

Power and clock management

Power management unit (PMU)

Power and clock management in nRF52840 is designed to automatically ensure maximum power efficiency.

The PMU automatically detects which power and clock resources are required by the different system components at any given time. The PMU will then automatically start/stop and choose operation modes in supply regulators and clock sources, *to achieve the lowest power consumption possible.*

Current consumption

Supply : 3V on VDD/VDDH (Normal voltage mode)

Page 59, part 5.2.1.1 : consumption depending on which event, more info

Consumption depending on the temperature

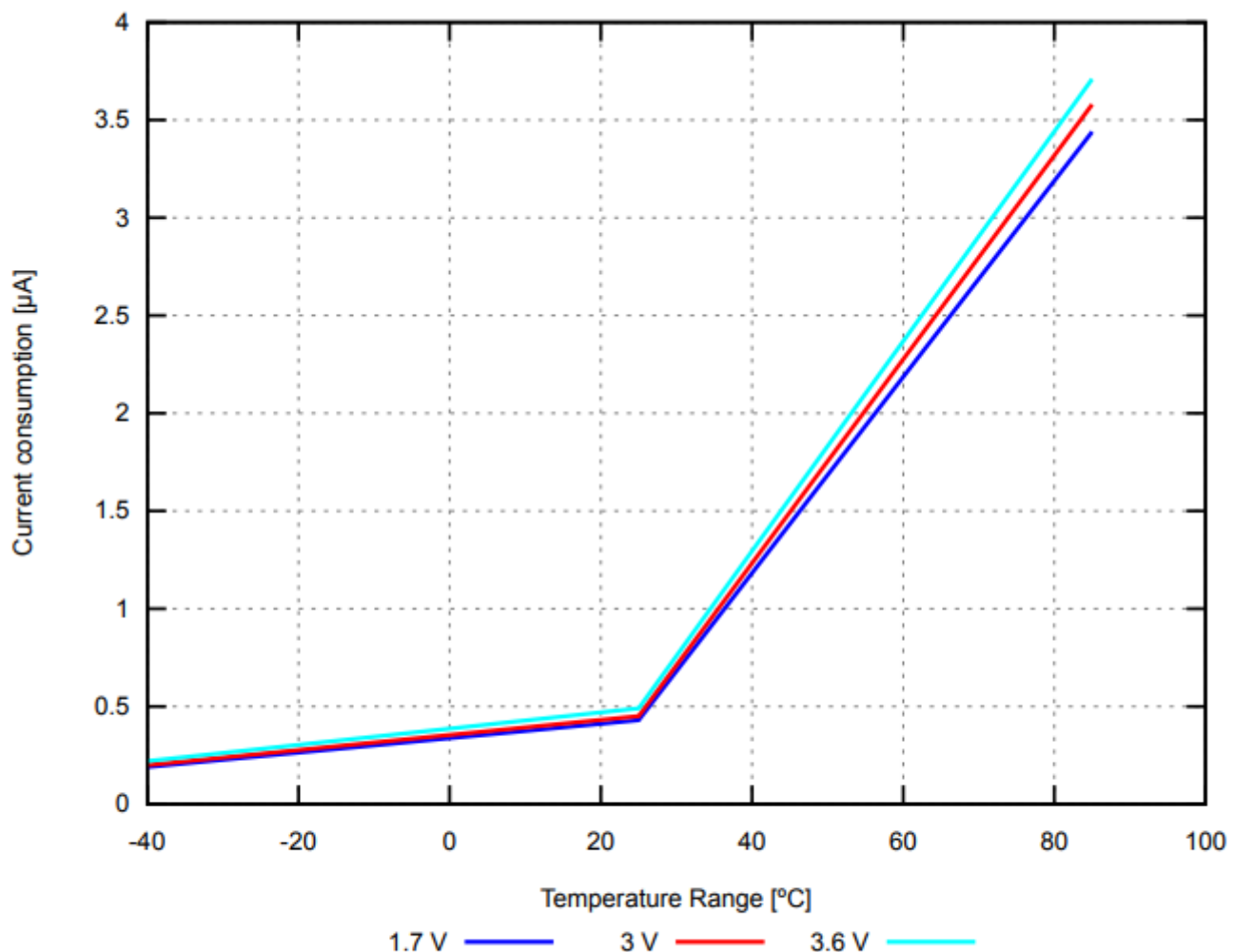


Figure 11: System OFF, no RAM retention, wake on reset (typical values)

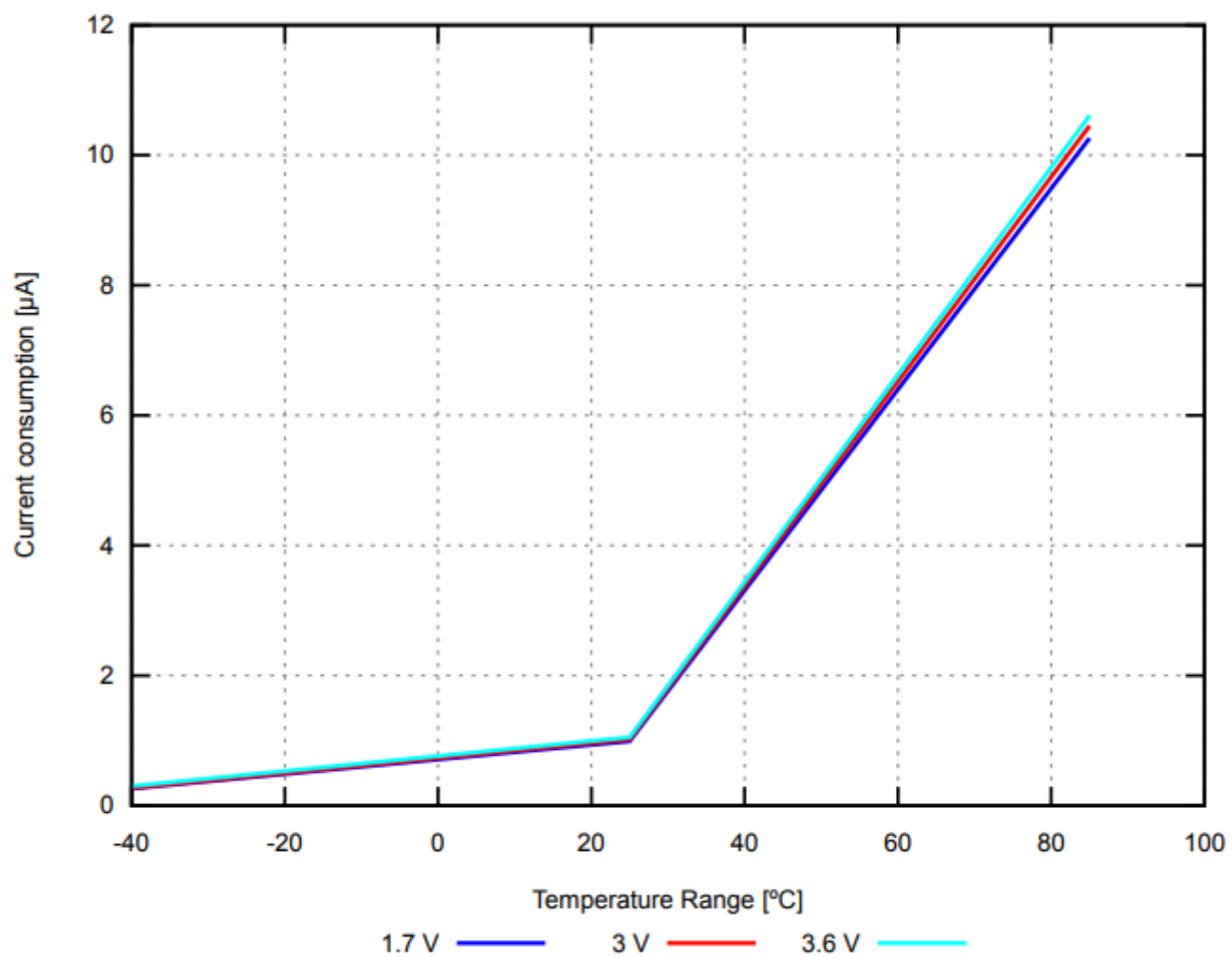
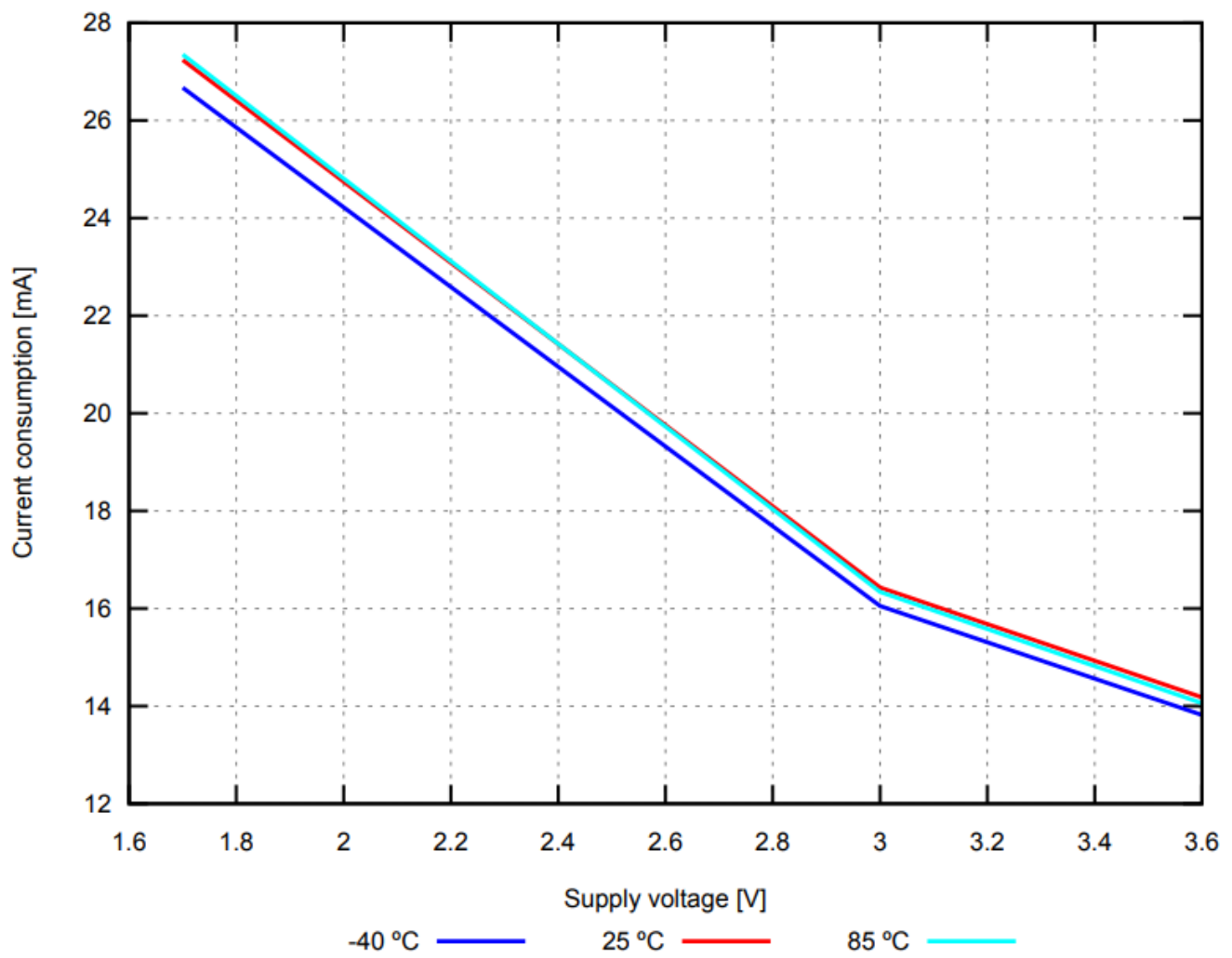


Figure 12: System ON, no RAM retention, wake on any event (typical values)



*Figure 13: Radio transmitting @ 8 dBm output power, 1 Mbps
BLE mode, Clock = HFXO, Regulator = DC/DC (typical values)*

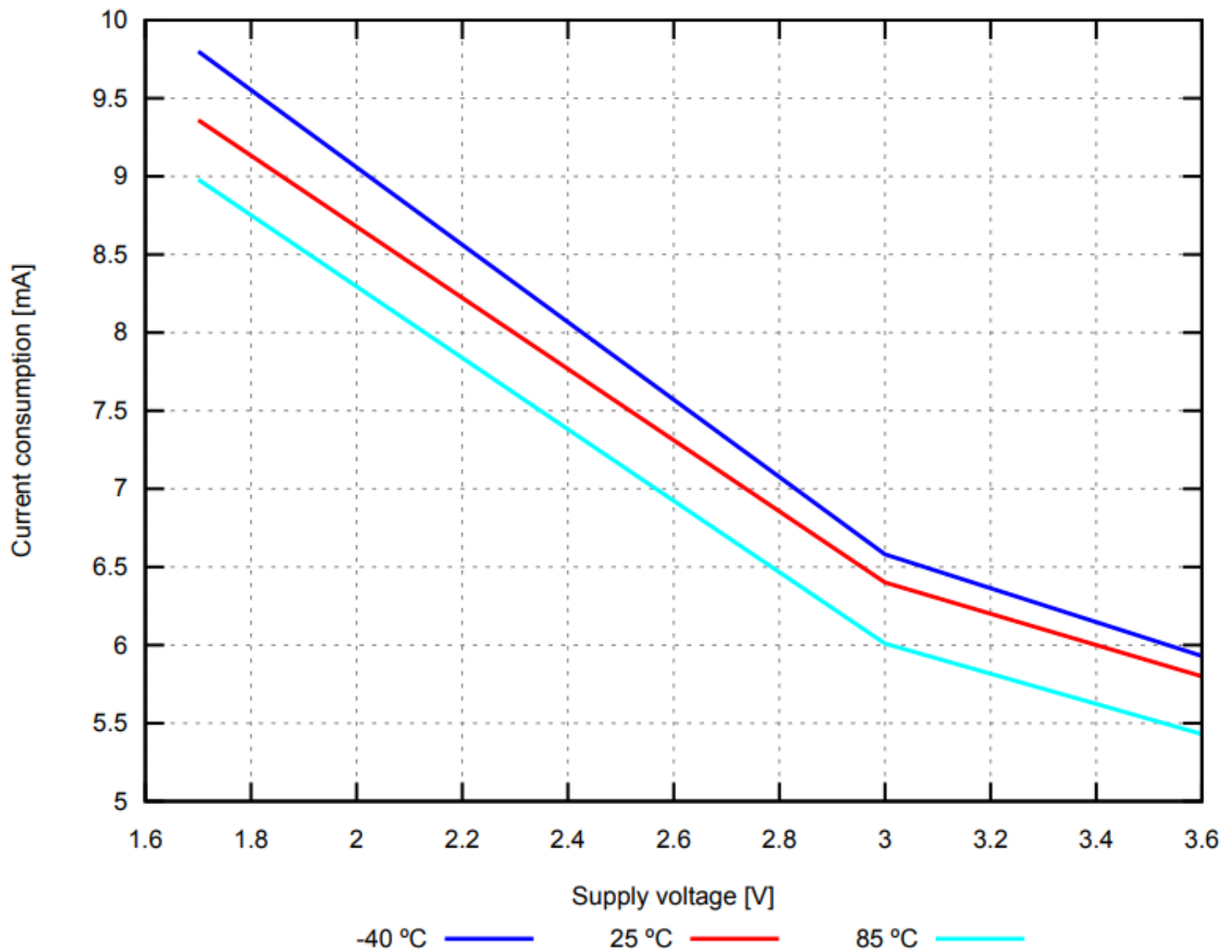


Figure 14: Radio transmitting @ 0 dBm output power, 1 Mbps BLE mode, Clock = HFXO, Regulator = DC/DC (typical values)

Power supply

The power supply consists of a number of LDO and DC/DC regulators that are utilized to maximize the system's power efficiency.

This device has the following power supply features:

- On-chip LDO and DC/DC regulators
- Global System ON/OFF modes
- Individual RAM section power control for all system modes
- Analog or digital pin wakeup from System OFF
- Supervisor hardware to manage power-on reset, brownout, and power failure
- Auto-controlled refresh modes for LDO and DC/DC regulators to maximize efficiency
- External circuitry supply
- Separate USB supply

Main supply

The main supply voltage is connected to the VDD/VDDH pins. The system will enter one of two supply voltage modes, Normal or High Voltage mode, depending on how the supply voltage is connected to these pins.

[info] Note:

VDD and VDDH are shortcircuited inside the QFN48 package. Therefore the QFN48 device is only usable in Normal Voltage supply mode, and not High Voltage supply mode.

The system enters Normal Voltage mode when the supply voltage is connected to both the VDD and VDDH pins (pin VDD shorted to pin VDDH). For the supply voltage range to connect to both VDD and VDDH pins, see parameter VDD.