# Rev.B Changes

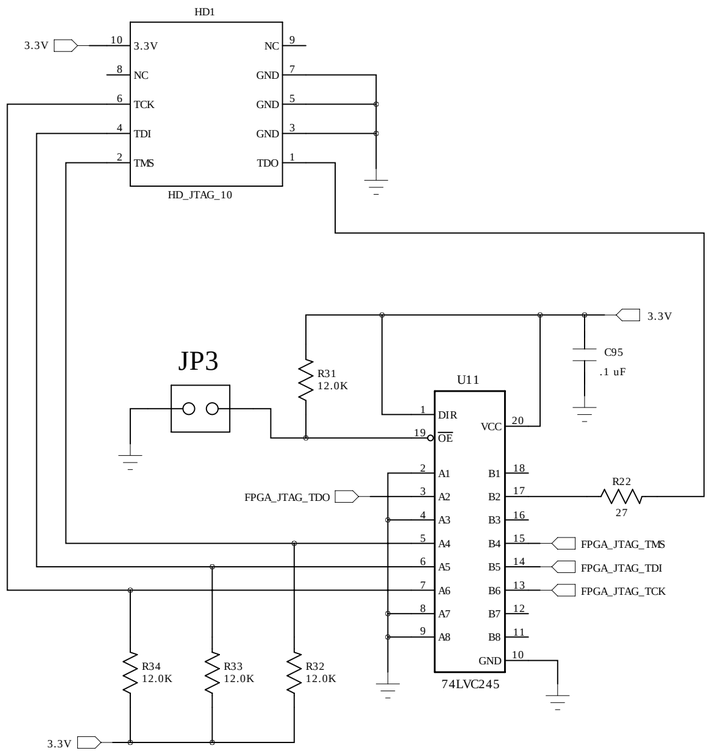
Added R77 (1K resistor)

This is because TS-4200 has 1.8V logic level on CAN_RXD

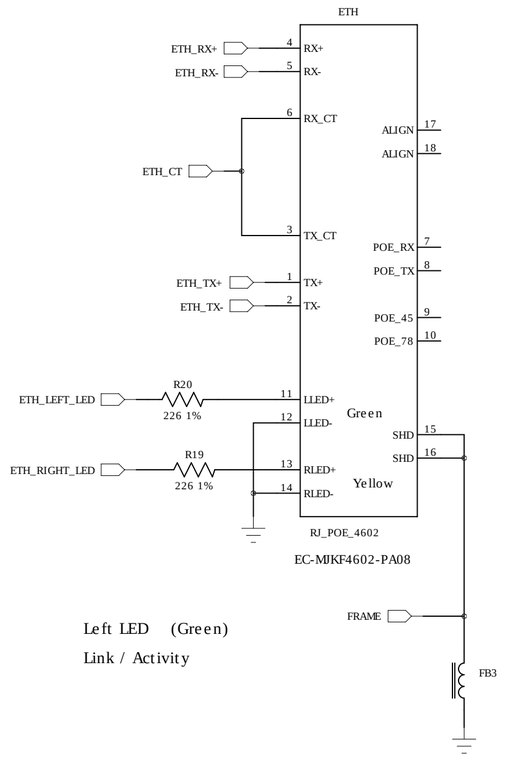
| | | |
|---|---|---|
| Technologic Systems | Date Jan. 11, 2016 | |
| Title: TS-8200 Documentation | | |
| Rev: | Designer RLM | Sheet 0 of 6 |

# TS-8200

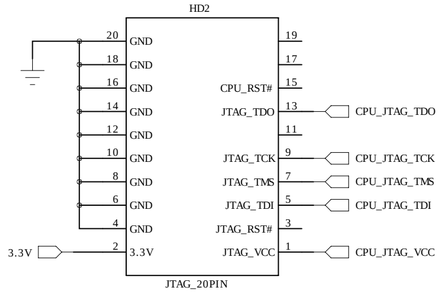
## FPGA JTAG Header




## 10/100 Ethernet



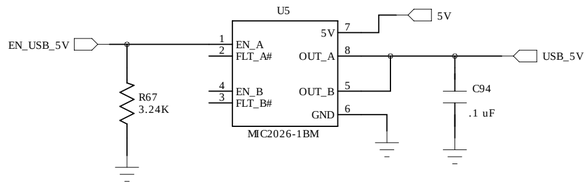

## CPU JTAG Header




## Not Populated

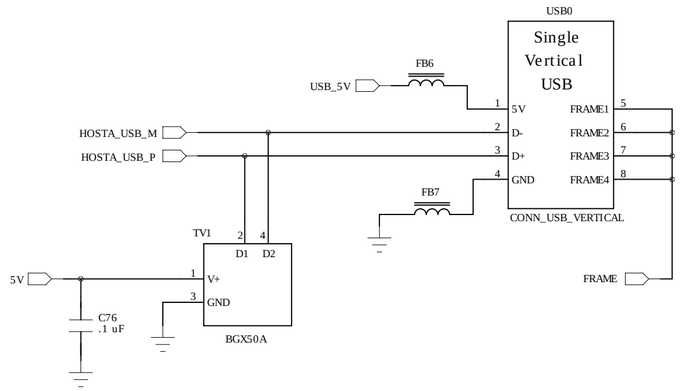
| | | |
|---|---|---|
| Technologic Systems | Date March 15, 2010 | |
| Title: TS-8200 Ethernet, FPGA JTAG | | |
| Rev: | Designer | Sheet 1 of 6 |

# USB Power Switch

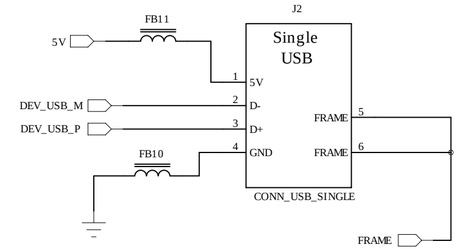



2 x 700 mA typ. current limit

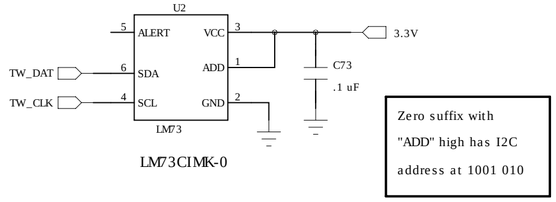
# Host USB




# USB Device



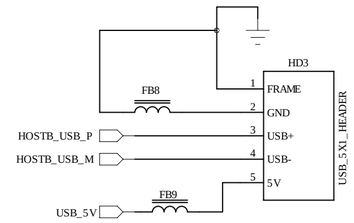

# Temp Sensor



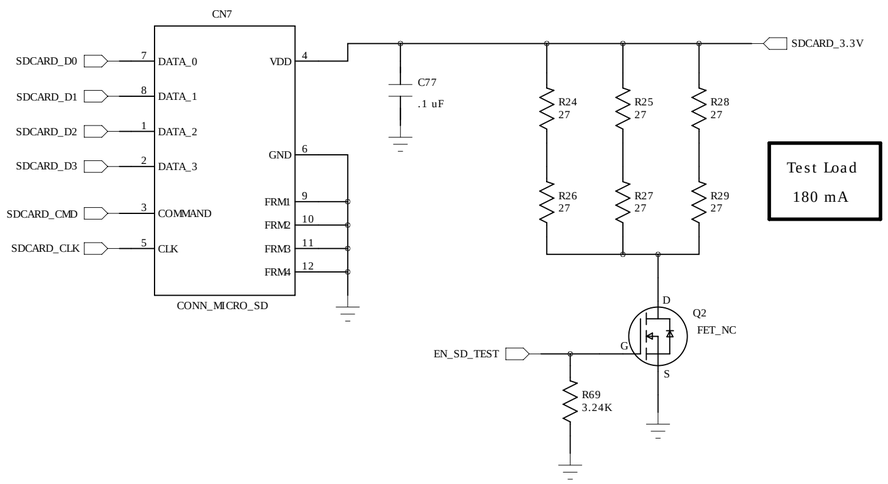

LM73CIMK-0

Zero suffix with "ADD" high has I2C address at 1001 010

# USB_B Header

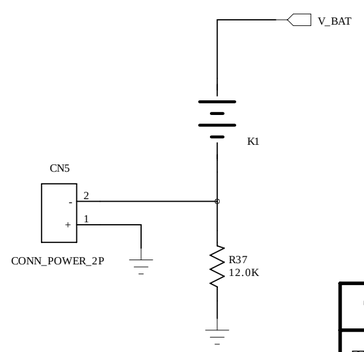



# Micro SD Card Socket




Test Load
180 mA

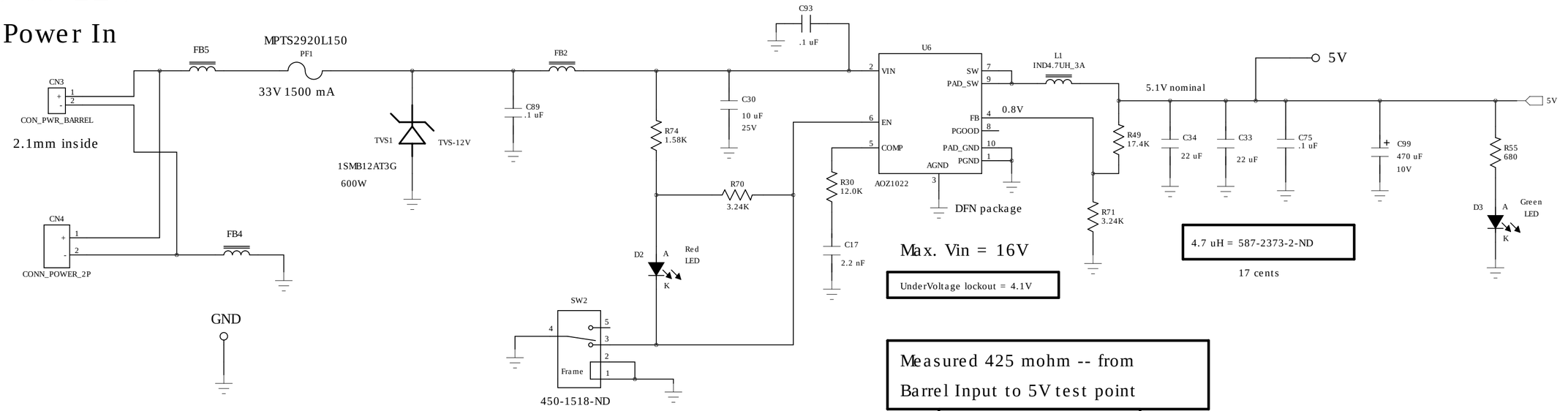
# RTC Battery




| | | |
|---|---|---|
| Technologic Systems | | Date March 15, 2010 |
| Title: TS-8200 USB, Serial Flash, SD Card | | |
| Rev: | Designer | Sheet 2 of 6 |

# 5V to 12V

## Power In




## Power Switch

For Production Test
Fixture only

Measured 425 mohm -- from
Barrel Input to 5V test point

with 5.0V at Input

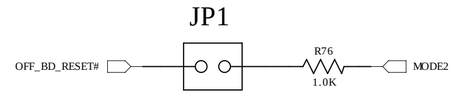
| PolyFuse | mohms |
|---|---|
| 1500 mA 33V | 122 |
| 1100 mA 6V | 160 |
| 750 mA 13V | 212 |

Ferrite beads = 32 mohm

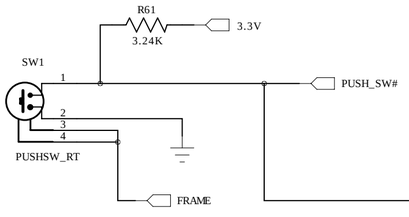
.063 hole
GND

# 5V Regulator

# Force Boot to SD card

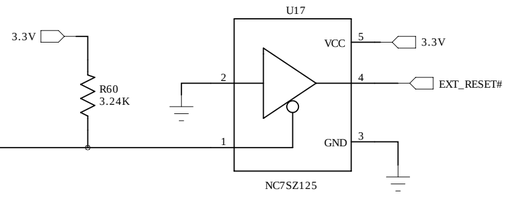



# Push Switch




## Enable

Not Populated




## Reset


| | | |
|---|---|---|
| Technologic Systems | Date March 15, 2010 | |
| Title: TS-8200 Power IN, Push Sw. Jumpers | | |
| Rev: | Designer RLM | Sheet 3 of 6 |

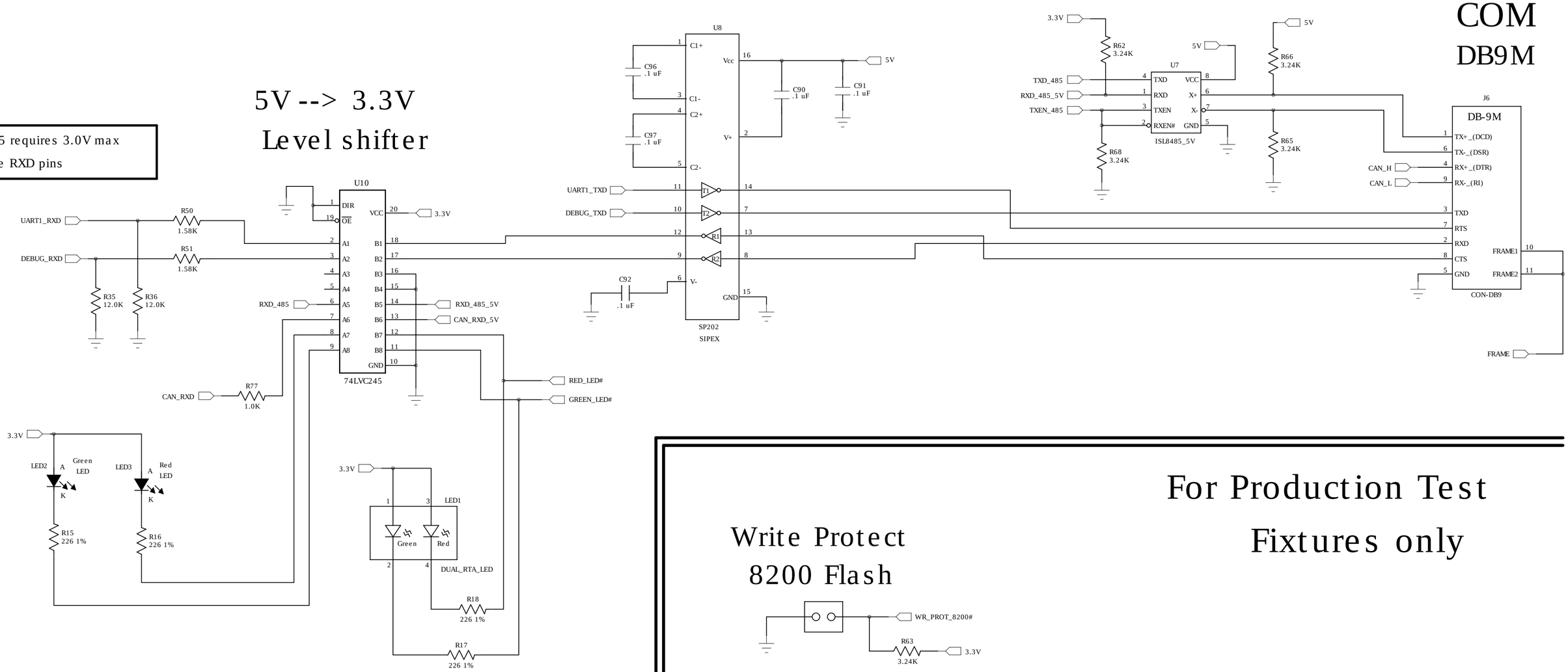
# RS-232 Transceiver

# RS-485 Driver

# COM
# DB9M

## 5V --> 3.3V
## Level shifter

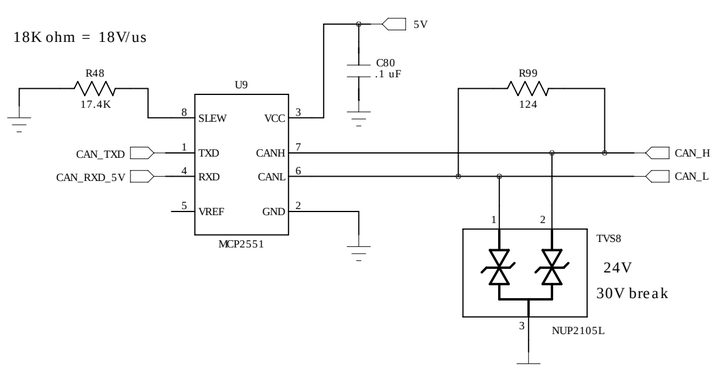
MX515 requires 3.0V max
on the RXD pins







# CAN Tranceiver



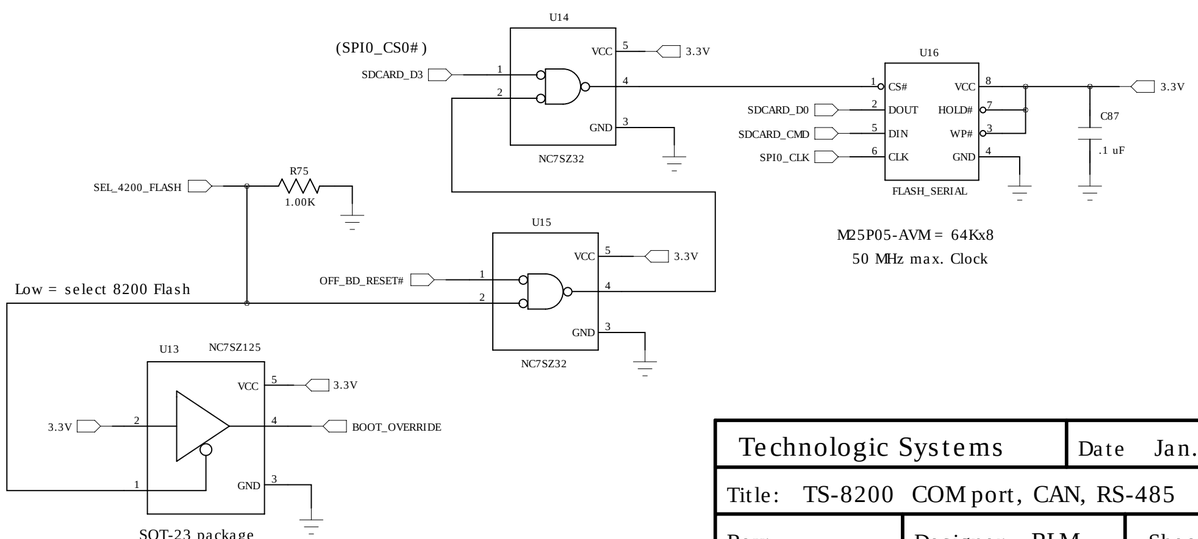

# For Production Test
# Fixtures only

## Write Protect
## 8200 Flash




## TS-4200 Boot
## using SPI0 Port

## 64KB Serial
## Boot Flash




| | | |
|---|---|---|
| Technologic Systems | Date Jan. 11, 2016 | |
| Title: TS-8200 COM port, CAN, RS-485 | | |
| Rev: | Designer RLM | Sheet 4 of 6 |

# Two 100-pin Module Connectors

"5V" pins supply all power to the module
Apply 4.5V to 5.5V to these pins

Current drain is < 600 mA
(less than 3 Watts)

EXT_RESET# is an Input to the SBC used to reboot the CPU

Do not drive active high
(use open drain)

## Left

CN1

FPGA JTAG: FPGA_JTAG_TMS, FPGA_JTAG_TCK, FPGA_JTAG_TDO, FPGA_JTAG_TDI

OFF_BD_RESET# is an output from the SBC

BOOT_OVERRIDE, SPI0_CLK

SD Card: SDCARD_D2, SDCARD_D3, SDCARD_CMD, SDCARD_3.3V, SDCARD_CLK, SDCARD_D0, SDCARD_D1

SD card signals on connector are wired in parallel with SD card socket. Only one can be populated with SD card

| Pin | Signal |
|---|---|
| 1 | FPGA_JTAG_TMS |
| 2 | EXT_RESET# |
| 3 | FPGA_JTAG_TCK |
| 4 | EN_USB_5V |
| 5 | FPGA_JTAG_TDO |
| 6 | SDCARD_D2 |
| 7 | FPGA_JTAG_TDI |
| 8 | SDCARD_D3 |
| 9 | OFF_BD_RESET# |
| 10 | SDCARD_CMD |
| 11 | BOOT_OVERRIDE |
| 12 | SDCARD_3.3V |
| 13 | SPI0_CLK |
| 14 | SDCARD_CLK |
| 15 | 5V |
| 16 | 5V |
| 17 | |
| 18 | SDCARD_D0 |
| 19 | |
| 20 | SDCARD_D1 |
| 21 | |
| 22 | ENWR_SERFLASH |
| 23 | |
| 24 | |
| 25 | |
| 26 | |
| 27 | |
| 28 | |
| 29 | 5V |
| 30 | |
| 31 | |
| 32 | |
| 33 | |
| 34 | |
| 35 | |
| 36 | V_BAT |
| 37 | |
| 38 | |
| 39 | |
| 40 | |
| 41 | |
| 42 | |
| 43 | |
| 44 | |
| 45 | |
| 46 | |
| 47 | 5V |
| 48 | |
| 49 | |
| 50 | |
| 51 | |
| 52 | |
| 53 | |
| 54 | |
| 55 | |
| 56 | |
| 57 | |
| 58 | |
| 59 | |
| 60 | |
| 61 | |
| 62 | |
| 63 | |
| 64 | |
| 65 | |
| 66 | |
| 67 | TXEN_485 |
| 68 | |
| 69 | |
| 70 | |
| 71 | |
| 72 | |
| 73 | PUSH_SW# |
| 74 | |
| 75 | |
| 76 | |
| 77 | |
| 78 | |
| 79 | |
| 80 | |
| 81 | |
| 82 | |
| 83 | |
| 84 | |
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| 88 | |
| 89 | |
| 90 | |
| 91 | |
| 92 | |
| 93 | |
| 94 | |
| 95 | |
| 96 | |
| 97 | |
| 98 | MODE2 |
| 99 | |
| 100 | |

FPGA DIO

CON100_5179029-4_TYCO

## Right

CN2

Ethernet: ETH_RX+, ETH_RX-, ETH_CT, ETH_TX+, ETH_TX-, ETH_CT

V_CORE

C81 .1 uF

Maximum load on 3.3V pin is 300 mA

I2C: TW_CLK, TW_DAT

CPU JTAG: CPU_JTAG_TMS, CPU_JTAG_TCK, CPU_JTAG_TDI, CPU_JTAG_TDO

V_1.8

V_T1

SPI Bus: SPI_MOSI, SPI_MISO, SPI_CLK

CPU_JTAG_VCC

Console: DEBUG_TXD, DEBUG_RXD

CAN: CAN_TXD, CAN_RXD

Serial Ports or DIO: TXD_485, RXD_485, UART1_TXD, UART1_RXD

DIO_20, DIO_21, DIO_50 and DIO_51 have a 2K ohm resistor to GND (initializes to a logic "0")

| Pin | Signal |
|---|---|
| 1 | ETH_RX+ |
| 2 | ETH_LEFT_LED |
| 3 | ETH_RX- |
| 4 | ETH_RIGHT_LED |
| 5 | ETH_CT |
| 6 | RED_LED# |
| 7 | ETH_TX+ |
| 8 | GREEN_LED# |
| 9 | ETH_TX- |
| 10 | |
| 11 | ETH_CT |
| 12 | |
| 13 | |
| 14 | |
| 15 | |
| 16 | |
| 17 | |
| 18 | |
| 19 | |
| 20 | |
| 21 | |
| 22 | |
| 23 | DEV_USB_M |
| 24 | |
| 25 | DEV_USB_P |
| 26 | |
| 27 | |
| 28 | TW_CLK |
| 29 | HOSTA_USB_M |
| 30 | TW_DAT |
| 31 | HOSTA_USB_P |
| 32 | |
| 33 | |
| 34 | |
| 35 | HOSTB_USB_M |
| 36 | |
| 37 | HOSTB_USB_P |
| 38 | |
| 39 | 3.3V |
| 40 | |
| 41 | |
| 42 | |
| 43 | |
| 44 | CPU_JTAG_TMS |
| 45 | |
| 46 | CPU_JTAG_TCK |
| 47 | |
| 48 | CPU_JTAG_TDI |
| 49 | |
| 50 | CPU_JTAG_TDO |
| 51 | |
| 52 | ENWR_SERFLASH |
| 53 | |
| 54 | |
| 55 | |
| 56 | |
| 57 | V_1.8 |
| 58 | |
| 59 | |
| 60 | |
| 61 | |
| 62 | WR_PROT_8200# |
| 63 | V_T1 |
| 64 | |
| 65 | |
| 66 | AD_CS# |
| 67 | SPI_MOSI |
| 68 | |
| 69 | SPI_MISO |
| 70 | EN_SD_TEST |
| 71 | SPI_CLK |
| 72 | SEL_4200_FLASH |
| 73 | |
| 74 | |
| 75 | |
| 76 | |
| 77 | |
| 78 | TXD_485 |
| 79 | CPU_JTAG_VCC |
| 80 | RXD_485 |
| 81 | |
| 82 | UART1_TXD |
| 83 | |
| 84 | UART1_RXD |
| 85 | |
| 86 | |
| 87 | |
| 88 | |
| 89 | |
| 90 | |
| 91 | |
| 92 | |
| 93 | DEBUG_TXD |
| 94 | |
| 95 | DEBUG_RXD |
| 96 | |
| 97 | CAN_TXD |
| 98 | |
| 99 | CAN_RXD |
| 100 | |

CON100_5179029-4_TYCO

| Mode 2 | Boots from |
|---|---|
| 1 | NAND Flash |
| 0 | SD Card |

MODE1 and MODE2 states are latched prior to OFF_BD_RESET# deasserted

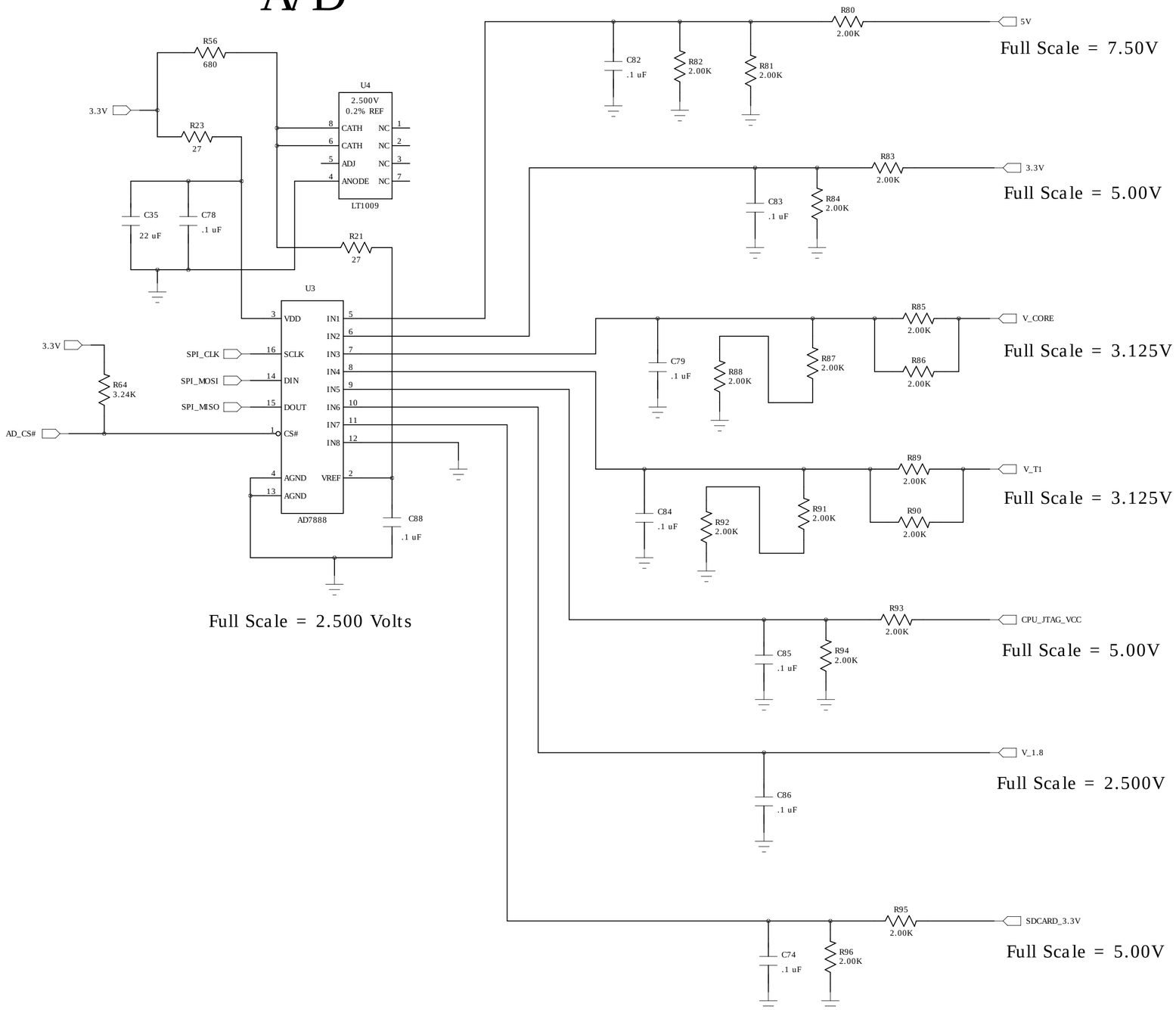
MODE1 and MODE2 have PU resistors on the SBC module

Use 1.5K ohm resistor to GND to set low

| | | |
|---|---|---|
| Technologic Systems | Date March 15, 2010 | |
| Title: TS-8200 Dual 100-pin Module Connectors | | |
| Rev: | Designer RLM | Sheet 5 of 6 |

# For Production Test Fixture Only

## A/D




Full Scale = 2.500 Volts

R80-R96 0.1% tolerance

| |
|---|
| P2.0KDBDKR-ND = .1% 0603 |
| 5K Reel is .05 each |

| | | |
|---|---|---|
| Technologic Systems | Date March 15, 2010 | |
| Title: TS-8200 A/D converter | | |
| Rev: | Designer RLM | Sheet 6 of 6 |