



Designed for
the i.MX 8M
applications
processor family

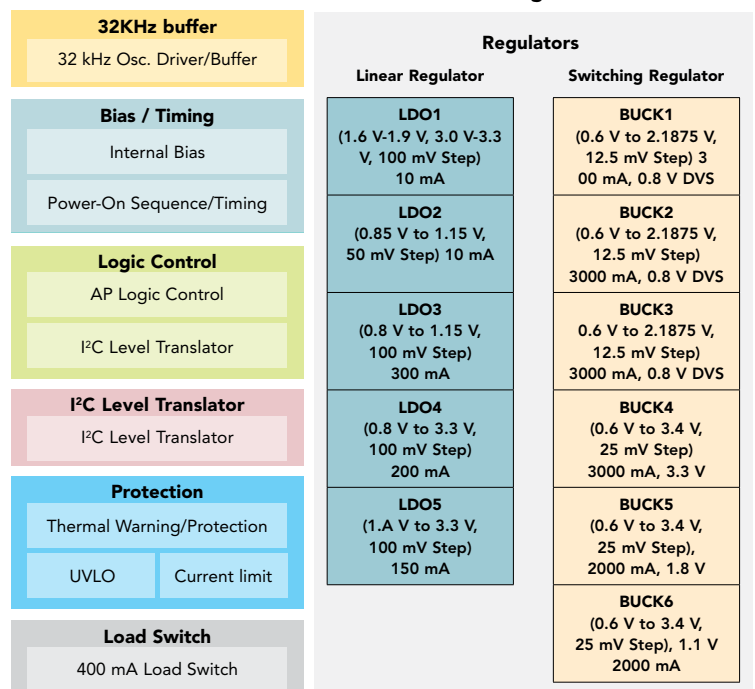
PCA9450 Power Management IC

The single-chip PCA9450 power management IC (PMIC) supports the i.MX 8M processor family across a variety of smart home, smart city, edge computing, industrial, and industrial IoT applications.

PCA9450 PMICs support various memory types (DDR4, LPDDR4, DDR3L, etc.) via system UBOOT configuration, which does not require hardware change.

The device provides six high-efficiency regulators, five LDOs, one 400 mA load switch, two channel level translators and a 32.768 kHz crystal oscillator driver. Three buck regulators support Dynamic Voltage Scaling (DVS) feature along with programmable ramping up and down time and those buck regulators support remote sense to compensate IR drop to load. This device is characterized across -40°C to 105°C ambient temperature range.

PCA9450 Functional Block Diagram



KEY FEATURES AND BENEFITS

- ▶ Six high-efficiency step-down regulators
 - Three 3 A buck regulators with DVS feature and remote sense
 - **PCA9450A** – Three 3 A buck regulators
 - **PCA9450B** – Two 3 A buck regulators
 - **PCA9450C** – 6 A dual-phase buck regulator and 3 A buck regulator
 - One 3 A buck regulator
 - Two 2 A buck regulators
- ▶ Five linear regulators
 - Two 10 mA LDOs
 - One 150 mA LDO
 - One 200 mA LDO
 - One 300 mA LDO
- ▶ Support various memory types: DDR4/LPDDR4/DDR3L via system UBOOT configuration, no hardware change required
- ▶ 400 mA load switch with built-in active discharge resistor
- ▶ 32.768 kHz crystal oscillator driver and buffer output
- ▶ Two-channel logic level translator
- ▶ Power control I/O–Power ON/OFF control–Standby/run mode control
- ▶ Fm+ 1 MHz I²C-bus interface
- ▶ ESD protection–Human Body Model (HBM) : +/- 2000 V – Charged Device Model (CDM) : +/-500 V
- ▶ 7 mm x 7 mm, 56 pin HVQFN with 0.4 mm

TARGET APPLICATIONS

- ▶ **Smart Home:** AI local server, alarm hub and security systems, smart robot, access, control, home patient monitors, sound bars, AV receivers, and other home automation applications
- ▶ **Smart City:** safety and security, surveillance, crowd and traffic control, transportation management and driver monitoring, public address systems
- ▶ **Smart World:** smart retail, POS interfaces targeted advertisement, building control, teleconferencing systems and healthcare diagnostics
- ▶ **Industrial IOT:** machine vision, robot controller, industrial gateway, HMI and computers, commercial printers and scanners, industrial tablets, smart industrial cameras and multiple factory automation applications
- ▶ **Edge Computer:** voice assistants, voice control
- ▶ **Industrial:** digital signage, machine visual inspection, image analytics, two-way video conferencing

PCA9450 SUPPORTS i.MX 8M MINI/NANO/PLUS BY PIN CONFIGURATION AND FACTORY SETTING

Part Number	AP Platform	BUCK1	BUCK3	LD04	R_SNSP3_CFG
PCA9450A	i.MX 8M Mini	3 A for SOC (ON by default)	3 A for SOC VPU/GPU/DRAM (ON by default)	0.9 V for VDDA (ON by default)	R_SNSP3_CFG is feedback of BUCK 3
PCA9450B	i.MX 8M Nano	3 A for SOC VPU/GPU/DRAM (ON by default)	Disabled	OFF by default	R_SNSP3_CFG = VSYS
PCA9450C	i.MX 8M Plus	6 A for SOC VPU/GPU/DRAM (ON by default)	6 A for SOC VPU/GPU/DRAM (ON by default)	OFF by default	R_SNSP3_CFG = GND

Reference designs including i.MX 8M family and PCA9450 products are available. Please contact NXP team for more details.