Table 62-1. OCOTP_ANA1 Temperature Sensor Calibration Data

Bit Range	Bit Mask	Name	Description
[31:20]	FFF0_0000h	ROOM_COUNT	Value of TEMPMON_TEMPSENSE0[TEMP_VALUE] after a measurement cycle at room temperature (25.0 °C).
[19:8]	000F_FF00h	HOT_COUNT	Value of TEMPMON_TEMPSENSE0[TEMP_VALUE] after a measurement cycle at the hot temperature, i.e. HOT_TEMP.
[7:0]	0000_00FFh	HOT_TEMP	The hot temperature test point. Each LSB equals 1 °C.

The points on the calibration curve are as follows.

- $(N_1, T_1) = (ROOM\_COUNT, 25.0)$
- $(N_2, T_2) = (HOT\_COUNT, HOT\_TEMP)$
- $(N_{meas}, T_{meas}) = (TEMP\_CNT, T_{meas})$

Substituting the fields from OCOTP_ANA1 into the earlier equation results in the following:

$$T_{meas} = HOT\_TEMP - (N_{meas} - HOT\_COUNT) * ((HOT\_TEMP - 25.0) / (ROOM\_COUNT – HOT\_COUNT))$$

62.3 TEMPMON Memory Map/Register Definition

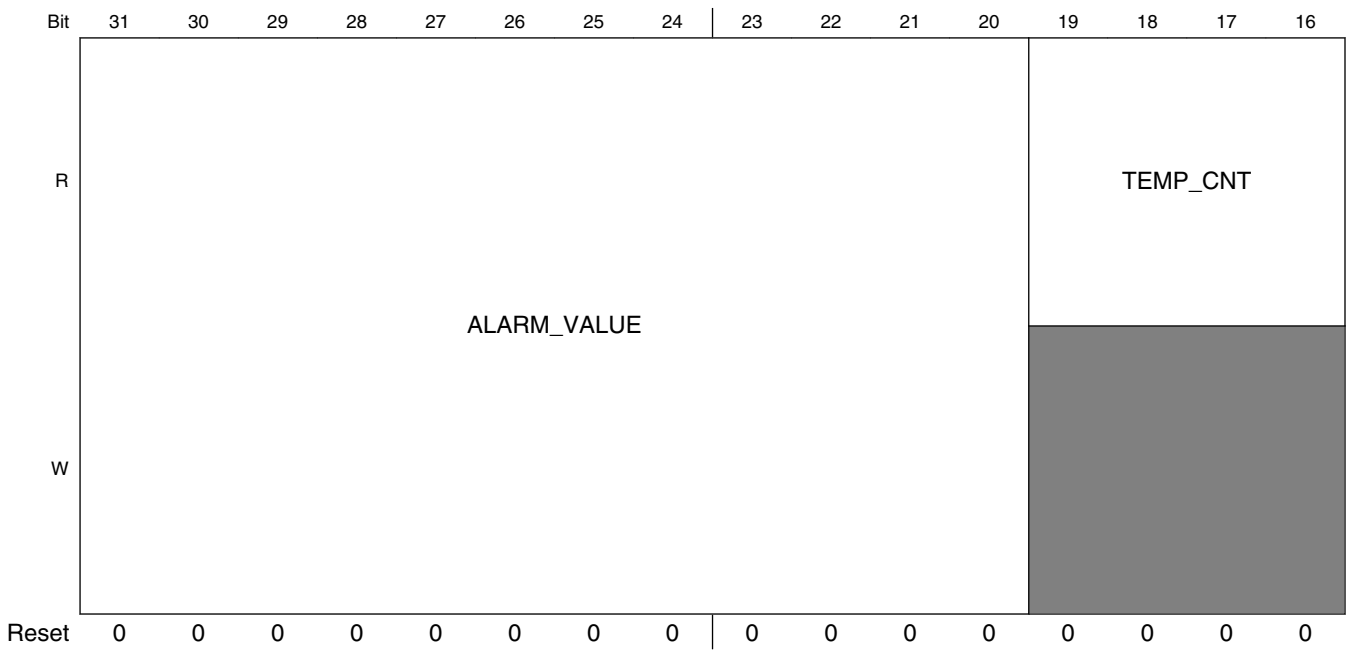
TEMPMON memory map

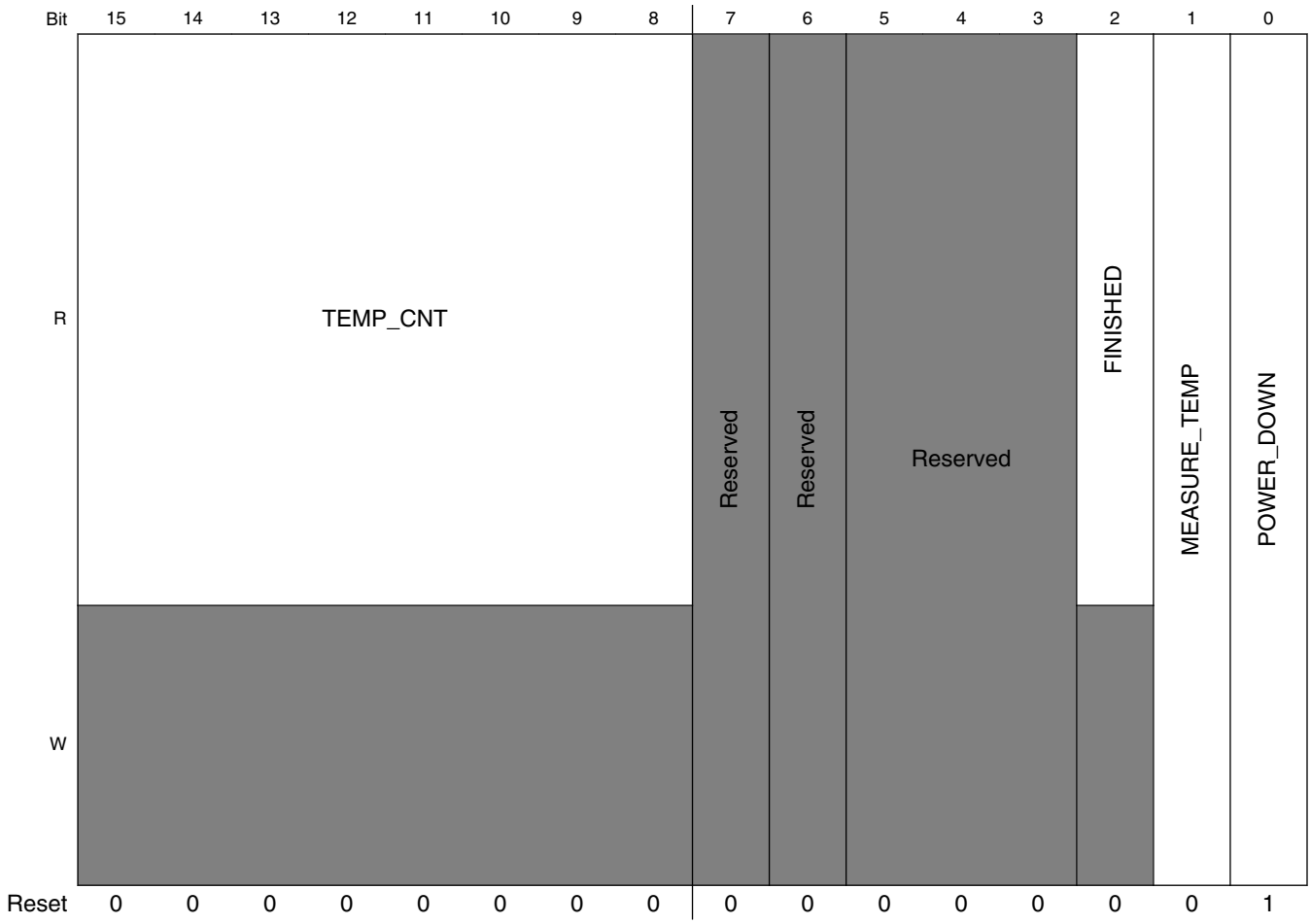
Absolute address (hex)	Register name	Width (in bits)	Access	Reset value	Section/ page
20C_8180	Tempsensor Control Register 0 (TEMPMON_TEMPSENSE0)	32	R/W	0000_0001h	62.3.1/5162
20C_8184	Tempsensor Control Register 0 (TEMPMON_TEMPSENSE0_SET)	32	R/W	0000_0001h	62.3.1/5162
20C_8188	Tempsensor Control Register 0 (TEMPMON_TEMPSENSE0_CLR)	32	R/W	0000_0001h	62.3.1/5162
20C_818C	Tempsensor Control Register 0 (TEMPMON_TEMPSENSE0_TOG)	32	R/W	0000_0001h	62.3.1/5162
20C_8190	Tempsensor Control Register 1 (TEMPMON_TEMPSENSE1)	32	R/W	0000_0001h	62.3.2/5164
20C_8194	Tempsensor Control Register 1 (TEMPMON_TEMPSENSE1_SET)	32	R/W	0000_0001h	62.3.2/5164
20C_8198	Tempsensor Control Register 1 (TEMPMON_TEMPSENSE1_CLR)	32	R/W	0000_0001h	62.3.2/5164
20C_819C	Tempsensor Control Register 1 (TEMPMON_TEMPSENSE1_TOG)	32	R/W	0000_0001h	62.3.2/5164

62.3.1 Tempsensor Control Register 0 (TEMPMON_TEMPSENSE0*n*)

This register defines the basic controls for the temperature sensor minus the frequency of automatic sampling which is defined in the tempsensor.

Address: 20C_8000h base + 180h offset + (4d × i), where i=0d to 3d





TEMPMON_TEMPSENSE0*n* field descriptions

Field	Description
31–20 ALARM_VALUE	This bit field contains the temperature count (raw sensor output) that will generate an alarm interrupt.
19–8 TEMP_CNT	This bit field contains the last measured temperature count.
7 -	This field is reserved. Reserved.
6 -	This field is reserved. Reserved.
5–3 -	This field is reserved. Reserved
2 FINISHED	Indicates that the latest temp is valid. This bit should be cleared by the sensor after the start of each measurement. 0 **INVALID** — Last measurement is not ready yet. 1 **VALID** — Last measurement is valid.
1 MEASURE_ TEMP	Starts the measurement process. If the measurement frequency is zero in the TEMPSENSE1 register, this results in a single conversion.

Table continues on the next page...

TEMPMON_TEMPSENSE0*n* field descriptions (continued)

Field	Description
	0 **STOP** — Do not start the measurement process. 1 **START** — Start the measurement process.
0 POWER_DOWN	This bit powers down the temperature sensor. 0 **POWER_UP** — Enable power to the temperature sensor. 1 **POWER_DOWN** — Power down the temperature sensor.

62.3.2 Tempsensor Control Register 1 (TEMPMON_TEMPSENSE1*n*)

This register defines the automatic repeat time of the temperature sensor.

Address: 20C_8000h base + 190h offset + (4d × i), where i=0d to 3d

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R W	Reserved																MEASURE_FREQ															
Reset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

TEMPMON_TEMPSENSE1*n* field descriptions

Field	Description
31–16 -	This field is reserved. Reserved.
MEASURE_ FREQ	This bits determines how many RTC clocks to wait before automatically repeating a temperature measurement. The pause time before remeasuring is the field value multiplied by the RTC period. 0x0000 Defines a single measurement with no repeat. 0x0001 Updates the temperature value at a RTC clock rate. 0x0002 Updates the temperature value at a RTC/2 clock rate. . . . — 0xFFFF Determines a two second sample period with a 32.768KHz RTC clock. Exact timings depend on the accuracy of the RTC clock.