

# 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>

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## 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      |