Fact Sheet

PCA9420/21

Designed to provide a full power management solution for low power applications

NXP's PCA9420/21 are highly-integrated Power Management ICs (PMIC), greatly extends battery life, thanks to our light load power efficiency, ultra-low standby power, two integrated high-efficiency buck regulators, ultra-small footprint, and built-in "mode transition" function for fast PMIC operation mode switch. Easily compatible with an array of different MCU operation modes. PCA9420 enables a new wave of power efficient devices for li-ion battery powered low power applications, such as hearable, fitness band, watch.

Key features

- Ultra-compact Low-Iq PMIC for Li-ion battery powered low power applications
- High light load efficiency allow longer system battery standby or ease of complying with energy standards
- Support for multiple system rails including sensitive signal chain
- Highly integrated solution, flexible programmability, small solution size
- 20V DC Tolerance on Vin Pin with Programmable OVP
- Fm+ 1MHz I2C Interface
- Offered in two package options:
  - WLCSP 25-bump, 2.09 mm x 2.09 mm, 0.4 mm pitch
  - QFN 24-pin 3 mm x 3 mm

Target applications

- Wearable devices
- Hearable devices
- Other low-power applications powered by li-ion battery (only for PCA9420)
- Home control panels
- Robotic appliances
- Gaming accessories
- Home appliances

Pinout diagrams

Bias/Timing

- Internal bias
- Power on sequence/timing

Logic Control

- Power on/off sequence
- I²C communication
- MODE selection

Protection

- Thermal warning/protection
- VIN OVP/ UVLO
- Current limit

Linear Regulator

Linear Battery Charger*
VBAT_REG Programmable
3.6 V~4.6 V, 20 mV/step
ICHG up to 315 mA
5 mA/step

NTC

Regulators

SW1
Core buck
0.5 V to 1.5 V, 1.8 V
(25mV/step)
250 mA

SW2
System buck
1.5 V~2.1 V, 2.7 V~3.3 V
(25 mV/step)
500 mA

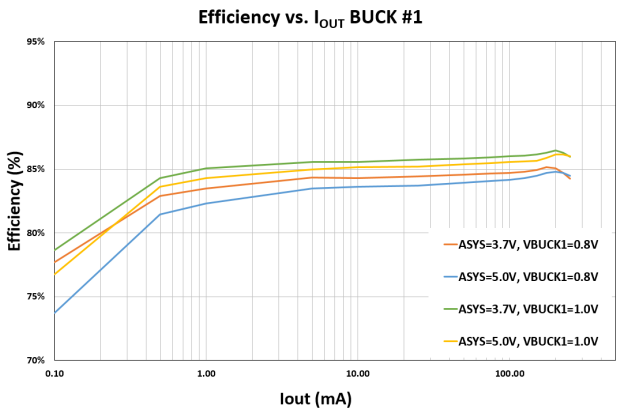
LDO1
Always-on LDO
1.7 V~1.9 V
(25 mV/step)
1 mA

LDO2
System LDO
1.5 V~2.1 V, 2.7 V~3.3 V
(25 mV/step)
250 mA

*Linear Battery Charger is optional for PCA9421

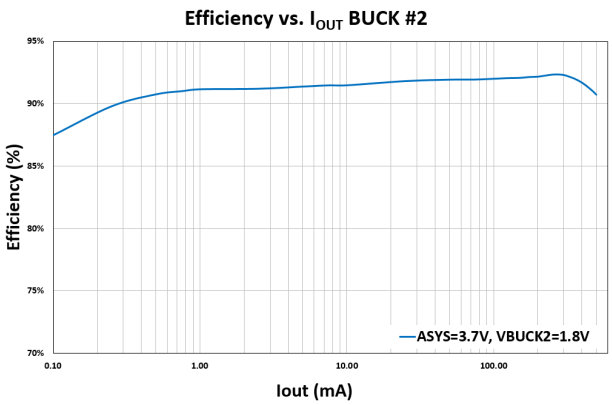
Operation Characteristics

Efficiency Curves for SW1

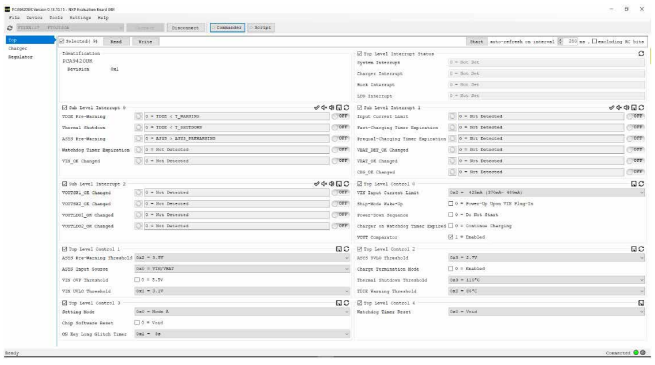


Labeled Photo of Efficiency Curve #1

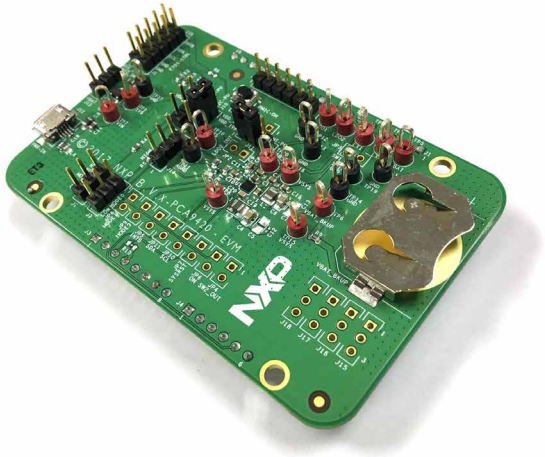
Efficiency Curves for SW2



Evaluation Kit GUI



Evaluation Kit



To get started and to learn more, visit www.nxp.com/PCA9420 and www.nxp.com/PCA9421

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