FH85163

I²C Real-time clock and calendar(RTC) with 56Byte NV RAM
Low current consumption

Datasheet Brierf

Description

The FH85163 is a CMOS Real-Time Clock (RTC) and calendar optimized for low power consumption.

A programmable clock output, interrupt output, and voltage-low detector are also provided. All addresses and data are transferred serially via a two-line bidirectional IIC-bus. Maximum bus speed is 400kbit/s.

The register address is incremented automatically after each written or read data byte.

Applications

- Mobile telephones
- Portable instruments
- Electronic metering
- Battery powered products

Key Features

- Provides year, month, day, weekday, hours, minutes, and seconds based on a 32.768kHz quartz crystal
- Century flag
- Clock operating voltage: 1.0V to 5.5V
- Low backup current; typical 0.25uA at V_{DD} = 3.0V and T_A = 25℃
- 400kHz two-line I²C-bus interface (at V_{DD} = 1.8V to 5.5V)
- Programmable clock output for peripheral devices (32.768kHz, 1.024kHz, 32.0Hz, and 1.0Hz)
- Alarm and timer functions
- Internal Power-On Reset (POR)
- IIC-bus slave address: read A3h and write A2h
- Open-drain interrupt pin

Package

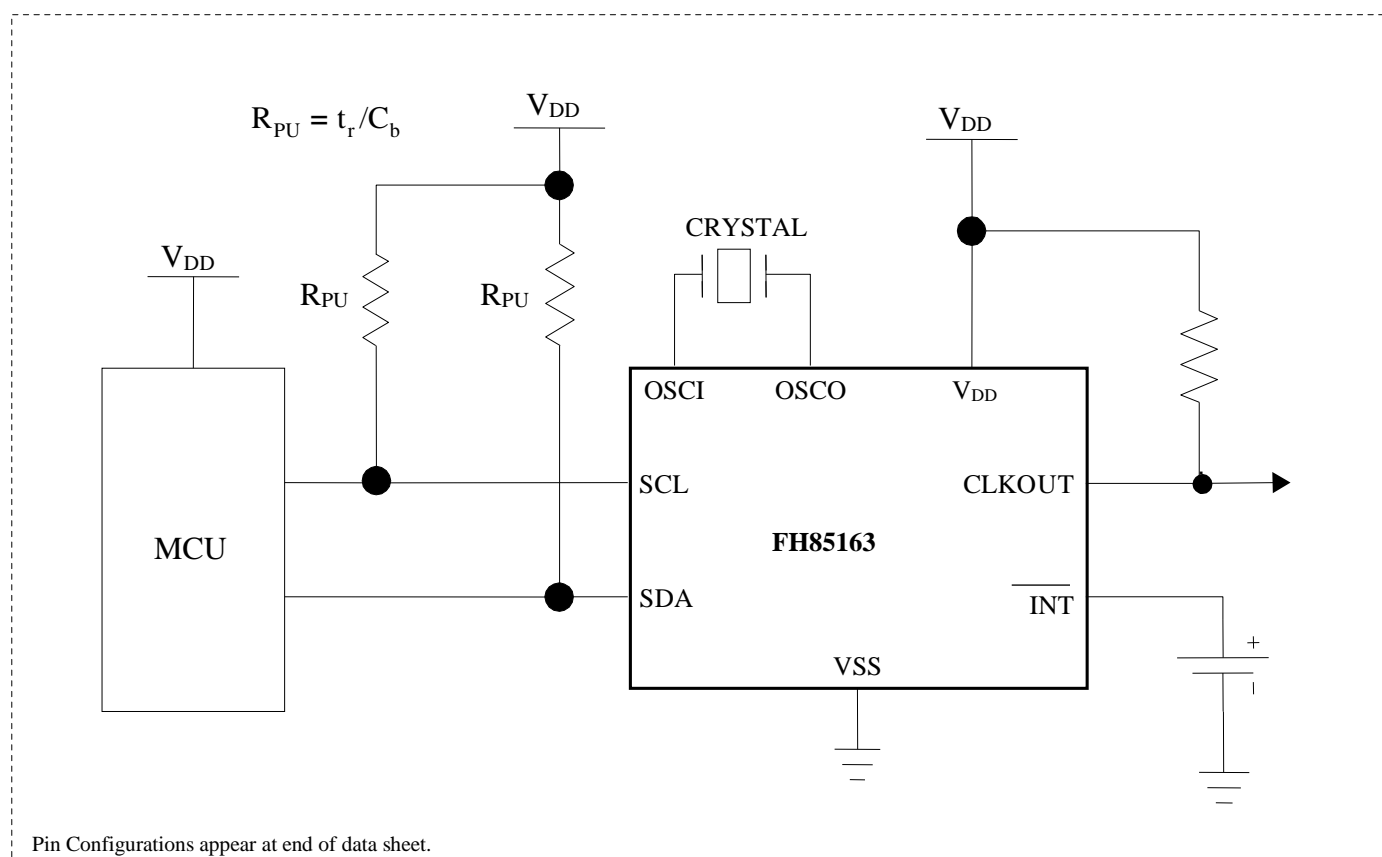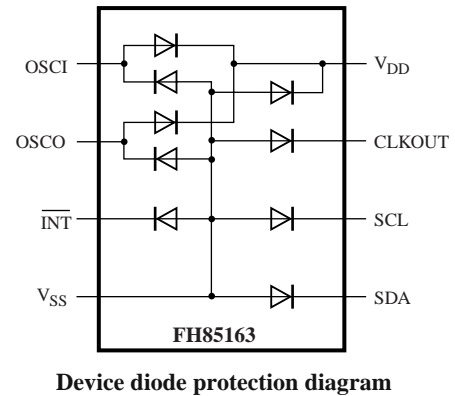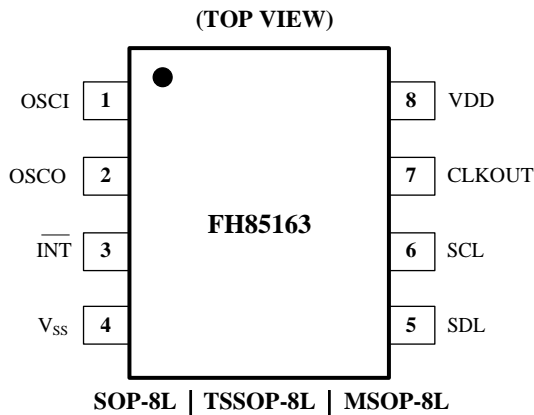- 8-Pin SOP/TSSOP/MSOP

Typical Operating Circuit

$$R_{PU} = t_r/C_b$$

Fig 1. Typical Operating Circuit

Pin Configurations appear at end of data sheet.

Pin Configurations

(TOP VIEW)

SOP-8L   TSSOP-8L   MSOP-8L

Device diode protection diagram

Pin Description

Symbol	Pin Name		Description
	SOP-8L (FH85163)	**TSSOP-8L** (FH85163TS)	
OSCI	1	1	oscillator input
OSCO	2	2	oscillator output
$\overline{\text{INT}}$	3	3	interrupt output (open-drain; active LOW)
V_{SS}	4	4	ground supply voltage
SDA	5	5	serial data input and output
SCL	6	6	serial clock input
CLKOUT	7	7	clock output (open-drain)
V_{DD}	8	8	supply voltage

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PACKAGE OUTLINE DIMENSIONS

Type: SOP-8L

RECOMMENDED LAND PATTERN(Unit: mm)
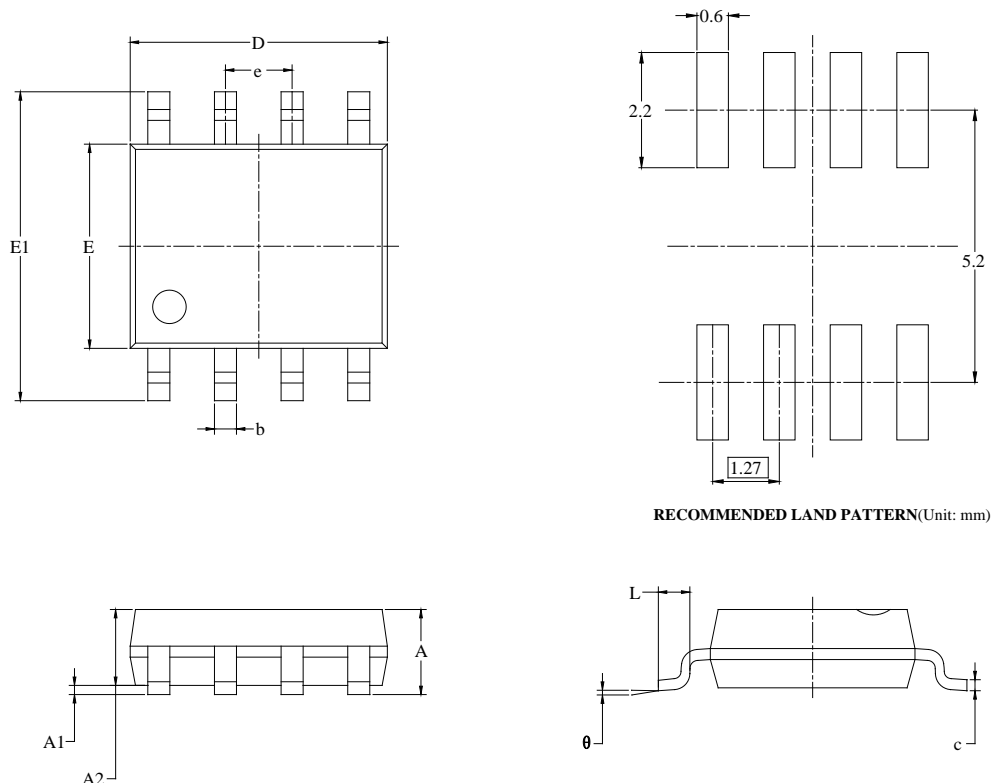
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	**MAX**	**MIN**	**MAX**
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.27 BSC		0.050 BSC	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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PACKAGE OUTLINE DIMENSIONS

Type: TSSOP-8L
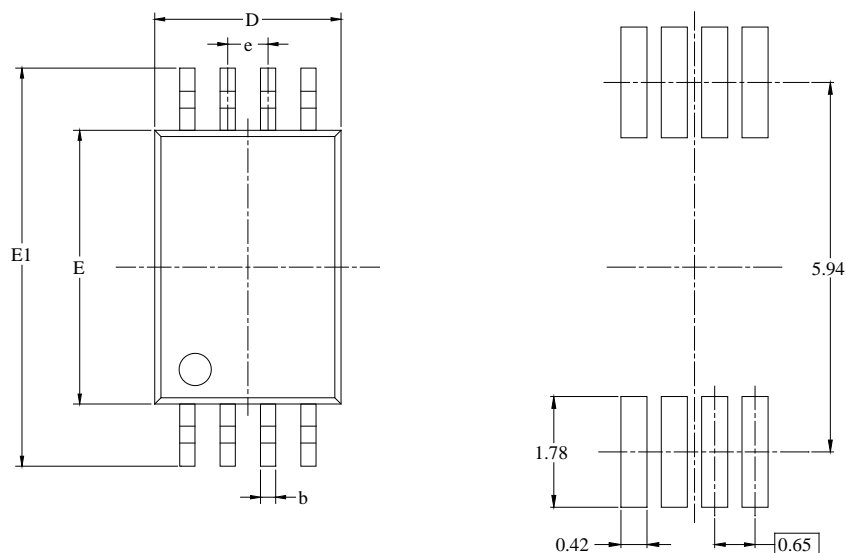
RECOMMENDED LAND PATTERN(Unit: mm)
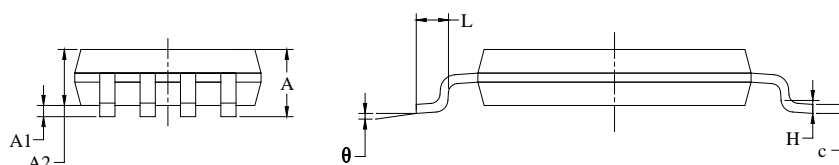
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	**MAX**	**MIN**	**MAX**
A		1.100		0.043
A1	0.050	0.150	0.00 2	0.006
A2	0.800	1.000	0.031	0.039
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
D	2.900	3.100	0.114	0.122
E	4.300	4.500	0.169	0.177
E1	6.250	6.550	0.246	0.258
e	0.65 0 BSC		0.026 BSC	
L	0.500	0.700	0.02	0.028
H	0.25 TYP		0.01 TYP	
θ	1°	7°	1°	7°

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PACKAGE OUTLINE DIMENSIONS

Type: MSOP-8L
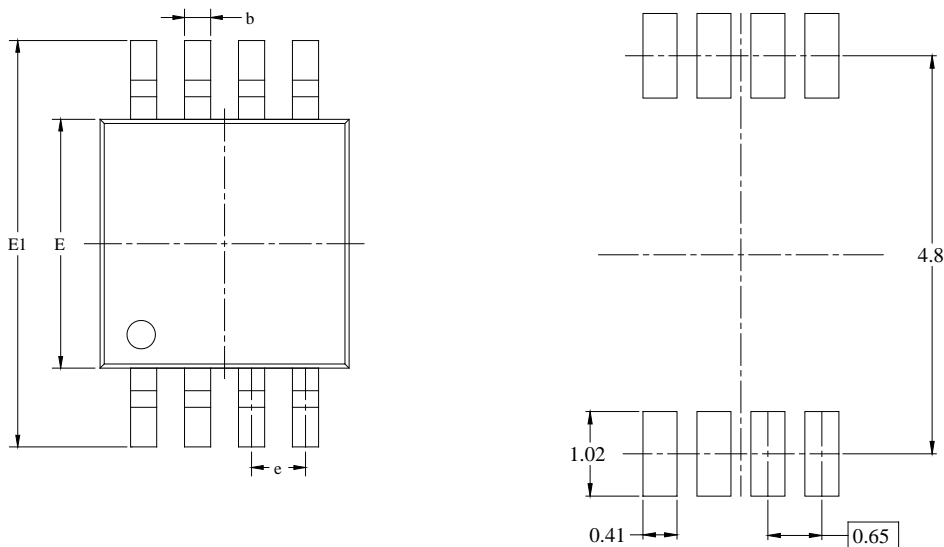
RECOMMENDED LAND PATTERN(Unit: mm)
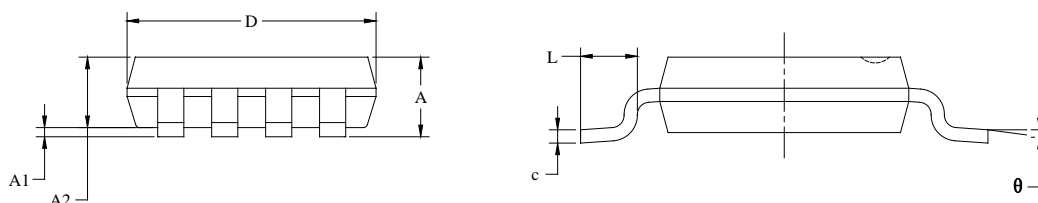
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
e	0.650 BSC		0.026 BSC	
L	0.400	0.800	0.016	0.031
θ	0°	6°	0°	6°

ORDERING INFORMATION

Part Number	Voltage Range	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH85163S8	1.0V ~ 5.5V	● CMOS Real-Time Clock(RTC) ● 400kbit/s bus speed	-45℃ to 85℃	SOP-8L	FH8563 <u>YY</u> <u>MM</u> <u>LL</u>	2500PCS/Reel
FH85163TS8	1.0V ~ 5.5V	● 400kHz I²C-bus Interface ● Century flag	-45℃ to 85℃	TSSOP-8L	FH8563T <u>YY</u> <u>MM</u> <u>LL</u>	3000PCS/Reel
FH85163MS8	1.0V ~ 5.5V	● Backup current: 0.25uA(Typ.) ● Clock output: 32.768kHz, 1.024kHz, 32.0Hz, 1.0Hz	-45℃ to 85℃	MSOP-8L	FH8563M <u>YY</u> <u>MM</u> <u>LL</u>	3000PCS/Reel

Note:

➢ **FH85163/FH85163T/FH85163M** 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.

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➢ ForDevices reserves the right to amend and legally interpret the electrical parameters of this chip device. (http://www.fordevices.com)

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▲ Update by Aug.2022