

### Product Features

- 3.3V operating voltage
- Uses an inexpensive external crystal
- Provide clock output enable
- On-chip VCXO with pull range of 240ppm
- VCXO tuning voltage from 0 to 3.3V
- 10mA output driver at CMOS levels
- Available in SOIC package

### Ordering Information

Ordering code	Package type	Operating Range
PT7V4027W	8-Pin SOIC	Industrial

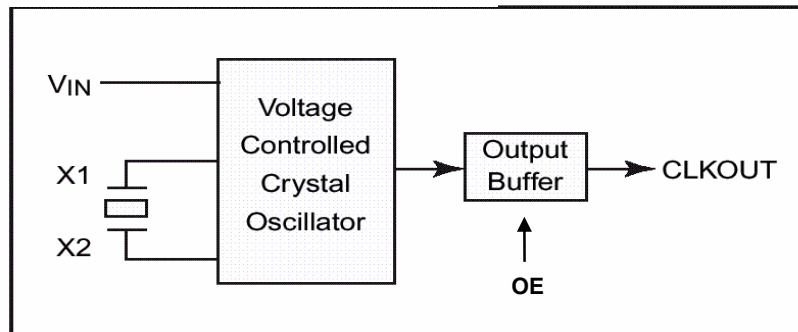
### General Description

The PT7V4027 is a low-cost, high-performance 3.3V VCXO, designed to replace expensive VCXO modules. The on-chip voltage causes clocks to vary by  $\pm 120$ ppm. It uses an inexpensive external pullable crystal at 27MHz to produce the same output frequency.

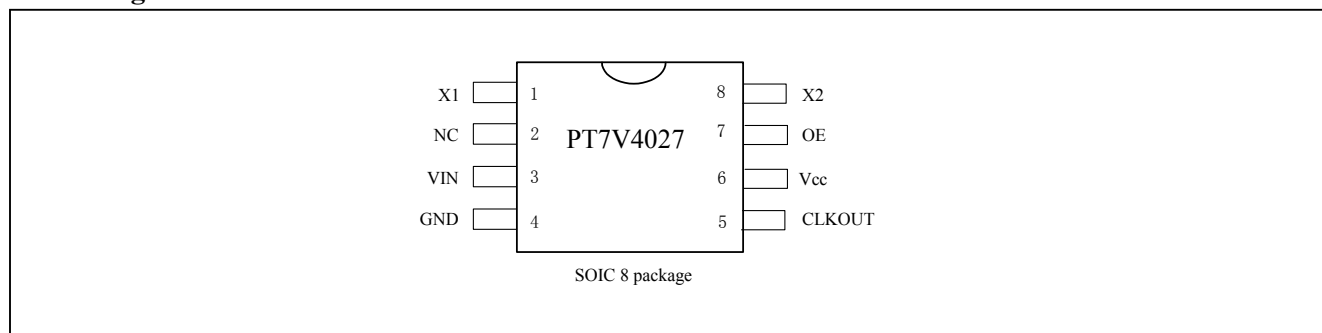
### Applications

- Set-Top Box
- xDSL

### Logic Block Diagram



### Pin Configuration



### Pin Description

Pin Number	Pin Name	Type	Description
1, 8	X1, X2	I	Crystal Connection, Connect to a pullable 27MHz crystal
2	NC		No Connect, Can be float or connected to V <sub>CC</sub> or GND
3	V <sub>IN</sub>	I	Voltage Input to VCXO
4	GND	PWR	Ground
5	CLKOUT	O	Clock Output
6	V <sub>CC</sub>	PWR	Power Supply +3.3V
7	OE	I	Output Enable. High or floating enables output. Internal pull-up.

### 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 $V_{CC}$ .....	-0.5V to 7V
Input Voltage.....	-0.5V to $V_{CC}+0.5V$
Output Current .....	10mA
Soldering Lead Temperature(10s).....	260°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,  $V_{CC} = 3.3V$ ,  $f_0 = 27MHz$ ,  $V_{IN} = 1.65V$ , Load = 15pF,  $T_A = 25^\circ C$ )

Sym.	Parameter	Test Condition	Pin	Min.	Typ.	Max.	Unit
$V_{DD}$	Supply Voltage		$V_{DD}$	3.153	3.3	3.465	V
$I_{DD}$	Supply Current	OE = 3.3V, $C_L = 15pF$	$V_{DD}$		5		mA
$I_{DDS}$	Supply Current	OE = 0V	$V_{DD}$		0.33	1	
$V_{IH}$	Input Logic High		OE	2.0			V
$V_{IL}$	Input Logic Low		OE			0.8	V
$I_{OH}$	High-level output voltage	$V_{OH} = V_{DD}-0.5V$	CLKOUT		-11	-4	mA
$I_{OL}$	Low-level output voltage	$V_{OL} = 0.5V$	CLKOUT	4	12		
$I_{OZ}$	Output Leakage Current	OE = 0V	CLKOUT			10	$\mu A$
$R_S^*$	Negative Resistance	$V_{IN} = 0V$	X1, X2		-150		$\Omega$
f	Input Frequency		X1, X2	20	27	30	MHz
$C_L$	Output Capacitance		CLKOUT		15	30	pF

\* Note: only reference for design.

### AC Electrical Characteristics

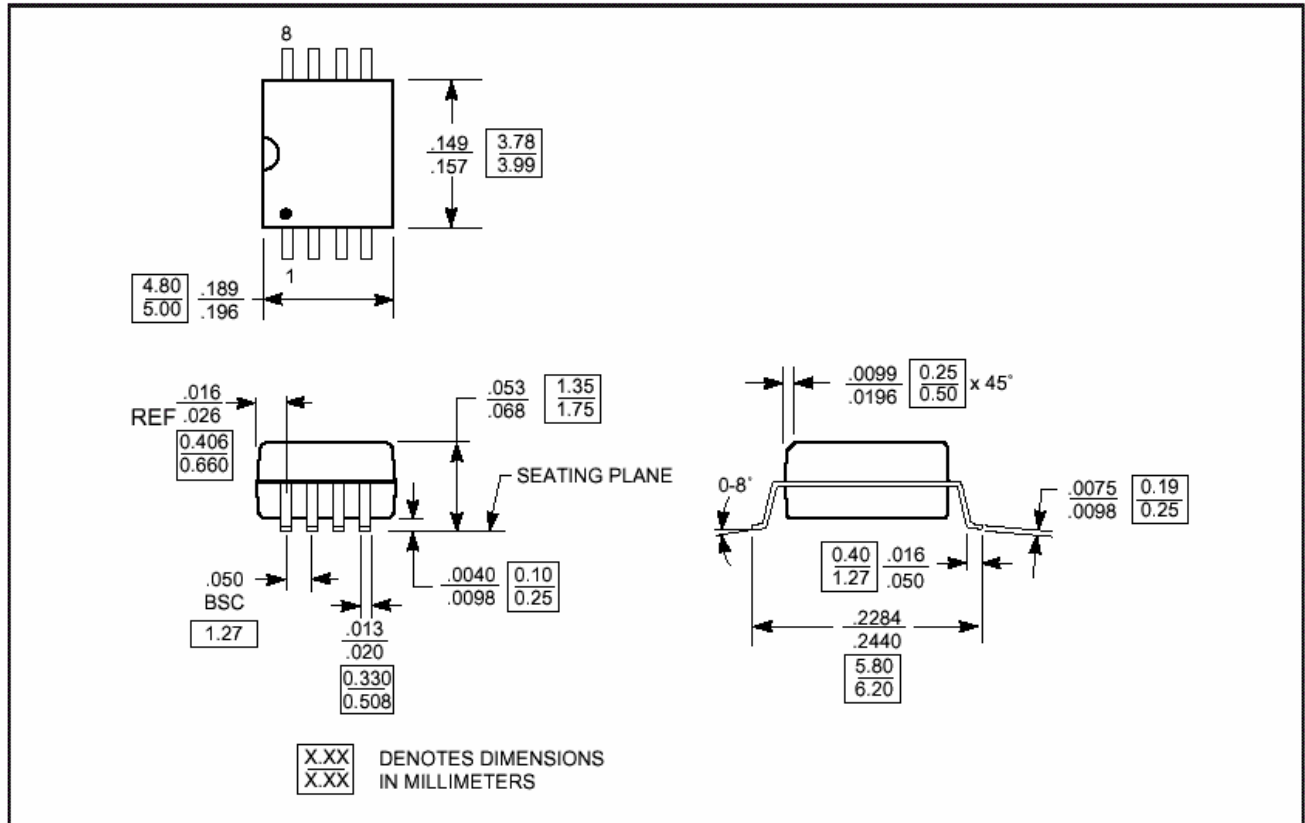
(Unless otherwise specified,  $f_0 = 27MHz$ , Load = 15pF,  $T_A = 25^\circ C$ )

Sym.	Parameter	Test Condition	Pin	Min.	Typ.	Max.	Unit
$t_r / t_f$	Rise / Fall time	$0.1V_{CC}$ to $0.9V_{CC}$	CLKOUT		1.5	6	ns
Duty	Output clock duty cycle	At $V_{CC}/2$	CLKOUT	45	50	55	%
$\Delta f$	Output frequency pull range	$V_{IN}$ from 0V to $V_{CC}$			$\pm 120$		ppm
$t_j$	Cycle to cycle jitter				50		ps
	Linearity	$V_{IN}$ from 0.1 to $0.9V_{CC}$			$\pm 10$		%
	Oscillator start time	Trigger at $0.9V_{CC}$			1.5	10	ms

**Recommended Crystal Specifications**

<b>Description</b>	<b>Crystal</b>
Mode of Oscillation	Fundamental
Frequency Range	27.000MHz
Frequency Tolerance	±30ppm
Temperature plus Aging Stability	±50ppm
Operating Temperature	-20°C to + 70°C
C0/C1	240(max.)
Load Capacitance(C <sub>L</sub> )	18pF
Equivalent Series Resistance(ESR)	35ohms(max.)

**Plastic 8-pin SOIC (W) Package**



**Notes**

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