



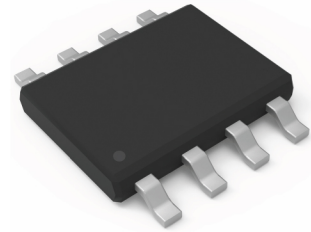
REAL TIME CLOCK IC

REAL TIME CLOCK IC (External Crystal Oscillator)

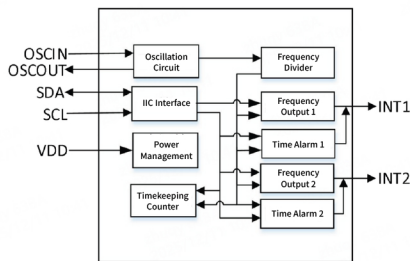


ST8190

- Low power consumption: 0.4 μ A typical ($V_{DD} = 3.0V, T_a = 25^\circ C$).
- Operating voltage: 1.5V~5.5V; Clock voltage: 1.2V~5.5V.
- Operating temperature: $-40^\circ C \sim +105^\circ C$.
- ROHS Recognized
- Standard IIC bus interface, maximum speed 400KHz (4.5V~5.5V).
- Chip pin ESD>4KV
- CMOS Process
- Package Form:SOP8/TSSOP8.



Block diagram



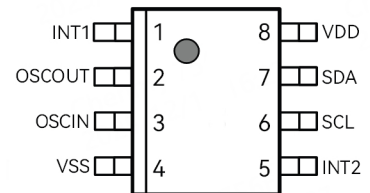
Overview

- Standard IIC interface
- Digital Calibration Function
- Pass 4 kV EFT Interference Test
- Dual Built-in Time Alarm Registers
- Built-in IIC bus 0.5 seconds automatic reset function.
- Built-in 7-byte alarm registers for day, week, hour and minute.
- Built-in clock data write-protection function
- Built-in power-on reset circuit

Pin Function

Pin	Name	Function	Feature
1	INT1	Interrupt output pin 1 for alarm, its operating mode is set via control registers.	N-channel open-drain output
2	OSCOUT	Output of crystal oscillator.	0 ~ 1.5V output
3	OSCIN	Input of crystal oscillator.	0 ~ 1.5V input
4	VSS	Negative power supply (GND).	
5	INT2	Interrupt output pin 2 for alarm, its operating mode is set via control registers.	N-channel open-drain output
6	SCL	Serial clock input pin. Since signal processing occurs on the rising/falling edges of SCL, special attention should be paid to the rise/fall times of the SCL signal. Please strictly follow the datasheet. To minimize the SCL rise time, the MCU interface connected to SCL can be configured as CMOS output; do not configure it as open-drain output.	CMOS input
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	VDD	Positive power supply.	1.5V ~ 5.5V

Terminal connection



Characteristics

• DC characteristics

Symbol	Parameter	Condition	Minimum Value	Typical Value	Maximum Value	Unit
V_{DD}	Main Supply Voltage		1.5		5.5	V
V_{keep}	Backup Voltage		1.2		5.5	V
I_{DD1}	Main Supply Current	$V_{DD} = 5V$		0.5	1.0	μA
		$V_{DD} = 3V$		0.4	0.8	μA
I_{DD2}	Supply Current during IIC Communication	$V_{DD} = 5V$		40	120	μA
I_{k1}	SCL Input Leakage Current			100		nA
I_{kO}	SDA Input/Output Leakage Current			100		nA
V_{OL}	INT / SDA Low-Level Output Voltage	$V_{DD} = 5V, I_{OL} = 0.5mA$	0.1	0.2	0.3	V

• Frequency Error & Temperature Relationship Curve

