

*Eastern System and Semiconductor Design*

## SS01 8-CH Digital Capacitive Sensor

### General Description

The SS01 digital capacitive sensor designed specifically for touch controls. It is provide stable sensing under a wide variety of changing conditions. It will project a sense field through almost any dielectric. It is designed specifically for human interfaces, like control panels, application lighting controls or anywhere a mechanical switch or button may be found. The device is designed to detect touch on up to 8 point independently.



32MLF

### General Feature

- 100% auto calibration for life - no adjustment
- Adjacent key suppression feature
- 16 touch keys through any dielectric
- TTL output (active high, active low, open drain)
- Embedded Flip Flop for toggle output
- Synchronous noise suppression
- Separated each Channel

### Application

- Fluid level sensing
- Outdoor keypad
- Human presence detection
- Appliance control Switch (TV/Monitor/Telephone etc)
- Toys & interactive games
- Lighting control switch (on/off)
- Membrane switch replacement
- Security key-panel
- Mobile application(Cell phone, Mp3/PMP player etc)

### Pin Description

PIN NO	PIN NAME	Description	PIN NO	PIN NAME	Description
30	Ref	Reference adjustment	14	Test	Test mode
31	IN1	Sens input1	15	Sens1	Sensitive adjust 1
32	IN2	Sens input2	16	Sens2	Sensitive adjust 2
1	IN3	Sens input3	17	Sens3	Sensitive adjust 3
2	IN4	Sens input4	18	Om1	Output mode 1
3	IN5	Sens input5	19	Om2	Output mode 2
4	IN6	Sens input6	20	OUT8	Sens Output 8
5	IN7	Sens input7	21	OUT7	Sens Output 7
6	IN8	Sens input8	22	OUT6	Sens Output 6
7	Bias	Bias current adjustment	23	OUT5	Sens Output 5
8	Reset	External reset	24	OUT4	Sens Output 4
9	Op1	Operation mode1	25	OUT3	Sens Output 3
10	Op2	Operation mode2	26	OUT2	Sens Output 2
11	Inf_time	Infinitive calibration time	27	OUT1	Sens Output 1
12	VSS	Ground	28	VDD	+ 5V supply
13	VSS	Ground	29	VDD	+ 5V supply

### Absolute Maximum Rating (Note 2)

Battery supply voltage	5.5V
Maximum voltage on any pin	VDD+0.3
Maximum current on any PAD to avoid latch-up	100mA
Power Dissipation	500mW
Storage Temperature	-50 ~ 150℃
Operating Temperature	-20 ~ 75℃
Junction Temperature	150℃
ESD protection	2000V

### Operation conditions (Note 1, 2)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Units
Supply Voltage	VDD	-	3.0	-	5.2	V
Current consumption in disable mode	I_disa	All blocks disable	-	-	500	uA
Power dissipation	Pd	-20 ~ 75℃	-	-	5.2	mW
Operating Temperature	Topr		-20	-	75	℃

### Electrical Characteristics (Note 1,2)

T<sub>A</sub> = 25℃ ( reset pin must connect vdd), Fclk = 1MHz

Characteristics	Symbol	Test Condition	Min	Typ	Max	Units
Current consumption	I <sub>DD_On</sub>	-	-	800	1000	uA
Output drive current	I <sub>o</sub>	Sens touched	20.0	22.0	24.0	mA
Output voltage I	V <sub>H</sub>	Sens touched	VDD-0.5	VDD	VDD+0.5	V
Output voltage II	V <sub>L</sub>	Sens non-touched		VSS	VSS+0.5	V
Response time	T <sub>res</sub>		-	24	-	ms
Threshold differential	Δc	Option pin selected	4	10	18	counts
Recalibration time	T <sub>cal</sub>	Non bias resistor	-	8	-	sec

### Options Condition

Description	Condition		Operation
	Op2	Op1	Mode
Operation mode	0	0	Matrix mode
	0	1	Single mode(8 to 1)
	1	0	Multi mode(8 to 8)
	1	1	X

Sensitive Adjust mode	Sens3	Sens2	Sens1	Differential Count
	0	0	0	4 counts
	0	0	1	6 counts
	0	1	0	8 counts
	0	1	1	10 counts
	1	0	0	12 counts
	1	0	1	14 counts
	1	1	0	16 counts
	1	1	1	18 counts

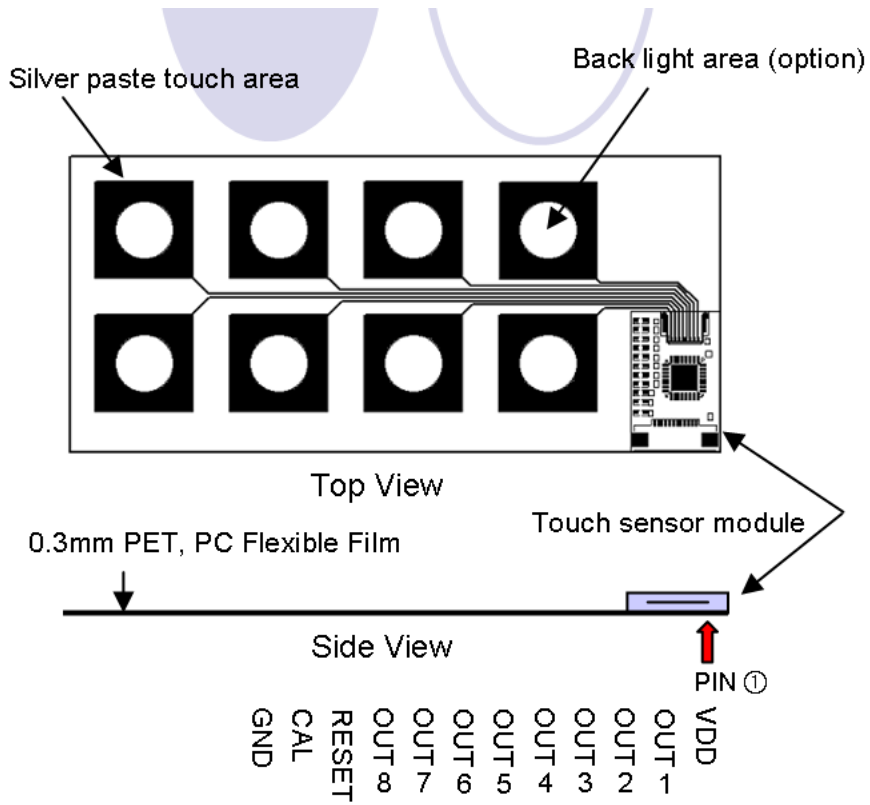
Output mode	Om2	Om1	Mode
	0	0	Active High
	0	1	Active Low
	1	0	Open Drain(active low)
	1	1	Toggle

**Note 1:** All voltages are measured with respect to the ground pin, unless otherwise specified.

**Note 2:** Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is functional, but do not guarantee specific performance limits. Electrical Characteristics state DC and AC electrical specifications under particular test conditions which guarantee specific performance limits. This assumes that the device is within the Operating Ratings. Specifications are not guaranteed for parameters where no limit is given, however, the typical value is a good indication of device performance



**Application Notes**

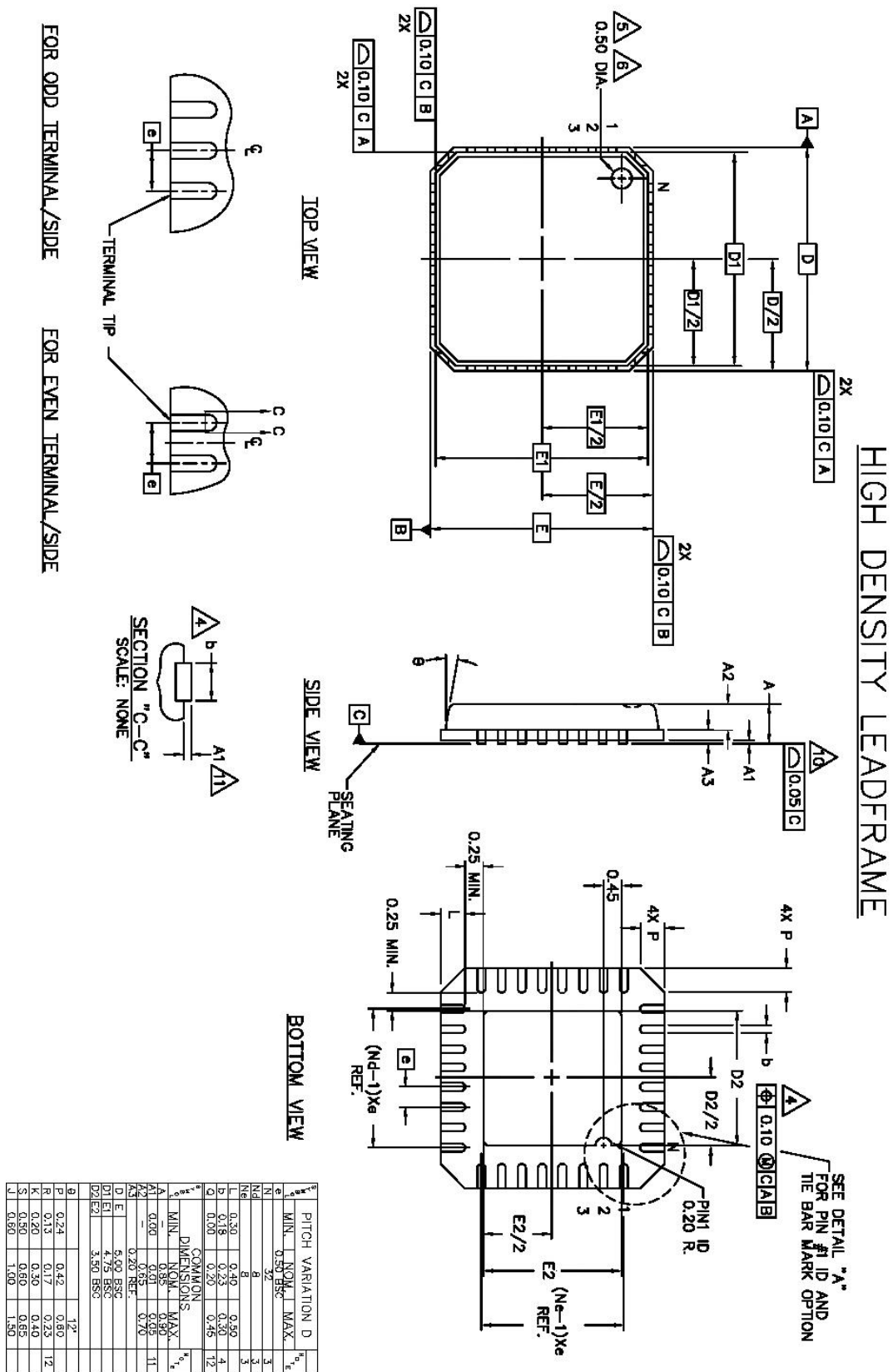


## **PCB & Film Layout recommendation**

### Common drawing rule

1. PCB & Film pattern from sense Pin to touch point have to draw equal pattern length and width respectively.
2. The touch PAD have to make use conduct material.
3. From touch PAD pattern to other patterns have to have distance around 1mm.

### Physical Dimensions millimeters



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