

## 1x, 2x, 4x, and 8x Clock Multiplier with Internal LCO

### Features

- ◆ Clock Multiplier / Jitter Reduction
  - Generates a Low Jitter 6 - 75 MHz Clock from a Jittery 750 kHz to 30 MHz Clock Source
- ◆ Internal LCO Reference Clock
- ◆ 128 Hz Loop Filter Bandwidth
- ◆ Selectable Multiplication Factors
  - 1x, 2x, 4x, and 8x
- ◆ Output Enable Pin
- ◆ Lock Indicator
- ◆ Minimal Board Space Required
  - No External Analog Loop-filter Components

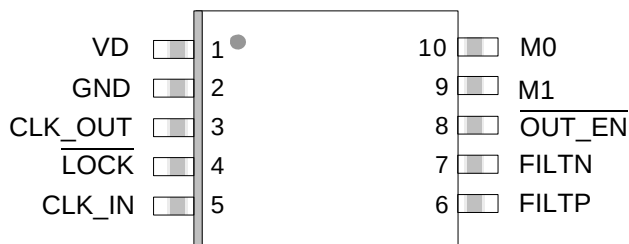
### General Description

The CS2300-02 is an extremely versatile system clocking device that utilizes a programmable phase lock loop. The CS2300-02 is based on a hybrid analog-digital PLL architecture comprised of a unique combination of a Delta-Sigma Fractional-N Frequency Synthesizer and a Digital PLL. This architecture allows for generation of a low-jitter clock relative to an external noisy synchronization clock with frequencies as low as 750 kHz. The CS2300-02 is a CS2300-OTP device that has been pre-configured at the factory. There are three hardware configuration pins available for mode and feature selection.

### Ordering Information

The CS2300-02 is available in a 10-pin MSOP package in Commercial (-10°C to +70°C) grade. Customer development kits are also available for custom device prototyping and device evaluation. Please see “[Ordering Information](#)” on [page 2](#) for complete details.

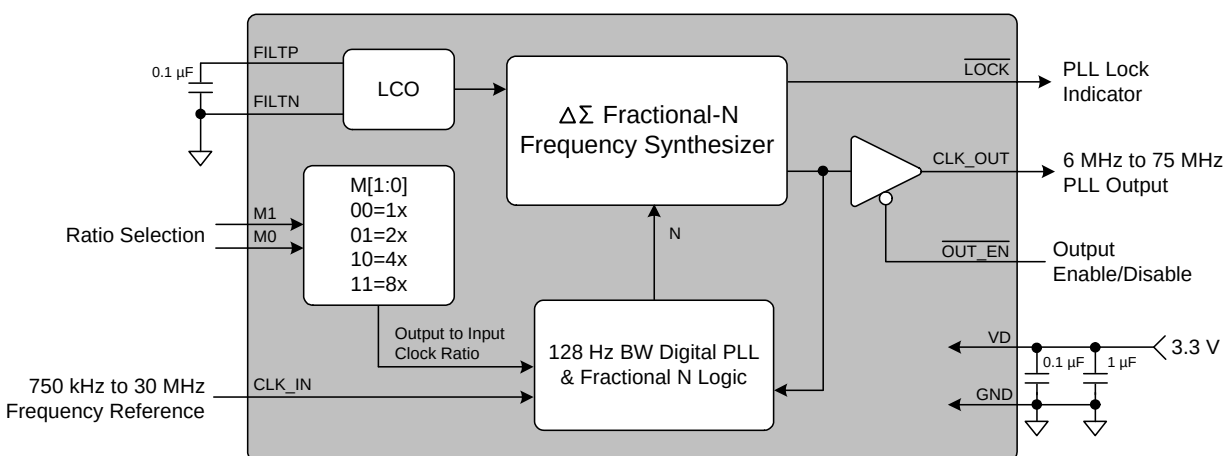
### Pin-Out Diagram



### Hardware Controls Settings

| M1 | M0 | PLL_OUT   |
|----|----|-----------|
| 0  | 0  | 1x CLK_IN |
| 0  | 1  | 2x CLK_IN |
| 1  | 0  | 4x CLK_IN |
| 1  | 1  | 8x CLK_IN |

| OUT_EN | CLK_OUT        |
|--------|----------------|
| 0      | Enabled        |
| 1      | High Impedance |



## 1. PIN DESCRIPTIONS

| Pin Name | #  | Pin Description                 |
|----------|----|---------------------------------|
| VD       | 1  | Digital Power                   |
| GND      | 2  | Ground                          |
| CLK_OUT  | 3  | PLL Clock Output                |
| LOCK     | 4  | Active Low PLL Lock Indicator   |
| CLK_IN   | 5  | Clock Input                     |
| FILTP    | 6  | LCO Filter Connections          |
| FILTIN   | 7  |                                 |
| OUT_EN   | 8  | Active Low CLK_OUT Enable Input |
| M1       | 9  | Mode Selection Inputs           |
| M0       | 10 |                                 |

See the CS2300-OTP datasheet for additional pin description information.

## 2. SPECIFICATIONS

Please see the CS2300-OTP datasheet for package information, device characteristics, and specifications except where noted due to specific programming options.

## 3. OPERATIONAL INFORMATION

Complete operational information can be found in the CS2300-OTP datasheet. Specific operational details dictated by the programming of the CS2300-02 are included below.

- The PLL clock output is forced to 0 when the PLL is unlocked, both upon loss of the CLK\_IN signal or briefly when switching mode pin configurations.
- The minimum loop filter bandwidth once locked is 128 Hz.

## 4. CONFIGURATION INFORMATION

The CS2300-02 has been factory pre-programmed with a unique configuration. The following table outlines the specific configuration profile which can be compared to the CS2300-OTP datasheet for detailed functional descriptions.

| OTP Modal and Global Configuration Parameters Form |             |           |             |        |             |        |             |  |
|----------------------------------------------------|-------------|-----------|-------------|--------|-------------|--------|-------------|--|
|                                                    | Mode 0      |           | Mode 1      |        | Mode 2      |        | Mode 3      |  |
| Ratio 0 (dec)                                      | 1           |           | 2           |        | 4           |        | 8           |  |
| Ratio 0 (hex)                                      | 00:10:00:00 |           | 00:20:00:00 |        | 00:40:00:00 |        | 00:80:00:00 |  |
| RModSel1                                           | 0           |           | 0           |        | 0           |        | 0           |  |
| RModSel0                                           | 0           |           | 0           |        | 0           |        | 0           |  |
| AuxOutSrc1                                         | 1           |           | 1           |        | 1           |        | 1           |  |
| AuxOutSrc0                                         | 1           |           | 1           |        | 1           |        | 1           |  |
| AutoRMod                                           | 0           |           | 0           |        | 0           |        | 0           |  |
| Global Configuration Set                           |             |           |             |        |             |        |             |  |
| ClkSkipEn                                          | AuxLockCfg  | ClkOutUnl | LFRatioCfg  | M2Cfg2 | M2Cfg1      | M2Cfg0 |             |  |
| 0                                                  | 0           | 0         | 1           | 0      | 0           | 0      |             |  |
| ClkIn_BW2                                          | ClkIn_BW1   | ClkIn_BW0 |             |        |             |        |             |  |
| 1                                                  | 1           | 1         |             |        |             |        |             |  |

## 5. ORDERING INFORMATION

| Product   | Description         | Package  | Pb-Free | Grade      | Temp Range    | Container     | Order#        |
|-----------|---------------------|----------|---------|------------|---------------|---------------|---------------|
| CS2300-02 | Clocking Device     | 10L-MSOP | Yes     | Commercial | -10° to +70°C | Rail          | CS230002-CZZ  |
|           |                     |          |         |            |               | Tape and Reel | CS230002-CZZR |
| CDK-2000  | Evaluation Platform | -        | Yes     | -          | -             | -             | CDK-2000-LCO  |

## 6. REVISION HISTORY

| Release | Changes         |
|---------|-----------------|
| A1      | Initial Release |

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### Contacting Cirrus Logic Support

For all product questions and inquiries, contact a Cirrus Logic Sales Representative.

To find one nearest you, go to [www.cirrus.com](http://www.cirrus.com).

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