

### Features

- Support XTAL or Clock input
- Three buffered outputs support  $V_{DD}$  operation
- Very low phase jitter(RMS) : < 0.5ps
- Very low additive jitter: <300fs (typ)
- 3.3V supply voltage for Core
- 1.8V ~ 3.3V supply voltage for two outputs
- Packaging: 16-pin TSSOP
- Commercial & Industrial Temperature support

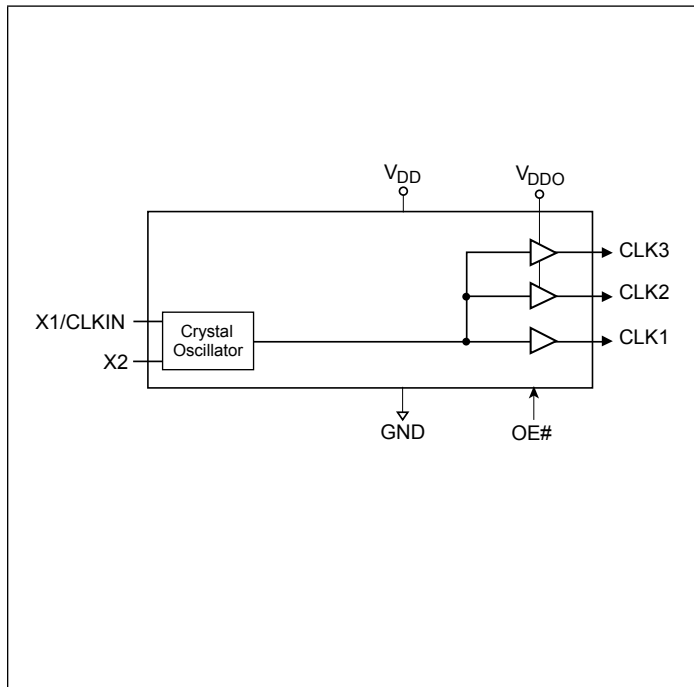
### Applications

- Networking Systems
- Femtocell BTS
- Peripheral

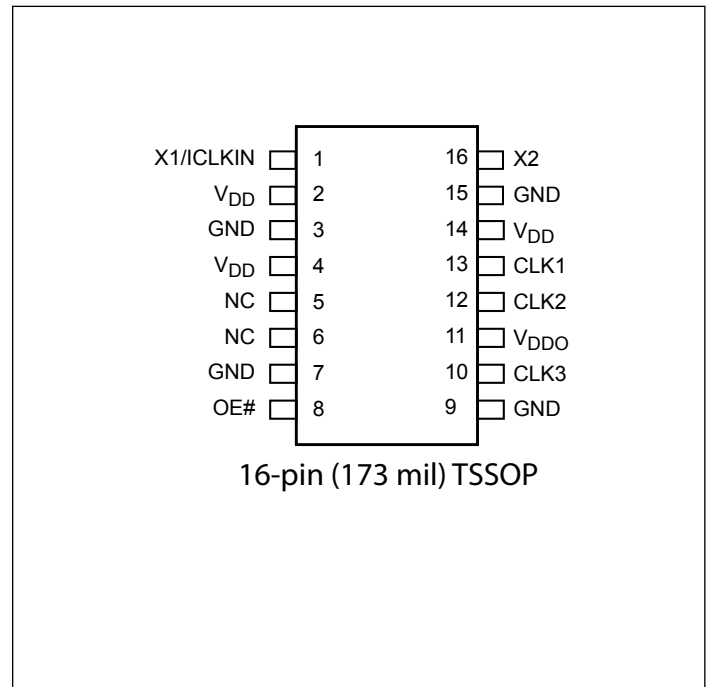
### Description

The PI6C490098 is a low jitter clock buffer supporting either XTAL or reference input. Two of its outputs can support wide operating voltage from 1.8V to 3.3V. It is a cost effective way to generate multiple outputs for all kinds of applications that need multiple CMOS outputs with different power supplies.

### Block Diagram



### Pin Configuration (16-Pin TSSOP)



Pin number	Pin Name	Type	Description
1	X1/CLKIN	Input	Crystal connection or clock input
2, 4, 14	V <sub>DD</sub>	Power	3.3V Supply voltage for core and CLK1
5, 6,	NC		No connect
7, 9, 15	GND	Power	Connect to Ground
8	OE#	Input	Global output enable when low. Internal pull-down resistor.
10	CLK3	Output	Clock Output 3
11	V <sub>DDO</sub>	Power	Supply voltage from 1.8V to 3.3V for CLK2 and CLK3
12	CLK2	Output	Clock Output 2
13	CLK1	Output	Clock Output 1
16	X2	Output	Crystal connection

### Function Table

OE#	CLK1/CLK2/CLK3
0	Enabled
1	Hi-Z, weak pull down

## Maximum Ratings

(Above which useful life may be impaired. For user guidelines, not tested.)

Storage Temperature.....	-65°C to +150°C
Supply Voltage to Ground Potential, V <sub>DD</sub> .....	-0.5V to +4.6V

**Note:** Stresses greater than those listed under MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

## Power Requirements (Over operating free-air temperature range)

Symbol	Parameter	Min.	Typ.	Max.	Units
V <sub>DD</sub>	Power Supply Voltage	3.135	3.3	3.465	V
V <sub>DDO</sub>	Power Supply Voltage for outputs	1.71		3.465	V
I <sub>DD</sub>	Power supply current, no load		5		mA
T <sub>A</sub>	Ambient Operating Temperature	0		+70	°C
		-40		+85	
t <sub>UP</sub>	Power Supply Ramp Time			4	ms

## DC Electrical Characteristics

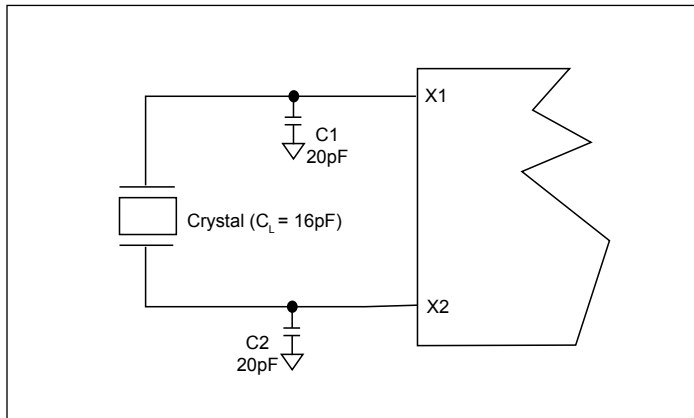
Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
V <sub>IH</sub>	Input High Voltage	CLKIN, OE#	V <sub>DD</sub> /2+1			V
V <sub>IL</sub>	Input Low Voltage	CLKIN, OE#			V <sub>DD</sub> /2-1	V
V <sub>OH</sub>	Output High Voltage	I <sub>OH</sub> = -8mA	V <sub>DDO</sub> - 0.4			V
V <sub>OL</sub>	Output Low Voltage	I <sub>OL</sub> = 8mA			0.4	V
Z <sub>O</sub>	Nominal Output Impedance			20		Ω
R <sub>PD</sub>	Internal Pull-down Resistor	OE#		230		kΩ
		CLKIN		320		
C <sub>IN</sub>	Input Capacitance	OE#		5		pF
		CLKIN		7		

**AC Electrical Characteristics (Note 4)**

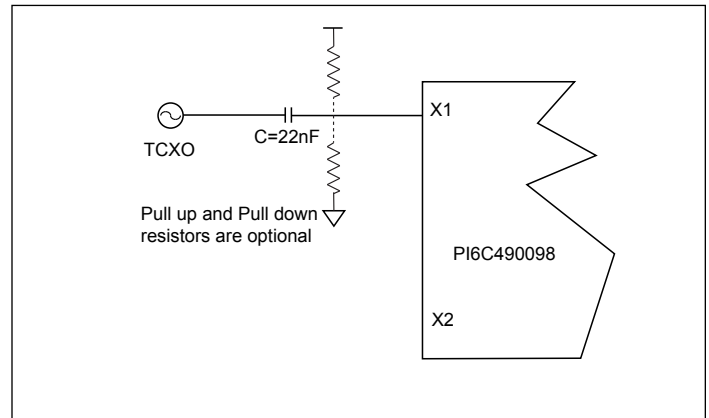
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
F <sub>IN</sub>	Input Frequency	Fundamental Crystal	10	25	52	MHz
		Input Clock	1	25	125	MHz
t <sub>R</sub>	Output Rise Time	20% to 80% 25MHz, Note 1,		1		ns
t <sub>F</sub>	Output Fall Time	80% to 20% 25MHz, Note 1,		1		ns
t <sub>DC</sub>	Duty Cycle	V <sub>DDO</sub> = 2.5V and 3.3V	47	50	53	%
		V <sub>DDO</sub> = 1.8V	45		55	%
F <sub>error</sub>	Output Frequency Synthesis Error		0			ppm
J <sub>phase</sub>	Clock Phase Jitter (RMS)	25MHz, Note 2		0.5	1.5	ps
J <sub>add</sub>	Additive Jitter	25MHz, Note 3,		300		fs

- Note 1: Measured with 7 pF lump load.
- Note 2: 12 kHz to 20 MHz offset frequency using a crystal input.
- Note 3: CLKIN input with X2 floating.
- Note 4: Do not drive this device without a crystal or valid clock input

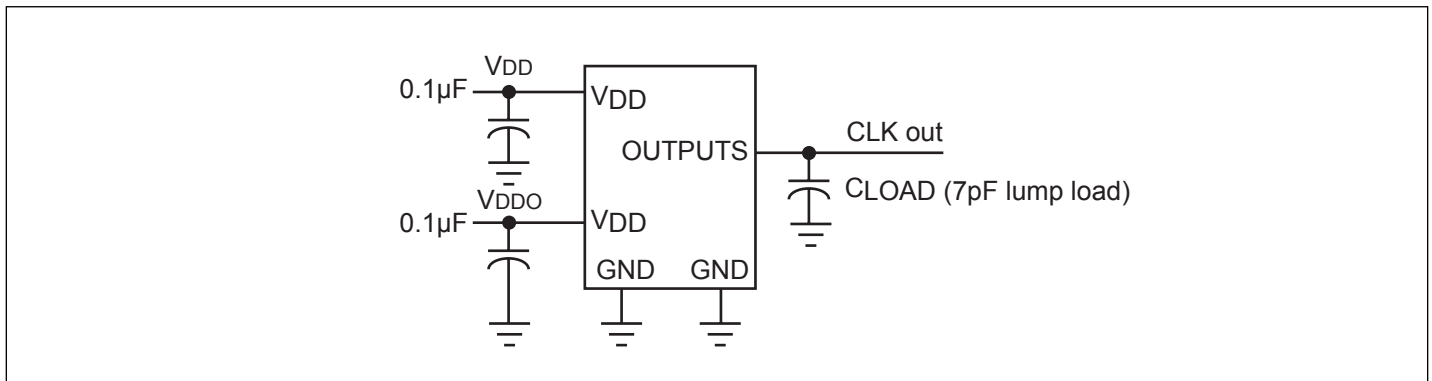
**Crystal Oscillator Circuit**



**Input AC Coupling Application**



**CMOS Test Configuration**



**Packaging Mechanical: 16-Pin TSSOP (L)**

SYMBOLS	MIN.	NOM.	MAX.
A	—	—	1.20
A1	0.05	—	0.15
A2	0.80	—	1.05
b	0.19	—	0.30
c	0.09	—	0.20
D	4.90	5.00	5.10
E1	4.30	4.40	4.50
E	6.40 BSC		
[e]	0.65 BSC		
L1	1.00 REF		
L	0.45	0.60	0.75
S	0.20	—	—
$\theta$	0°	—	8°

**Notes:**  
 1. Refer JEDEC MO-153F/AB  
 2. Controlling dimensions in millimeters  
 3. Package outline exclusive of mold flash and metal burr

<b>PERICOM</b> Enabling Serial Connectivity	DATE: 05/03/12
<b>DESCRIPTION: 16-Pin, 173mil Wide TSSOP</b>	
<b>PACKAGE CODE: L</b>	
<b>DOCUMENT CONTROL #: PD-1310</b>	<b>REVISION: F</b>

12-0372

**Ordering Information**

Ordering Code	Package Code	Package Type	Operating Temperature
PI6C490098LE	L	Pb-free & Green, 16-pin TSSOP	Commercial
PI6C490098LIE	L	Pb-free & Green, 16-pin TSSOP	Industrial

**Notes:**

- Thermal characteristics can be found on the company web site at [www.pericom.com/packaging/](http://www.pericom.com/packaging/)
- E = Pb-free and Green
- X suffix = Tape/Reel

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Authorized Distributor

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