

19.44 to 40 MHz, 3.3V, VCXO for General Purpose Applications

Features

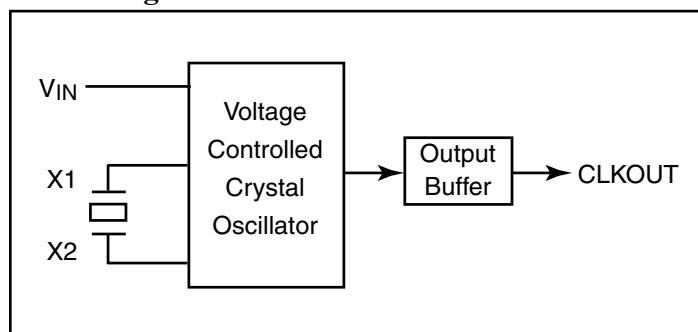
- 3.3V operating voltage
- Uses an external crystal
- On-chip VCXO with pull range of 240ppm
- VCXO tuning voltage from 0V to 3.3V
- 10mA output drive at CMOS levels
- Packaging (Pb-free & Green):
 - 8-pin SOIC (W)

Description

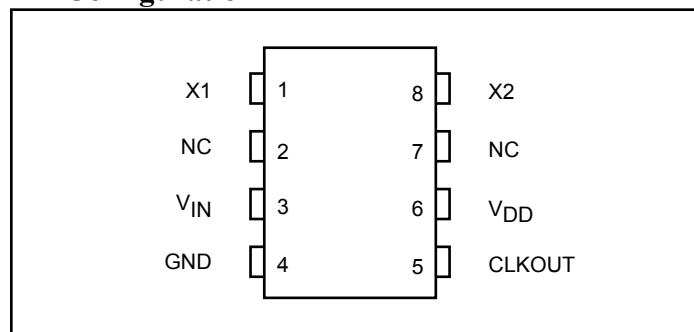
The PI6CX100-00 is a low-cost, high-performance, 3.3V, VCXO available in discrete IC form with external quartz crystal. The on-chip Voltage Controlled Crystal Oscillator accepts a 0V to 3.3V input voltage that pulls the output clock frequency by ± 120 ppm. This device operates with an external quartz crystal specified to achieve the desired performance.

The PI6CX100-00 is designed for General Purpose applications, supporting operating frequencies between 19.44 and 40 MHz.

Block Diagram



Pin Configuration



Pin Description

Pin Name	Number	Type	Description
X1, X2	1, 8	I	Crystal Connection
NC	2, 7		No Connection
V _{IN}	3	I	Voltage Input to VCXO
GND	4	PWR	Ground
CLKOUT	5	O	Clock Output
V _{DD}	6	PWR	Power Supply ⁽¹⁾

Note:

1. 0.1 μ F or 0.01 μ F bypass capacitor is required.

Maximum Ratings

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

Storage Temperature	-55°C to 125°C
Ambient Temperature	-40°C to 85°C
Supply Voltage V_{DD}	-0.5V to 7V
Inputs/Outputs Voltage.....	-0.5V to $V_{DD} + 0.5V$
Output Current	10mA
Soldering Lead Temperature (10s).....	260°C
Junction Temperature	-50°C to 150°C

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.

DC Electrical Characteristics

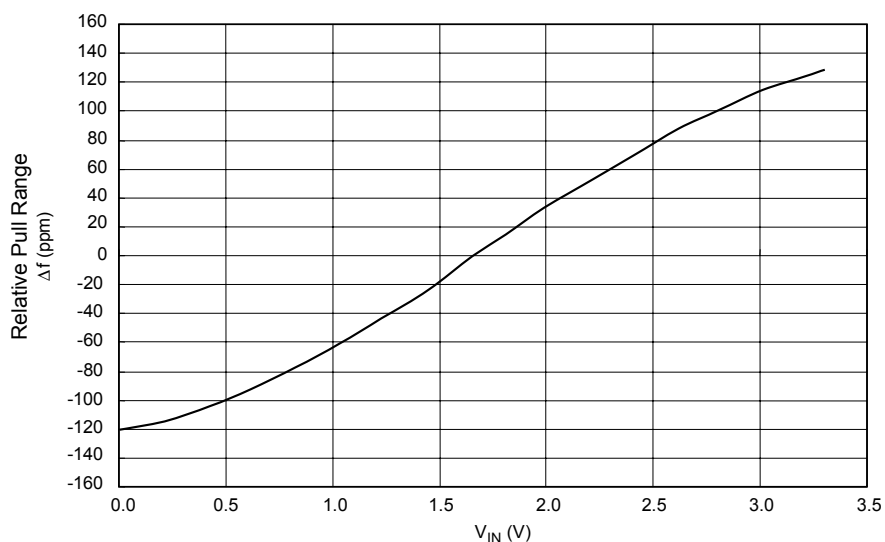
(Unless otherwise specified, $V_{DD} = 3.3V$, $f_O = 27\text{ MHz}$, $V_{IN} = 1.65V$, Load = 15pF, $T_A = 25^\circ\text{C}$)

Symbol	Description	Test Condition	Min.	Typ.	Max.	Units
V_{DD}	Operating Voltage		3.135	3.3	3.465	V
V_{OH}	Output High Voltage	$I_{OH} = -12\text{mA}$	2.8			
V_{OL}	Output Low Voltage	$I_{OL} = 12\text{mA}$			0.5	
I_{OH}	Output High Current	$V_{OH} = V_{DD} - 0.5V$		-11	-4	mA
I_{OL}	Output Low Current	$V_{OL} = 0.5V$	4	12		
I_{DD}	Supply Current	$C_L = 15\text{pF}$		5		
I_{OZ}	Output Off-leakage				10	μA
R_S	Negative Resistance	$V_{IN} = 0V$		-150		Ω
f_O	Input Frequency		19.44		40	MHz
C_L	Output load Capacitance			15	30	pF

AC Electrical Characteristics (Unless otherwise specified, $f_O = 27\text{ MHz}$, Load = 15pF, $T_A = 25^\circ\text{C}$)

Symbol	Description	Test Condition	Min.	Typ.	Max.	Units
T_R/T_F	Rise / Fall Time	$0.1V_{DD}$ to $0.9V_{DD}$		1.5	6	ns
T_d	Duty Cycle	$0.5V_{DD}$	45		55	%
Δf	Pull Range	$V_{IN} = 0$ to V_{DD}		± 120		ppm
T_j	Cycle-to-Cycle Jitter	$C_L = 15\text{pF}$		50		ps
Lin	Linearity	$V_{IN} = 0.1V_{DD}$ to $0.9V_{DD}$		± 10		%
	Oscillator Start Time	$V_{DD} = 0.9V_{DD}$ Trigger		1.5	10	ms

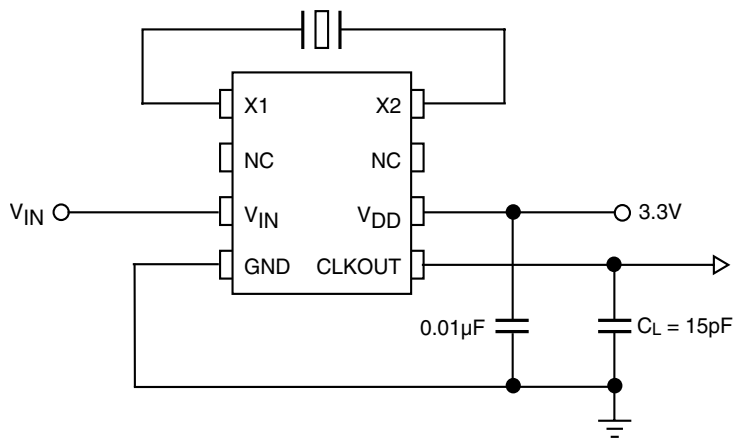
Pullability Characteristics



Recommended Crystal Specifications

Description	Crystal
Mode of Oscillation and Cut	Fundamental AT
Frequency (as specified)	19.44 to 40 MHz
Frequency Tolerance	±20ppm
Temperature plus Aging Stability	±30ppm
Operating Temperature	-20°C to +70°C
C0 /C1	240 (max.)
Load Capacitance (C _L)	18pF
Equivalent Series Resistance (ESR)	35Ω (max.)

Measurement Circuit



Note:

1. 0.1μF or 0.01μF bypass capacitor is required.

The image displays three mechanical views of a 16-pin DIP package:

- Top View:** Shows the package footprint. Dimensions include a width of .189" (4.80 mm) and .196" (5.00 mm), and a height of .149" (3.78 mm) and .157" (3.99 mm). Pin 1 is indicated at the bottom left.
- Side View:** Shows the package profile. Dimensions include a total height of .016" (.406 mm) and .026" (.660 mm) from the seating plane, a body height of .053" (1.35 mm) and .068" (1.75 mm), and a pin height of .050" (1.27 mm). A .0040" (.10 mm) gap is shown between the pins.
- End View:** Shows the package cross-section. Dimensions include a top width of .0099" (.25 mm) and .0196" (.50 mm) at a 45° angle, a body width of .016" (.40 mm) and .050" (1.27 mm), a pin width of .0075" (.19 mm) and .0098" (.25 mm), and a total width of .2284" (5.80 mm) and .2440" (6.20 mm). A 0-8° angle is indicated for the pin flange.

A legend at the bottom right states: **X.XX** DENOTES DIMENSIONS IN MILLIMETERS.

Ordering Code	Package Code	Package Type	Operating Range
PI6CX100-00WE	W	Pb-free & Green 8-pin, 150-mil SOIC	Industrial

1. Thermal characteristics can be found on the company web site at www.pericom.com/packaging/
2. Use Suffix "X" for tape and reel
3. Number of Transistors = TBD