Kernel driver mc13783-adc

Supported chips:

- Freescale MC13783

  Prefix: 'mc13783'

  Datasheet: https://www.nxp.com/docs/en/data-sheet/MC13783.pdf

- Freescale MC13892

  Prefix: 'mc13892'

  Datasheet: https://www.nxp.com/docs/en/data-sheet/MC13892.pdf

Authors:

- Sascha Hauer <s.hauer@pengutronix.de>
- Luotao Fu <l.fu@pengutronix.de>

Description

The Freescale MC13783 and MC13892 are Power Management and Audio Circuits. Among other things they contain a 10-bit A/D converter. The converter has 16 (MC13783) resp. 12 (MC13892) channels which can be used in different modes. The A/D converter has a resolution of 2.25mV.

Some channels can be used as General Purpose inputs or in a dedicated mode with a chip internal scaling applied .

Currently the driver only supports the Application Supply channel (BP / BPSNS), the General Purpose inputs and touchscreen.

See the following tables for the meaning of the different channels and their chip internal scaling:

- MC13783:

Channel	Signal	Input Range	Scaling
0	Battery Voltage (BATT)	2.50 - 4.65V	-2.40V
1	Battery Current (BATT - BATTISNS)	-50 - 50 mV	x20
2	Application Supply (BP)	2.50 - 4.65V	-2.40V
3	Charger Voltage (CHRGRAW)	0 - 10V / 0 - 20V	/5 /10
4	Charger Current (CHRGISNSP-CHRGISNSN)	-0.25 - 0.25V	x4
5	General Purpose ADIN5 / Battery Pack Thermistor	0 - 2.30V	No
6	General Purpose ADIN6 / Backup Voltage (LICELL)	0 - 2.30V / 1.50 - 3.50V	No / -1.20V
7	General Purpose ADIN7 / UID / Die Temperature	0 - 2.30V / 0 - 2.55V /	No / x0.9 / No
8	General Purpose ADIN8	0 - 2.30V	No
9	General Purpose ADIN9	0 - 2.30V	No
10	General Purpose ADIN10	0 - 2.30V	No
11	General Purpose ADIN11	0 - 2.30V	No
12	General Purpose TSX1 / Touchscreen X-plate 1	0 - 2.30V	No
13	General Purpose TSX2 / Touchscreen X-plate 2	0 - 2.30V	No
14	General Purpose TSY1 / Touchscreen Y-plate 1	0 - 2.30V	No
15	General Purpose TSY2 / Touchscreen Y-plate 2	0 - 2.30V	No

- MC13892:

Channel	Signal	Input Range	Scaling
0	Battery Voltage (BATT)	0 - 4.8V	/2
1	Battery Current (BATT - BATTISNSCC)	-60 - 60 mV	x20
2	Application Supply (BPSNS)	0 - 4.8V	/2
3	Charger Voltage (CHRGRAW)	0 - 12V / 0 - 20V	/5 /10
4	Charger Current (CHRGISNS-BPSNS) / Touchscreen X-plate 1	-0.3 - 0.3V / 0 - 2.4V	x4 / No
5	General Purpose ADIN5 / Battery Pack Thermistor	0 - 2.4V	No
6	General Purpose ADIN6 / Backup Voltage (LICELL) Backup Voltage (LICELL)	0 - 2.4V / 0 - 3.6V	No x2/3
7	General Purpose ADIN7 / UID / Die Temperature	0 - 2.4V / 0 - 4.8V	No / /2
12	General Purpose TSX1 / Touchscreen X-plate 1	0 - 2.4V	No
13	General Purpose TSX2 / Touchscreen X-plate 2	0 - 2.4V	No

Channel	Signal	Input Range	Scaling
14	General Purpose TSY1 / Touchscreen Y-plate 1	0 - 2.4V	No
15	General Purpose TSY2 / Touchscreen Y-plate 2	0 - 2.4V	No