

Accessory charging and communication for smart earbuds with POW:COM

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POW:COM enables simultaneous battery charging and data exchange between charger cradle, earpiece and mobile phone

- Two pins per device increase design flexibility and improve charging reliability
- Improved user experience with enhanced communication capabilities

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General Description

Bluetooth earphones are gaining popularity and mobile charging for these devices is mandatory. Both, earphones and charger cradle, are equipped with electronics and sensors, but the connection between the charging case and the earphones is typically limited to two wires – ground and power. Without enhancing the capabilities of the two wires only power transfer for charging the battery is possible.

The AS3442/47 allows to extend the functionality of the two wire connection to enable charging and simultaneous communication to the earpiece. The MCU inside the charger cradle can request data from the earphone while the charging process is on-going and vice versa. In order to operate the system two chips per side are necessary. The master

device (AS3442), which is typically located in the charger cradle, and a client device (AS3447), which is located in the accessory. The master device features an I²C interface typically connected to a MCU inside the charger cradle to initiate the single wire connection to the client device. Furthermore it enables readout of AS3447 register and I²C sensors which are connected to the AS3442 I²C master interface. An interrupt signal line is available to detect status changes on GPIOs or if communication is interrupted.

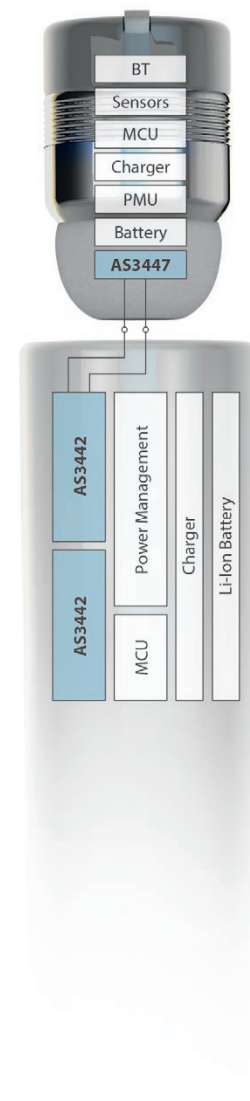
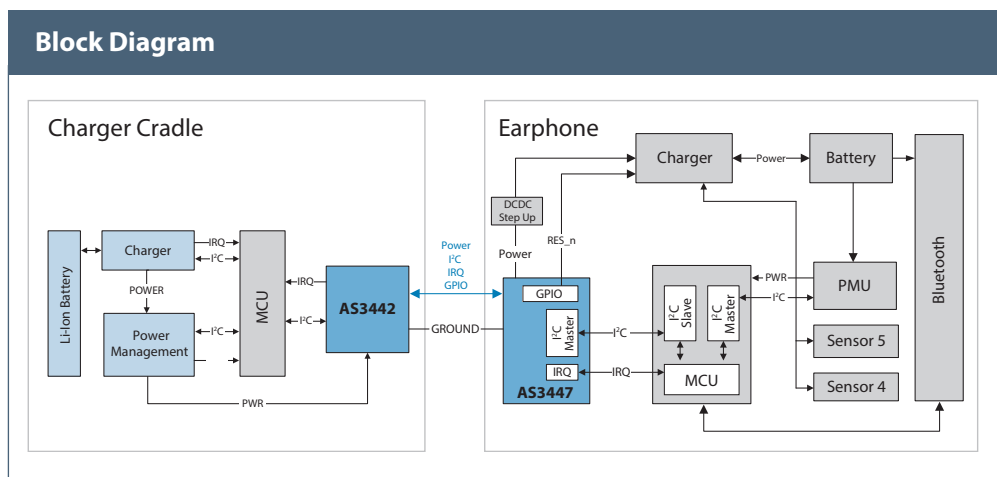
The client device features besides the I²C master interface up to 5 GPIOs which can be controlled via the host MCU. An interrupt input pin is available whose status signal is also transferred to host MCU accordingly.

Benefits

- Simultaneous battery charging (up to 150mA) and communication to earpiece with only two pins
- Reduced number of mechanical connections to accessory
- Enables smaller footprint with enhanced communication capabilities
- Increased design flexibility of accessory
- Enables data exchange between charger cradle and accessory

Features

- Showing the battery level of the charging box on the phone (instead of LED on the box itself)
- Automatically pair wireless earbuds with the phone when opening the charging case
- Restoring acoustic parameters to earphone in production line for ANC, beamforming after calibration
- Enabling headphone makers to build smaller and better-looking earbuds
- Accessory Firmware Updates



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