ForDevices

Serial Real Time Clock/Calendar

■ General Description

The FH1381 is a serial timekeeper IC which provides seconds, minutes, hours, day, date, month, and year information. It communicates with a microprocessor via a simple serial interface. The end of the month date is automatically adjusted for months with less than 31 days, including corrections for leap year. The clock operates in either the 24-hour or 12-hour format with an AM/PM indicator.

Interfacing the FH1381 with a microprocessor is simplified by using synchronous serial communication. Only three wires are required to communicate with the clock: (1) $\overline{RST}$ (Reset), (2) I/O (Data line), and (3) SCLK (Serial clock). Data can be transferred to and from the clock 1 byte at a time or in a burst mode. The FH1381 is designed to operate on very low power.
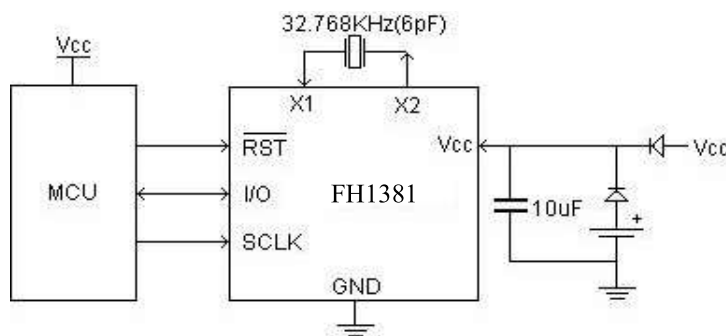
■ Features

- Provides year, month, day, weekday, hours, minutes and seconds based on 32.768kHz quartz crystal
- Serial I/O transmission: Simple 3–wire interface
- Clock registers store BCD format
- 2.0~5.5 volt full operation
- Uses less than 400nA at 2.0 volts
- Single–byte or multiple–byte (burst mode) data transfer for read or write of clock
- 8-Pin SOP package for FH1381
- Maximum input serial clock:
  500kHz at V_{CC} =2.0V, 2MHz at V_{CC} =5.0V
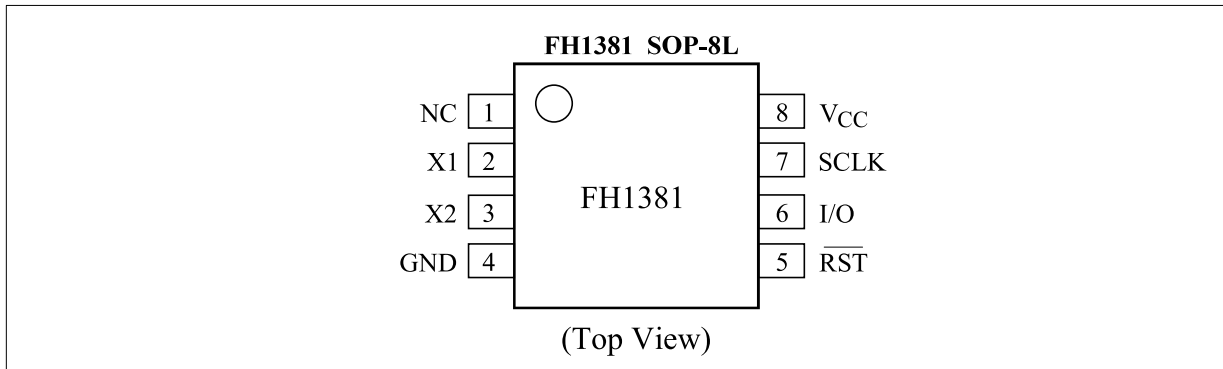- TTL -compatible (V_{DD} =5.0V)

■ Applications

- Cash Register
- Security Access Controller, Door Controller
- Time Recorder
- Mobile Telephones
- Public Phone Bill Meter, Smart Card Payphone
- IC Water-Flow Meter, IC Gas Meter

■ Typical Applications Circuit

■ Pin Assignment

FH1381 SOP-8L

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NC   ┌1      ○        8┐  V_CC
X1   ┌2               7┐  SCLK
X2   ┌3    FH1381     6┐  I/O
GND  ┌4               5┐  RST
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(Top View)

■ Pin Description

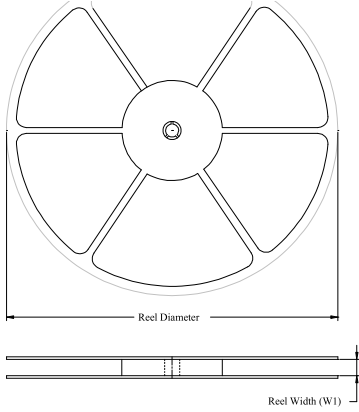| Pin No.	Symbol	Description
1	NC	No Connection
2	X1	Connections for a standard 32.768kHz quartz crystal
3	X2	Connections for a standard 32.768kHz quartz crystal
4	GND	Ground
5	$\overline{RST}$	The reset signal must be asserted high during a read or a write,
6	I/O	The I/O pin is the bi-directional data pin for the 3-wire interface
7	SCLK	The SCLK pin is used to synchronize data movement on the serial interface
8	V_{CC}	Power Supply Pin

■ Absolute Maximum Rating

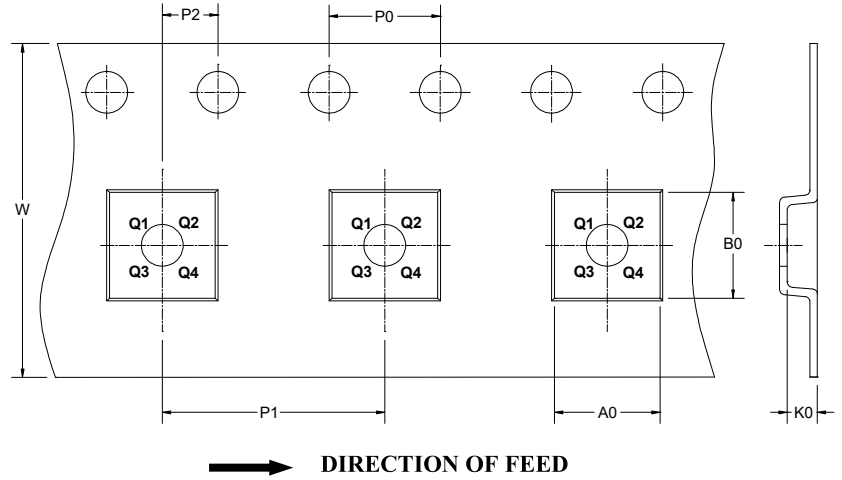| Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	-0.3 ~ 5.5	V
Operating Temperature	T_A	0～70	°C
Storage Temperature	T_S	-50～+125	°C
Soldering Temperature	T_H	260 (10 Sec)	°C

Note: These stress ratings only. Stress exceeding the range specified under "Absolute Maximum Ratings" may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification. not implied and prolonged to extreme conditions may affect device reliability.

■ TAPE AND REEL INFORMATION

REEL DIMENSIONS

Reel Diameter

Reel Width (W1)

TAPE DIMENSIONS

DIRECTION OF FEED

NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
SOP-8L	13″	12.4	6.40	5.40	2.10	4.0	8.0	2.0	12.0	Q1

■ Ordering Information

Part Number	Temp Range	Package	Top Mark	Package	SPQ
FH1381S8	0°C to +70°C	SOP-8L	1381* ** ** *	SOP-8L	2500PCS/Reel

➢ FH1381 devices are Pb‑free and RoHS compliant.
➢ The surface prints of our semiconductor devices are subject to change during the production process and do not involve changes in electrical parameters, and we will not separately state the notice.

➢ Update by Dec.2017