



# REAL TIME CLOCK IC

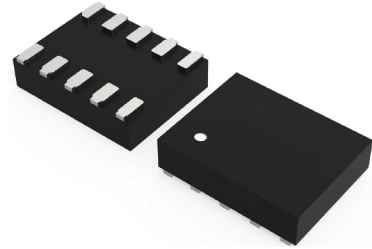
## REAL TIME CLOCK IC (Built-in Crystal Oscillator)

High-precision

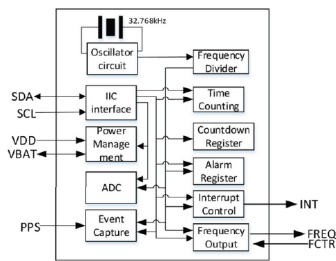


### ST8800

- Low power consumption: 0.6µA typical (VDD =3.0V, Ta=25°C).
- Operating voltage: 2.5V ~ 5.5V; Timekeeping: 1.5V ~ 5.5V.
- Operating temperature: -40°C~+125°C.
- AEC-Q100 certified
- 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



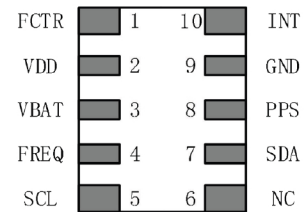
#### Overview

- Built-in 70-byte general-purpose SRAM
- high precision timing function in a wide temperature range: -40°C ~+85°C<±5ppm; +86°C ~ +105°C<±10ppm; +106 °C ~ +125 °C<±20ppm.
- disposable or rechargeable backup battery input pin VBAT
- 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

#### Terminal connection

Pin	Name	function	Features
1	FCTR	FREQ port output enable control, FCTR=0. disable FREQ output, FCTR=1: FREQ output is allowed.	CMOS input
2	VDD	Positive power pin	
3	VBAT	Spare battery input pin, built-in voltage regulator and charging current optional charging circuit.	1.5V ~ 5.5V, it should be connected to VDD when not in use
4	FREQ	Frequency output port controlled by FCTR, see pin 1 for details.	CMOS output
5	SCL	The serial clock input pin, since the signal is processed at the SCL rising/falling edge, special attention should be paid to the SCL signal rising/falling rise and fall time, and the instructions should be strictly followed. In order to reduce the rising edge time of SCL, the port connected between MCU and SCL can be set as CMOS output instead of open-drain output.	CMOS input
6	NC	There is no internal connection to the chip.	
7	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.	N-channel open-drain output /CMOS input
8	PPS	Time calibration with event capture input pin, internal with 500kΩ controllable pull-up resistor.	CMOS input
9	GND	Power supply ground (GND)	
10	INT	Alarm interrupt output pin	N-channel open-drain output



#### Characteristics

##### • DC characteristics

Symbol	Parameters	Condition	Min	Typical	Max	Unit
V <sub>DD</sub>	Main power supply		2.5		5.5	V
V <sub>keep</sub>	Timekeeping		1.5		5.5	V
V <sub>BAT</sub>	Standby battery supply voltage		1.5		5.5	V
I <sub>DD1</sub>	Main supply current	V <sub>DD</sub> =5V		0.6	1.2	µA
I <sub>DD2</sub>	The supply current when the IIC communicates	V <sub>DD</sub> =3V		40	120	µA
I <sub>DD3</sub>	Power supply current when charging is enabled	V <sub>DD</sub> =5V		80		µA
I <sub>BAT</sub>	Spare battery supply current	V <sub>BAT</sub> =3.3V		0.5		µA
I <sub>I1</sub>	The input leakage current of SCL			100		nA
I <sub>Ic</sub>	The input/output leakage current of the SDA			100		nA
V <sub>BATHYS</sub>	Hysteresis voltage for switching between VBAT and VDD			85		mV
V <sub>SW</sub>	Voltage to switch between VBAT and VDD	Ta=25°C		2.4		V
V <sub>OL</sub>	INT /SDA low level output voltage	V <sub>DD</sub> =5V I <sub>OL</sub> =0.5mA	0.1	0.2	0.3	V
V <sub>CLR</sub>	VDD rise rate when power is reset		0.1		1	V/ms
V <sub>temp</sub>	Temperature compensation threshold voltage			2.4		V

##### • Frequency Error & Temperature Relationship Curve

