



# REAL TIME CLOCK IC

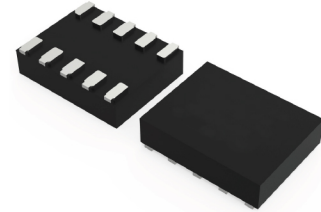
## REAL TIME CLOCK IC (Built-in Crystal Oscillator)

High-precision

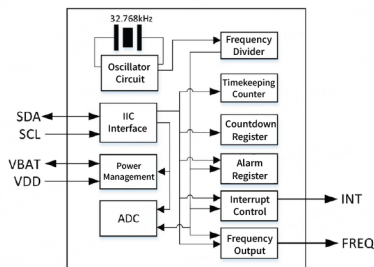


### ST8830

- Low power consumption: 0.5µA typical (VDD =3.0V, Ta=25°C).
- Operating voltage: 1.8V ~ 5.5V; Timekeeping: 1.5V ~ 5.5V.
- Operating temperature: -40°C~+105°C
- Standard IIC bus interface, maximum speed 400KHz (4.5V~5.5V).
- Chip pin ESD>4KV
- CMOS Process
- Package Form:3225(3.2mmx2.5mmx0.75mm).



#### Block diagram



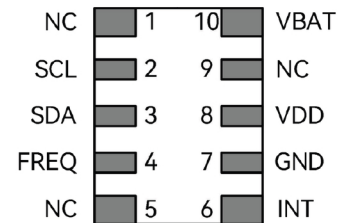
#### Overview

- Built-in 70-byte general-purpose SRAM
- high precision timing function in a wide temperature range: 25 °C < ± 5 ppm.
- Built-in IIC bus 0.5 seconds automatic reset function.
- Built-in 1/1024 second register
- Built-in communication verification function
- Built-in clock data write-protection function

#### Pin Function

Pin	Name	Function	Feature
1, 5, 9	NC	Not connected internally to the chip	—
2	SCL	Serial clock input pin. Since signals are processed on the rising and falling edges of SCL, special attention should be paid to the rise/fall times of the SCL signal. Please strictly follow the datasheet. To reduce the rise time of SCL, the MCU port connected to SCL can be set as CMOS output; do not set it as open-drain output.	CMOS input
3	SDA	Serial data input/output pin, this pin is usually pulled up to VDD with a resistor, and connected to other devices with open drain or open collector outputs via wire-AND logic.	Open-drain output / CMOS input
4	FREQ	Frequency output pin	CMOS output
6	INT	Interrupt output pin	Open-drain output
7	GND	Power supply ground (GND)	—
8	VDD	Positive power supply	1.5V ~ 5.5V
10	VBAT	Backup battery input pin, with built-in voltage regulator and configurable charging circuit for selectable charging current. When not in use, it should be connected to VDD.	1.5V ~ 5.5V, connect to VDD when not in use.

#### Terminal connection



#### DC Characteristics

Symbol	Parameter	Condition	Min	Typical	Max	Unit	Note
V <sub>DD</sub>	Supply Voltage		1.8	5.5		V	
V <sub>IO</sub>	I/O Voltage		1.8	5.5		V	
V <sub>KEE</sub>	Keep-Alive Voltage		1.5	5.5		V	
V <sub>THRE</sub>	Temperature Compensation Threshold Voltage			2.4		V	
V <sub>BAT</sub>	Battery Supply Voltage		1.5	5.5		V	
I <sub>CC1</sub>	Supply Current	V <sub>DD</sub> = 5V V <sub>DD</sub> = 3V		1.0 0.6	2.0 1.2	µA	
I <sub>CC2</sub>	Supply Current during IC Activation	V <sub>DD</sub> = 5V		40	120	µA	
I <sub>CC3</sub>	Supply Current during Charging Enable	V <sub>DD</sub> = 5V		80		µA	
I <sub>BAT</sub>	Battery Supply Current	V <sub>BAT</sub> = 3V		0.4		µA	
I <sub>IL1</sub>	Input Leakage Current on SCL			100		nA	
I <sub>LO</sub>	I/O Leakage Current on SDA			100		nA	
V <sub>BAT-VDD</sub>	Hysteresis Voltage between V <sub>BAT</sub> and V <sub>DD</sub>			85		mV	
INT/SDA V <sub>OL</sub>	Output Low Voltage	V <sub>CC</sub> = 5V, I <sub>O</sub> = 0.5mA	0.1	0.2	0.3	V	