

ATMEL SAM7X256 ARM CONTROLLER WITH CAN-INTERFACE BOARD ARMCAN2-1

This board was designed for the purpose of processing messages transmitted over a CAN bus. A PLC with moderate capabilities transmit a few variable values over the CAN-bus, this card process the values and transmits the result, which the PLC uses in it's own program execution. The response time for a PID-controller is less than 1 usec.

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The schematics and board layout are provided as Eagle files, a free version is available at <http://www.cadsoft.de>, the free version can be used to view the CAD-files. Gerber files for PCB production are also included. The board consists of four layers, no buried vias or other special technology.

Features

- CPU with 256 KB Flash
- Isolated 18-36 V DC supply
- Isolated power and CAN bus
- 2 USB ports, one for programming and one for serial port 0
- 1 TTL level serial debug port
- Serial number chip
- JTAG connector for debugging and programming
- 2 serial IIC EEPROMs
- Micro controller drives erase/reset signals for programming

Short description, see figures

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P1 is a DC/DC converter with a wide supply voltage range, the range depends on the converter used. For 24V DC supplies the range will be 18-36 V.

P2 is a smaller isolated 5 to 5 V DC converter for the CAN bus driver U2 supply.

U6 regulates the supply voltage from 5 to 3.3 V and Q1 enables this voltage.

U3 is an isolated barrier for the CAN-signals.

U13 is a controller that provides a ERASE/RESET/power sequence for the CPU when the button S2 is pressed. A jumper on J6 pin 1-2 must be present to enable the chip erasure. When wanting to program the CPU one pressthe button, the controller erase the flash and turns the power off and on putting the CPU in a state ready for programming.

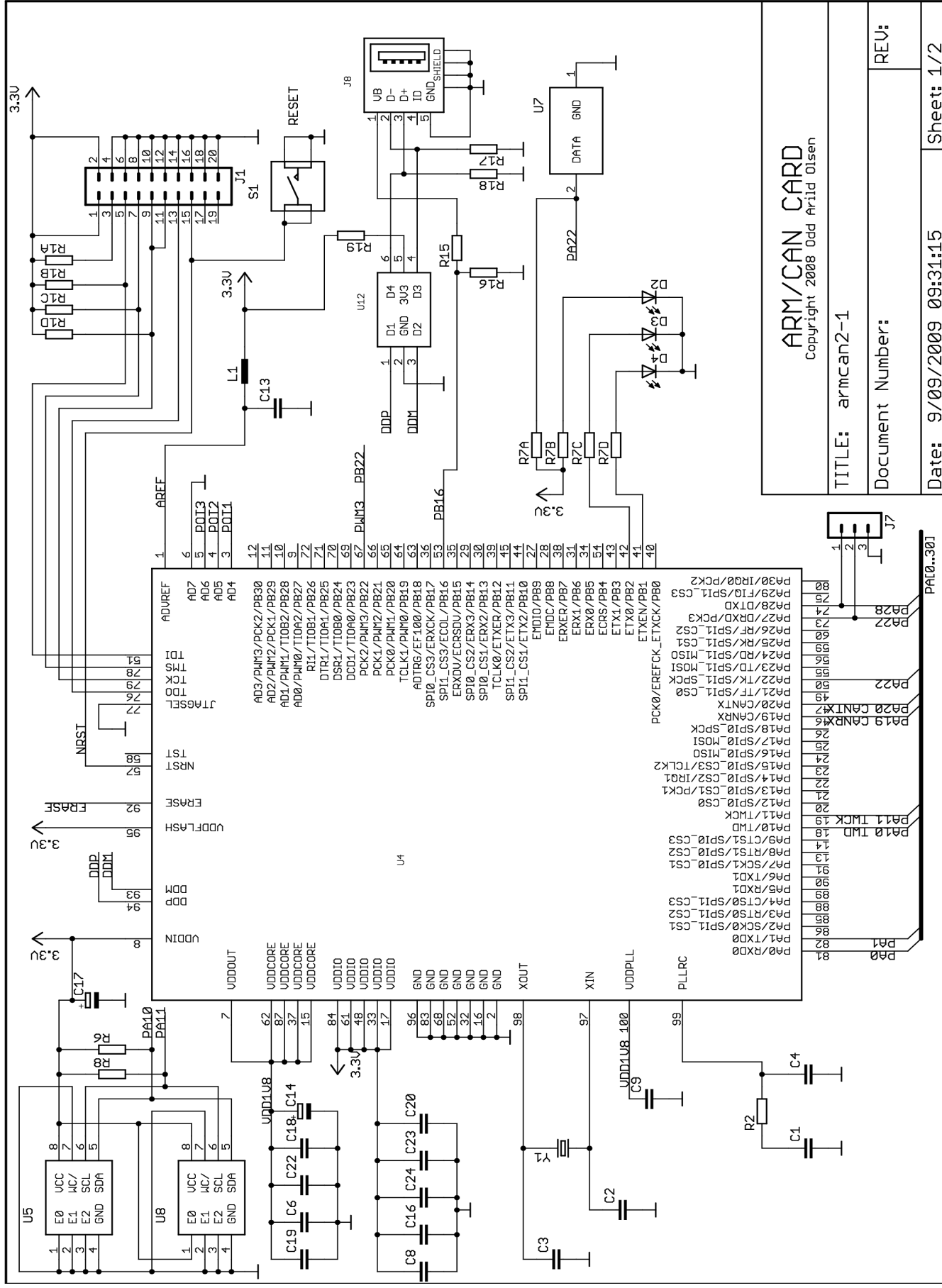
U1 is a serial port to USB serial device chip.

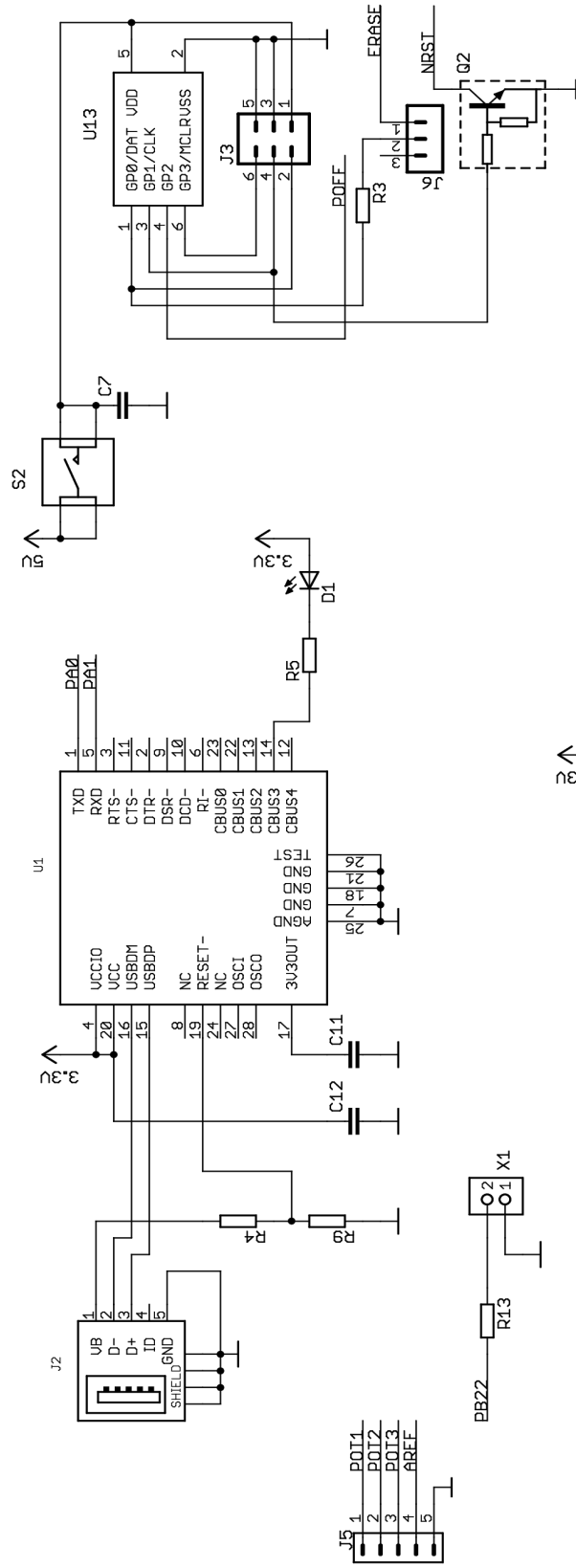
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U5 and U8 are serial IIC EEPROMs, a large range of memories can be used here, e.g. of a 64 kB size.

J1 is the JTAG connector and S1 is for manual reset. U12 is a passive network for the USB programming port. U7 is a 1-wire serial number chip.

The debug serial port is available at TTL-levels at connector J7.





ARM/CAN CARD

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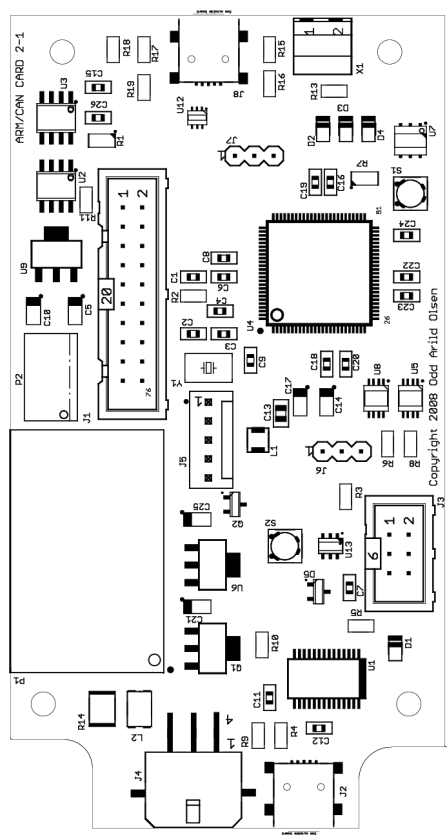
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Parts list

Qty	Value	Device	Parts
1	BAT54	SOT23	D5
4	EL15-21UGC	1206	D1, D2, D3, D4
1			J1
1	MKDS1/2-3,81	PHOENIX 2-3.81	X1
1	SMDC014	POLYSWITCH 1812	R14
1	TME0509S	TRACO	P2
1	TEN3-2411	TRACO	P1
1	USBUF02W6	ST SOT323-6	U12
1	0R	0603	R19
1	1K5	0603	R2
1	1N	0603	C4
3	2K2	0603	R3,R5, R6, R8, R10
1	2K2	1206	R7
1	3k3	0603	R13
1	3pin		J6
1	4U7	1210	L1
5	2U2/20V	A	C5, C10, C14, C17, C21, C25
1	10F200	SOT23-6 Microchip	U13
1	10N	0603	C1
1	18.4320/20P	Digikey: 300-8098-1-ND	Y1
10	22N	0603	C6, C8, C9, C16, C18, C19, C20, C22, C23, C24
5	22n	0603	C7, C11, C12, C15, C26
2	24LC64-I/MS	MSOP	U5, U8
3	27k	0603	R4, R11, R15
1	47K	1206	R1
2	47k	0603	R9, R16
1	11uH	Farnell: 387-7747	L2
1	82C251-SO	SO8	U2
1	100N	0805	C13
2	330k	0603	R17, R18
1	ADUM1201	SO8 ANALOG DEVICES	U3
2	MCTJ-416-V	Farnell	S1, S2
1			J4
1	DS2401	TSOC6 MAXIM	U7
1	FT232RLL	SSOP28 FTDI	U1
1	J7		J7
1	LM1117-3.3	SOT223	U6
1	LM1117-5.0	SOT223	U9
1			J3
1		MTA100 TYCO	J5
2	Do not mount	0603	C2, C3
1	PDTC144ET	SOT23	Q2
1	BSP315	SOT223	Q1
1	AT91SAM7X256	TSQFP100 ATMEL	U4
2	USBMINI		J2, J8

