

31bytes RAM, Trickle - Charge Timekeeping Chip

PRELIMINARY DATASHEET

DETAILED DESCRIPTION

The FH1302 trickle-charge timekeeping chip contains a real-time clock/calendar and 31 bytes of static RAM. It communicates with a microprocessor via a simple serial interface. The real-time clock/calendar provides seconds, minutes, hours, day, date, month, and year information. The end of the month date is automatically adjusted for months with fewer 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 FH1302 with a microprocessor is simplified by using synchronous serial communication. Only three wires are required to communicate with the clock/RAM: CE, I/O (data line), and SCLK (serial clock). Data can be transferred to and from the clock/RAM 1 byte at a time or in a burst of up to 31 bytes. The FH1302 is designed to operate on very low power and retain data and clock information on less than 1.0uW.

The FH1302 is the successor to the FH1202. In addition to the basic timekeeping functions of the FH1302, the FH1302 has the additional features of dual power pins for primary and backup power supplies, programmable trickle charger for V_{CC1}, and seven additional bytes of scratchpad memory.

OPERATION

Figure 1 shows the main elements of the serial timekeeper: shift register, control logic, oscillator, real-time clock, and RAM.

KEY FEATURES

- Real-Time Clock Counts Seconds, Minutes, Hours, Date of the Month, Month, Day of the Week, and Year with Leap-Year Compensation Valid Up to 2100
- 31x8 Battery-Backed General-Purpose RAM
- Serial I/O for Minimum Pin Count
- 2.0V to 5.5V Full Operation
- Uses Less than 300nA at 2.0V
- Single-Byte or Multiple-Byte (Burst Mode) Data Transfer for Read or Write of Clock or RAM Data
- Optional 8-Pin SOP for Surface Mount
- Simple 3-Wire Interface
- TTL-Compatible (V_{CC} = 5.0V)
- Optional Industrial Temperature Range: -40°C to +85°C
- Underwriters Laboratories Recognized

Applications

- Microcomputer serial clock
- Clock and Calendar

Device Information (1)

PART NUMBER	PACKAGE	BODY SIZE (NOM)
FH1302	SOP-8L	4.90mm × 3.91mm

(1) For all available packages, see the orderable addendum at the end of the data sheet.

TYPICAL OPERATING CIRCUIT

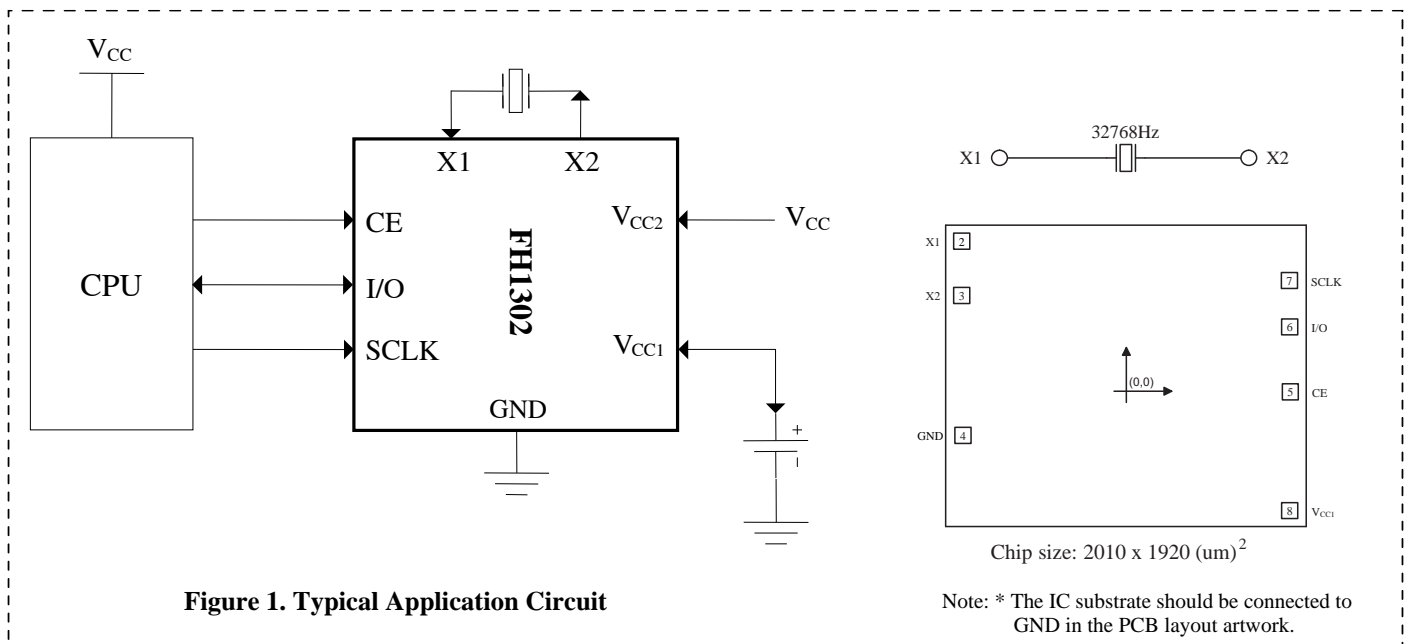
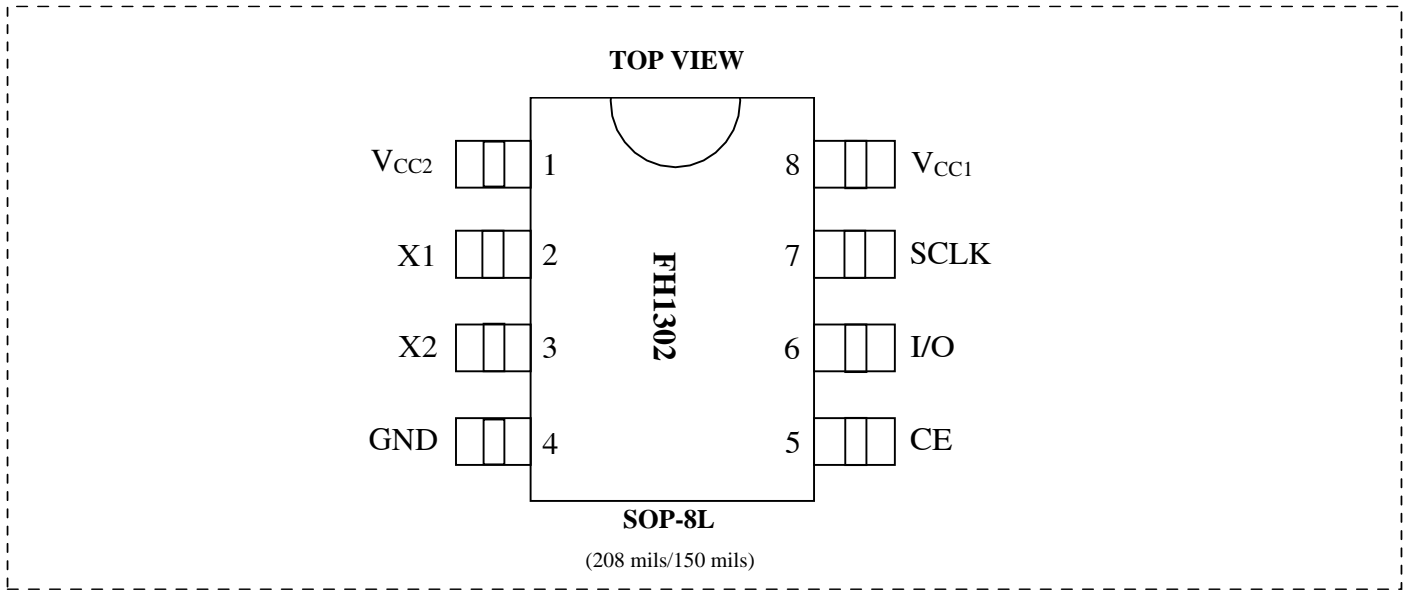


Figure 1. Typical Application Circuit

PIN CONFIGURATIONS

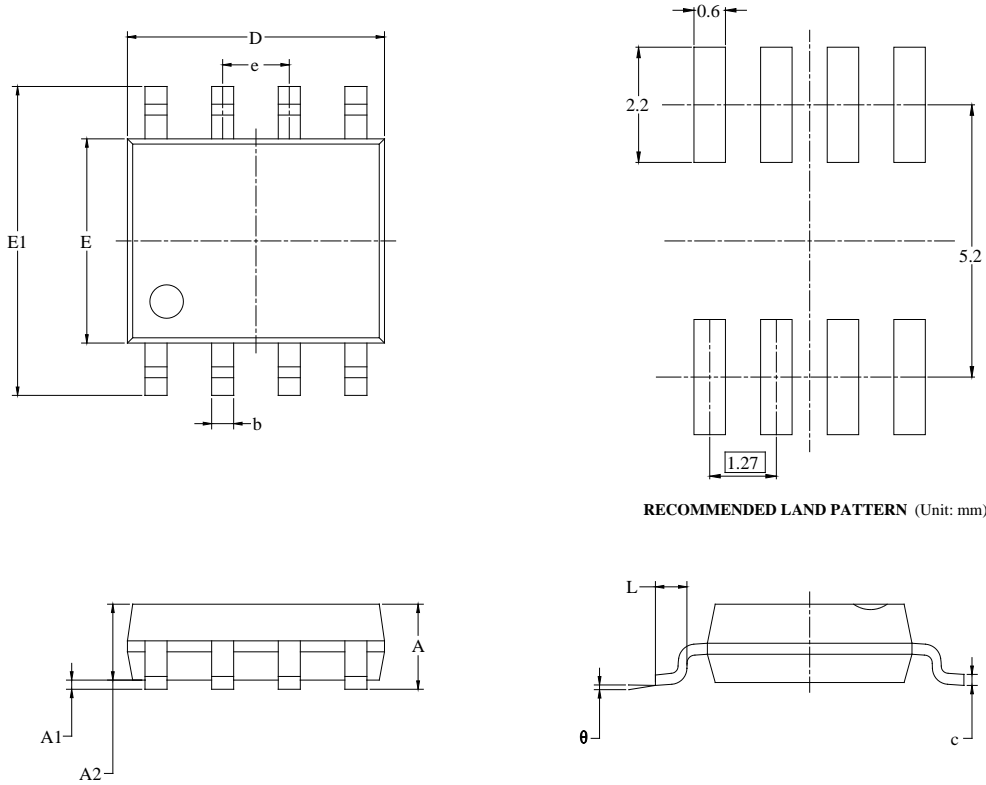


PIN DESCRIPTION

PIN	NAME	FUNCTION
1	V _{CC2}	Primary Power-Supply Pin in Dual Supply Configuration. V _{CC1} is connected to a backup source to maintain the time and date in the absence of primary power. The FH1302 operates from the larger of V _{CC1} or V _{CC2} . When V _{CC2} is greater than V _{CC1} + 0.2V, V _{CC2} powers the FH1302. When V _{CC2} is less than V _{CC1} , V _{CC1} powers the FH1302.
2	X1	Connections for Standard 32.768kHz Quartz Crystal. The internal oscillator is designed for operation with a crystal having a specified load capacitance of 6pF. For more information on crystal selection and crystal layout considerations, refer to Application Note 58: Crystal Considerations for Dallas Real-Time Clocks. The FH1302 can also be driven by an external 32.768kHz oscillator. In this configuration, the X1 pin is connected to the external oscillator signal and the X2 pin is floated.
3	X2	
4	GND	Ground
5	CE	Input. CE signal must be asserted high during a read or a write. This pin has an internal 40kΩ (typ) pulldown resistor to ground. Note: Previous data sheet revisions referred to CE as \overline{RST} . The functionality of the pin has not changed.
6	I/O	Input/Push-Pull Output. The I/O pin is the bidirectional data pin for the 3-wire interface. This pin has an internal 40kΩ (typ) pulldown resistor to ground.
7	SCLK	Input. SCLK is used to synchronize data movement on the serial interface. This pin has an internal 40kΩ (typ) pulldown resistor to ground.
8	V _{CC1}	Low-Power Operation in Single Supply and Battery-Operated Systems and Low-Power Battery Backup. In systems using the trickle charger, the rechargeable energy source is connected to this pin. UL recognized to ensure against reverse charging current when used with a lithium battery.

PACKAGE OUTLINE DIMENSIONS

- Type: SOP-8L



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°

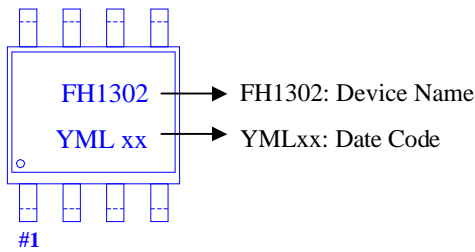
ORDERING INFORMATION

Part Number	Voltage Range	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH1302S8	2.0V ~ 5.5V	<ul style="list-style-type: none"> • 31*8 General-Purpose RAM • Serial I/O • Simple 3-Wire Interface • Uses Less than 300nA at 2.0V 	-40°C to 85°C	SOP-8L	FH1302 YML xx	3000PCS/Reel

Note:

- FH1302 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.

Device Name: SOP-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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