

Low Power, Real Time Clock/Calendar(RTC) with I²C

PRELIMINARY DATASHEET

General Description

The FH8563 is a CMOS real time clock /calendar, which provides seconds, minutes, hours, day, date, month, and year information. The number of days in each month and leap years are automatically adjusted. The clock can operate in two modes: one is the 12-hour mode with an AM/PM indicator, the other is the 24-hour mode. The clock/calendar is full binary-coded decimal (BCD). In addition, the FH8563 contains a programmable clock output, a timer, an alarm, a voltage-low detector. All address and data are transferred serially via I²C bus and The FH8563 operates as a slave device on the serial bus.

The built-in word address register is incremented automatically after each written or read data byte.

The FH8563 is designed to operate on very low power consumption.

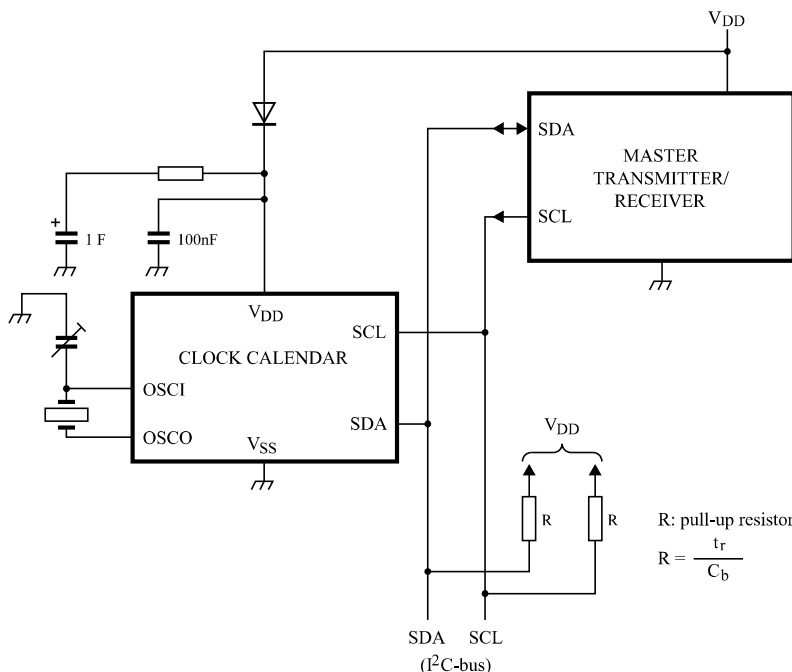
Features

- Provides Year, Month, Day, Weekday, Hours, Minutes and Seconds Information
- Century Flag
- Wide Operating Voltage: 1.80V to 5.50V
- Low Power Consumption: 0.25μA at V_{DD} = 3.0V and Tamb=25°C
- I²C-bus Interface
- Programmable Clock Output (32.768kHz, 1024Hz, 32Hz and 1.0Hz)
- Alarm and Timer Functions
- Built-in Power Voltage Detecting Circuit
- I²C-bus Slave Address: Read A3H and Write A2H
- Open-Drain Interrupt Pin

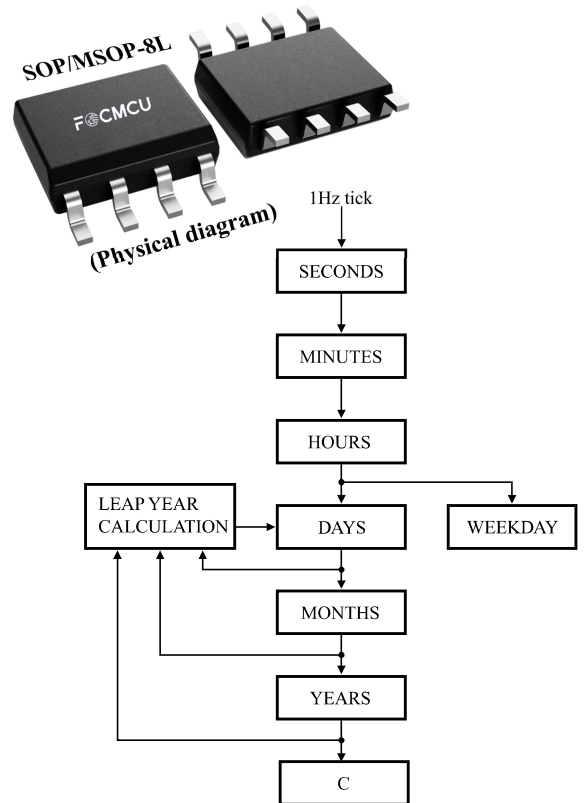
Applications

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

Typical Application Circuit Diagram

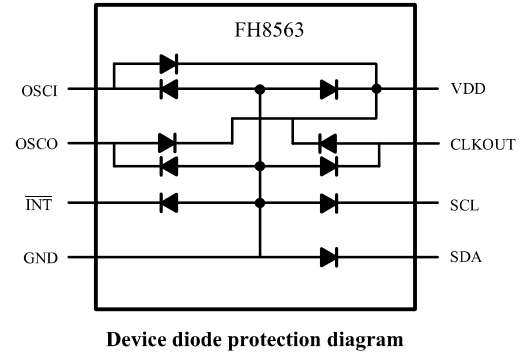
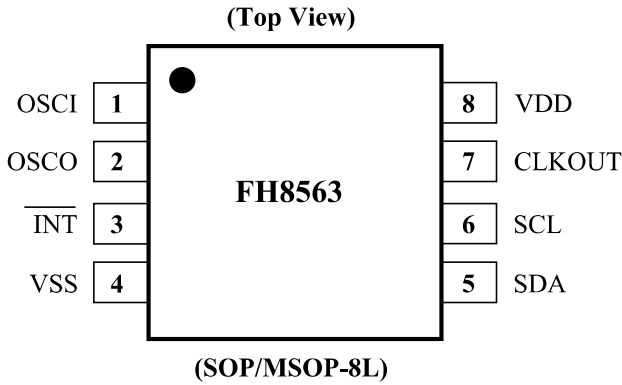


A. Typical Application



B. Data flow for the time function

Pin Assignment

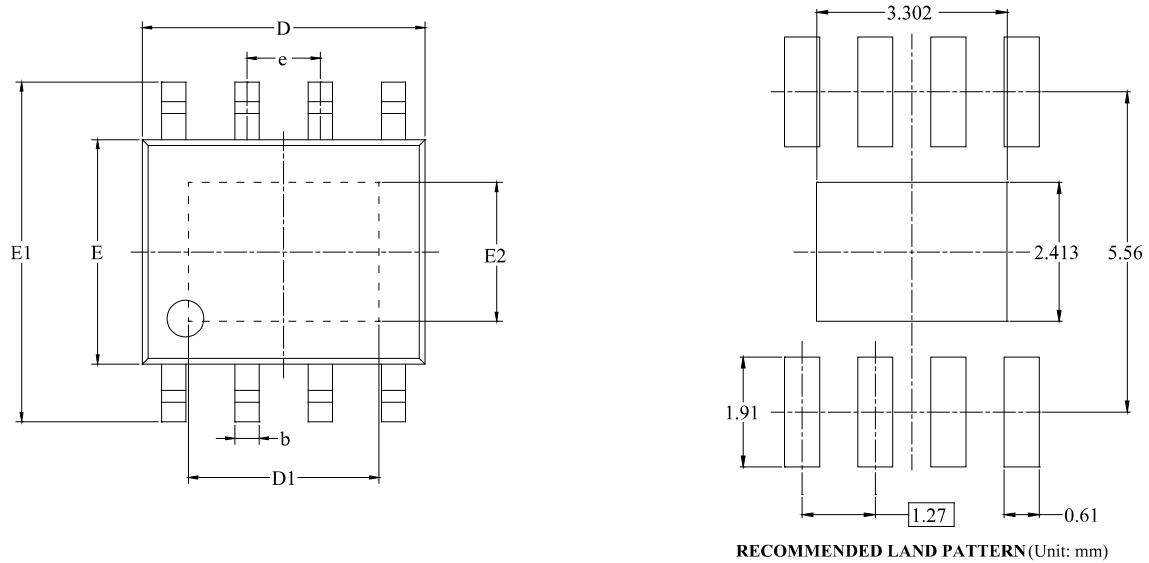


Pin Description

Pin No.	Symbol	I/O	Pin Description SOP-8L MSOP-8L
1	OSCI	I	Oscillator input 振荡器输入
2	OSCO	O	Oscillator output 振荡器输出
3	$\overline{\text{INT}}$	O	Interrupt output (open-drain; active LOW) 中断输出 (开漏; 有效 LOW), 根据控制寄存器来设置其工作的模式, 它可通过重写控制寄存器来禁止
4	VSS	/	Ground 接地
5	SDA	I/O	Serial data input and output 串行数据输入和输出, 串行数据输入/输出脚, 此管脚通常用一电阻上拉至 VDD, 并与其它漏极开路或集电极开路输出的器件通过线与方式连接
6	SCL	I	Serial clock input 串行时钟输入, 由于在 SCL 上升/下降沿处理信号, 要特别注意 SCL 信号的上升/下降时间, 应严格遵循数据手册
7	CLKOUT	O	Clock output, open-drain 时钟输出、开漏, 32.768KHZ 方波信号输出
8	VDD	I	Supply voltage 电源电压

■ Package

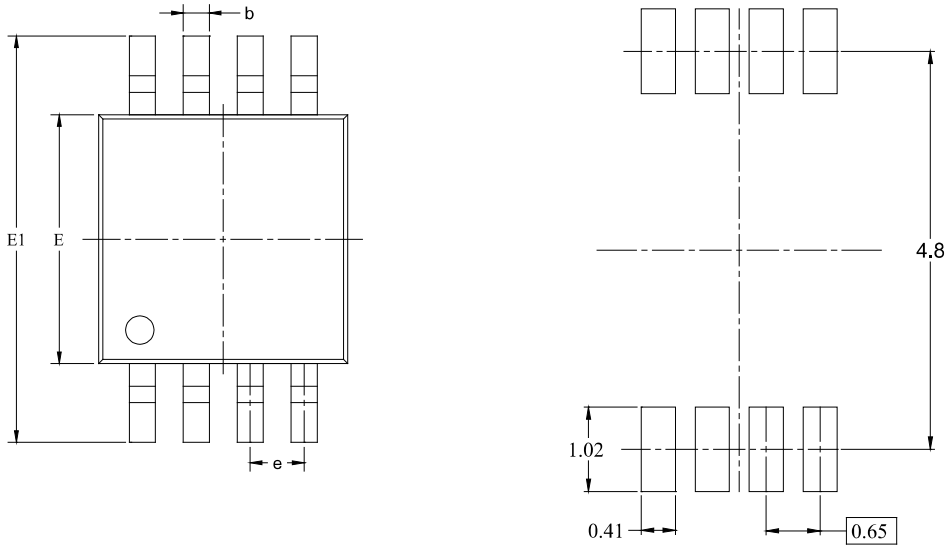
- Type: SOP-8L



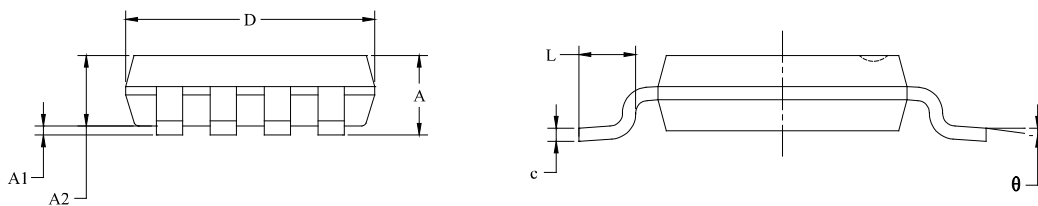
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A		1.700		0.067
A1	0.000	0.100	0.000	0.004
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.201
D1	3.202	3.402	0.126	0.134
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
E2	2.313	2.513	0.091	0.099
e	1.27 BSC		0.050 BSC	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

■ Package

- Type: MSOP-8L



RECOMMENDED LAND PATTERN(Unit: mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
e	0.650 BSC		0.026 BSC	
L	0.400	0.800	0.016	0.031
θ	0°	6°	0°	6°

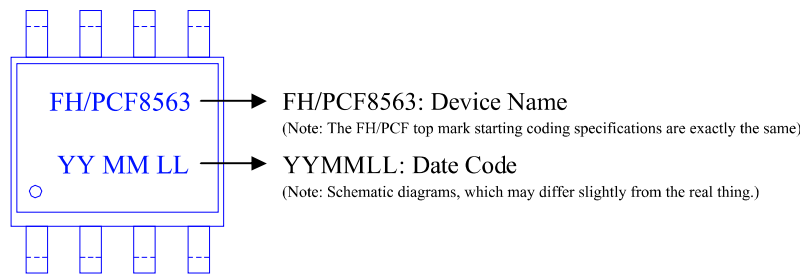
Ordering Information

Part Number	Operating Voltage	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH8563S8	1.80V~5.50V	<ul style="list-style-type: none"> • CMOS real time clock/calendar • Provides Year, Month, Day, Weekday, Hours, Minutes and Seconds Information 	-30°C to +85°C	SOP-8L	FH/PCF8563 <u>YY MM LL</u>	3000EA/Reel
FH8563MS8	1.80V~5.50V	<ul style="list-style-type: none"> • I2C-bus interface • Low power consumption 	-30°C to +85°C	MSOP-8L	FH/PCF8563 <u>YY MM LL</u>	3000EA/Reel

Note:

- **FH8563** 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.
- If you have any other custom purchase needs, please contact our sales department.
- ForDevices reserves the right to amend and legally interpret the electrical parameters of this chip device. (<http://www.fordevices.com>)

Device Name: SOP-8L / MOP-8L



ESD SENSITIVITY CAUTION

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.



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➢ Update by Aug.2024