

V1.00	2008/01/07	
V1.01	2008/04/17	A/D
V1.02	2008/5/20	Falsh 2M
V1.03	2008/10/08	M23A



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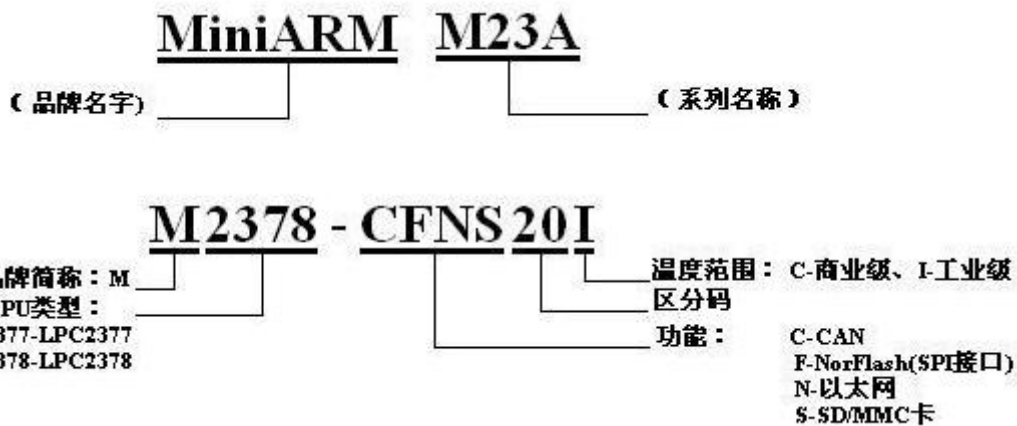
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1. M23A

1.1

- ¥ LPC2377/ LPC2378
- ¥ μC/OS-II
- ¥ TCP/IP FAT32
- ¥ CAN-bus 2 CAN M2378-CFNS20
- ¥ 504KBytes
- ¥ 2/4MBytes Flash
- ¥ 58KBytes+64KBytes SRAM
- ¥ 12MHz
- ¥ 16 8
- ¥ 10/100M PHY
- ¥ 8 10 A/D 10 D/A
- ¥ 6 PCB 70mm x 50mm
- ¥ 3.3V± 5%

1.2



1.1

1.3

M23A

1.1

	SRAM	Flash		CAN-bus	SD/MMC	USB	
M2377-FNS20I	64KB	2MB	10/100M	-		-	
M2378-CFNS20C	64KB	2MB	10/100M	2		2	
M2378-CFNS20I	64KB	2MB	10/100M	2		2	

2. MiniARM

MiniARM

ARM
 TCP/IP CAN-bus
 MiniARM M23A CPU SRAM

3.3V

MiniARM

C MiniARM MiniARM M23A
 TCP/IP CAN-bus ARM
 ARM API

API

UART API

2.1

2.1 UART API

```
UartInit( UART0, /* UART0 */
  "BaudRate=115200 RxBufSize=512 TxBufSize=512",
  NULL );
UartRead( UART0, RcvBuf, RcvLength, NULL ); /* UART0 */
UartWrite( UART0, SendBuf, SendLength, NULL ); /* UART0 */
```

TCP

2.2

2.2 TCP

```
s = socket( 0, SOCK_STREAM, TCP_PROTOCOL ); /* TCP */
recv( ei, RcvBuf, RcvLength, 0 ); /* TCP */
send( ei, SendBuf, SendLength, 0 ); /* TCP */
```

CAN-bus API

2.3

2.3 CAN-bus API

```
CanInit( CAN1, /* CAN 1 */
  "BaudRate=1000000 RxBufSize=10 Mode=0",
  NULL );
CanRead( CAN1, CANRxBuf1, 1, NULL ); /* 1 */
CanWrite( CAN1, CANTxBuf1, 1, NULL ); /* 1 */
```

FAT

API

2.4

2.4

FAT

SD

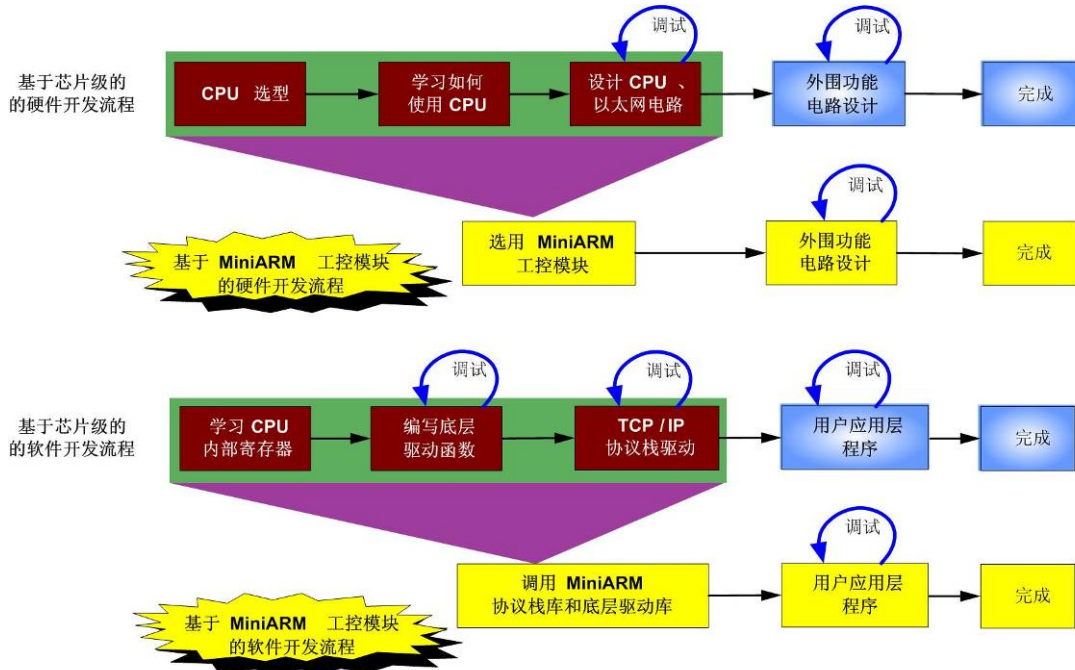
```
fp = FileOpen( "A:\\ReadMe.TXT", "RW" ); /* " ReadMe.TXT" */
```

```
FileRead( ReadData, RdLength, fp );          /* */
FileWrite( WrData, WrLength, fp );          /* */
```

“0”

MiniARM M23A

2.1



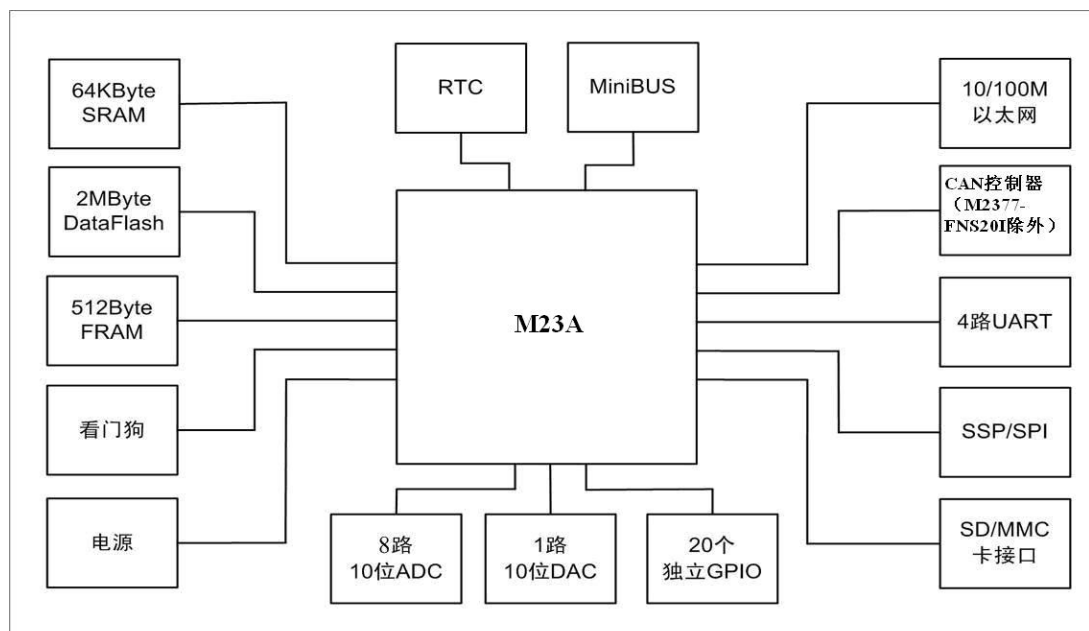
2.1

3.

3.1

MiniARM M23A	M2377-FNS20I	M2378-CFNS20I	LPC2378	USB PHY	LPC2378 (M2377)
) 10/100M) SD/MMC	Flash	TCP/IP	CAN-bus	12MHz
2M	2M	Flash	TCP/IP	CAN-bus	USB
			ARM		SD
					USB CAN-bus
					API

M23A 70mm× 50mm 2 24 x 3
M23A GPIO 3.1



3.1 M23A

3.2

· M23A

3.2.1

· LPC2377/ LPC2378

48 MHz

72MHz

3.2.2

· 504KBytes

· 58KBytes+64KBytes SRAM

4.

M23A

PWM

API

GPIO

4.1

4.1 GPIO

	GPIO
P0	P0.0 P0.14 P0.19 P0.26 P0.29 P0.30 P0.31
P1	P1.18 P1.31
P2	P2.0 P2.13
P3	P3.23 P3.24 P3.25 P3.26
P4	P4.28 P4.29
I/O	60

/ 4.2

4.2 Timer

		P1.19	P3.24	CAP1.1	TIMER1	P1.19
CAP0.0	CAP0.1	CAP0.0	—	P1.26	P3.23	
CAP1.0	CAP1.1	CAP0.1	—	P1.27	P3.34	
CAP2.0	CAP2.1	CAP1.0	—	P1.18		
CAP3.0	CAP3.1	CAP1.1	—	P1.19		
		CAP2.0	—	P0.4		
		CAP2.1	—	P0.5		
		CAP3.0	—	P0.23		
		CAP3.1	—	P0.24		
MAT0.0	MAT0.1	MAT0.0	—	P1.28	P3.25	
MAT1.0	MAT1.1	MAT0.1	—	P1.29	P3.26	
MAT2.0	MAT2.3	MAT1.0	—	P1.22		
MAT3.0	MAT3.1	MAT1.1	—	P1.25		
		MAT2.0	—	P0.6	P4.28	
		MAT2.1	—	P0.7	P4.29	
		MAT2.2	—	P0.8		
		MAT2.3	—	P0.9		
		MAT3.0	—	P0.10		
		MAT3.1	—	P0.11		

UART

4.3

4.3 UARTn

	CPU		
RXD0	P0.3		
RXD1	P2.1		
RXD2	P0.11 P2.9		
RXD3	P0.1 P0.26 P4.29		
TXD0	P0.2		
TXD1	P2.0		UARTn TXD
TXD2	P0.10 P2.8		TXCn
TXD3	P0.0 P0.25 P4.28		
CTS1	P2.2		
DCD1	P2.3		
DSR1	P0.19 P2.4		
RI1	P0.21 P2.6		
DTR1	P0.20 P2.5		
RTS1	P0.22 P2.7		

I²C 4.4

4.4 I²C

	CPU		
SDA1	P0.0 P0.19	I ² C1	/
SCL1	P0.1 P0.20	I ² C1	/
SDA2	P0.10	I ² C2	/
SCL2	P0.11	I ² C2	/

*注: I2C0 已被固件程序占用, 不开放。

SSP 4.5

4.5 SSP

	CPU		
SCK	P0.07 P1.20 P1.31	I/O	SPI
SSEL	P0.06 P0.14 P1.21	I/O	SSEL SPI
MISO	P0.08 P1.23 P0.12	I/O	
MOSI	P0.09 P1.24 P0.13	I/O	MISO

4.6

4.6

	CPU		
EINT0	P2.10		0
EINT1	P2.11		1
EINT2	P2.12		2
EINT3	P2.13		3

ADC 4.7

4.7 ADC

	CPU		
AIN0	P0.23		PINSEL _n GPIO A/D
AIN1	P0.24		
AIN2	P0.25		
AIN3	P0.26		
AIN4	P1.30		
AIN5	P1.31		
AIN6	P0.12		
AIN7	P0.13		

DAC 4.8

4.8 DAC

CPU			
AOUT	P0.26	Aout	P0.26

PWM 4.9

4.9 PWM

CPU			
PWM1	P1.18 P2.0	PWM	1
PWM2	P1.20 P2.1 P3.25	PWM	2
PWM3	P1.21 P2.2 P3.26	PWM	3
PWM4	P1.23 P2.3	PWM	4
PWM5	P1.24 P2.4	PWM	5
PWM6	P1.26 P2.5	PWM	6

M23A

M2377 P0 4.10

4.10 M2377 P0

M2377	P0	
P0.0/TXD3/SDA1	SDA1	I ² C1
P0.1/RXD3/SCL1	SCL1	
P0.2/TXD0	TXD0	UART0
P0.3/RXD0	RXD0	
P0.4/I2SRX_CLK/ CAP2.0	-	-
P0.5/I2SRX_WS/ CAP2.1	-	-
P0.6/I2SRX_SDA/SSEL1/MAT2.0	SSEL1	SSP1
P0.7/I2STX_CLK/SCK1/MAT2.1	SCK1	
P0.8/I2STX_WS/MISO1/MAT2.2	MISO1	
P0.9/I2STX_SDA/MOSI1/MAT2.3	MOSI1	
P0.10/TXD2/ SDA2/MAT3.0	SDA2	I ² C2
P0.11/RXD2/ SCL2/MAT3.1	SCL2	
P0.12/MISO1/AD0.6	-	-
P0.13/U2UP_LED/MOSI1/AD0.7	-	-
P0.14/U2CONNECT/SSEL1	-	-
P0.19/DSR1/ MCICLK/SDA1	SDCLK	SD
P0.20/DTR1/ MCICMD/SCL1	SDCMD	/
P0.21/RI1/ MCIPWR/RD1	SDPWR	SD
P0.22/RTS1/ MCIDAT0/TD1	SDDATA0	DAT0
P0.23/AD0.0/ I2SRX_CLK/ CAP3.0	-	-
P0.24/AD0.1/ I2SRX_WS/ CAP3.1	-	-
P0.25/AD0.2/ I2SRX_SDA/ TXD3	-	-
P0.26/AD0.3/ AOUT/RXD3	AOUT	D/A
P0.29	P0.29	GPIO



M2377		
P0.30	P0.30	GPIO
P0.31	P0.31	GPIO

M2377 P1 4.11

4.11 P1

M2377		
P1.18/ PWM1.1/CAP1.0	-	-
P1.19/CAP1.1	-	-
P1.20/PWM1.2/ SCK0	SCK0	SSP0
P1.21/PWM1.3/ SSEL0	SSEL0	
P1.22/MAT1.0	-	-
P1.23/PWM1.4/ MISO0	MISO0	SPP0
P1.24/PWM1.5/ MOSI0	MOSI0	
P1.25/MAT1.1	-	-
P1.26/PWM1.6/ CAP0.0	-	-
P1.27/CAP0.1	-	-
P1.28/PCAP1.0/ MAT0.0	-	-
P1.29/PCAP1.1/ MAT0.1	-	-
P1.30/VBUS/ AD0.4	-	-
P1.31/SCK1/ AD0.5	-	-

M2377 P2 P3 P4 4.12

4.12 P2 P3 P4

M2377		
P2.0/PWM1.1/ TXD1/ TRACECLK	TXD1	MODEM
P2.1/PWM1.2/ RXD1/ PIPESTAT0	RXD1	
P2.2/PWM1.3/ CTS1/ PIPESTAT1	CTS1	
P2.3/PWM1.4/ DCD1/ PIPESTAT2	DCD1	
P2.4/PWM1.5/DSR1/ TRACESYNC	DSR1	
P2.5/PWM1.6/ DTR1/ TRACEPKT0	DTR1	
P2.6/PCAP1.0/ RI1/ TRACEPKT1	RI1	
P2.7/RD2/RTS1/ TRACEPKT2	RTS1	
P2.8/TD2/TXD2/TRACEPKT3	SD_CD	
P2.9/U1CONNECT/ RXD2/EXTIN0	-	-
P2.10/nEINT0	-	-
P2.11/nEINT1/MCIDAT1/I2STX_CLK	SDDATA1	DAT1
P2.12/nEINT2/MCIDAT2/ I2STX_WS	SDDATA2	DAT2
P2.13/nEINT3/MCIDAT3/I2STX_SDA	SDDATA3	DAT3
P3.25/MAT0.0/ PWM1.2	SD_WP	SD
P3.26/MAT0.1/ PWM1.3		
P4.28/MAT2.0/ TXD3	TXD3	UART3
P4.29/MAT2.1/ RXD3	RXD3	

M2378 P0 4.13

4.13 M2378 P0

M2378		
P0.0/RD1/TXD3/SDA1	RD1	CAN1
P0.1/TD1/RXD3/SCL1	TD1	
P0.2/TXD0	TXD0	UART0
P0.3/RXD0	RXD0	
P0.4/I2SRX_CLK/RD2/CAP2.0	RD2	CAN2
P0.5/I2SRX_WS/TD2/CAP2.1	TD2	
P0.6/I2SRX_SDA/SSEL1/MAT2.0	SSEL1	SSP1
P0.7/I2STX_CLK/SCK1/MAT2.1	SCK1	
P0.8/I2STX_WS/MISO1/MAT2.2	MISO1	
P0.9/I2STX_SDA/MOSI1/MAT2.3	MOSI1	
P0.10/TXD2/ SDA2/MAT3.0	SDA2	I ² C2
P0.11/RXD2/ SCL2/MAT3.1	SCL2	
P0.12/MISO1/AD0.6	-	-
P0.13/U2UP_LED/MOSI1/AD0.7	-	-
P0.14/U2CONNECT/SSEL1	-	-
P0.19/DSR1/ MCICLK/SDA1	SDCLK	SD
P0.20/DTR1/ MCICMD/SCL1	SDCMD	/
P0.21/RI1/ MCIPWR/RD1	SDPWR	SD
P0.22/RTS1/ MCIDAT0/TD1	SDDATA0	DAT0
P0.23/AD0.0/ I2SRX_CLK/ CAP3.0	-	-
P0.24/AD0.1/ I2SRX_WS/ CAP3.1	-	-
P0.25/AD0.2/ I2SRX_SDA/ TXD3	-	-
P0.26/AD0.3/ AOUT/RXD3	AOUT	D/A
P0.29/U1D+	U1D+	USB1
P0.30/U1D-	U1D-	
P0.31/U2D+	-	-

M2378 P1 4.14

4.14 P1

M2378		
P1.18/U1UP_LED/PWM1.1/CAP1.0	U1UP_LED	USB1
P1.19/CAP1.1	-	-
P1.20/PWM1.2/ SCK0	SCK0	SSP0
P1.21/PWM1.3/ SSEL0	SSEL0	
P1.22/MAT1.0		
P1.23/PWM1.4/ MISO0	MISO0	SPP0
P1.24/PWM1.5/ MOSI0	MOSI0	
P1.25/MAT1.1	-	-
P1.26/PWM1.6/ CAP0.0	-	-
P1.27/CAP0.1	-	-

M2378		
P1.28/PCAP1.0/ MAT0.0	-	-
P1.29/PCAP1.1/ MAT0.1	-	-
P1.30/VBUS/ AD0.4	-	-
P1.31/SCK1/ AD0.5	-	-

M2378

P2 P3 P4

4.15

4.15 P2 P3 P4

M2378		
P2.0/PWM1.1/ TXD1/ TRACECLK	TXD1	MODEM
P2.1/PWM1.2/ RXD1/ PIPESTAT0	RXD1	
P2.2/PWM1.3/ CTS1/ PIPESTAT1	CTS1	
P2.3/PWM1.4/ DCD1/ PIPESTAT2	DCD1	
P2.4/PWM1.5/DSR1/ TRACESYNC	DSR1	
P2.5/PWM1.6/ DTR1/ TRACEPKT0	DTR1	
P2.6/PCAP1.0/ RI1/ TRACEPKT1	RI1	
P2.7/RD2/RTS1/ TRACEPKT2	RTS1	
P2.8/TD2/TXD2/TRACEPKT3	SD_CD	
P2.9/U1CONNECT/ RXD2/EXTIN0	-	-
P2.10/nEINT0	-	-
P2.11/nEINT1/MCIDAT1/I2STX_CLK	SDDATA1	DAT1
P2.12/nEINT2/MCIDAT2/ I2STX_WS	SDDATA2	DAT2
P2.13/nEINT3/MCIDAT3/I2STX_SDA	SDDATA3	DAT3
P3.25/MAT0.0/ PWM1.2	SD_WP	SD
P3.26/MAT0.1/ PWM1.3	-	-
P4.28/MAT2.0/ TXD3	TXD3	UART3
P4.29/MAT2.1/ RXD3	RXD3	

" _"

5.

5.1 M23A

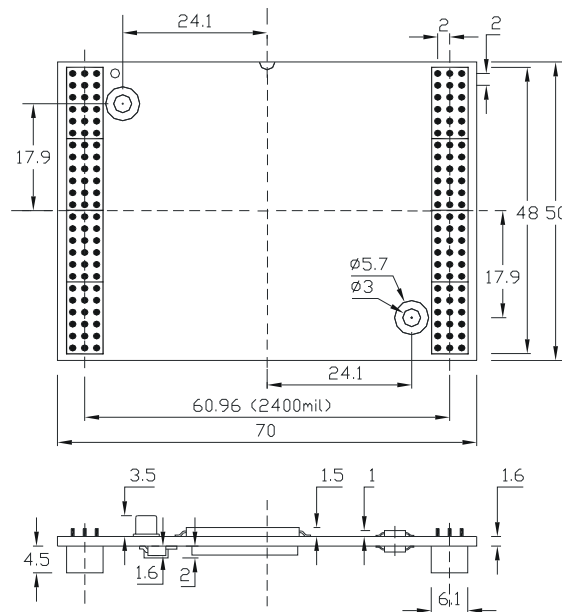
1 →	P0.0	P0.1	P0.2	3	1 →	D0	D1	D2	3
	P0.3	P0.4	P0.5			D3	D4	D5	
	P0.6	P0.7	P0.8			D6	D7	DGND	
	P0.9	P0.10	P0.11			A0	A1	A2	
	P0.12	P0.13	P0.14			A3	A4	A5	
	P0.15	P0.16	P0.17			A6	A7	A8	
	P0.18	P0.19	P0.20			A9	A10	A11	
	P0.21	P0.22	P0.23			A12	A13	A14	
	P0.24	P0.25	P0.26			A15	NC	CS1	
	P0.27	P0.28	P0.29			OE	WE	DGND	
	P0.30	P0.31	U2D-			P2.0	P2.1	P2.2	
	P1.18	P1.19	P1.20			P2.3	P2.4	P2.5	
	P1.21	P1.22	P1.23			P2.6	P2.7	P2.8	
	P1.24	P1.25	P1.26			P2.9	P2.10	P2.11	
	P1.27	P1.28	P1.29			P2.12	P2.13	DGND	
	P1.30	P1.31	DGND			P3.23	P3.24	P3.25	
	SYS_RST	RST OUT_N	ALARM			P3.26	P4.28	P4.29	
	VA3.3	VA3.3	AGND			VDD3.3	VDD3.3	DGND	
	VREF	VREF	AGND			VBAT	VBAT	DGND	
	NC	NC	NC			RTCK	TDI	TDO	
	NC	NC	NC			TCK	nTRST	TMS	
	NC	NC	AGND			TX+	TX-	AVDD_NET	
	VA5.0	VA5.0	AGND			RX+	RX-	GND_NET	
70	NC	NC	NC	72	70	LINK LED	ACT LED	SPEED LED	72

5.1 M23A

M23A

DP2432A

5.2



单位: mm

5.2 DP2432A

6.

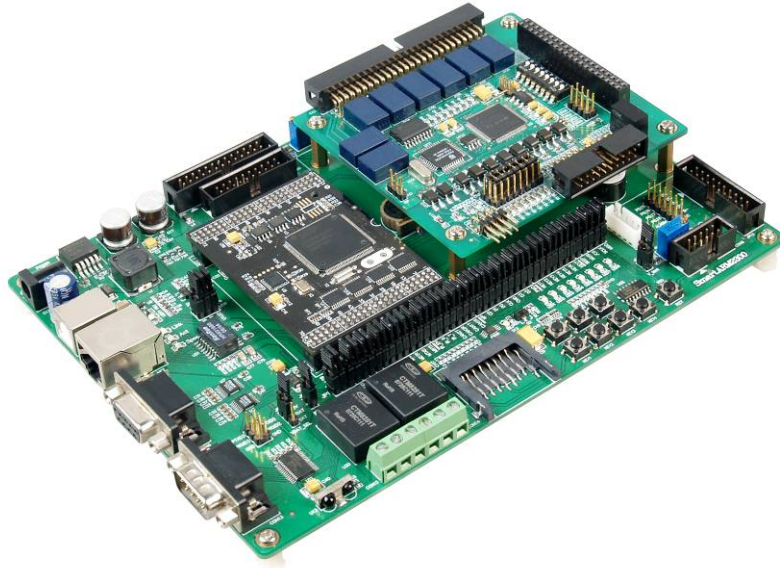
M23A

SmartARM2300

CAN-bus SD/MMC

SmartARM2300

6.1



6.1 SmartARM2300



7.

M23A

7.1 7.2 7.3

7.1

VDD3.3	3.3V	3.15	3.3	3.45	V	
I _{VDD3.3}	3.3V		108		mA	GPIO
VA3.3	3.3V	3.15	3.3	3.45	V	
V _{BAT}	RTC RAM	2.0	3.3	3.6	V	
I _{V_{BAT}}	RTC RAM	20	28		μA	

7.2

V _{IH}			2.0		5.0	V	GPIO
V _{IL}					0.8	V	
V _{OH}		I=-4mA	2.9			V	
V _{OL}		I=4mA			0.4	V	

7.3

V _{REF}				2.5		V	8 AD
V _{IA}			0		V _{REF}	V	
D _I				10		bit	
E _T					+4	LSB	

8.

MiniARM M23A				
	MiniARM M23A			ARM7
LPC2300	ARM		ADS	
SmartARM2300	/	/		

MiniARM M23A

ESD

MiniARM M23A

ESD

MiniARM M23A

