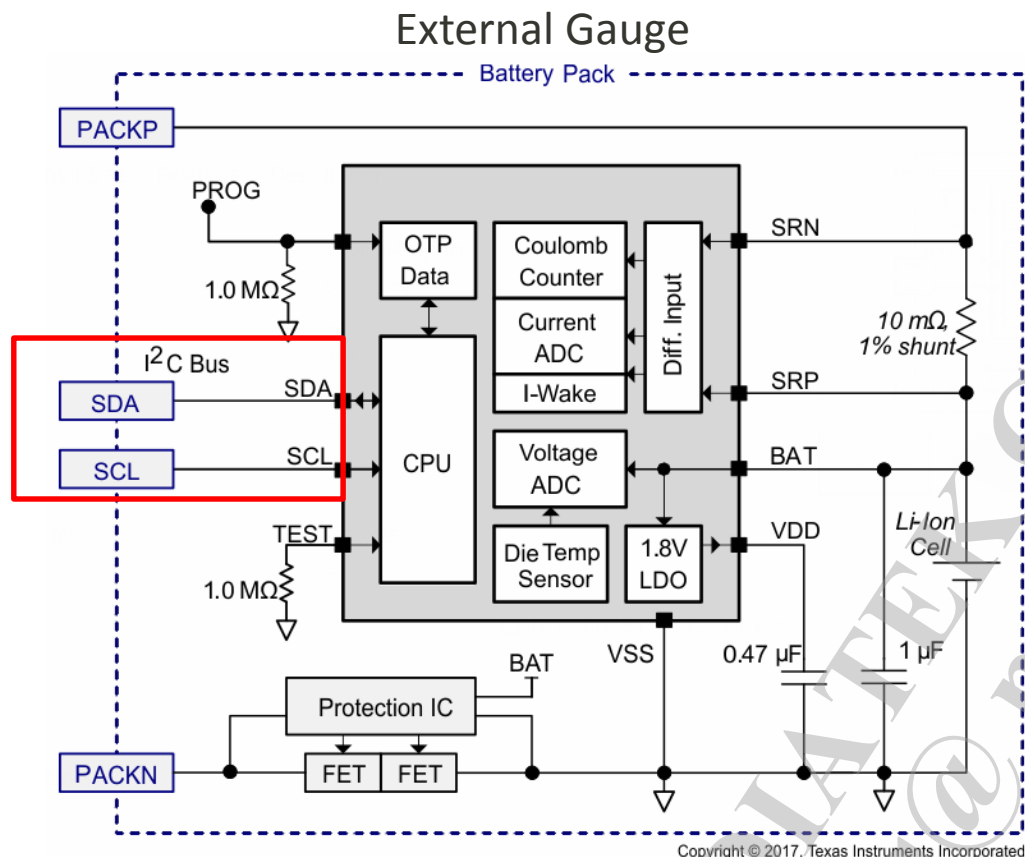


MTK gauge migration notes

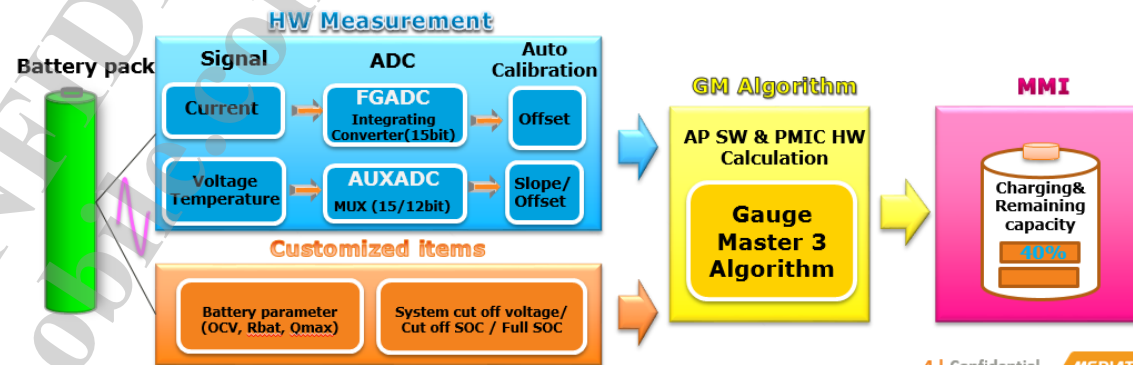
Timo Liao

External gauge vs MTK gauge solution



External Gauge IC:
Get SOC through I2C

MTK Gauge solution



MTK Gauge:

Using FGADC/AUXADC to observe battery.

Kernel side send raw data to Gauge Master 3(GM3) Algorithm
GM3 Algo send calculated uisoc/soc back to kernel.

How to migration

- Migration GM3 flow:
 - Enable GM3 in kernel config
 - check kernel config: CONFIG_MTK_GAUGE_VERSION=30
 - Put battery dtsi file
 - Put battery ZCV table and setting.
 - Check dependency function
 - Check charger IN/OUT and other dependency function
 - Start test
 - Using APIs to get soc/uisoc/vbat/ibat/bat_temp and related data

Enable GM3 in kernel config

- kernel-4.14/arch/arm64/configs/k6873v1_64_defconfig or related kernel config
 - add CONFIG_MTK_GAUGE_VERSION=30 to enable GM3
- After add CONFIG_MTK_GAUGE_VERSION=30, kernel will build related GM3 files:
 - kernel-4.14/arch/arm64/boot/dts/mediatek/bat_setting/mt6873_battery_prop.dtsi
 - Kernel-4.14/drivers/misc/mediatek/power/mt6873/mtk_battery_intf.c
 - kernel-4.14/drivers/misc/mediatek/pmic/mtk_battery_adc_intf.c
 - Kernel-4.14/drivers/power/supply/mediatek/battery/
 - kernel-4.14/drivers/misc/mediatek/pmic/mt6359/v1/mt6359_gauge.c

Add battery ZCV table to dtsi

- kernel-4.14/arch/arm64/boot/dts/mediatek/bat_setting
 - Put your battery ZCV table and battery parameter to this folder.
 - Contact MTK support team for how to retrieve battery ZCV table, the battery ZCV table may contains different battery temperature's OCV.
 - Contact MTK support team for how to correctly modify battery parameter, the battery parameter may adjust pseudo1/ pseudo100/ PMIC_MIN_VOL or other parameter.

APIs

- If you need to get fuelgauge data from other module, using these APIs
- kernel-4.14/drivers/misc/mediatek/power/mt6873/mtk_battery_intf.c

Item	API
Soc	signed int battery_get_soc(void)
Uisoc	battery_get_uisoc(void)
Vbat	battery_get_bat_voltage(void)
average battery current	signed int battery_get_bat_avg_current(void)
Battery current	signed int battery_get_bat_current(void)
Battery temperature	signed int battery_get_bat_temperature(void)

Check dependency functions

- MTK GM3.0 have some dependency with charger module. It need to receive some callback from charger module while these events occurs:
 - Charger plug_in
 - Charger plug_out
 - Charger start charging
 - Charger stop charging
 - Charging error
 - Charge normal
 - Charging full (EOC)
- Please check “Gauge dependency function” document for detail.