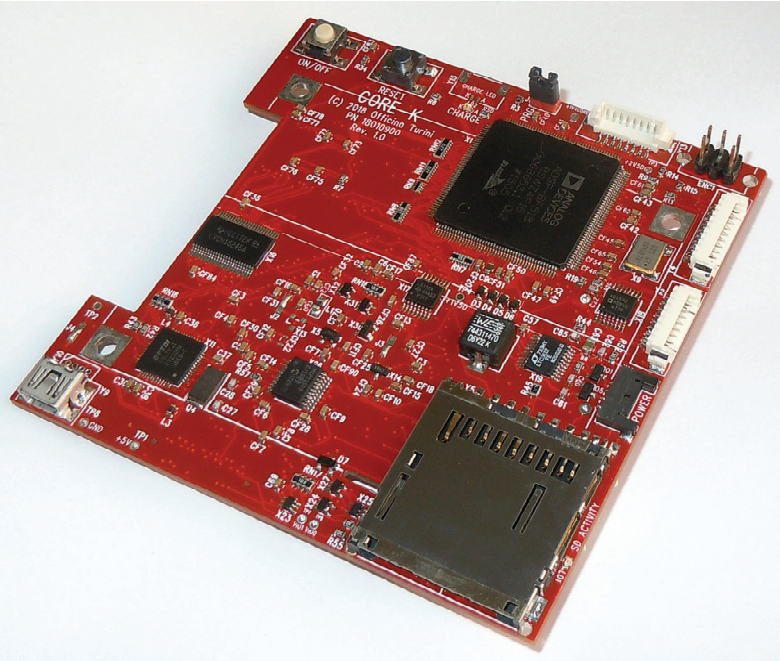
Officina Turini

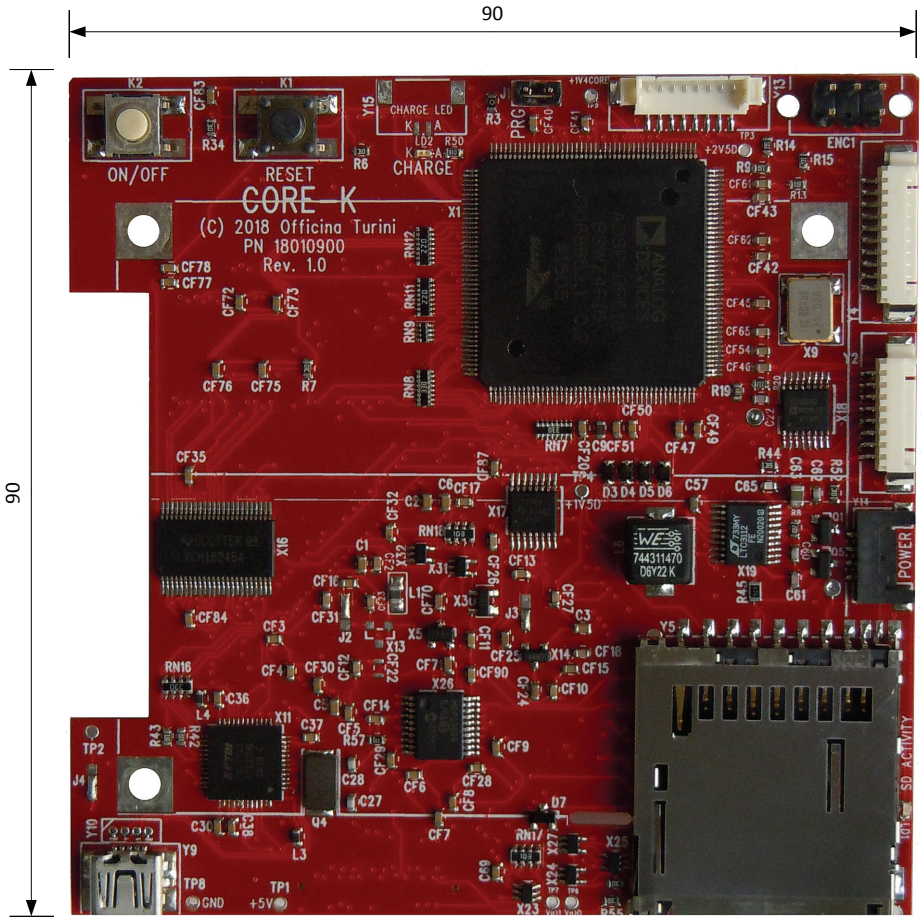
User Manual

CORE-KING

CORE-KING is main board based on Blackfin BF518F16 by Analog Device Inc. In a minimum space are available SDRAM (64 Mbyte 133 MHz), USB 2 interface, TFT display, touch screen controller, full size secure digital socket, 9 axys IMU, AD/DA interface, power supply by battery, by external supply, USB. Expansion port is made with a 1Millions gate FPGA available on two 60 pin high density connectors.
Is a system ready to use, simply you must a DC source and with our free development system (GNU Toolchain) or with Analog Device CROSSCORE you can start the development.



MECHANICAL DIMENSION (mm)



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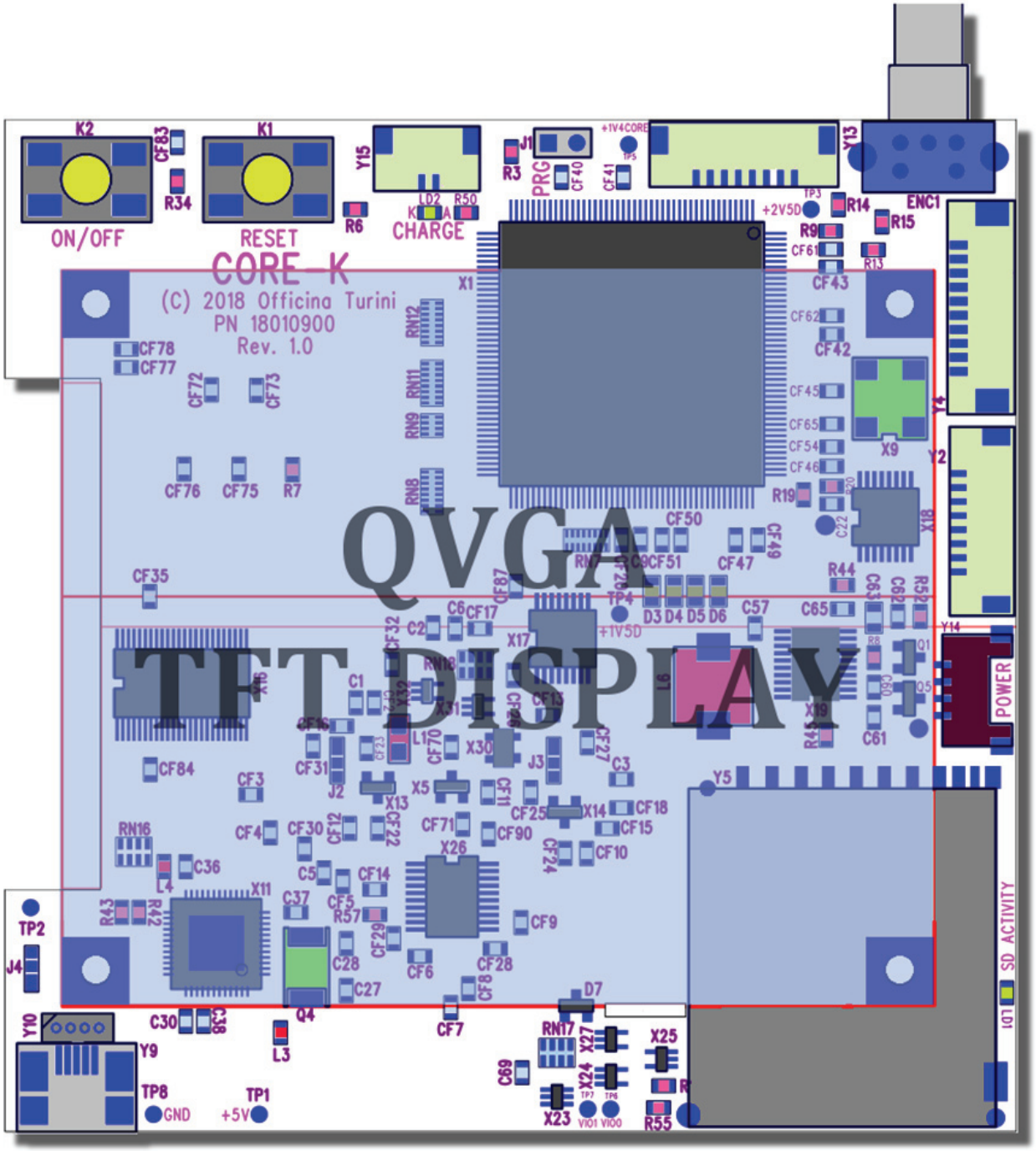
SILK-SCREEN


CORE-K
(C) 2018 Officina Turini
PN 18010900
Rev. 1.0
ON/OFF
RESET
CHARGE
PRG
POWER
SD ACTIVITY
QVGA
TFT DISPLAY

Y8-I/O CONNECTOR -Bank 0 Port 3.3,2.5,1.8 V settable

PIN	SIGNAL	DESCRIPTION
1	+5V	Power supply +5V
2	+5V	Power supply +5V
3	+5V	Power supply +5V
4	+5V	Power supply +5V
5	B0P00	Programmable Input/Output
6	B0P01	Programmable Input/Output
7	B0P02	Programmable Input/Output
8	B0P03	Programmable Input/Output
9	B0P04	Programmable Input/Output
10	B0P05	Programmable Input/Output
11	B0P06	Programmable Input/Output
12	B0P07	Programmable Input/Output
13	B0P08	Programmable Input/Output
14	B0P09	Programmable Input/Output
15	B0P10	Programmable Input/Output
16	B0P11	Programmable Input/Output
17	B0P12	Programmable Input/Output
18	B0P13	Programmable Input/Output
19	B0P14	Programmable Input/Output
20	B0P15	Programmable Input/Output
21	B0P16	Programmable Input/Output
22	B0P17	Programmable Input/Output
23	B0P18	Programmable Input/Output
24	B0P19	Programmable Input/Output
25	B0P20	Programmable Input/Output
26	B0P21	Programmable Input/Output
27	B0P22	Programmable Input/Output
28	B0P23	Programmable Input/Output
29	B0P24	Programmable Input/Output
30	B0P25	Programmable Input/Output
31	B0P26	Programmable Input/Output
32	B0P27	Programmable Input/Output
33	B0P28	Programmable Input/Output
34	B0P29	Programmable Input/Output
35	B0P30	Programmable Input/Output
36	B0P31	Programmable Input/Output
37	B0P32	Programmable Input/Output
38	B0P33	Programmable Input/Output
39	B0P34	Programmable Input/Output
40	B0P35	Programmable Input/Output
41	B0P36	Programmable Input/Output
42	B0P37	Programmable Input/Output
43	B0P38	Programmable Input/Output
44	B0P39	Programmable Input/Output
45	B0P40	Programmable Input/Output
46	SCL	I2C clock
47	SDA	I2C data
48	MISO	Master Input Slave Output SPI
49	MOSI	Master Output Slave Input SPI
50	SCLK	SPI clock
51	PADENA	SPI peripheral decoder enable, active high
52	RESET	System reset active low
53	EXTRES	External RESET input
54	EXTSTART	Power on input +5V tolerant
55	PCS6	SPI peripheral select
56	SPISEL	SPI selection active low
57	GND	Power supply return
58	GND	Power supply return
59	GND	Power supply return
60	GND	Power supply return

Y12-I/O CONNECTOR -Bank 1 Port 3.3,2.5,1.8 V settable

PIN	SIGNAL	DESCRIPTION
1	+5V	Power supply +5V
2	+5V	Power supply +5V
3	+5V	Power supply +5V
4	+5V	Power supply +5V
5	B1P00	Programmable Input/Output
6	B1P01	Programmable Input/Output
7	B1P02	Programmable Input/Output
8	B1P03	Programmable Input/Output
9	B1P04	Programmable Input/Output
10	B1P05	Programmable Input/Output
11	B1P06	Programmable Input/Output
12	B1P07	Programmable Input/Output
13	B1P08	Programmable Input/Output
14	B1P09	Programmable Input/Output
15	B1P10	Programmable Input/Output
16	B1P11	Programmable Input/Output
17	B1P12	Programmable Input/Output
18	B1P13	Programmable Input/Output
19	B1P14	Programmable Input/Output
20	B1P15	Programmable Input/Output
21	B1P16	Programmable Input/Output
22	B1P17	Programmable Input/Output
23	B1P18	Programmable Input/Output
24	B1P19	Programmable Input/Output
25	B1P20	Programmable Input/Output
26	B1P21	Programmable Input/Output
27	B1P22	Programmable Input/Output
28	B1P23	Programmable Input/Output
29	B1P24	Programmable Input/Output
30	B1P25	Programmable Input/Output
31	B1P26	Programmable Input/Output
32	B1P27	Programmable Input/Output
33	B1P28	Programmable Input/Output
34	B1P29	Programmable Input/Output
35	B1P30	Programmable Input/Output
36	B1P31	Programmable Input/Output
37	B1P32	Programmable Input/Output
38	B1P33	Programmable Input/Output
39	B1P34	Programmable Input/Output
40	B1P35	Programmable Input/Output
41	VIO_X0	Bank 0 port power supply: 3.3,25.1.8V settable
42	VIO_X0	Bank 0 port power supply: 3.3,25.1.8V settable
43	VIO_X1	Bank 1 port power supply: 3.3,25.1.8V settable
44	VIO_X1	Bank 1 port power supply: 3.3,25.1.8V settable
45	+3V3BT	+3V3 battery power supply
46	START	Signal to power on
47	ENCB	Rotary encoder phase B
48	ENCA	Rotary encoder phase A
49	EXI03	Programmable Input/Output
50	EXI02	Programmable Input/Output
51	EXI01	Programmable Input/Output
52	EXI00	Programmable Input/Output
53	RXD1	Serial port 1 receive data
54	TXD1	Serial port 1 transmit data
55	RXD0	Serial port 0 receive data
56	TXD0	Serial port 0 transmit data
57	GND	Power supply return
58	GND	Power supply return
59	GND	Power supply return
60	GND	Power supply return

BOOT MODE

J1	BOOT MODE
CLOSE	Boot from UART0 Host
OPEN	Boot from internal SPI memory

Y3-JTAG X ICE-100

PIN	SIGNAL	DESCRIPTION
1	+3.3V 330uA	Pull Up 10K to +3.3V
2	/EMU	Emulation Output
3	TMS	JTAG Mode Select
4	TCK	JTAG CLK
5	/TRST	JTAGReset
6	TDI	JTAG Serial Data In
7	TDO	JTAG Serial Data Out
8	GND	Power supply return

Y4-SERIAL I/O

PIN	SIGNAL	DESCRIPTION
1	+5V	Power supply
2	RESIN	Reset input, active low
3	TXD0	Transmit Serial Data
4	RXD0	Receive Serial Data
5	TXD1	Transmit Serial Data
6	RXD1	Receive Serial Data
7	SCL	I2C clock
8	SDA	I2C data
9	+3V3	+3.3 volt power supply
10	GND	Power supply return

Y2-AD/DA expansion

PIN	SIGNAL	DESCRIPTION
1	+5V	Power supply
2	CH0	Channel 0 AD or DA
3	CH1	Channel 0 AD or DA
4	CH2	Channel 0 AD or DA
5	CH3	Channel 0 AD or DA
6	CH4	Channel 0 AD or DA
7	CH5	Channel 0 AD or DA
8	GND	Channel 0 AD or DA

Y13-SPI I/O

PIN	SIGNAL	DESCRIPTION
1	+5V	Power supply
2	+3V3D	+3.3 volt power supply
3	MISO	Master Input Slave Output
4	MOSI	Master Output Slave Input
5	SCLK	Serial clock
6	PCS7	Peripheral selection active low
7	PADENA	SPI decoder enable active high
8	GND	Power supply return

Y2-RTC BATTERY

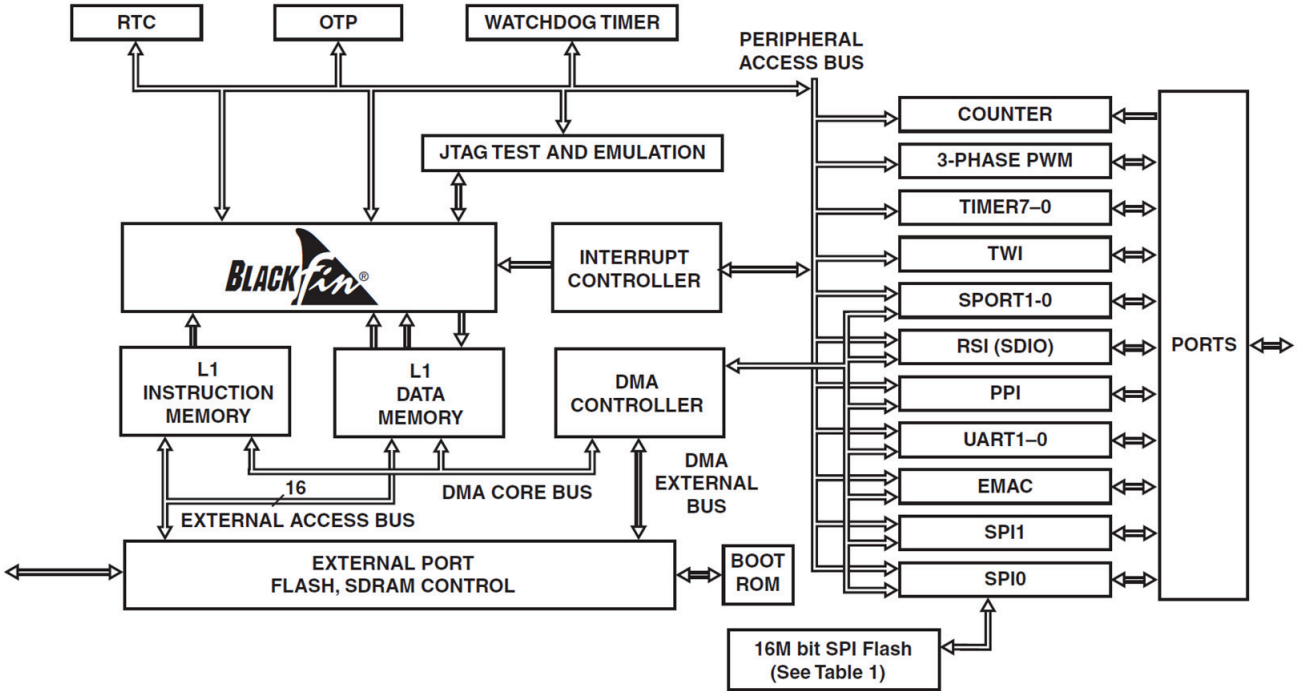
PIN	SIGNAL	DESCRIPTION
1	VBAT	+3V RTC supply
2	GND	Power supply return

FLASH LOAD AND DEBUG

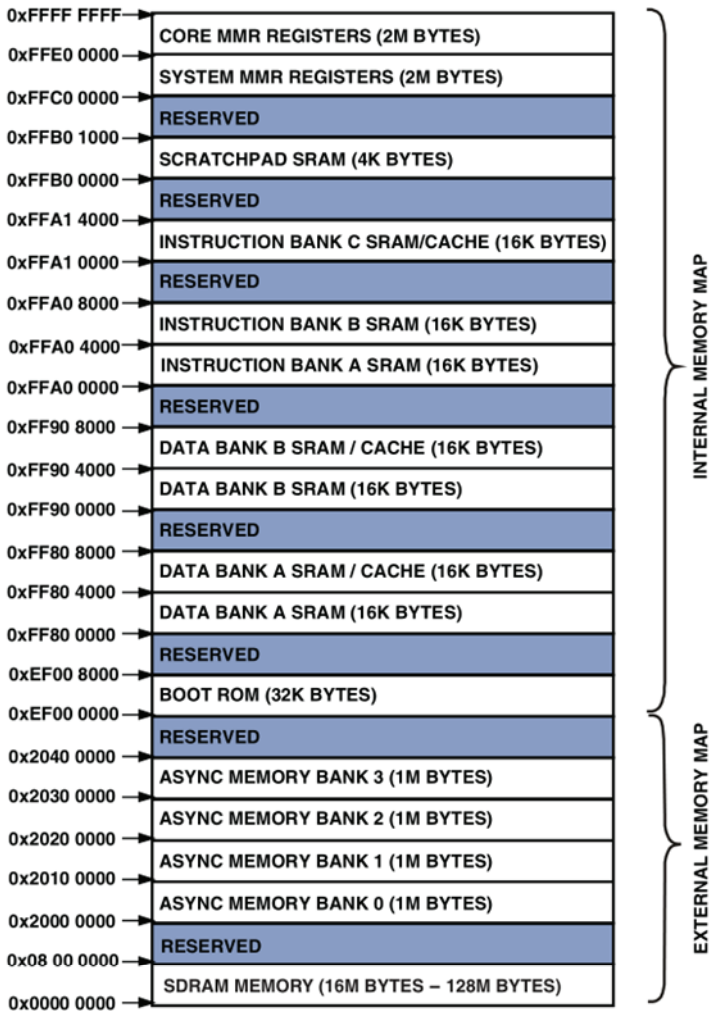
The **TTL-232R-3V3-WE** by FTDI is used for the development of programs for the CORE-KING.
With this link you can download and debug the program with our GNU toolchain available in MDI program.

Y4	SIGNAL	TTL-232R-3V3-WE
3	TXD	YELLOW wire
4	RXD	ORANGE wire
6	GND	BLACK wire

BF518 FUNCTIONAL BLOCK DIAGRAM



BF518 MEMORY MAP



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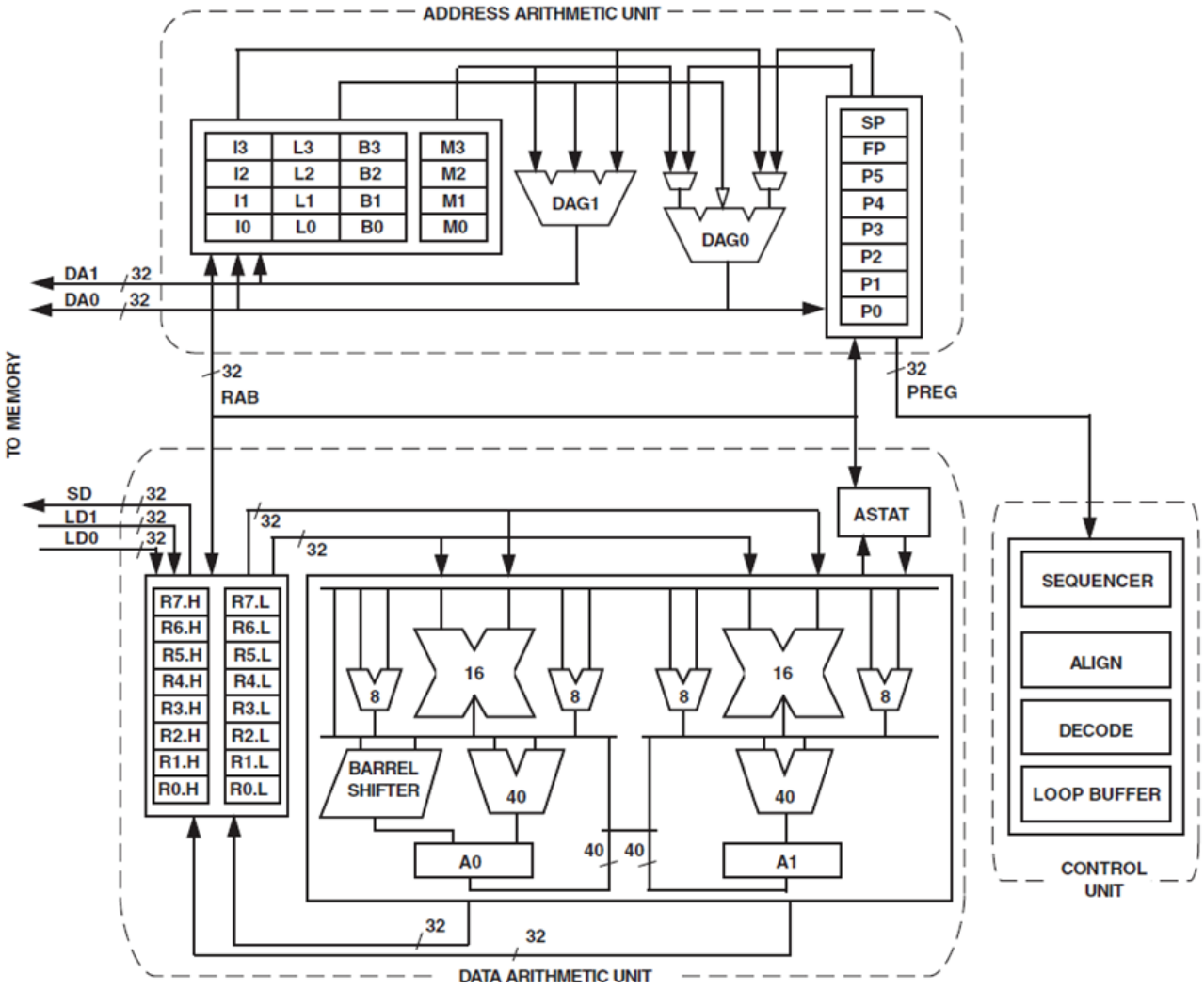
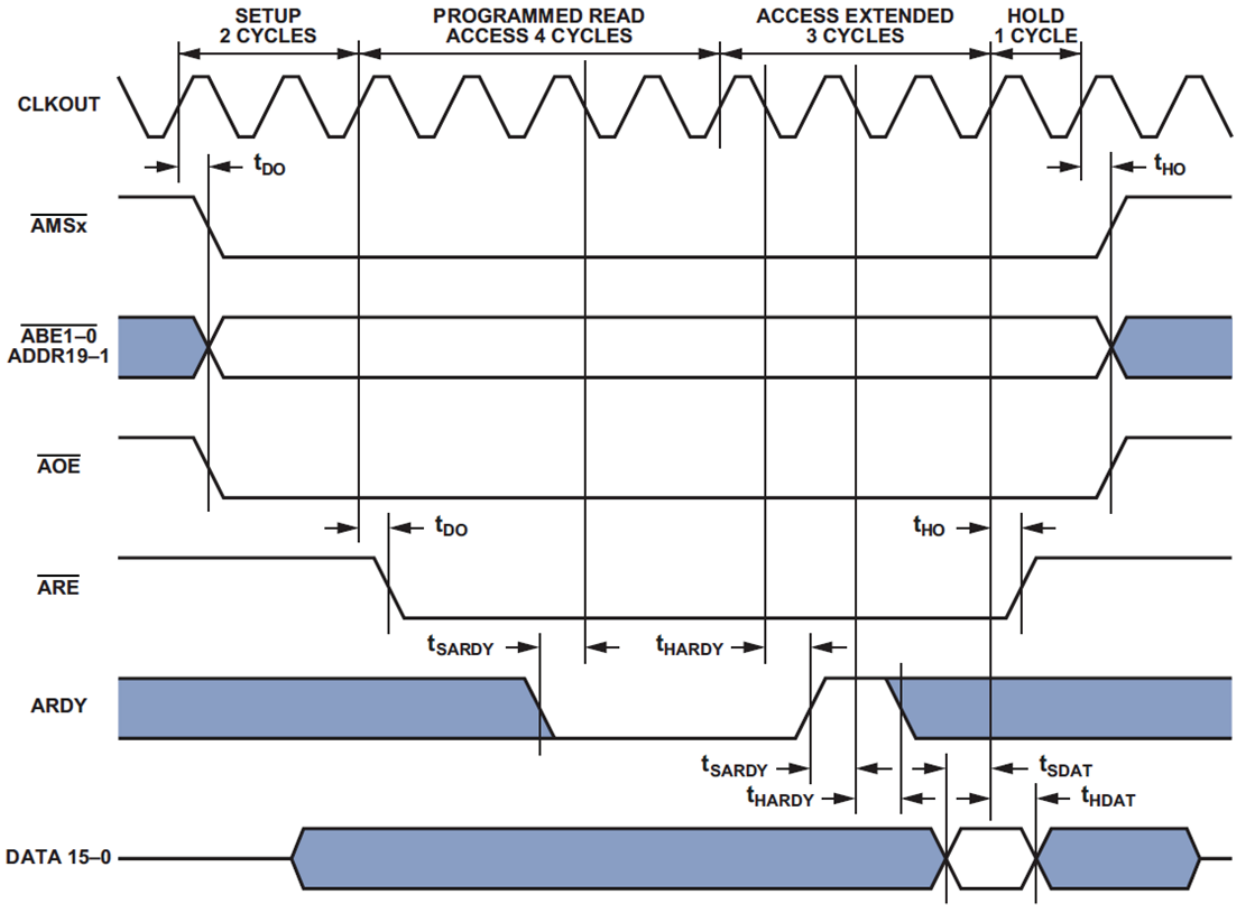
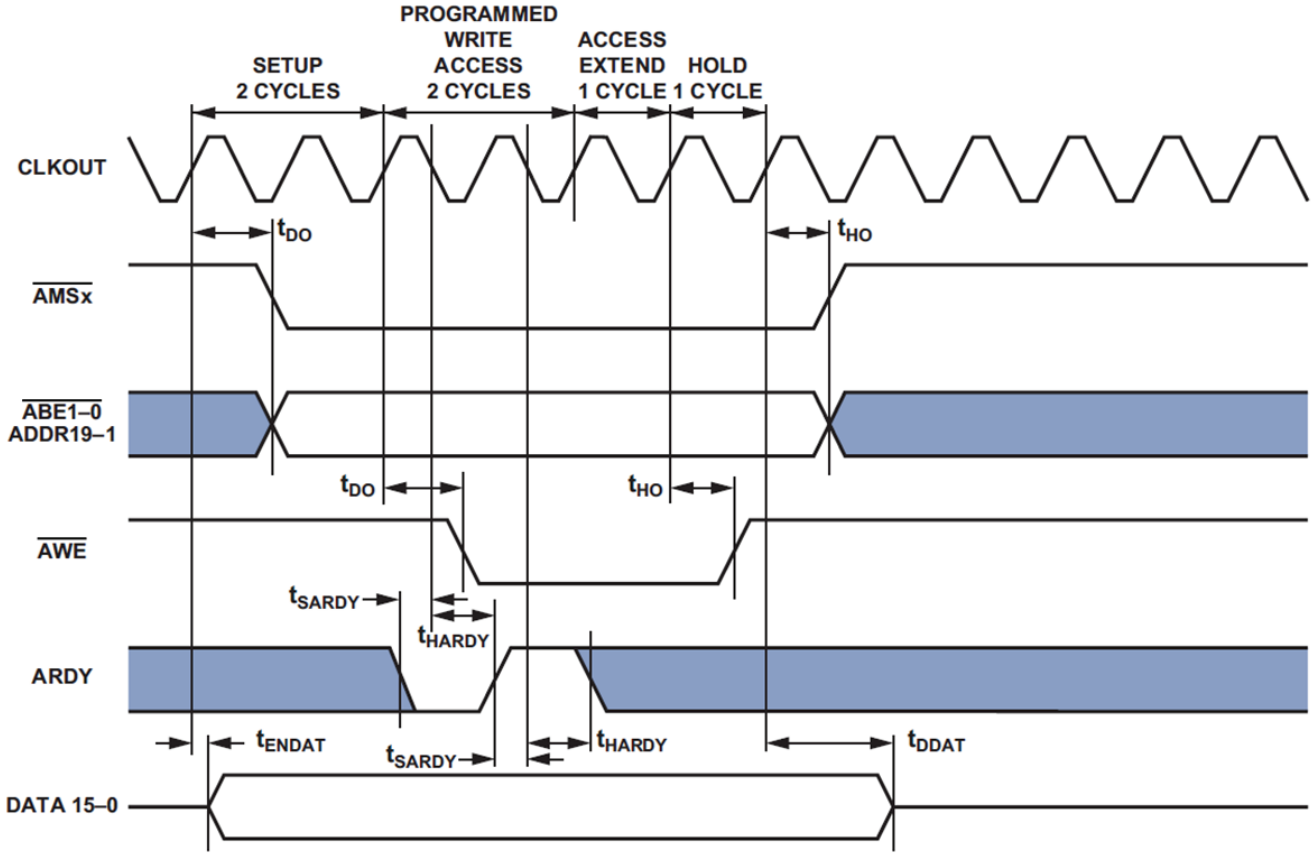


READ CYCLE TIMING ON BUS

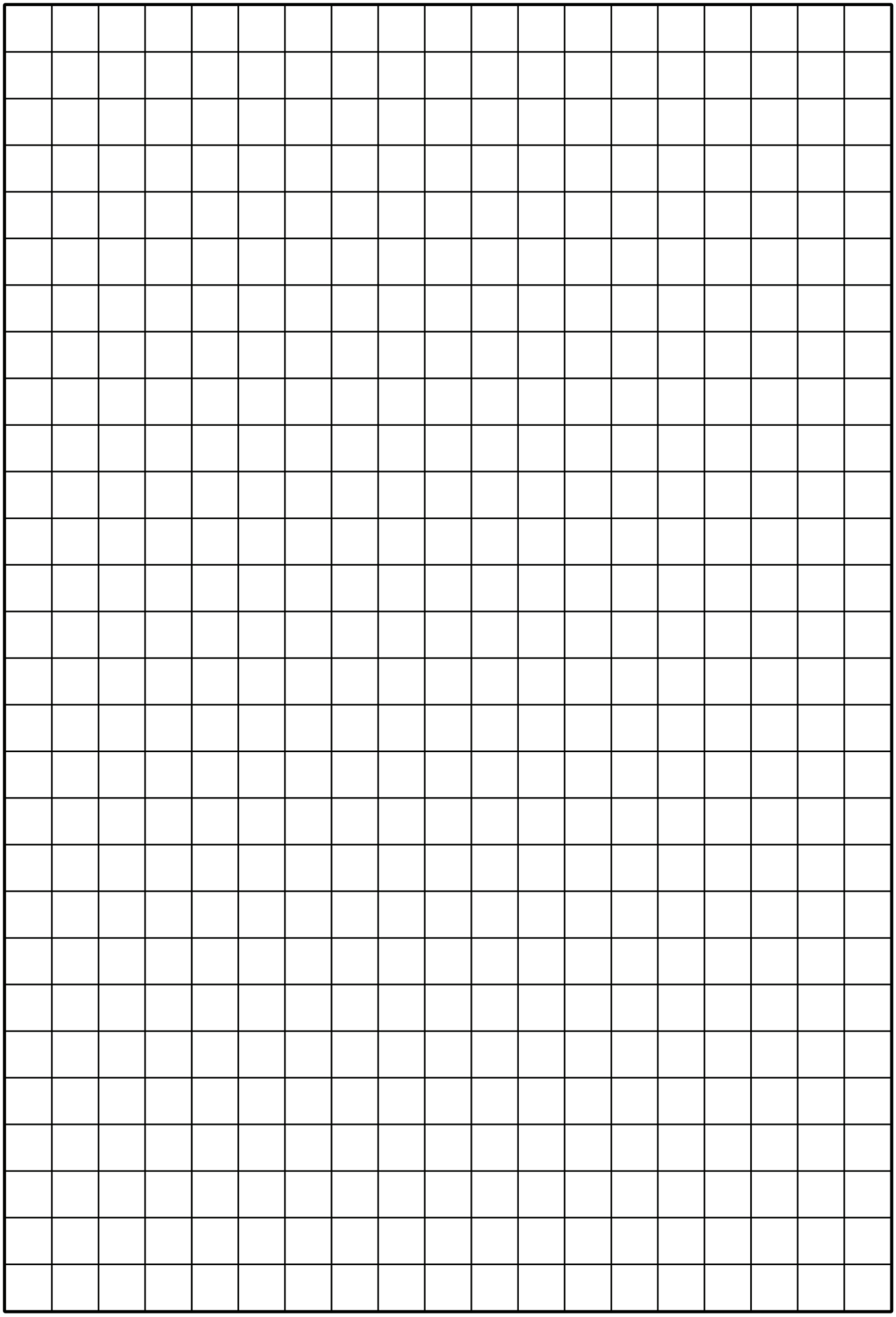


Parameter		V_{DDMEM} 3.3 V Nominal Min	Max	Unit
Timing Requirements				
t_{SDAT}	DATA15–0 Setup Before CLKOUT	2.1		ns
t_{HDAT}	DATA15–0 Hold After CLKOUT	0.8		ns
t_{SARDY}	ARDY Setup Before CLKOUT	4		ns
t_{HARDY}	ARDY Hold After CLKOUT	0.2		ns
Switching Characteristics				
t_{DO}	Output Delay After CLKOUT[1]		6	ns
t_{HO}	Output Hold After CLKOUT [1]	0.8		ns

WRITE CYCLE TIMING ON BUS



Parameter		Min	Max	Unit
Timing Requirements				
t_{SARDY}	ARDY Setup Before CLKOUT	4		ns
t_{HARDY}	ARDY Hold After CLKOUT	0.2		ns
Switching Characteristics				
t_{DDAT}	DATA15–0 Disable After CLKOUT		6	ns
t_{ENDAT}	DATA15–0 Enable After CLKOUT	0		ns
t_{DO}	Output Delay After CLKOUT[1]		6	ns
t_{HO}	Output Hold After CLKOUT [1]	0.8		ns



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