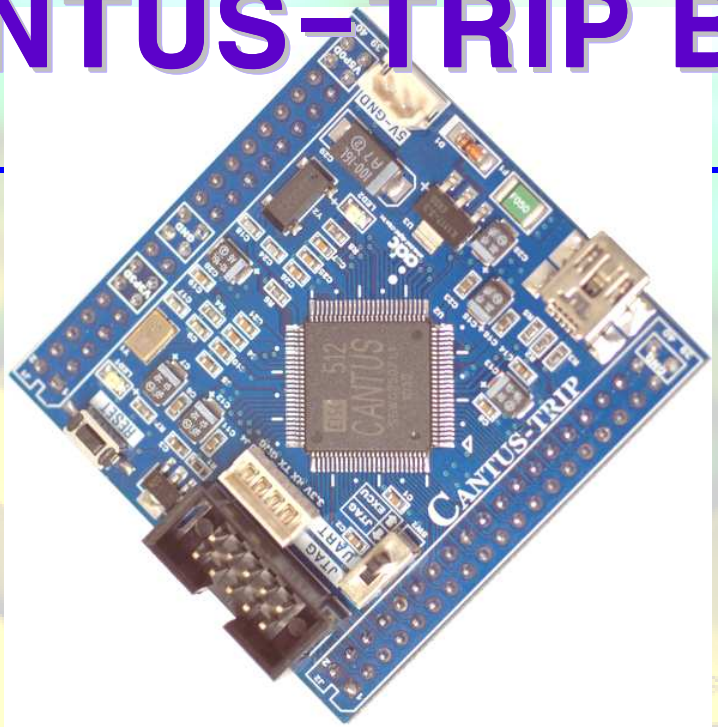
CANTUS-TRIP Board



advanced digital chips inc.

2010.10.1 Ver 1.0

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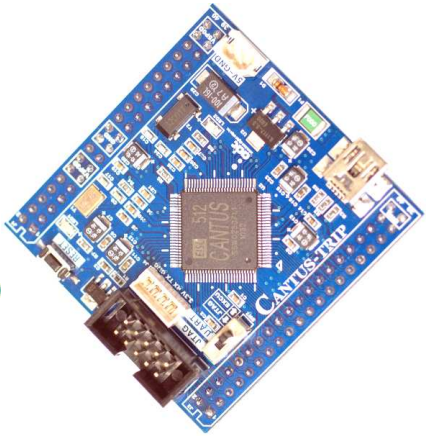
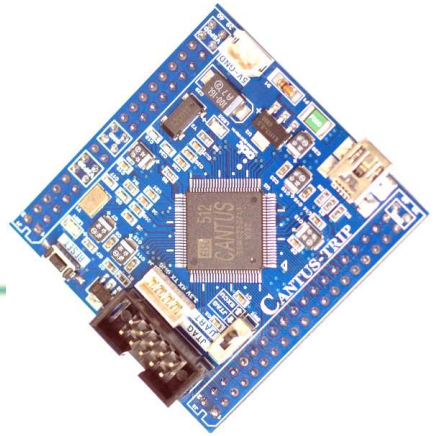
contents



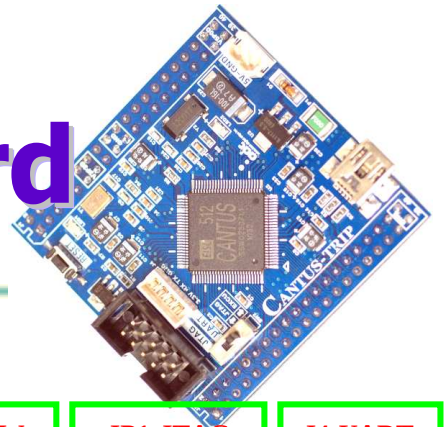
- CANTUS Feature
- CANTUS-TRIP 소개
- Flash Download
- References

CANTUS Feature



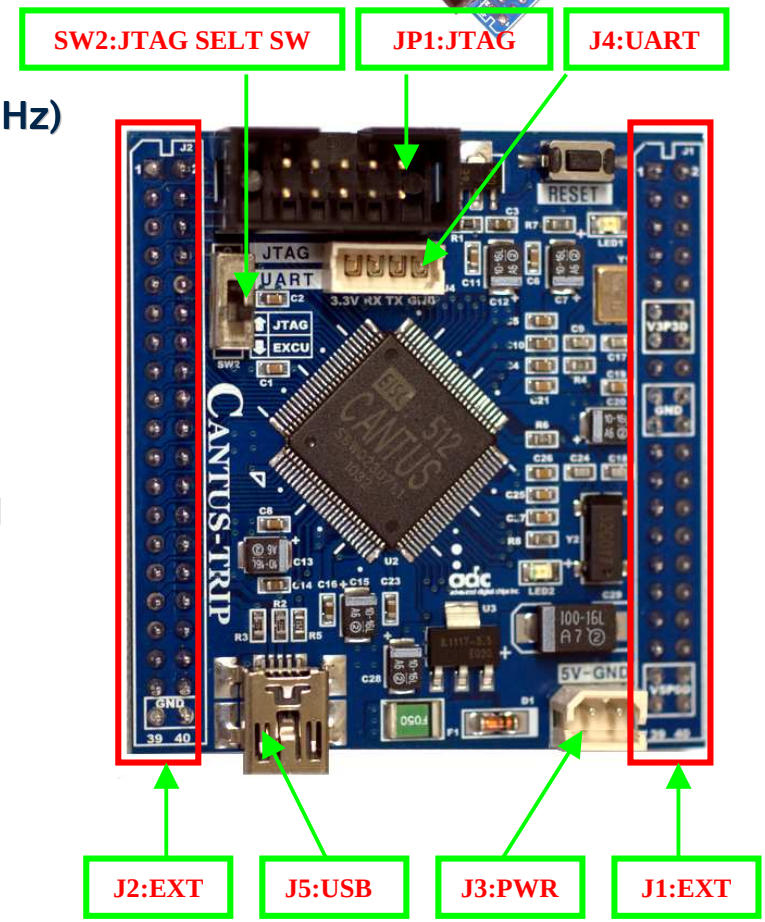
- AE3200C CPU
  - 32bit EISC processor
  - Up to 96MIPS Throughput at 96MHz
  - 2Way set associative cache with I-Cache(8KB) and D-Cache(4KB)
- Memory
  - 128K, 512KByte of Internal Flash
  - 80KByte of SRAM
  - External static memory interface with ALE
- Power
  - Core:1.8V
  - I/O: 3

CANTUS-TRIP Board

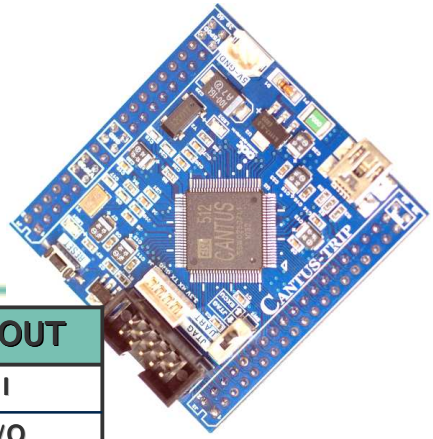


❑ 제품 개요

- CANTUS 512/128
- 11.2896Mhz CLK을 사용하여 96MIPS 동작(96MHz)
- 512K Flash, 80K RAM
- PWM 8Port,Capture 8Port 내장
- 32bit count Timer 8개 내장
- 32bit Watchdog timer
- I/O Max 53개 사용
- USB 2.0 Full Speed(12MBit/s) 지원
- 8CH UART
- 4CH 12bit voice ADC, 1CH voice DAC/ADPCM
- NAND Flash I/F
- I2S,TWI,8Byte FIFO Master/Slave SPI
- 3.3V/1.8V Operating Voltage
- USB Power or External 5V
- Board Size 50x53mm

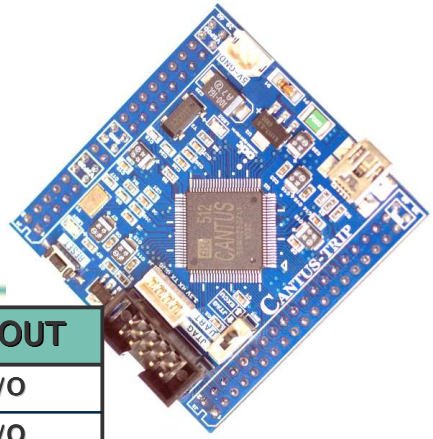


J1 확장 connector



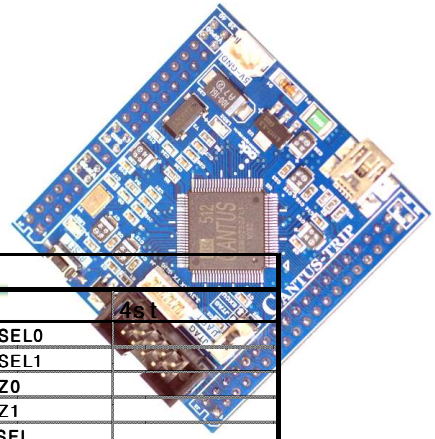
Pin Num	Pin Name	IN/OUT	Pin Num	Pin Name	IN/OUT
1	nRESET_CPU	I	2	nRESET_CPU	I
3	P3.7	I/O	4	P3.6	I/O
5	P3.5	I/O	6	P3.4	I/O
7	P3.3	I/O	8	P3.2	I/O
9	P3.1	I/O	10	P3.0	I/O
11	V3P3D	3.3V	12	V3P3D	3.3V
13	V3P3D	3.3V	14	V3P3D	3.3V
15	NC		16	NC	
17	GND	Ground	18	GND	Ground
19	GND	Ground	20	GND	Ground
21	P5.7	I/O	22	P5.6	I/O
23	P5.5	I/O	24	P5.4	I/O
25	P5.3	I/O	26	P5.2	I/O
27	P5.1	I/O	28	P5.0	I/O
29	P4.7	I/O	30	P4.6	I/O
31	P4.5	I/O	32	P4.4	I/O
33	P4.3	I/O	34	P4.2	I/O
35	P4.1	I/O	36	P4.0	I/O
37	V5P0D	5.0V	38	V5P0D	5.0V
39	P5P0D	5.0V	40	V5P0D	5.0V

J2 확장 Connector



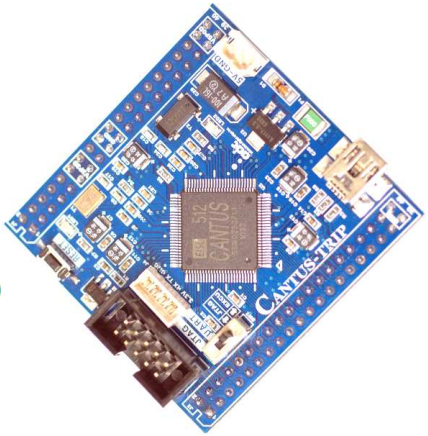
Pin Num	Pin Name	IN/OUT	Pin Num	Pin Name	IN/OUT
1	P0.0	I/O	2	P0.1	I/O
3	P0.2	I/O	4	P0.3	I/O
5	P0.4	I/O	6	P0.5	I/O
7	P0.6	I/O	8	P0.7	I/O
9	P2.0	I/O	10	P2.1	I/O
11	P2.2	I/O	12	P2.3	I/O
13	P2.4	I/O	14	P2.5	I/O
15	P2.6	I/O	16	P2.7	I/O
17	JTAG_TRST/P6.0	I/O	18	JTAG_TCK/P6.1	I/O
19	JTAG_TMS/P6.2	I/O	20	JTAG_TDI/P6.3	I/O
21	JTAG_TDO	Out	22	NC	
23	P1.0	I/O	24	P1.1	I/O
25	P1.2	I/O	26	P1.3	I/O
27	P1.4	I/O	28	P1.5	I/O
29	P1.6	I/O	30	P1.7	I/O
31	USB_DP	I/O	32	USB_DM	I/O
33	VGA	In	34	VOA	Out
35	AOUT	Out	36	AIN1	In
37	AIN2	In	38	AIN3	In
39	GND	Ground	40	GND	Ground

J1,J2 Function



J1						J2				
NO	1st	2st	3st	4st	5st	NO	1st	2st	3st	4st
1	nRESET					1	P0.0	A0/D0/A8	BootSEL0	
2	nRESET					2	P0.1	A1/D1/A9	BootSEL1	
3	P3.7	NDFL_nBUSY	nNMI			3	P0.2	A2/D2/A10	NFSIZ0	
4	P3.6	NDFL_nRE				4	P0.3	A3/D3/A11	NFSIZ1	
5	P3.5	NDFL_nCS				5	P0.4	A4/D4/A12	nISPSEL	
6	P3.4	NDFL_CLE				6	P0.5	A5/D5/A13	MEMSIZ	
7	P3.3	NDFL_ALE				7	P0.6	A6/D6/A14	nOSISEL	
8	P3.2	NDFL_new				8	P0.7	A7/D7/A15	nJTAGSEL	
9	P3.1	nBE1	EIRQ1			9	P2.0	SRAM_ALE0		
10	P3.0	nWAIT	EIRQ0			10	P2.1	SRAM_ALE1		
11	V3P3D					11	P2.2	SRAM_nRE		
12	V3P3D					12	P2.3	SRAM_nWE		
13	V3P3D					13	P2.4	SRAM_nCS0		
14	V3P3D					14	P2.5	SRAM_nCS1		
15	NC					15	P2.6	SRAM_nCS2		
16	NC					16	P2.7	SRAM_nCS3	SPI_nSS	
17	GND					17	JTAG_TRST	P6.0		
18	GND					18	JTAG_TCK	P6.1		
19	GND					19	JTAG_TMS	P6.2		
20	GND					20	JTAG_TDI	P6.3		
21	P5.7	A18	CAP7	TMOD7		21	JTAG_TDO			
22	P5.6	A17	CAP6	TMOD6		22	NC			
23	P5.5	A16	CAP5	TMOD5		23	P1.0	A8/D8	KEY_O0	TX4
24	P5.4	IIS_MCLK	CAP4	TMOD4		24	P1.1	A9/D9	KEY_I0	RX4
25	P5.3	IIS_SCLK	CAP3	TMOD3		25	P1.2	A10/D10	KEY_O1	TX5
26	P5.2	IIS_LRCK	CAP2	TMOD2		26	P1.3	A11/D11	KEY_I1	RX5
27	P5.1	SDCD_D0	CAP1	TMOD1		27	P1.4	A12/D12	KEY_O2	TX6
28	P5.0	SDCD_D1	CAP0	TMOD0	EXT_CLK	28	P1.5	A13/D13	KEY_I2	RX6
29	P4.7	TWI_SDA	RX3			29	P1.6	A14/D14	KEY_O3	TX7
30	P4.6	TWI_SCL	TX3			30	P1.7	A15/D15	KEY_I3	TX7
31	P4.5	SDCD_CMD	RX2			31	USB_DP			
32	P4.4	SDCD_CLK	SPI_SCK	TX2		32	USB_DM			
33	P4.3	SDCD_D2	SPI_MISO	RX1		33	VGA			
34	P4.2	SDCD_D3	SPI_MOSI	TX1		34	VOA			
35	P4.1	IIS_SDI	RX0			35	AOUT			
36	P4.0	IIS_SDO	TX0			36	AIN1			
37	V5PD					37	AIN2			
38	V5PD					38	AIN3			
39	V5PD					39	GND			
40	V5PD					40	GND			

J3 Power, J4 Uart

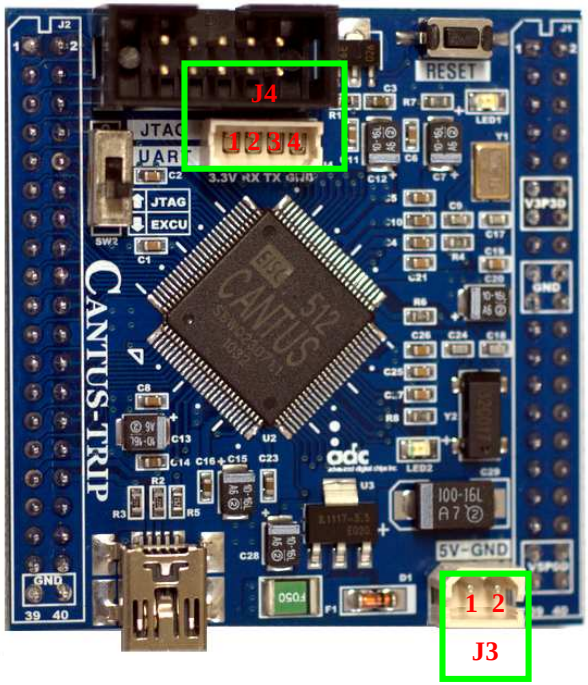


- J3: Power Connector

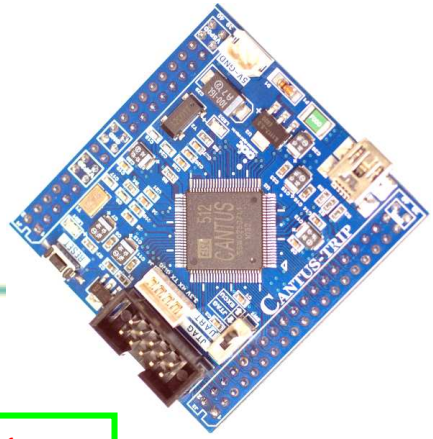
Pin Num	Pin Name	In/Out
1	V5P0D	5.0V
2	GND	Ground

- J4: Uart Connector

Pin Num	Pin Name	In/Out
1	V3P3D	3.3V
2	UART_RX7	In
3	UART_TX7	Out
4	GND	Ground

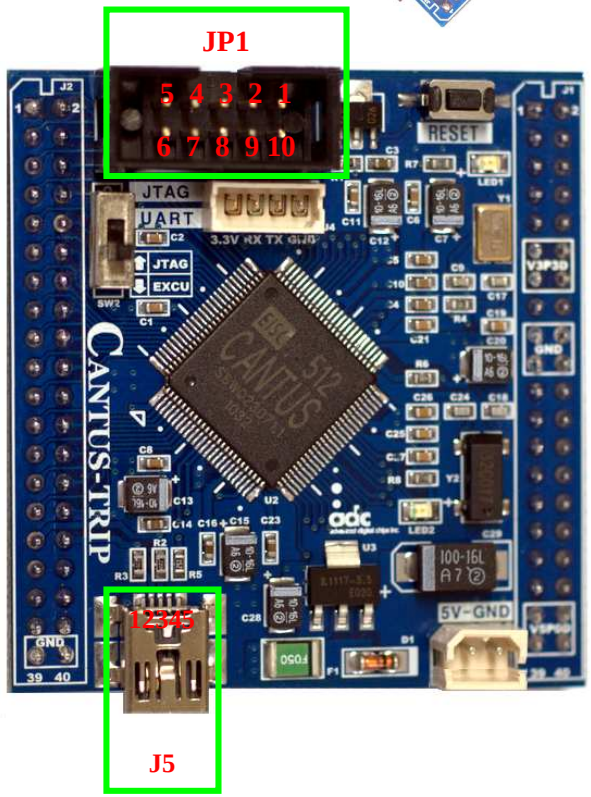


J5 USB, JP1 JTAG



J5: USB Connector

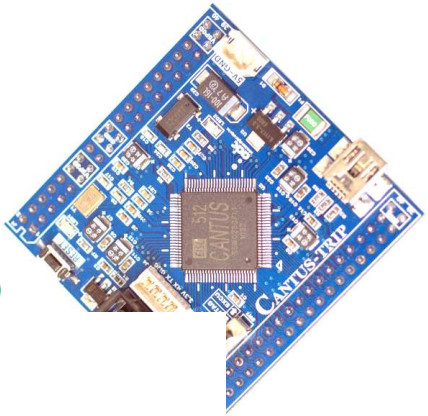
Pin Num	Pin Name	In/Out
1	USB_VCC	5.0V
2	D+	In
3	D-	Out
4	NC	
5	GND	Ground

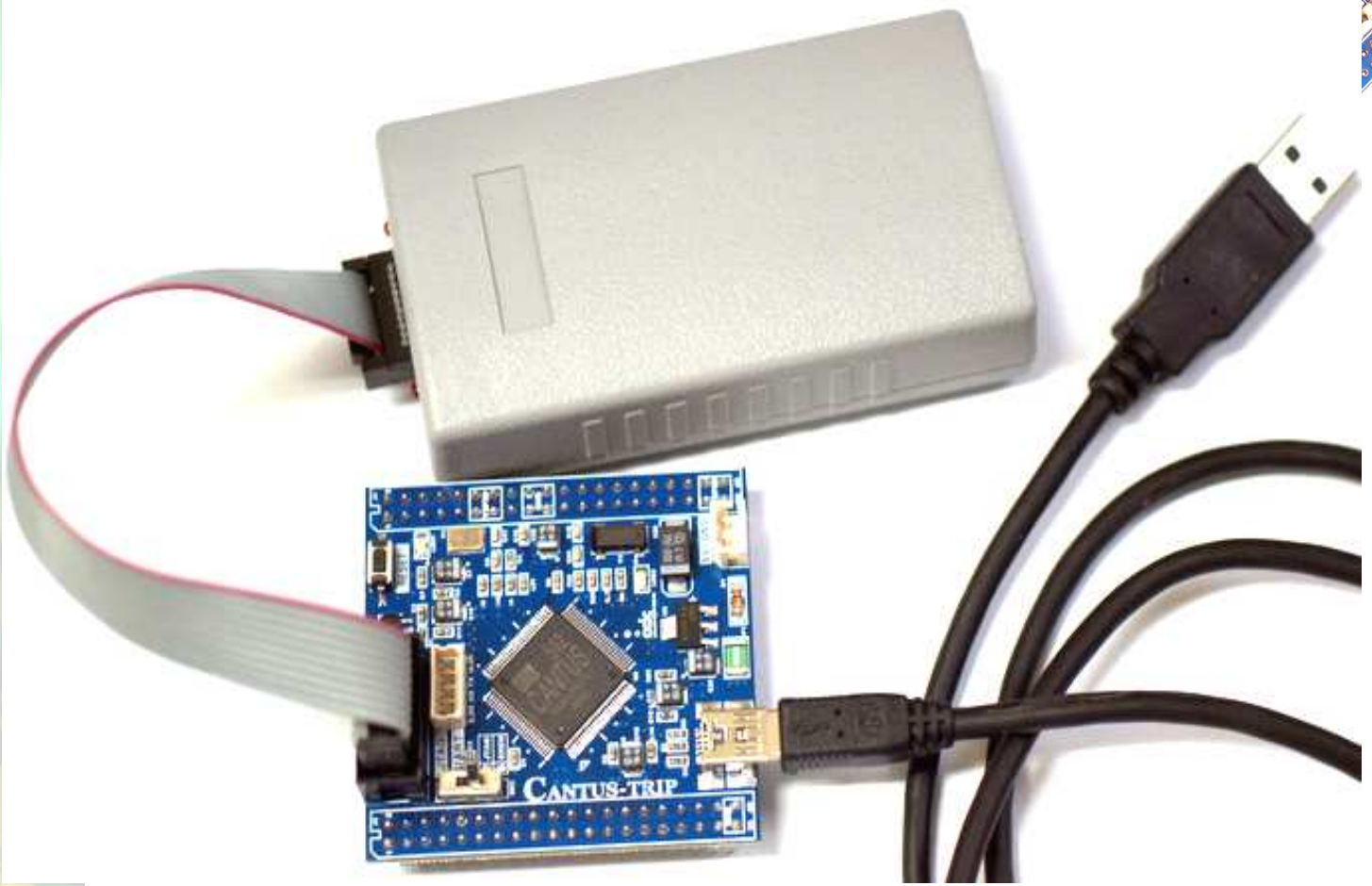


JP1: JTAG Connector

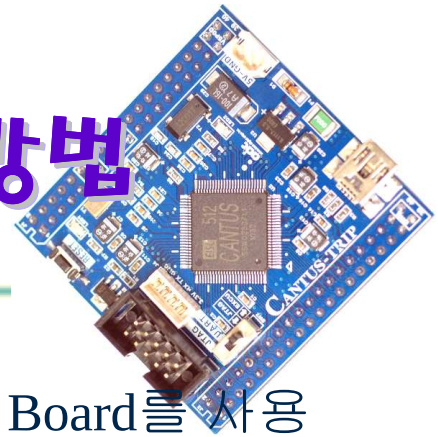
Pin Num	Pin Name	In/Out	Pin Num	Pin Name	In/Out
1	JTAG_TDI	In	10	V3P3D	3.3V
2	JTAG_TMS	In	9	NC	
3	JTAG_TRST	In	8	JTAG_TDO	Out
4	JTAG_TCK	In	7	NC	
5	GND	Ground	6	GND	Ground

결선





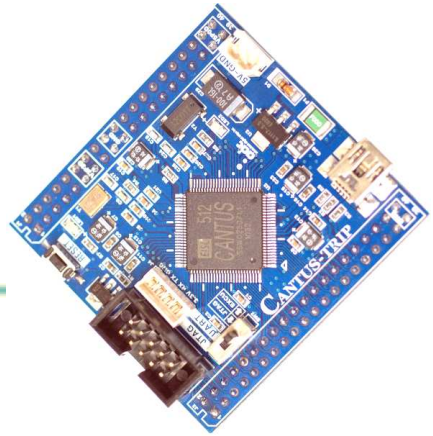
Download하는 2가지 방법



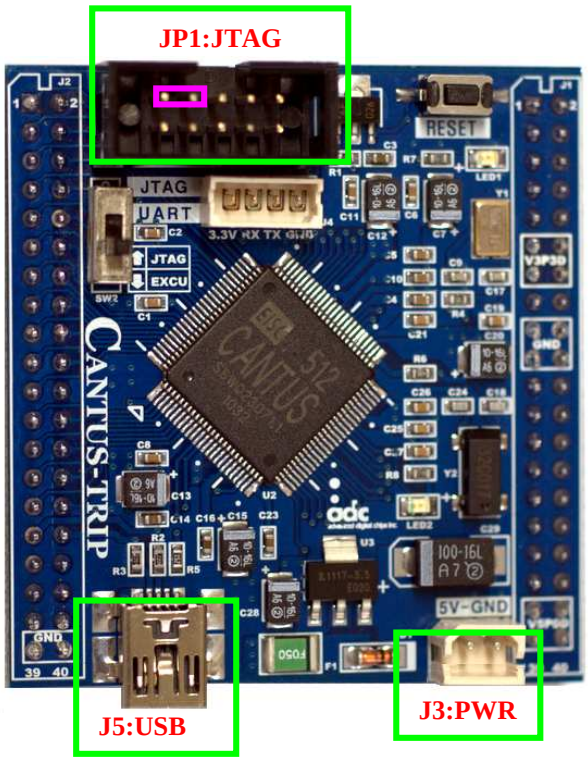
- Dev Tools사용
  - 사용자가 Download 장비가 없이 CANTUS-TRIP Board를 사용할 수 있음.
  - USB Port(J5)를 이용하여 binary file을 download
  - 내부에 boot loader가 writing 되어있는 상태
  - *사용자는 boot영역(sector 0)을 지우거나 over writing하지 않도록 주의 해야 한다.

    만약 파괴 되었을 경우 E-CON을 사용 하거나 A/S를 받아야 함.
- E-CON 사용
  - JP1:JTAG를 이용하여 Writing.

Dev Tools 사용-1

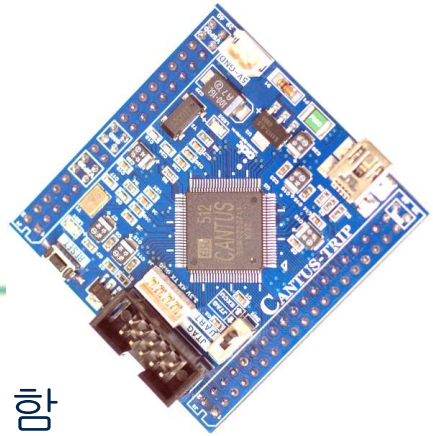


- H/W 설정
  - 1. JP1의 JTAG Connector의4,5번 pin을 short.
  - 2. USB Cable을 연결.
  - 3. Power On
    USB or EXT PWR

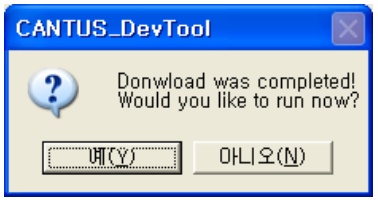


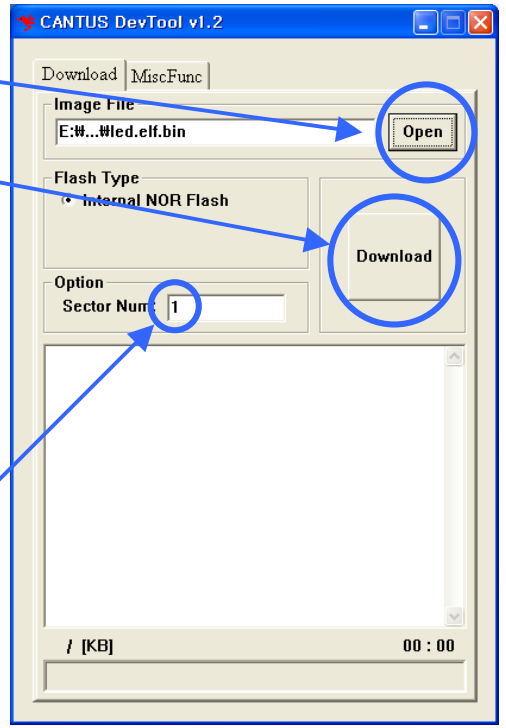
  - Normal로 실행 하는 경우 JP1의 4,5번 pin은 open 상태로 함.

Dev Tools 사용-2



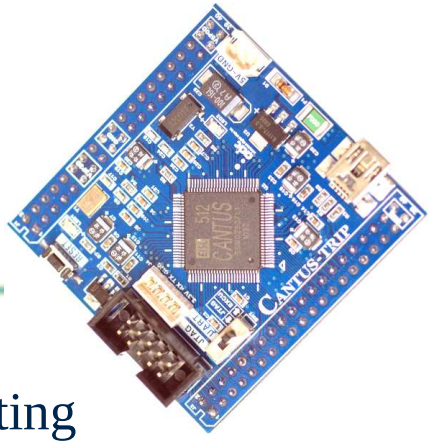
- CANTUS Dev Tools 사용방법
  - CANTUS-TRIP에 boot loader가 Write되어있어야 함
  - Boot loader는 0 sector, 실행 file은 1 sector에 위치 함.
  - CANTUS DevTool을 실행.
  - Open을 열어 binary file를 선택.
  - Download를 click하여 download.
  - 예(Y) 눌러 program을 실행.



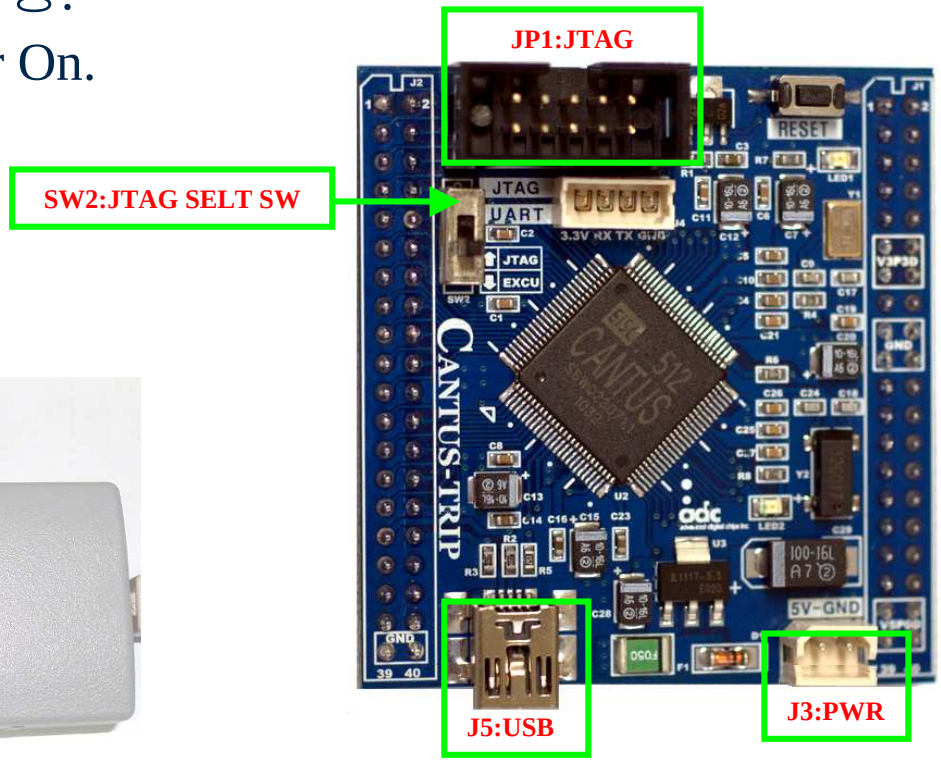


  - 아니오(N)를 누르면 다시 download 할 수 있음
  - *Download Sector는 항상 1로 해야 함.
  - JP1의 4,5번 PIN을 OPEN하고, 다시 booting하면 바로 실행 된다.

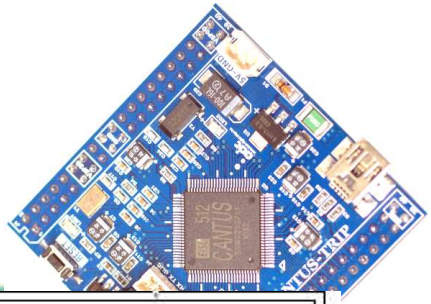
E-CON 사용

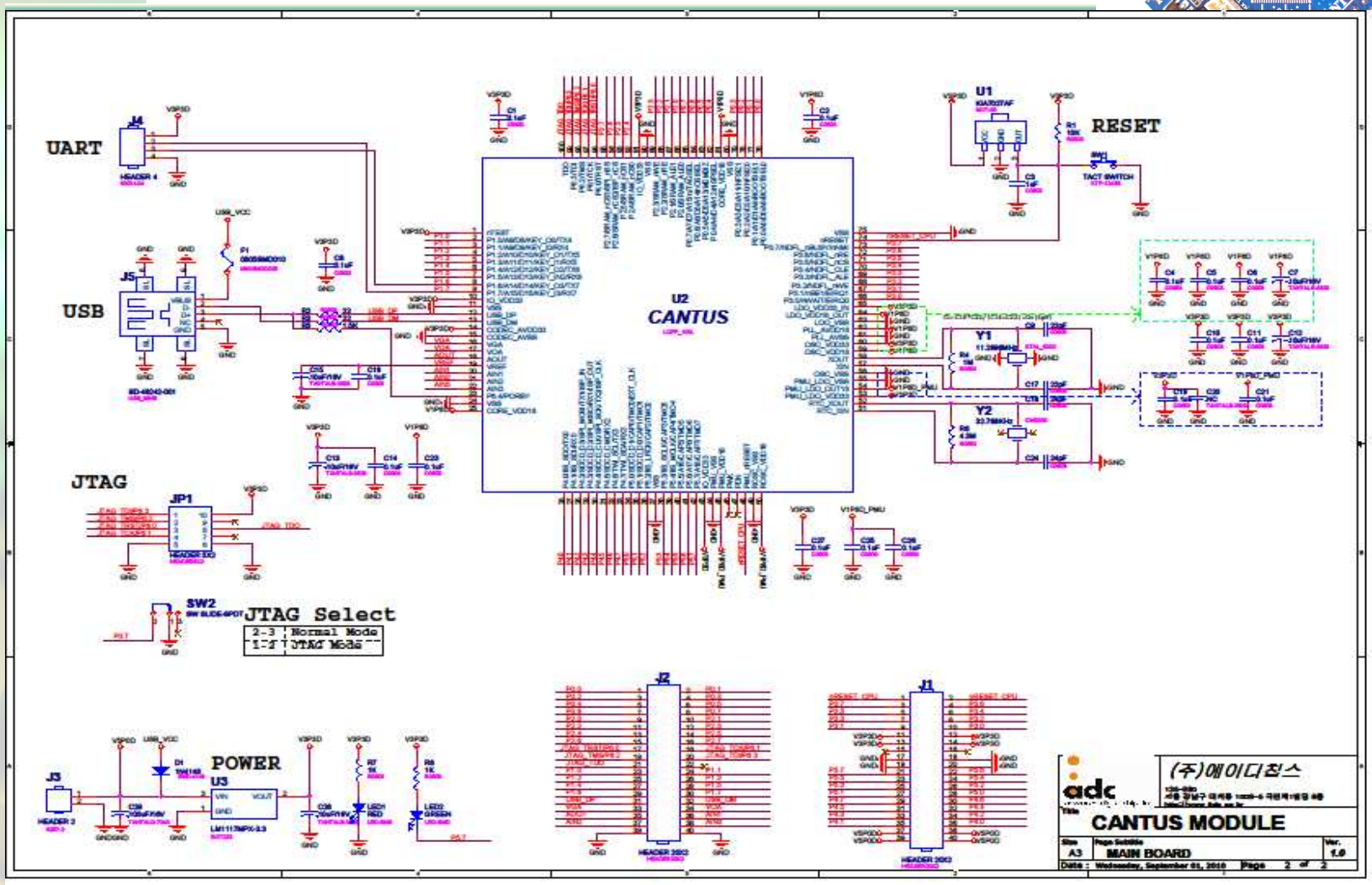


- JTAG Downloader(E-CON별도 구매)
  - CANUTS의 내부 flash를 E-CON을 사용하여 Writing
  - SW2를 JTAG mode로 설정.
  - J5:USB or J3:EXT Power On.
  - E-CON Program 실행.
  - *자세한 사용 방법은 E-CON 매뉴얼 참조.

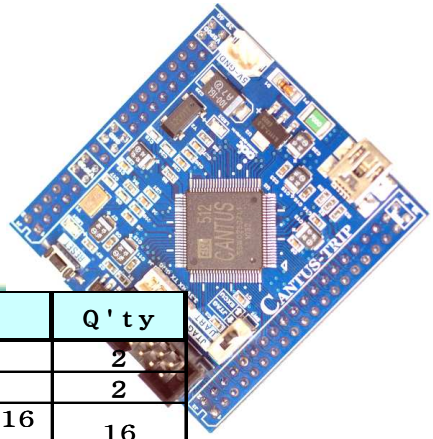


Schematic



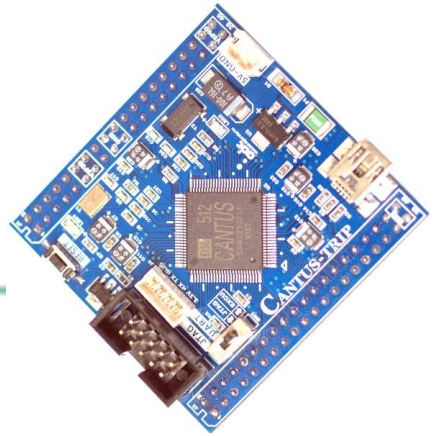

UART
USB
JTAG
RESET
U1
U2
CANTUS
Y1
Y2
JP1
SW2
JTAG Select
2-3 Normal Mode
1-2 JTAG Mode
POWER
U3
J1
J2
J3
J4
J5
CANTUS MODULE
(주)에이디칩스
MAIN BOARD

BOM



번호	품 명	규 격	REFERENCE	Q'ty
1	Capacitor	22pF	C9,C17	2
2	Capacitor	24pF	C18,C24	2
3	Capacitor	0.1uF	C1,C2,C4,C5,C6,C8,C10,C11,C14,C16,C19,C21,C23,C25,C26,C27	16
4	Capacitor	10uF/16V	C7,C12,C13,C15,C20,C28	6
5	Capacitor	1uF	C3	1
6	Capacitor	100uF/16V	C29	1
7	Diode	1N4148	D1	1
8	FUSE	0805SMD010	F1	1
9	Box Header	BoxHeader 5x2	JP1	1
10	Header Pin	Header 20x2	J1,J2	2
11	Header Pin	SD5267-2	J3	3
12	Header Pin	SD53014-04	J4	1
13	Connector	USB mini B	J5	1
14	LED	RED LED	LED1	1
15	LED	GREEN LED	LED2	1
16	Resister	10K	R1	1
17	Resister	22	R2,R3	2
18	Resister	1M	R4	1
19	Resister	4.3M	R6	1
20	Resister	1K	R7,R8	2
21	Resister	1.5K	R5	1
22	Slide Switch	BSI-10	SW2	1
23	Tact Switch	1101NEA-5mm	SW1	1
24	Reset IC	KIA7027AF	U1	1
25	MCU	CANTUS	U2	1
26	Regulator	LM1117MPX-3.3	U3	1
27	Crystall	11.2896MHz/18pF	Y1	1
28	Crystall	32.768KHz/1.5pF	Y2	1
29	PCB			1

References



- CANTUS datasheet
- 에이디칩스 홈페이지
  - www.adc.co.kr
- CANTUS-TRIP Board 제작사
  - www.adc.co.kr