

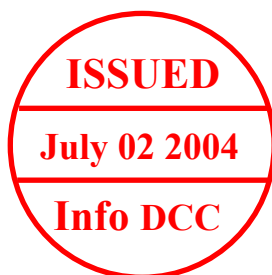


**CSC0102A**

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**3 Dimensions 3 Keys  
USB & PS/2 Combo Mouse Controller**

**Version: 2.00**



April 2004

Chesen Electronics Corp.

Taipei, Taiwan

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### Revision History

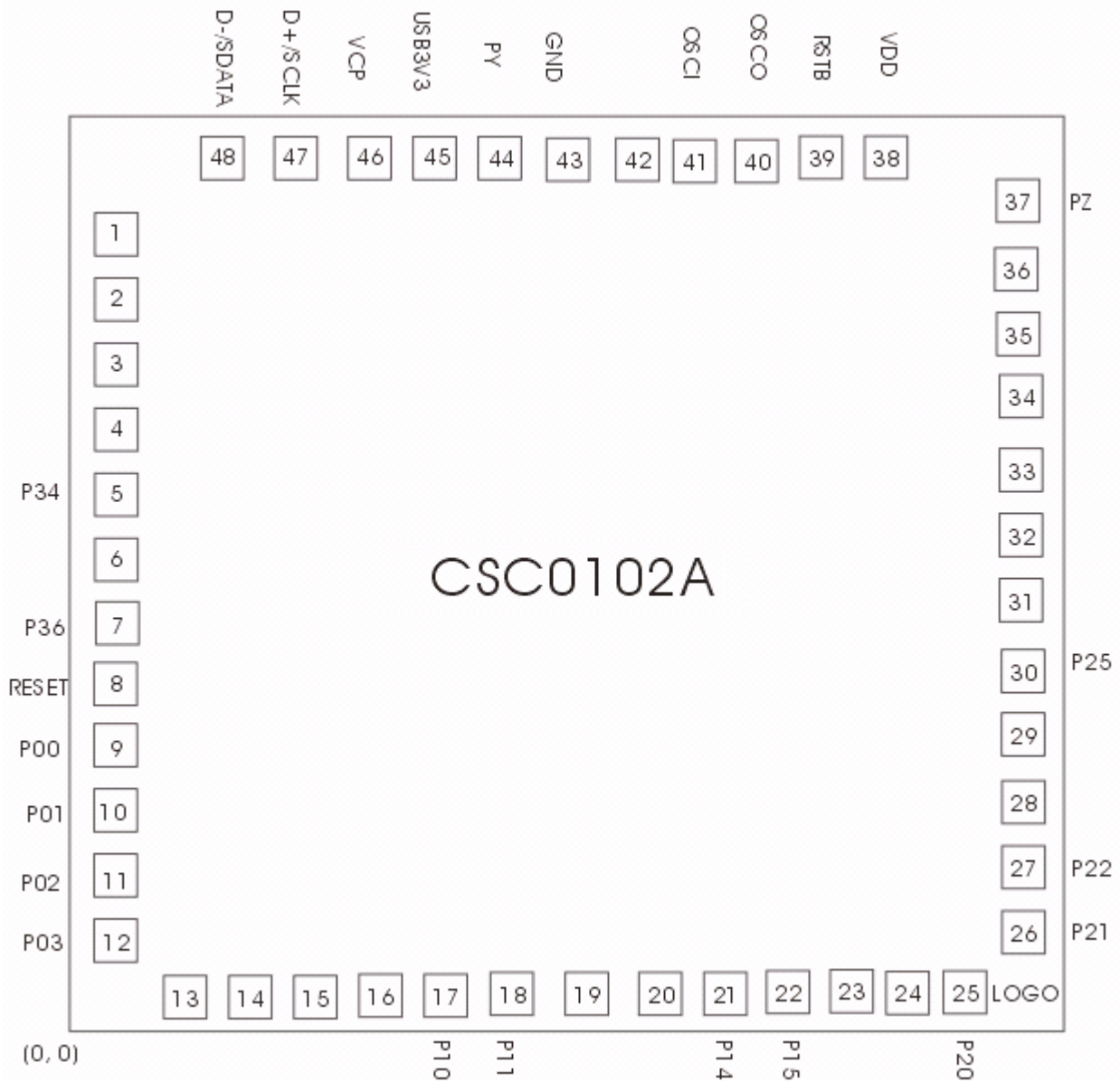
<b>Revision No.</b>	<b>History</b>	<b>Date</b>	<b>Remark</b>
1.00	Body reversion initial issue	Dec. 19, 2003	
2.00	Support dice form	April 04, 2004	

## Features

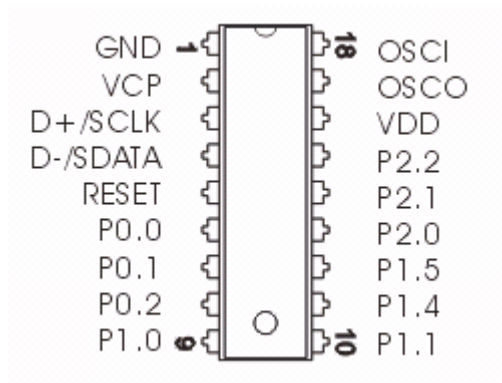
- Cost effective solution for low speed USB or PS/2 mouse peripheral
- Built-in 65C02 8 Bit CPU
  - 6MHz external ceramic resonator
  - 3MHz internal CPU clock
  - 256 bytes RAM
  - 8 Kbytes ROM
  - Internal 3.3V regulator for USB pull-up resistor
  - Auto configure to operate as USB or PS/2 interface
- USB specification compliance:
  - Conforms to USB specification, version 1.1
  - Conforms to USB HID specification, version 1.1
  - Supports 1 low speed device address and 3 endpoints
  - 8 bytes FIFO for each endpoint
  - Integrated USB transceiver
- Compatible with PS/2 protocol
- Built-in power-on reset & watchdog timer reset
- One 8 bits timer
- Compatible with Microsoft® scrolling mouse
- Support standard 3 dimension 3 keys mechanical/optical mouse functions
- 400/800 cpi resolution auto configured with best fit to sensor
- Sensor types support
  - Ball (Mechanical/Semi-optical)
  - Agilent: H2000; A2051; A2610
  - Pixart: PAN101
  - @lab: ATA1080
- 1:2 Z axis input
- Auto configuration with the interface attach to
- 18-pin PDIP package
- Embedded customized function
  - 400/800 cpi manual configuration
  - Support 4 dimension
  - Max. 5 key support
  - Optional 1:1/1:4/1:10 Z axis ratio
  - Optional 90/180 degree sensor position rotation
  - Dice form or other package type

### Pin Assignment

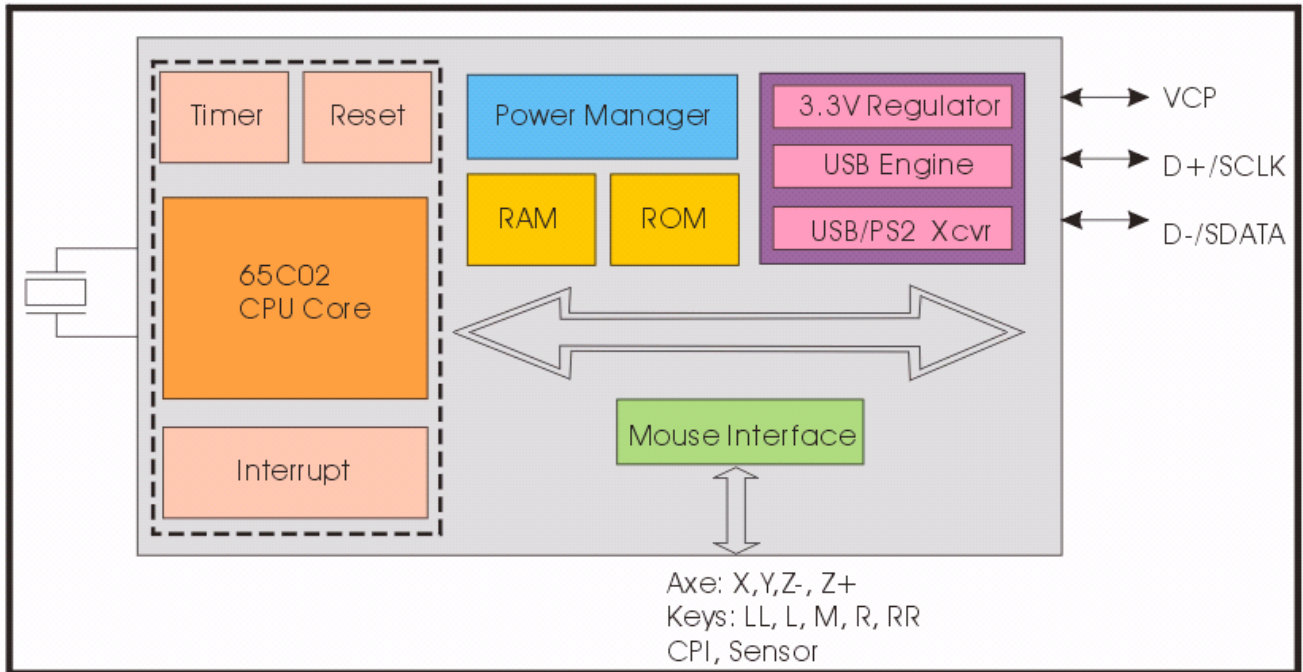
Dice



### DIP 18 Pins



## Block Diagram



**Pin Configurations****CSC0102A**

<b>PAD #</b>	<b>NAME</b>	<b>IN/OUT</b>	<b>DESCRIPTION</b>
5	P3.4	I	Resolution selection (400/600/800/Auto cpi) Open: 400cpi; 10K pull-up: 600cpi; GND: 800cpi; VCC: Auto configure
7	P3.6	I	Force to VCC
8	RESETB	I	External reset
9	P0.0	O	Optical Scrolling LED Control
10	P0.1	I	Z+ Axis A
11	P0.2	I	Z+ Axis B
12	P0.3	O	Suspend control
17	P1.0	I	X Axis A / Optical sensor control clock
18	P1.1	I	X Axis B / Optical sensor control data
21	P1.4	I	Y Axis A
22	P1.5	I	Y Axis B
25	P2.0	I	Button R key input
26	P2.1	I	Button M key input
27	P2.2	I	Button L key input
30	P2.5	I	Force connect to P2.2
31	P2.6	I	Button RR key input
32	P2.7	I	Button LL key input
37	PZ	I	Z Axis scrolling ratio
38	VDD	P	Power supply 5V
40	OSCO	OUT	Crystal/Ceramic resonator out
41	OSCI	IN	Crystal/Ceramic resonator in
43	GND	P	Ground
44	PY	I	Z Axis scrolling ratio
45	USB3V3	I	USB 3.3V
46	VCP	O	Power 3.3V
47	D+/SCLK	I/O	USB data+ / PS/2 SCLK signal
48	D-/SDATA	I/O	USB data- / PS/2 SDATA signal

**CSC0102A-01D18**

<b>PIN #</b>	<b>NAME</b>	<b>IN/OUT</b>	<b>DESCRIPTION</b>
1	GND	P	Ground
2	VCP	O	Power 3.3V
3	D+/SCLK	I/O	USB data+ / PS/2 SCLK signal
4	D-/SDATA	I/O	USB data- / PS/2 SDATA signal
5	RESETB	I	External reset
6	P0.0	O	Optical Scrolling LED Control
7	P0.1	I	Z Axis A
8	P0.2	I	Z Axis B
9	P1.0	I	X Axis A / Optical sensor control clock
10	P1.1	I	X Axis B / Optical sensor control data
11	P1.4	I	Y Axis A
12	P1.5	I	Y Axis B
13	P2.0	I	Button R key input
14	P2.1	I	Button M key input
15	P2.2	I	Button L key input
16	VDD	P	Power supply 5V
17	OSCO	OUT	Crystal/Ceramic resonator out
18	OSCI	IN	Crystal/Ceramic resonator in



**Electrical Characteristics**

VDD=5V, GND=0V, TA=25°C, Fosc=6MHz

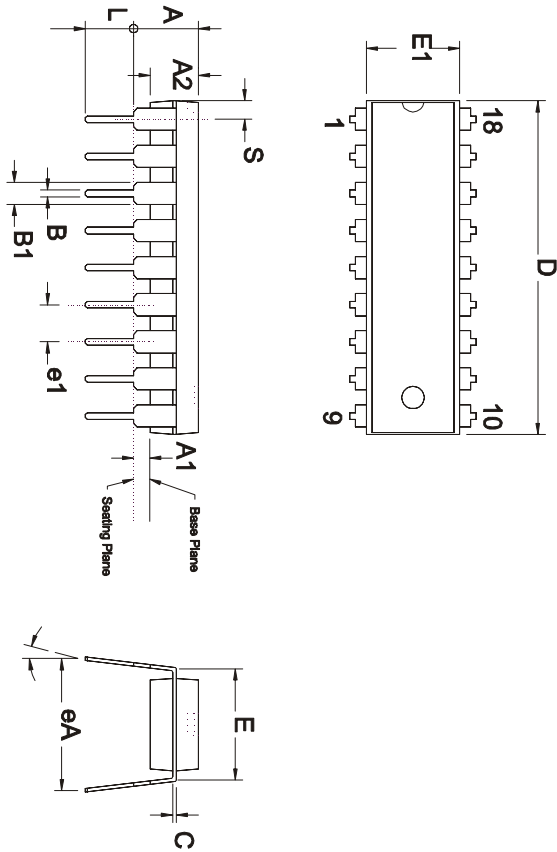
Parameters	Symbol	Min	Typ	Max	Unit	Conditions
Operating Voltage	Vdd	4.4	5	5.25	V	
Operating Current	Iop			30	mA	No load
Suspend Current	Isp			500	uA	
Input High Voltage	Vih	2			V	
Input Low Voltage	Vil			0.8	V	
Output High Voltage	Voh	2.4			V	
Output Low Voltage	Vol			0.4	V	
Pull-up Resistance	Rup		20K		Ω	

**Product Matrix**

Part Number	Memory		I/Os	Package Type	Operating Range
	ROM Size	RAM Size			
CSC0102A	8K Bytes	256 Bytes	12	Dice	Commercial
CSC0102A-01D18	8K Bytes	256 Bytes	10	18-pin PDIP	Commercial

## Package Outline

DIP 18 Pins

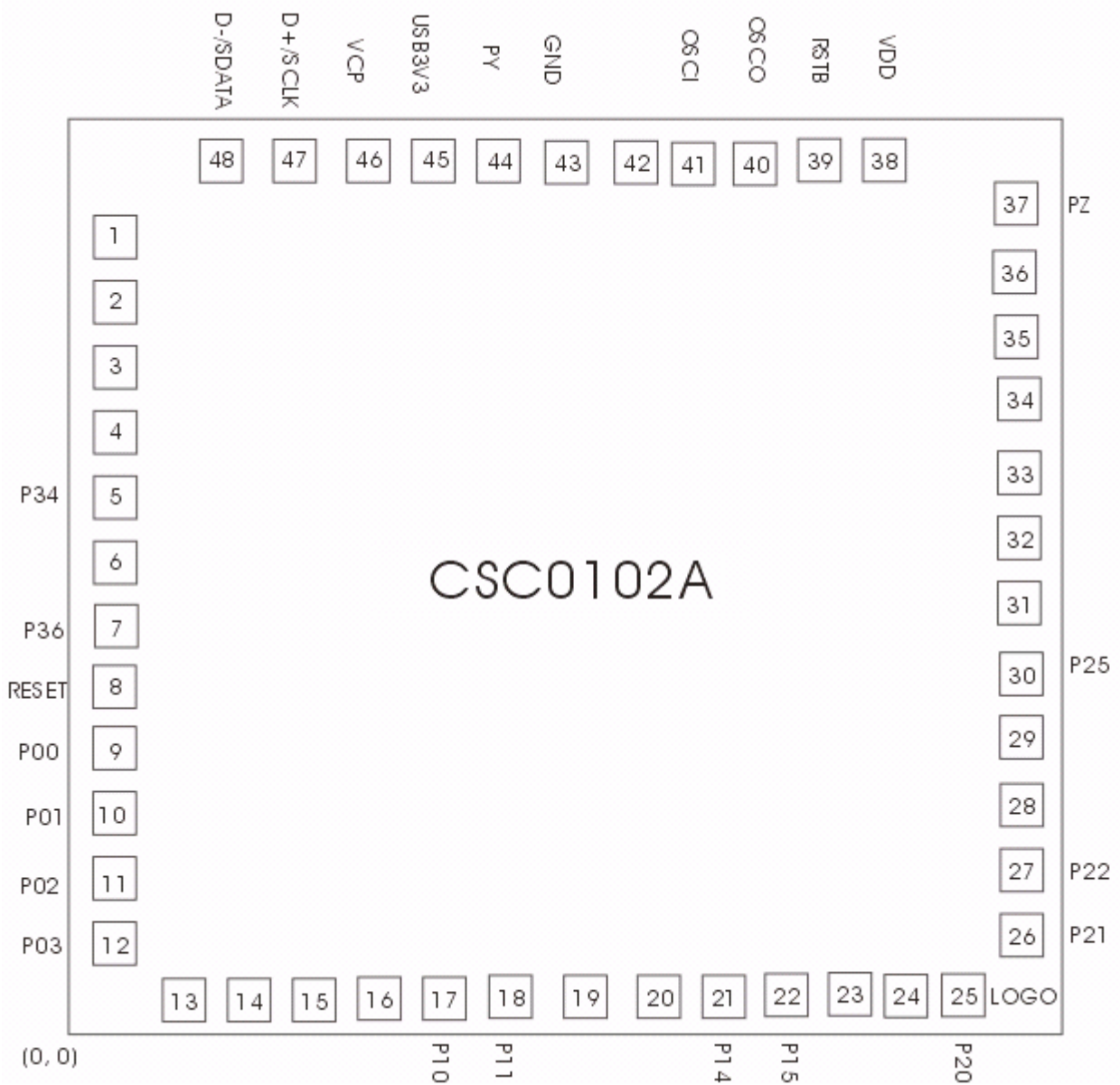


Symbol	Dimension in inch			Dimension in mm		
	Min	Nom	Max	Min	Nom	Max
A	0.010	—	0.175	0.25	—	4.45
A1	0.125	0.130	0.135	3.18	3.30	3.43
A2	0.016	0.018	0.022	0.41	0.46	0.56
B	0.058	0.080	0.084	1.47	1.52	1.63
B1	0.008	0.010	0.014	0.20	0.25	0.36
C	—	0.900	0.910	—	22.86	23.11
D	0.290	0.300	0.310	7.37	7.62	7.87
E	0.245	0.250	0.255	6.22	6.35	6.48
E1	0.090	0.100	0.110	2.29	2.54	2.79
e1	0.120	0.130	0.140	3.05	3.30	3.56
L	0	—	15	0	—	15
eA	0.335	0.355	0.375	8.51	9.02	9.53
S	—	—	0.055	—	—	1.40

**Note:**

1. Dimension D Max S include mold flash or the bar burrs.
2. Dimension E1 does not include interlead flash.
3. Dimension D E1 include mold mismatch and are determined at the mold parting line.
4. Dimension B1 does not include dambar protrusion/intrusion.
5. Controlling dimension: Inch.
6. General appearance spec. should be based on final visual inspection spec.

### Bonding Diagram



### Coordination:

Orientation: (0, 0)

Chip size: 1867.45 um x 1726.25 um

Lower left: (0, 0)

Top right: (1867.45, 1726.25)

Min bonding pitch: 92 um

IC substrate should be connected to GND

Pad No	Pad Name	X	Y	Pad No	Pad Name	X	Y
1		42	1407.125	25	P20	1548.325	42
2		42	1302.675	26	P21	1825.45	319.125
3		42	1208.475	27	P22	1825.45	428.35
4		42	1114.25	28		1825.45	524.95
5	P34	42	1020.025	29		1825.45	621.575
6		42	925.825	30	P25	1825.45	718.2
7	P36	42	831.6	31		1825.45	814.8
8	RESET	42	737.4	32		1825.45	911.425
9	P00	42	643.175	33		1825.45	1008.025
10	P01	42	548.95	34		1825.45	1104.65
11	P02	42	439.15	35		1825.45	1201.275
12	P03	42	319.125	36		1825.45	1297.875
13		319.125	42	37	PZ	1825.45	1407.125
14		434.725	42	38	VDD	1548.325	1684.25
15		526.725	42	39		1447.85	1684.25
16		618.725	42	40	OSCO	1355.625	1684.25
17	P10	710.725	42	41	OSCI	1200.6	1684.25
18	P11	818.325	42	42		1108.375	1684.25
19		925.925	42	43	GND	1016.125	1684.25
20		1017.925	42	44	PY	923.9	1684.25
21	P14	1109.925	42	45	USB3V3	831.675	1684.25
22	P15	1217.525	42	46	VCP	739.45	1684.25
23		1325.125	42	47	D+/SCLK	533.4	1684.25
24		1432.725	42	48	D-/SDATA	319.125	1684.25