CY24115

MediaClock™ Mini Disc Clock Generator

Features

- Integrated phase-locked loop (PLL)
- Low jitter, high accuracy outputs
- 3.3 V operation
- 8-pin SOIC package

Benefits

- High performance PLL tailored for mini disc applications.
- Meets critical timing requirements in complex system designs.
- Enables application compatibility.
- Industry standard package saves on board space.

Part Number	Outputs	Input Frequency Range	Output Frequencies
CY24115-2	1	1 MHz–30 MHz	90.3168 MHz and 180.6336 MHz (selectable)

Logic Block Diagram

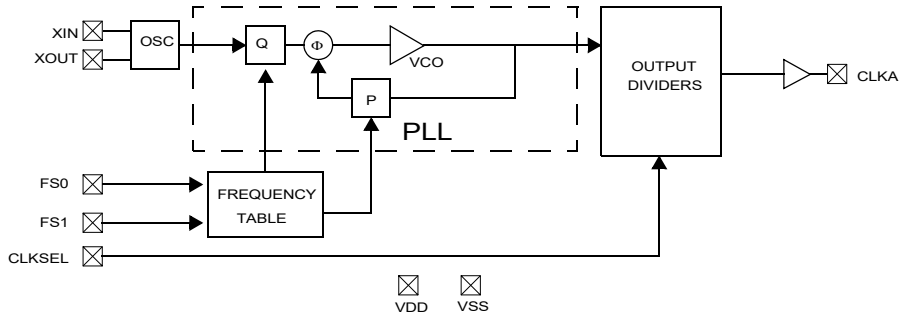


Table 1. CLKSEL Function, CY24115-2

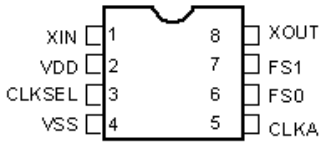
CLKSEL	CLKA	Unit	PPM Error
0	90.3168	MHz	0
1	180.6336	MHz	0

Table 2. Input Frequency Function, CY24115-2

FS1	FS0	Xtal Input	Unit
0	0	2.8224	MHz
0	1	5.6448	MHz
1	0	11.2896	MHz
1	1	22.5792	MHz

Pin Configurations

Figure 1. 8-pin SOIC pinout



Pin Definitions

Pin Name	Pin Number	Pin Description
X_{IN}	1	Reference input (crystal or external input)
V_{DD}	2	3.3V voltage supply
CLKSEL	3	CLKA select line For 24115-2, see Table 1 on page 1 for output values
V_{SS}	4	Ground
CLKA	5	24115-2: 90.3168 MHz and180.6336 MHz (frequency selectable). See Table 1 on page 1.
FS0	6	Input frequency FS0. See Table 2 on page 1.
FS1	7	Input frequency FS1. See Table 2 on page 1.
X_{OUT}[1]	8	Reference output

Note
1. Float X_{OUT} if X_{IN} is externally driven.

Absolute Maximum Conditions

Parameter	Description	Min	Max	Unit
V_{DD}	Supply Voltage	–0.5	7.0	V
T_S	Storage Temperature [2]	–65	125	°C
T_J	Junction Temperature	–	125	°C
	Digital Inputs	V_{SS} – 0.3	V_{DD} + 0.3	V
	Digital Outputs Referred to V_{DD}	V_{SS} – 0.3	V_{DD} + 0.3	V
	Electrostatic Discharge	2	–	kV

Recommended Operating Conditions

Parameter	Description	Min	Typ	Max	Unit
V_{DD}	Operating Voltage	3.14	3.3	3.47	V
T_A	Ambient Temperature	0	–	70	°C
C_{LOAD}	Max. Load Capacitance	–	–	15	pF
f_{REF}	Reference Frequency	2.8224	–	22.5792	MHz
t_1	Driven Reference Edge Rate	0.8	–	–	V/ns
DC_{IN}	Driven Reference Duty Cycle	40	–	60	%
C_{IN}	X_{IN}, X_{OUT} capacitance	–	12		pF
t_{PU}	Power up time for all VDD's to reach minimum specified voltage (power ramps must be monotonic)	0.05	–	500	ms

DC Electrical Characteristics

Parameter	Name	Description	Min	Typ	Max	Unit
I_{OH}	Output High Current	$V_{OH} = V_{DD} – 0.5$ V, $V_{DD} = 3.3$ V (source)	12	24	–	mA
I_{OL}	Output Low Current	$V_{OL} = 0.5$, $V_{DD} = 3.3$ V (sink)	12	24	–	mA
C_{IN}	Input Capacitance	CLKSEL, FS0, FS1, excludes XIN, XOUT	–	–	7	pF
V_{IL}	Input Low Voltage		–	–	30	% of V_{DD}
V_{IH}	Input High Voltage		70	–	–	% of V_{DD}
I_{IZ}	Input Leakage Current		–	5	–	µA
I_{DD}	Supply Current	Sum of core and output current	–	–	35	mA

Note
2. Rated for 10 years.

AC Electrical Characteristics

(V_{DD} = 3.3 V)

Parameter [3]	Name	Description	Min	Typ	Max	Unit
DC	Output Duty Cycle	Duty cycle is defined in Figure 3, 50% of V_{DD}	45	50	55	%
t_3	Rising Edge Slew Rate	Output clock rise time, 20%–80% of V_{DD}	0.8	1.4	–	V/ns
t_4	Falling Edge Slew Rate	Output clock fall time, 80%–20% of V_{DD}	0.8	1.4	–	V/ns
t_9	Clock Jitter	Peak to peak period jitter	–	–	350	ps
t_{10}	PLL Lock Time		–	–	3	ms

Figure 2. Test Circuit

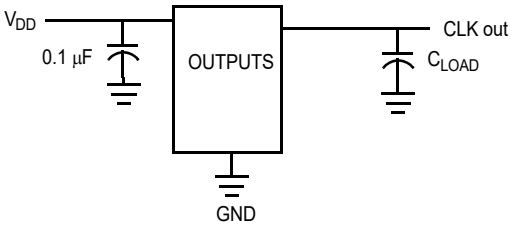


Figure 3. Duty Cycle Definition; DC = t_2/t_1

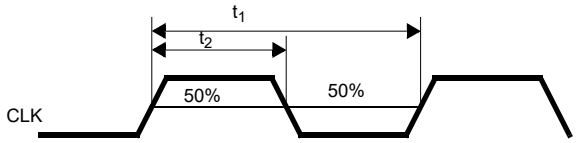
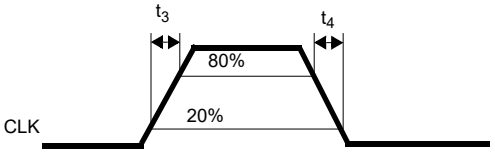


Figure 4. Rise and Fall Time Definitions

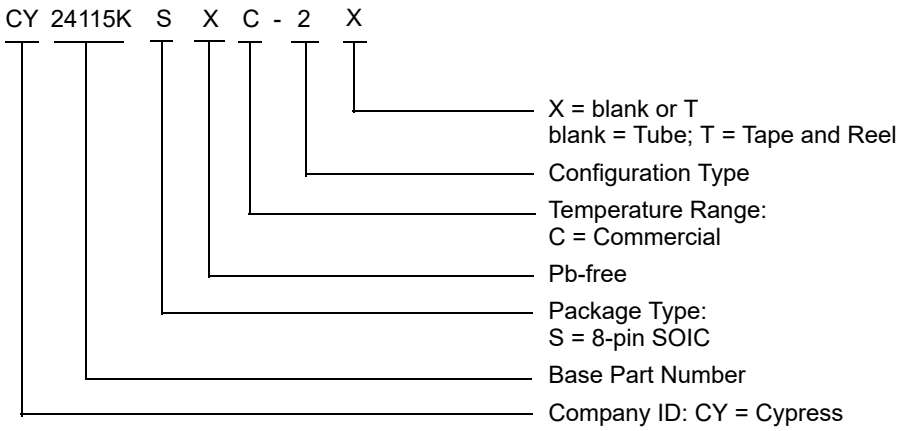


Note
3. Not 100% tested.

Ordering Information

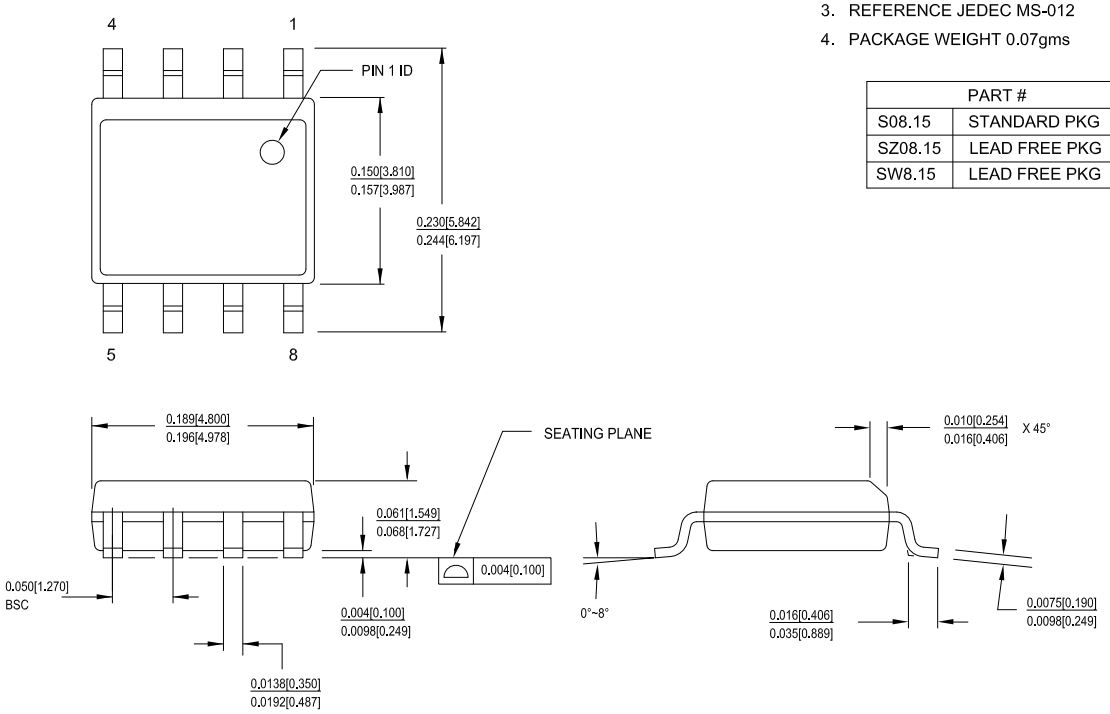
Ordering Code	Package Type	Operating Range	Operating Voltage
Pb-free			
CY24115KSXC-2	8-pin SOIC	Commercial	3.3 V
CY24115KSXC-2T	8-pin SOIC - Tape and Reel	Commercial	3.3 V

Ordering Code Definitions



Package Diagram

Figure 5. 8-pin SOIC (150 Mils) S0815/SZ815/SW815 Package Outline, 51-85066



Acronyms

Acronym	Description
I/O	Input/Output
PLL	Phase-Locked Loop
SOIC	Small-Outline Integrated Circuit

Document Conventions

Units of Measure

Symbol	Unit of Measure
°C	degree Celsius
kHz	kilohertz
kV	kilovolt
MHz	megahertz
µA	microampere
mA	milliampere
mm	millimeter
ms	millisecond
mW	milliwatt
ns	nanosecond
Ω	ohm
%	percent
pF	picofarad
ps	picosecond
V	volt
W	watt

Document History Page

Document Title: CY24115, MediaClock™ Mini Disc Clock Generator Document Number: 38-07275				
Revision	**ECN No.**	**Orig. of Change**	**Submission Date**	**Description of Change**
**	110767	CKN	02/06/2002	New data sheet.
*A	113515	CKN	04/30/2002	Changed status from Preliminary to Final. Updated DC Electrical Characteristics: Updated details in “Description” column corresponding to I_{OH} and I_{OL} parameters (Added (source) at the end in description of I_{OH} parameter and (sink) at the end in description of I_{OL} parameter).
*B	121884	RBI	12/14/2002	Updated Recommended Operating Conditions: Added t_{PU} parameter and its details.
*C	252154	RGL	08/26/2004	Updated Ordering Information: Updated part numbers. Updated Package Diagram: spec 51-85066 – Changed revision from *A to *C.
*D	2441946	AESA	05/15/2008	Updated Ordering Information: Added Note “Not recommended for new designs.” and referred the same note in existing MPNs. Updated part numbers (Added MPNs CY24115KSXC-2, and CY24115KSXC-2T). Updated to new template.
*E	2781381	CXQ	03/19/2010	Updated Ordering Information: Updated part numbers (Removed MPNs CY24115SC-2, CY24115SC-2T, CY24115SC-1, CY24115SC-1T, CY24115SXC-1, CY24115SXC-1T). Updated Package Diagram: spec 51-85066 – Changed revision from *C to *D. Updated to new template.
*F	3068367	CXQ	10/21/2010	Removed CY24115-1 parts related information in all instances across the datasheet. Updated Ordering Information: Updated part numbers (Removed MPNs CY24115SXC-2 and CY24115SXC-2T). Added Ordering Code Definitions.
*G	4018058	CINM	06/03/2013	Updated Package Diagram: spec 51-85066 – Changed revision from *D to *F. Added Acronyms and Units of Measure. Updated to new template. Completing Sunset Review.
*H	5298871	XHT	06/07/2016	Updated Package Diagram: spec 51-85066 – Changed revision from *F to *H. Updated to new template. Completing Sunset Review.
*I	6013606	XHT	01/04/2018	Updated Package Diagram: spec 51-85066 – Changed revision from *H to *I. Updated to new template.

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