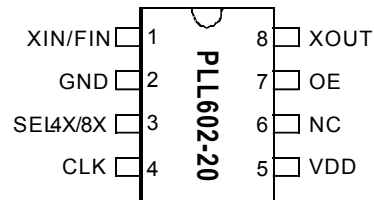


## 200MHz XO IC With Selectable 4X/8X Multiplier

### FEATURES

- Integrated crystal oscillator circuitry (XO).
- Very low Jitter and Phase Noise (-110dBc @ 10kHz offset)
- Selectable frequency multiplication (x4, x8).
- Accepts Fundamental Crystal input of 10MHz-30MHz
- Output Frequency: up to 200MHz CMOS
- Output enable (OE) pin with 60KΩ pull up resistor
- Operating temperature range from 0°C to 70°C
- 2.5 or 3.3V supply voltage.
- Available in Green/RoHS compliant 8-pin SOIC package

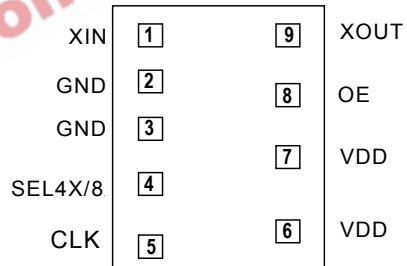
### PIN CONFIGURATION



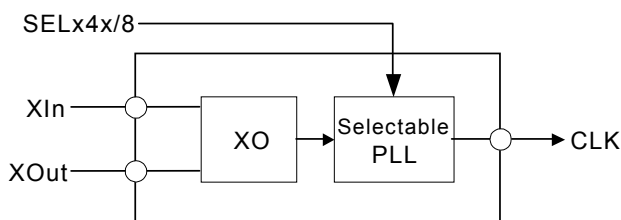
### DESCRIPTION

The PLL602-20 is a general purpose low jitter and low phase noise (-110dBc @10kHz offset), high performance CMOS XO IC. This flexible device can be used as a XO with output frequencies ranging from  $F_{XIN} \times 4$  to  $F_{XIN} \times 8$  with the use of a single selector pin. This makes the PLL602-20 the ideal high performance, low-cost solution for a wide range of applications requiring up to 200MHz (including 77.76MHz, 125MHz and 155.52MHz).

### PAD LAYOUT AND DIE ID



### BLOCK DIAGRAM



### DIE SPECIFICATION

Name	Value
Size	31.5x55.1 mil
Reverse side	GND
Pad Opening	80 micron x 80 micron
Die Thickness	10 mil

## 200MHz XO IC With Selectable 4X/8X Multiplier

### PIN/PAD ASSIGNMENT and DESCRIPTION

Name	Pin #	Die Pads			Type	Description
		Pad #	X (μm)	Y(μm)		
XIN/FIN	1	1	101.5	1274.0	I	Crystal or Reference Input Pin.
GND	2	2	101.5	1075.0	P	GND connection.
		3	101.5	878.4		
SEL4X/8X	3	4	101.5	671.8	O	Multiplier Selector Pin with 60KΩ pull-up resistor.
						<table border="1"> <thead> <tr> <th>Logic State</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>x4</td> </tr> <tr> <td>1(default)</td> <td>x8</td> </tr> </tbody> </table>
Logic State	Multiplier					
0	x4					
1(default)	x8					
CLK	4	5	101.5	425.0	O	Clock Output.
VDD	5	6	697	483.0	P	VDD connection.
		7	697	790.0		
DNC	6	-	-	-	-	Do Not Connect.
OE	7	8	697	1024.0	O	Output Enable: '0' to disable (tri-state output), '1' (default value when not connected) to enable the output (internal (60KΩ pull up resistor).
XOUT	8	9	697	1274.0	O	Crystal output.

## 200MHz XO IC With Selectable 4X/8X Multiplier

### ELECTRICAL SPECIFICATIONS

#### ABSOLUTE MAXIMUM RATINGS

PARAMETERS	SYMBOL	MIN.	MAX.	UNITS
Supply Voltage Range	$V_{DD}$	-0.5	4.6	V
Input Voltage Range	$V_I$	-0.5	$V_{DD}+0.5$	V
Output Voltage Range	$V_O$	-0.5	$V_{DD}+0.5$	V
Soldering Temperature (Green package)			260	°C
Storage Temperature	$T_S$	-65	150	°C
Ambient Operating Temperature		0	70	°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.

#### AC SPECIFICATIONS

PARAMETERS	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Crystal Input Frequency(XIN)	Fundamental Crystal	10		30	MHz
Settling Time	At power-up (after VDD increases over 1.62V)			10	ms
Output Rise Time	15pF Load, 10/90%VDD		1.2	2.0	ns
Output Fall Time	15pF Load, 90/10%VDD		1.2	2.0	ns
Duty Cycle	At VDD/2	45	50	55	%
Period Jitter, peak-to-peak* (measured from 10,000 samples)	With capacitive decoupling between VDD and GND. Operating only one output.		70		ps

## 200MHz XO IC With Selectable 4X/8X Multiplier

### DC SPECIFICATIONS

PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Supply Current, Dynamic, with Loaded Outputs	$I_{DD}$	At 80MHz, load=15pF, VDD=3.3V			15	mA
Operating Voltage	$V_{DD}$		2.25		3.63	V
Output Low Voltage	$V_{OL}$	$I_{OL} = +4mA$ Std. drive			0.4	V
Output High Voltage	$V_{OH}$	$I_{OH} = -4mA$ Std. drive	$V_{DD} - 0.4$			V
Output Current	$I_{OSD}$	$V_{OL} = 0.4V, V_{OH} = 2.4V$			24	mA
Short-circuit Current	$I_s$			$\pm 50$		mA

### JITTER AND PHASE NOISE SPECIFICATION

PARAMETERS	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Period Jitter (PkPk – 10,000 samples)	at 155MHz, with capacitive decoupling between VDD and GND.		50		ps
	at 80MHz, with capacitive decoupling between VDD and GND.		55		
Phase Noise relative to carrier	125MHz @100Hz offset		-100		dBc/Hz
Phase Noise relative to carrier	125MHz @1kHz offset		-118		dBc/Hz
Phase Noise relative to carrier	125MHz @10kHz offset		-112		dBc/Hz
Phase Noise relative to carrier	125MHz @100kHz offset		-98		dBc/Hz
Phase Noise relative to carrier	125MHz @1MHz offset		-107		dBc/Hz

**200MHz XO IC With Selectable 4X/8X Multiplier**

**CRYSTAL SPECIFICATIONS**

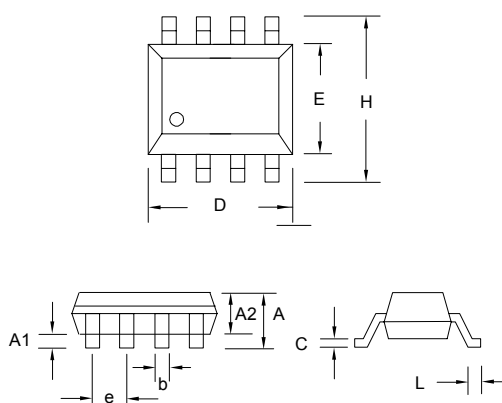
PARAMETERS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Fundamental Crystal Resonator Frequency	$F_{XIN}$	10		30	MHz
Crystal Loading Rating	$C_{L(xtal)}$		11		pF
Maximum Sustainable Drive Level				500	$\mu$ W
Operating Drive Level			100		$\mu$ W
Crystal Shunt Capacitance	$C_0$			6	pF
Effective Series Resistance, Fundamental, 10-30MHz	$R_E$			30	$\Omega$

Note: A detailed crystal specification document is also available for this part

**PACKAGE DRAWINGS (GREEN PACKAGE COMPLIANT)**

**SOIC 8L**

Symbol	Dimension in MM	
	Min.	Max.
A	1.35	1.75
A1	0.10	0.25
A2	1.25	1.50
B	0.33	0.53
C	0.19	0.27
D	4.80	5.00
E	3.80	4.00
H	5.80	6.20
L	0.40	0.89
e	1.27 BSC	



**200MHz XO IC With Selectable 4X/8X Multiplier**

**ORDERING INFORMATION**

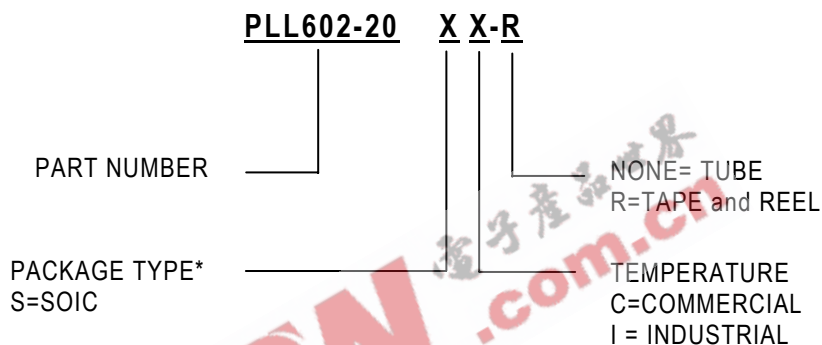
**For part ordering, please contact our Sales Department:**

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



\* PhaseLink Offers Green/RoHS Compliant Packaging Only.

Part / Order Number	Marking	Package Option
PLL602-20SC	P602-20SC	8-Pin SOIC (Tube)
PLL602-20SC-R	P602-20SC	8-Pin SOIC (Tape & Reel)

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.