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DS80C400 (DSTINIm400) Networked Microcontroller Evaluation Kit

www.maxim-ic.com

GENERAL DESCRIPTION

The DSTINIm400 is a fully assembled and tested circuit board that evaluates the DS80C400 network microcontroller. In addition to the DS80C400, the DSTINIm400 includes a real-time clock, 1MB flash, 1MB static RAM, and support for an external Ethernet PHY for connecting to a wide variety of networks. The circuit board is designed as a module to be plugged into a 144-pin SODIMM connector. For evaluation, the DSTINIm400 can be inserted into the DSTINIs400 socket board. The combination of the two boards allows full evaluation of the features of the DS80C400 using an Ethernet network.

Detailed information about the initial setup process and use of the TINI platform is contained in *Application Note 612: Getting Started with the TINIm400 (DS80C400) Verification Module.*

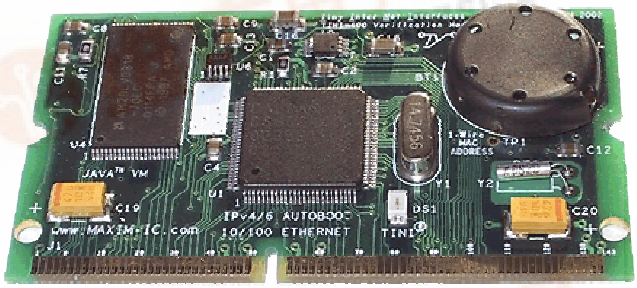
FEATURES

- Hosts the TINI® Runtime Environment in Validated Hardware Design (in Conjunction with the DSTINIs400)
- Industry Standard MII Interface to Connects to Network Interfaces Including 10/100 Base-T, Optical, and HomePNA
- Three Hardware Serial Ports
- Integrated 1-Wire® Network Master
- CAN2.0B Port
- Real-Time Clock for Time Stamping
- 1MB Flash ROM for Application Storage
- 1MB NV SRAM for Data Storage
- 3.3V Single-Supply Operation
- Fully Assembled and Tested Design

ORDERING INFORMATION

PART	TEMP RANGE	DIMENSIONS
DSTINIm400	0°C to +70°C	Approx. 67mm x 48mm, 144 SODIMM

Note: *To evaluate the DS80C400, order both a DSTINIm400 and a DSTINIs400.*



COMPONENT LIST

DESIGNATION	QTY	DESCRIPTION
C1–C5, C8–C14, C17, C18	14	0.1µF, ±20%, 10V ceramic capacitors (0805)
C6, C7	2	27pF, ±20%, 50V C0G ceramic capacitors (0805)
C15	1	1.0µF, ±20%, 10V ceramic capacitor (1206)
C16	1	4.7µF, ±20%, 10V ceramic capacitor (1206)
C19, C20	2	47µF, ±20%, tantalum capacitors (C)
BT1	1	CR1632 3V lithium cell

DESIGNATION	QTY	DESCRIPTION
DN1	1	BAT54S diode (SOT23)
DS1	1	SML-LX23SRC Lumex LED
Q1, Q3	2	BSS84 P-Channel FET (SOT23)
Q2	1	2N7002 N-Channel FET (SOT23)
R1, R4, R7, R8	4	10kΩ, ±5% resistors (0805)
R2	1	1.5kΩ, ±5% resistor (0805)
R3	1	1kΩ, ±5% resistor (0805)
R5	1	2.2kΩ, ±5% resistor (0805)

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COMPONENT LIST (continued)

DESIGNATION	QTY	DESCRIPTION
R6	1	10Ω, ±5% resistor (0805)
U1	1	DS80C400 networked microcontroller
U2, U3	2	HM62W8512BLTT-7UL 512kB RAM
U4	1	AM29LV081B-70EC 1MB flash
U5, U6	2	MAX6365PKA31 reset controllers

DESIGNATION	QTY	DESCRIPTION
U7	1	MAX1792EUA18 voltage regulator
U8	1	DS1672U-33 real-time clock
U9	1	DS2502-E48 IEEE MAC address
Y1	1	14.7456MHz crystal
Y2	1	32kHz crystal

QUICK START

It is highly recommended that the developer use the DSTINIs400 sockets board in conjunction with the DSTINIm400. The DSTINIs400 was specifically designed to hold the DSTINIm400 and provide the physical interconnects (Ethernet PHY), as well as the 1-Wire, I²C™, SPI™, CAN, and four serial port connectors.

If the developer wishes to implement his or her own design using the DSTINIm400, a 144-pin SODIMM connector such as the Hirose SX6E-144S-0.8SH is required.

The TINIm400 must be seated correctly into the DSTINIs400 to ensure a proper connection. Insert the TINIm400 into the connector at a 30-degree angle. Place index fingers behind the SODIMM connector and place thumbs on the top edge of the TINIm400, pressing firmly until it clicks into place or seats with only a millimeter of gold contact exposed. Press the TINIm400 down parallel to the TINIs400 until the side arms latch into the center of the semicircular cutouts on the TINIm400.

Note that the flash used on the DSTINIm400 limits applications to a maximum of 2x clock multiplier mode with the included 14.7456MHz crystal. Use of the 4x clock multiplier mode results in unstable operations.

FOR MORE INFORMATION

TINI platform details can be found at www.maxim-ic.com/TINI. The *TINI Specification and Developer's Guide* (Addison-Welsey, 2001) is an invaluable resource when developing with the TINI platform. Download a free copy from our website at www.maxim-ic.com/TINIguide.

DS80C400 INFORMATION

For more information about the DS80C400 network microcontroller, please consult the DS80C400 data sheet available on our website at www.maxim-ic.com/microcontrollers.

ADDITIONAL RESOURCES

For detailed information about the initial setup and use of the TINI platform, refer to *Application Note 612: Getting Started with the TINIm400 (DS80C400) Verification Module at* www.maxim-ic.com/appnoteindex.

DS80C400 Networked Microcontroller Data Sheet: www.maxim-ic.com/DS80C400

Microcontroller Website: www.maxim-ic.com/microcontrollers

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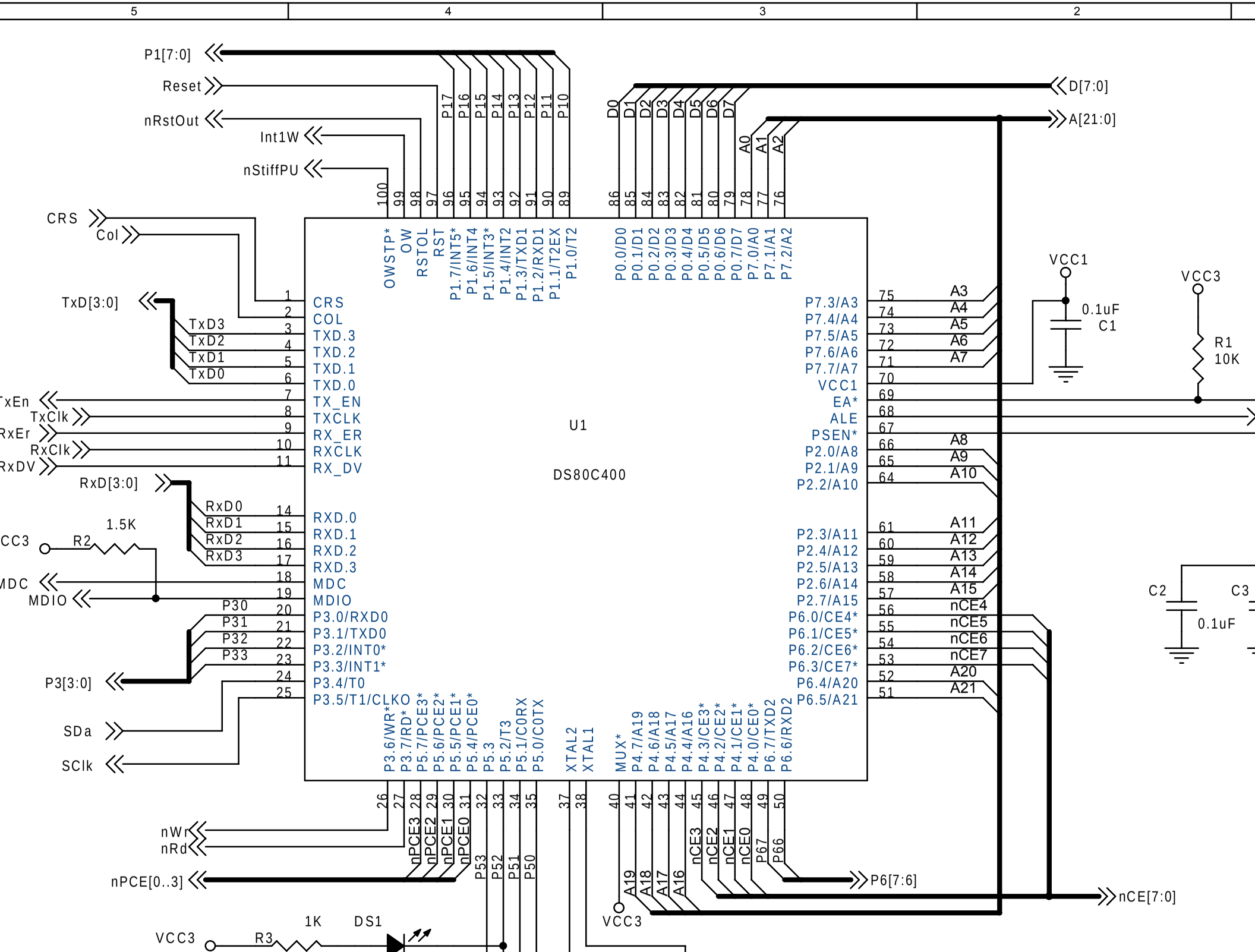
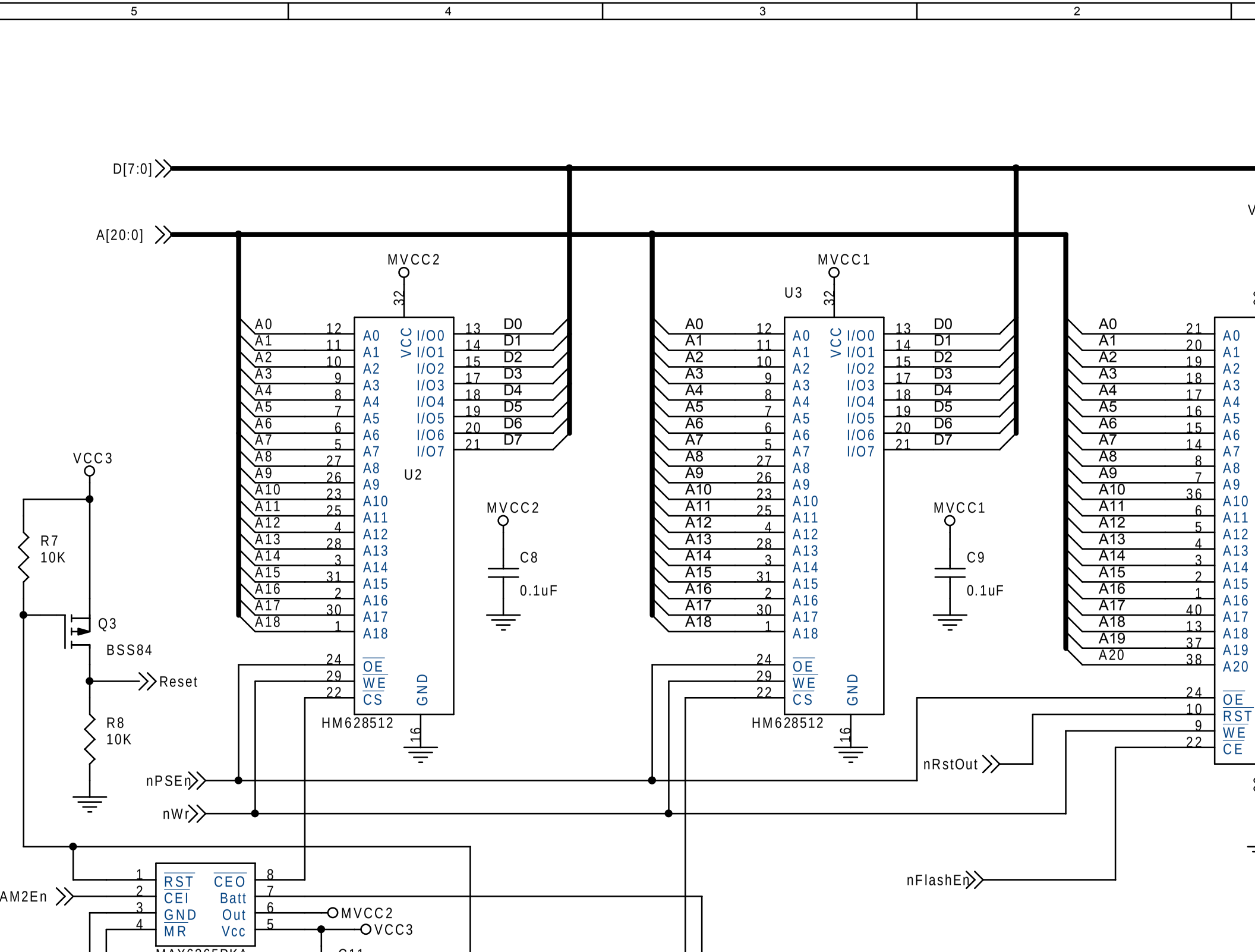
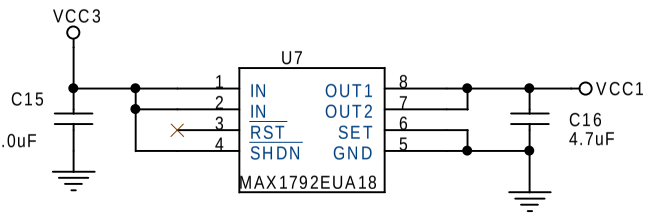
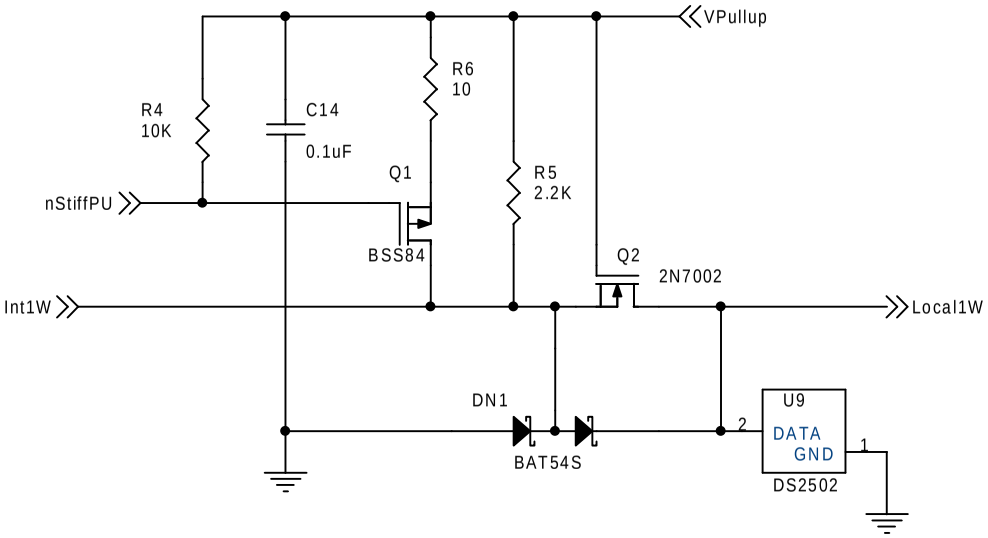
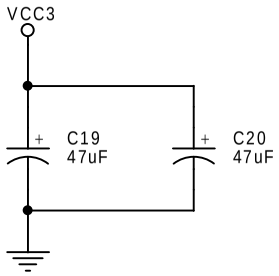

5
4
3
2
P1[7:0]
Reset
nRstOut
Int1W
nStiffPU
CRS
Col
TxD[3:0]
TxD3
TxD2
TxD1
TxD0
TxEn
TxClk
RxEr
RxClk
RxDV
RxD[3:0]
RxD0
RxD1
RxD2
RxD3
1.5K
R2
MDC
MDIO
P30
P31
P32
P33
P3[3:0]
SDa
SClk
nWr
nRd
nPCE[0..3]
VCC3
1K
DS1
R3
U1
DS80C400
CRS
COL
TXD.3
TXD.2
TXD.1
TXD.0
TX_EN
TXCLK
RX_ER
RXCLK
RX_DV
RXD.0
RXD.1
RXD.2
RXD.3
MDC
MDIO
P3.0/RXD0
P3.1/TXD0
P3.2/INT0*
P3.3/INT1*
P3.4/T0
P3.5/T1/CLKO
P3.6/WR*
P3.7/RD*
OWSTP*
OW
RSTOL
RST
P1.7/INT5*
P1.6/INT4
P1.5/INT3*
P1.4/INT2
P1.3/TXD1
P1.2/RXD1
P1.1/T2EX
P1.0/T2
XTAL2
XTAL1
P0.0/D0
P0.1/D1
P0.2/D2
P0.3/D3
P0.4/D4
P0.5/D5
P0.6/D6
P0.7/D7
P7.0/A0
P7.1/A1
P7.2/A2
P7.3/A3
P7.4/A4
P7.5/A5
P7.6/A6
P7.7/A7
VCC1
EA*
ALE
PSEN*
P2.0/A8
P2.1/A9
P2.2/A10
P2.3/A11
P2.4/A12
P2.5/A13
P2.6/A14
P2.7/A15
P6.0/CE4*
P6.1/CE5*
P6.2/CE6*
P6.3/CE7*
P6.4/A20
P6.5/A21
MUX*
P4.7/A19
P4.6/A18
P4.5/A17
P4.4/A16
P4.3/CE3*
P4.2/CE2*
P4.1/CE1*
P4.0/CE0*
P6.7/TXD2
P6.6/RXD2
P5.7/PCE3*
P5.6/PCE2*
P5.5/PCE1*
P5.4/PCE0*
P5.3
P5.2/T3
P5.1/C0RX
P5.0/C0TX
D[7:0]
A[21:0]
VCC1
0.1uF
C1
VCC3
R1
10K
C2
0.1uF
C3
P6[7:6]
nCE[7:0]
VCC3

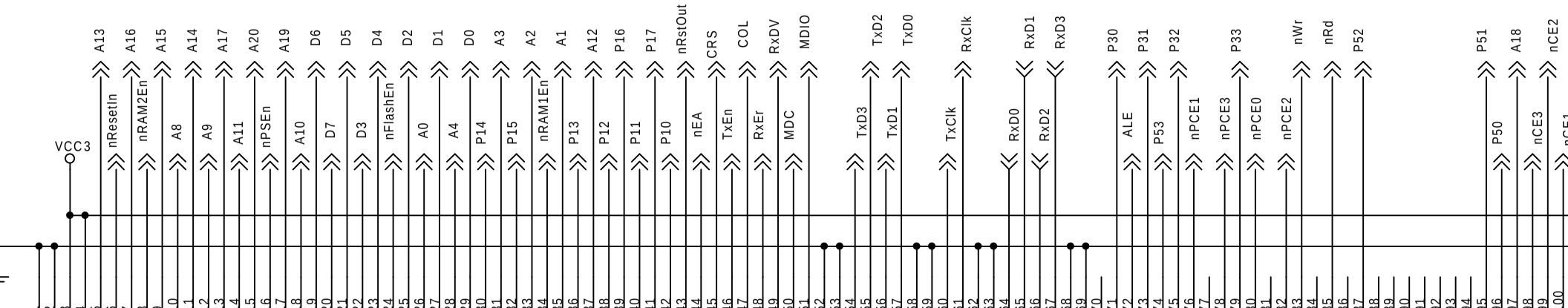


5
4
3
2
D[7:0]
A[20:0]
MVCC2
MVCC1
U2
U3
HM628512
HM628512
VCC
I/O0
I/O1
I/O2
I/O3
I/O4
I/O5
I/O6
I/O7
OE
WE
CS
GND
RST
CE
C8
0.1uF
C9
0.1uF
VCC3
R7
10K
Q3
BSS84
Reset
R8
10K
nPSEn
nWr
nRstOut
nFlashEn
AM2En
RST
CEI
GND
MR
CEO
Batt
Out
Vcc
MVCC2
VCC3


VCC3
C15
.0uF
U7
IN
IN
RST
SHDN
OUT1
OUT2
SET
GND
MAX1792EUA18
VCC1
C16
4.7uF


VPullup
R4
10K
C14
0.1uF
R6
10
R5
2.2K
Q1
BSS84
nStiffPU
Q2
2N7002
Int1W
Local1W
DN1
BAT54S
U9
DATA
GND
DS2502


VCC3
C19
47uF
C20
47uF


VCC3
A13
nResetIn
A16
nRAM2En
A15
A8
A14
A9
A17
A11
A20
nPSEn
A19
A10
D6
D7
D5
D3
D4
nFlashEn
D2
A0
D1
A4
D0
P14
A3
P15
A2
nRAM1En
A1
P13
A12
P12
P16
P11
P17
P10
nRstOut
nEA
CRS
TxEn
COL
RxEr
RxDV
MDC
MDIO
TxD3
TxD2
TxD1
TxD0
TxClk
RxClk
RxD0
RxD1
RxD2
RxD3
P30
ALE
P31
P53
P32
nPCE1
P33
nPCE3
nPCE0
nPCE2
nWr
nRd
P52
P51
P50
A18
nCE3
nCE2