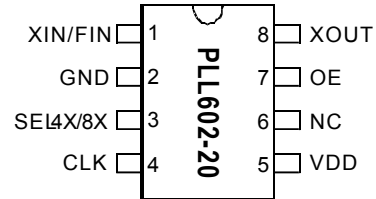


**200MHz XO IC With Selectable 4X/8X Multiplier**

**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

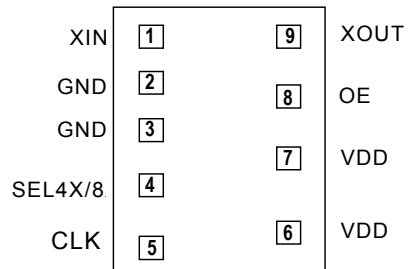
**PIN CONFIGURATION**



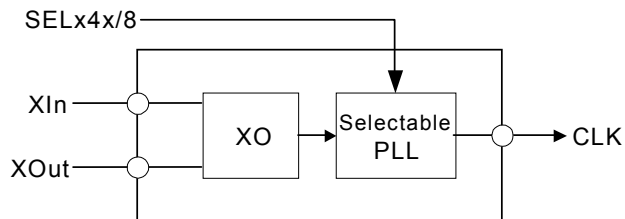
**DESCRIPTION**

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 <sub>DD</sub>	-0.5	4.6	V
Input Voltage Range	V <sub>I</sub>	-0.5	V <sub>DD</sub> +0.5	V
Output Voltage Range	V <sub>O</sub>	-0.5	V <sub>DD</sub> +0.5	V
Soldering Temperature (Green package)			260	°C
Storage Temperature	T <sub>S</sub>	-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	$I_s$			±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**

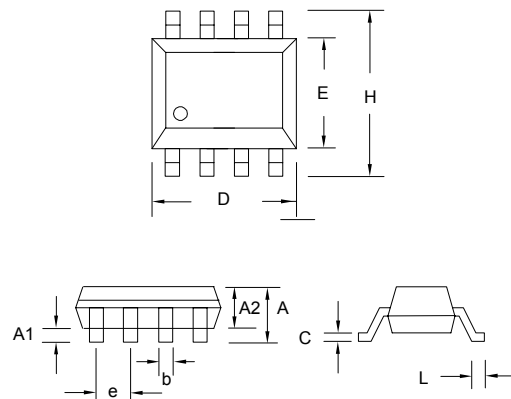
PARAMETERS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Fundamental Crystal Resonator Frequency	$F_{XIN}$	10		30	MHz
Crystal Loading Rating	$C_L (xtal)$		11		pF
Maximum Sustainable Drive Level				500	$\mu W$
Operating Drive Level			100		$\mu W$
Crystal Shunt Capacitance	$C_0$			6	pF
Effective Series Resistance, Fundamental,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

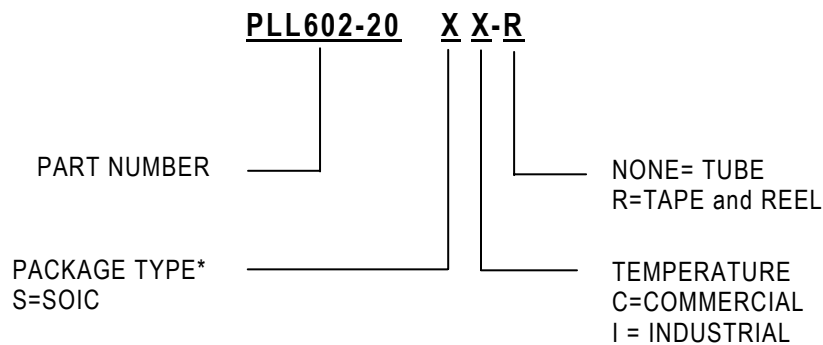
47745 Fremont Blvd., Fremont, CA 94538, USA

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)

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