承 认 书

SPECIFICATION FOR APPROVAL

客 户 名 称：
CUSTOMER

产 品 类 型：　　3D5K U+P Mouse controller
PRODUCT TYPE

物 料 编 号：　　AT8083
PART NO.　　(MCU Model:FM8PU83; CheckSum: ; Package:DIP20)

承 认 书 编 号：　　ATC-0220-0001
SPEC NO.

承 认 日 期：　　2009-02-20
APPROVAL DATE

APPROVED BY			
承 认 主 管 签 章			承 认 编 号

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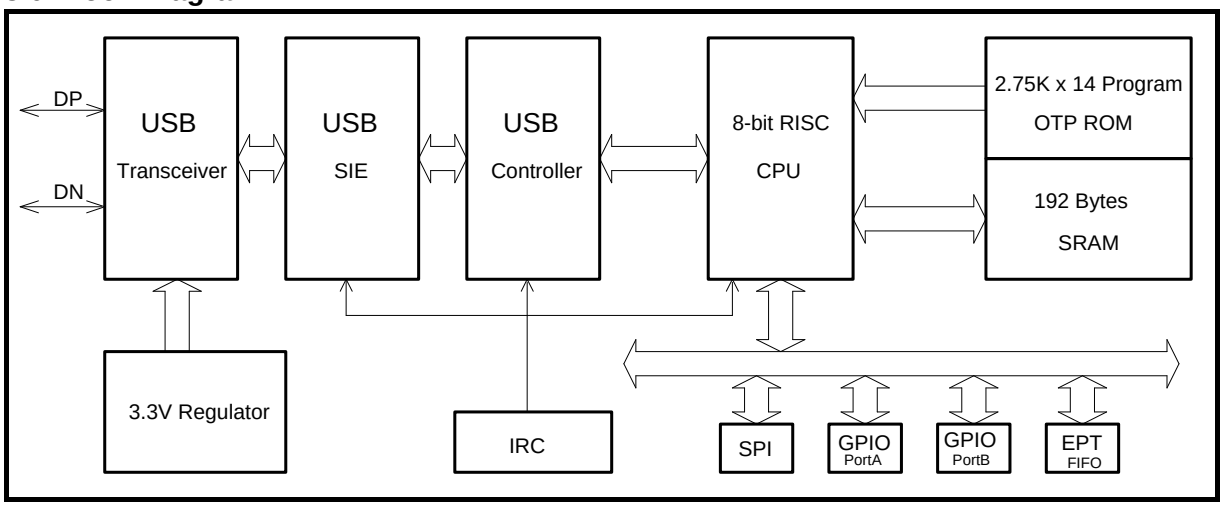
1.0 General Description

The AT8083 is an 8-bit microprocessor embedded device tailored to the USB application. It includes an 8-bit RISC CPU core, 192 byte SRAM, Low Speed USB Interface and a 2.75K x 14 internal program OTP-ROM.

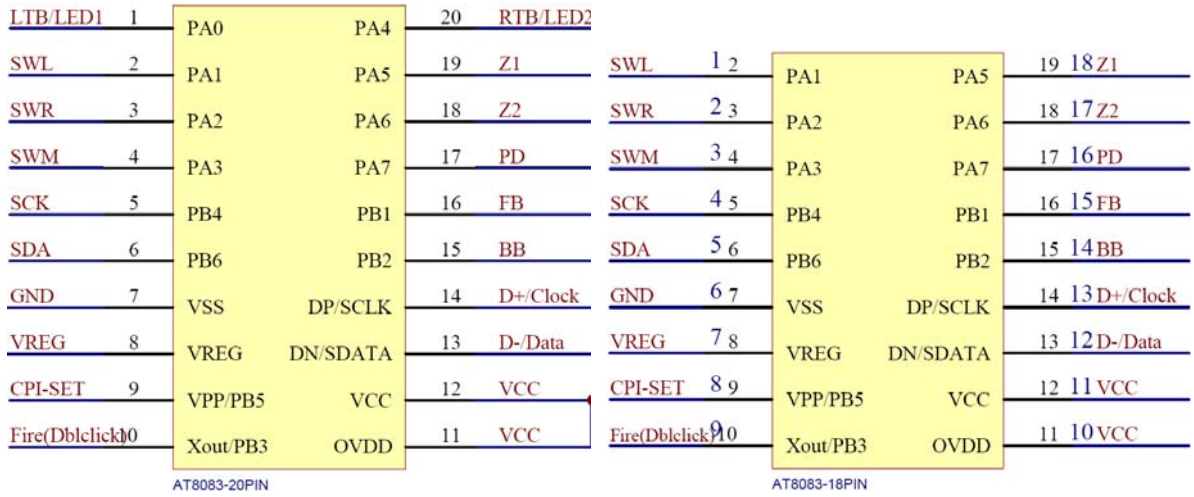
2.0 Features

- Support USB2.0 Low-Speed specification.
- Complete USB HID spec V1.1 compatibility
- Built-in USB Transceiver and 3.3V regulator (VREG)
- Support USB Suspend and Resume function.
- Support PS2 compatible interface share with USB interface.
- One Control IN/OUT(EP0), two INT endpoints (EP1,EP2).
- 192 bytes internal SRAM.
- 2.75K x 14 internal program OTP-ROM
- 8-bit RISC CPU core.
- Support Master/Slave SPI serial Communication Interface.
- Support up to two user configured endpoints.
  - Up to three 8-byte data endpoints (EP0、EP1、EP2).
- Internal Oscillator
  - Internal RC +/- 8% 24MHz Oscillator.
  - 0.25% Accuracy after USB traffic is received.
  - Supply 24MHz/16MHz/12MHz clock output (XOUT)
- General-purpose programmable-level IO interface.
- 5V power supply only; GPIO support 1.8V~5V interface.
- Supply 3.3V voltage.
- Support SSC to reduce EMI.
- Supports five buttons (R, M, L, B4, B5) and CPI-SW, Dblclick.
- Z-axis support mechanical Encoder and Photo couples input (Z/2).
- Sensor Support：PAN3101DB、PAN3102DB、PAN3601DH、PAN3602DH.
  - PAN3101DB,CPI Model:800(LED1 shine)\1600(LED2 shine);
  - PAN3102DB,CPI Model:1000(LED1 shine)1600(LED1+LED2 shine)\800(LED2 shine)\400(Not shine);
  - PAN3601DH\3602DH,CPI: 800(LED1 shine)\1600(LED2 shine);
- 20pin and 18pin DIP package；
- Pass WHQL, USB-IF and EMC testing

3.0 Block Diagram



4.0 Pin Definitions



5.0 Pin Description

Function Name	IC Names	PIN No.	Function Description
LTB	PA0	1	Tilt button left side or LED2 Indicator
SWL	PA1	2	Left button input
SWR	PA2	3	Right button input
SWM	PA3	4	Middle or wheel button input
SCK	PB4	5	SCK signal of Sensor interface
SDA	PB6	6	SDA signal of Sensor interface
GND	VSS	7	Power ground
VREG	VREG	8	3.3V Regulator output
CPI-SET	PB5	9	CPI switch
Fire	XOUT/PB3	10	double-click
OVDD	OVDD	11	I/O pad power Voltage, supply 1.8 ~ 5V
VCC	VCC	12	Voltage supply
D-	DN	13	USB differential data lines (D-) and data
D+	DP	14	USB differential data lines (D+) and clock
BB	PB2	15	5 Button for Side down
FB	PB1	16	4 Button for Side up
PD	PA7	17	Z-axis IR control
Z2	PA6	18	Phase B of Z-Encoder
Z1	PA5	19	Phase A of Z-Encoder
RTB	PA4	20	Tilt button right side or LED2 Indicator

6.0 Absolute Maximum Ratings

Parameter	Conditions	Values		Unit
		min.	max.	
Ambient Operating Temperature	-	0	70	℃
Storage Temperature	-	-10	150	℃
DC Supply Voltage	-	2.4	5.5	V
Supply Current	-	-	-	mA

7.0 DC Characteristics (Operating Temperature = 0 to70 ℃)

7.1 General

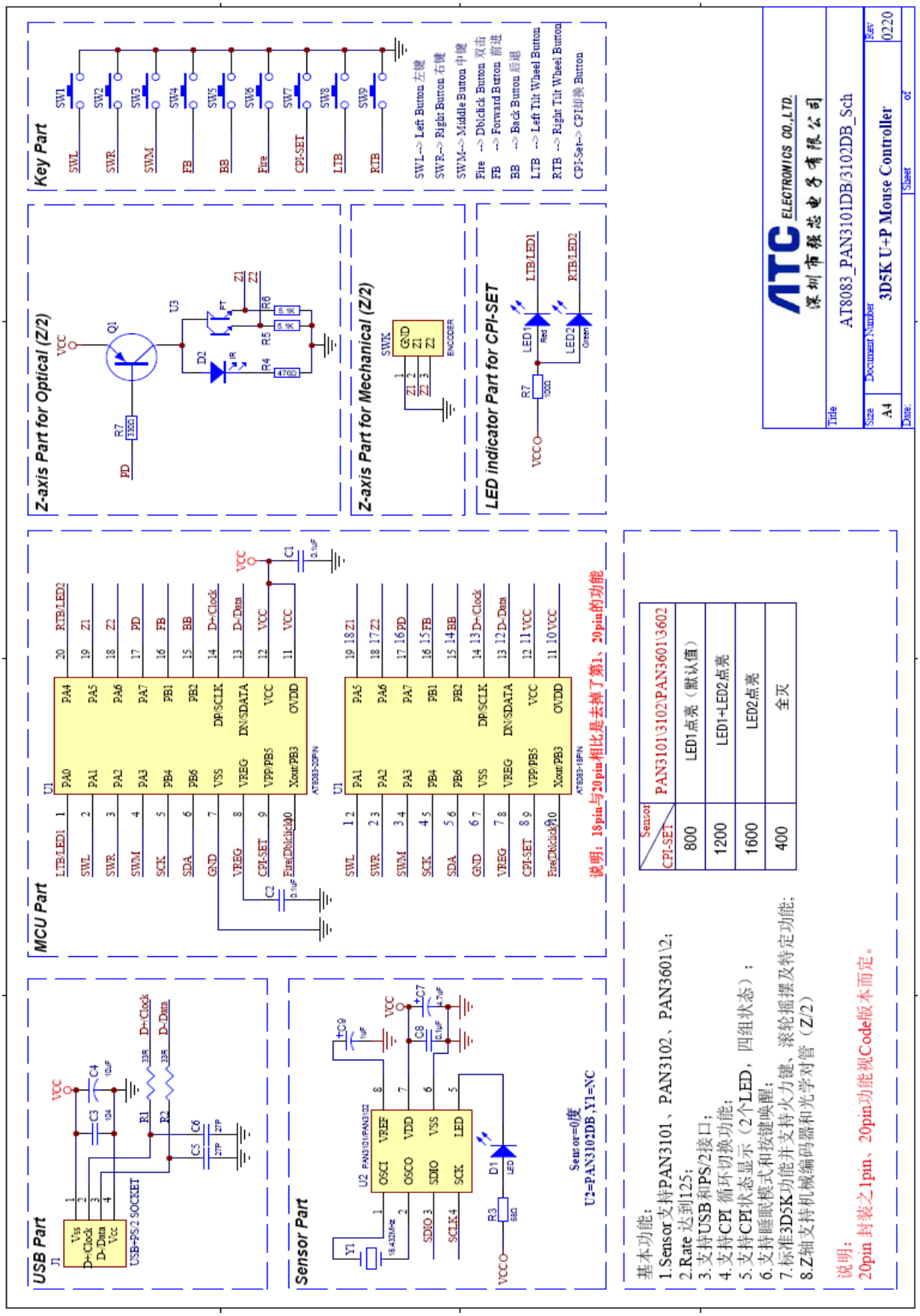
Symbol	Parameter	Conditions	Values		Unit
			min.	max.	
V_{CC}	Operating Voltage	-	2.4	5.5	V
I_{CC1}	Operating Voltage Current Typical = 15mA[1]	Vcc=5.5V,No GPIO loading IRC Operating ,MCU=12MHz	-	8	mA
I_{CC2}	Operating Voltage Current Typical = 19mA[1]	Vcc=5.5V,No GPIO loading IRC Operating,MCU=24MHz	-	12	mA
I_{SPD}	Suspend Current	With IRC(17us)	-	100	uA
V_{POR}	Power on Reset		2.4	-	V
V_{LVDT}	Low voltage detect		3.8		V
T_{VBUSST}	Vbus Power on Slew Time	Linear ramp:0 to 4V		100	ms
V_{REG}	VREG Regulator output	-	3.0	3.6	V
I_{REG}	VREG supply current			45	mA

7.2 GPIO Interface

Symbol	Parameter	Conditions	Values		Unit
			min.	max.	
RUP	Pull-up Resistor	-	11.6	13.7	KΩ
V_{OL_HD5v}	Output Low Voltage(High drive)	OVDD=5V,I_{OL}=25mA	-	0.8	V
V_{OL_HD3v}	Output Low Voltage(High drive)	OVDD=3.3V, I_{OL}=20mA		0.8	V
V_{OL_MD5v}	Output Low Voltage(Medium drive)	OVDD=5V,I_{OL}=7mA	-	0.4	V
V_{OL_MD3v}	Output Low Voltage(Medium drive)	OVDD=3.3V,I_{OL}=5mA	-	0.4	V
V_{OL_LD5v}	Output Low Voltage(Low drive)	OVDD=5V,I_{OL}=2mA	-	0.4	V
V_{OL_LD3v}	Output Low Voltage(Low drive)	OVDD=3.3VI_{OL}=1.5mA	-	0.4	V
V_{OH}	Output High Voltage	OVDD =5V,I_{OH}=2mA	OVDD-2	-	V
V_{OH}	Output High Voltage	I_{OH}=2mA	OVDD-1	-	V

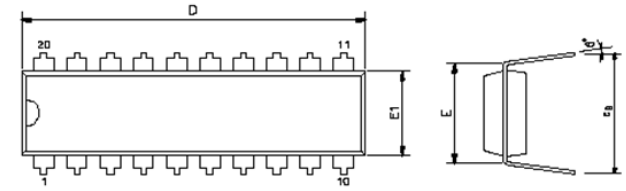
Note:Bench measurements on nominal operating conditions. V_{cc} = Vbus

8.0 Application Circuit



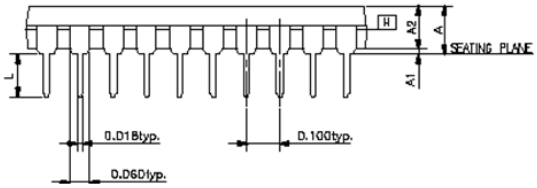
9.0 Package Diagrams

DIP20 (300mil)



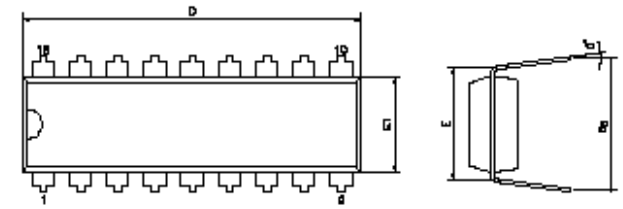
SYMBOLS	MIN.	NOR.	MAX.
A	–	–	0.210
A1	0.015	–	–
A2	0.125	0.130	0.135
D	0.98	1.030	1.060
E		0.300 BSC.	
E1	0.245	0.250	0.255
L	0.115	0.130	0.150
e_B	0.335	0.355	0.375
θ°	0	7	15

UNIT : INCH



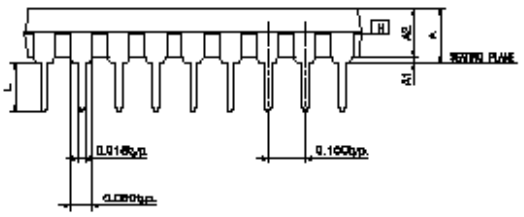
NOTES:
1.JEDEC OUTLINE : MS-001 AD
2."D","E1" DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.MOLD FLASH OR PROTRUSIONS SHALL NOT EXCEED .010 INCH.
3.eB IS MEASURED AT THE LEAD TIPS WITH THE LEADS UNCONSTRAINED.
4.POINTED OR ROUNDED LEAD TIPS ARE PREFERRED TO EASE INSERTION.
5.DISTANCE BETWEEN LEADS INCLUDING DAM BAR PROTRUSIONS TO BE .005 INCH MINIMUM.
6.DATUM PLANE [H] COINCIDENT WITH THE BOTTOM OF LEAD, WHERE LEAD EXITS BODY.

DIP18 (300mil)



SYMBOLS	MIN.	NOR.	MAX.
A	–	–	0.210
A1	0.015	–	–
A2	0.125	0.130	0.135
D	0.880	0.900	0.920
E		0.300 BSC.	
E1	0.245	0.250	0.255
L	0.115	0.130	0.150
e_B	0.335	0.355	0.375
θ°	0	7	15

UNIT : INCH



NOTES:
1.JEDEC OUTLINE : MS-001 AC
2."D","E1" DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.MOLD FLASH OR PROTRUSIONS SHALL NOT EXCEED .010 INCH.
3.eB IS MEASURED AT THE LEAD TIPS WITH THE LEADS UNCONSTRAINED.
4.POINTED OR ROUNDED LEAD TIPS ARE PREFERRED TO EASE INSERTION.
5.DISTANCE BETWEEN LEADS INCLUDING DAM BAR PROTRUSIONS TO BE .005 INCH MINIMUM.
6.DATUM PLANE [H] COINCIDENT WITH THE BOTTOM OF LEAD, WHERE LEAD EXITS BODY.

10.0 Sample display