

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 ($T_A = -40 \sim 85^\circ C$, $V_{DD} = 3.3V \pm 0.3V$, 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,t_F}	Rise, Fall time	0.8V~2.0V			1.2	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.
2. Maximum Output Skew is 100ps when frequency is below 125MHz with 10pF loading.

PI6CV2304 DC Characteristics Over Operating Conditions

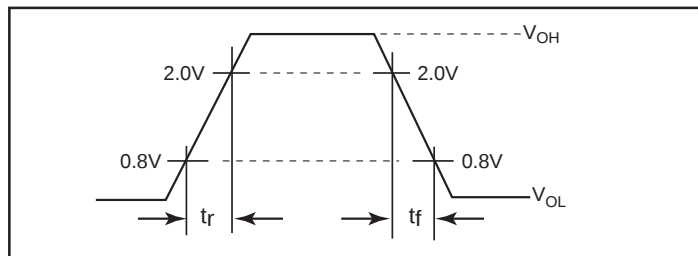
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{IL}	Low Input Voltage				0.8	V
V_{IH}	High Input Voltage		2.0			
I_{IL}	Low Input Current	$V_{IN} = 0V$			-50	μA
I_{IH}	High Input Current	$V_{IN} = V_{DD}$			200	
V_{OL}	Low Output Voltage	$V_{DD} = 3.0V, I_{OL} = 8\text{ mA}$			0.4	V
V_{OH}	High Output Voltage	$V_{DD} = 3.0V, I_{OH} = -8\text{mA}$	2.4			
I_{DD}	Supply Current	$C_L = 33\text{pF}/33\text{MHz}$		20		mA
		$C_L = 33\text{pF}/66\text{MHz}$		41		
		$C_L = 22\text{pF}/80\text{MHz}$		35		
		$C_L = 15\text{pF}/100\text{MHz}$		34		
		$C_L = 10\text{pF}/125\text{MHz}$		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 ($T_A = -40 \sim 85^\circ\text{C}$, $V_{DD} = 3.3V \pm 0.3V$, 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.

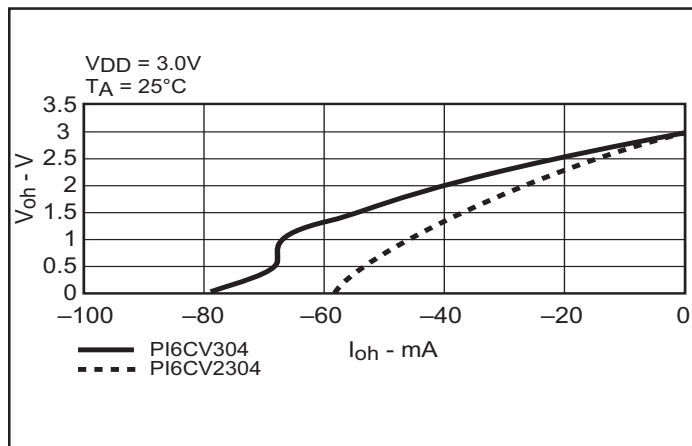
Rise/Fall Time



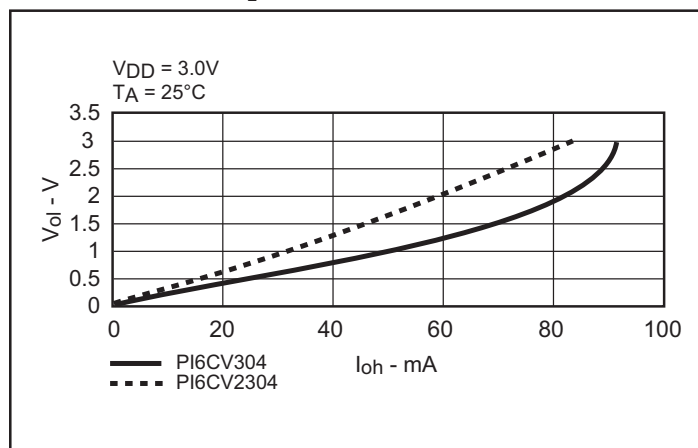
Note:

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

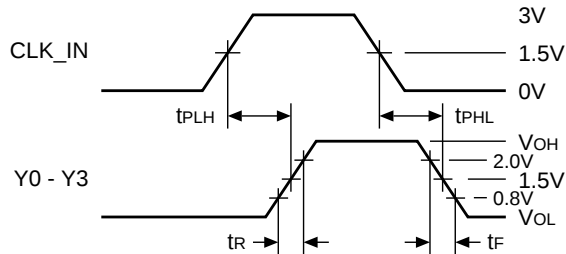


Low-Level Output Voltage vs. Low-Level Output Current

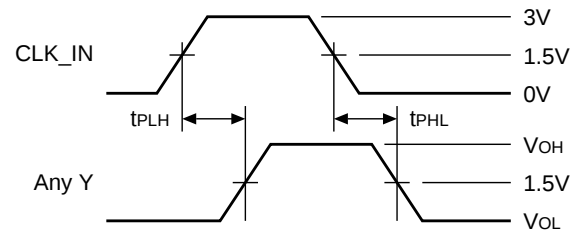


Switching Waveforms

Propagation Delay

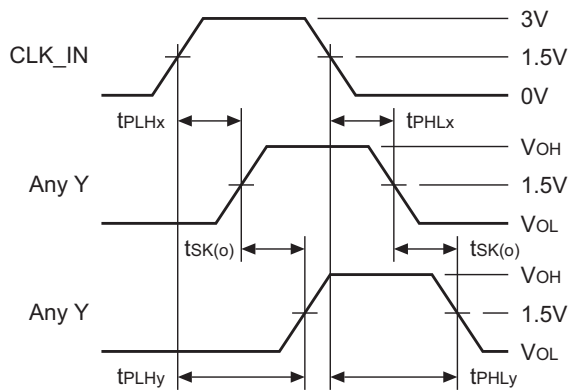


Pulse Skew – $t_{sk(p)}$



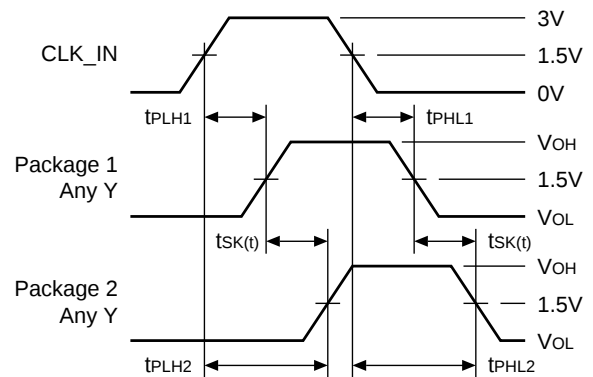
$$t_{sk(p)} = |t_{PHL} - t_{PLH}|$$

Output Skew – $t_{sk(o)}$



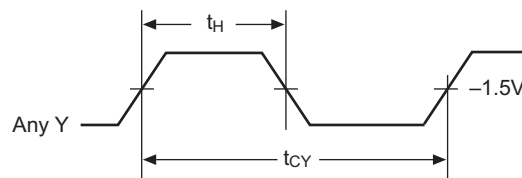
$$t_{sk(o)} = |t_{PLHy} - t_{PLHx}| \text{ or } |t_{PHLy} - t_{PHLx}|$$

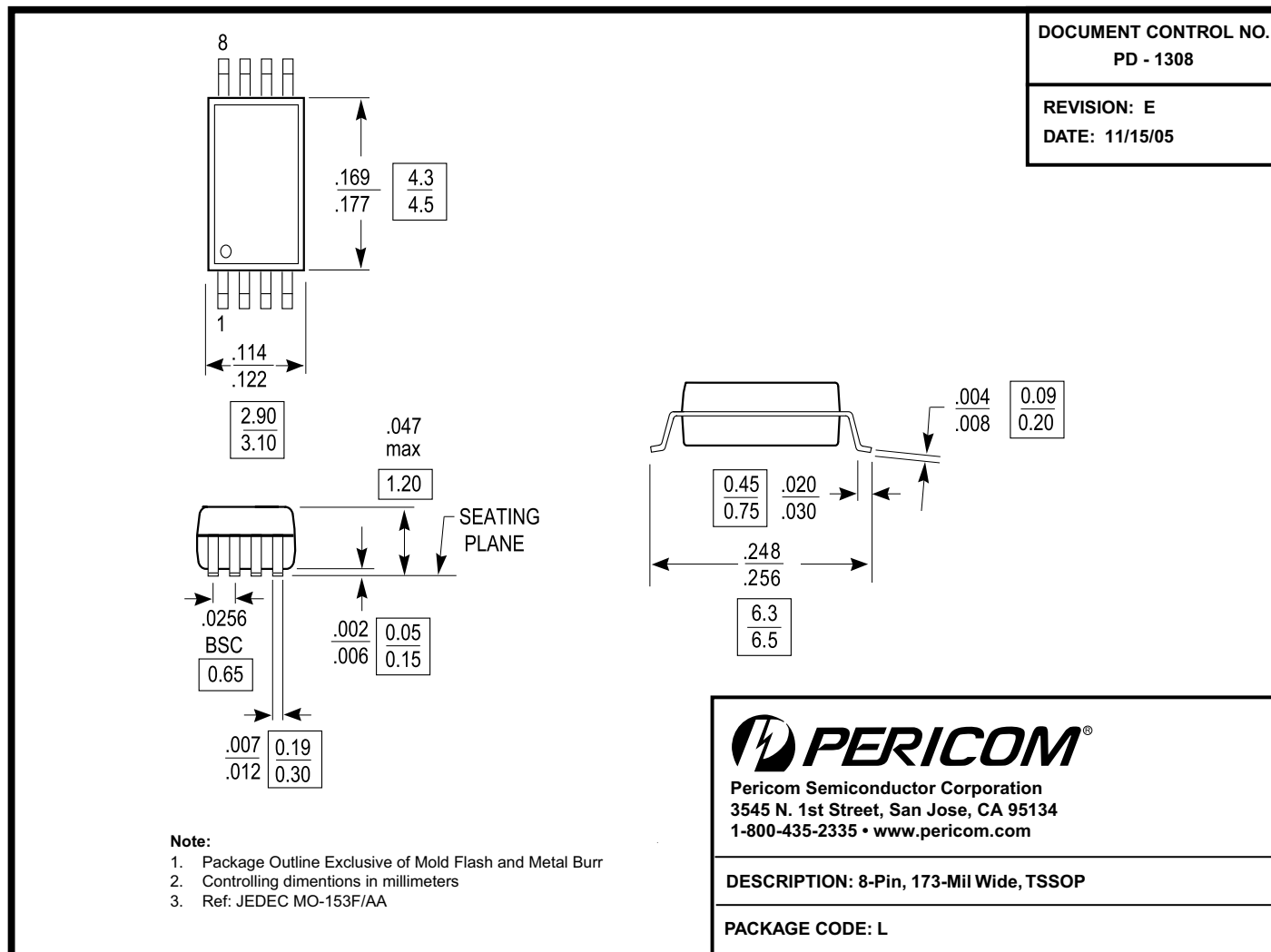
Package Skew – $t_{sk(t)}$



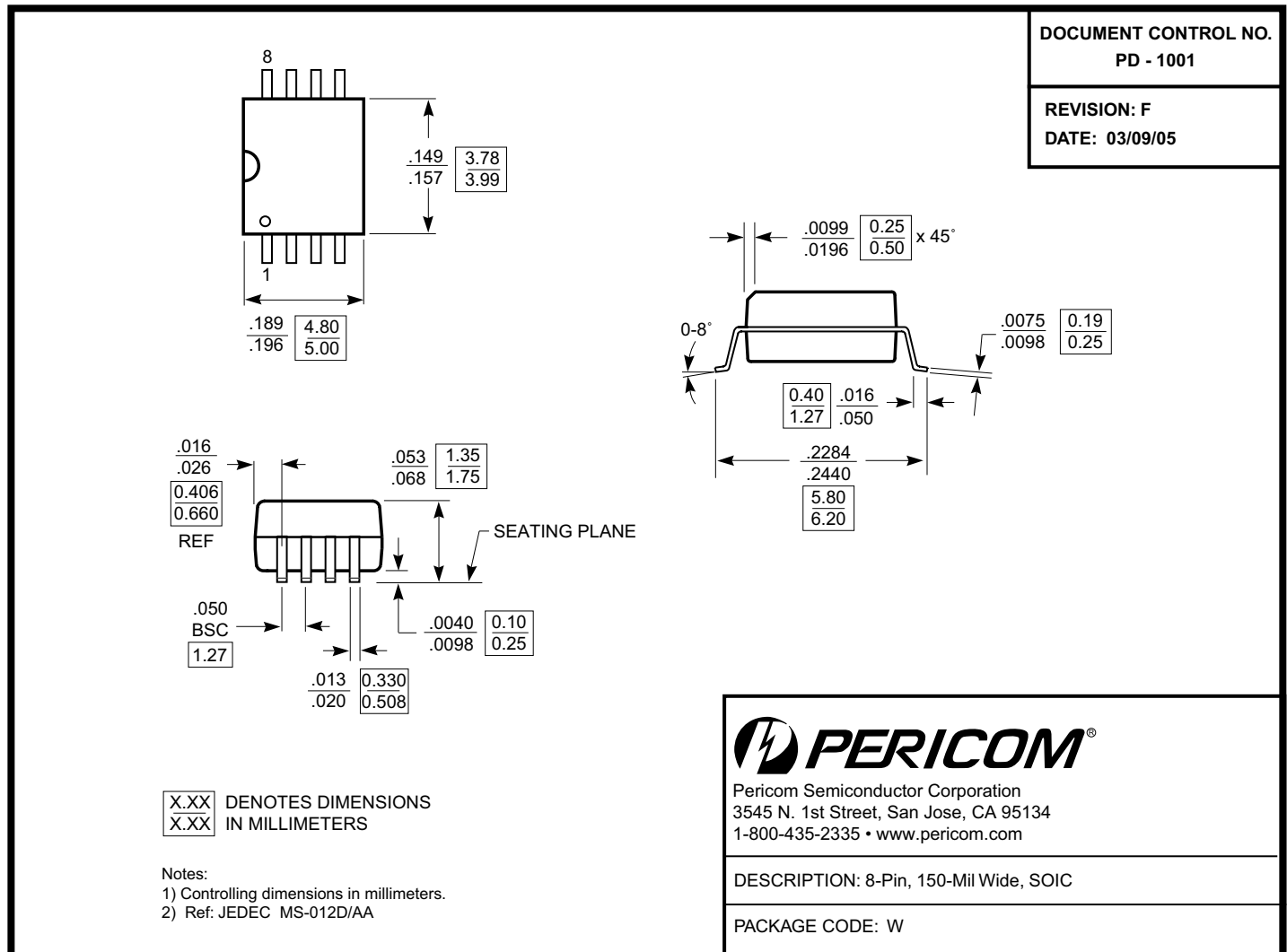
$$t_{sk(t)} = |t_{PLH2} - t_{PLH1}| \text{ or } |t_{PHL2} - t_{PHL1}|$$

Output Duty Cycle – t_{DC}



Packaging Mechanical: 8-Pin TSSOP (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/