

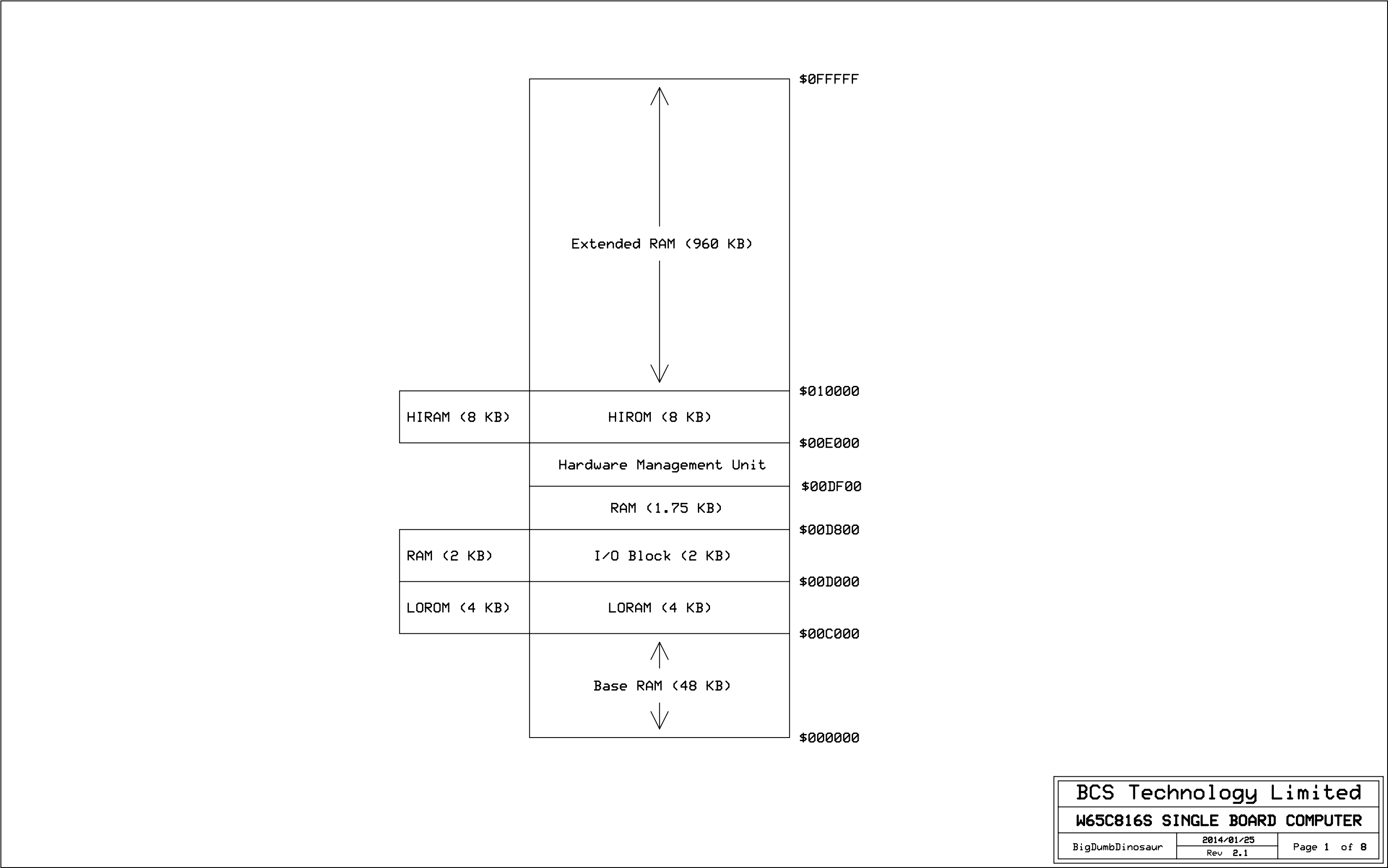
PROOF OF CONCEPT V2

SINGLE-BOARD COMPUTER

One Megabyte Static RAM System

Powered by the W65C816S Microprocessor

Designed by BigDumbDinosaur



POC V2 MEMORY MAP																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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1) Default at power-on or reset.
2) Hardware management unit.

I/O BLOCK DECODING										
	8	4	2	1	0	0	0	0		
	0	0	0	0	8	4	2	1		
	0	0	0	0	0	0	0	0		
	0	0	0	0	0	0	0	0		
ADDRESS	A15	A14	A13	A12	A11	A10	A9	A8	ASSIGNMENT	SYMBOL
\$00D000	1	1	0	1	0	0	0	0	SC28C94 QUART	I00
\$00D100	1	1	0	1	0	0	0	1	DS1511 RTC	I01
\$00D200	1	1	0	1	0	0	1	0	53CF94 Control & PIO FIFO	I02
\$00D300	1	1	0	1	0	0	1	1	53CF94 DMA FIFO	I03
\$00D400	1	1	0	1	0	1	0	0	53CF94 DMA request	I04
\$00D500	1	1	0	1	0	1	0	1	---	---
\$00D600	1	1	0	1	0	1	1	0	---	---
\$00D700	1	1	0	1	0	1	1	1	---	---

HARDWARE MANAGEMENT UNIT

ADDRESS	SYMBOL	DESCRIPTION	BIT	FUNCTION
00DF00	hmumcfg	Memory map configuration	0	0: I/O at 00D000-00D7FF
				1: RAM at 00D000-00DEFF
			1	0: RAM at 00C000-00CFFF
				1: ROM at 00C000-00CFFF
			2	0: ROM at 00E000-00FFFF
				1: RAM at 00E000-00FFFF
			3	0: HIRAM write-enabled
				1: HIRAM write-protected

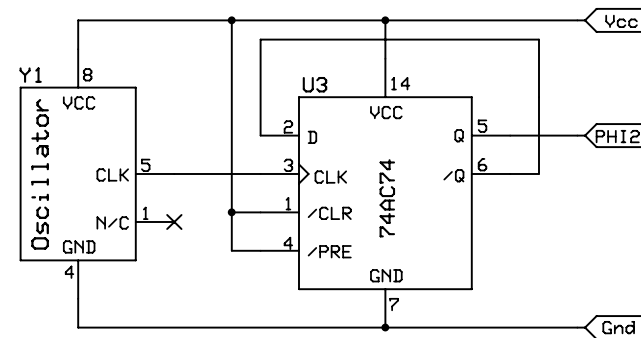
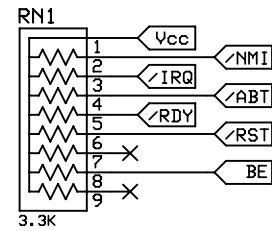
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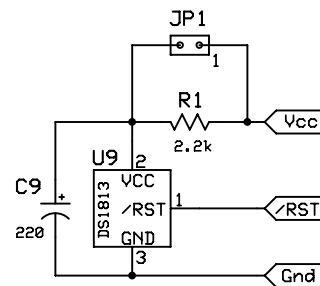
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2014/01/25
Rev 2.1

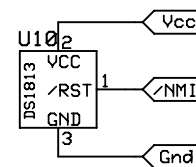
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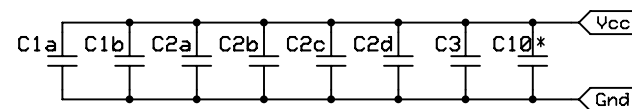
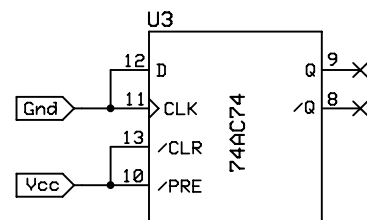
Clock Generator
CLK = [square wave] PHI2 = [square wave]



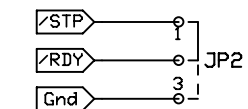
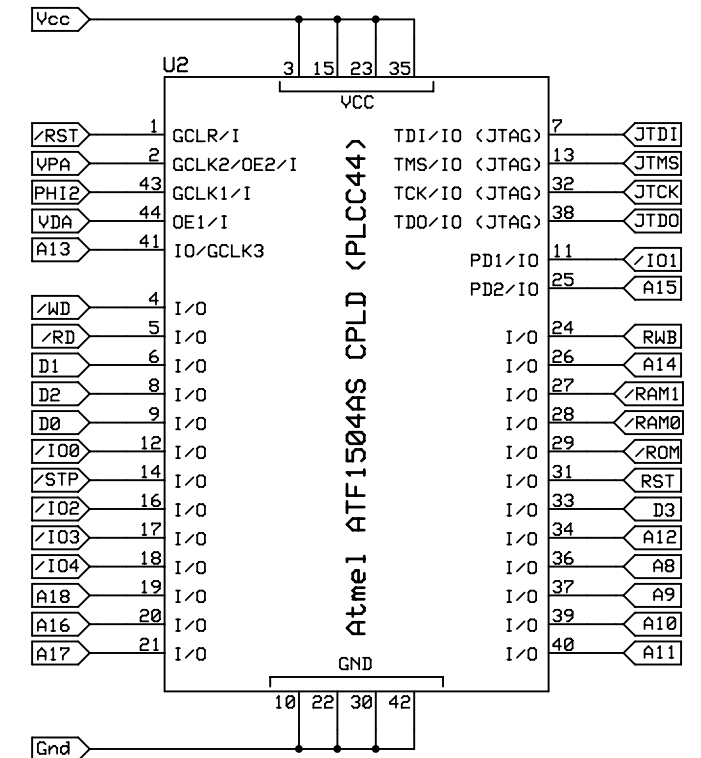
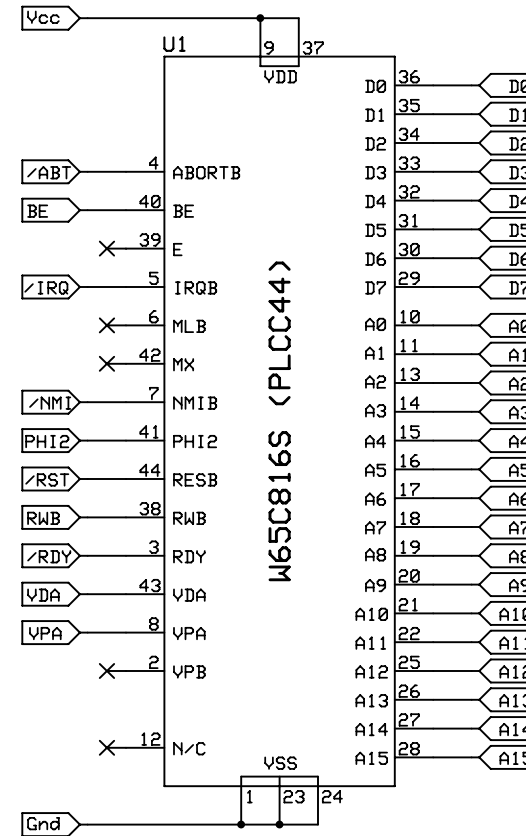
Reset Generator



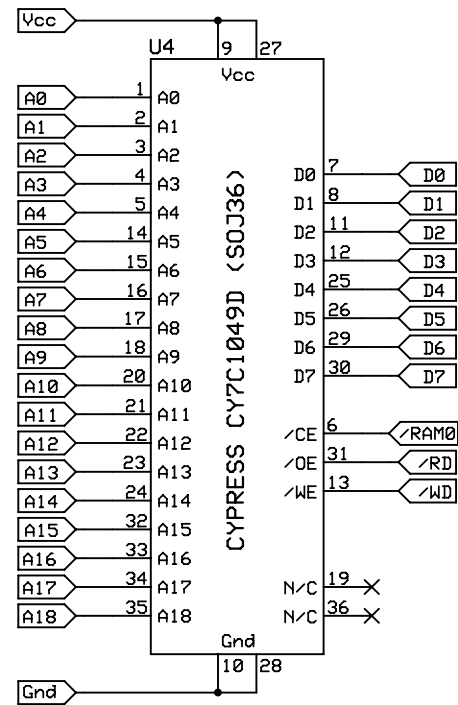
NMI Debouncer



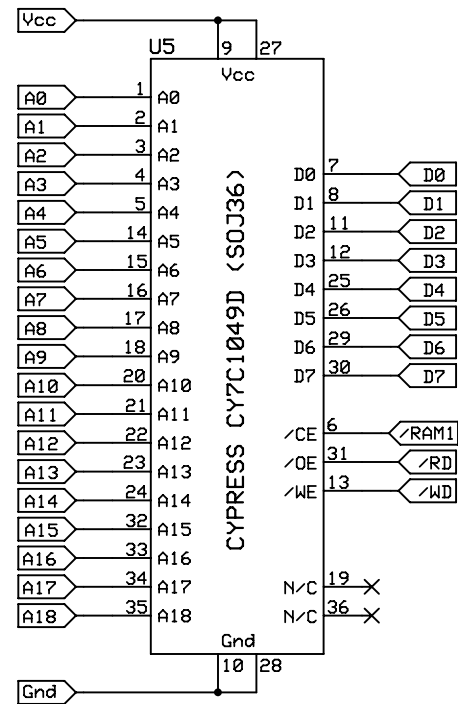
Decoupling Capacitors -- 0.1 uf @ 50v
*C10 → Y1



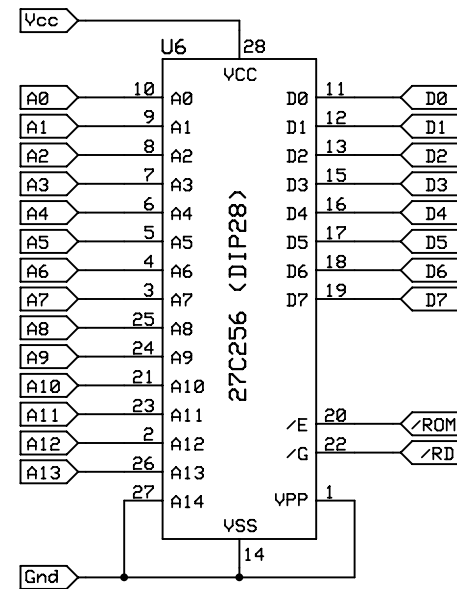
Run Inhibit (?)



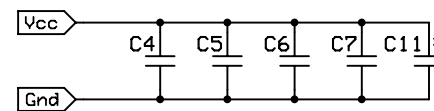
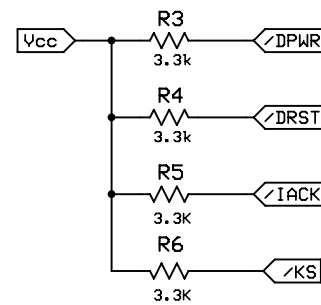
RAM (\$000000-\$07FFFF)



RAM (\$080000-\$0FFFFFF)

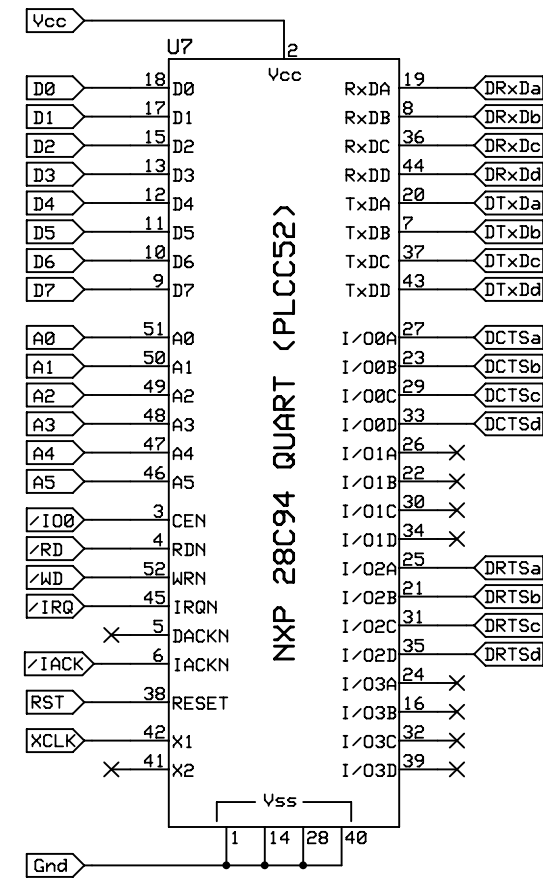


LOROM (\$00C000-\$00CFFF)
HIROM (\$00E000-\$00FFFF)

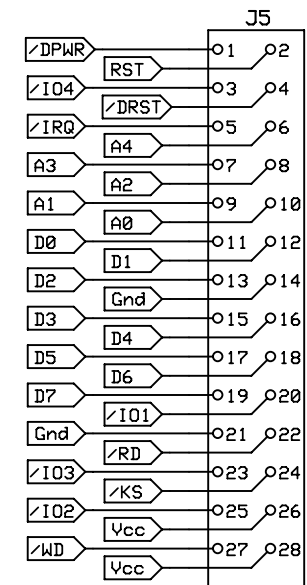
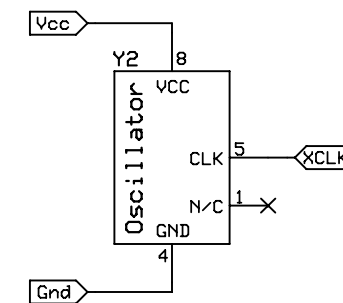


Decoupling Capacitors -- 0.1 uf @ 50v

*C11 → Y2



QUART (\$00D100)



Expansion Port

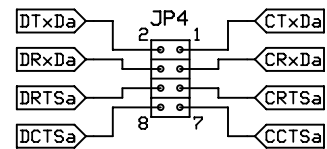
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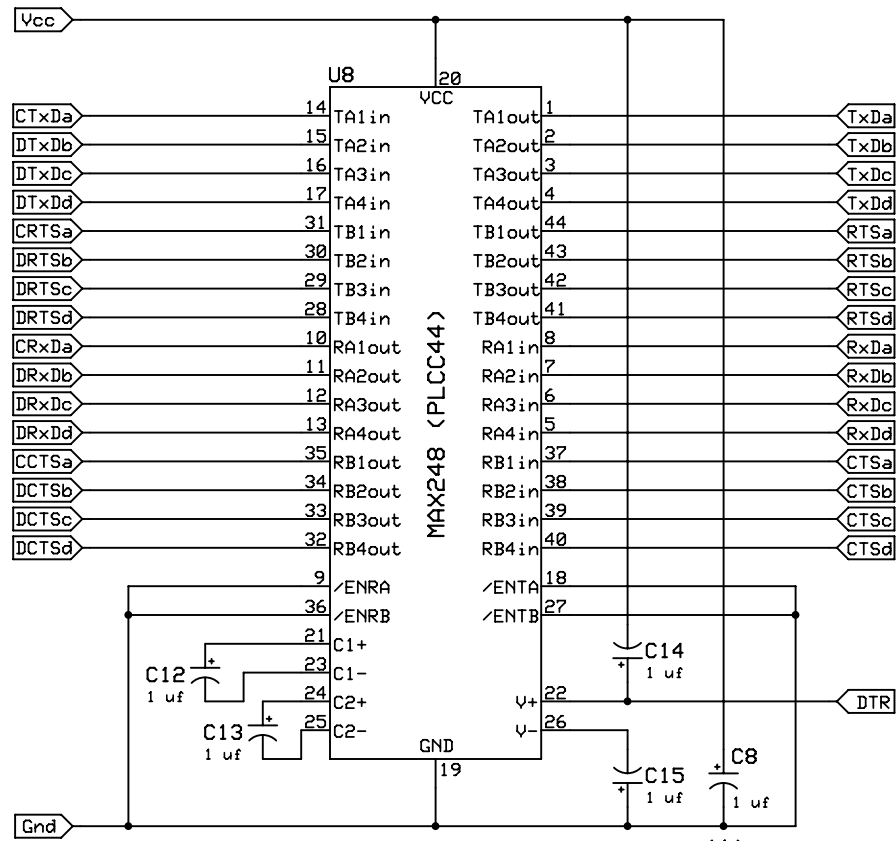
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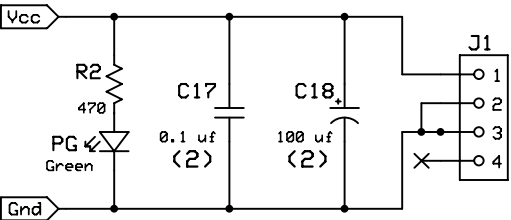
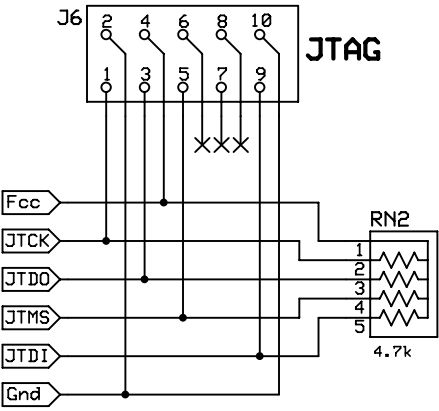
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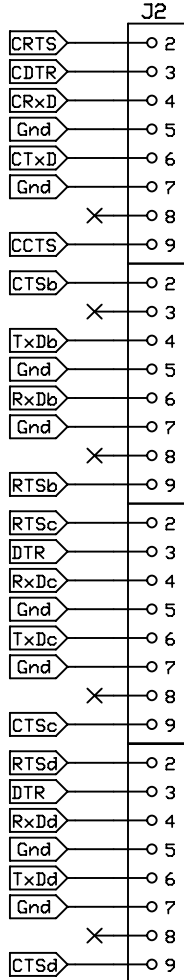
TIA-232 Console Enable (5)



TIA-232 Interface (1)



5.0 VDC Power In

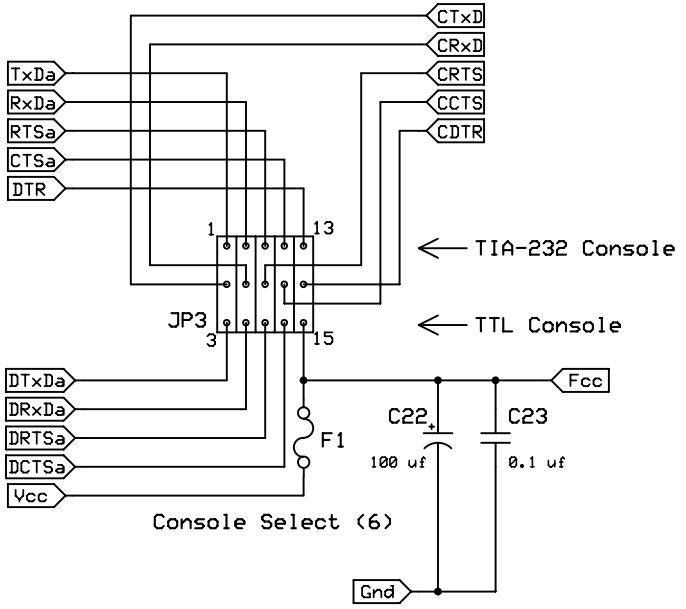


TIA-232/TTL Console (DTE)

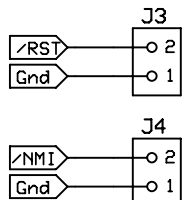
TIA-232 Channel B (xDTE)

TIA-232 Channel C (DTE)

TIA-232 Channel D (DTE)

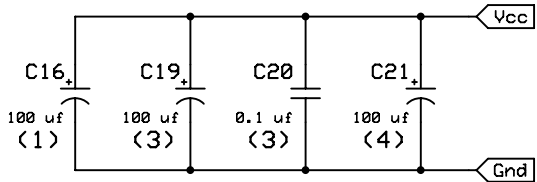


Console Select (6)



Reset

NMI



- 1) Place C8, C12, C13, C14, C15 & C16 as close to U8 as possible.
- 2) Place C17 & C18 as close to J1 as possible.
- 3) Place C19 & C20 as close to J5 as possible.
- 4) Place C21 as close to U7 as possible.
- 5) Jumper all pins for TIA-232 console operation. Remove all for TTL console operation.
- 6) Set jumpers as shown for console type.
- 7) Jumper only when programming U2 via JTAG port.

QTY	DESCRIPTION	WHERE USED	VENDOR	VENDOR PART NUMBER	SOURCE	
16	Capacitor, MLCC ceramic, X7R	0.1 uf 50v	C1A-B,C2A-D,C3-8,C12,C18,C21	Kemet	C326C104M5R5CA7301	Mouser
3	Capacitor, radial electrolytic, low ESR	100 uf 10v	C17,C19-20	Panasonic	EEU-FR1A101B	Mouser
1	Capacitor, radial electrolytic, low ESR	220 uf 10v	C10	Panasonic	EEU-FR1A221B	Mouser
5	Capacitor, tantalum	1.0 uf 25v	C9,C13-16	AVX	TAP105K025SCS	Mouser
1	Fuse, auto-reset, 200 mA trip point	F1	Littelfuse	60R010XU	Mouser	
4	Header, unshrouded, 1 row, 2 pos, 2.54mm pitch	J3-4,JP1-2	(3)	(3)	(3)	
1	Header, unshrouded, 1 row, 5 pos, 2.54mm pitch	JP3 (1)	TE Connectivity	5-146281-5	Mouser	
1	Header, unshrouded, 2 row, 5 pos, 2.54mm pitch	JP3 (1)	TE Connectivity	5-146257-5	Mouser	
1	Header, unshrouded, 2 row, 8 pos, 2.54mm pitch	JP4	TE Connectivity	5-146257-4	Mouser	
1	Header, shrouded, 2 row, 10 pos, 2.54mm pitch	J6	3M	30310-6002HB	Mouser	
1	IC - CPLD, 64 MC, PLCC44	U2	Atmel	ATF1504AS-10 JC44	Mouser	
1	IC - EPROM, 32kb x 8, 55 NS, FDIP28	U7	AMD	27C256-55	JAMECO	
1	IC - Flip-flop, dual D, SOIC-14	U3	generic	74AC74D	Mouser	
1	IC - Microprocessor, 16 bit, PLCC44	U1	WDC	W65C816S6PLG-14	Mouser	
1	IC - Real-time clock, DIP28	(2)	Maxim	DS1511Y+	Mouser	
2	IC - RAM, static, 512kb x 8, 10 NS, SOJ36	U5-6	Cypress	CY7C1049D-10	Mouser	
2	IC - Reset controller, timed, T0-92	U10-11	Maxim	DS1813+	Mouser	
1	IC - Transceiver, TIA-232, PLCC44	U9	Maxim	MAX248CQH+D	Mouser	
1	IC - UART, 4-channel, PLCC52	U8	NXP	SC28C94A1A	Digi-Key	
1	Jack, power (3.5" disk), RA PCB mount	J1	TE Connectivity	171826-4	Mouser	
1	Jack, quad 8P8C, RA PCB mount	J2	TE Connectivity	5557562-1	Mouser	
1	Light emitting diode, T1-3/4, green	PG	(3)	(3)	(3)	
1	Oscillator, 40.0000 MHz, 100 PPM, half-can	Y1	ECS	ECS-2100AX-40.0MHZ	Mouser	
1	Oscillator, 3.6864 MHz, 100 PPM, half-can	Y2	ECS	ECS-2100AX-3.6864MHZ	Mouser	
1	Resistor, axial carbon film, 470 Ohm	R2	(3)	(3)	(3)	
1	Resistor, axial carbon film, 2.2k Ohm	R1	(3)	(3)	(3)	
4	Resistor, axial carbon film, 3.3k Ohm	R3-6	(3)	(3)	(3)	
1	Resistor network, 4 position, 4.7k Ohm 1.13w	RN2	Bourns	4605X-101-472LF	Mouser	
1	Resistor network, 8 position, 3.3k Ohm 1.13w	RN1	Bourns	4609X-101-332LF	Mouser	
2	Socket, IC, DIP28, gold-flashed	J5,U7	CNC Tech	210-1-28-006	Digi-Key	
3	Socket, IC, PLCC44, gold-flashed	U1-2,U9	Assmann	A-CCS44-G	Digi-Key	
1	Socket, IC, PLCC52, gold-flashed	U8	Assmann	A-CCS52-G	Digi-Key	
1	Socket, oscillator, half-can, gold-flashed	Y1	Aries	1108800	Digi-Key	

- 1) JP3 consists of 1pc of TE 5-146281-5 & 1pc of TE 5-146257-5.
2) Mounted in J5 if SCSI HBA is not present.
3) Generic item obtainable from multiple vendors.

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