

POWER MANAGEMENT INTEGRATED CIRCUITS (PMICs)



| SECURE CONNECTIONS
FOR A SMARTER WORLD |

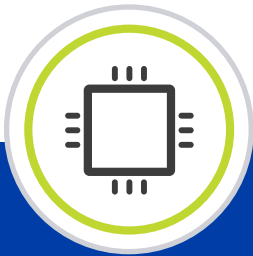
NXP PMICs are highly integrated, high-performance power management solutions for automotive, consumer and industrial

Our PMICs provide scalable, robust and proven platform solutions for high-performance applications processors, networking and other processors.

Using innovative process technologies, our PMICs offer high-efficiency solutions designed to extend battery life, reduce power dissipation and minimize EMC.

These PMICs bring an advanced level of configurability and programmability at the system level.

A single device can be easily configured to power a wide range of processors or FPGAs. One-time programmable (OTP) memory stores configuration without the need for external memory.



**SYSTEM
SOLUTION**



EFFICIENCY



SAFETY

YOUR FUNCTIONAL SAFETY AND POWER MANAGEMENT PARTNER

**ENABLING SMART SYSTEM POWER PLATFORM
STRATEGIES FOR FLEXIBLE AND SCALABLE SOLUTIONS FOR DIFFERENT MARKETS**



AUTOMOTIVE



INDUSTRIAL



SMART HOME

KEY FEATURES

- Switching and linear regulators
- Battery management functions
- Optimized power modes management
- OTP memory for flexible configurability
- System interface and control for advanced scalability
- One-stop customer service and support as part of reference design platforms
- Auto-sync signaling enables all devices to be synchronized and act as one single PMIC
- Advanced Functional Safety Architecture

BYLINK SYSTEM POWER PLATFORM

The missing link to safely power all ECUs.

NXP's safe, scalable, expandable BYLink System Power Platform is the answer to an easy and vital link towards a safe and configurable power management design, connecting various NXP SBCs/PMICs devices together as a single power system.

ADDRESSES KEY CHALLENGES

- Power dissipation management
- Functional safety integration
- Complex power up/down sequence management

KEY BENEFITS

- Accelerate time-to-market
- Simplify safety analysis
- Enable platform approach

www.nxp.com/BYLink

PMIC COMMUNITY

The PMIC community is a dedicated community with experts available to answer your questions.

<https://community.nxp.com/community/Power-Management>

POWER MANAGEMENT IC

	Features	PCA9420	PCA9450	PCA9460	PF0100	PF0200	PF1510
Power Management Features	Orderable part numbers	PCA9420UKZ PCA9420BSZ	PCA9450AAHNY PCA9450BHNY PCA9450CHNY	PCA9460AUK PCA9460BUK PCA9460CUK	MMPF0100xxAEP	MMPF0200xxAEP	MC34PF1510xxEP
	Buck	1*(0.5 V~1.5 V or fixed 1.8 V/250 mA) 1*(1.5 V~2.1 V, 2.7 V~3.3 V/500 mA)	3*(0.6 V~2.1875 V/3 A) 1*(0.6 V~3.4 V/3 A) 2*(0.6 V~3.4 V/2 A)	2*(0.6 V ~3.4 V/1A) 2*(0.6 V~2.1875 V/1A)	1*(0.3 V~1.875 V/2.5 A) 1*(0.3 V~1.875 V/2 A) 1*(0.4 V~3.3 V/2 A, 1.2 V~3.3 V/2.5 A) 2*(0.4 V~3.3 V/1.25 A) 1*(0.4 V~3.3 V/1 A)	1*(0.3 V~1.875 V/2.5 A) 1*(0.4 V~3.3 V/1.5 A) 2*(0.4 V~3.3 V/1.25 A)	2*(0.6 V~1.3875 V or 1.1 V~3.3 V /1A) 1*(1.8 V~3.3 V/1A)
	Boost	–	–	–	1*(5 V~5.15 V/600 mA)	1*(5 V~5.15 V/600 mA)	–
	LDO	1*(1.70 V~1.90 V/1 mA) 1*(1.5 V~2.1 V, 2.7 V~3.3 V/250 mA)	1*(1.6 V~1.9 V, 3.0 V~3.3 V/10 mA) 1*(0.8 V~1.15 V/10 mA) 1*(0.8 V~3.3 V/300 mA) 1*(0.8 V~3.3 V/200 mA) 1*(0.8 V~3.3 V/150 mA)	3*(0.8 V~3.3 V/250 mA) 1*(0.8 V~3.3 V/10 mA) 1*(0.6 V~1.95 V/250 mA)	1*(0.8 V~1.55 V/100 mA) 1*(0.8 V~1.55 V/250 mA) 2*(1.8 V~3.3 V/100 mA) 1*(1.8 V~3.3 V/350 mA) 1*(1.8 V~3.3 V/200 mA)	1*(0.8 V~1.55 V/100 mA) 1*(0.8 V~1.55 V/250 mA) 2*(1.8 V~3.3 V/100 mA) 1*(1.8 V~3.3 V/350 mA) 1*(1.8 V~3.3 V/200 mA)	2*(0.75 V~1.5 V/1.8 V ~3.3 V/300 mA) 1*(1.8 V~3.3 V/400 mA)
	Others	Charger	Load Switch, I ² C Level Translator	4* Load Switch	Coin-cell charger	Coin-cell charger	USB_PHY LDO (3.3 V or 4.9 V/60 mA); VREFDDR LDO (0.45 V~0.9 V/10 mA)
Safety Features (listed for higher level of ASIL)	Fit for ASIL	QM	QM	QM	QM	QM	QM
	Watchdog	Yes	–	–	–	–	Yes
	BIST	–	–	–	–	–	–
	ABIST On Demand	–	–	–	–	–	–
	Safety Output	–	–	–	–	–	–
	Documentation/Analysis	–	–	–	–	–	–
System Features	Operating Voltage (V)	2.5 – 5.5	2.7 – 5.5	3.0 – 5.5	2.85 – 4.5	2.8 – 4.5	2.65 – 6.0
	Ambient Temp Range (°C)	-40 °C to 85 °C	-40 °C to 105 °C	-40 °C to 85 °C	-40 °C to 85 °C / 105 °C	-40 °C to 85 °C / 105 °C	-40 °C to 85 °C / 105 °C
	Low-power Off Mode (25 °C) All Reg Off	Low power with ship mode	–	–	–	–	–
	GPIO	1.8 V	1.8 V / 3.3 V	1.8 V / 3.3 V	–	–	1.8 V / 3.3 V
	AMUX (battery, I/O, temp, VREF)	–	–	–	–	–	–
	Communication	I ² C	I ² C	I ² C	I ² C	I ² C	I ² C
	Special Features	Linear battery charger integrated	Load Switch, I ² C Level Translator	Load Switch	Coin-cell charger RTC Supply	Coin-cell charger RTC Supply	Coin-cell charger RTC Supply
	Package (mm)	HVQFN24 (3 mm x 3 mm x 0.85 mm) or WLCSP25 (2.09 mm x 2.09 mm x 0.525 mm)	HVQFN56 (7 mm x 7 mm x 0.85 mm)	WLCSP42 (2.86 mm x 2.46 mm x 0.525 mm)	QFN56 (8 mm x 8 mm x 0.85 mm)	QFN56 (8 mm x 8 mm x 0.85 mm)	HVQFN406 (5 mm x 5 mm x 0.85 mm)
MCU alignment	i.MX RT600 i.MX RT500 (BSP available)	i.MX 8M Mini i.MX 8M Nano i.MX 8M Plus (BSP available)	i.MX 8ULP	i.MX 6S / D / Q / QP / SL / SX (BSP available)	i.MX 6SL / SX (BSP available)	i.MX 7ULP, 6UL, 6ULL, 6ULZ (BSP available)	
BYLink System Power Platform	–	–	–	–	–	–	

POWER MANAGEMENT IC (continued)

	Features	PF1550	PF3000	PF3001	PF4210	VR500	VR5100
Power Management Features	Orderable part numbers	MC32PF1550xxEP	MC32PF3000xxEP	MC32PF3001xxEP	MC32PF4210xxES	MC34VR500VxES	MC34VR5100xxEP
	Buck	2*(0.6 V~1.3875 V or 1.1 V~3.3 V /1A) 1*(1.8 V~3.3 V/1A)	1*(0.7 V~1.425 V, 1.8V, 3.3 V/1 A) 1*(0.7 V~1.475 V/1.75 A) 1*(1.5 V~1.85 V, 2.5 V~3.3 V/1.25 A) 1*(0.9 V~1.65 V/1.5 A)	1*(0.7 V~1.425 V, 1.8 V, 3.3 V/2.75 A) 1*(1.5 V~1.85 V, 2.5 V~3.3 V/1.25 A) 1*(0.9 V~1.65 V/1.5 A)	1*(0.3 V~1.875 V/2.5 A) 1*(0.3 V~1.875 V/2 A) 2*(0.4 V~3.3 V/3 A) 1*(0.4 V~3.3 V/1.5 A)	1*(0.625 V~1.875 V/4.5 A) 1*(0.625 V~3.3 V/2 A) 1*(0.625 V~3.3 V/2.5 A)	1*(0.7 V~1.425 V, 1.8 V, 3.3 V/3.8 A) 1*(1.5 V~1.85 V, 2.5 V~3.3 V/1.25 A) 1*(0.9 V~1.65 V/1.5 A)
	Boost	–	1*(5 V~5.15 V/600 mA)	–	1*(5 V~5.15 V/600 mA)	–	1*(5 V~5.15 V/600 mA)
	LDO	2*(0.75 V~1.5 V/1.8 V~3.3 V/300 mA) 1*(1.8 V~3.3 V/400 mA)	1*(1.8 V~1.85 V, 2.85 V~3.3 V/100 mA) 1*(2.85 V~3.3 V/350 mA) 1*(0.8 V~1.55 V/250 mA) 2*(1.8 V~3.3 V/100 mA) 1*(1.8 V~3.3 V/350 mA)	1*(1.8 V~1.85 V, 2.85 V~3.3 V/100 mA) 1*(2.85 V~3.3 V/350 mA) 1*(0.8 V~1.55 V/250 mA) 2*(1.8 V~3.3 V/100 mA) 1*(1.8 V~3.3 V/350 mA)	1*(0.8 V~1.55 V/100 mA) 1*(0.8 V~1.55 V/250 mA) 2*(1.8 V~3.3 V/100 mA) 1*(1.8 V~3.3 V/350 mA) 1*(1.8 V~3.3 V/200 mA)	1*(0.8 V~1.55 V/250 mA) 2*(1.8 V~3.3 V/100 mA) 1*(1.8 V~3.3 V/350 mA) 1*(1.8 V~3.3 V/200 mA)	1*(2.85 V~3.3 V/350 mA) 1*(0.8 V~1.55 V/250 mA) 1*(1.8 V~3.3V/350 mA)
	Others	USB_PHY LDO (3.3 V or 4.9 V/60 mA); VREFDDR LDO (0.45 V~0.9 V/10 mA)	Coin-cell charger	Coin-cell charger	Coin-cell charger	–	Coin-cell charger
	Safety Features (listed for higher level of ASIL)	Fit for ASIL	QM	QM	QM	QM	QM
Watchdog		Yes	–	–	–	–	–
BIST		–	–	–	–	–	–
ABIST On Demand		–	–	–	–	–	–
Safety Output		–	–	–	–	–	–
Documentation/Analysis		–	–	–	–	–	–
System Features	Operating Voltage (V)	2.65 – 6.0	2.8 – 5.5	2.8 – 5.5	2.8 – 4.5	2.8 – 4.5	2.8 – 4.5
	Ambient Temp Range (°C)	-40 °C to 85 °C / 105 °C	-40 °C to 85 °C / 105 °C	-40 °C to 85 °C / 105 °C	-40 °C to 85 °C / 105 °C	-40 °C to 105 °C	-40 °C to 105 °C
	Low-power Off Mode (25 °C) All Reg Off	Low power with ship mode	–	–	–	–	–
	GPIO	1.8 V / 3.3 V	–	–	–	–	–
	AMUX (battery, I/O, temp, VREF)	–	–	–	–	–	–
	Communication	I ² C	I ² C	I ² C	I ² C	I ² C	I ² C
	Special Features	Linear battery charger integrated Coin-cell charger RTC Supply	Coin-cell charger and always-on RTC supply	Coin-cell charger and always-on RTC supply	Coin-cell charger RTC Supply	–	Coin-cell charger RTC Supply
	Package (mm)	HVQFN40 (5 mm x 5 mm x 0.85 mm)	QFN48 (7 mm x 7 mm x 0.85 mm)	QFN48 (7 mm x 7 mm x 0.85 mm)	QFN56 (8 mm x 8 mm x 0.85 mm)	QFN56 (8 mm x 8 mm x 0.85 mm)	QFN48 (7 mm x 7 mm x 0.85 mm)
MCU alignment	i.MX 7ULP, 6UL, 6ULL (BSP available)	i.MX 7, i.MX 6SL / SX / UL	i.MX 7, i.MX 6SL / SX / UL	i.MX 8MQ, 8MD (BSP available)	LS1020 / 21 / 23 / 24 / 26 / 28 / 43 / 46, T1013 / 23 (BSP available)	LS1012, LX2160 (BSP available)	
BYLink System Power Platform	–	–	–	–	–	–	

POWER MANAGEMENT IC BELONGING TO BYLINK SYSTEM POWER PLATFORM

	Features	PF5020	PF5023	PF5024	PF5030 (Pre-production)	PF5103 (Pre-production)
Power Management Features	Orderable part numbers	MPF5020xxxxES	MPF5023xxxxES	MPF5024xxxxES	PPF5030AMDA0ES	PPF5103xxxxES
	Buck	2x (0.4 V to 1.8 V / 2.5 A) 1 x (1 V to 4.1 V / 2.5 A)	3x (0.4 V to 1.8 V / 2.5 A)	4x (0.4 V to 1.8 V / 2.5 A)	2*(0.7 V~1.5 V / 3.5 A with SVS and dual phase capability, up to 7 A) 1*(1 V~4.1 V, 2.5 A)	3*(0.5 V-3.3 V/3.5 V)
	Boost	0	0	0	-	-
	LDO	1x (1.5 V V to 5 V / 400 mA)	0	0	2*(1.5 V~ 5.0 V/400 mA) with load switch capability	1*(0.75 V-3.3 V/200 mA), 1*(0.75 V-3.3 V/500 mA)
	Others	Load switch	-	-	-	-
Safety Features (listed for higher level of ASIL)	Fit for ASIL	QM / ASIL B	QM / ASIL B	QM / ASIL B	QM/ ASIL B/D	QM/ ASIL B/D
	Watchdog	Simple	Simple	Simple	Simple/Challenger	Simple/Challenger
	BIST	ABIST	ABIST	ABIST	ABIST/LBIST	ABIST/LBIST
	ABIST On Demand	Yes	Yes	Yes	Yes	Yes
	Safety Output	5x PGOOD	4x PGOOD	5x PGOOD	F50B, RSTB, PGOOD	PGOOD
	Documentation/ Analysis	Yes	Yes	Yes	Yes	Yes
System Features	Operating Voltage (V)	2.5 – 5.5	2.5 – 5.5	2.5 – 5.5	3.15 – 5.25	2.7 - 5.5
	Ambient Temp Range (°C)	-40 °C to 105 °C / 125 °C	-40 °C to 105 °C / 125 °C	-40 °C to 105 °C / 125 °C	-40 °C to 125 °C	-40 °C to 125 °C
	Low-power Off Mode (25 °C) All Reg Off	-	-	-	-	-
	GPIO	1.8 V / 3.3 V	1.8 V / 3.3 V	1.8 V / 3.3 V	-	1.8 V/3.3 V
	AMUX (battery, I/O, temp, VREF)	Yes	Yes	Yes	Yes	No
	Communication	I ² C	I ² C	I ² C	I ² C	I ² C
	Special Features	Coin-cell charger RTC Supply Spread-spectrum Clock synchronization	Spread-spectrum Clock synchronization	Spread-spectrum Clock synchronization	Spread-spectrum	Spread-spectrum, clock synchronization
	Package (mm)	HVQFN40 (6 mm x 6 mm x 0.85 mm)	HVQFN40 (6 mm x 6 mm x 0.85 mm)	HVQFN40 (6 mm x 6 mm x 0.85 mm)	HVQFN40 (6 mm x 6 mm x 0.85 mm)	HWQFN28 (4.5 mm x 4.5 mm x 0.68 mm)
MCU alignment	i.MX RT117x	i.MX 8	i.MX 8	S32xx		
BYLink System Power Platform		Yes	Yes	Yes	Yes	Yes

POWER MANAGEMENT IC BELONGING TO BYLINK SYSTEM POWER PLATFORM

	Features	PF52	PF53 (Pre-production)	PF71	PF81	PF8101
Power Management Features	Orderable part numbers	MPF5200AMBxxES	PPF5300xxxxES	MPF7100xxxxES	MC33PF8100xxES	MC33PF8101A0ES MC34PF8101A0EP
	Buck	2x (0.6 V to 1.2 V / 8 A)	1*(0.5 V-1.2 V/15 A)	4x (0.4 V to 1.8 V / 2.5 A) multiphase 1x (1 V to 4.1 V / 2.5 A)	6x (0.4 V to 1.8 V / 2.5 A) multiphase 1x (1 V to 4.1 V / 22.5 A)	4x (0.4 V to 1.8 V / 2.5 A) multiphase 2+2 1x (1 V to 4.1 V / 2.5 A)
	Boost	-	-	-	-	-
	LDO	-	-	2x (0.8 V to 5 V / 400 mA)	4x (1.5 V to 5 V / 400 mA)	3x (1.5 V to 5 V / 400 mA)
	Others	-	-	VSNVS1: (1.8 V / 3.0 V / 3.3 V, 10 mA) VSNVS2: (0.8 V / 0.9 V / 1.8 V, 10 mA)	VSNVS: (1.8 V / 3.0 V / 3.3 V, 10 mA)	VSNVS: (1.8 V / 3.0 V / 3.3 V, 10 mA)
Safety Features (listed for higher level of ASIL)	Fit for ASIL	QM / ASIL B	QM/ ASIL B/D	QM / ASIL B	QM	ASIL B
	Watchdog	Window Watchdog	Simple/Challenger	Window Watchdog	Window Watchdog	Window Watchdog
	BIST	ABIST	ABIST	ABIST	ABIST	ABIST
	ABIST On Demand	Yes	Yes	Yes	No	No
	Safety Output	PGOOD	GGOOD	FSOB, PGOOD	PGOOD	PGOOD
	Documentation/ Analysis	Yes	Yes	Yes	No	No
System Features	Operating Voltage (V)	2.7 – 5.5	3.15 - 5.5	2.7 – 5.5	2.7 – 5.5	2.7 – 5.5
	Ambient Temp Range (°C)	-40 °C to 125 °C	-40 °C to 125 °C	-40 °C to 105 °C / 125 °C	-40 °C to 85 °C / 105 °C	-40 °C to 105 °C
	Low-power Off Mode (25 °C) All Reg Off	-	1.5uA	-	-	-
	GPIO	1.8 V / 3.3 V / 5.0 V	1.8 V/3.3 V	1.8 V / 3.3 V	1.8 V / 3.3 V	1.8 V / 3.3 V
	AMUX (battery, I/O, temp, VREF)	Yes	No	Yes	Yes	Yes
	Communication	I ² C	I ² C	I ² C	I ² C	I ² C
	Special Features	Spread-spectrum Clock synchronization	Adaptive voltage positioning	2* RTC Supply Spread-spectrum Clock synchronization	RTC Supply Coin-cell charger Spread-spectrum Clock synchronization	RTC Supply Coin-cell charger Spread-spectrum Clock synchronization
	Package (mm)	PQFN32 (5 mm x 5 mm x 0.68 mm)	3.5 mm x 4.5 mm	HVQFN48 (7 mm x 7 mm x 0.85 mm)	HVQFN56 (8 mm x 8 mm x 0.85 mm)	HVQFN56 (8 mm x 8 mm x 0.85 mm)
	MCU alignment	S32R45, LX2160	S32G3	i.MX 8X / XL (BSP available)	i.MX 8, i.MX 8X, S32V, LS1043 / LS1046 / LA1575 / LA9358 / LX2160 (BSP available)	i.MX 8, i.MX 8X (BSP available)
BYLink System Power Platform	Yes	Yes	Yes	Yes	Yes	

POWER MANAGEMENT IC BELONGING TO BYLINK SYSTEM POWER PLATFORM (continued)

Features	PF8121	PF82	PF8201	
Power Management Features	Orderable part numbers	MC32PF8121xxEP	MC33PF8200xxES	MC33PF8201A0ES
	Buck	6x (0.4 V to 1.8 V / 2.5 A) multiphase 2+2 1 x (1 V to 4.1 V / 2.5 A)	6x (0.4 V to 1.8 V / 2.5 A) multiphase 4+2 1x (1 V to 4.1 V / 2.5 A)	4x (0.4 V to 1.8 V / 2.5 A) multiphase 2+2 1 x (1 V to 4.1 V / 2.5 A)
	Boost	0	-	0
	LDO	4x (1.5 V to 5 V / 400 mA)	4x (1.5 V to 5 V / 400 mA)	3x (1.5 V to 5 V / 400 mA)
	Others	VSNVS: (1.8 V / 3.0 V / 3.3 V, 10 mA)	VSNVS: (1.8 V / 3.0 V / 3.3 V, 10 mA)	VSNVS: (1.8 V / 3.0 V / 3.3 V, 10 mA)
Safety Features (listed for higher level of ASIL)	Fit for ASIL	QM	ASIL B	ASIL B
	Watchdog	Simple	Window Watchdog	Simple
	BIST	-	ABIST	ABIST
	ABIST On Demand	No	Yes	Yes
	Safety Output	PGOOD	FSOB, PGOOD	FSOB, PGOOD
	Documentation/Analysis	No	Yes	Yes
System Features	Operating Voltage (V)	2.7 – 5.5	2.7 – 5.5	2.7 – 5.5
	Ambient Temp Range (°C)	-40 °C to 85 °C	-40 °C to 105 °C	-40 °C to 105 °C
	Low-power Off Mode (25 °C) All Reg Off	-	-	-
	GPIO	1.8 V / 3.3 V	1.8 V / 3.3 V	1.8 V / 3.3 V
	AMUX (battery, I/O, temp, VREF)	Yes	Yes	Yes
	Communication	I ² C	I ² C	I ² C
	Special Features	RTC Supply Coin-cell charger Spread-spectrum Clock synchronization	RTC Supply Coin-cell charger Spread-spectrum Clock synchronization	RTC Supply Coin-cell charger Spread-spectrum Clock synchronization
	Package (mm)	HVQFN56 (8 mm x 8 mm x 0.85 mm)	HVQFN56 (8 mm x 8 mm x 0.85 mm)	HVQFN56 (8 mm x 8 mm x 0.85 mm)
MCU alignment	i.MX 8, i.MX 8X (BSP available)	i.MX 8, i.MX 8X, S32V, LS1043 / LS1046 / LA1575 / LA9358 / LX2160 (BSP available)	i.MX 8, i.MX 8X, S32 V, LS1043 / LS1046 / LA1575 / LA9358 / LX2160 (BSP available)	
BYLink System Power Platform		Yes	Yes	Yes