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One-PLL Clock Generator

Features

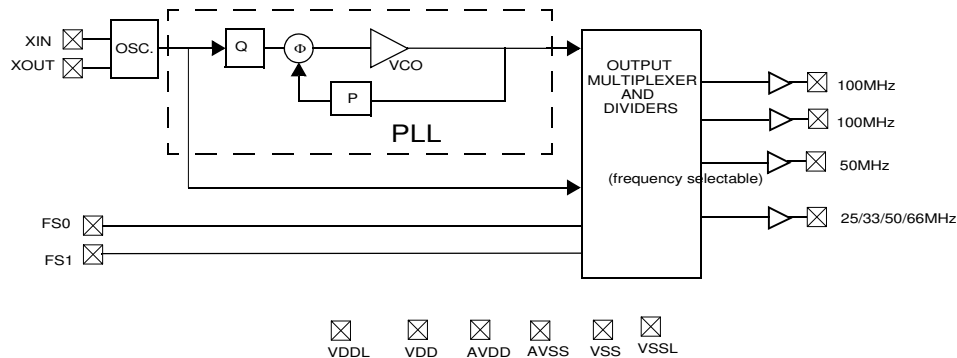
- Integrated phase-locked loop
- Low skew, low jitter, high accuracy outputs
- 3.3V operation with 2.5 V output option

Benefits

- Internal PLL with up to 333 MHz internal operation.
- Meets critical timing requirements in complex system designs.
- Enables application compatibility.

Part Number	Outputs	Input Frequency	Output Frequency Range
CY26114	4	25 MHz Crystal Input	2 copies of 100 MHz, 1 copy of 50 MHz, 1 copy 25, 33, 50, and 66 MHz (frequency selectable)

Logic Block Diagram



CLK4 Frequency Select Options

FS1	FS0	CLK 4	Units
0	0	25	MHz
0	1	33	MHz
1	0	50	MHz
1	1	66	MHz

Pin Configurations

Figure 1. CY26114, 16-Pin TSSOP

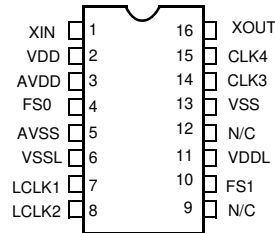


Table 1. Pin Definitions

Name	Pin Number	Description
XIN	1	Reference Crystal Input
V _{DD}	2	Voltage Supply
AV _{DD}	3	Analog Voltage Supply
FS0	4	Frequency Select 0
AV _{SS}	5	Analog Ground
V _{SSL}	6	LCLK Ground
LCLK1	7	100 MHz Output clock at V _{DDL} Level
LCLK2	8	100 MHz Output clock at V _{DDL} Level
N/C	9	No Connect
FS1	10	Frequency Select 1
V _{DDL}	11	LCLK Voltage Supply (2.5V or 3.3V)
N/C	12	No Connect
VSS	13	Ground
CLK3	14	50 MHz Output Clock
CLK4	15	25, 33, 50, and 66 MHz Clock Output (frequency selectable)
XOUT ^[1]	16	Reference Crystal Output

Note

1. Float XOUT if XIN is externally driven.

Absolute Maximum Conditions

Parameter	Description	Min	Max	Unit
V _{DD}	Supply Voltage	-0.5	7.0	V
V _{DDL}	IO Supply Voltage		7.0	V
T _J	Junction Temperature		125	°C
	Digital Inputs	AV _{SS} - 0.3	AV _{DD} + 0.3	V
	Digital Outputs Referred to V _{DD}	V _{SS} - 0.3	V _{DD} + 0.3	V
	Digital Outputs Referred to V _{DDL}	V _{SS} - 0.3	V _{DDL} + 0.3	V
	Electro-Static Discharge	2		kV

Recommended Operating Conditions

Parameter	Description	Min	Typ	Max	Unit
V _{DD}	Operating Voltage	3.0	3.3	3.6	V
V _{DDL}	Operating Voltage	2.375	2.5	2.625	V
T _A	Ambient Temperature	0		70	°C
C _{LOAD}	Maximum Load Capacitance			15	pF
f _{REF}	Reference Frequency		25		MHz
t _{PU}	Power Up Time—for all VDDs to reach minimum specified voltage (power ramps must be monotonic)	0.05		500	ms

DC Electrical Characteristics

Parameter ^[2]	Name	Description	Min	Typ	Max	Unit
I _{OH}	Output High Current	V _{OH} = V _{DD} - 0.5, V _{DD} /V _{DDL} = 3.3V	12	24		mA
I _{OL}	Output Low Current	V _{OL} = 0.5, V _{DD} /V _{DDL} = 3.3V	12	24		mA
I _{OH}	Output High Current	V _{OH} = V _{DDL} - 0.5, V _{DDL} = 2.5V	8	16		mA
I _{OL}	Output Low Current	V _{OL} = 0.5, V _{DDL} = 2.5V	8	16		mA
V _{IH}	Input High Voltage	CMOS levels, 70% of V _{DD}	0.7			VDD
V _{IL}	Input Low Voltage	CMOS levels, 30% of V _{DD}			0.3	VDD
I _{VDD}	Supply Current	AV _{DD} /V _{DD} Current			25	mA
I _{VDDL}	Supply Current	V _{DDL} Current (V _{DDL} = 3.6V)			20	mA
I _{VDDL}	Supply Current	V _{DDL} Current (V _{DDL} = 2.625V)			15	mA

AC Electrical Characteristics

Parameter ^[2]	Name	Description	Min	Typ	Max	Unit
DC	Output Duty Cycle	Duty cycle is defined in Figure 2; t ₁ /t ₂ , 50% of V _{DD}	45	50	55	%
t ₃	Rising Edge Rate	Output clock rise time, 20%–80% of V _{DD} /V _{DDL} = 3.3V	0.8	1.4		V/ns
t ₃	Rising Edge Rate	Output clock rise time, 20%–80% of V _{DDL} = 2.5V	0.6	1.2		V/ns
t ₄	Falling Edge Rate	Output clock fall time, 80%–20% of V _{DD} /V _{DDL} = 3.3V	0.8	1.4		V/ns
t ₄	Falling Edge Rate	Output clock fall time, 80%–20% of V _{DDL} = 2.5V	0.6	1.2		V/ns
t ₅	Skew	Delay between related outputs at rising edge			250	ps
t ₉	Clock Jitter	Peak to peak period jitter			200	ps
t ₁₀	PLL Lock Time				3	ms

Note
2. Not 100% tested.

Figure 2. Duty Cycle Definitions: $DC = t2/t1$

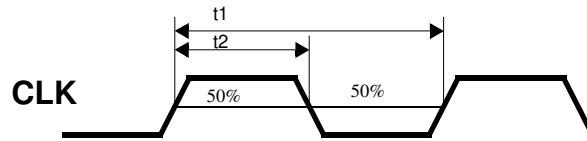


Figure 3. Rise Time and Fall Time Definitions

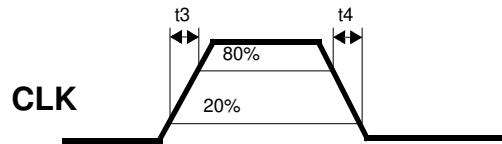
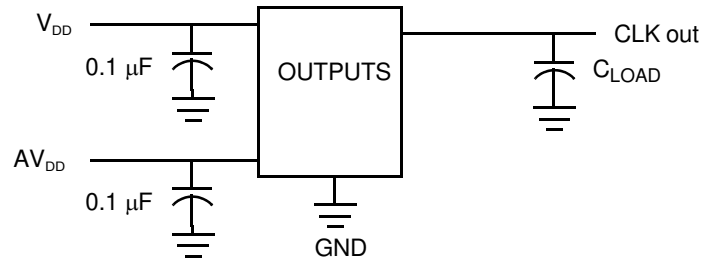


Figure 4. Test Circuit



Ordering Information

Ordering Code	Package Name	Package Type	Operating Range	Operating Voltage
CY26114ZC ^[3]	Z16	16-Pin TSSOP	Commercial	3.3V
CY26114KZC	Z16	16-Pin TSSOP	Commercial	3.3V
CY26114KZCT	Z16	16-Pin TSSOP- Tape and Reel	Commercial	3.3V

Note

3. Not recommended for new designs.

Document History Page

Document Title: CY26114 One-PLL Clock Generator Document Number: 38-07098				
Revision	ECN No.	Origin of Change	Submission Date	Description of Change
**	107333	CKN	12/14/02	New Data Sheet
*A	121867	RBI	08/28/01	Power up requirements added to Operating Conditions Information
*B	2441946	AESA	05/15/08	Updated template. Added Note "Not recommended for new designs." Added part number CY26114KZC, and CY26114KZCT in ordering information table.

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