

8356 349
+ ,

179: 56 1338

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2	4
3	5
4	6
5	8
6	10
7	11
8	8356 349	12
9	8356 349.....	15
9.1	(X36).....	17
9.2	(X25).....	17
9.3	SPI (X21).....	18
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10	27
11	29
	31
	32

1

8356 349

1

65-

DUP F h -P 3 + ; 3 ,1

Synchronous Random Access Memory (SRAM) (2 ,

=NOR-Flash (1), NOR-Flash (16 , magnetic

Random Access Memory (MRAM) (2)1

1

(CPLD) XC2C128 CoolRunner-II + 1 8). CPLD CoolRunner-II / /

General Purpose Input/Output (GPIO-)

X29. =Universal

Asynchronous receiver/transmitter (UART), UART (Universal Serial Bus communications device class (USB CDC)), 2 Synchronous Serial Interface

(SSI), 4 853: 3 2 V dfh l hl

Organic Light-Emitting Diod (OLED).

Cortex-M0, /IAR Keil.

IAR lib_sputnik_chip5023BC ,

1

45 / ROHG

CD-

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8356 349

:

— / ARM Cortex M0/ 32 /

80 ;

— CPLD XC2C128 CoolRunner-II;

— SRAM 2 ;

— SPI NOR-Flash 16 ;

— NOR-Flash 1 ;

— P UDP 5 ;

— XDUW4 +XVE FGF,;

— XDUW5;

—

— 7 P 52070;

—5 V dfh 1 h;

—5 SSI;

— ROHG ;

—16 J SIR;

—8 - +);

— Joint Test Action Group Complex Programmable Logic Device (JTAG CPLD)

JTAG ;

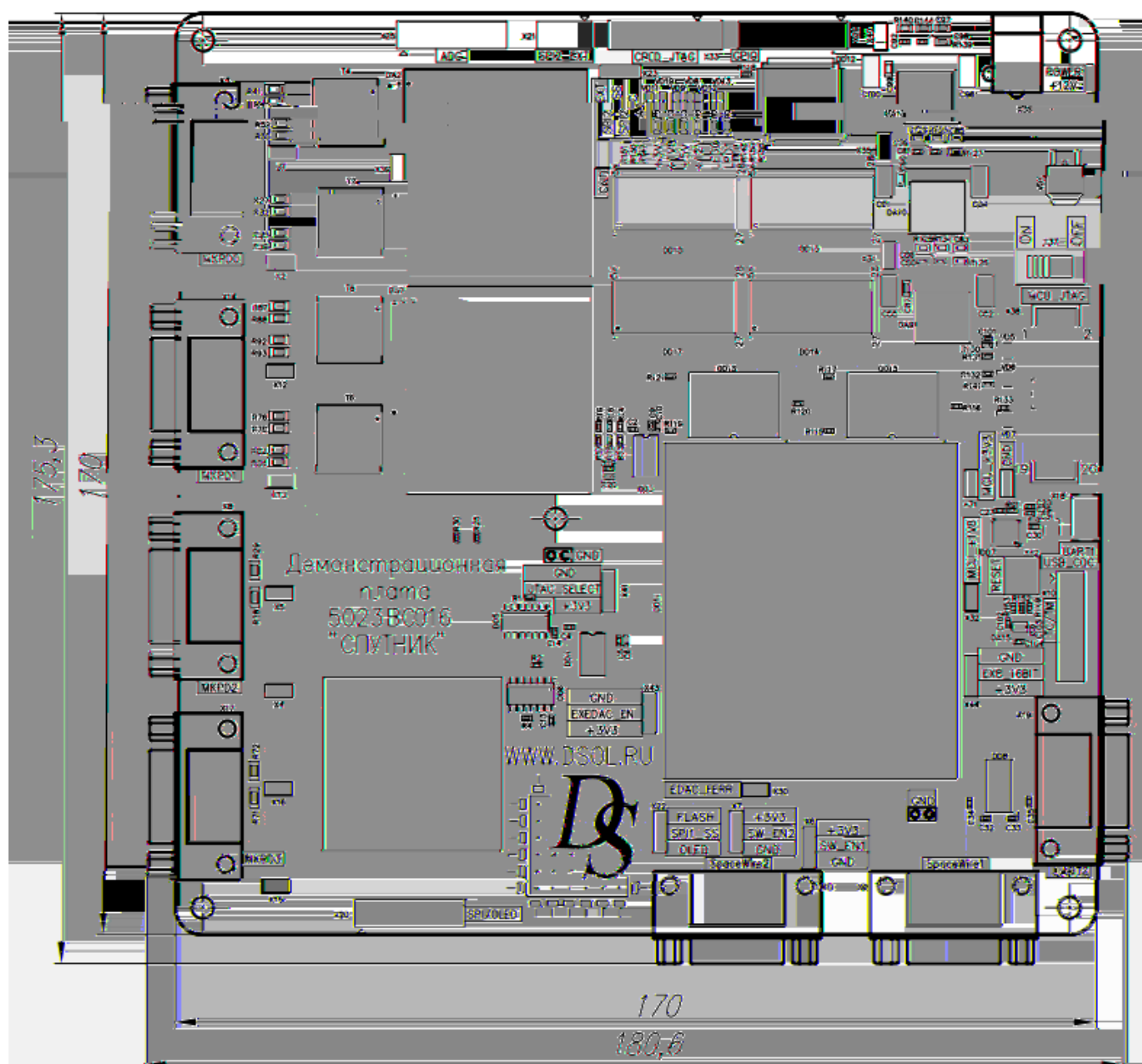
— 42 ;

— 475,4 180,9 54,0 1

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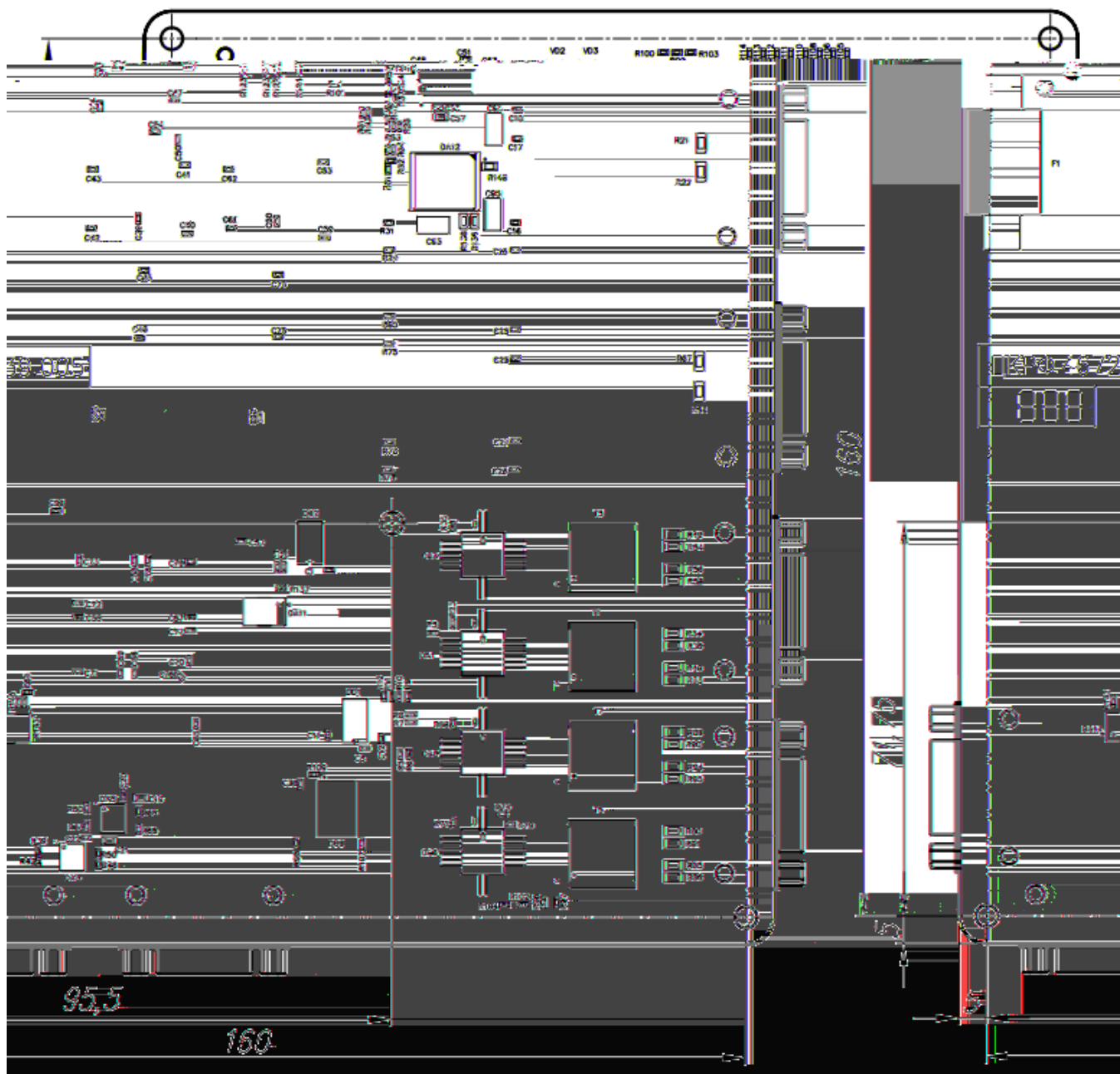
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12 69

6: R 1 45

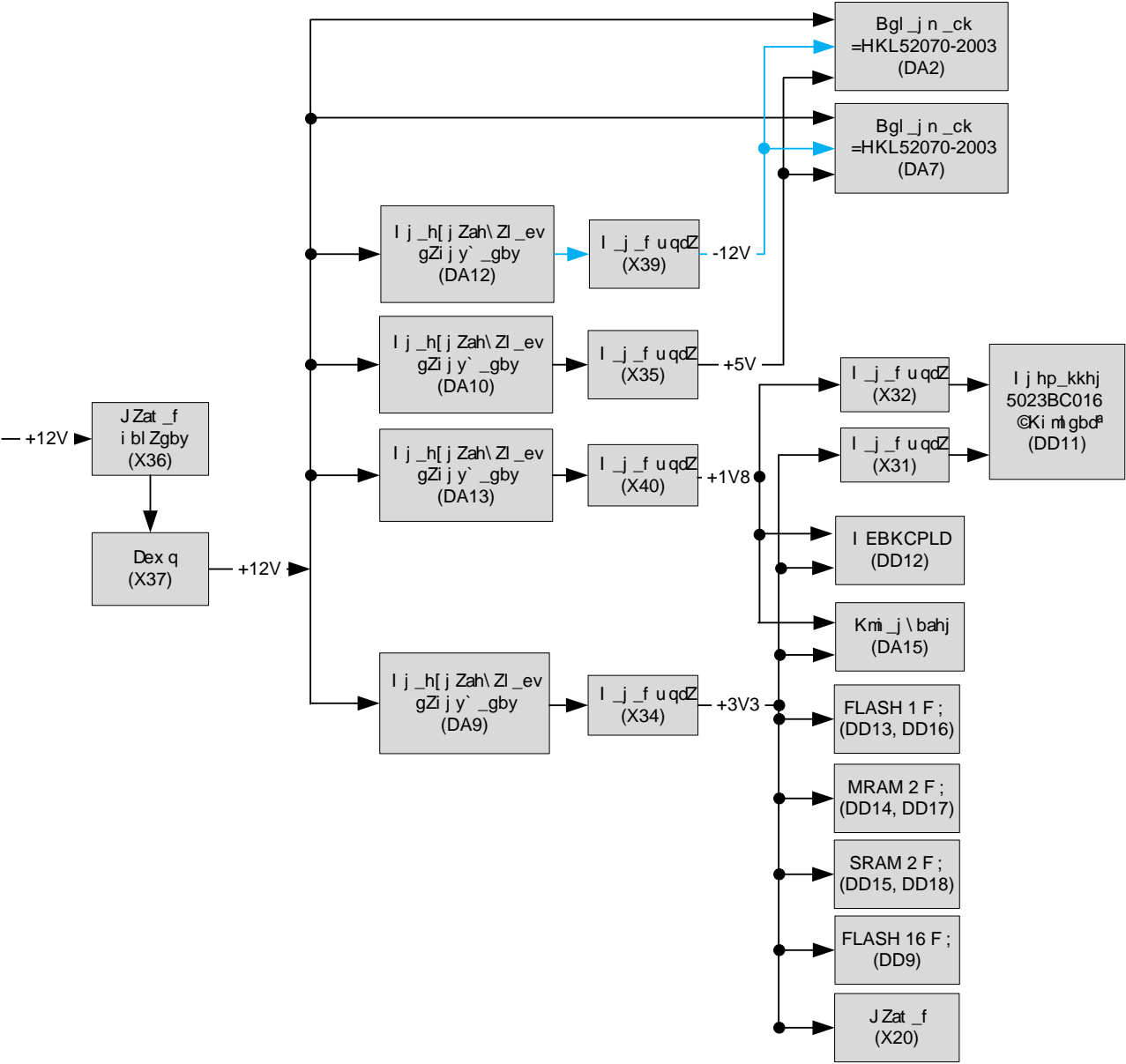
1

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+12V	52070 (DA2, DA7 ,/ +GD10, DA13, DA9 1)/ +GD45 59,
+5V	853: 3 (DA2, DA7 =1, 15)
+1V8	+GG11 : 74, 111, 90, 127, 54, 128, 18, 38, 2), FSOG XC2C128 CoolRunner-II (DD12, =26, 57)
+3V3	+GG44 : 91, 73, 109, 110, 55, 128, 37, 1, 19), FSOG XC2C128 CoolRunner-II (DD12, =5, 20, 38, 51, 88, 98), FLASH 1 +GG43, DD16 37), MRAM 2 +GG47, DD14 =13, 41), SRAM 2 +GG48/GG48 =2, 14, 23, 29, 50), FLASH 16 +GG9 5,/ + 53 =1, 2, 15, 16)
12V	853: 3 (DA2, DA7 7)

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/ J G1

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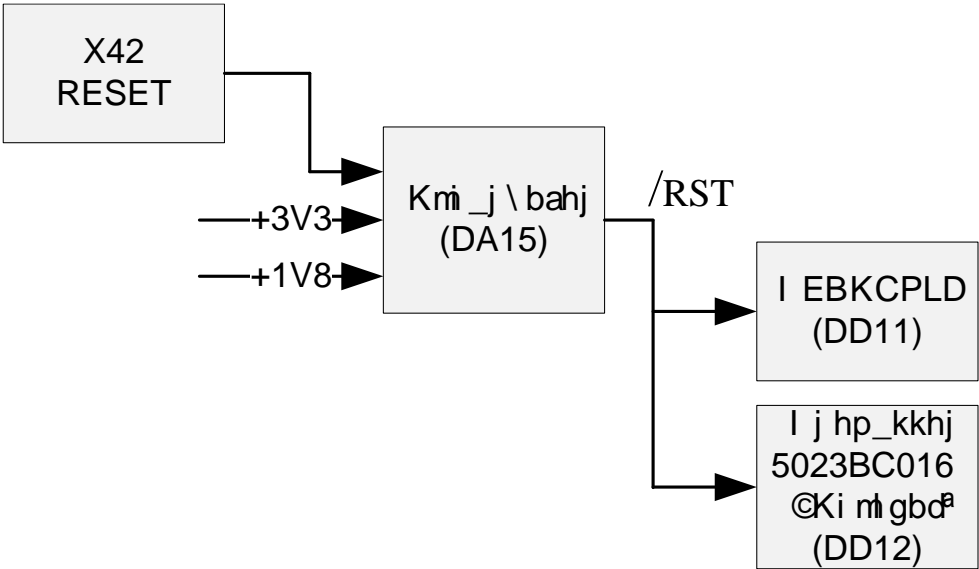
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	2				
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2					
RST		GG12	7, /	CPLD (DD11	99)
	5				1
72					FSOG

XC2C128 CoolRunner-II.



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	/	
CLK	80	XC2C128 CoolRunner-II (DD12) FSOG
SW_CLK	100	88) V dfh l h DD11

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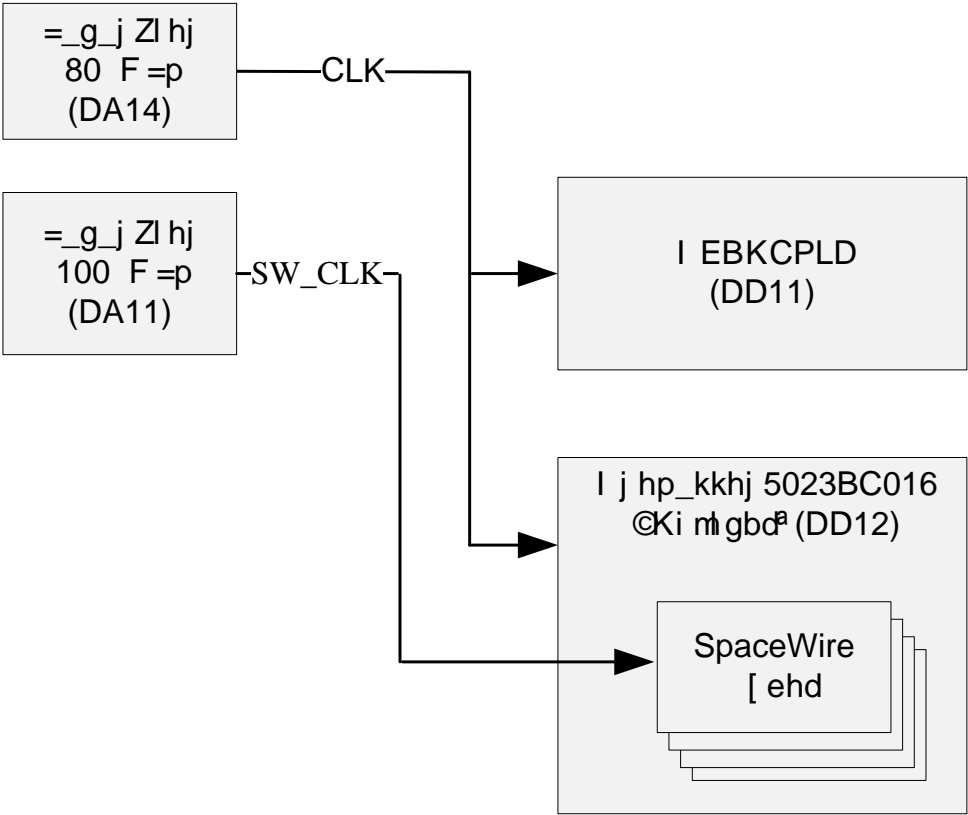
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FSOG XC2C128 CoolRunner-II

100

V dfh l hl



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— VUDP (2)(DD15, DD18);

— NOR-Flash (1)(DD13, DD16);

— NOR-Flash Serial Peripheral Interface (SPI) +49)(DD9);

— MRAM (2)(DD17, DD14).

NOR-Flash SPI (DD9, /

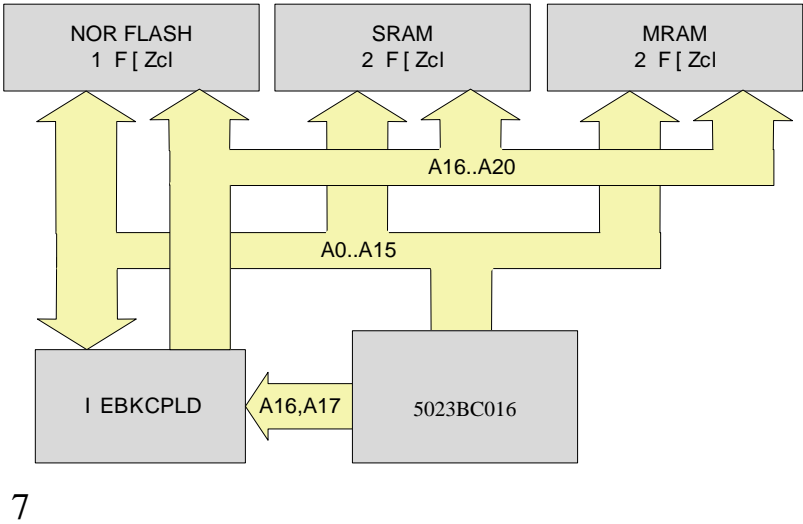
16 SSI 1

—DD15, DD18, DD13, DD16, DD17, DD14,

. 7 8

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CPLD XC2C128 CoolRunner-II.



8

X29

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4

1	2	3	4
0x10000 0x1FFFF	REG_MEMADD, REG_CE = 1	UHJ bP HP DGG/ REG_CE = 2	REG_MEMADD, REG_CE = 4
0x20002	UHJ bFH		
0x20004	UHJ b P HP DGG		

5

UHJ bFH

UHJ bP HP DGG

1

n .

5

1

REG_CE	REG_MEMADD	SRAM	MRAM	Flash
0x0001	0x0000		1	
	0x000n		n	
	0x001F		31	
0x0002	0x0000			1
	0x000n			n
	0x001F			31
0x0004	0x0000	1		
	0x000n	n		
	0x001F	31		

9

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8356 349.

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8356 349

1	2
X1	+ 1 19)
X2	+ 1 19)
X3	0- 853: 3

1	2
X4	+ 1 19)
X5	+ 1 19)
X6	+ 1 19)
X7	+ 1 19)
X8	2- 853: 3
X9	V dfh 1 h 1
X10	2
X11	V dfh 1 h 2
X12	+ 1 19)
X13	+ 1 19)
X14	1- 853: 3
X15	+ 1 19)
X16	+ 1 19)
X17	3- 853: 3
X18	UART, 1 (USB CDC)
X19	XDUW 5
X20	1- VSL
X21	2- VSL
X22	+ 1 19)
X23	+ 1 19)
X25	
X27	GND
X29	2 J SIR
X30	HGDFbI HUU
X31	+ 1 19)
X32	+ 1 19)
X33	MWJ
X34	+ 1 19)
X35	+ 1 19)
X36	
X37	+ 1 19)
X38	MWJ
X39	+ 1 19)
X40	+ 1 19)
X41	+ 1 19)
X42	
X43	+ 1 19)
X44	+ 1 19)

9.1 (X36)

7 X361

10 X36 (3-232 5,5 x 2,5).

10 X36

7 X36

1	+12V
2	
3	GND

9.2 (X25)

55 (PLD-16)

- (1 11). 8

X25.

11 (X25)

8 58

1	2	3
1	AIN1	
2	GND	
3	AIN2	
4	GND	
5	AIN3	
6	GND	

8		
1	2	3
7	AIN4	
8	GND	
9	AIN5	
10	GND	
11	AIN6	
12	GND	
13	AIN7	
14	GND	
15	AIN8	
16	GND	

9.3 SPI (X21)

54 (PLD-8)

8356 349 2-

SPI (1 12). 9 1

12 5- SPI (X21)		
9 54		
1	SPI2SS_EXT	
2	GND	
3	SPI2_MISO	
4	GND	
5	SPI2_MOSI	
6	GND	
7	SPI2_SCK	VFN + ,
8	GND	

9.4 - (X29)
X29 (PLD-16) J SIR +
- , (1 13). 10
X29.
CPLD 1

13 X29)
10 X29

1	CPLD_GPIO 0	-
2	CPLD_GPIO 1	-
3	CPLD_GPIO 2	-
4	CPLD_GPIO 3	-
5	CPLD_GPIO 4	-
6	CPLD_GPIO 5	-
7	CPLD_GPIO 6	-
8	CPLD_GPIO 7	-
9	CPLD_GPIO 8	-
10	CPLD_GPIO 9	-
11	CPLD_GPIO 10	-
12	CPLD_GPIO 11	-
13	CPLD_GPIO 12	-
14	CPLD_GPIO 13	-
15	CPLD_GPIO 14	-
16	CPLD_GPIO 15	-

9.5 UART (X18)
18 -USB /
XDUWUSB CDC. 14

X18. XVE
1

14 UART USB CDC (X18)

9.6 TM/TC (X10)
10 + SOG-16)

1 15
X10. 11 43.

15 TM/TC (X10)

11 X10

1	2	3
1	TM_CLK1	
2	GND	
3	TC_DIN2	2
4	GND	
5	TC_DIN1	4
6	GND	
7	TC_ACT	
8	GND	
9	TC_CLK1	

11

1	2	3
10	GND	
11	TC_DIN0	3
12	GND	
13	TM_CLK0	
14	GND	
15	TM_DOUT	
16	GND 15	

9.7 UART (X19)

19 + GE-9M)
XDUW(1 16). 12
4 .

16 UART (X19)

12 X19

1	NC	
2	RD	
3	TD	
4	NC	
5	GND	
6	NC	
7	NC	
8	NC	
9	NC	

9.8 SpaceWire (X9, X11)

X9 11 (DB-9M)
SpaceWire (1 17). 13
X9 X11.

17 SpaceWire (X9, X11)

13 X9, X11

	SpaceWire 1 (X9)	SpaceWire 2 (X11)	
1	LVDS_DIN1+	LVDS_DIN2+	
2	LVDS_SIN1+	LVDS_SIN2+	
3	GND	GND	
4	LVDS_SOUT1	LVDS_SOUT2	
5	LVDS_DOUT1	LVDS_DOUT2	
6	LVDS_DIN1	LVDS_DIN2	
7	LVDS_SIN1	LVDS_SIN2	
8	LVDS_SOUT1+	LVDS_SOUT2+	
9	LVDS_DOUT1+	LVDS_DOUT2+	

9.9 SPI OLED (X20)

20 + SOV-8) VSL
OLED (1 18). 14 20.

18 SPI OLED (X20)
14 X20

	X20	
1	+3V3	ROHG . 3
2	GND	
3	NC	
4	SPI1_MOSI	P d h R Vd h L + ,
5	SPI1_SCK	SCK ()
6	SPI1SS_EXT	Slave Vhdf +)
7	SPI1_MISO	Master In Vd h R + ,
8	+3V3	ROHG . 3

9.10 853: 3 (X17, X8, X3, X14)

47, X8, X3 14 (DB-9M)

4- 853: 3 (1 19). 15
X3, X14, X17, X8.

19 853: 3 (X17, X8, X3, X14)
15 X3, X14, X17, X8.

	X3, X14, X17, X8	
1	2	3
1	CH_B_DC+	+).
2	CH_B_TC+	+ ,1

15

1	2	3
3	GND	
4	CH_B_TC	+ ,1
5	CH_B_DC	().
6	CH_A_DC+	+ ,1
7	CH_A_TC+	+ ,1
8	CH_A_TC	+ ,1
9	CH_A_DC	+ ,1

9.11 JTAG 8356 349 (X38)

X38 + EKV-20)

WDJ 8356 349 (1 20).

16 X38.

20 JTAG (X38)

16 X38

	68	
1	2	3
1	+3V3	. 3 1
2	NC	
3	TRST	
4	GND	
5	TDI	
6	GND	
7	TMS	
8	GND	
9	TCK	
10	GND	
11	NC	

16

1	2	3
12	GND	
13	TDO	
14	GND	
15	NC	
16	GND	
17	NC	
18	GND	
19	NC	
20	GND	

9.12 JTAG (X33)

X33 (BHS-14)
WDJ (1 21). 17
X33.

21 JTAG (X33)

17 X33

	63	
1	2	3
1	GND	
2	+3V3	. 3 1
3	GND	
4	TMS	
5	GND	
6	TCK	
7	GND	
8	TDO	
9	GND	
10	TDI	
11	GND	

17

1	2	3
12	NC	
13	GND	
14	NC	

9.13 EDAC_FERR (X30)

X30 + SOV-2)

(1 22). 18 60.

22 EDAC_FERR (X30)

18 X30

	60	
1	INTMEM_EDAC_FERR	HGDFbI HUU
2	GND	

9.14 GND (X27)

57 (PLS-2) (1 23).

23 GND (X27)

10

19

8356 349.

19

1	2	3
X1		520701 1
X2		
X12		
X13		
X4		
X5		
X15		
X16		
X29	4 5	(MRAM)
X31		6/6 +)
X32		4/; +)
X35		. 8 52070 (DA1, DA2)
X40		. 4 ; + . 4 ; (1 4))
X39		+ 12 + 1 4))
X34		. 6 6 + . 6 6 (1 4))
X22	VSL4bVV OLED	+ 44/ 45, GG7 +) VSL4 ROHG SPI Flash ROHG
X7	. 6 6 SW_EN2	SpaceWire + V dfh 1 h)
X6	. 6 6 SW_EN1	
X44	H ; b49ELW +3V3	+ 16-)

19

1	2	3
X41	J G-JTAG_SELECT	+ MWDJ E gd Vfd MWDJ)
X23	VS15bH WSPI2_SS	SPI 8 + VSD
X43	HGDFbH -+3V3	Error Detection and Correction (EDAC) + HGDF)
X37	OFF	

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=: (495) 978-2870
=: +7 8, : 78-4218
e-mail: support@dsol.ru
www.dsol.ru

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CPLD	Complex Programmable Logic Device
EDAC	Error Detection and Correction
Flash	
GRIO	General Purpose Input/Output
JTAG	Joint Test Action Group
MISO	Master Input Slave Output
MOSI	Master Output Slave Input
MRAM	Magnetic Random Access Memory
OLED	Organic Light-Emitting Diod
SPI	Serial Peripheral Interface
SRAM	Synchronous Random Access Memory
SSI	Synchronous Serial Interface
UART	Universal Asynchronous Receiver-Transmitter
USB CDC	Universal Serial Bus Communications Device Class

2.0	534	
2.01	46 534	81 4 5