Kernel driver jc42

Supported chips:

- Analog Devices ADT7408

  Datasheets:

  https://www.analog.com/static/imported-files/data_sheets/ADT7408.pdf

- Atmel AT30TS00, AT30TS002A/B, AT30TSE004A

  Datasheets:

  http://www.atmel.com/Images/doc8585.pdf

  http://www.atmel.com/Images/doc8711.pdf

  http://www.atmel.com/Images/Atmel-8852-SEEPROM-AT30TSE002A-Datasheet.pdf

  http://www.atmel.com/Images/Atmel-8868-DTS-AT30TSE004A-Datasheet.pdf

- IDT TSE2002B3, TSE2002GB2, TSE2004GB2, TS3000B3, TS3000GB0, TS3000GB2,

  TS3001GB2

  Datasheets:

  Available from IDT web site

- Maxim MAX6604

  Datasheets:

  http://datasheets.maxim-ic.com/en/ds/MAX6604.pdf

- Microchip MCP9804, MCP9805, MCP9808, MCP98242, MCP98243, MCP98244, MCP9843

  Datasheets:

  https://ww1.microchip.com/downloads/en/DeviceDoc/22203C.pdf

  https://ww1.microchip.com/downloads/en/DeviceDoc/21977b.pdf

  https://ww1.microchip.com/downloads/en/DeviceDoc/25095A.pdf

  https://ww1.microchip.com/downloads/en/DeviceDoc/21996a.pdf

  https://ww1.microchip.com/downloads/en/DeviceDoc/22153c.pdf

  https://ww1.microchip.com/downloads/en/DeviceDoc/22327A.pdf

- NXP Semiconductors SE97, SE97B, SE98, SE98A

  Datasheets:

  https://www.nxp.com/documents/data_sheet/SE97.pdf

  https://www.nxp.com/documents/data_sheet/SE97B.pdf

  https://www.nxp.com/documents/data_sheet/SE98.pdf

  https://www.nxp.com/documents/data_sheet/SE98A.pdf

- ON Semiconductor CAT34TS02, CAT6095

  Datasheet:

  https://www.onsemi.com/pub_link/Collateral/CAT34TS02-D.PDF

  https://www.onsemi.com/pub/Collateral/CAT6095-D.PDF

- ST Microelectronics STTS424, STTS424E02, STTS2002, STTS2004, STTS3000

  Datasheets:

  http://www.st.com/web/en/resource/technical/document/datasheet/CD00157556.pdf

  http://www.st.com/web/en/resource/technical/document/datasheet/CD00157558.pdf

http://www.st.com/web/en/resource/technical/document/datasheet/CD00266638.pdf

http://www.st.com/web/en/resource/technical/document/datasheet/CD00225278.pdf

http://www.st.com/web/en/resource/technical/document/datasheet/DM00076709.pdf

- JEDEC JC 42.4 compliant temperature sensor chips

  Datasheet:

  http://www.jedec.org/sites/default/files/docs/4_01_04R19.pdf

Common for all chips:

Prefix: 'jc42'

Addresses scanned: I2C 0x18 - 0x1f

Author:

Guenter Roeck <linux@roeck-us.net>

Description

This driver implements support for JEDEC JC 42.4 compliant temperature sensors, which are used on many DDR3 memory modules for mobile devices and servers. Some systems use the sensor to prevent memory overheating by automatically throttling the memory controller.

The driver auto-detects the chips listed above, but can be manually instantiated to support other JC 42.4 compliant chips.

Example: the following will load the driver for a generic JC 42.4 compliant temperature sensor at address 0x18 on I2C bus #1:

```
# modprobe jc42
# echo jc42 0x18 > /sys/bus/i2c/devices/i2c-1/new_device
```

A JC 42.4 compliant chip supports a single temperature sensor. Minimum, maximum, and critical temperature can be configured. There are alarms for high, low, and critical thresholds.

There is also an hysteresis to control the thresholds for resetting alarms. Per JC 42.4 specification, the hysteresis threshold can be configured to 0, 1.5, 3.0, and 6.0 degrees C. Configured hysteresis values will be rounded to those limits. The chip supports only a single register to configure the hysteresis, which applies to all limits. This register can be written by writing into temp1_crit_hyst. Other hysteresis attributes are read-only.

If the BIOS has configured the sensor for automatic temperature management, it is likely that it has locked the registers, i.e., that the temperature limits cannot be changed.

Sysfs entries

temp1_input	Temperature (RO)
temp1_min	Minimum temperature (RO or RW)
temp1_max	Maximum temperature (RO or RW)
temp1_crit	Critical high temperature (RO or RW)
temp1_crit_hyst	Critical hysteresis temperature (RO or RW)
temp1_max_hyst	Maximum hysteresis temperature (RO)
temp1_min_alarm	Temperature low alarm
temp1_max_alarm	Temperature high alarm
temp1_crit_alarm	Temperature critical alarm