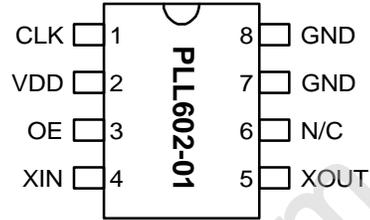


**Low Phase Noise XO (24MHz to 50MHz)**

**FEATURES**

- Low phase noise XO output for the 24MHz to 50MHz range (-135 dBc at 10kHz offset).
- CMOS output.
- 12 to 25MHz crystal input.
- Integrated crystal load capacitor: no external load capacitor required.
- Low jitter (RMS): 5-7ps period jitter (1 sigma).
- 3.3V operation.
- Available in 8-Pin TSSOP or SOIC.

**PIN CONFIGURATION**



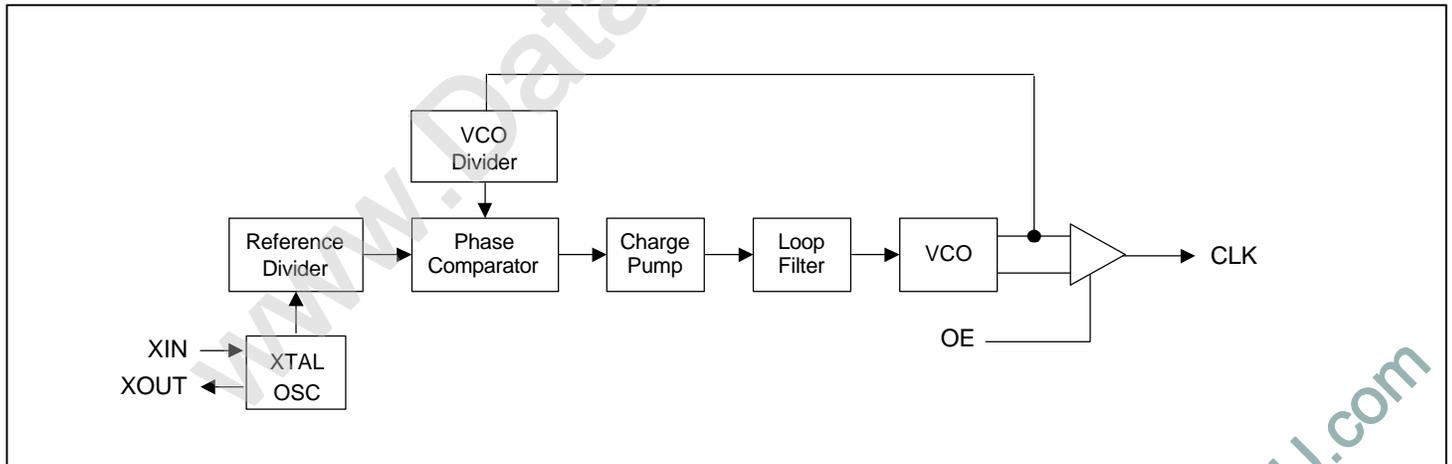
**OUTPUT RANGE**

MULTIPLIER	FREQUENCY RANGE	OUTPUT BUFFER
x2	24 - 50MHz	CMOS

**DESCRIPTIONS**

The PLL602-01 is a low cost, high performance and low phase noise XO, providing less than -135dBc at 10kHz offset in the 24MHz to 50MHz operating range. The very low jitter (5 ps to 7 ps RMS period jitter) makes this chip ideal for applications requiring reference frequency sources. Input crystal can range from 12 to 25MHz (fundamental resonant mode).

**BLOCK DIAGRAM**



**Low Phase Noise XO (24MHz to 50MHz)**
**PIN DESCRIPTIONS**

Name	Number	Type	Description
CLK	1	O	Output clock pin.
VDD	2	P	+3.3V VDD power supply pin.
OE	3	I	Output enable input pin. Disables (tri-state) output when low. Internal pull-up enables output by default if pin is not connected to low.
XIN	4	I	Crystal input pin.
XOUT	5	I	Crystal output pin.
N/C	6	-	Not connected.
GND	7, 8	P	Ground pin.

**ELECTRICAL SPECIFICATIONS**
**1. Absolute Maximum Ratings**

PARAMETERS	SYMBOL	MIN.	MAX.	UNITS
Supply Voltage Range	V <sub>CC</sub>	-0.5	7	V
Input Voltage Range	V <sub>I</sub>	-0.5	V <sub>CC</sub> +0.5	V
Output Voltage Range	V <sub>O</sub>	-0.5	V <sub>CC</sub> +0.5	V
Soldering Temperature			260	°C
Storage Temperature	T <sub>S</sub>	-65	150	°C
Ambient Operating Temperature		-10	85	°C

Exposure of the device under conditions beyond the limits specified by Maximum Ratings for extended periods may cause permanent damage to the device and affect product reliability. These conditions represent a stress rating only, and functional operations of the device at these or any other conditions above the operational limits noted in this specification is not implied.

**2. AC Specification**

PARAMETERS	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Frequency		12		25	MHz
Output Frequency		24		50	MHz
Output Rise Time	0.8V to 2.0V with 10pF load			1.5	ns
Output Fall Time	2.0V to 0.8V with 10pF load			1.5	ns
Duty Cycle	At VDD/2	45	50	55	%

**Low Phase Noise XO (24MHz to 50MHz)**
**3. Jitter and Phase Noise specification**

PARAMETERS	CONDITIONS	MIN.	TYP.	MAX.	UNITS
RMS Period Jitter (1 sigma – 1000 samples)	at 44MHz, with capacitive de-coupling between VDD and GND.		7		ps
Phase Noise relative to carrier	44MHz @100Hz offset		-80		dBc/Hz
Phase Noise relative to carrier	44MHz @1kHz offset		-110		dBc/Hz
Phase Noise relative to carrier	44MHz @10kHz offset		-135		dBc/Hz
Phase Noise relative to carrier	44MHz @100kHz offset		-130		dBc/Hz
Phase Noise relative to carrier	44MHz @1MHz offset		-132		dBc/Hz

**4. DC Specification**

PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Supply Current, Dynamic, with Loaded Outputs	$I_{DD}$	$F_{XIN} = 12 - 25\text{MHz}$ Output load of 10pF		10		mA
Operating Voltage	$V_{DD}$		3.13		3.47	V
Output High Voltage	$V_{OH}$	$I_{OH} = -12\text{mA}$	2.4			V
Output Low Voltage	$V_{OL}$	$I_{LO} = 12\text{mA}$			0.4	V
Output High Voltage at CMOS level	$V_{OHC}$	$I_{OH} = -4\text{mA}$	$V_{DD} - 0.4$			V
Output drive current		At TTL level (High drive)	36	51		mA
		At TTL level (Low drive)	12	17		mA
Short Circuit Current				$\pm 50$		mA
ESD Protection		Human Body Model, all pads except XT and XTB	3000			V
		Human Body Model, XT and XTB pads	2000			

**5. Crystal Specifications**

PARAMETERS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Crystal Resonator Frequency	$F_{XIN}$	12		25	MHz
Crystal Loading Capacitance Rating	$C_L$ (xtal)		20		pF
Driving power			1		mW
ESR	$R_s$			30	$\Omega$

**Low Phase Noise XO (24MHz to 50MHz)**

**PACKAGE INFORMATION**

8 PIN ( dimensions in mm )

Symbol	Narrow SOIC		TSSOP	
	Min.	Max.	Min.	Max.
A	1.47	1.73	-	1.20
A1	0.10	0.25	0.05	0.15
B	0.33	0.51	0.19	0.30
C	0.19	0.25	0.09	0.20
D	4.80	4.95	2.90	3.10
E	3.80	4.00	4.30	4.50
H	5.80	6.20	6.20	6.60
L	0.38	1.27	0.45	0.75
e	1.27 BSC		0.65 BSC	

**ORDERING INFORMATION**

***For part ordering, please contact our Sales Department:***  
 47745 Fremont Blvd., Fremont, CA 94538, USA  
 Tel: (510) 492-0990 Fax: (510) 492-0991

**PART NUMBER**

The order number for this device is a combination of the following:  
 Device number, Package type and Operating temperature range

**PLL602-01 X C**

PART NUMBER \_\_\_\_\_

- \_\_\_\_\_ TEMPERATURE  
 C=COMMERCIAL  
 M=MILITARY  
 I=INDUSTRIAL
- \_\_\_\_\_ PACKAGE TYPE  
 S=SOIC, O=TSSOP

*PhaseLink Corporation, reserves the right to make changes in its products or specifications, or both at any time without notice. The information furnished by PhaseLink is believed to be accurate and reliable. However, PhaseLink makes no guarantee or warranty concerning the accuracy of said information and shall not be responsible for any loss or damage of whatever nature resulting from the use of, or reliance upon this product.*

**LIFE SUPPORT POLICY:** PhaseLink's products are not authorized for use as critical components in life support devices or systems without the express written approval of the President of PhaseLink Corporation.