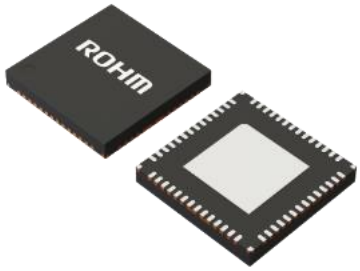
ROHM SEMICONDUCTOR Innovations Embedded

Product Brief

System PMIC BD71850MWV for i.MX 8M Nano Application Processor

BD718450MWV is a single-chip power solution for multicore multimedia System on a Chip (SoC) such as NXP's i.MX8M Nano application processors. It integrates power supplies for processor, memory, and system peripherals. As an OTP variant of Rohm's BD71847AMWV PMIC for 8M Mini, BD71850MWV is a proven solution and is featured on NXP's 8M Nano EVK.

BD71850MWV integrates 6 step-down converters and 6 general purpose LDOs. When used with 8M Nano, one buck and two LDOs are available for user-defined uses. Operating at 1.5- and 2 MHz and supplying up to 3A each, the buck converters achieve 83%-95% efficiency. Five converters support DVFS for dynamic power optimization. To minimize loss, the on-chip bucks supply power to LDOs with low output voltages (after power-on) To realize lowest bill of materials cost, the PMIC integrates a programmable power button, 32-kHz crystal driver, buffered output clock, and extensive monitoring and protection circuitry.



Target Consumer and Industrial Applications

- Streaming media boxes and dongles
- Smart speakers, sound bars, AV receivers
- Industrial SBC, IPC, HMI, control panels
- Smart home devices, connected appliances

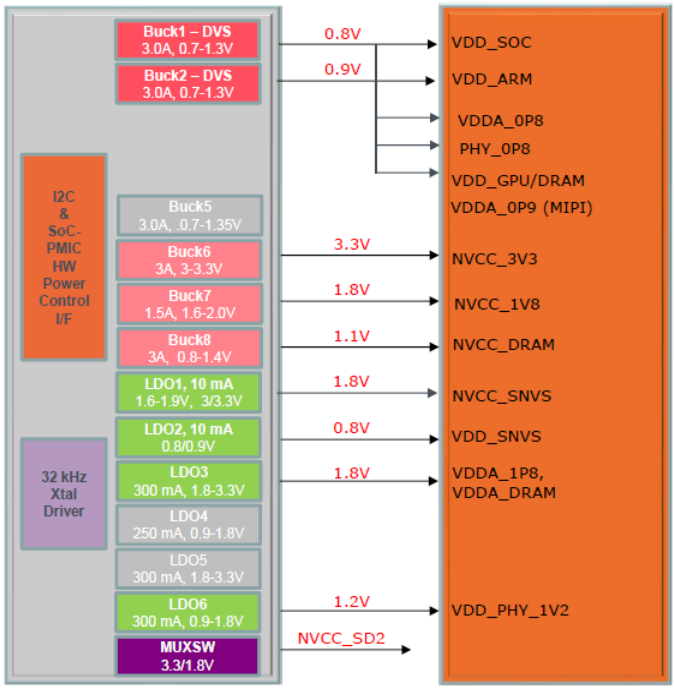
Availability

- Qualified samples: Now
- Production: Dec 2019

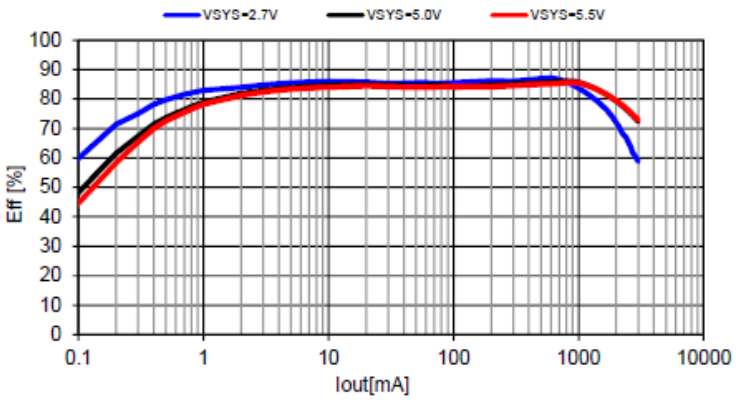
Key Features

- All-in-one system PMIC for quadcore multimedia SoCs, optimized for NXP i.MX 8M Nano
- 6 buck converters (5x 3A, 1x 1.5A), 1.5 & 2 MHz, 0.47 uH inductors
- Output voltage accuracy: +/-1.5%. Bucks 1-5 support DVS with 10-mV step
- 4 general purpose LDOs + 2 10-mA LDOs
- 2.7V – 5.5V input source
- 14 uA OFF mode. 30 uA timekeeping (SNVS) mode
- OTP configurable power sequencing, output voltages, power state and reset behavior
- Power button, 32 kHz crystal driver and buffered clock, 1.8V/3.3V power mux for SDXC
- Glueless power control hardware interface with i.MX 8M Nano
- I2C interface: configurable 1.8V - 3.3V, 100 kHz, 400 kHz, 1 MHz
- QFN-56, 7 x 7 x 1 mm, 0.4-mm pitch.
- Driver integrated into i.MX BSP. Linux and Android source code available

i.MX8M Nano + BD81850MWV Block Diagram



Buck converter efficiency



Load	BUCK1 (0.8V)	BUCK2 (0.9V)	BUCK5 (0.9V)	BUCK6 (3.3V)	BUCK7 (1.8V)	BUCK8 (1.1V)
1mA	78.9	79.3	79.1	92.2	85.0	82.4
500mA	85.2	85.2	84.3	94.4	89.4	87.4
Io max	72.2 (Io=3.0A)	74.2 (Io=3.0A)	72.6 (Io=3.0A)	88.4 (Io=3.0A)	87.6 (Io=1.5A)	77.3 (Io=3.0A)