



REAL TIME CLOCK IC

REAL TIME CLOCK IC (Built-in Crystal Oscillator)

High-precision



ST8803

- Low power consumption: 0.6 μ A 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:3515 (3.5mm×1.5mm×0.75mm).

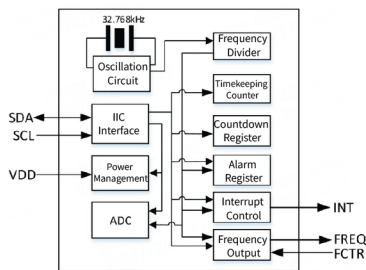
Package Top View

Package Bottom View

Package Side View



Block diagram



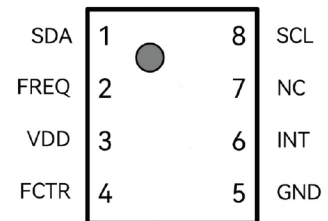
Overview

- Built-in 70-byte general-purpose SRAM
- high precision timing function in a wide temperature range: 25°C<1ppm,-40°C~+85°C<3ppm,+86°C~+105°C<10ppm.
- 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

Name	Function	Feature
SCL	Serial clock input pin. Since signals are processed on the rising/falling edge of SCL, special attention should be paid to the rise/fall time of the SCL signal. The manual must be strictly followed. 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
FREQ	Frequency output pin controlled by FCTR. See FCTR pin description for details.	CMOS Output
VDD	Positive power supply pin	—
FCTR	Enables/disables FREQ pin output: FCTR=0 disables FREQ output; FCTR=1 enables FREQ output.	CMOS Input
INT	Interrupt output pin for alarm. Its operating mode is set via control registers.	N-channel open-drain output
GND	Ground (GND)	—
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
NC	Not connected internally within the chip	—

Terminal connection



Characteristics

• DC characteristics

Symbol	Parameter	Condition	Min Value	Typical Value	Max Value	Unit
V _{DD}	Main Supply Voltage		2.5		5.5	V
V _{keep}	Backup Voltage		1.5		5.5	V
V _{I/O}	I/O Voltage		1.8		5.5	V
I _{DD1}	Main Supply Current	V _{DD} = 5V		0.6	3.0	μ A
		V _{DD} = 3V		0.5	2.0	μ A
I _{DD2}	Supply Current During IIC Communication	V _{DD} = 5V		40	120	μ A
I _{IL}	Input Leakage Current of SCL	PIN connected to VCC/GND	-500		500	nA
I _{IO}	Input/Output Leakage Current of SDA	PIN connected to VCC/GND	-500		500	nA
V _{OL}	Low-Level Output Voltage of INT/SDA	V _{DD} = 5V, I _{O1} = 0.5mA	GND		GND + 0.3	V
V _{OH}	High-Level Output Voltage of INT/SDA	V _{DD} = 5V, I _{O1} = 0.5mA	4.5		5.0	V
V _{IL}	Low-Level Input Voltage of SCL/FCTR/SDA		GND - 0.3V		0.3 × V _{DD}	V
V _{IH}	High-Level Input Voltage of SCL/FCTR/SDA		0.7 × V _{DD}		5.5	V
V _{DDR}	VDD Rise Rate During Power-On Reset		0.1		1	V/ms
V _{TEMP}	Temperature Compensation Threshold Voltage			2.0		V

• Frequency Error & Temperature Relationship Curve

