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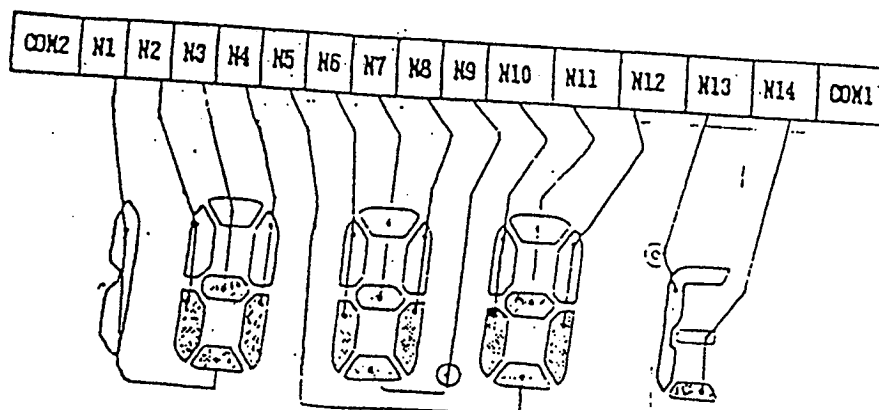
SS0502

GENERAL DESCRIPTION: SS0502 IS AN INTEGRATED CIRCUIT PROVIDED WITH DIGITAL THERMOMETER FUNCTION. TEMPERATURE REANGING FROM -50°C TO $+50^{\circ}\text{C}$ IS DETECTED BY USE OF A THERMISTER AS A SENSOR AND TEMPERATURE IS DISPLAYED ON A LCD BY 0.2°C STEP.

FEATURE: MEASUREMENT OF TEMPERATURE (THERMISTER SEMITEC 103CT)

- MEASUREABLE RANGE: $-50^{\circ}\text{C} \sim +50^{\circ}\text{C}$ ($-58^{\circ}\text{F} \sim +122^{\circ}\text{F}$)
- RESOLUTION: 0.2°C ($^{\circ}\text{F}$)
- ACCIRACY: $\pm 1^{\circ}\text{C}$
- 3 1/2 + 7 INDICATORS, 1/2 DUTY LCD
- LOW POWER CONSUMPTION
- FEW EXTERNAL COMPONENTS
- EASINESS IN ADJUSTMENT
- SERIAL INTEFACD OUTPUT
- 1.5V BATTFF OPERATION

LCD FO





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FUNCTION DESCRIPTION

A THERMISTER IS USED FOR DETECTING TEMPERATURE AND CONVERT TO FREQUENCY. HIGH ACCURACY IS OBTAINED IN WIDE RANG OF $-50^{\circ}\text{C} \sim +50^{\circ}\text{C}$ BY PROVIDING NONLINEAR CORRECTION CIRUCIT FOR THERMISTER INSIDE THE IC.

ITEM	REMARKS
MEASWRABLE TEMPERATURE RANGE	$^{\circ}\text{C}$ $-49^{\circ}\text{C} \sim +49.8^{\circ}\text{C}$ $^{\circ}\text{F}$ $-57^{\circ}\text{C} \sim 121.8^{\circ}\text{F}$
SUITABLE THERMISTER (103CT)	$R_T = 10\text{K}\Omega \pm 5\%$ (AT 20°C) $B = 3270\text{K} \pm 2\%$
RESOLUTION	0.2°C DEGREE STEP
SAMPLING CYCLE	1 SECOND, 3 SECOND, 5 SECOND, 10 SECOND (DEFAULT 10 SEC)

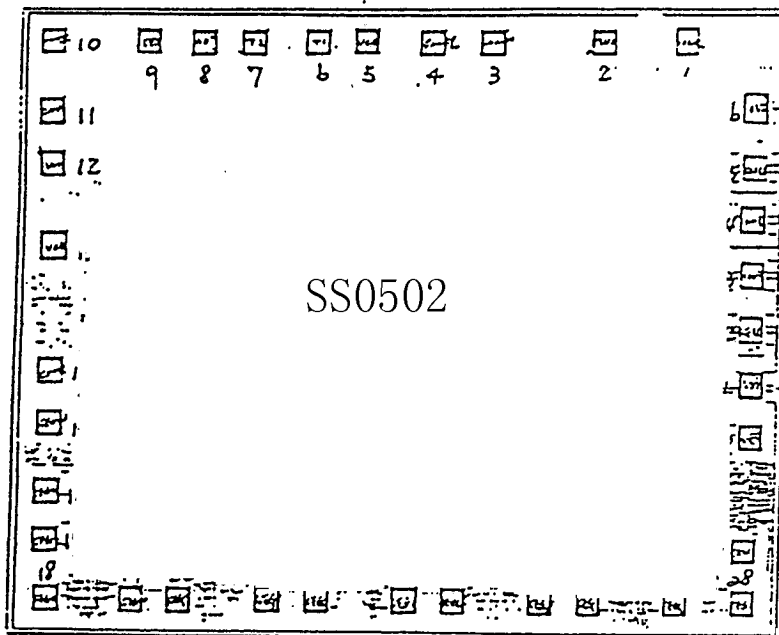
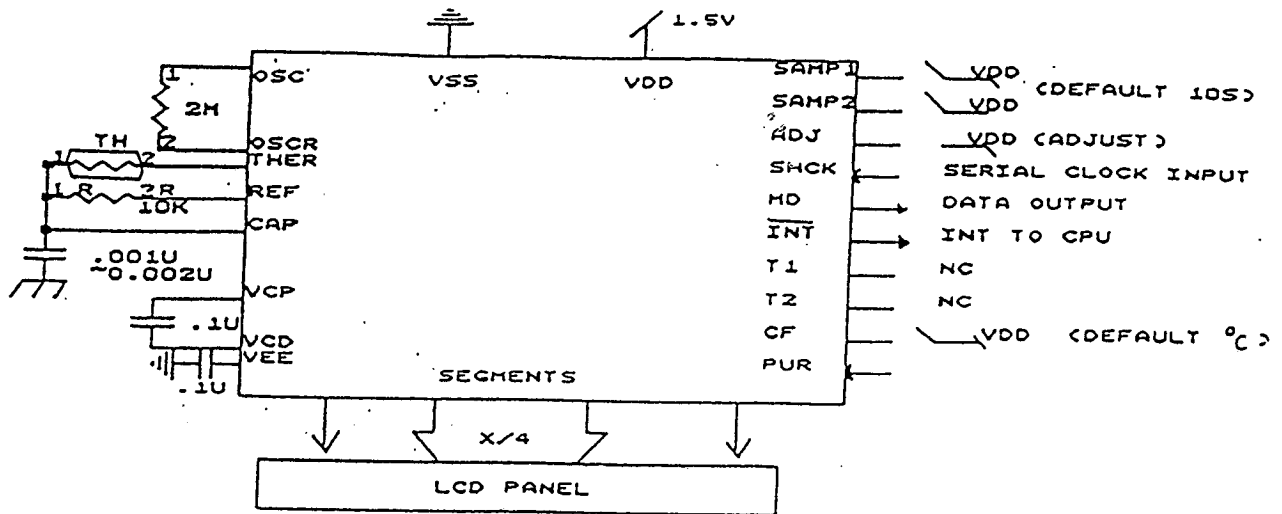
OSCILLATION FREQUENCY: 16 KHZ

TEMPERATURE ADJUSTMENT: ADJUSTMENT OF TEMPERATURE IS MADE BY ADJUSTING FUNDAMENTAL RESISTANCE AGAINST DISPERSION IN RESISTANCE VALUES OF THERMISTERS.

THE VALUE OF REF IS ADJUSTED TO COINCIDE WITH THE TEMPERATURE INDICATION A RESISTOR.

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APPLICATION:

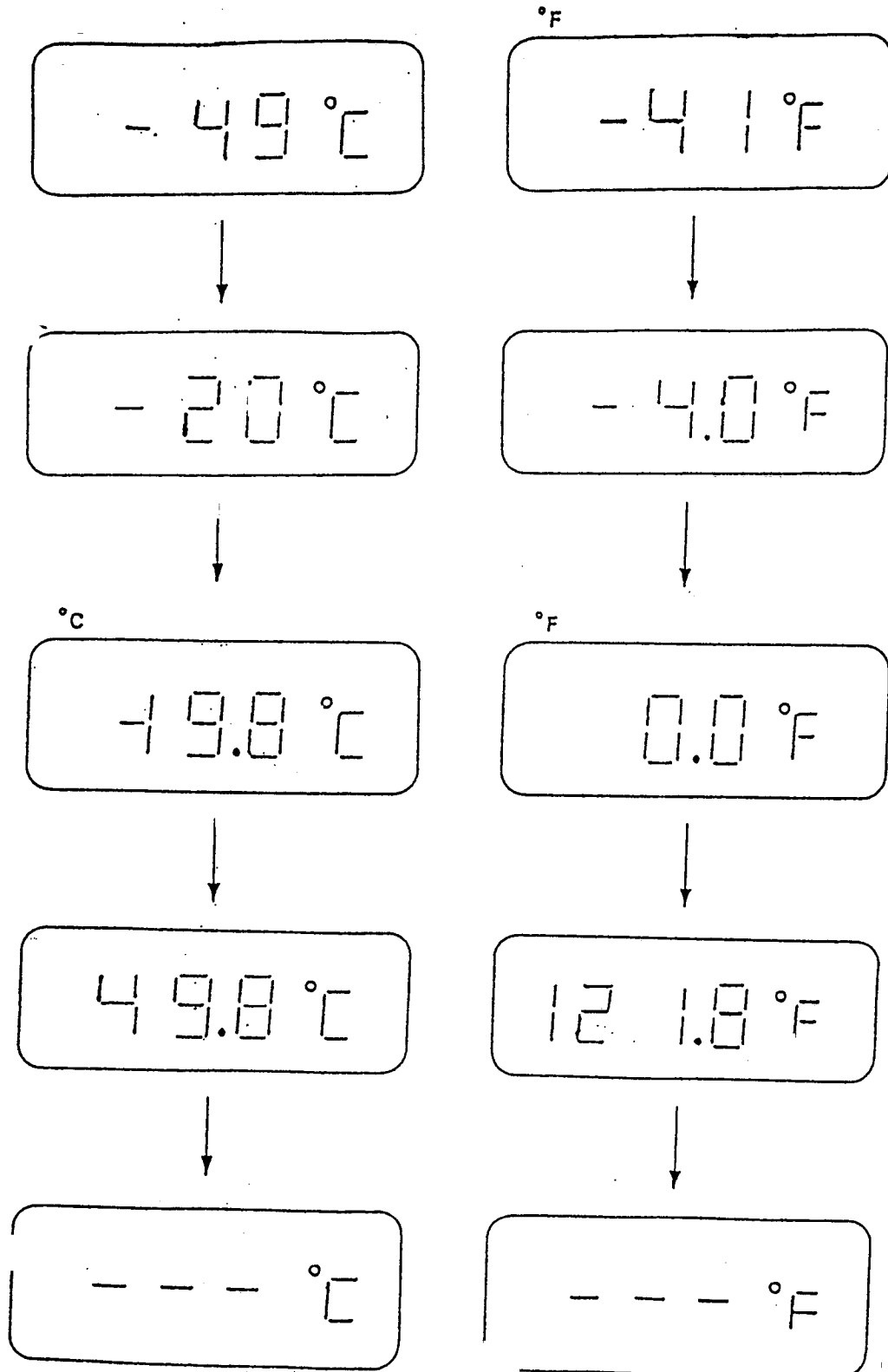


1: OSC R	16: SEG13	30: VEE
2: PWR	17: SEG12	31: VSS
3: SAMP1	18: SEG11	32: SELC
4: SAMP2	19: SEG10	33: INT
5: VCP	20: SEG 9	34: MD
6: T1	21: SEG 8	35: SHCK
7: T2	22: SEG 7	36: OSI
8: ADJ	23: SEG 6	
9: REF	24: SEG 5	
10: THER	25: SEG 4	
11: CAP	26: SEG 3	
12: VDD	27: SEG 2	
13: VCD	28: SEG 1	
14: COM2	29: COM 1	
15: SEG14		

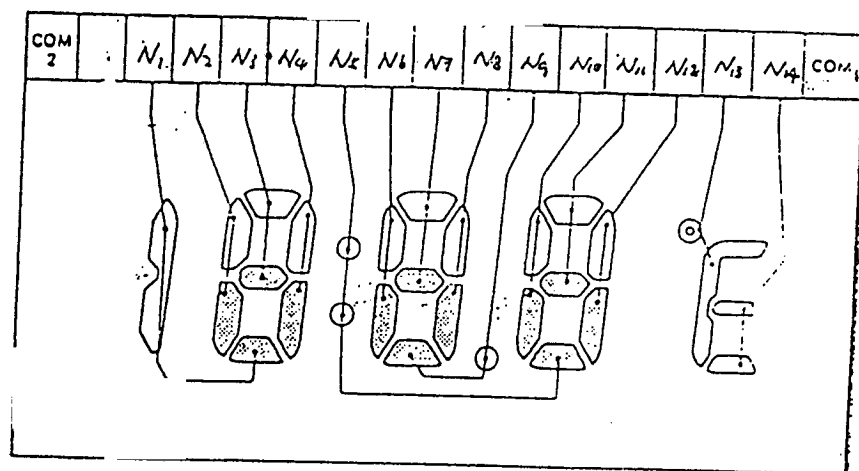


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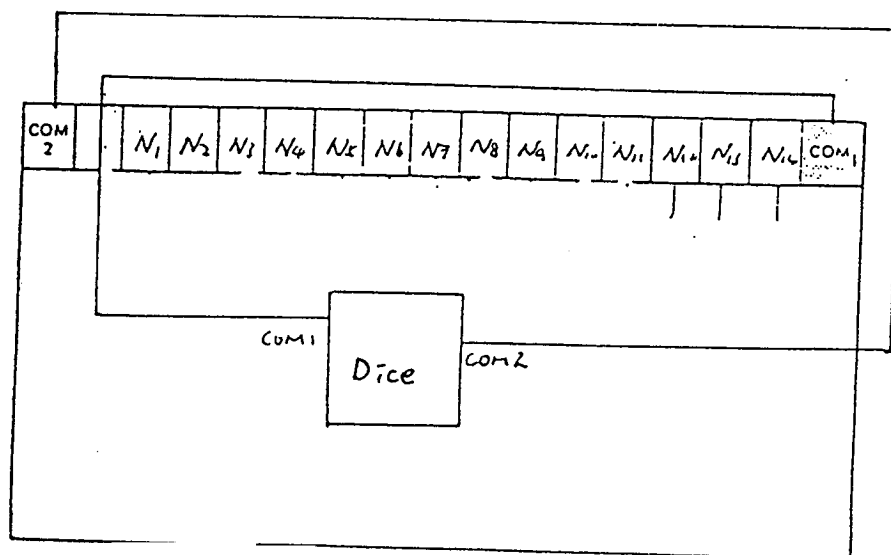
DISPLAY FORMAT:



LCD FORMAT



LCD FORMAT



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SHENZHEN SUNSTAR ELECTRONICS CO.,LTD.

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集成电路
单片机

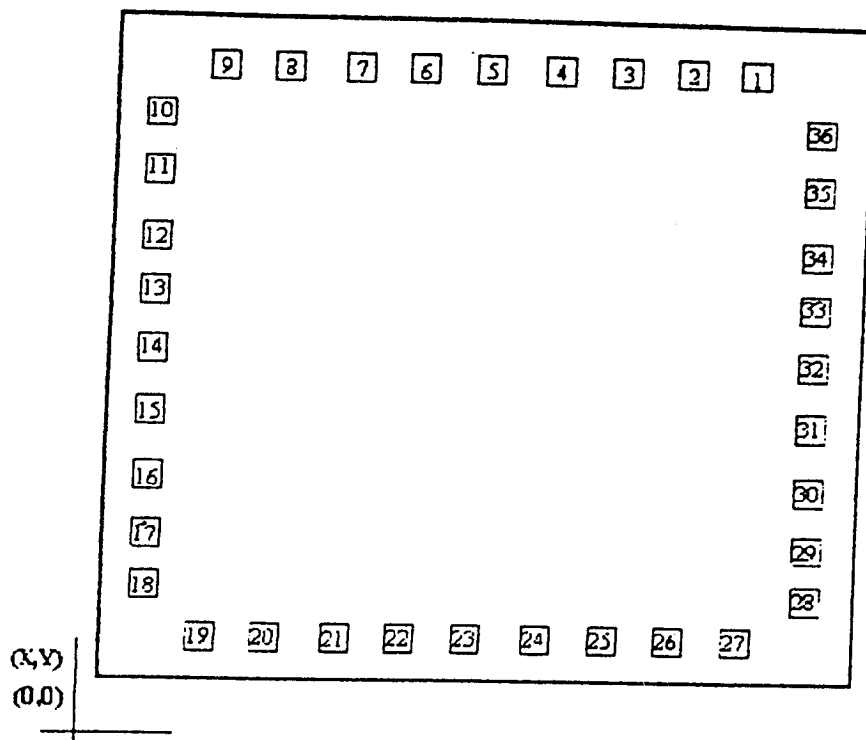


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SPECIFICATION

ELECTRICAL CHARACTERISTIC

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
OPERATING VOLTAGE	VDD	1.2	1.5	2.0	VOLT
STANDBY CURRENT	Istd		5.0	10.0	μ A
ERATING TEMP	Top	-50		+50	$^{\circ}$ C
STORAGE TEMP.	Istr	-50		+125	$^{\circ}$ C
MEASURING CURRENT.	I meas		50	80	μ A



DICE SIZE :
SUBSTRATE CONNECTED TO VDD

PAD NO.	DESTINATION	X	Y	PAD NO.	DESTINATION	X	Y
1	OSCR	2402	2045	19	SEG10	412	105
2	PWR	2084	2045	20	SEG 9	591	105
3	SAMP1	1688	2045	21	SEG 8	913	105
4	SAMP2	1460	2045	22	SEG 7	1093	105
5	VCP	1219	2045	23	SEG 6	1411	105
6	T1	1036	2045	24	SEG 5	1590	105
7	T2	803	2045	25	SEG 4	1917	105
8	ADJ	648	2045	26	SEG 3	2088	105
9	REF	424	2045	27	SEG 2	2414	105
10	THER	65	2045	28	SEG 1	2659	105
11	CAP	69	1806	29	COM 1	2667	276
12	VDD	69	1621	30	VEE	2667	690
13	VCD	69	1324	31	VSS	2667	881
14	COM2	69	910	32	SELC(CF)	2667	1062
15	SEG14	69	742	33	INT	2667	1239
16	SEG13	69	715	34	MD	2667	1430
17	SEG12	69	315	35	SHCK	2667	1618
18	SEG11	69	105	36	OS'	2667	1825

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FUNCTION OF TERMINALS:

NAME OF TERMINALS	FUNCTION															
THER, CAP, REF	OSCILLATOR CIRCUIT FOR TEMPERATURE DETECTION															
CF	℃/ℱ TERMINAL. DEFAULT (VSS) SELECT ℄															
MD, SHCK	SERIAL MEASUREMENT DATA OUTPUT TERMIAL MD=SERIAL DATA OUTPUT SHCK=SERIAL SHIFT CLOCK															
OSC, OSCR	OSCILLATOR CIRCUIT FOR SYSTEM CLOCK															
VCD, VCR	BOOSTER CAPACITOR CONNECTION TERMINAL															
VEE	LEVEL SHIFT (3V)															
COM1, COM2	LCD COMMENT DRIVE															
SEG1~SEG14	LCD SEGMENT DRIVE															
ADJ	ADJUST THE FIXED TEMPERATURE (ACTIVE HIGH)															
INT	SIGNAL TO INTERRUPT THE MPU.															
T1, T2	TEST INPUT TERMINAL															
SAMP1, SAMP2	PIN OPTION, SELET THE THERMISTOR SAMPLING CYCLE (DEFAULT 10S) <table><tr><th>SAMP1</th><th>SAMP2</th><th>SAMPLENG CYCLE</th></tr><tr><td>0</td><td>0</td><td>10S</td></tr><tr><td>0</td><td>1</td><td>1S</td></tr><tr><td>1</td><td>0</td><td>2S</td></tr><tr><td>1</td><td>1</td><td>5S</td></tr></table> 0:VSS 1:VDD	SAMP1	SAMP2	SAMPLENG CYCLE	0	0	10S	0	1	1S	1	0	2S	1	1	5S
SAMP1	SAMP2	SAMPLENG CYCLE														
0	0	10S														
0	1	1S														
1	0	2S														
1	1	5S														



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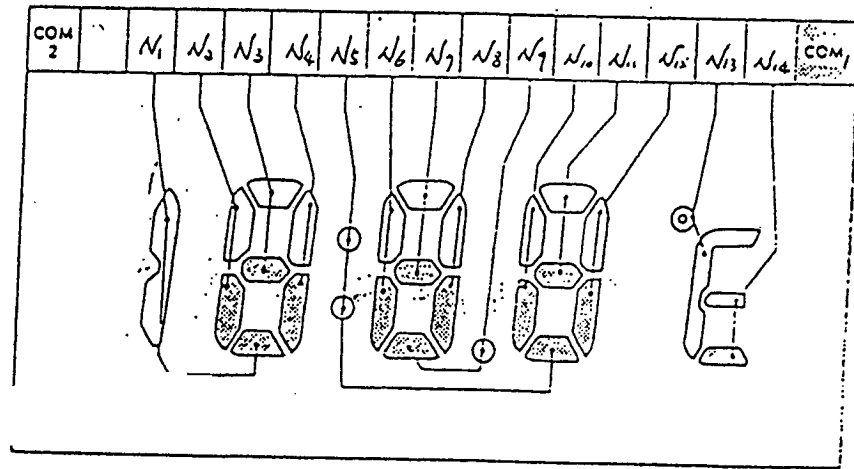


Fig. 2

Segment pair

	N ₁	N ₂	N ₃	N ₄	N ₅	N ₆	N ₇	N ₈	N ₉	N ₁₀	N ₁₁	N ₁₂	N ₁₃	N ₁₄	
COM ₂	b _{C1}	F ₂	a ₂	b ₂	coL	F ₃	a ₃	b ₃	D _P	F ₄	a ₄	b ₄	C _F	F	
	d ₂	e ₂	G ₂	C ₂	d ₄	e ₃	G ₃	C ₃	d ₃	e ₄	G ₄	C ₄	OFF	C	COM ₁

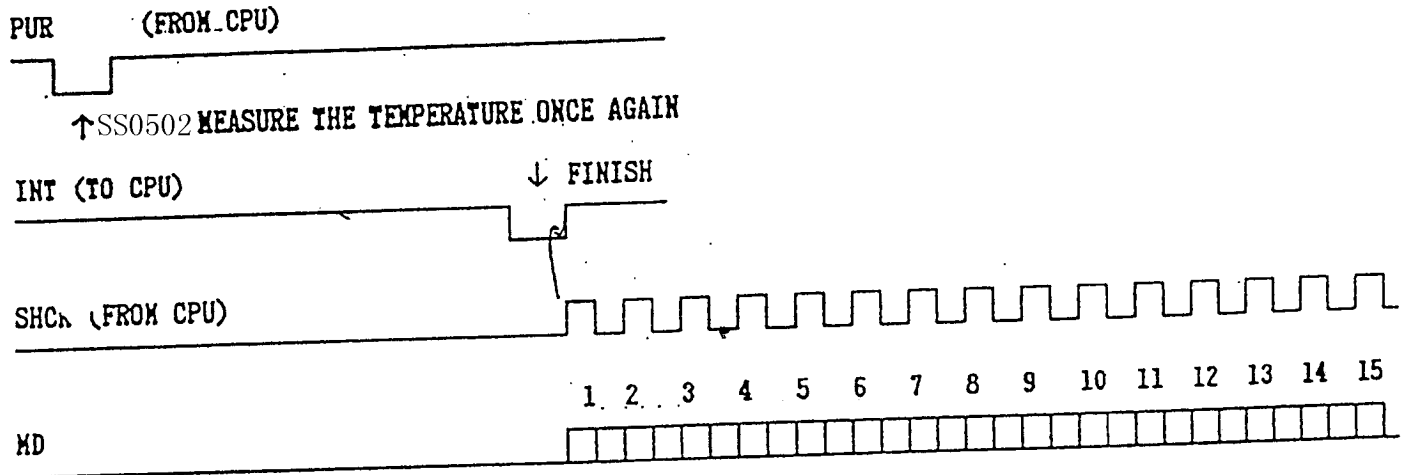
* "OFF" signal is always being output at COM₁ side of N₁...



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SERIAL OUTPUT:

TEMPERATURE DATA CONVERTED SERIALLY BY MD, SHCK INT, PUR TERKIALS
TEMPERATURE DATA IS OUTPUT AS TOTAL 15-BITS DATA



- D1: °C POLARITY (1:MINUS 0:PLUS)
- D2: °F (HUNDREDTH DIGIT) (°C NO USE)
- D3: 80
- D4: 40
- D5: 20
- D6: 10
- D7: 8
- D8: 4
- D9: 2
- D10: 1
- D11: 0.8
- D12: 0.4
- D13: 0.2
- D14: 0.1
- D15: (°C / °F) (0=°C 1=°F)

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