S1A00210B

S1A00210B Power Management IC(PMIC)

■ DESCRIPTIONS

The S1A00210B is a high-performance solution designed for applications using small rechargeable batteries. It is a Power Management IC (PMIC) that includes charging control, power supply, power management, protection functions, and a 0.1 W wireless charging reception function.

■ FEATURES

- **Charging for Rechargeable Battery**
  - ✓ Charging power supply (VD5) range: 2.3 V to 5.25 V
  - ✓ Charging method: CCCV charging and customizable charging profiles
  - ✓ Configurable charging current: Up to 300 mA, adjustable in 37 µA 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

- **0.1 W Wireless Charging Reception**
  Rectifier
  - ✓ Built-in Schottky barrier diode rectifier

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

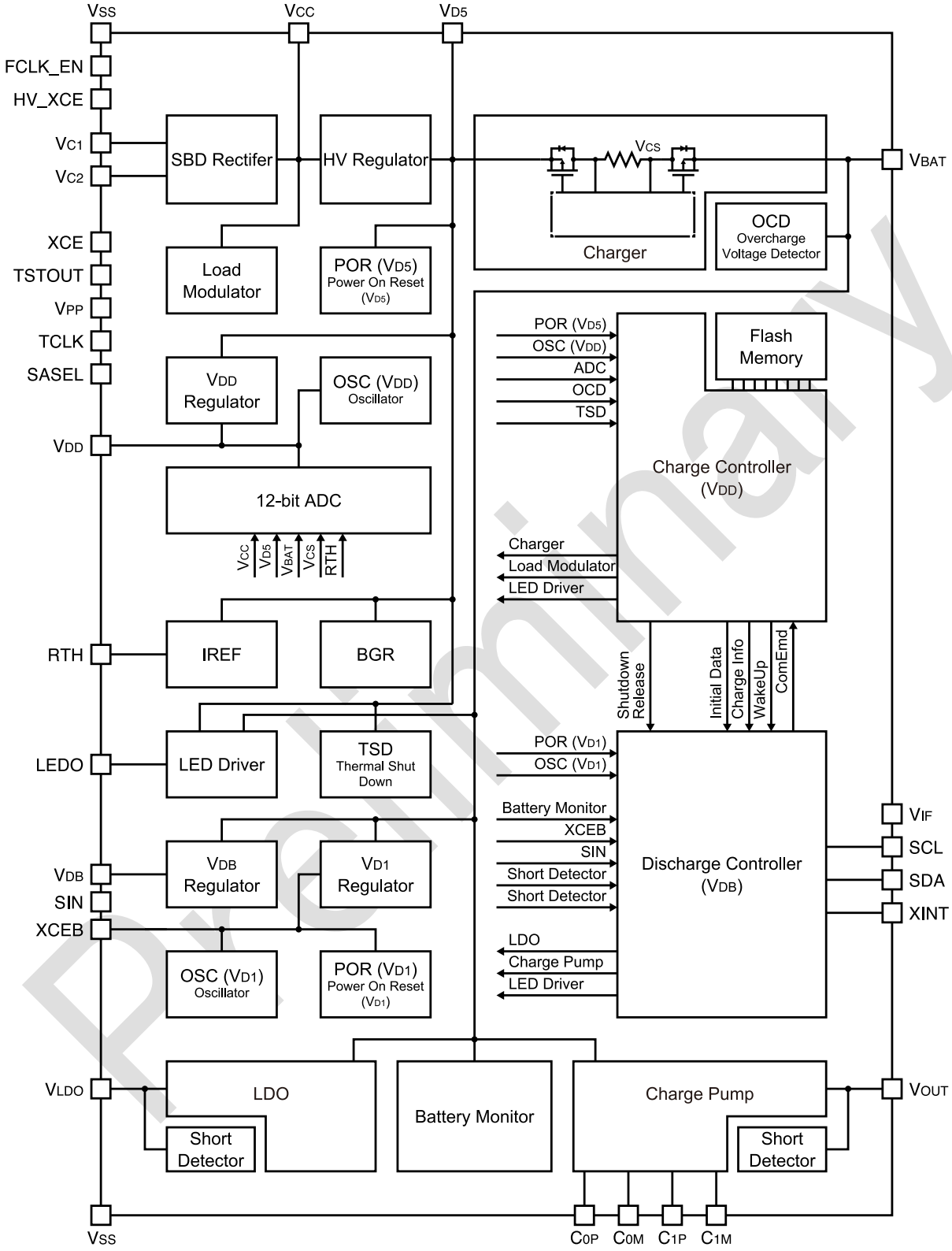
- **I2C Communication Control**
  - ✓ Supports communication for charge/discharge through a single I2C channel
  - ✓ Charge/discharge profile configuration
  - ✓ Charge/discharge status read
  - ✓ Transmission of control commands

- **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

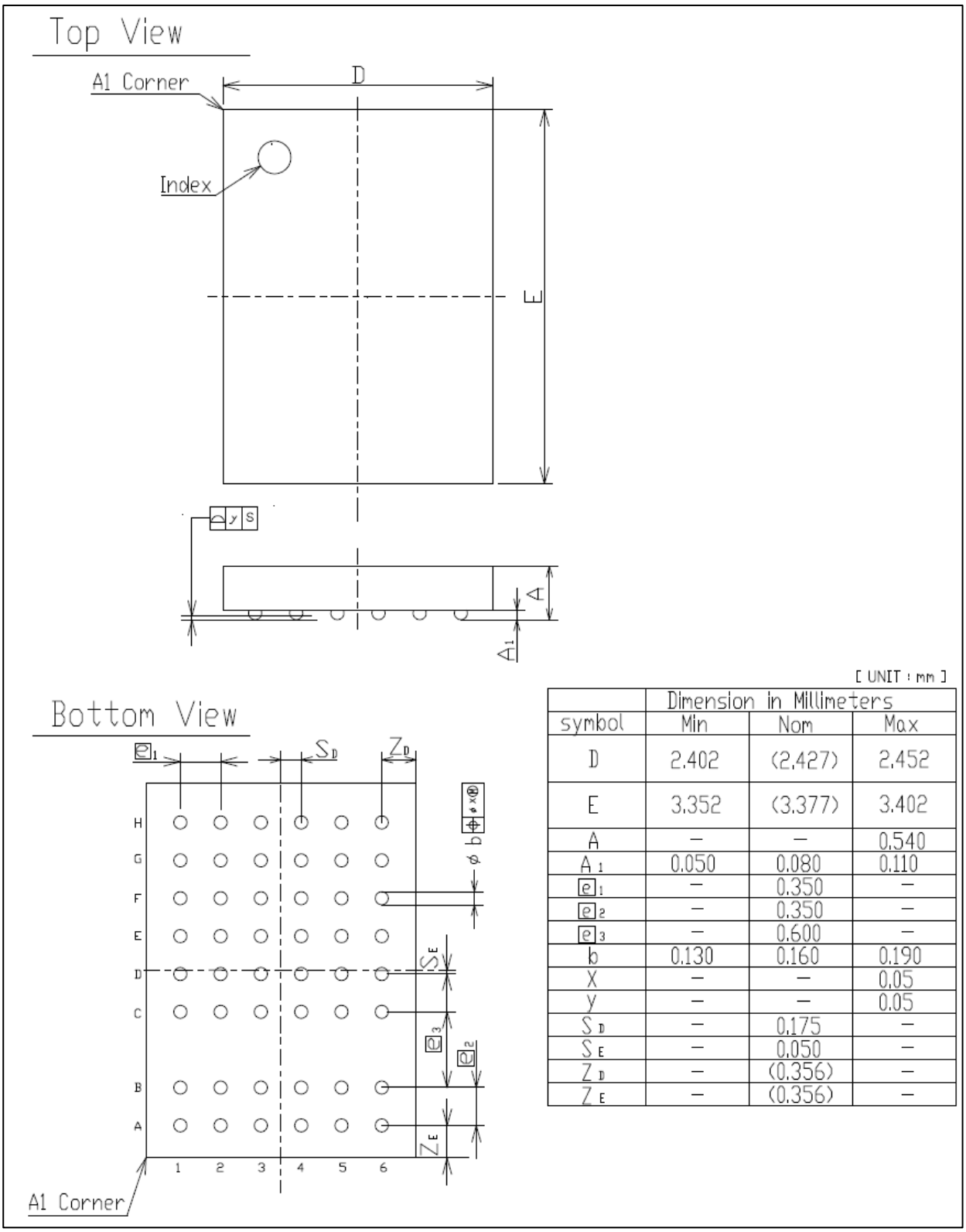
- **Operating Current**
  - ✓ During charging: 3 mA (max.)
  - ✓ During discharging:

Power ON state:	Charge pump activated	65 µA (typ.), 50 kHz, Iout = 0 mA
	LDO activated	0.4 µA (typ.), Iout = 0 mA
Power OFF state:		0.2 µA (typ.)
Shutdown state:		0.03 µA (typ.)

■ BLOCK DIAGRAM



■ PACKAGE OUTLINE



[UNIT : mm]

	Dimension in Millimeters		
symbol	Min	Nom	Max
D	2.402	(2.427)	2.452
E	3.352	(3.377)	3.402
A	–	–	0.540
A_1	0.050	0.080	0.110
e_1	–	0.350	–
e_2	–	0.350	–
e_3	–	0.600	–
b	0.130	0.160	0.190
X	–	–	0.05
y	–	–	0.05
S_D	–	0.175	–
S_E	–	0.050	–
Z_D	–	(0.356)	–
Z_E	–	(0.356)	–

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