1:3 CMOS Clock Buffer

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

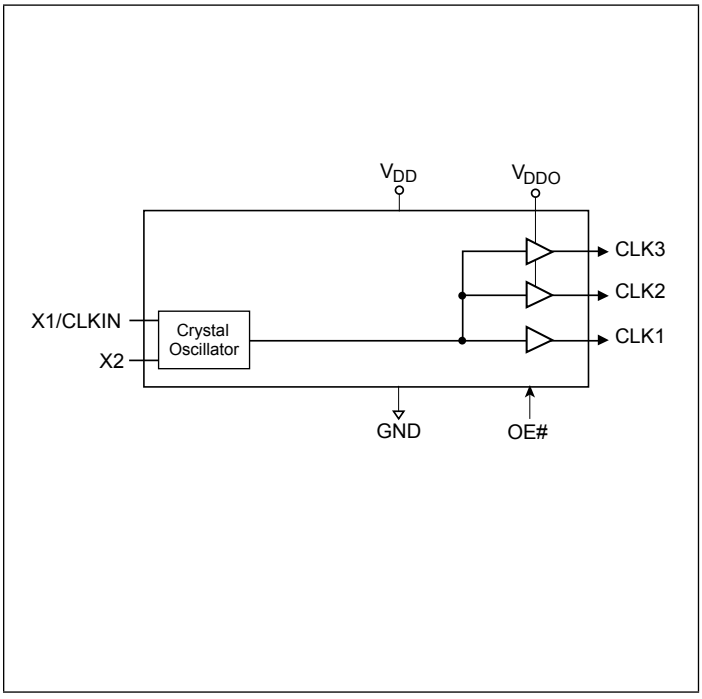
Applications

- Networking Systems
- Femtocell BTS
- Peripheral

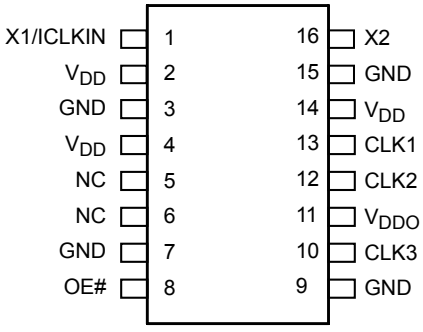
Description

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)



16-pin (173 mil) TSSOP

Pin number	Pin Name	Type	Description
1	X1/CLKIN	Input	Crystal connection or clock input
2, 4, 14	V_{DD}	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_{DDO}	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_{DD} .....–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_{DD}	Power Supply Voltage	3.135	3.3	3.465	V
V_{DDO}	Power Supply Voltage for outputs	1.71		3.465	V
I_{DD}	Power supply current, no load		5		mA
T_A	Ambient Operating Temperature	0		+70	°C
		-40		+85	
t_{UP}	Power Supply Ramp Time			4	ms

DC Electrical Characteristics

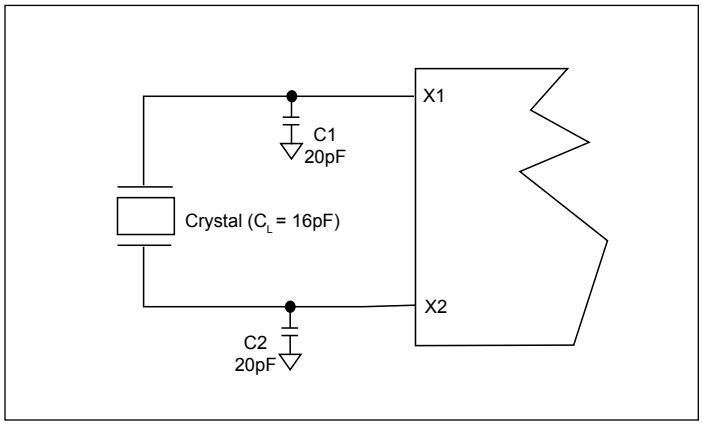
Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
V_{IH}	Input High Voltage	CLKIN, OE#	V_{DD}/2+1			V
V_{IL}	Input Low Voltage	CLKIN, OE#			V_{DD}/2-1	V
V_{OH}	Output High Voltage	I_{OH} = -8mA	V_{DDO} – 0.4			V
V_{OL}	Output Low Voltage	I_{OL} = 8mA			0.4	V
Z_O	Nominal Output Impedance			20		Ω
R_{PD}	Internal Pull-down Resistor	OE#		230		kΩ
		CLKIN		320		
C_{IN}	Input Capacitance	OE#		5		pF
		CLKIN		7		

AC Electrical Characteristics (Note 4)

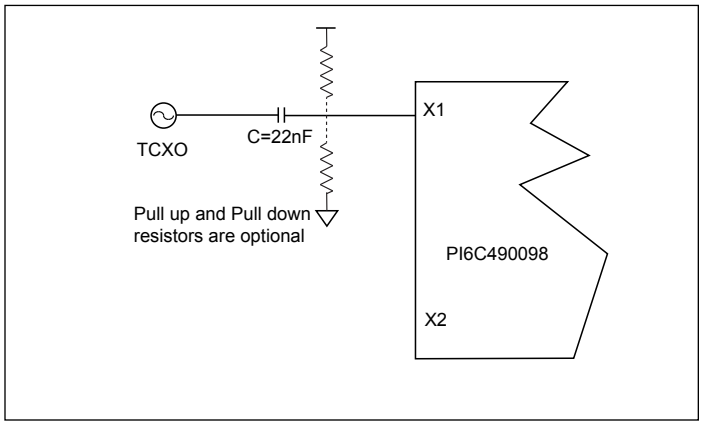
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
F_{IN}	Input Frequency	Fundamental Crystal	10	25	52	MHz
		Input Clock	1	25	125	MHz
t_R	Output Rise Time	20% to 80% 25MHz, Note 1,		1		ns
t_F	Output Fall Time	80% to 20% 25MHz, Note 1,		1		ns
t_{DC}	Duty Cycle	V_{DDO} = 2.5V and 3.3V	47	50	53	%
		V_{DDO}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

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

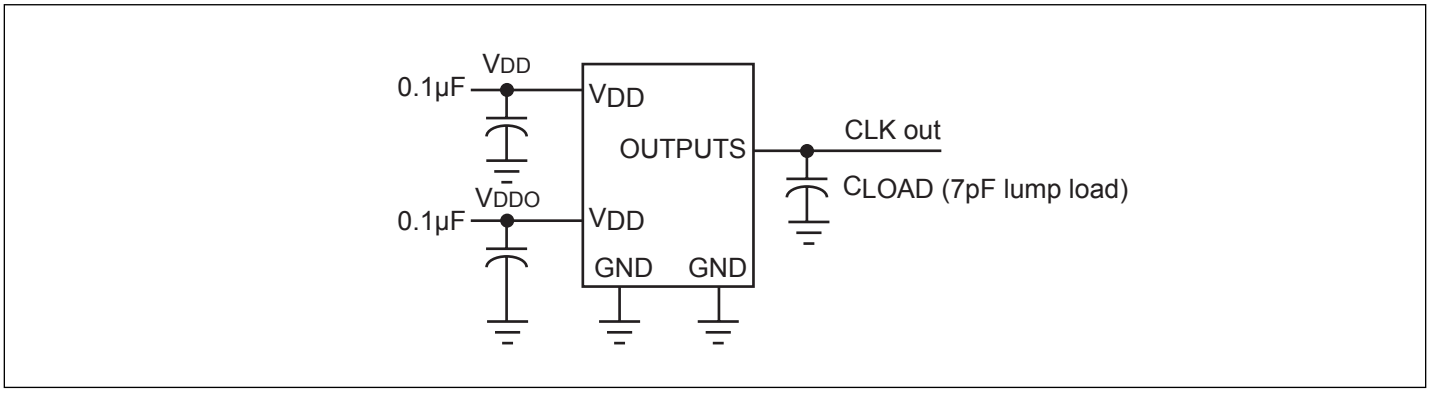
Crystal Oscillator Circuit



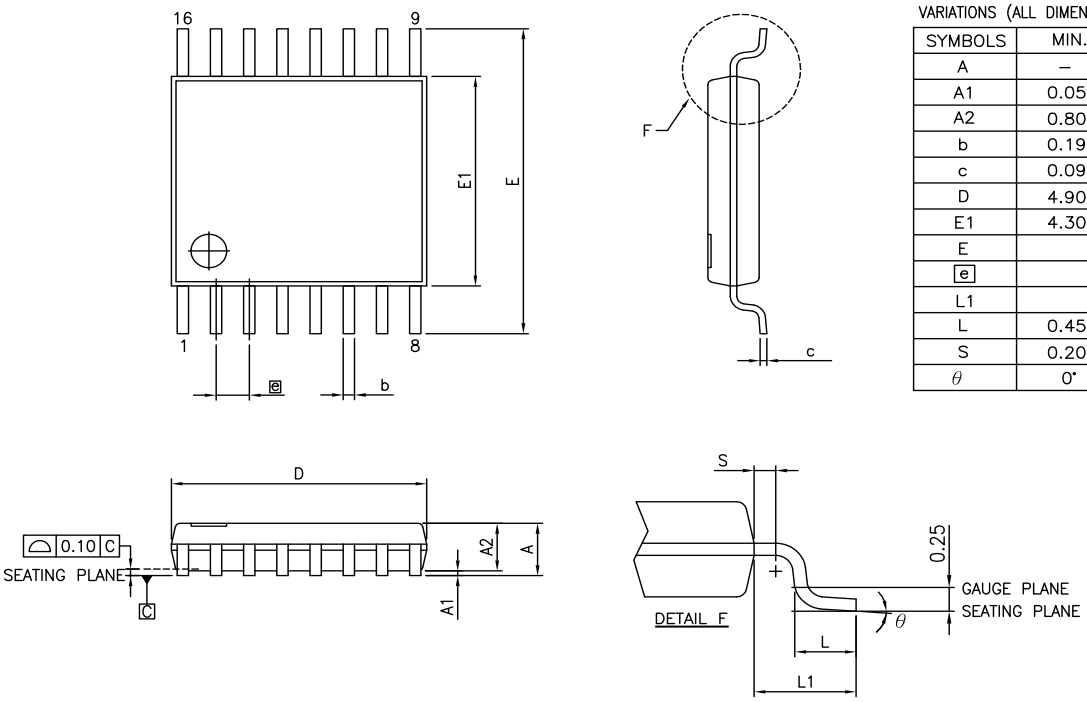
Input AC Coupling Application



CMOS Test Configuration



Packaging Mechanical: 16-Pin TSSOP (L)



VARIATIONS (ALL DIMENSIONS SHOWN IN MM)

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	–	–
θ	0°	–	8°

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

PERICOM Enabling Serial Connectivity

DATE: 05/03/12

DESCRIPTION: 16-Pin, 173mil Wide TSSOP

PACKAGE CODE: L

DOCUMENT CONTROL #: PD-1310 **REVISION: F**

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/
- E = Pb-free and Green
- X suffix = Tape/Reel