

S1A00211B Power Management IC(PMIC)

■ DESCRIPTIONS

The S1A00211B is a high-performance power management IC designed for applications that use small rechargeable batteries. It provides battery charging control, power management, protection functions, and power supply for other ICs — all in a single chip.

The device supports multiple charging profiles. By controlling the charge termination voltage and enabling fast charging up to a user-defined state of charge (SOC), the device allows immediate use after charging while reducing battery degradation and extending battery life.

■ FEATURES

● Charging for Rechargeable Battery

- ✓ Charging power supply (VD5) range: 2.3 V to 5.25 V
- ✓ Charging method: CC-CV Charging
During CC charging, fast charging up to a user-defined state of charge (SOC) is supported.
charge voltage threshold and current level.
- ✓ Configurable charging current: Up to 300 mA, adjustable in 37 μ A increments
- ✓ Configurable CV (constant voltage): Adjustable in the range of 2.6 V to 2.8 V and 3.6 V to 4.5 V in 50 mV increments
- ✓ Configurable temperature management: Charging current and CV can be controlled across seven temperature zones
- ✓ Lifetime support: Charging settings based on battery usage or cycle time
- ✓ Configurable overcharge protection: CV + 70 mV

● Power Supply to Application System Charge Pump

- ✓ Automatic switching of step-down ratio (1/3 and 1/2) based on load, with a constant 1.2 V output
- ✓ Load current: 80 mA (max.)
- ✓ Output short detection: 150 mA (typ.)

LDO (Low Dropout Regulator)

- ✓ Configurable output voltage: 1.8 V to 3.0 V, adjustable in 100 mV increments
- ✓ Load current: 30 mA (max.)
- ✓ Output short detection: 90 mA (typ.)

● Power Supply Control

- ✓ Power ON/OFF trigger control via switch
- ✓ Power ON/OFF trigger control via external sensing device (Hall sensor, Motion sensor)
- ✓ Power ON/OFF trigger control via I2C command
- ✓ Configurable over-discharge protection: Adjustable in the ranges of 1.8 V to 2.4 V and 2.9 V to 3.5 V

● Flash Memory

- ✓ Function settings and charge/discharge profile configuration for this IC
- ✓ Charge/discharge profiles can be configured for two types of rechargeable batteries
- ✓ Cycle time management according to the actual number of charge/discharge cycles

● Load Modulation Communication

- ✓ Configurable communication load: Adjustable up to 8 mA in 500 μ A increments
- ✓ Protocol and charging control information: Rectified voltage, charging status (battery voltage, temperature, cycle time, status), ID, and IC number

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- **I2C Communication Control**

- ✓ Supports communication for charge/discharge through a single I2C channel
- ✓ Charge/discharge profile configuration
- ✓ Charge/discharge status read
- ✓ Transmission of control commands

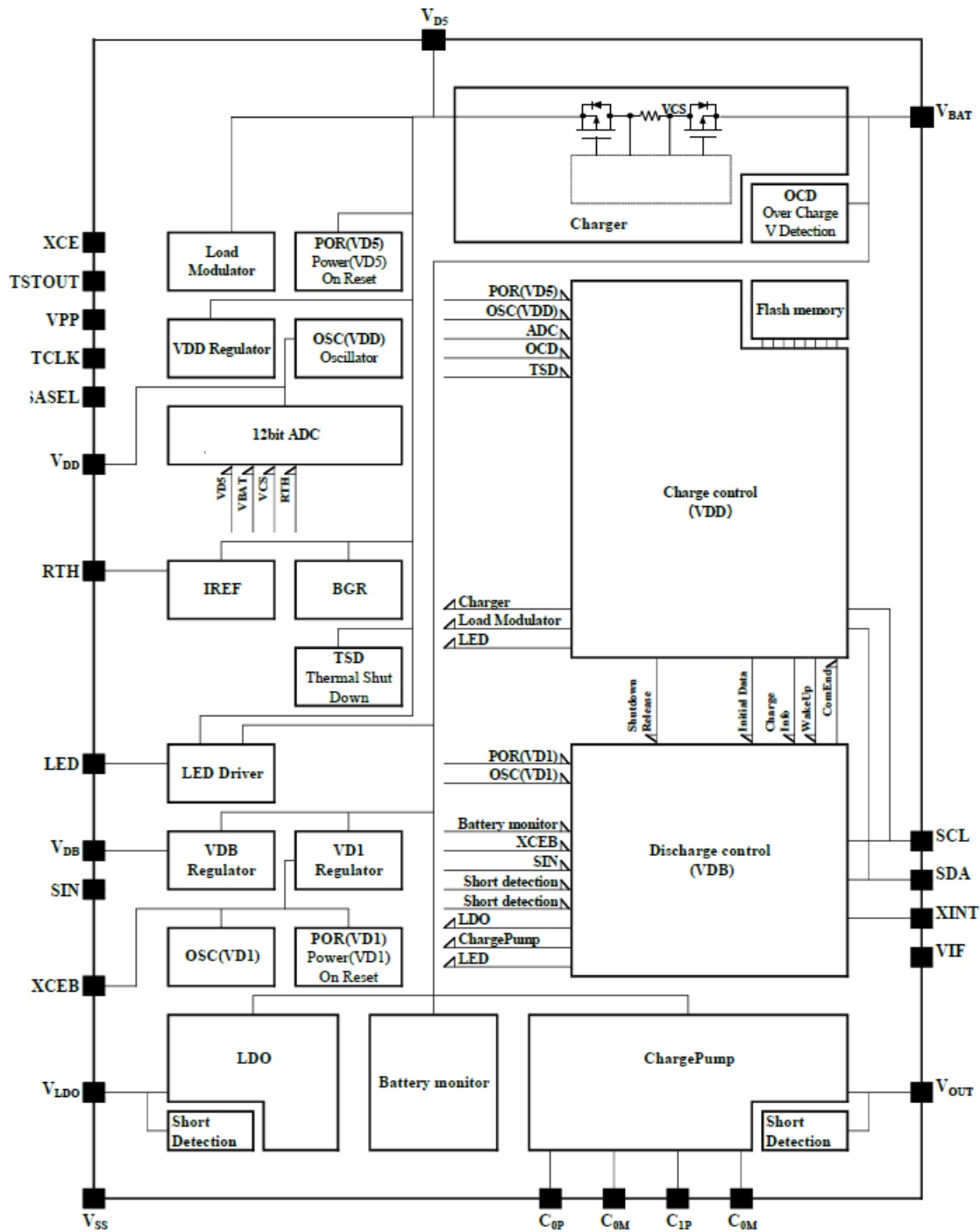
- **LED Indicator**

- ✓ Indicates charging/discharging status with a single LED (built-in single LED driver)
- ✓ Configurable LED driving current: Adjustable from 2 mA to 5 mA in 1 mA increments

- **Operating Current**

- ✓ During charging: 3 mA (max.)
- ✓ During discharging:
 - Power ON state: Charge pump activated 65 μ A (typ.), 50 kHz, Iout = 0 mA
 - LDO activated 0.4 μ A (typ.), Iout = 0 mA
 - Power OFF state: 0.2 μ A (typ.)
 - Shutdown state: 0.03 μ A (typ.)

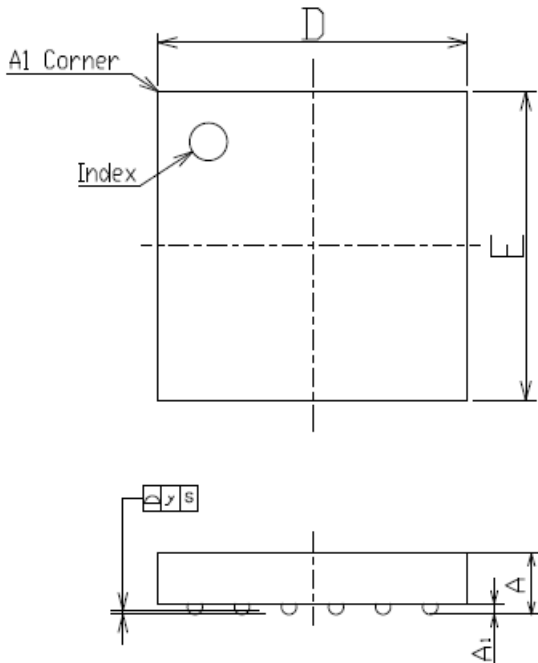
■ BLOCK DIAGRAM



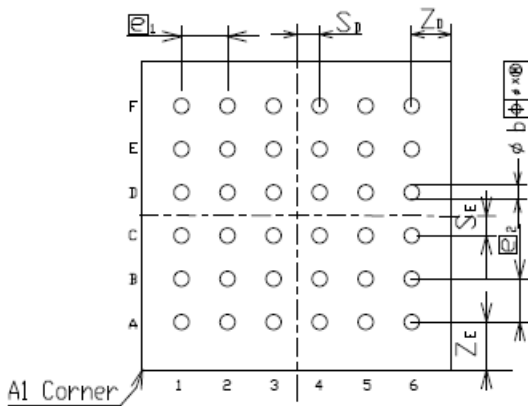
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■ PACKAGE OUTLINE

Top View



Bottom View



[UNIT : mm]

symbol	Dimension in Millimeters		
	Min	Nom	Max
D	2.402	(2.427)	2.452
E	2.402	(2.427)	2.452
A	—	—	0.540
A ₁	0.050	0.080	0.110
e ₁	—	0.350	—
e ₂	—	0.350	—
b	0.130	0.160	0.190
X	—	—	0.05
Y	—	—	0.05
S _D	—	0.175	—
S _E	—	0.175	—
Z _D	—	(0.356)	—
Z _E	—	(0.356)	—

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