



# Users Manual

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**Micrel KSZ8695 ARM9 SoC with ALTERA Cyclone IV FPGA**

**Brought to You By ORSoC**

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## Table of Contents

<b>Overview</b>	<b>4</b>
<b>SO-DIMM pinout</b>	<b>5</b>
Supply	5
FPGA IO	6
Clock sources	6
Bank 1	6
Bank 2	7
Low Pin Count, LPC	8
USB	8
Ethernet	10
CPU	11
Config/Debug	11
<b>Recommended Resources</b>	<b>12</b>

## Overview

Formfactor: SO-DIMM 200

Possible mating connector:

Manufacturer TE connectivity , part number 1565917-4

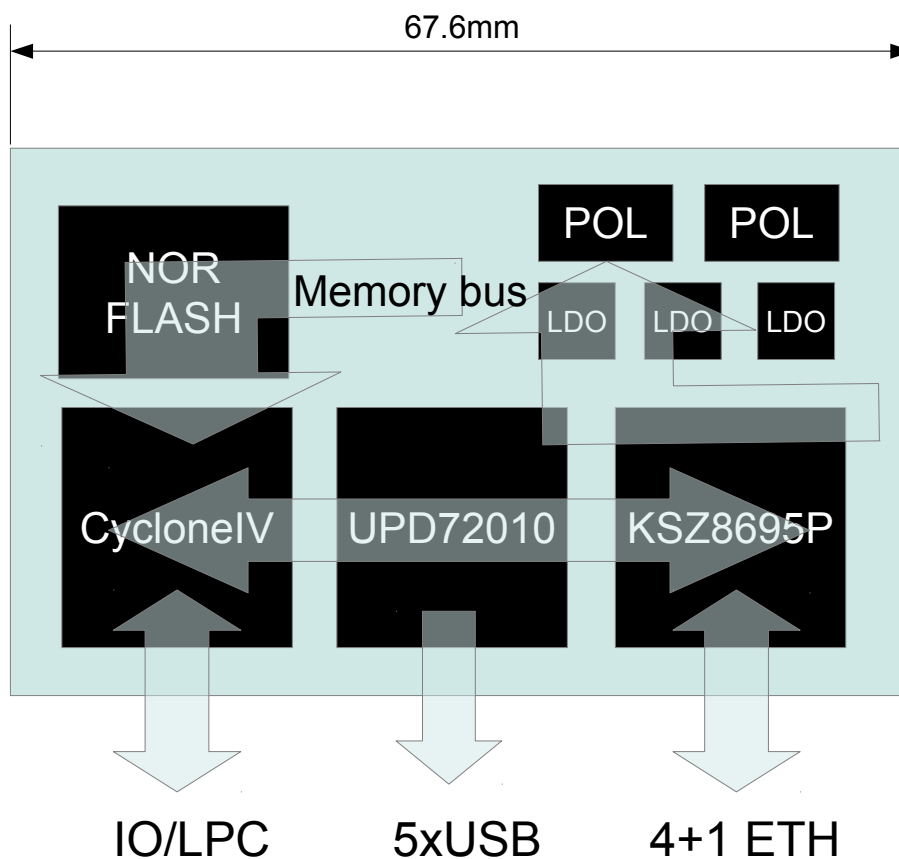
Available from DigiKey and Farnell/Newark:

<http://www.digikey.se/product-detail/en/1565917-4/A97498TR-ND/1619799>

<http://se.farnell.com/te-connectivity-amp/1565917-4/memory-socket-so-dimm-200pos/dp/1677306?Ntt=1565917-4>

The board will have the following key components:

1. Micrel KSZ8695P ARM9 SoC with builtin 4+1 Ethernet manageable switch
2. NEC uPD72010 USB 5 x USB 2.0 host ports
3. ALTERA Cyclone IV FPGA
4. SDRAM and NOR FLASH
5. Supply circuit



Supply circuit support single cell Li+ battery. Board can be supplied from

1. AC connected power source
2. USB
3. Battery

## SO-DIMM pinout

### Supply

Pin #	Signal	Comment
1,2,3,4	BAT	For battery operation connect to single cell Li+ battery. For no battery operation connect to BAT_SENSE and leave floating. Voltage 2.7-5.5V
5	BAT_SENSE	Battery voltage sense
6	TS	Battery temperature sense
7,8,9, 10	AC	Connect to AC connected power source, 4.3-5.8V
11,12, 13,14	USB	VBUS USB power source, 4.3-5.8V. If unused connect to GND
15	SDA	I2C manage bus
16	IRQ	Power circuit IRQ
17	SCL	I2C manage bus
18	RESETN	Board reset, active low
19	PB_IN	Push button to cycle power.
20	GND	
21	WLEDSRC1	White LED source 1
22	WLEDSINK1	White LED sink 1
23	WLEDSRC2	White LED source 2
24	WLEDSINK2	White LED sink 2
25,26, 27,28	1.8V	1.8V supply from on board source
29,30, 31,32	3.3V	3.3V supply from on board source
33	1.8VA	1.8V from on board LDO
34	3.3VA	3.3V from on board LDO
35	LDO3/SW1	Connected to on board LDO/power switch
36	LDO4/SW2	Connected to on board LDO/power switch
38,40	GND	
63,65	VCCIOB1	VCC IO bank1, FPGAIO[0:21]
64,66	GND	
92,94	GND	
115,116,117,118	GND	
139,140	GND	
148,156,162, 164,170,172, 178,180,198, 200	GND	

**FPGA IO*****Clock sources***

Pin #	Signal	Comment
37	CLK0/CLKoP	External clock source
39	CLK1/CLKoM	External clock source

***Bank 1***

Pin #	Signal	Comment
41	FPGAIO0	
43	FPGAIO1	
45	FPGAIO2	
47	FPGAIO3	
49	FPGAIO4	
51	FPGAIO5	
53	FPGAIO6	
55	FPGAIO7	
57	FPGAIO8	
59	FPGAIO9	
61	FPGAIO10	
42	FPGAIO11	
44	FPGAIO12	
46	FPGAIO13	
48	FPGAIO14	
50	FPGAIO15	
52	FPGAIO16	
54	FPGAIO17	
56	FPGAIO18	
58	FPGAIO19	
60	FPGAIO20	
62	FPGAIO21	

**Bank 2**

Pin #	Signal	Comment
67	GXB_TX3P FPGAIO22	Reserved for high speed signals
69	GXB_TX3N FPGAIO23	Reserved for high speed signals
71	GXB_RX3P FPGAIO24	Reserved for high speed signals
73	GXB_RX3N FPGAIO25	Reserved for high speed signals
75	GXB_TX2P FPGAIO26	Reserved for high speed signals
77	GXB_TX2N FPGAIO27	Reserved for high speed signals
79	GXB_RX2P FPGAIO28	Reserved for high speed signals
81	GXB_RX2N FPGAIO29	Reserved for high speed signals
83	GXB_TX1P FPGAIO30	Reserved for high speed signals
85	GXB_TX1N FPGAIO31	Reserved for high speed signals
87	GXB_RX1P FPGAIO32	Reserved for high speed signals
89	GXB_RX1N FPGAIO33	Reserved for high speed signals
91	GXB_TX0P FPGAIO34	Reserved for high speed signals
93	GXB_TX0N FPGAIO35	Reserved for high speed signals
95	GXB_RX0P FPGAIO36	Reserved for high speed signals
97	GXB_RX0N FPGAIO37	Reserved for high speed signals
99	FPGAIO38	
101	FPGAIO39	
103	FPGAIO40	
105	FPGAIO41	
68	FPGAIO45	
70	FPGAIO46	
72	FPGAIO47	
74	FPGAIO48	

Pin #	Signal	Comment
76	FPGAIO49	
78	FPGAIO50	
80	FPGAIO51	
82	FPGAIO52	
84	FPGAIO53	
86	FPGAIO54	
88	FPGAIO55	
90	FPGAIO56	
96	FPGAIO57	
98	FPGAIO58	
100	FPGAIO59	
102	FPGAIO60	
104	FPGAIO61	
106	FPGAIO62	

### Low Pin Count, LPC

Pin #	Signal	Comment
107	FPGAIO42/ LAD[3]	
108	FPGAIO63/ LAD[2]	
109	FPGAIO43/ LAD[1]	
110	FPGAIO64/ LAD[0]	
111	FPGAIO44/ LFRAME	
112	FPGAIO65/ SER_IRQ	
113	PCLKOUT	PCI Clock source
114	PRSTN	PCI reset, active low

### USB

Pin #	Signal	Comment
119,123,127, 131,135	DP[1:5]	D+ USB host [1:5]
121,125,129, 133,137	DM[1:5]	D- USB host [1:5]



<b>Pin #</b>	<b>Signal</b>	<b>Comment</b>
120,124,128, 132,136	OC[1:5]	USB over current [1:5], input
122,126,130, 134,138	PP[1:5]	USB port power [1:5], output

## Ethernet

Pin #	Signal	Comment
141	WANRXP	WAN port RX+
143	WANRXM	WAN port RX-
145	WANTXP	WAN port TX+
147	WANTXM	WAN port TX-
142,144	WLED[0:1]	WAN LED indicators
146	WANFXSD	WAN FX signal detect
149,157, 165,173	LANRXP[1:4]	LAN port [1:4] RX+
151,159, 167,175	LANRXM[1:4]	LAN port [1:4] RX-
153,161, 169,177	LANTXP[1:4]	LAN port [1:4] TX+
155,163, 171,179	LANTXM[1:4]	LAN port [1:4] TX-
154	LANFXSD1	LAN port 1 FX signal detect
150,152	L1LED[0:1]	LAN port 1 LED indicators
158,160	L2LED[0:1]	LAN port 2 LED indicators
166,168	L3LED[0:1]	LAN port 3 LED indicators
174,176	L4LED[0:1]	LAN port 4 LED indicators

**CPU**

Pin #	Signal	Comment
181	GPIO0	GPIO0/EINT0
182	GPIO1	GPIO1/EINT1
183	GPIO2	GPIO2/EINT2
184	GPIO3	GPIO3/EINT3
185	GPIO4	GPIO4/TOUT0
186	GPIO5	GPIO5/TOUT1
187	GPIO6	
188	GPIO7	
189	GPIO8	
190	GPIO9	
191	GPIO10	
192	GPIO11	
193	GPIO12	
194	GPIO13	
195	GPIO14	
196	GPIO15	

**Config/Debug**

Pin #	Signal	Comment
197	USBDBGDP	USB D+
199	USBDBGDM	USB D-

## **Recommended Resources**

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