

Bitfire Development Kit
Bitfire Schematic
Version 1.12



Bitfire



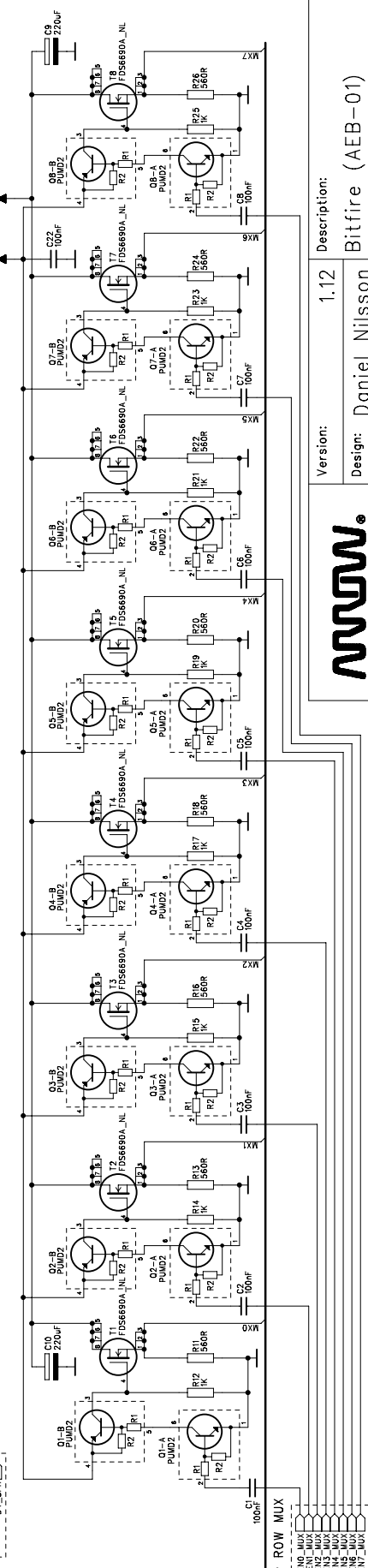
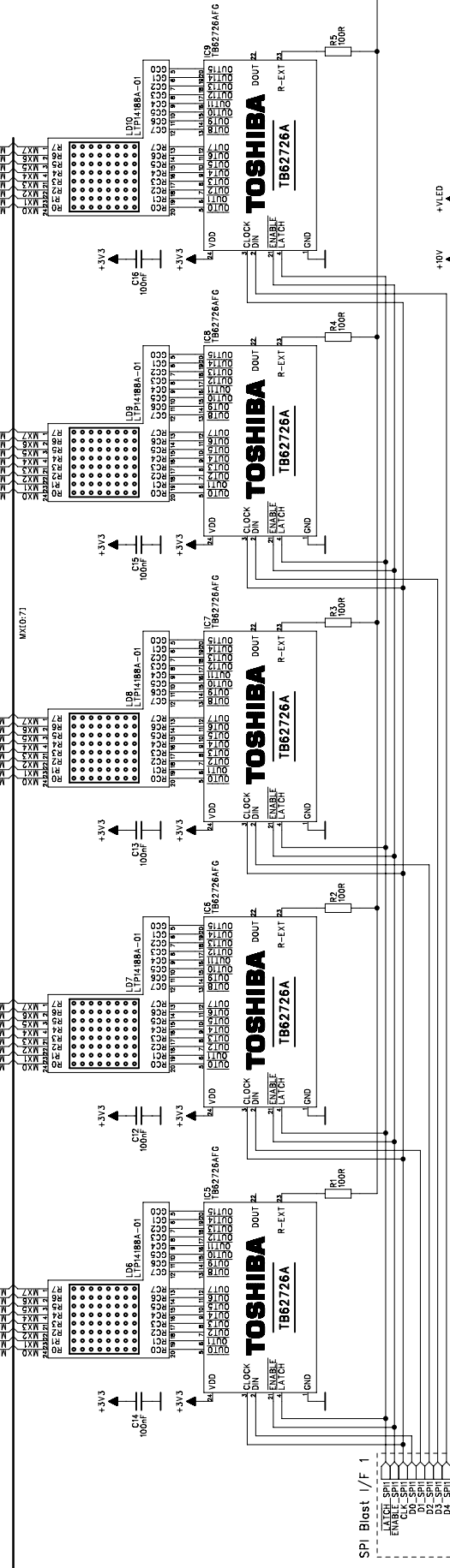
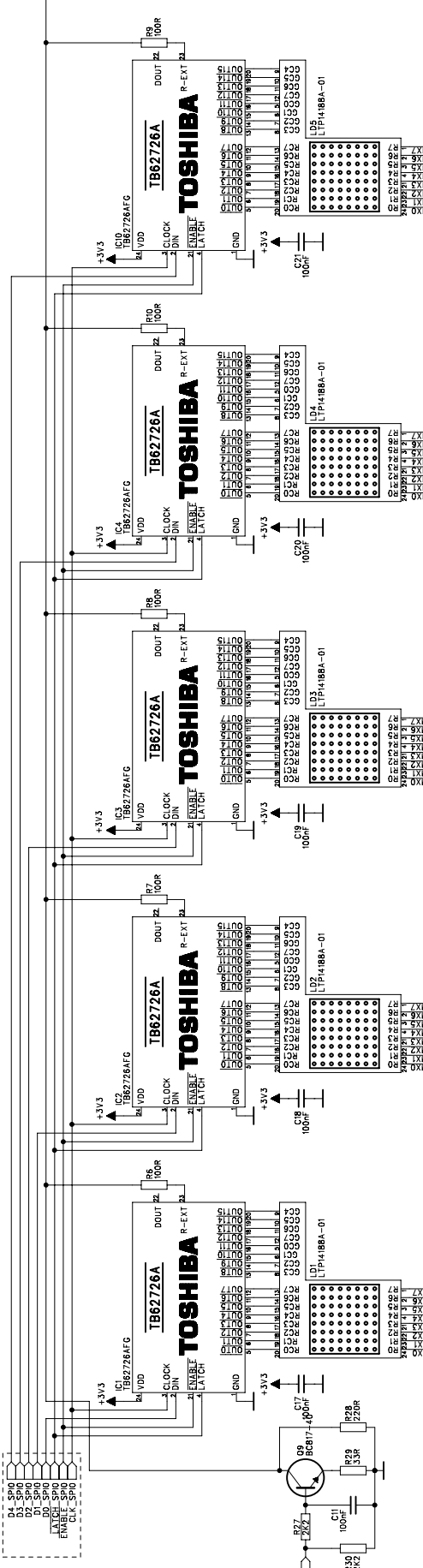
ARROW ENGINEERING SWEDEN

Revision History		
Version	Date	Updates
1.10	050430	Final design, ARM School edition
1.11	050707	Second spin edition; <ul style="list-style-type: none">• Replaced PIC18 against the more capable ATmega48.• Added UART override support for debug controller.• Added I2C configuration support for debug controller.• Added LED traffic indicators on all UART & CAN channels with delayed flash.• Changed logos• Removed patch for pullup on SSEL.• Added 8MHz oscillator output with buffering.• Changed a number of resistor values
1.12	061011	Third spin: <ul style="list-style-type: none">• Changed the whole power supply to National Semi.• Improved OCD user interface.• Corrected HW-handshaking bug• Added upstream JTAG port for addon boards• And some smaller adjustments

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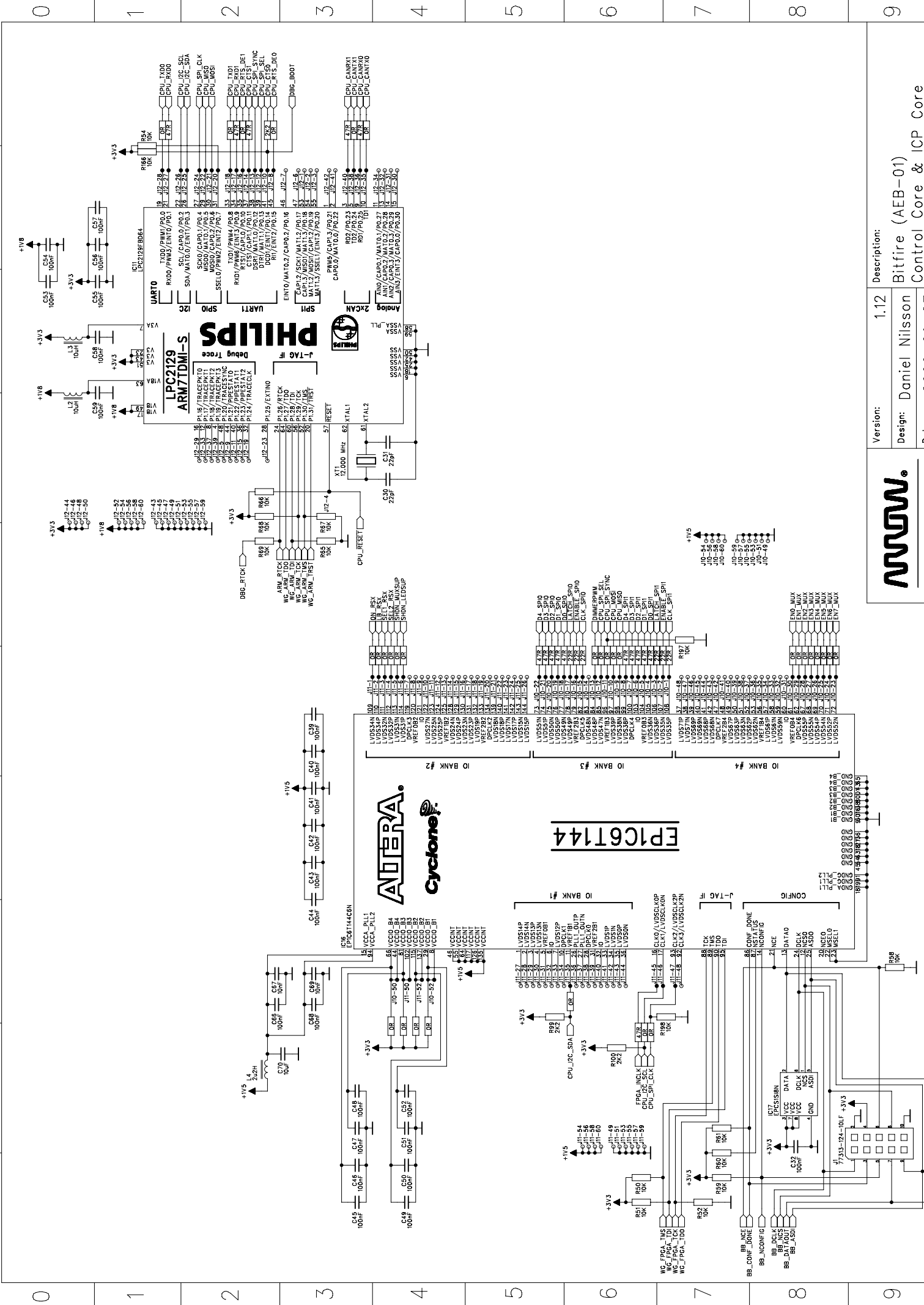
Arrow Engineering Sweden, Timmernabben, Sweden

SPI Blast I/F 0

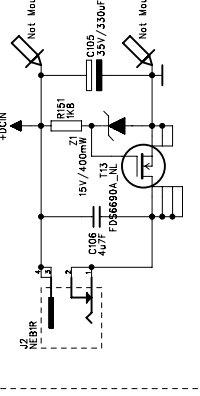


Version: 1.12
Design: Daniel Nilsson
Datum: 2006-09-27

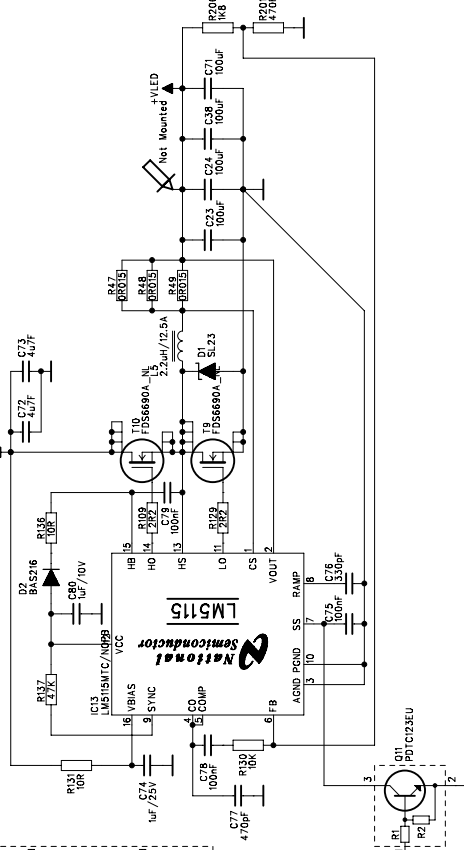
Description:
Bittfire (AEB-01)
LED Display Driver
40x16 BiColor Super Intense



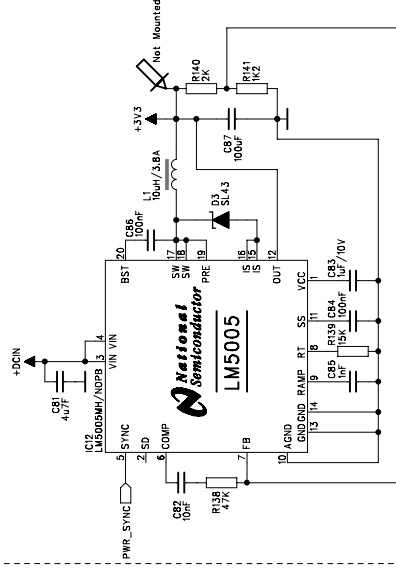
LED Voltage 3.5V / 8A



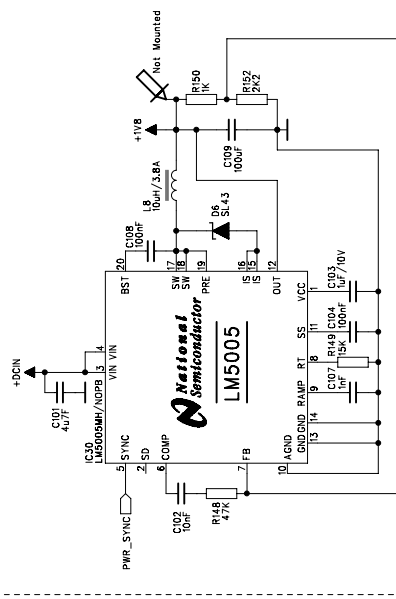
LED Voltage 3.5V / 8A



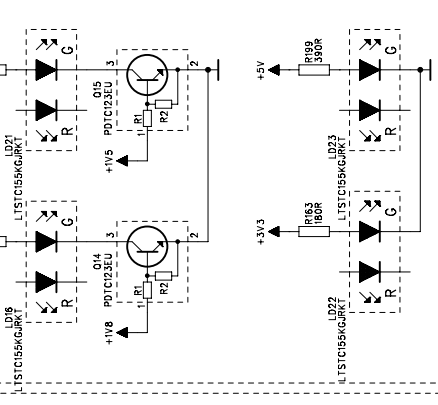
Main IO Voltage 3.3V/2A



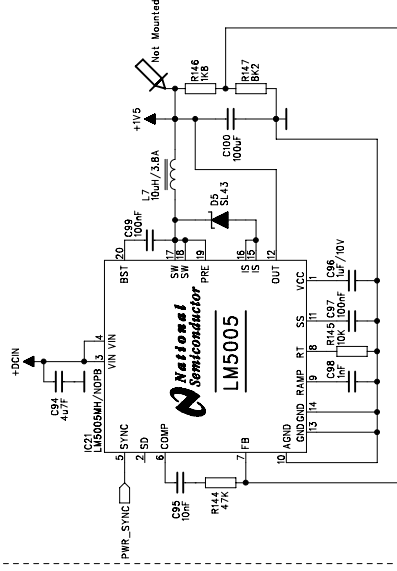
CPU Core Voltage 1.8V/1.2A



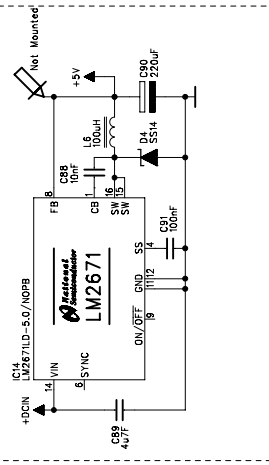
Voltage Monitor



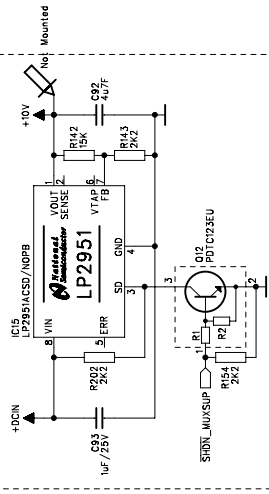
FPGA Core Voltage 1.5V/1.2A



Transceiver Supply 5V/300mA



MUX Gate Voltage 9.7V/10mA



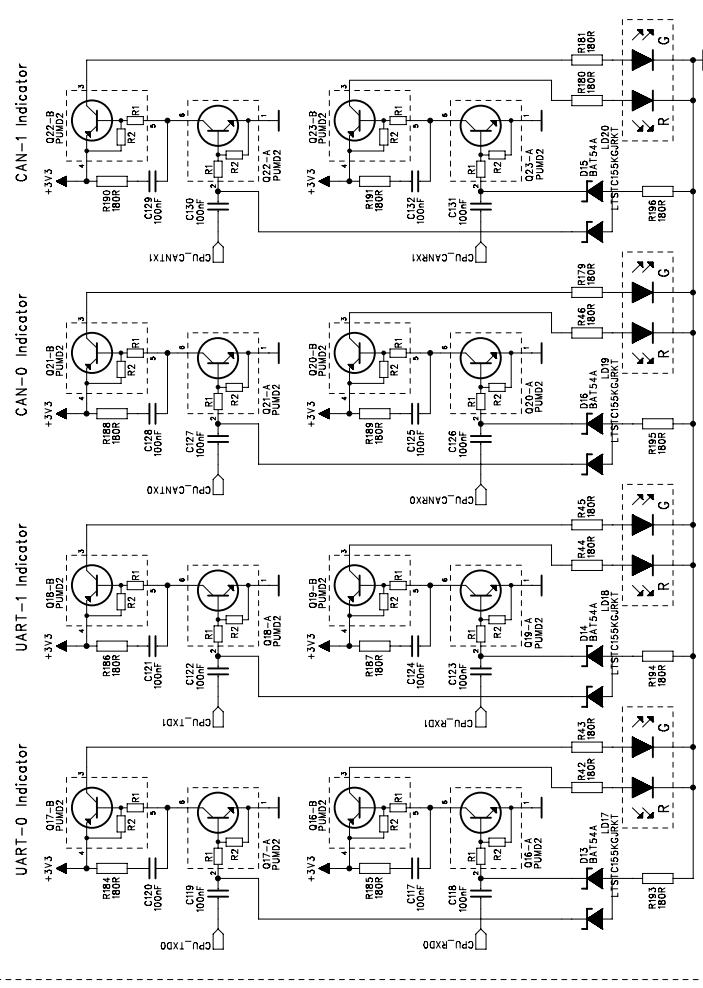
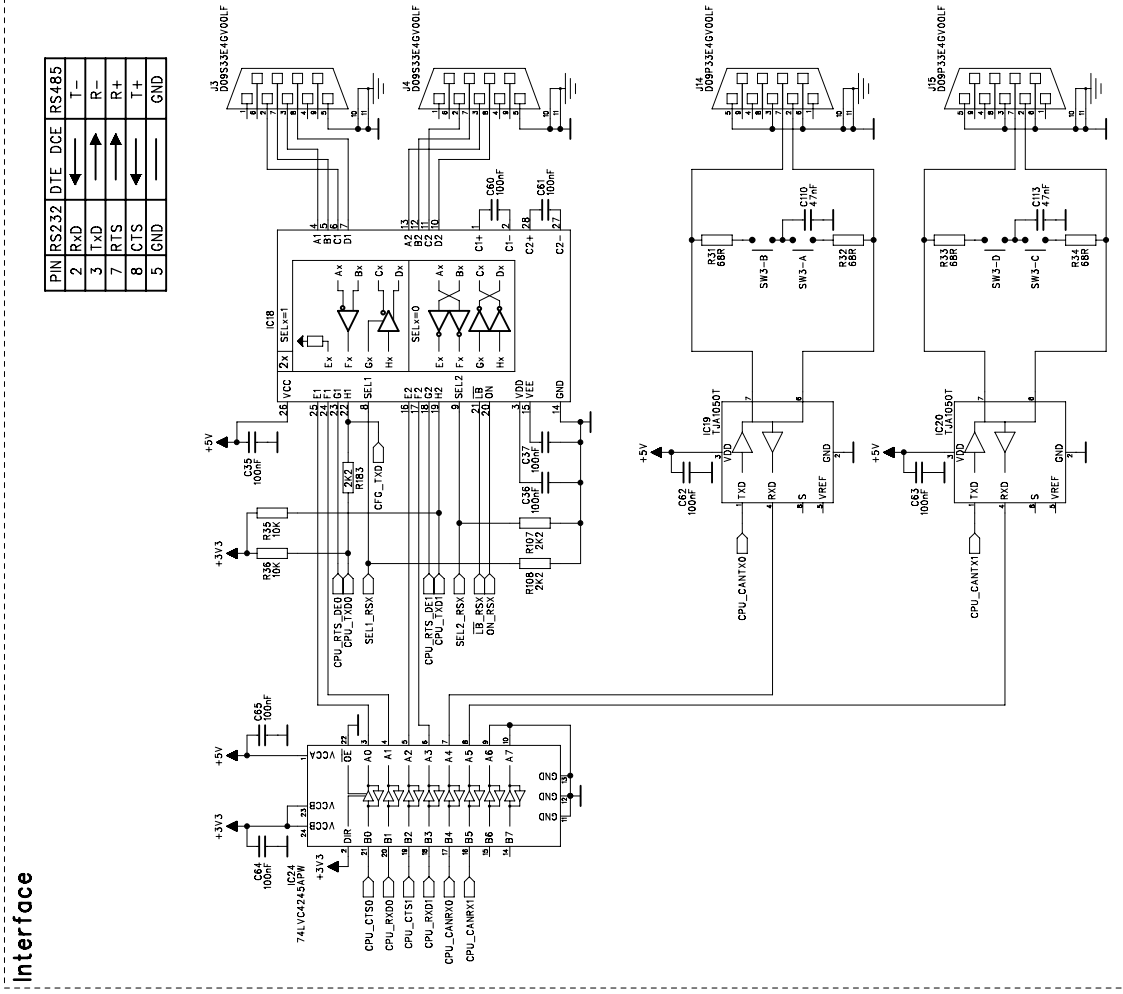
ARROW ENGINEERING

Version:	1.12
Design:	Daniel Nilsson
Datum:	2006-09-27

Description:	
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Bitfire (AEB-01)

Power Supply with Monitor



Bill Of Material AEB-01 (Bitfire)

Date:	2006-08-27
Aut:	Daniel Nilsson
Schematic:	V1.12

POS	Ref Des	Qty	Partnumber	Value	Package	Manufacturer	Description
1	IC25-27	3	74LV367PW		TSSOP-16	Texas Instr.	Hex buffer / line driver 3-state
2	IC28	1	74LVC00APW		TSSOP-14	Philips Semi	Quad NAND gate.
3	IC24	1	74LVC4245APW		TSSOP-24	Philips Semi	Dual supply transceiver
4	IC23	1	ATMEGA48-20MU		MLF-32	Atmel	8-bit 20Mhz RISC MCU
5	D2	1	BAS216	75V/250mA	SOD-110	Philips Semi	Small signal switch diode
6	D12-16	5	BAT54A	30V/200mA	SOT-23	Philips Semi	Small signal schottky tandemdiode
7	Q9	1	BC817-40	45V/500mA	SOT-23	Philips Semi	General Purpose NPN Transistor
8	Z1	1	BZX284-C15	15V/400mW	SOD-110	Philips Semi	Zener: Low power voltage regulator diode.
9	C1-8 C11-22 C25-29 C32-37 C39-66 C68 C75 C78-79 C84 C86 C91 C97 C99 C104 C108 C114-132	89		100nF	0603	Any	X7R Ceramic Capacitor 10%
10	C67 C69 C82 C88 C95 C102	6		10nF	0603	Any	X7R Ceramic Capacitor 10%
11	C85 C98 C107	3		1nF	0603	Any	X7R Ceramic Capacitor 10%
12	C30-31 C111-112	4		22pF	0603	Any	NP0 Ceramic Capacitor
13	C76	1		330pF	0603	Any	NP0 Ceramic Capacitor
14	C77	1		470pF	0603	Any	NP0 Ceramic Capacitor
15	C80 C83 C96 C103	4		1uF/10V	0805	Any	X7R Ceramic Capacitor 10% 10VDC
16	C110 C113	2		47nF	0805	Any	X7R Ceramic Capacitor 10% 50VDC
17	C70	1	C3216X5R0J106M	10uF	1206	TDK	X5R Ceramic Capacitor 10% 6.3VDC
18	C74 C93	2		1uF/25V	1206	Kemet	X7R Ceramic Capacitor 10% 25VDC
19	C72-73 C81 C89 C92 C94 C101 C106	8	C3216X7R1E475KT	4u7F	1206	TDK	X7R Ceramic Capacitor 10% 25VDC
20	C23-24 C38 C71 C87 C100 C109	7	C1210C107M9PAC7800	100uF	1210	Kemet	X5R Ceramic Capacitor 6.3VDV
21	C9-10 C90	3	B45296R1227M409	220uF	CASE-D	Epcos	Polymer Capacitor
22	C105	1	EEEFK1V331P	35V/330uF	SMD 10.3x10.3mm	Panasonic	SMT Low Impedance Series:FK
23	J2	1	NEB1R			Lumberg	DC-Jack DIN45323
24	J3-4	2	D09S33E4GV00LF	9 Pole	DSUB US-FP	FCI	9P DSUB Female TM
25	J14-15	2	D09P33E4GV00LF	9 Pole	DSUB US-FP	FCI	9P DSUB Male TM
26	J13	1	D25P33E4GV00LF	25 Pole	DSUB US-FP	FCI	25P DSUB Male TM
27	J16	1	77313-127-20LF	20 Pole	THM 2row header	FCI	Dual row 1M Header
28	J5	1	Not Mounted	6 Pole	Not Mounted	Not Mounted	Not Mounted on PCB!
29	J1 J17	2	77313-124-10LF	10 Pole	THM 2row header	FCI	Dual row 1M Header
30	J6	1	SMM-105-02-S-D	10 Pole		SAMTEC	Dual row 2mm header
31	J10-12	3	TMM-130-01-F-D-SM	60 Pole		SAMTEC	Dual row 2mm pinheader
32	D4	1	SS14	1A/40V	SMA	Vishay	SMD Schottky Diode
33	D1	1	SL23	2A/30V	SMB	Vishay	SMD Schottky Diode
34	D3 D5-6	3	SL43	4A/30V	SMC	Vishay	SMD Schottky Diode

35	IC16	1	EP1C6T144C6N		TQFP-144	Altera	Low-Cost FPGA Cyclone-I
36	IC17	1	EPCS1SI8N		SO-8	Altera	FPGA Configuration Memory
37	T1-10 T13	11	FDS6690A_NL		SO-8	FairChild Semi	N-Channel Power MosFet
38	L2-3 L11	3	CS201212-100K	10uH	0805	Bourns	Chip inductor
39	L4	1	CS201212-2R2K	2u2H	0805	Bourns	Chip inductor
40	L1 L7-8	3	P0751.103NLT	10uH/3.8A		Pulse Eng	SMT Power Inductor 6.7x4.5mm
41	L5	1	PF0553.222NLT	2.2uH/12.5A		Pulse Eng	SMT Power Inductor 12.5x12.5mm
42	L6	1	PF0581.104NLT	100uH/760mA		Pulse Eng	SMT Power Inductor 9x10mm
43	LD11-23	13	LTSTC155KGJRKT		3.2x2.7mm ChipPkg	Lite-On	BiColor Red/Green LED
44	IC14	1	LM2671LD-5.0/NOPB		LLP-16 (MLF)	National	High Efficiency 500mA Step-Down Voltage Regulator
45	IC12 IC21 IC30	3	LM5005MH/NOPB		TSSOP-20	National	Integrated high voltage 2.5A buck regulator
46	IC13	1	LM5115MTC/NOPB		TSSOP-16	National	Secondary side post regulator controller
47	IC15	1	LP2951ACSD/NOPB		LLP-8	National	Adjustable Micropower Voltage Regulator
48	IC11	1	LPC2129FBD64		LQFP-64	Philips Semi	ARM7TDMI Integrated 32-bit RISC MCU w CAN
49	IC18	1	LTC1334CG#PBF		28-PIN SSOP	LT	Combined dual RS485 and RS232 Transceiver switchable
50	LD1-10	10	LTP14188A-01	Red/Green	37x37mm LMTRX	Lite-On	8x8 bi-color 37mm LED matrix
51	Q10-12 Q14-15	5	PDTC123EU		SC-70	Philips Semi	Small sinal digital NPN transistor
52	Q1-8 Q13 Q16-23	17	PUMD2		SC-70-6	Philips Semi	Small signal digital NPN+PNP transistor
53	R40-41 R86-98 R101-106 R110-117 R119 R121 R124-125 R127	34		0R	0603	Any	Metalfilm chipresistor 1%
54	R1-10	10		100R	0603	Any	Metalfilm chipresistor 1%
55	R35-36 R50-54 R58-61 R65-69 R130 R145 R164 R166-169 R197-198	25		10K	0603	Any	Metalfilm chipresistor 1%
56	R139 R142 R149	3		15K	0603	Any	Metalfilm chipresistor 1%
57	R42-46 R161-163 R179-181 R184-191 R193-196	23		180R	0603	Any	Metalfilm chipresistor 1%
58	R37-39 R150 R182	5		1K	0603	Any	Metalfilm chipresistor 1%
59	R141	1		1K2	0603	Any	Metalfilm chipresistor 1%
60	R146 R200	2		1K8	0603	Any	Metalfilm chipresistor 1%
61	R178	1		220K	0603	Any	Metalfilm chipresistor 1%
62	R177	1		220R	0603	Any	Metalfilm chipresistor 1%
63	R75-77 R83-85	6		22R	0603	Any	Metalfilm chipresistor 1%
64	R140	1		2K	0603	Any	Metalfilm chipresistor 1%
65	R27 R30 R99-100 R107-108 R123 R143 R152-154 R183 R202	13		2K2	0603	Any	Metalfilm chipresistor 1%
66	R199	1		390R	0603	Any	Metalfilm chipresistor 1%
67	R201	1		470R	0603	Any	Metalfilm chipresistor 1%
68	R137-138 R144 R148	4		47K	0603	Any	Metalfilm chipresistor 1%
69	R70-74 R78-82 R118 R120 R122 R126 R128 R132-135 R165 R170-176 R192	28		47R	0603	Any	Metalfilm chipresistor 1%
70	R63-64	2		5K6	0603	Any	Metalfilm chipresistor 1%
71	R55-57 R62 R155-160	10		82R	0603	Any	Metalfilm chipresistor 1%

72	R147	1		8K2	0603	Any	Metalfilm chipresistor 1%
73	R136	1		10R	0805	Any	Metalfilm chipresistor 1%
74	R12 R14-15 R17 R19 R21 R23 R25	8		1K	0805	Any	Metalfilm chipresistor 1%
75	R28	1		220R	0805	Any	Metalfilm chipresistor 1%
76	R11 R13 R16 R18 R20 R22 R24 R26	8		560R	0805	Any	Metalfilm chipresistor 1%
77	R31-34	4		68R	0805	Any	Metalfilm chipresistor 1%
78	R47-49	3	235 051 010 150	0R015	1206	Yageo	Low ohmic chip resistor LRC01
79	R131	1		10R	1206	Any	Metalfilm chipresistor 1%
80	R151	1		1K8	1206	Any	Metalfilm chipresistor 1%
81	R109 R129	2		2R2	1206	Any	Metalfilm chipresistor 1%
82	R29	1		33R	1206	Any	Metalfilm chipresistor 1%
83	SK1-6	6	Not Mounted	Screw		Not Mounted	Not Mounted
84	IC29	1	SN74LVC1G80DCKR		SC-70-6	Texas Instr.	Single Gate Logic, D-Type Flip-Flop
85	IC22	1	SN74LVCE161284DL		SSOP-48	Texas Instr.	IEEE1284 Compatible protected interface transceiver
86	SW3	1	IKN0403000	4P	SMD DIPSW-4	APEM	4-pole SMD dip-switch
87	SW1-2	2	SDTM-610-N		SMD 6x6mm	Bourns	SMD tactswitch h=4.3mm
88	IC1-10	10	TB62726AFG		SSOP-24(Tosh)	Toshiba	16-bit constant current serial LED driver
89	TP1-5 TP7-9	8	TestPad	Not Mounted	Not Mounted		Not Mounted
90	IC19-20	2	TJA1050T		SO-8	Philips Semi	High Speed CAN-Transceiver
91	XT1	1	AS-12.000-30-SMD-TR	12.000 MHz	HC49/U SMD	Raltron	HC49 crystal 30pF load
92	XT2	1	AS-16.000-18-SMD-TR	16.000 MHz	MC49/U SMD	Raltron	HC49 crystal 18pF load