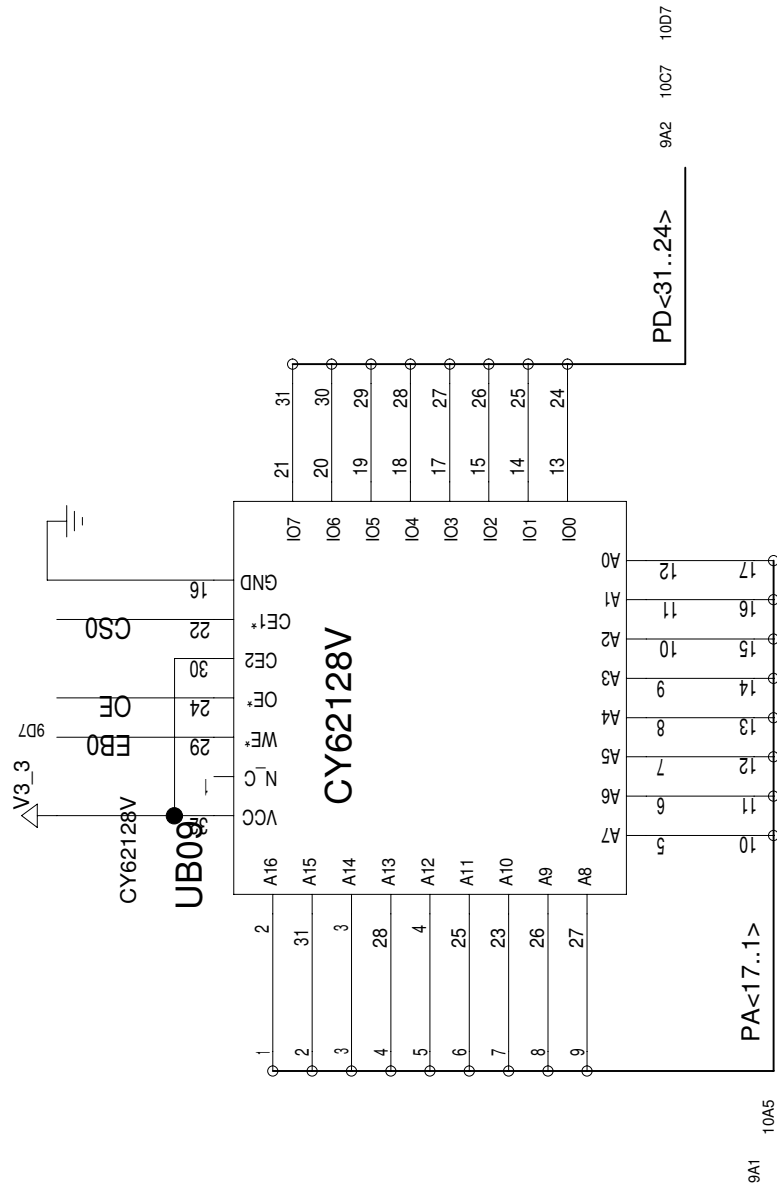
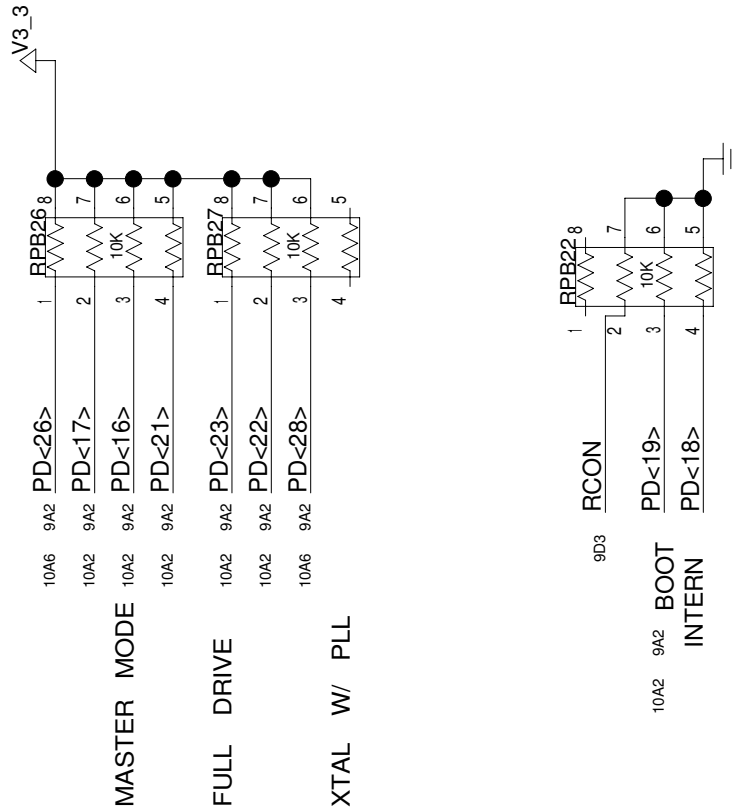
|           |               |                  |
|-----------|---------------|------------------|
| TITLE:    | DS33M30DK02A0 | DATE:            |
| POWER.    | P.7-8         | 03/10/2008       |
| ENGINEER: | STEVE SCULLY  | PAGE: 8/8(BLOCK) |
|           |               | 8/14(TOTAL)      |



## BEGINNING OF PROCESSOR HIERARCHY BLOCK

|           |               |       |                           |
|-----------|---------------|-------|---------------------------|
| TITLE:    | DS33M30DK02A0 | DATE: | 03/10/2008                |
| ENGINEER: | STEVE SCULLY  | PAGE: | 1/3(BLOCK)<br>9/14(TOTAL) |

## RESET CONFIGURATION



TITLE: DS33M30DK02A0

DATE:03/10/2008

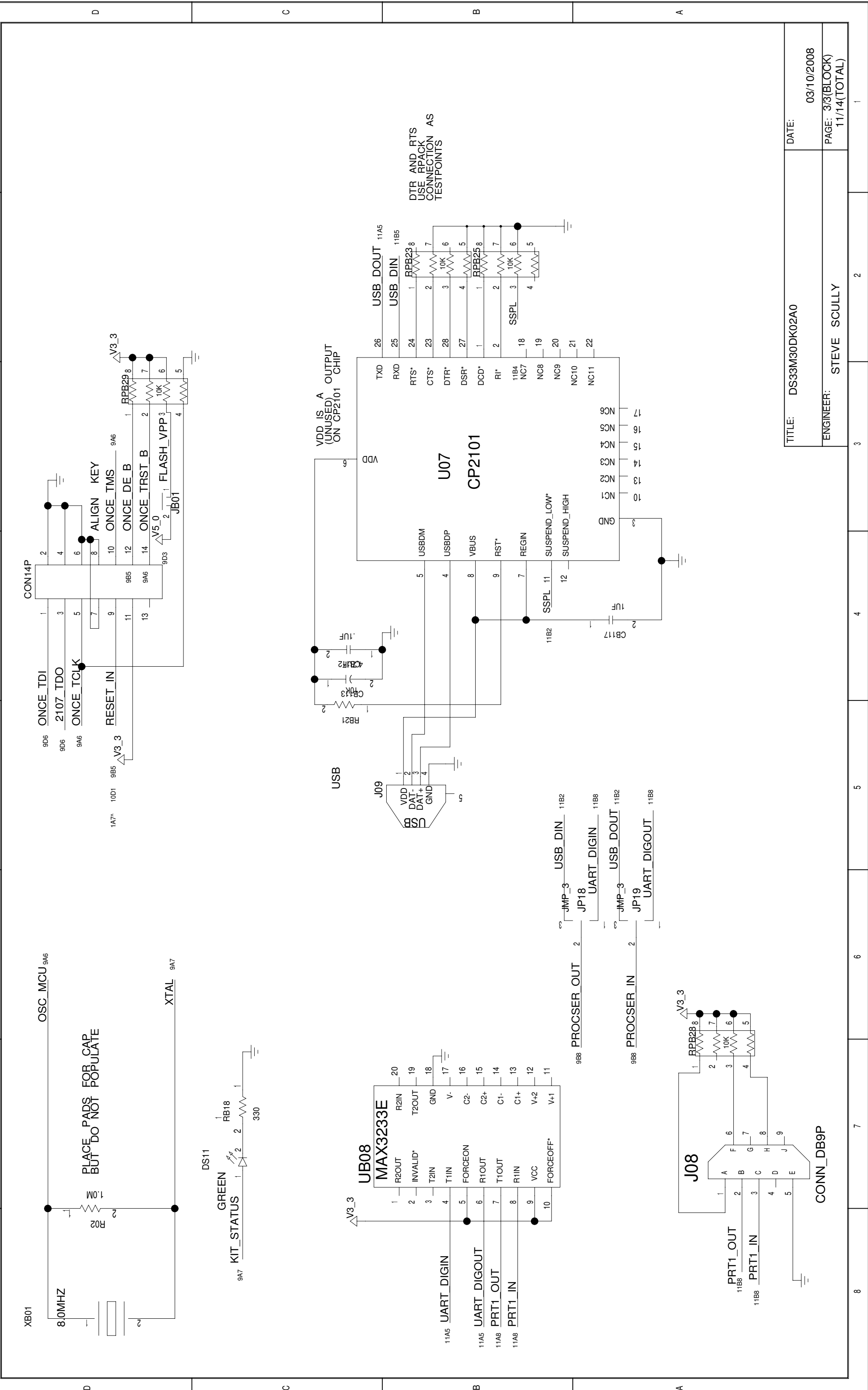
|           |                  |
|-----------|------------------|
| ENGINEER: | PAGE: 2/3(BLOCK) |
|-----------|------------------|

PAGE: 2/3(BLOCK)

10/14(TOTAL)

|             |                    |
|-------------|--------------------|
| BLOCK NAME: | motprocrescard dn. |
|-------------|--------------------|

PARENT BLOCK: \ rc top dn \



TITLE: DS33M30DK02A0

DATE:

03/10/2008

PAGE: 3/3(BLOCK)

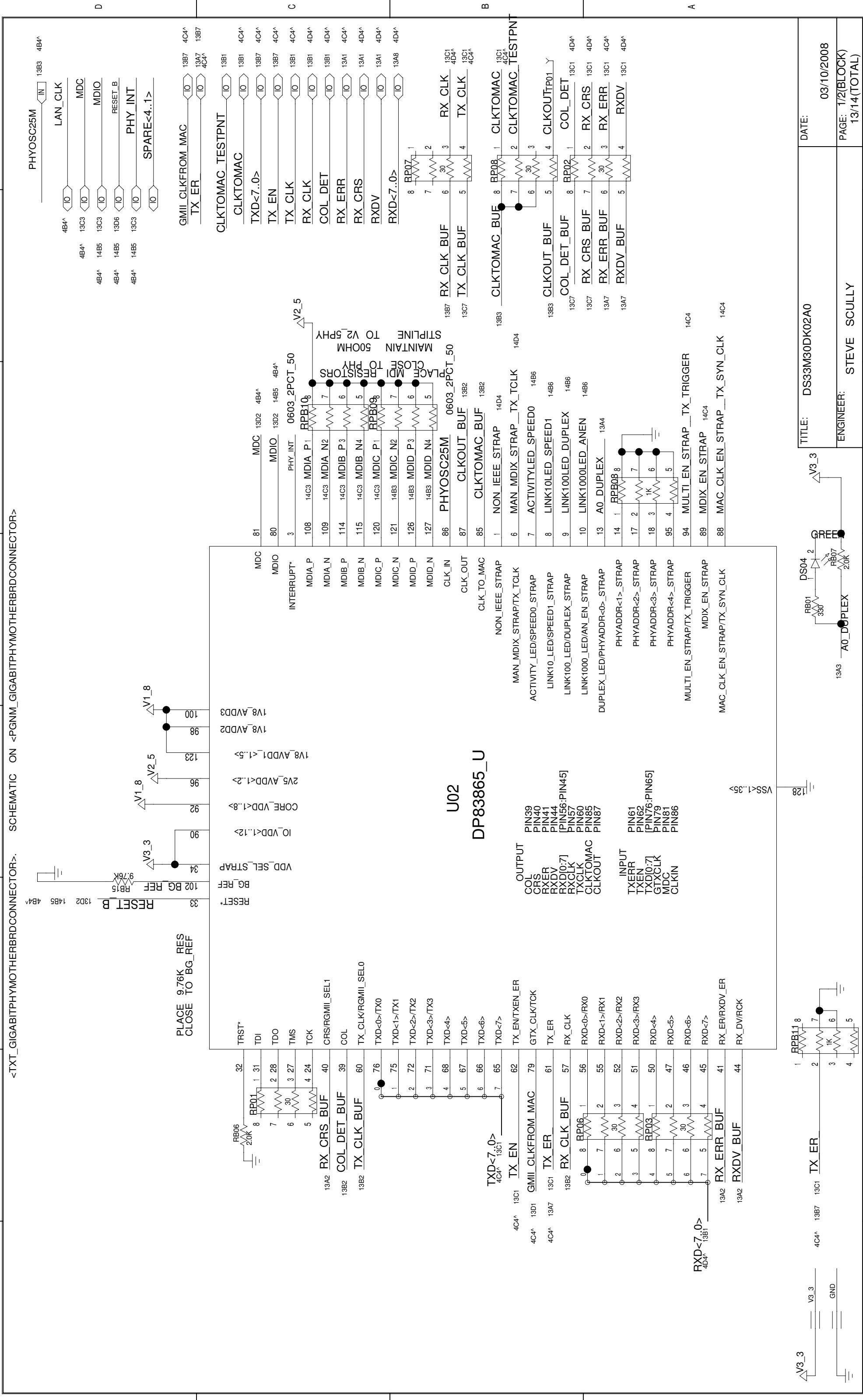
11/14(TOTAL)

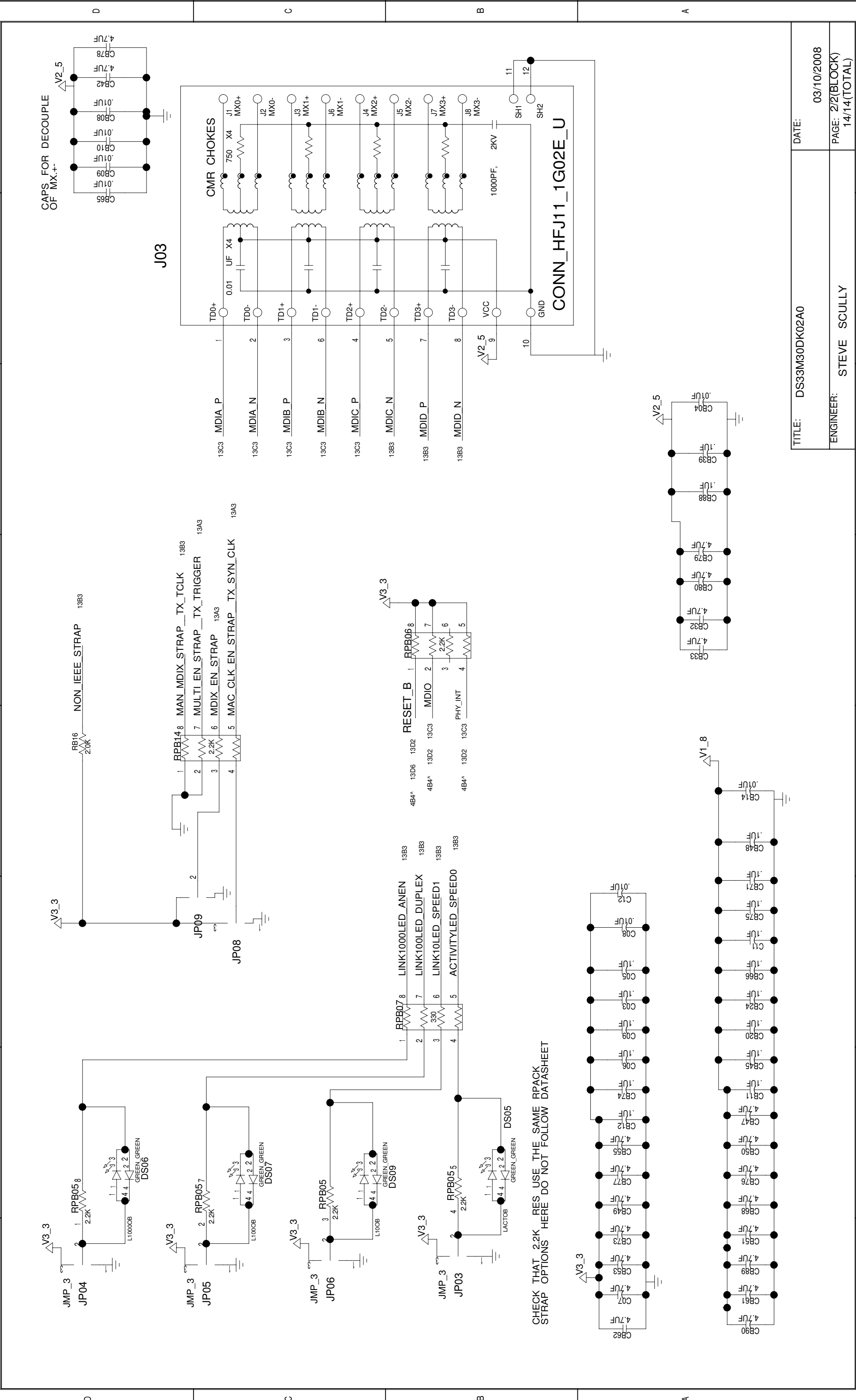
ENGINEER: STEVE SCULLY

BLOCK NAME: motorocrescard dn.

PARENT BLOCK: rc top dn







TITLE: DS33M30DK02A0

DATE:

03/10/2008

ENGINEER: STEVE SCULLY

PAGE: 2/2(BLOCK)  
14/14(TOTAL)

BLOCK NAME: \_phy\_dp83865bvh\_dn.

PARENT BLOCK: \_rc\_top\_dn\

1

2

3

4

5

6

7

8