

## Application Note by Telit.

### Trizium: 5 Years RTC.

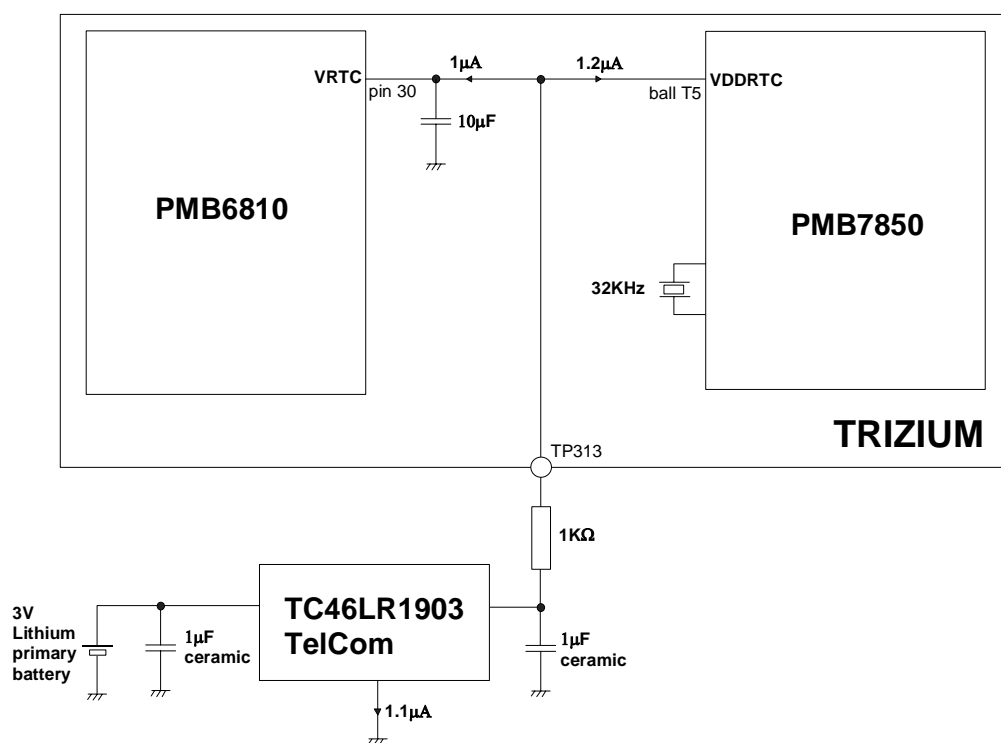
To obtain several working years for the Real Time Clock without V<sub>batt</sub> power supply voltage, it is necessary to make use of a lithium primary battery to supply the RTC circuits in the Trizium.

The operative voltage for VDDRTC (PMB7850) is 1.80V...2.25V, whereas the voltage of primary lithium voltage is 3V nominal.

It is necessary to put a LDO voltage regulator in the circuit.

Fig. 1 shows the resultant circuit.

The quoted current intensity are without V<sub>batt</sub> power supply for the Trizium.



**Fig. 1**

The TC46LR1903 TelCom LDO has **1.1μA Typ** for the quiescent current.

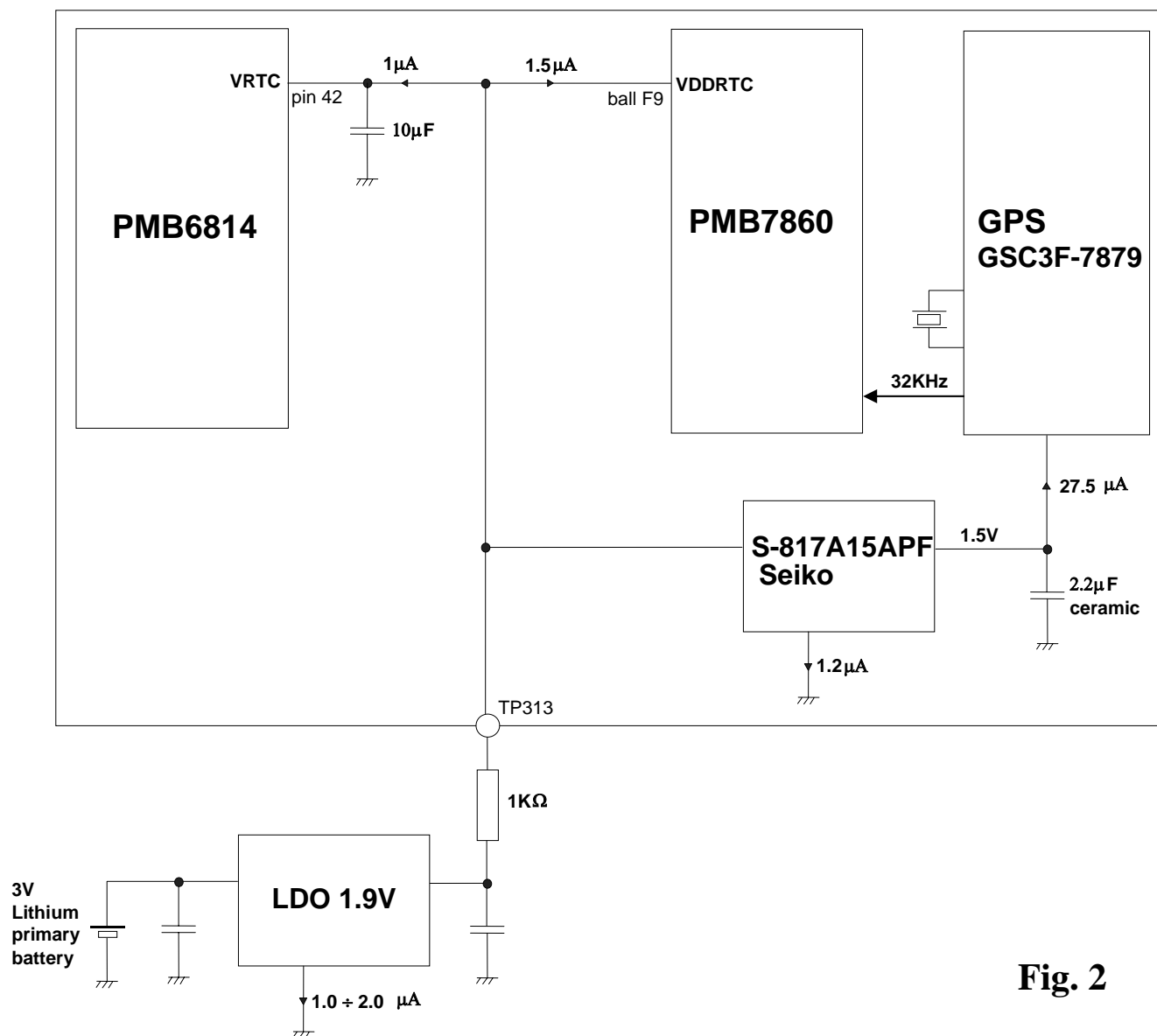
Without V<sub>batt</sub> power supply voltage, the VRTC Reverse Current (PMB6810) is **1μA Typ**. The VDDRTC current (PMB7850) is **1.2μA Typ**.

Consequently, for 5 years (without V<sub>batt</sub>, the worst case), the Lithium Primary Battery must supply 145 mAh plus its autodischarge. At ambient temperature 20°C, the BR2032 coin type (Panasonic 190 mAh) should be sufficient for 5 years with **typical current intensity**. The CR2032 coin type (Panasonic 220 mAh) has an improved behaviour at low and high temperatures.

When the V<sub>batt</sub> voltage is present, the VRTC voltage exceeds the TC46LR1903 output voltage, so the current for the Lithium Primary Battery is only **1.1μA Typ (or less)**.

**“Lite” + GPS: Primary Battery for RTC.**

The overall current intensity for the RTC regarding “Lite” (PMB6814 & PMB7860) + GPS (GSC3F – 7890) is about  $31 \mu\text{A}$  @  $1.9\text{V}$ , obviously, without main power supply for the module. We can make use of the Fig. 2 schematic diagram.



**Fig. 2**

When the main power supply for the module ( $V_{\text{batt}}$ ) is present, the Lithium Primary Battery supplies only the quiescent current for the LDO, so, the Lithium Primary Battery working time will be increased.

The minimum voltage at the TP313 is 1.6 V.