

Digital Clock Datasheet

DESCRIPTION

This chip is a low-power high-performance digital clock design fabricated with IBM 180nm CMOS technology with supply voltage of 1.8 V.

The chip is designed to be driven by a 32,768 Hz clock source, and outputs time-division-multiplexed (TDM) signals to indicate hours, minutes, and seconds. The time values are represented as decimal digits, where each digit is seven-segment-display-format encoded on 7 binary bits (A, B, C, D, E, F, and G). The value of time are totally represented by six digits (ones digits, tens digits of hours, minutes, and seconds). All six digits share the common output pins by using TDM process, and an enable signal for each digit is set to high when the corresponding digit appears at the output pins.

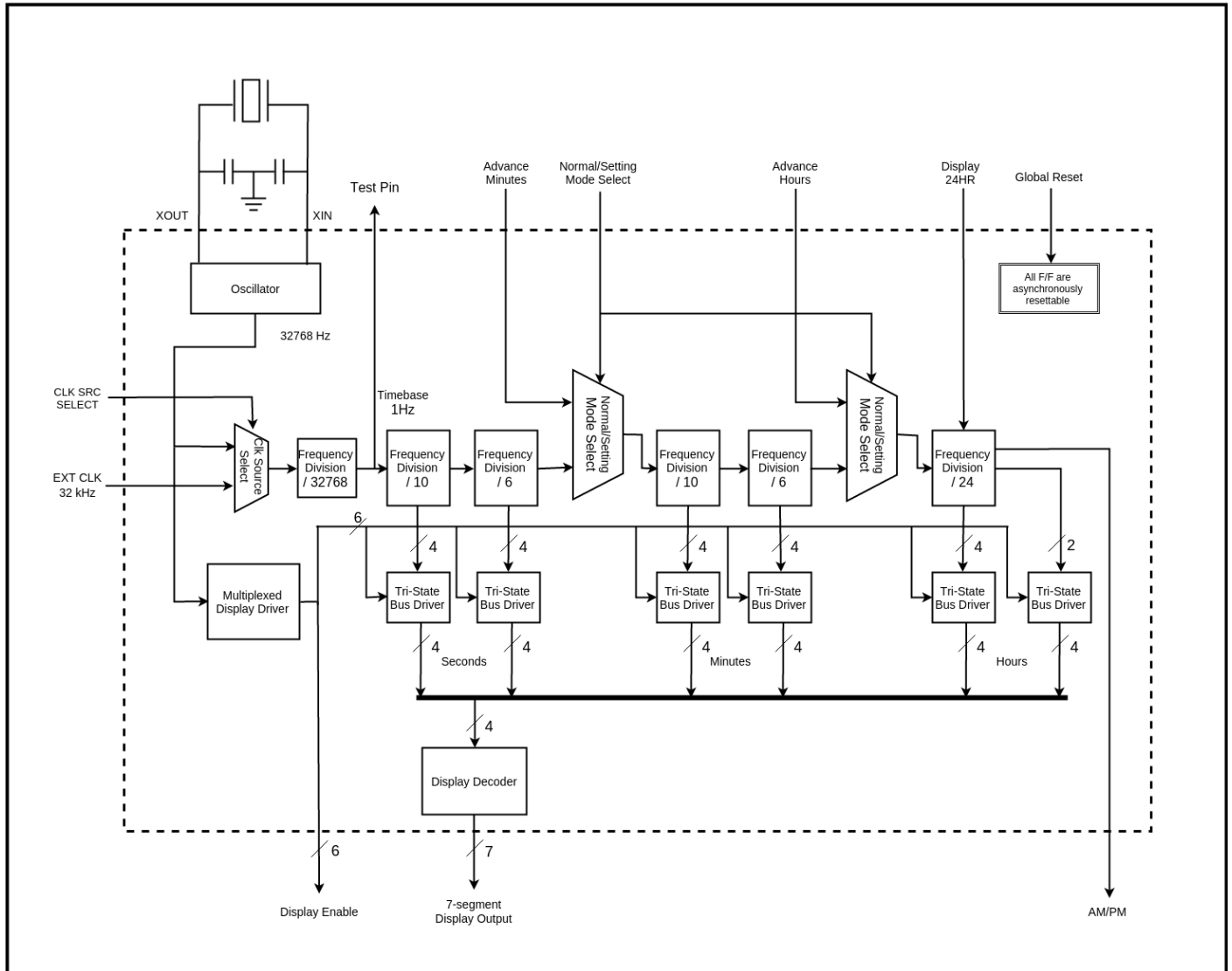
In addition, the digit clock is able to work in time-setting mode, in which both hours and minutes can be adjusted by applying positive-edge signals on the corresponding input pins. The digital clock chip provides a wide range of selection of operating configurations. Different output formats (12-hr or 24-hr) and different clock sources (on-chip oscillator or external clock) are available.

FEATURES

- 1.8 V Operating Voltage
- CMOS Logic
- Asynchronous Reset to Zero Time
- Clock Source Select
 - On-Chip Oscillator
 - External Clock Source
- Operation Mode Select
 - Timing Mode
 - Setting Mode
- Time-Division-Multiplexed (TDM) 7-Seg-Display-Format Encoded Outputs
 - 6 TDM Decimal Digits for Hours, Minutes, and Seconds
 - Decimal Digits Encoded in Seven-Segment-Display Format by A, B, C, D, E, F, and G
 - 1/6 Duty Cycle for Each Digit
 - Corresponding Enable Signal Output for Each Digit
- Output Format Select
 - 12 Hour Format with AM/PM
 - 24 Hour Format
- On-Chip Input Debouncing Circuit
- 1 Hz Test Pin

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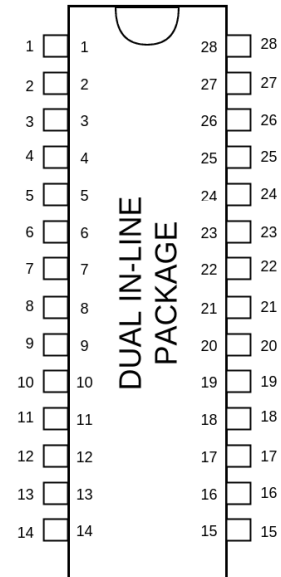
BLOCK DIAGRAM



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LOGIC SYMBOL

PIN ASSIGNMENT



Pin	Function	Pin	Function
1	XTAL1	2	XTAL2
3	N.C.	4	1 Hz Test Pin
5	Ext. Clock	6	Clk. Select
7	N.C.	8	VDD
9	Mode Select	10	Adv. Hours
11	Adv. Minutes	12	24Hr Format
13	\overline{RESET}	14	PM
15	Enable5	16	Enable4
17	Enable3	18	Enable2
19	Enable1	20	Enable0
21	VSS	22	G
23	F	24	E
25	D	26	C
27	B	28	A