

耳温枪 IC SS0405

商斯达电子

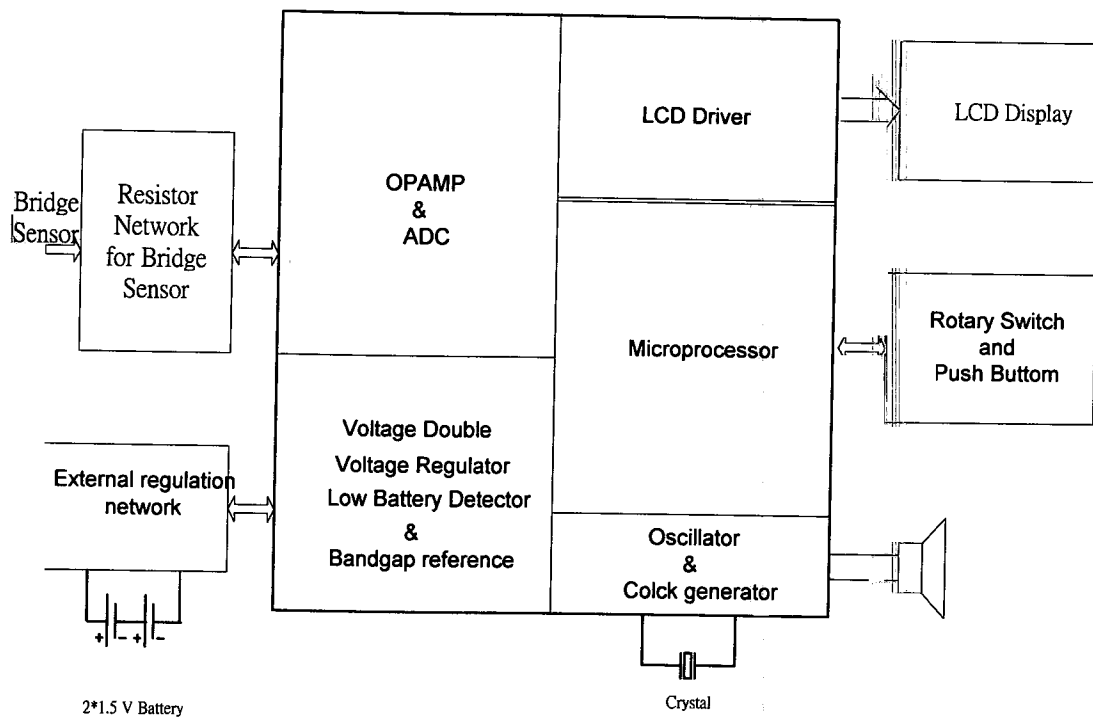
1. Feature

- 1) Operating Voltage : 2.4V to 5.5V
- 2) Crystal/Ceramic Oscillator : 4MHz
- 3) Internal 2Kx 16 bits Program and 128 bytes Data Memory.
- 4) Three types interrupts (Timer, ADC, Input Port)
- 5) 4-level subroutine nesting
- 6) Fully differential 14 bits Analog-to-Digital converter(ADC) 40Hz output rate.
- 7) 2x24 bits Frequency Counter for Capacitance and Frequency measurement
- 8) Low Noise Internal Instrumentation Amplifier
- 9) 1/3 bias 1/4duty LCD Driver Output 14 Segment x 4 Common
- 10) Built in CMOS bandgap reference.
- 11) Internal Voltage Doubler and Regulator for 2.4V~3.6V operation
- 12) 16 bits Input Ports, 2 bits output port, 1 Beeper output.

2. Application Product

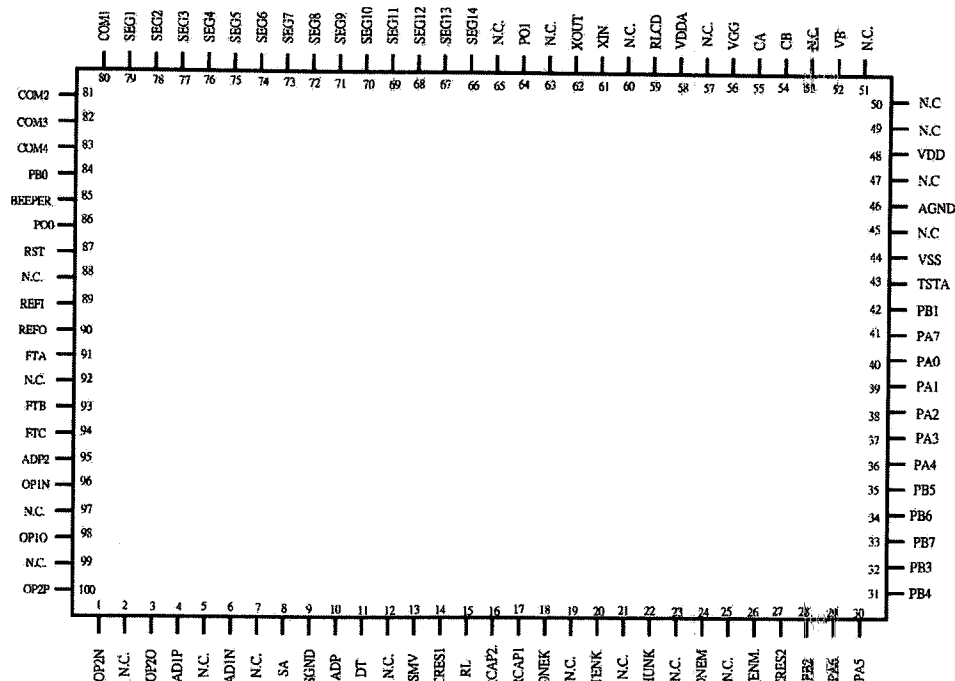
- 1) Ear Thermometer.
- 2) Pressure Meter.
- 3) Sensor Measurement.
- 4) Kitchen Scale or Post Scale.

3 Block Diagram



• Fig3-1 SS0405 Block Diagram

4. Pin Configuration



• Fig4-1 SS0405 Pin Out.

5. Pin Description

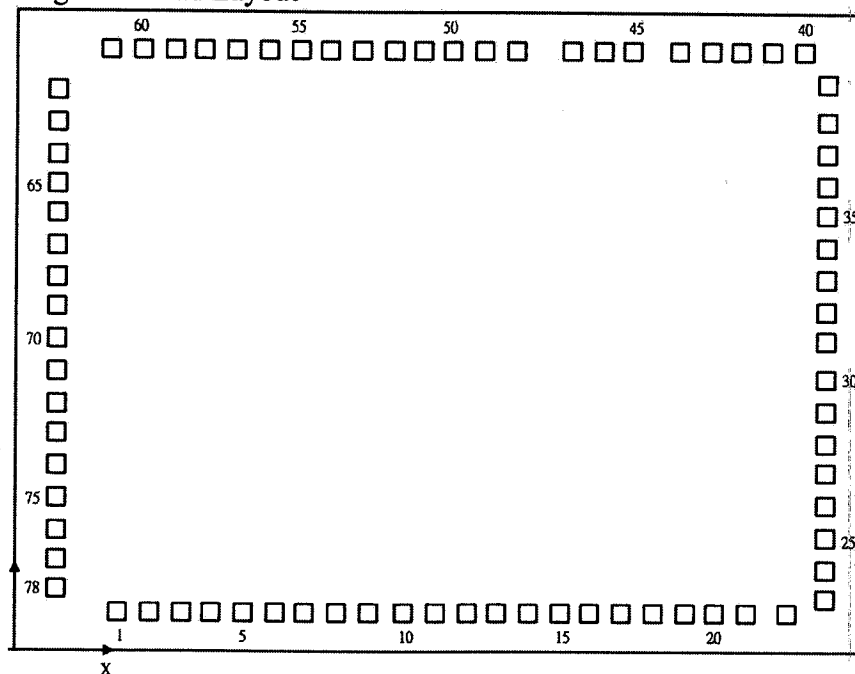
NO.	SYMBOL	I/O	DESCRIPTION
1	OP2N	I	OPAMP 2 Negative Input
2	OP2O	O	OPAMP 2 Output
3	AD1P	I	ADC Positive Input
4	AD1N	I	ADC Negative Input
5	SA	I	ADC Positive Input
6	SGND	I	ADC Negative Input
7	ADP	I	ADC Positive Input
8	DT	I/O	Diode Measurement Divider
9	SMV	I	ADC Positive Input
10	CRES1	I/O	OHM Source Output
11	RL	I	Resistor Measurement ADC Reference Negative Input
12	RCAP2	I/O	Capacitor Measurement Reference Resistor Connection
13	RCAP1	I/O	Capacitor Measurement Reference Resistor Connection
14	ONEK	I/O	Voltage/Resistor Measurement Reference Resistor

15	TENK	I/O	Voltage/Resistor Measurement Reference Resistor
16	HUNK	I/O	Voltage/Resistor Measurement Reference Resistor
17	ONEM	I/O	Voltage/Resistor Measurement Reference Resistor
18	TENM	I/O	Voltage/Resistor Measurement Reference Resistor
19	CRES2	I/O	Resistor Measurement Reference Filter Capacitor
20	PB2	I	Input Port
21	PA6	I	Input Port
22	PA5	I	Input Port
23	PB4	I	Input Port
24	PB3	I	Input Port
25	PB7	I	Input Port
26	PB6	I	Input Port
27	PB5	I	Input Port
28	PA4	I	Input Port
29	PA3	I	Input Port
30	PA2	I	Input Port
31	PA1	I	Input Port
32	PA0	I	Input Port
33	PA7	I	Input Port
34	PB1	I	Input Port
35	TST	I	Testing mode control Input
36	VSS	I	Power Supply Negative Input
37	AGND	I	Analog Common
38	VDD	I	Power Supply Positive Input
39	VB	I	Bias Current Input
40	CB	I/O	Voltage Doubler Capacitor Negative Connection
41	CA	I/O	Voltage Doubler Capacitor Negative Connection
42	VGG	I/O	Voltage Doubler Output
43	VDDA	I/O	Analog Power Regulator Output
44	RLCD	I/O	LCD Bias Voltage
45	XIN	I	Oscillator Input
46	XOUT	O	Oscillator Output
47	PB1	O	Output Port
48	SEG14	O	LCD Segment 14
49	SEG13	O	LCD Segment 13
50	SEG12	O	LCD Segment 12
51	SEG11	O	LCD Segment 11
52	SEG10	O	LCD Segment 10
53	SEG9	O	LCD Segment 9
54	SEG8	O	LCD Segment 8
55	SEG7	O	LCD Segment 7

56	SEG6	O	LCD Segment 6
57	SEG5	O	LCD Segment 5
58	SEG4	O	LCD Segment 4
59	SEG3	O	LCD Segment 3
60	SEG2	O	LCD Segment 2
61	SEG1	O	LCD Segment 1
62	COM1	O	Backplane 1 of LCD Display
63	COM2	O	Backplane 2 of LCD Display
64	COM3	O	Backplane 3 of LCD Display
65	COM4	O	Backplane 4 of LCD Display
66	PB0	I	Input Port
67	BEEPER	O	Beeper Output
68	PO0	O	Output Port
69	RST	I	CPU Reset Input
70	REFI	I	ADC Reference Input
71	REFO	O	Bandgap Reference Output
72	FTA	O	ADC Pre-Filter Input
73	FTB	I	ADC Pre-Filter Output
74	FTC	I/O	ADC Pre-Filter Negative Connection
75	ADP2	I	ADC Input
76	OP1N	I	OPAMP Negative Input
77	OP1O	O	OPAMP Output
78	OP2P	I	AC to DC Converter OPAMP Negative Input

6. PAD Layout

6. Diagram of Pad Layout



Pad opening : 90um

Chip size: 4.55mm x 3.50mm

6.2 Pad Coordinate

Pad No.	Name	X[mm]	Y[mm]	Pad No.	Name	X[mm]	Y[mm]
1	OP2N	0.592	0.208	41	CA	3.848	3.291
2	OP2O	0.744	0.208	42	VGG	3.696	3.291
3	ADIP	0.897	0.208	43	VDDA	3.506	3.291
4	ADIN	1.049	0.208	44	RLCD	3.359	3.291
5	SA	1.200	0.208	45	XIN	3.101	3.291
6	SGND	1.355	0.208	46	XOUT	2.951	3.291
7	ADP	1.506	0.208	47	PO1	2.799	3.291
8	DT	1.657	0.208	48	SEG14	2.492	3.291
9	SMV	1.810	0.208	49	SEG13	2.342	3.291
10	CRES1	1.961	0.208	50	SEG12	2.192	3.291
11	RL	2.113	0.208	51	SEG11	2.042	3.291
12	RCAP2	2.266	0.208	52	SEG10	1.892	3.291
13	RCAP1	2.418	0.208	53	SEG9	1.741	3.291

14	ONEK	2.571	0.208	54	SEG8	1.592	3.291
15	TENK	2.723	0.208	55	SEG7	1.442	3.291
16	HUNK	2.876	0.208	56	SEG6	1.292	3.291
17	ONEM	3.028	0.208	57	SEG5	1.143	3.291
18	TENM	3.178	0.208	58	SEG4	0.993	3.291
19	CRES2	3.332	0.208	59	SEG3	0.842	3.291
20	PB2	3.508	0.208	60	SEG2	0.693	3.291
21	PA6	3.733	0.208	61	SEG1	0.542	3.291
22	PA5	3.968	0.208	62	COM1	0.208	2.933
23	PB4	4.332	0.306	63	COM2	0.208	2.782
24	PB3	4.332	0.516	64	COM3	0.208	2.633
25	PB7	4.332	0.728	65	COM4	0.208	2.483
26	PB6	4.332	0.939	66	PB0	0.208	2.328
27	PB5	4.332	1.160	67	BEEPER	0.208	2.162
28	PA4	4.332	1.327	68	PO0	0.208	2.012
29	PA3	4.332	1.494	69	RST	0.208	1.862
30	PA2	4.332	1.662	70	REFI	0.208	1.641
31	PA1	4.332	1.829	71	REFO	0.208	1.488
32	PA0	4.332	1.996	72	FTA	0.208	1.337
33	PA7	4.332	2.162	73	FTB	0.208	1.185
34	PB1	4.332	2.326	74	FTC	0.208	1.033
35	TSTA	4.332	2.491	75	ADP2	0.208	0.880
36	VSS	4.332	2.642	76	OPIN	0.208	0.728
37	AGND	4.332	2.792	77	OP1O	0.208	0.576
38	VDD	4.332	2.942	78	OP2P	0.208	0.423
39	VB	4.332	3.092	79			
40	CB	4.032	3.291	80			

7. Electronic Characteristic

7.1. Absolute Maximum Ratings

PARAMETER	Rating	UNITS
Supply Voltage to Ground Potential	-0.3 to 7.0	V
Applied Input/Output Voltage	-0.3 to 7.0	V
Ambient Operating Temperature	0 to +70	°C
Storage Temperature	-55 to +150	°C

7.2. AC,DC and Analog Circuit Characteristic (VDD=3V, Ta=25°C)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
VDD	Recommend Operation Power Voltage		2.4		3.6	V
IDD	Supply Current			2	3	mA
IHO	Power-off Supply Current	At Power Off		1	3	uA
VIH	Digital Input High Voltage		VDD-0.5			V
VIL	Digital Input Low Voltage				0.5	V
I _{pu}	Pull up Current	Vin=0		5	10	uA
AGND	Analog Ground Voltage		VDD/2-3%	VDD/2	VDD/2+3%	V
VDDA	Analog Power		3.7	3.9	4.2	V
VBAND	Build in Reference Voltage	To AGND	1.1	1.25	1.4	V
	Build in Reference Voltage Output	VDD=2.4~3.6	-2000		+2000	ppm/V

	Voltage Coefficient					
VBATT	Low Battery Detector Voltage		2.25	2.4	2.55	V
FLCD	LCD Frame Frequency			32		Hz
VLCD	LCD Pk-Pk Driver Voltage		2.8	3	3	V
	ADC Input Offset	REFIN=0.44V ADP=0V	-100	0	100	uV
	ADC Linearity Error (Max. Deviation From Best Straight Line Fit)	REFIN=0.44V	-100	0	+100	UV
	ADC Differential Input Range		AGND-0.4		AGND+0.4	V
	OP1 Input Offset			2	4	mV
	ADC with Amplifier Linearity Error (Max. Deviation From Best Straight Line Fit)	REFIN=0.44V AMP Gain=10	-30	0	+30	uV

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