

SS0505 Dual Display Thermometer

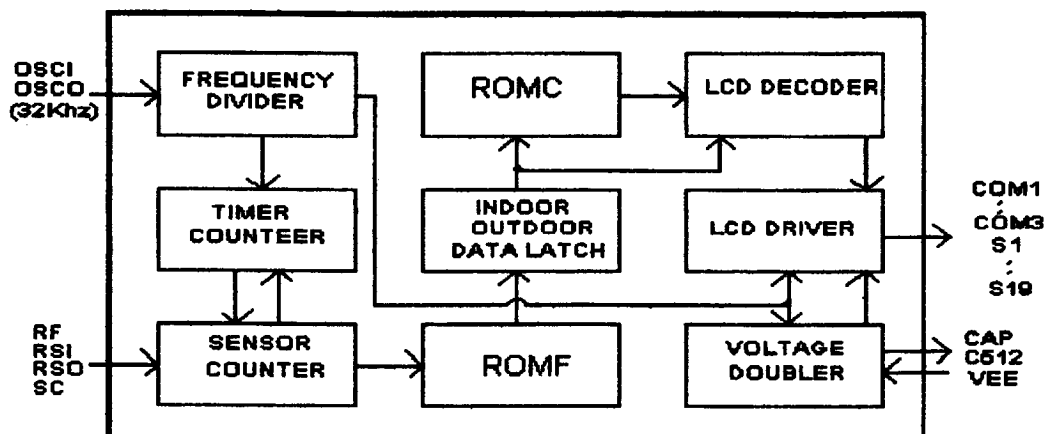
General Description:

SS0505 is a high-performance Dual Display Thermometer CMOS IC. It will be used to measure Indoor and Outdoor Temperature, the temperature of environment can be measured from -50°C (-58°F) to 70°C (158°F), and it also can be set in $^{\circ}\text{C}$ or $^{\circ}\text{F}$ mode.

Features

- Range of Temperature : -50°C (-58°F) $\sim$ 70°C (158°F)
If temperature $> 70^{\circ}\text{C}$ (158°F), display H $^{\circ}\text{C}$ ($^{\circ}\text{F}$)
If temperature $< -50^{\circ}\text{C}$ (-58°F), display L $^{\circ}\text{C}$ ($^{\circ}\text{F}$)
- Number of channel : 2 channels, one for Indoor and one for Outdoor
- Battery operation : $1.3\text{ V} \sim 1.65\text{ V}$
- Resolution : 0.1° for the whole range -50°C (-58°F) $\sim$ 70°C (158°F)
- Accuracy : $\pm 1^{\circ}\text{C}$ ($\pm 2^{\circ}\text{F}$)
- Sensor : 103AT-2Bx 2, will use a 3M wire for the outdoor sensor
- Oscillator : RC Oscillator only
- Sampling period : 10 sec approximate
- Change unit : NC - $^{\circ}\text{C}$ and Bond to VDD - $^{\circ}\text{F}$
- LCD self-test : Power On full segment test 2 second
- LCD driver : 1/2 bias, 1/3 duty.
- Not-measuring current : Current is less than 15 uA

Block Diagram:



PAD DESCRIPTION:

Pad No.	Pad Name	I/O	DESCRIPTION
1	OSCI	I	Oscillator generator input pad.
2	OSCO	O	Oscillator generator output pad.
3	COM1	O	LCD common pad.
4	S1	O	LCD segment pad.
5	S2	O	LCD segment pad.
6	S3	O	LCD segment pad.
7	S4	O	LCD segment pad.
8	S5	O	LCD segment pad.
9	S6	O	LCD segment pad.
10	S7	O	LCD segment pad.
11	S8	O	LCD segment pad.
12	S9	O	LCD segment pad.
13	S10	O	LCD segment pad.
14	S11	O	LCD segment pad.
15	S12	O	LCD segment pad.
16	S13	O	LCD segment pad.
17	S14	O	LCD segment pad.
18	S15	O	LCD segment pad.
19	S16	O	LCD segment pad.
20	S17	O	LCD segment pad.
21	S18	O	LCD segment pad.
22	S19	O	LCD segment pad.
23	COM2	O	LCD common pad.
24	COM3	O	LCD common pad.
25	C512	O	Doubler voltage capacitor input pad.
26	CAP	I	Doubler voltage capacitor output pad.
27	VEE	O	Doubler voltage (3V) output pad.
28	VDD	I	IC Vdd pad.
29	TC	I	IC Test Pad
30	SFC	I	°C/°F select pad, (bonding to Vss → °C, bonding to Vdd → °F)
31	VSS	I	IC Vss pad.
32	SC	I	PAD 1 is sensor clock generator input pad.
33	RF	O	PAD 2 is reference resistor output pad.
34	RSI	O	PAD 3 is indoor sensor resistor output pad.
35	RSO	O	PAD 4 is outdoor sensor resistor output pad.
36	TA	I	IC test pad. inner pull low resistor.

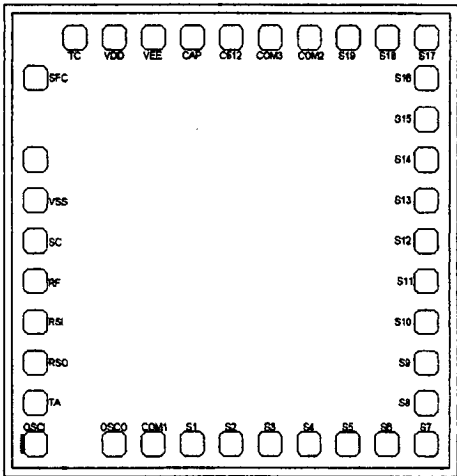
ELECTRICAL DESCRIPTION:

ITEM	PARAMETER	TEST CONDITION	STAND VALUE			UNIT
			MIN.	TYP.	MAX.	
Vdd	Supply Voltage		1.30	1.5	1.65	V
VIL	Input Low Voltage	Vdd=1.5V		0	0.2	V
VIH	Input High Voltage	Vdd=1.5V	1.3	1.5		V
VOL	Output Low Voltage	Vdd=1.5V		0	0.1	V
VOH	Output High Voltage	Vdd=1.5V	1.4	1.5		V
Inm	Current No Measurement	Vdd=1.5V, LCD Display			15	uA
Irf	RF Pad Driving Current	Vdd=1.5V, Vds=-0.75V			-1	mA
Irsi	RSI Pad Driving Current	Vdd=1.5V, Vds=-0.75V			-1	mA
Irso	RSO Pad Driving Current	Vdd=1.5V, Vds=-0.75V			-1	mA

SFC PAD FUNCTION :

- If SFC is open , it display Temp in °C .
If SFC is switch to VDD , it displays Temp in °F .
- When the SFC state is changed no matter it is displaying the current Temp , the temperature will be converted and display in the corresponding scale (°C or °F) at a delay time less than 0.2 second.

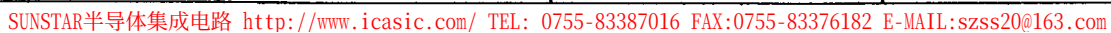
SS0505 PAD'S DIAGRAM



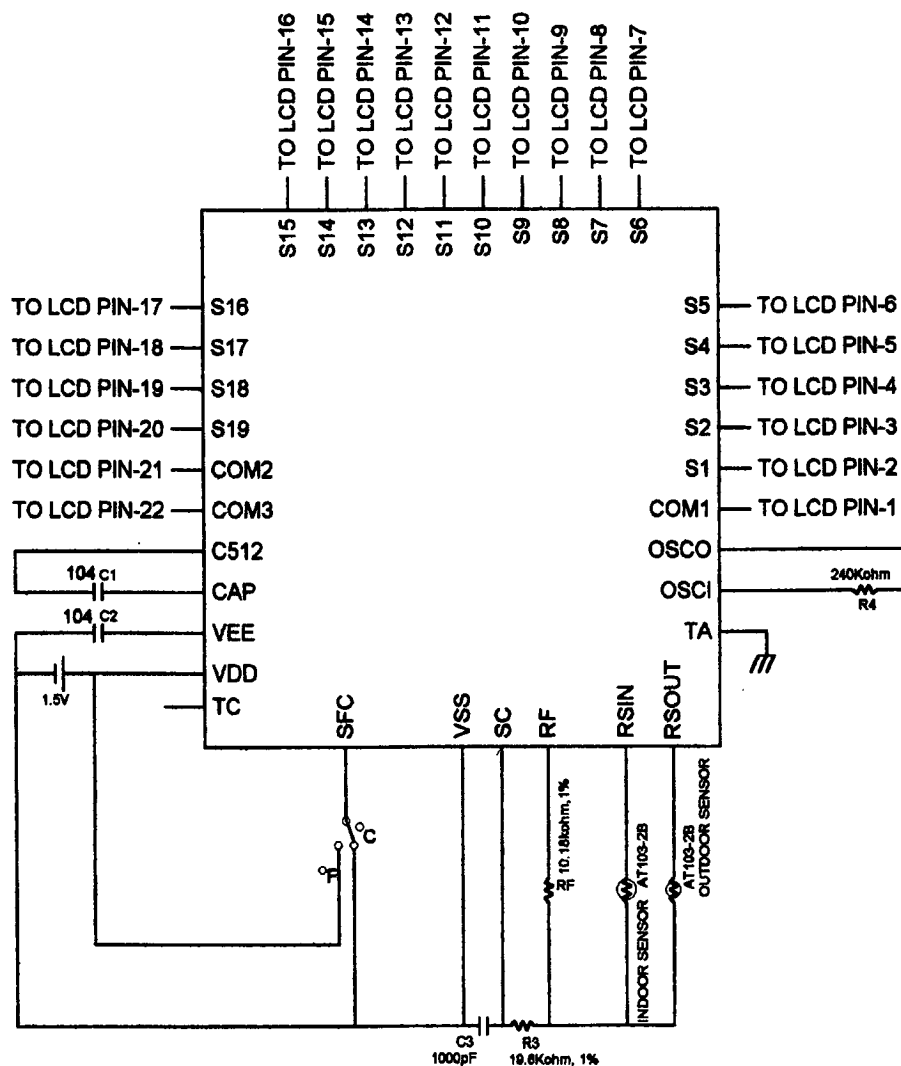
CHIP SIZE : X= 1610 um
Y= 1680 um

PAD NAME	PAD No.	COORDINATE (X,Y)	PAD NAME	PAD No.	COORDINATE (X,Y)
OSCI	1	(-677.00, -712.00)	S16	19	(677.00, 562.00)
OSCO	2	(-387.00, -712.00)	S17	20	(677.00, 712.00)
COM1	3	(-257.00, -712.00)	S18	21	(527.00, 712.00)
S1	4	(-127.00, -712.00)	S19	22	(397.00, 712.00)
S2	5	(5.00, -712.00)	COM2	23	(267.00, 712.00)
S3	6	(137.00, -712.00)	COM3	24	(127.00, 712.00)
S4	7	(267.00, -712.00)	C512	25	(-5.00, 712.00)
S5	8	(397.00, -712.00)	CAP	26	(-137.00, 712.00)
S6	9	(527.00, -712.00)	VEE	27	(-267.00, 712.00)
S7	10	(677.00, -712.00)	VDD	28	(-397.00, 712.00)
S8	11	(677.00, -562.00)	TC	29	(-527.00, 712.00)
S9	12	(677.00, -422.00)	SFC	30	(-677.00, 562.00)
S10	13	(677.00, -282.00)	VSS	31	(-677.00, 142.00)
S11	14	(677.00, -142.00)	SC	32	(-677.00, 0.00)
S12	15	(677.00, 0.00)	RF	33	(-677.00, -142.00)
S13	16	(677.00, 142.00)	RSI	34	(-677.00, -282.00)
S14	17	(677.00, 282.00)	RSO	35	(-677.00, -422.00)
S15	18	(677.00, 422.00)	TA	36	(-677.00, -562.00)

NOTICE: On PCB, IC Substrate should not connect directly with VDD or Vss.



SS0505 THERMOMETER APPLICATION



NOTES:

1. R4 use 240Kohm resistor.
2. RF use 10.18Kohm resistor.
3. indoor sensor use AT103-2B type sensor.
4. outdoor sensor use 3M wire AT103-2B type sensor, and this 3M wire C Equal is about 150pF
5. RF is adjusted at 25 °C temperature of environment.
6. If RF has been calibrated at 25 °C, and check high temperature (about 65 to 68 °C) ,
If temperature is more than 1 °C, and R3 will serial a 400ohm resistor.
If temperature is less than 1 °C, and R3 will paralle a 1Mohm resistor.

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