

CY26121

PacketClock[™] Spread Spectrum Clock Generator

Features

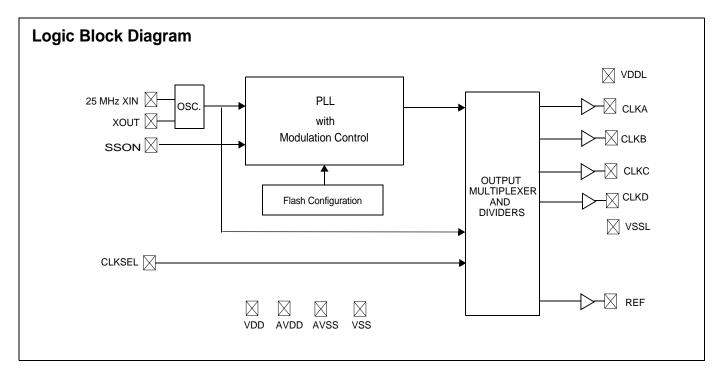
- Integrated phase-locked loop (PLL)
- Low jitter, high-accuracy outputs
- 3.3V operation
- 25-MHz input frequency
- 66.66-MHz or 33.33-MHz selectable output frequency (orig, -3,-11,-31)
- 33.33-MHz or 25-MHz selectable output frequency (-2,-21)

Table 1. Frequency Table for CLKA-D

Benefits

- High-performance PLL tailored for Spread Spectrum application
- Meets critical timing requirements in complex system designs
- Enables application compatibility
- Works with commonly available crystal or driven reference
- Downspread Spread Spectrum with 30-kHz nominal modulation frequency

Part Number	CLKSEL=0	CLKSEL=1	Spread%	Parallel Crystal Load
CY26121	66.66 MHz	33.33	-2.8%	6 pF
CY26121-2	33.33 MHz	25.00	-2.8%	6 pF
CY26121-3	66.66 MHz	33.33	-1.4%	6 pF
CY26121-11	66.66 MHz	33.33	-2.8%	15 pF
CY26121-21	33.33 MHz	25.00	-2.8%	15 pF
CY26121-31	66.66 MHz	33.33	-1.4%	15 pF



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Pin Configuration

Figure 1. CY26121, 16-pin TSSOP

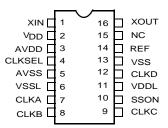


Table 2. Pin Definitions

Name	Pin Number	Description
XIN	1	Reference input Or Crystal Input
VDD	2	3.3V Voltage Supply
AVDD	3	3.3V Analog Voltage
CLKSEL	4 (orig., -11,-3,-31)	0 = 66.66MHz out, 1 = 33.33 MHz Out. Weak pull up.
CLKSEL	4 (-2, -21)	0 = 33.33MHz out, 1 = 25 MHz Out. Weak pull up.
AVSS	5	Analog Ground
VSSL	6	CLK Ground
CLK(A:D)	7,8,9,12	Clock Outputs at V _{DDL} level
SSON	10	Spread Spectrum Enable pin 0 = SS off; 1 = SS on. Weak pull up.
VDDL	11	3.3V Clock Voltage Supply
VSS	13	Ground
REF	14	Reference Output at V _{DD} Level
NC	15	No Connect
XOUT ^[1]	16	Crystal Output



Maximum Ratings

Exceeding maximum ratings may impair the useful life of the device. These user guidelines are not tested.

Supply Voltage (V _{DD} , AV _{DD} , V _{DDL})	–0.5 to +7.0V
DC Input Voltage	–0.5V to V _{DD} + 0.5
Storage Temperature	
(Non-condensing)	–55°C to +125°C

Junction Temperature	–40°C to +125°C
Data Retention at Tj = 125°C	> 10 years
Package Power Dissipation	350 mW
Static Discharge Voltage (per MIL-STD-883, Method 3015)	<u>≥</u> 2000V

Recommended Operating Conditions

Parameter	Description	Min	Тур.	Max	Unit
V _{DD,} AV _{DD}	Supply voltage	3.135	3.30	3.465	V
V _{DDL}	Supply voltage for CLK (A-D)	3.135	3.30	3.465	V
T _A	Ambient temperature (commercial temp. grade)	0		70	°C
T _A	Ambient Temperature (industrial temp grade)	-40		85	°C
C _{LOAD}	Max. output load capacitance			15	pF
F _{ref}	Reference frequency		25		MHz

Crystal Specification^[2]

Parameter	Name	Min	Тур	Мах	Unit
CR _{load}	Crystal load capacitance (original, -2, -3)		6		pF
CR _{load}	Crystal load capacitance (-11,-21,-31)		15		pF
ESR	Equivalent series resistance			50	Ω

DC Electrical Specifications

Parameter	Description	Condition	Min	Тур.	Max	Unit
I _{ОН}	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
IIH	Input High Current	$V_{IH} = V_{DD}$		5	10	μA
۱ _{IL}	Input Low Current	$V_{IL} = 0V$			50	μA
V _{IH}	Input High Voltage	CMOS levels	0.7			V _{DD}
V _{IL}	Input Low Voltage	CMOS levels			0.3	V _{DD}
C _{IN} ^[3]	Input Capacitance	Input pins excluding XIN			7	pF
R _{UP} ^[3]	Pull up resistor on input pins	V_{DD} = 3.14 to 3.47V, measured at V_{IN} = 0V	80	100	150	kΩ
I _{DD}	Supply Current	AV _{DD} /V _{DD} /V _{DDL} Current.		42	60	mA

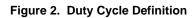
Float XOUT if XIN is externally driven.
 A fundamental parallel resonant crystal must be used



AC Electrical Specifications [3]

Parameter	Description	Condition	Min	Тур.	Max	Unit
DC	Output Duty Cycle	Duty Cycle is defined in Figure 2, 50% of V_{DD}	45	50	55	%
ER	Rising Edge Rate	Output Clock Edge Rate, Measured from 20% to 80% of V_{DD} , C_{LOAD} = 15 pF See Figure 3.	0.8	1.4		V/ns
EF	Falling Edge Rate	Output Clock Edge Rate, Measured from 80% to 20% of V_{DD} , C_{LOAD} = 15 pF See Figure 3.	0.8	1.4		V/ns
tj	RMS Clock Cycle-to-Cycle Jitter	RMS cycle-to-cycle jitter with Spread on. Measured at $V_{DD}/2$.		15	40	ps

Voltage and Timing Definitions



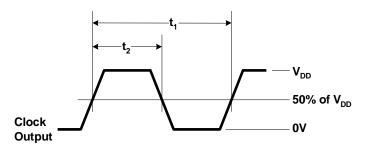
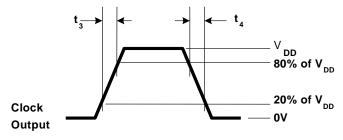


Figure 3. ER = (0.6 x V_{DD}) /t3, EF = (0.6 x V_{DD}) /t4





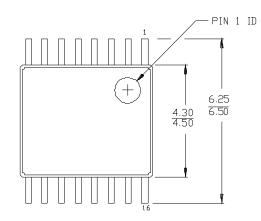
Ordering Information

Ordering Code	Package Type	Operating Range
CY26121ZC ^[4]	16-pin TSSOP	Commercial, 0°C to 70°C
CY26121ZCT ^[4]	16-pin TSSOP – Tape and Reel	Commercial, 0°C to 70°C
CY26121ZI ^[4]	16-pin TSSOP	Industrial, -40°C to 85°C
CY26121ZIT ^[4]	16-pin TSSOP – Tape and Reel	Industrial, -40°C to 85°C
CY26121ZC-2 ^[4]	16-pin TSSOP	Commercial, 0°C to 70°C
CY26121ZC-2T ^[4]	16-pin TSSOP – Tape and Reel	Commercial, 0°C to 70°C
CY26121ZI-2 ^[4]	16-pin TSSOP	Industrial, -40°C to 85°C
CY26121ZI-2T ^[4]	16-pin TSSOP – Tape and Reel	Industrial, -40°C to 85°C
CY26121ZC-3 ^[4]	16-pin TSSOP	Commercial, 0°C to 70°C
CY26121ZC-3T ^[4]	16-pin TSSOP – Tape and Reel	Commercial, 0°C to 70°C
CY26121ZI-3 ^[4]	16-pin TSSOP	Industrial, -40°C to 85°C
CY26121ZI-3T ^[4]	16-pin TSSOP – Tape and Reel	Industrial, -40°C to 85°C
CY26121ZC-11 ^[4]	16-pin TSSOP	Commercial, 0°C to 70°C
CY26121ZC-11T ^[4]	16-pin TSSOP – Tape and Reel	Commercial, 0°C to 70°C
CY26121ZC-21 ^[4]	16-pin TSSOP	Commercial, 0°C to 70°C
CY26121ZC-21T ^[4]	16-pin TSSOP – Tape and Reel	Commercial, 0°C to 70°C
CY26121ZI-21 ^[4]	16-pin TSSOP	Industrial, -40°C to 85°C
CY26121ZI-21T ^[4]	16-pin TSSOP – Tape and Reel	Industrial, -40°C to 85°C
CY26121ZC-31 ^[4]	16-pin TSSOP	Commercial, 0°C to 70°C
CY26121ZC-31T ^[4]	16-pin TSSOP – Tape and Reel	Commercial, 0°C to 70°C
CY26121KZC-21	16-pin TSSOP	Commercial, 0°C to 70°C
CY26121KZC-21T	16-pin TSSOP – Tape and Reel	Commercial, 0°C to 70°C
CY26121KZI-21	16-pin TSSOP	Industrial, -40°C to 85°C
CY26121KZI-21T	16-pin TSSOP – Tape and Reel	Industrial, -40°C to 85°C
Pb-Free	·	
CY26121ZXC-21 ^[4]	16-pin TSSOP	Commercial, 0°C to 70°C
CY26121ZXC-21T ^[4]	16-pin TSSOP – Tape and Reel	Commercial, 0°C to 70°C
CY26121ZXI-21 ^[4]	16-pin TSSOP	Industrial, -40°C to 85°C
CY26121ZXI-21T ^[4]	16-pin TSSOP – Tape and Reel	Industrial, -40°C to 85°C
CY26121KZXC-21	16-pin TSSOP	Commercial, 0°C to 70°C
CY26121KZXC-21T	16-pin TSSOP – Tape and Reel	Commercial, 0°C to 70°C
CY26121KZXI-21	16-pin TSSOP	Industrial, –40°C to 85°C
CY26121KZXI-21T	16-pin TSSOP – Tape and Reel	Industrial, -40°C to 85°C



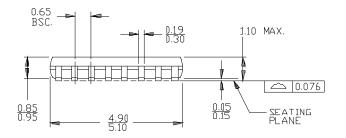
Package Drawing and Dimensions

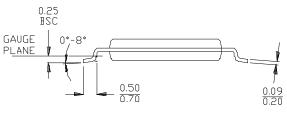




DIMENSIONS IN MILLIMETERS,







51-85091-**

Deremeter	Inches			Millimeters			
Parameter	Min	Nom.	Max	Min	Nom.	Max.	
А	-	-	0.047	-	-	1.20	
A ₁	0.002	-	0.006	0.05	-	0.15	
A2	0.031	0.039	0.041	0.80	1.00	1.05	
В	0.007	-	0.012	0.19	-	0.30	
С	0.004	-	0.008	0.09	-	0.20	
D	0.193	0.197	0.201	4.90	5.00	5.10	
E	0.169	0.173	0.177	4.30	4.40	4.50	
е		0.026 BSC			0.65 BSC	•	
Н	0.244	0.252	0.260	6.20	6.40	6.60	
L	0.018	0.024	0.030	0.45	0.60	0.75	
а	0°	-	8°	0°	-	8°	



Document History Page

	Document Title: CY26121 PacketClock™ Spread Spectrum Clock Generator Document Number: 38-07350						
REV.	ECN NO.	Issue Date	Orig. of Change	Description of Change			
**	121669	02/11/03	CKN	New Data Sheet			
*A	2440886	See ECN		Updated template. Added Note "Not recommended for new designs." Added part numbers CY26121ZXC-21, CY26121ZXC-21T, CY26121ZXI-21, and CY26121ZXI-21T in ordering information table. Added part numbers CY26121KZC-21, CY26121KZC-21T, CY26121KZI-21, and CY26121KZI-21T. Added part numbers CY26121KZXC-21, CY26121KZXC-21T, CY26121KZXI-21, and CY26121KZXI-21T. Removed part numbers CY26121ZI-11, CY26121ZI-11T, CY26121ZI-31 and CY26121ZI-31T			

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