

Features

- 140MHz operation (PI6CV2304)
- 160 MHz operation (PI6CV304)
- Low noise, low skew: 150ps max
- Fast rise/fall time: 1.0ns typ.
- Fast propagation delay: 2.0ns typ.
- 5V I/O tolerant input
- Industrial temperature (−40°C to 85°C)
- 3.3V power supply
- Packaging (Pb-free & Green available)
 - 8-pin TSSOP (L)
 - 8-pin SOIC (W)

Applications

- 33 MHz PCI-to-133 MHz PCIX controllers
- 80 MHz for 10/100 Mbps Ethernet
- 125 MHz for Gigabit networking
- 155 MHz for Optical OC3/SDH/SONET

Description

Pericom’s PI6CV304 and PI6CV2304 are low-skew, low-noise, high-speed clock buffers and are ideal for computing, networking, and communication applications. Application examples include PCI(X) clock buffers in servers and workstations, PCI(X) Storage Area Network (SAN), and RAID controllers. They are used for networking and communications applications requiring 80 MHz for 10/100 Mbps Ethernet and 125 MHz for Gigabit networking clocks.

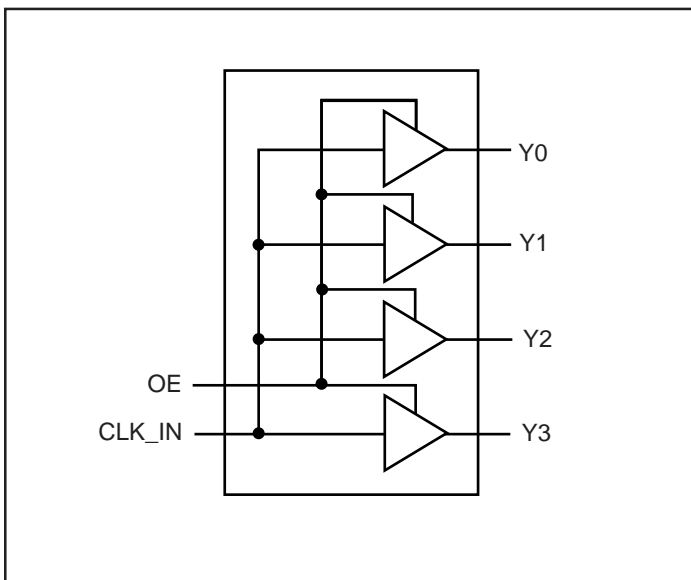
To reduce EMI emission and power consumption, all outputs can be disabled to 3-state by asserting a low signal to the OE (Output Enable) pin.

PI6CV2304 output impedance is 30-ohms. PI6CV304 output impedance is 20-ohms.

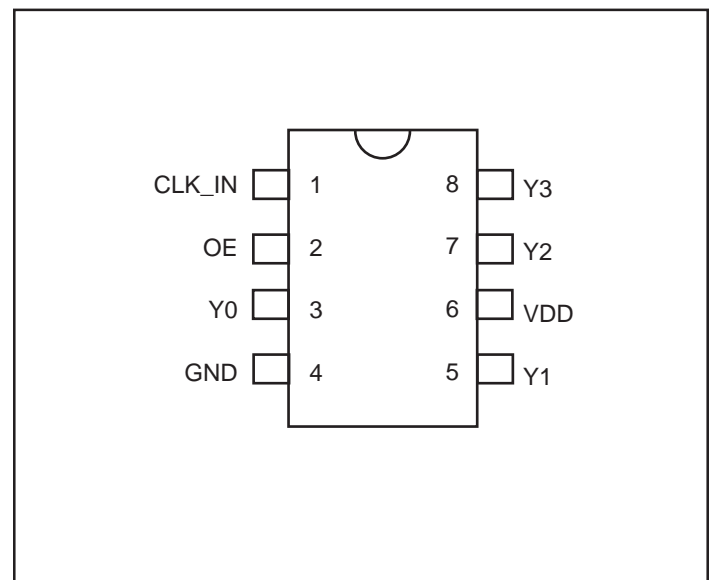
Function Table

| Inputs | | Output |
|--------|----|--------|
| CLK_IN | OE | Y[0:3] |
| X | L | Z |
| L | H | L |
| H | H | H |

Block Diagram



Pin Configuration



Pin Description

| Pin # | Symbol | Type | Qty | Description |
|---------|-----------------|--------|-----|---|
| 1 | CLK_IN | Input | 1 | 5V Tolerant clock input |
| 2 | OE | Input | 1 | Active High Output Enable. Y[0-3] outputs will be 3-stated when OE is low |
| 3,5,7,8 | Y[0-3] | Output | 4 | LVC MOS level outputs |
| 4 | GND | Ground | 1 | Ground |
| 6 | V _{DD} | Power | 1 | 3.3V power |

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

| | |
|--|--------------------------------|
| Supply Voltage (V _{DD}) | -0.0V to +5.0V |
| Input Voltage | -0.5V to V _{DD} +0.5V |
| Industrial Operating Temperature | -40°C to +85°C |
| Storage Temperature | -65°C to +150°C |
| Junction Temperature | 150°C |
| Input ESD MIL-883, method 3015, human body model | 2KV |

Operating Conditions

| Symbol | Description | Min | Max | Unit |
|-----------------|--------------------------------|-----|-----|------|
| V _{DD} | I/O Supply, Analog Core Supply | 3.0 | 3.6 | V |
| T _A | Industrial Ambient Temperature | -40 | +85 | °C |

PI6CV304 DC Characteristics Over Operating Conditions

| Symbol | Parameter | Conditions | Min | Typ. | Max | Units |
|-----------------|---------------------|---|-----|------|-----|-------|
| V _{IL} | Low Input Voltage | | | | 0.8 | V |
| V _{IH} | High Input Voltage | | 2.0 | | | |
| I _{IL} | Low Input Current | V _{IN} = 0V | | | -5 | μA |
| I _{IH} | High Input Current | V _{IN} = V _{DD} | | | 5 | |
| V _{OL} | Low Output Voltage | V _{DD} = 3.0V, I _{OL} = 12mA | | | 0.4 | V |
| V _{OH} | High Output Voltage | V _{DD} = 3.0V, I _{OH} = -12mA | 2.4 | | | |
| C _O | Output Capacitance | | | | 7 | pF |
| C _I | Input Capacitance | | | | 5 | |
| I _{DD} | Supply Current | C _L = 33pF/33MHz | | 20 | | mA |
| | | C _L = 33pF/66MHz | | 40 | | |
| | | C _L = 22pF/80MHz | | 35 | | |
| | | C _L = 15pF/100MHz | | 32 | | |
| | | C _L = 10pF/125MHz | | 28 | | |
| | | C _L = 10pF/155MHz | | 41 | | |
| Z _O | Output Impedance | | | 20 | | Ω |
| L | Pin Inductance | | | | 7 | nH |

PI6CV304 AC Characteristics (T_A = -40~85°C, V_{DD} = 3.3V ± 0.3V, 33pF/66MHz and 10pF/160MHz)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------------------|-------------------------------|--|------|------|------|-------|
| f _{IN} | Input frequency | | 0 | | 160 | MHz |
| t _{PLH} | Low-to-high propagation delay | CLK_IN to Y[0-3] rising edges @ 1.5V | 1.0 | | 3.0 | ns |
| t _{PHL} | High-to-low propagation delay | CLK_IN to Y[0-3] falling edges @ 1.5V | 1.0 | | 3.0 | |
| t _{SK(O)} | Output skew ⁽²⁾ | @ 1.5V | | | 100 | ps |
| t _{SK(P)} | Pulse skew | @ 1.5V | | | 300 | |
| t _{SK(T)} | Package skew ⁽¹⁾ | @ 1.5V | | | 500 | |
| t _{R,tF} | Rise, Fall time | 0.8V~2.0V | | | 1.2 | ns |
| t _{PZL,tPZH} | Output enable time | | | | 5 | |
| t _{PLZ,tPHZ} | Output disable time | | | | 10 | |
| t _{DC} | Output Duty Cycle | t _{DC} = t _H /t _{CY} , t _H = High Pulse Width, t _{CY} = Output Cycle Time, @ 1.5V | 45 | | 55 | % |

Note:

- Identical traces, loads, power supply.
- Maximum Output Skew is 100ps when frequency is below 125MHz with 10pF loading.

PI6CV2304 DC Characteristics Over Operating Conditions

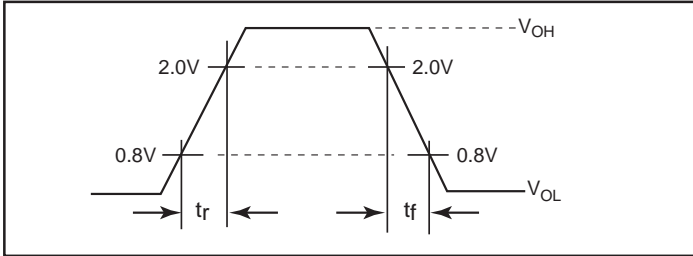
| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------------|---------------------|--|------|------|------|-------|
| V _{IL} | Low Input Voltage | | | | 0.8 | V |
| V _{IH} | High Input Voltage | | 2.0 | | | |
| I _{IL} | Low Input Current | V _{IN} = 0V | | | -50 | μA |
| I _{IH} | High Input Current | V _{IN} = V _{DD} | | | 200 | |
| V _{OL} | Low Output Voltage | V _{DD} = 3.0V, I _{OL} = 8 mA | | | 0.4 | V |
| V _{OH} | High Output Voltage | V _{DD} = 3.0V, I _{OH} = -8mA | 2.4 | | | |
| I _{DD} | Supply Current | C _L = 33pF/33MHz | | 20 | | mA |
| | | C _L = 33pF/66MHz | | 41 | | |
| | | C _L = 22pF/80MHz | | 35 | | |
| | | C _L = 15pF/100MHz | | 34 | | |
| | | C _L = 10pF/125MHz | | 31 | | |
| C _O | Output Capacitance | | | | 7 | pF |
| C _I | Input Capacitance | | | | 5 | |
| Z _O | Output Impedance | | | 30 | | Ω |
| L | Pin Inductance | | | | 7 | nH |

PI6CV2304 AC Characteristics (T_A = -40~85°C, V_{DD} = 3.3V ±0.3V, 33pF/66MHz and 10pF/133MHz)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-------------------------------------|-------------------------------|---|------|------|------|-------|
| f _{IN} | Input frequency | | 0 | | 140 | MHz |
| t _{PLH} | Low-to-high propagation delay | CLK_IN to Y[0-3] rising edges @ 1.5V | 1.0 | | 3.0 | ns |
| t _{PHL} | High-to-low propagation delay | CLK_IN to Y[0-3] falling edges @ 1.5V | 1.0 | | 3.0 | |
| t _{SK(O)} | Output skew | @ 1.5V | | | 150 | ps |
| t _{SK(P)} | Pulse skew | @ 1.5V | | | 300 | |
| t _{SK(T)} | Package skew ⁽¹⁾ | @ 1.5V | | | 500 | |
| t _R , t _F | Rise, Fall time | 0.8V~2.0V | | | 1.35 | ns |
| t _{PZL} , t _{PZH} | Output enable time | | | | 5 | |
| t _{PLZ} , t _{PHZ} | Output disable time | | | | 10 | |
| t _{DC} | Output duty cycle | t _{DC} = t _H /t _{CY} , t _H = High Pulse Width, t _{CY} = Output Cycle Time, @ 1.5V | 45 | | 55 | % |

Note: 1. Identical traces, loads, power supply.

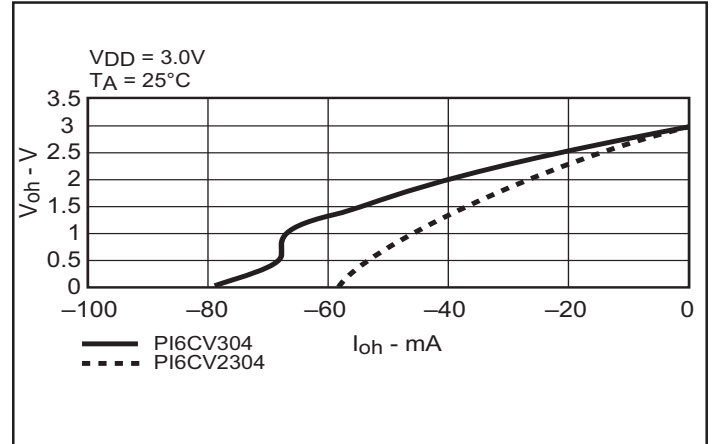
Rise/Fall Time



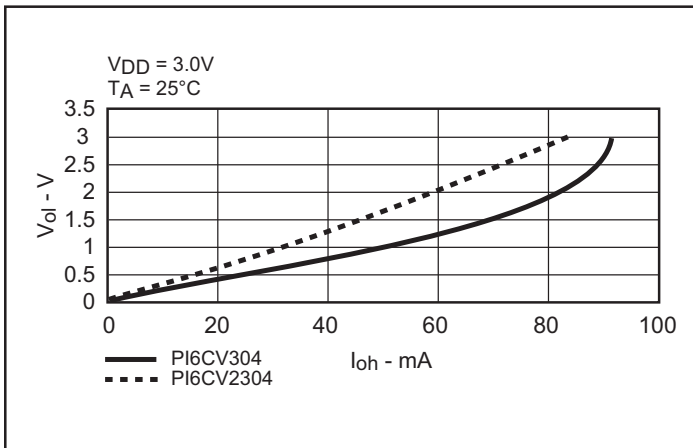
Note:

For test circuit: $R_S = 0$ for PI6CV2304, $R_S = 15$ ohms for PI6CV304
 $C_L = 10, 15, 22,$ or 33 pF, depending on frequency.

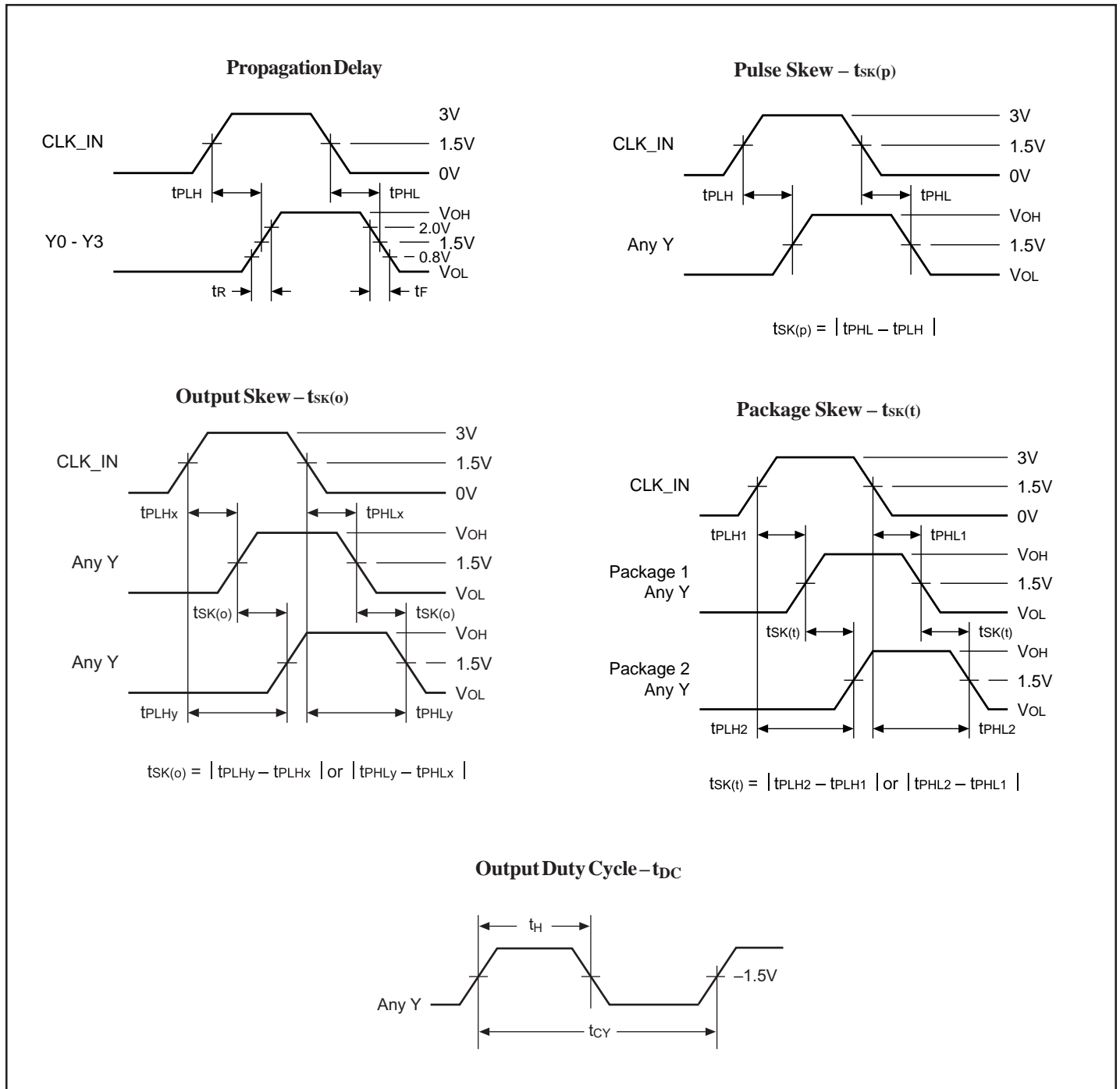
High-Level Output Voltage vs. High-Level Output Current



Low-Level Output Voltage vs. Low-Level Output Current



Switching Waveforms



Packaging Mechanical: 8-Pin TSSOP (L)

DOCUMENT CONTROL NO.
PD - 1308

REVISION: E
DATE: 11/15/05



- Note:**
1. Package Outline Exclusive of Mold Flash and Metal Burr
 2. Controlling dimensions in millimeters
 3. Ref: JEDEC MO-153F/AA



Pericom Semiconductor Corporation
3545 N. 1st Street, San Jose, CA 95134
1-800-435-2335 • www.pericom.com

DESCRIPTION: 8-Pin, 173-Mil Wide, TSSOP

PACKAGE CODE: L

Note:

For latest package info, please check: <http://www.pericom.com/products/packaging/mechanicals.php>

Packaging Mechanical: 8-Pin SOIC (W)



Note:

For latest package info, please check: <http://www.pericom.com/products/packaging/mechanicals.php>

Ordering Information

| Ordering Code | Package Code | Package Type |
|---------------|--------------|---|
| PI6CV304L | L | 8-pin 173-mil wide TSSOP |
| PI6CV304LE | L | Pb-free & Green, 8-pin 173-mil wide TSSOP |
| PI6CV304W | W | 8-pin 150-mil wide SOIC |
| PI6CV304WE | W | Pb-free & Green, 8-pin 150-mil wide SOIC |
| PI6CV2304L | L | 8-pin 173-mil wide TSSOP |
| PI6CV2304LE | L | Pb-free & Green, 8-pin 173-mil wide TSSOP |
| PI6CV2304WE | W | Pb-free & Green, 8-pin 150-mil wide SOIC |

Notes:

1. Thermal characteristics can be found on the company web site at www.pericom.com/packaging/

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Diodes Incorporated:

[PI6CV304LEX](#) [PI6CV304LE](#) [PI6CV2304WEX](#) [PI6CV304WEX](#) [PI6CV304WE](#) [PI6CV2304WE](#) [PI6CV2304LE](#)
[PI6CV2304LEX](#) [PI6CV2304LE-2017](#) [PI6CV304LE-2017](#) [PI6CV304LEX-2017](#) [PI6CV2304LEX-2017](#)

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- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
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- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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JONHON

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«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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