

SAMA5D36 SODIMM-200 Module

Cost efficient, high performance, reliable

- + Guaranteed availability >5 years (with customer outline agreement)
- + Easy design-in at low risk
- + Cost saving by short development cycles
- + Development board and starter kit available

Features

ARM Cortex-A5 processor with 536MHz:

- 32kB Data Cache, 32kB Instruction Cache
- 128kB int. SRAM, 160kB int. ROM

On-Board memory:

- 256MB, up to 512MB DDR2 RAM (DDRC5)
- 8MB NOR Flash (SPI)
- 256MB, up to 2GB NAND (EBI3)

Available interfaces:

- 2x 10/100Mbit Ethernet PHY (KSZ8081MNX/KSZ8081RNB)
- 2x USB 2.0 High Speed Host (480 Mbit)
- 1x USB 2.0 High Speed Device (480 Mbit)
- 4x USART + 1x UART + 1x DBG-UART
- 2x Synchronous Serial Controller (SSC)
- 2x SPI
- 3x I²C (TWI)
- 2x CAN
- 3x High Speed Memory Card Hosts (MCI)
- 11x ADC + Touch Screen Controller with Interrupt Signal
- 1x four channel PWM
- 1x JTAG
- LCD Size up to 2048x2048, or 720p Video
- Image Sensor Interface (ISI)

Access to all available GPIOs!

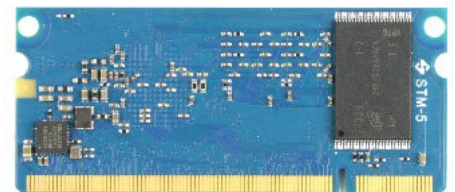
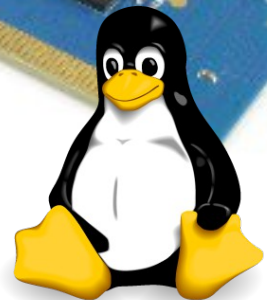
Only one 3.3V to 5V power supply required

Generated On-Board:

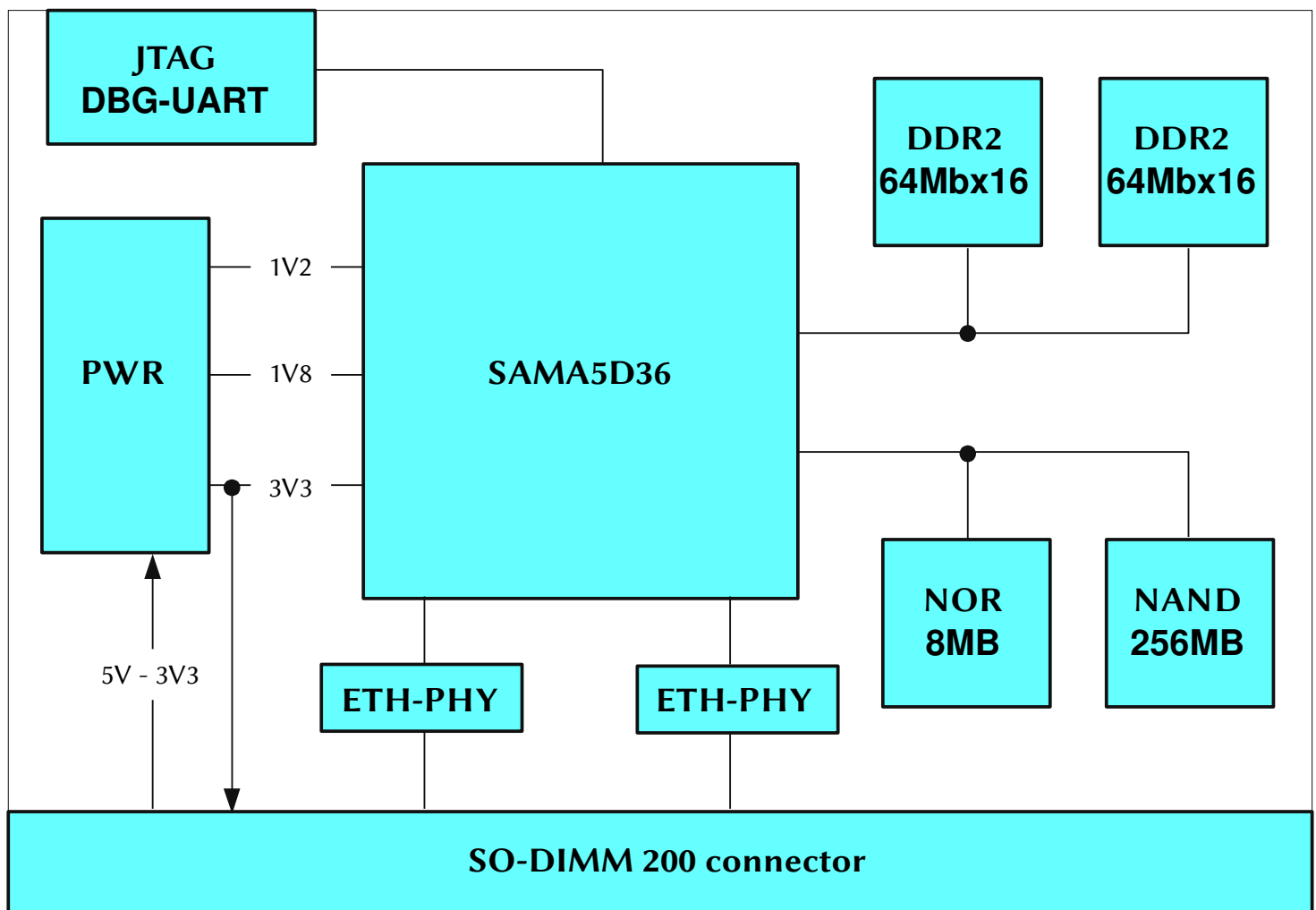
- 3.3V (I/O)
- 1.8V (DDR2)
- 1.2V (Core)
- Power consumption max. 1W

Dimensions:

- 67.6 x 29 x 3.5mm
- Temperature range -40°C to 85°C



Block diagramm



The ICnova SAMA5D36 SODIMM Module incorporates the following features:

- High processor speed at low power consumption
- High bandwidth 256MByte DDR2 RAM on a dedicated memory bus
- Large capacity Flash (8MByte NOR + 256MByte NAND) on a dedicated memory bus
- two ethernet PHYs by MICREL (KSZ8081)

Achieving high data rate communication using 100Mbit Ethernet or 480Mbit USB2.0 is easily possible as well as controlling TFT or LCD displays or accessing periphery via SPI, I2C, UART, and many others.

Nearly all signals of the SAMA5D36 are available at the pins on the SODIMM module. The memory interface is not provided in order to assure signal integrity.

A detailed description of the pins can be found on the following pages.

Pinout

SODIMM	ICnova SAMA5D3 SODIMM200						
Pin	Name	V-Level	Primary	Alternate	Peripheral A	Peripheral B	Peripheral C
1	VIN	3.3V – 5.5V	module power input (recommend 5.0V)				
2	3V3	3.3V	power output				
3	VIN	3.3V – 5.5V	module power input (recommend 5.0V)				
4	3V3	3.3V	power output				
5	VIN	3.3V – 5.5V	module power input (recommend 5.0V)				
6	3V3	3.3V	power output				
7	GND	0V	ground				
8	GND	0V	ground				
9	VDDBU	3.3V	backup power input (connect battery, or to VDDIO)				
10	VDDIO	3.3V	power input for I/O lines				
11	VDFUSE	2.5V	power input for fuse box programming				
12	VDDIO	3.3V	power input for I/O lines				
13	V_ADREF	2.4V – 3.6V	analog-digital-converter reference input				
14	VDDIO	3.3V	power input for I/O lines				
15	SHDN	3.3V	shutdown control output				
16	BMS	3.3V	not connected, set to high level (boot from SPI, SD)				
17	WKUP	3.3V	wake-up input				
18	PD13	3.3V	PD13		SPI0_NPCS0		
19	NC						
20	PD31	3.3V	PD31		AD11		
21	NC						
22	RST_OUT	3.3V	reset state output				
23	RST_BTN	3.3V	user reset control				
24	GND	0V	ground				
25	PB30	3.3V	PB30		DRXD		
26	JTAG_TRST	3.3V	NTRST				
27	PB31	3.3V	PB31		DTXD		
28	JTAG_TDO	3.3V	TDO				
29	GND	0V	ground				
30	JTAG_TDI	3.3V	TDI				
31	ETH1_RD-	3.3V	receive signal (-differential)				
32	JTAG_TMS	3.3V	TMS	SWDIO			
33	ETH1_RD+	3.3V	receive signal (+differential)				
34	JTAG_TCK	3.3V	TCK	SWCLK			
35	GND	0V	ground				
36	GND	0V	ground				
37	ETH1_TD-	3.3V	transmit signal (-differential)				
38	ETH1_SPEED	3.3V	speed led				
39	ETH1_TD+	3.3V	transmit signal (+differential)				
40	ETH1_LINK	3.3V	link/activity led				
41	GND	0V	ground				
42	PE31	3.3V	PE31		IRQ	PWML1	
43	PA0	3.3V	PA0		LCDDAT0		
44	PD10	3.3V	PD10		SPI0_MISO		
45	PA1	3.3V	PA1		LCDDAT1		
46	PD11	3.3V	PD11		SPI0_MOSI		
47	PA2	3.3V	PA2		LCDDAT2		
48	PD12	3.3V	PD12		SPI0_SPCK		
49	PA3	3.3V	PA3		LCDDAT3		

Pinout

SODIMM	ICnova SAMA5D3 SODIMM200						
Pin	Name	V-Level	Primary	Alternate	Peripheral A	Peripheral B	Peripheral C
50	NC						
51	PA4	3.3V	PA4		LCDDAT4		
52	PD16	3.3V	PD16		RTS0	SPI0_NPCS3	PWMFI3
53	PA5	3.3V	PA5		LCDDAT5		
54	GND	0V			ground		
55	PA6	3.3V	PA6		LCDDAT6		
56	PC31	3.3V	PC31		FIQ	PWMFI1	
57	PA7	3.3V	PA7		LCDDAT7		
58	PC22	3.3V	PC22		SPI1_MISO		
59	PA8	3.3V	PA8		LCDDAT8		
60	PC23	3.3V	PC23		SPI1_MOSI		
61	PA9	3.3V	PA9		LCDDAT9		
62	PC24	3.3V	PC24		SPI1_SPCK		
63	PA10	3.3V	PA10		LCDDAT10		
64	PC25	3.3V	PC25		SPI1_NPCS0		
65	PA11	3.3V	PA11		LCDDAT11		
66	PC28	3.3V	PC28		SPI1_NPCS3		
67	PA12	3.3V	PA12		LCDDAT12		
68	GND	0V			ground		
69	PA13	3.3V	PA13		LCDDAT13		
70	PC21	3.3V	PC21		RD0		
71	PA14	3.3V	PA14		LCDDAT14		
72	PC18	3.3V	PC18		TD0		
73	PA15	3.3V	PA15		LCDDAT15		
74	PC16	3.3V	PC16		TK0		
75	PC14	3.3V	PC14		MCI2_DA3	TCLK1	LCDDAT16
76	PC17	3.3V	PC17		TF0		
77	PC13	3.3V	PC13		MCI2_DA2	TIOB1	LCDDAT17
78	PC20	3.3V	PC20		RF0		
79	PC12	3.3V	PC12		MCI2_DA1	TIOA1	LCDDAT18
80	GND	0V					
81	PC11	3.3V	PC11		MCI2_DA0		LCDDAT19
82	PD14	3.3V	PD14		SCK0	SPI0_NPCS1	CANRX0
83	PC10	3.3V	PC10		MCI2_CDA		LCDDAT20
84	PD15	3.3V	PD15		CTS0	SPI0_NPCS2	CANTX0
85	PC15	3.3V	PC15		MCI2_CK	PCK2	LCDDAT21
86	GND	0V			ground		
87	PE27	3.3V	PE27		NCS1	TIOA2	LCDDAT22
88	PC26	3.3V	PC26		SPI1_NPCS1	TWD1	ISI_D11
89	PE28	3.3V	PE28		NCS2	TIOB2	LCDDAT23
90	PC27	3.3V	PC27		SPI1_NPCS2	TWCK1	ISI_D10
91	PA27	3.3V	PA27		LCDHSYNC		
92	GND	0V			ground		
93	PA26	3.3V	PA26		LCDVSYNC		
94	PD17	3.3V	PD17		RXD0		
95	PA28	3.3V	PA28		LCDPCK		
96	PD18	3.3V	PD18		TXD0		
97	PA29	3.3V	PA29		LCDDEN		
98	GND	0V			ground		
99	PA24	3.3V	PA24		LCDPWM		

Pinout

SODIMM	ICnova SAMA5D3 SODIMM200						
Pin	Name	V-Level	Primary	Alternate	Peripheral A	Peripheral B	Peripheral C
100	PB28	3.3V	PB28		RXD1		
101	PA25	3.3V	PA25		LCDDISP		
102	PB29	3.3V	PB29		TXD1		
103	GND	0V	ground				
104	PB27	3.3V	PB27		RTS1	G125CKO	
105	PC30	3.3V	PC30		UTXD0		ISI_PCK
106	PB26	3.3V	PB26		CTS1	GRX7	
107	PA16	3.3V	PA16		LCDDAT16		ISI_D0
108	GND	0V	ground				
109	PA17	3.3V	PA17		LCDDAT17		ISI_D1
110	PE25	3.3V	PE25		A25	RXD2	
111	PA18	3.3V	PA18		LCDDAT18	TWD2	ISI_D2
112	PE26	3.3V	PE26		NCS0	TXD2	
113	PA19	3.3V	PA19		LCDDAT19	TWCK2	ISI_D3
114	PE24	3.3V	PE24		A24	RTS2	
115	PA20	3.3V	PA20		LCDDAT20	PWMH0	ISI_D4
116	PE23	3.3V	PE23		A23	CTS2	
117	PA21	3.3V	PA21		LCDDAT21	PWML0	ISI_D5
118	GND	0V	ground				
119	PA22	3.3V	PA22		LCDDAT22	PWMH1	ISI_D6
120	PE18	3.3V	PE18		A18	RXD3	
121	PA23	3.3V	PA23		LCDDAT23	PWML1	ISI_D7
122	PE19	3.3V	PE19		A19	TXD3	
123	PA30	3.3V	PA30		TWD0	URXD1	ISI_VSYNC
124	PE17	3.3V	PE17		A17	RTS3	
125	PA31	3.3V	PA31		TWCK0	UTXD1	ISI_HSYNC
126	PE16	3.3V	PE16		A16	CTS3	
127	GND	0V	ground				
128	GND	0V	ground				
129	PD19	3.3V	PD19		ADTRG		
130	PB20	3.3V	PB20		MCI1_DA0	GTX5	
131	PD20	V_ADREF	PD20		AD0		
132	PB21	3.3V	PB21		MCI1_DA1	GTX6	
133	PD21	V_ADREF	PD21		AD1		
134	PB22	3.3V	PB22		MCI1_DA2	GTX7	
135	PD22	V_ADREF	PD22		AD2		
136	PB23	3.3V	PB23		MCI1_DA3	GRX4	
137	PD23	V_ADREF	PD23		AD3		
138	PB19	3.3V	PB19		MCI1_CDA	GTX4	
139	PD24	V_ADREF	PD24		AD4		
140	PB24	3.3V	PB24		MCI1_CK	GRX5	
141	PD25	V_ADREF	PD25		AD5		
142	GND	0V	ground				
143	PD26	V_ADREF	PD26		AD6		
144	PD5	3.3V	PD5		MCI0_DA4	TIOA0	PWMH2
145	PD27	V_ADREF	PD27		AD7		
146	GND	0V	ground				
147	PD28	V_ADREF	PD28		AD8		
148	PE0	3.3V	PE0		A0/NBS0		
149	GND	0V	ground				

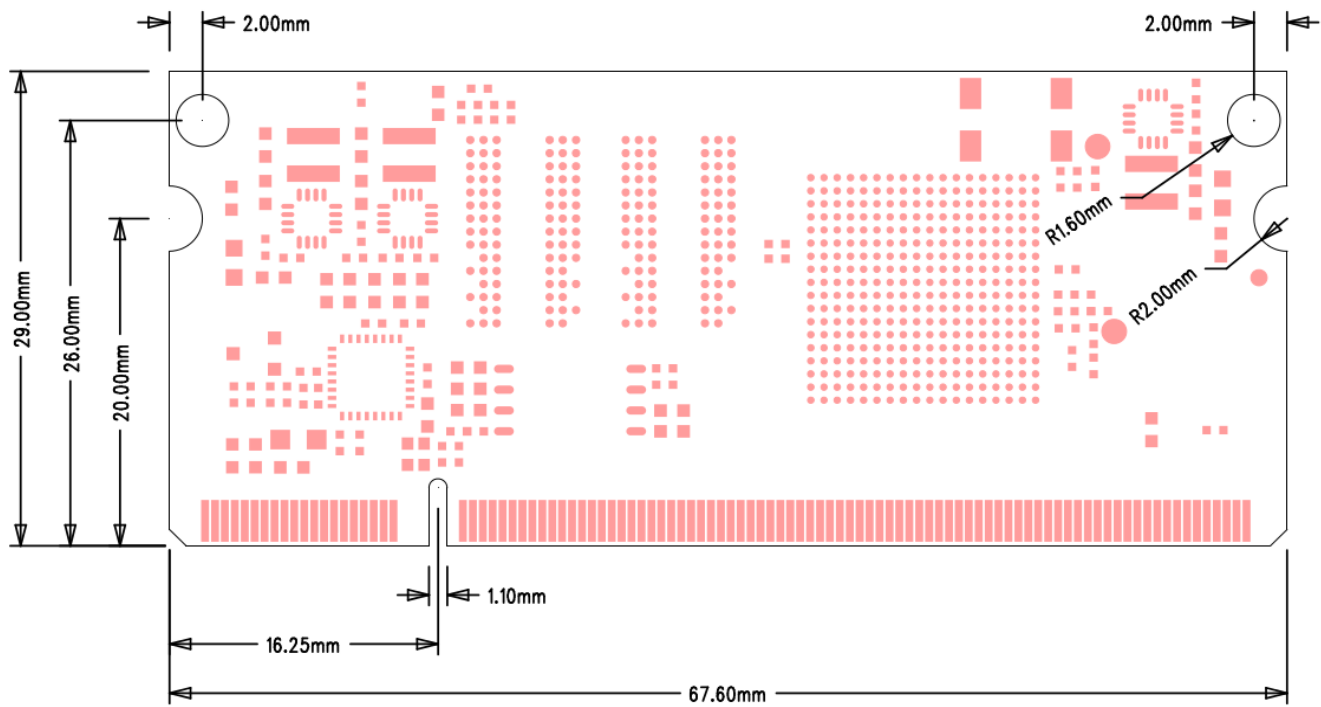
Pinout

SODIMM	ICnova SAMA5D3 SODIMM200						
Pin	Name	V-Level	Primary	Alternate	Peripheral A	Peripheral B	Peripheral C
150	PE1	3.3V	PE1		A1		
151	PD7	3.3V	PD7		MCI0_DA6	TCLK0	PWMH3
152	PE2	3.3V	PE2		A2		
153	PD1	3.3V	PD1		MCI0_DA0		
154	PE3	3.3V	PE3		A3		
155	PD2	3.3V	PD2		MCI0_DA1		
156	PE4	3.3V	PE4		A4		
157	PD3	3.3V	PD3		MCI0_DA2		
158	PE5	3.3V	PE5		A5		
159	PD4	3.3V	PD4		MCI0_DA3		
160	PE6	3.3V	PE6		A6		
161	PD0	3.3V	PD0		MCI0_CDA		
162	PE7	3.3V	PE7		A7		
163	PD9	3.3V	PD9		MCI0_CK		
164	GND	0V			ground		
165	GND	0V			ground		
166	PE8	3.3V	PE8		A8		
167	PD29	V_ADREF	PD29		AD9		
168	PE9	3.3V	PE9		A9		
169	PD30	V_ADREF	PD30		AD10	PCK0	
170	PE10	3.3V	PE10		A10		
171	PD6	3.3V	PD6		MCI0_DA5	TIOB0	PWML2
172	PE11	3.3V	PE11		A11		
173	PD8	3.3V	PD8		MCI0_DA7		PWML3
174	PE12	3.3V	PE12		A12		
175	OTG_D-	3.3V	HHSDMA	DHSDM			
176	PE13	3.3V	PE13		A13		
177	OTG_D+	3.3V	HHSDPA	DHSDP			
178	PE14	3.3V	PE14		A14		
179	GND	0V			ground		
180	PE15	3.3V	PE15		A15	SCK3	
181	PC19	3.3V	PC19		RK0		
182	GND	0V			ground		
183	PE20	3.3V	PE20		A20	SCK2	
184	ETH2_TD+	3.3V			transmit signal (+differential)		
185	H1_D-	3.3V	HHSDMB				
186	ETH2_TD-	3.3V			transmit signal (-differential)		
187	H1_D+	3.3V	HHSDPB				
188	GND	0V			ground		
189	GND	0V			ground		
190	ETH2_RD+	3.3V			receive signal (+differential)		
191	PE29	3.3V	PE29		NWR1/NBS1	TCLK2	
192	ETH2_RD-	3.3V			receive signal (-differential)		
193	PE30	3.3V	PE30		NWAIT		
194	GND	0V			ground		
195	H2_D-	3.3V	HHSDMC				
196	ETH2_SPEED	3.3V			speed led		
197	H2_D+	3.3V	HHSDPC				
198	ETH2_LINK	3.3V			link/activity led		
199	GND	0V			ground		
200	GND	0V			ground		

Schematic symbol for SAMA5D36

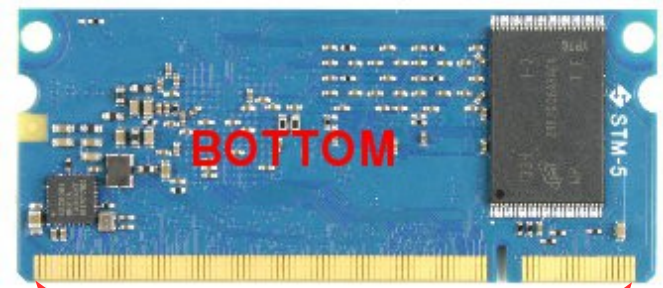
1	VIN	3V3	2
3	VIN	3V3	4
5	VIN	3V3	6
7	GND	GND	8
9	VDDBU	VDDIO	10
11	VDDFUSE	VDDIO	12
13	V_ADREF	VDDIO	14
15	SHDN	NC	16
17	WKUP	PD13/SPI0_CS0	18
19	NC	PD31/FLASH_W	20
21	NC	RST_OUT	22
23	RST_BTN	GND	24
25	PB30/DRXD	JTAG_TRST	26
27	PB31/DTXD	JTAG_TDO	28
29	GND	JTAG_TDI	30
31	ETH1_RD-	JTAG_TMS	32
33	ETH1_RD+	JTAG_TCK	34
35	GND	GND	36
37	ETH1_TD-	ETH1_SPEED	38
39	ETH1_TD+	ETH1_LINK	40
ICnova SAMA5D3 SODIMM			
41	GND	PE31/IRQ	42
43	PA0/LCD_D0	PD10/SPI0_MISO	44
45	PA1/LCD_D1	PD11/SPI0_MOSI	46
47	PA2/LCD_D2	PD12/SPI0_SPOK	48
49	PA3/LCD_D3	NC	50
51	PA4/LCD_D4	PD16/SPI0_CS3	52
53	PA5/LCD_D5	GND	54
55	PA6/LCD_D6	PC31/RQ	56
57	PA7/LCD_D7	PC22/SPI1_MISO	58
59	PA8/LCD_D8	PC23/SPI1_MOSI	60
61	PA9/LCD_D9	PC24/SPI1_SCLK	62
63	PA10/LCD_D10	PC25/SPI1_CS0	64
65	PA11/LCD_D11	PC28/SPI1_CS3	66
67	PA12/LCD_D12	GND	68
69	PA13/LCD_D13	PC21/SSC0_RD	70
71	PA14/LCD_D14	PC18/SSC0_TD	72
73	PA15/LCD_D15	PC16/SSC0_TK	74
75	PC14/LCD_D16	PC17/SSC0_TF	76
77	PC13/LCD_D17	PC20/SSC0_RF	78
79	PC12/LCD_D18	GND	80
81	PC11/LCD_D19	PD14/CANRX0	82
83	PC10/LCD_D20	PD15/CANTX0	84
85	PC15/LCD_D21	GND	86
87	PE27/LCD_D22	PC26/TWD1	88
89	PE28/LCD_D23	PC27/TWCK1	90
91	PA27/LCD_HS	GND	92
93	PA26/LCD_VS	PD17/RXD0	94
95	PA26/LCD_PCLK	PD18/TXD0	96
97	PA29/LCD_DVAL	GND	98
99	PA24/LCD_CC	PB28/RXD1	100
101	PA25/LCD_PWR	PB29/TXD1	102
103	GND	PB27/RTS1	104
105	PC30/ISI_PCLK	PB26/CTS1	106
107	PA16/ISI_D0	GND	108
109	PA17/ISI_D1	PE25/RXD2	110
111	PA18/ISI_D2	PE26/TXD2	112
113	PA19/ISI_D3	PE24/RTS2	114
115	PA20/ISI_D4	PE23/CTS2	116
117	PA21/ISI_D5	GND	118
119	PA22/ISI_D6	PE18/RXD3	120
121	PA23/ISI_D7	PE19/TXD3	122
123	PA30/ISI_VS	PE17/RTS3	124
125	PA31/ISI_HS	PE16/CTS3	126
127	GND	GND	128
129	PD19/ADTRG	PB20/MCI1_D0	130
131	PD20/AD0	PB21/MCI1_D1	132
133	PD21/AD1	PB22/MCI1_D2	134
135	PD22/AD2	PB23/MCI1_D3	136
137	PD23/AD3	PB19/MCI1_CDA	138
139	PD24/AD4	PB24/MCI1_OK	140
141	PD25/AD5	GND	142
143	PD26/AD6	PD5/PWMH2	144
145	PD27/AD7	GND	146
147	PD28/AD8	PE0	148
149	GND	PE1	150
151	PD7/PWMH3	PE2	152
153	PD1/MCI0_D0	PE3	154
155	PD2/MCI0_D1	PE4	156
157	PD3/MCI0_D2	PE5	158
159	PD4/MCI0_D3	PE6	160
161	PD0/MCI0_CDA	PE7	162
163	PD9/MCI0_OK	GND	164
165	GND	PE8	166
167	PD29/AD9	PE9	168
169	PD30/AD10	PE10	170
171	PD6/PWML2	PE11	172
173	PD8/PWML3	PE12	174
175	OTG_D-	PE13	176
177	OTG_D+	PE14	178
179	GND	PE15	180
181	PC19/SSC0_RK	GND	182
183	PE20/SCK2	ETH2_TD+	184
185	H1_D-	ETH2_TD-	186
187	H1_D+	GND	188
189	GND	ETH2_RD+	190
191	PE29	ETH2_RD-	192
193	PE30	GND	194
195	H2_D-	ETH2_SPEED	196
197	H2_D+	ETH2_LINK	198
199	GND	GND	200

Mechanical dimension



Pin 1

Pin 199



Pin200

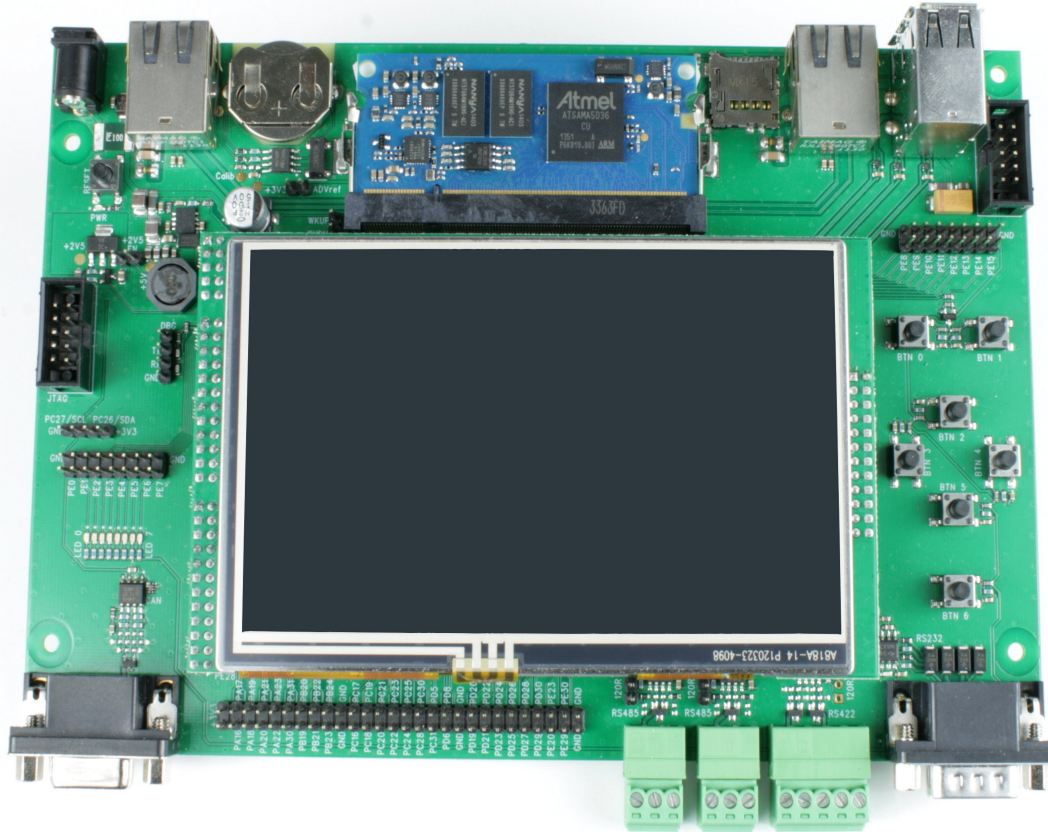
Pin2

The ICnova SAMA5D36 SODIMM module fits in a regular SO-DIMM 200 1.8V socket. We recommend the following socket:

Manufacturer	Part number	Height	Total height	Board to board space
TE Connectivity	1612618-4	9,2 mm	10,4 mm	7 mm

Application

An evaluation board is available for the ICnova SAMA5D36 module.
A Bundle of ICnova SAMA5D36 + ADB4003 is available as a starter kit with pre-installed Linux-OS.



We also offer:

- Hardware design of base boards optimized for your application
- Prototype and mass production using our in-house production lines
- Assembly options, adapted to your requirements, of our standard products
- Linux driver development and adaption



Contact

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Change history:

Version	Date	Changes	Editor
A	09.07.2014	First version	Schmidt