

Stopwatch IC for Time Measurement Between Two Events

Check for Samples: [TPL7200](#)

FEATURES

- **Supply Voltage: 2.0V to 3.7V**
- **Time Sensing**
 - **LSB 52ps (typ)**
 - **Accuracy 200ps (max)**
- **SPI Host Interface for Configuration and Register Access**
- **Measurement Range:**
 - **Mode 1: 10ns to 167µs**
 - **Mode 2: Power Save Mode**
250ns to 8.2ms With **CLOCK = 8MHz**
- **Low Quiescent Current**
 - **TDC running: 1.2 mA (typ)**
 - **TDC off, Clock Counter on: 200 µA (typ)**
- **Supports up to 5 STOP Signals For Every START Signal**
- **Latch-Up Performance Exceeds 100 mA Per JESD 78, Class II**
- **ESD Protection Exceeds JESD 22**
 - **2000-V Human-Body Model (A114-A)**
 - **1000-V Charged-Device Model (C101)**
- **Operating Temperature –40°C to 85°C**

APPLICATIONS

- **Gas Flow Meters**
- **Heat Cost Allocators**
- **Laser Distance Measurements**
- **Magnetostrictive Sensors**

DESCRIPTION

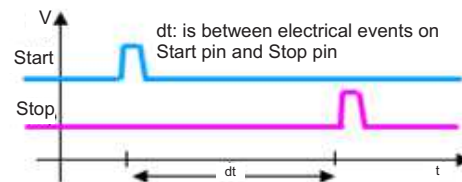
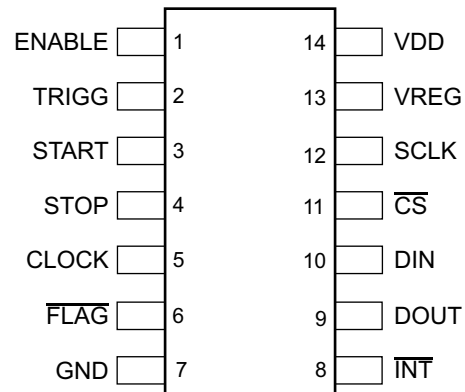
The TPL7200 is a Time to Digital Converter (TDC) that performs the function of a stopwatch and measures the elapsed time between two events. The TPL7200 has an SPI interface to the host for register access and configuration. Once a measurement has been initiated, the host can go into sleep (power-saving) mode and wake up when interrupted by the TDC upon completion of the measurement sequence.

The TPL7200 can be part of a TI chipset that includes the MSP430 (microcontroller).

ORDERING INFORMATION

T _A	PACKAGE ⁽¹⁾		ORDERABLE PART NUMBER	TOP-SIDE MARKING
–40°C to 85°C	TSSOP-PW	Tape and Reel	TPL7200PWR	TBD

(1) Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

**TSSOP - PW PACKAGE
(TOP VIEW)**


Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/ Ball Finish	MSL Peak Temp ⁽³⁾	Samples (Requires Login)
TPL7200PWR	PREVIEW	TSSOP	PW	14	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	

⁽¹⁾ The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

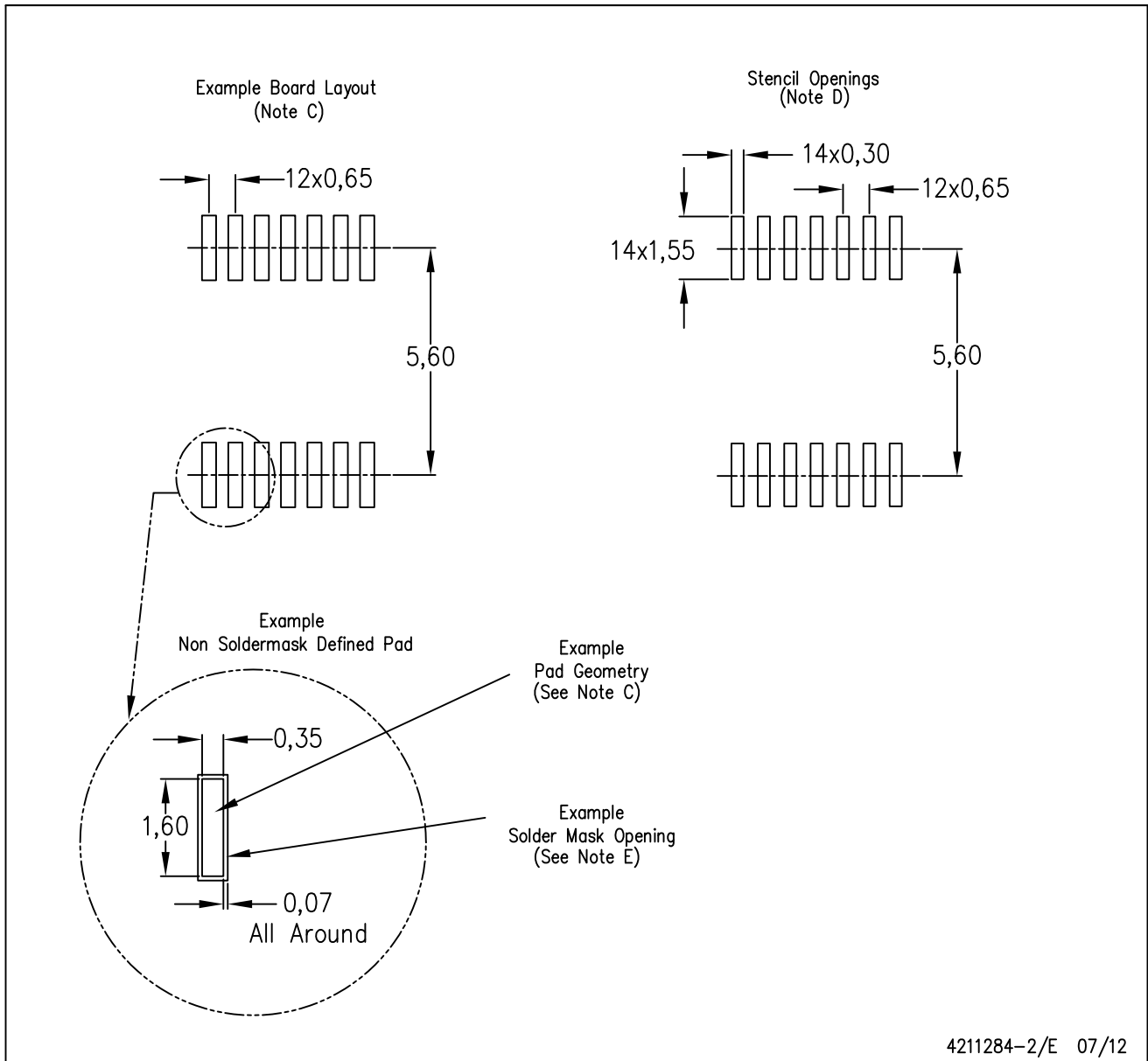
⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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PW (R-PDSO-G14)

PLASTIC SMALL OUTLINE



- NOTES:
- All linear dimensions are in millimeters.
 - This drawing is subject to change without notice.
 - Publication IPC-7351 is recommended for alternate designs.
 - Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
 - Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

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