

# Advanced PMU for Multi-core Application Processors integrated High-Accuracy Gas Gauge and Flash Charger

## FEATURES

- **IPS™**

- Input voltage range: 2.9V~6.3V (AMR: -0.3V~11V)
- Configurable IPS™ system
- Adaptive USB/AC adaptor voltage/current limit (4.4V/900mA/500mA)

- **Flash Charger**

- Integrated MOSFET charge current up to 2.2A
- Battery temperature monitor
- Fully supports USB charge
- High charge accuracy, ±0.5% accuracy
- Supports 4.1V/4.2V/4.22V/4.24V battery
- Automatic charge control
- Supports LED to indicate charge status
- Automatic charge current adjustment based on system load

- **Buck DC-DC Converters (5-CH)**

- DC-DC1: 1.6V~3.4V adjustable, 100mV/step, load current up to 1.4A
- DC-DC2: 0.6V~1.54V adjustable, 20mV/step, load current up to 2.5A, supports VRC (Voltage Ramp Control)
- DC-DC3: 0.6V-1.86V adjustable, 20mV/step, load current up to 2.5A
- DC-DC4: 0.6V-1.54V adjustable, 20mV/step, load current up to 0.6A
- DC-DC5: 1.0V-2.55V adjustable, 50mV/step, load current up to 2A

- **LDOs (14-CH)**

- RTC\_VCC: 30mA, always valid
- ALDO1/2: low noise LDO, 0.7V~3.3V adjustable,

100mV/step, load current up to 300mA

- ALDO3: low noise LDO, 0.7V~3.3V adjustable, 100mV/step, load current up to 200mA
- LDOIO0/LDOIO1: low noise LDO, 0.7V~3.3V adjustable, 100mV/step, load current up to 100mA
- DLDO1/ ELDO1: 0.7~3.3V adjustable, 100mV/step, load current up to 400mA
- DLDO2/ DLDO3/ ELDO2/ ELDO3: 0.7~3.3V adjustable, 100mV/step, load current up to 200mA
- DLDO4: 0.7V~3.3V adjustable, 100mV/step, load current up to 100mA
- DC5LDO: 0.7V~1.4V adjustable, 100mV/step, load current up to 200mA

- **Switch (2-CH)**

- DC1SW: internal resistance 100mOhm, power sourced from DCDC1
- CHGLED:100mA sink strength, can be used to drive the motor and charging LED

- **Host Interface**

- P2WI (Push-Pull Two Wire Interface) for host communication
- Configurable interrupt management
- Flexible pin function configuration: 2 GPIOs can be set as IO or LDO, etc
- Integrated timer
- 12 groups of registers for system shutdown data storage

- **E-Gauge™ System**

- Highly accurate gauge system with dual modes
- Easy Mode: highly adaptive to different Powers

- Exact Mode: highly accurate data is provided for specific power
- Provides rich power information, such as instantaneous power consumption (mA or mW), remaining power (% or mA), charge status (%), remaining power life, charge time, etc.
- Low power warning and low power protection
- Provides die temperature

- **System Management**

- Supports soft reset and hard reset
- Supports soft shutdown and hard shutdown
- Supports external wakeup triggers
- Supports PWROK for system rest or shutdown indication
- External power detection(insert/remove/drive strength deficiency)
- All output voltage support software boot
- Over/Under-voltage protection (OVP/UVP)
- Over-current protection (OCP)
- Over-temperature protection (OTP)

- **High Integration**

- Highly accurate (0.5%) reference voltage
- Integrates MOSFET

## APPLICATIONS

- Tablets, smartphones, smart TVs, DVRs
- UMPC and UMPC-like, student computers

## DESCRIPTION

AXP228 is a highly integrated PMIC targeted at single cell Li-battery (Li-ion or Li-polymer) applications that require multi-channel power conversion outputs. It provides an easy and flexible power management solution for multi-core processors to meet the increasingly complex and accurate Requirements of power control.

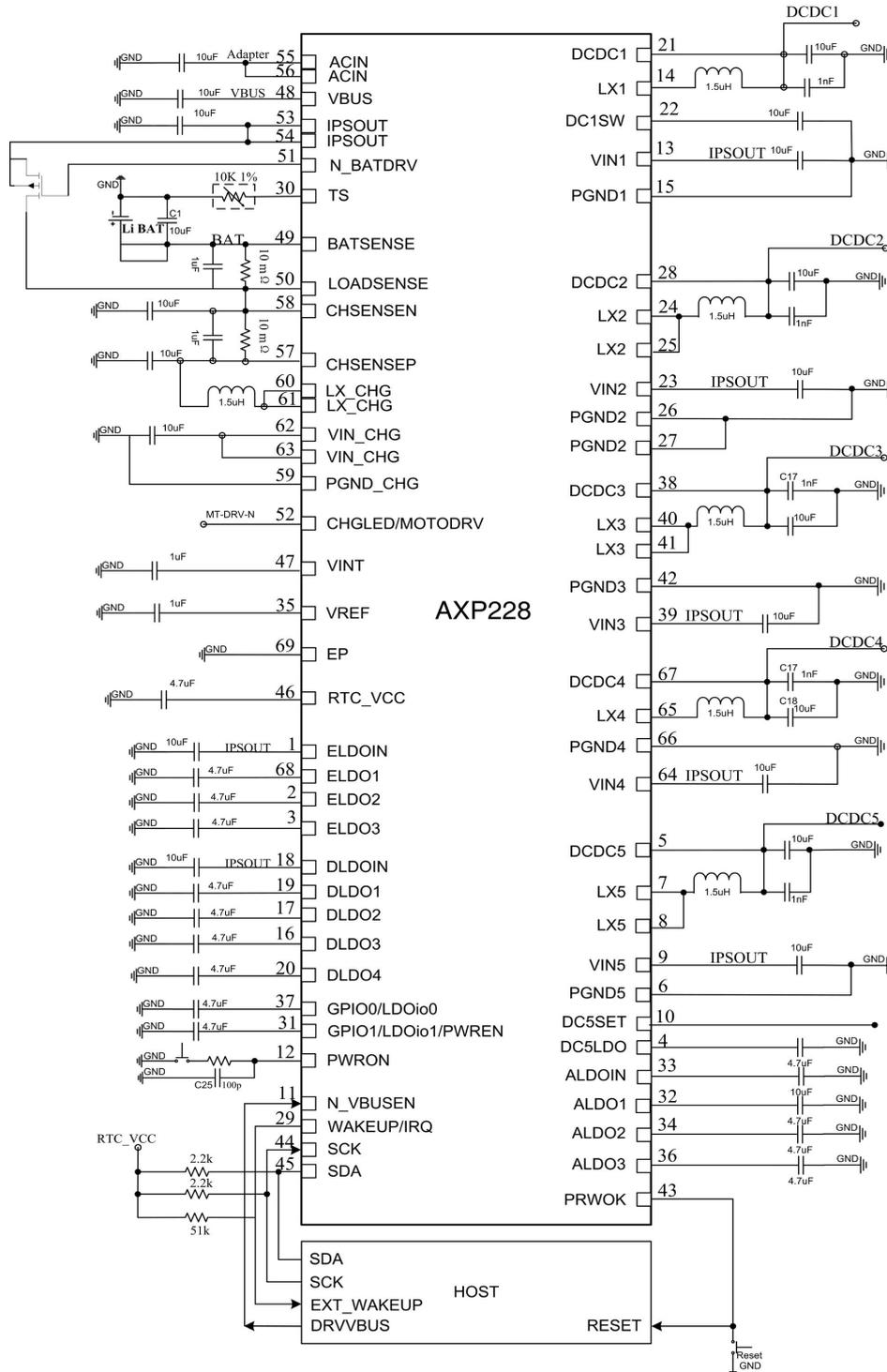
AXP228 comes with an adaptive USB3.0-compatible Flash Charger that supports up to 94% efficiency and 2.2A charge current. It also provides 21 power output channels (including 5-CH DCDC, with efficiency up to 95%). To ensure the security and stability of the power system, AXP228 provides multiple-channel 12-bit ADC for voltage/current temperature monitoring and integrates protection circuits such as OVP, UVP, OTP, and OCP. Moreover, AXP228 integrates a unique E-Gauge™ system which simplifies battery power measurement.

In addition, AXP228 contains a fast interface for the system to dynamically adjust output voltage and enable work mode switch in order to optimize battery life.

Importantly, AXP228 also features an IPS™ (Intelligent Power Select) circuit that transparently selects power path among USB, external adaptor, Li-battery, and system load, allowing the system to function normally when only running on external input power and not the battery.

AXP228 is available in 8mm x 8mm x 0.75mm 68-pin QFN package.

# TYPICAL APPLICATION DIAGRAM



29/44/45 pin are pulled high to RTC\_VCC; 10 PIN IF is connected to VINT; DCDC5 outputs 1.35V; 10 PIN IF is connected to GND; DCDC5 outputs 1.5V ; 10 PIN is floating; DCDC5 outputs 1.2V;

**Figure 1. Typical Application Circuit**

# PIN CONFIGURATION

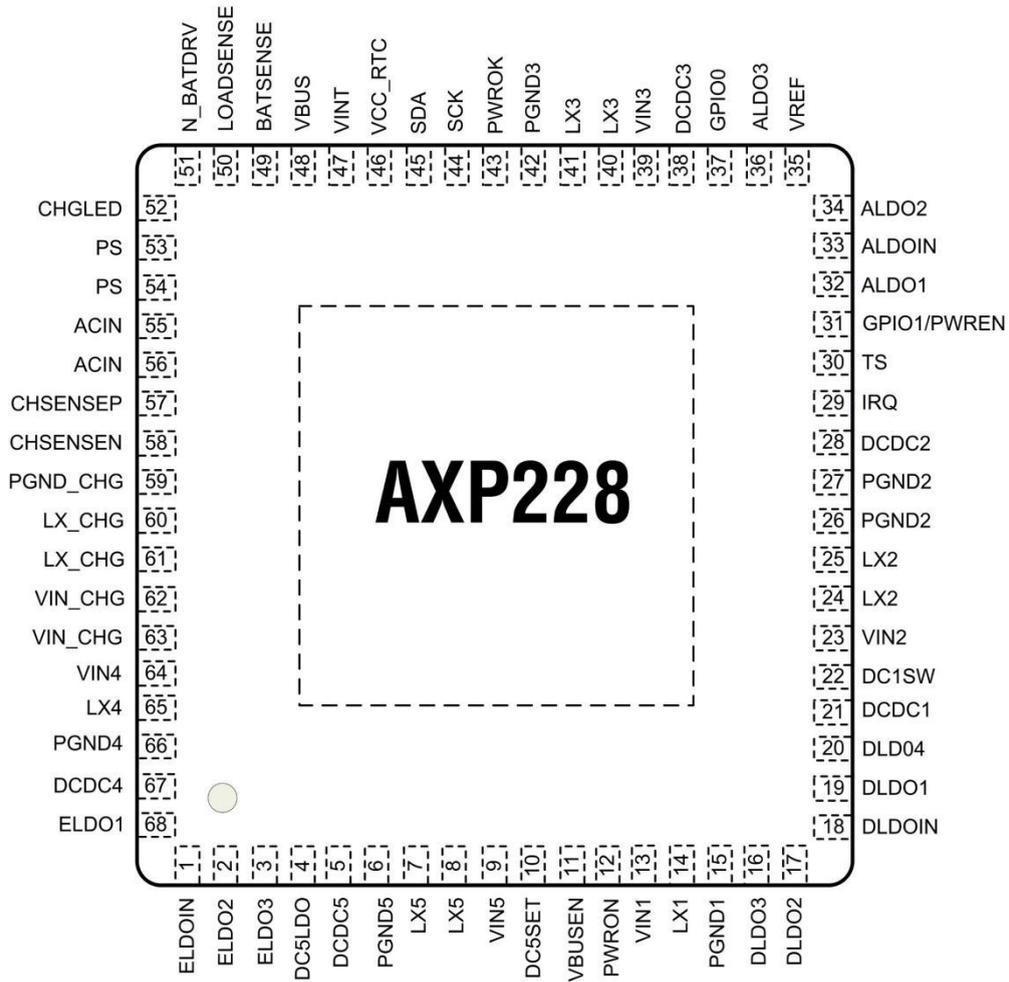


Figure 2. AXP228 Pin Configuration

## DECLARATION

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