3.3V 4x1:4 CMOS Clock Driver

Features

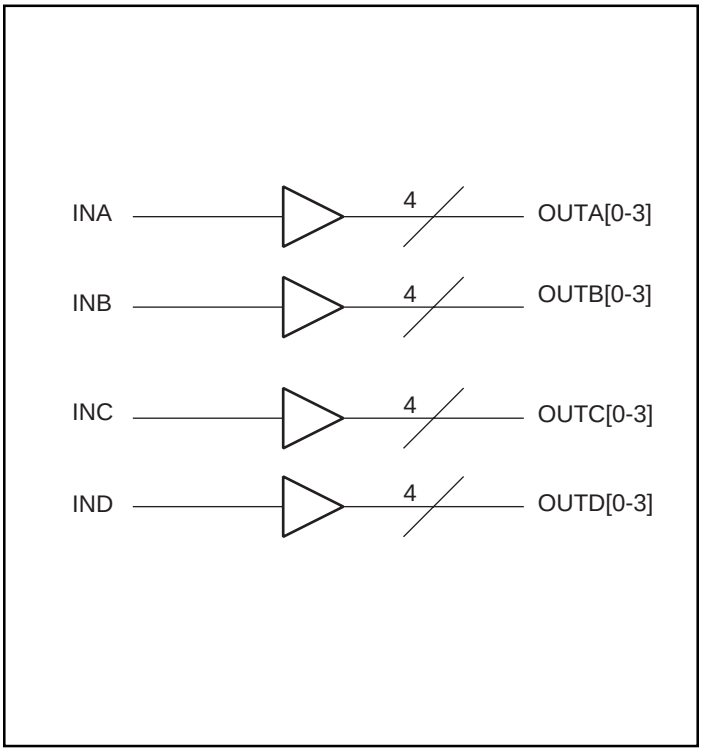
- Maximum Operating Frequency: 133MHz
- Low skew < 350ps
- Low propagation delay < 3.5ns
- Fast output rise/fall time < 1.0ns
- Balanced CMOS outputs
- Industrial Operation: -40^{0}C to +85^{0}C
- 3.3V supply voltage
- 5V tolerant input
- Available in 28-pin 50mil PLCC

Description

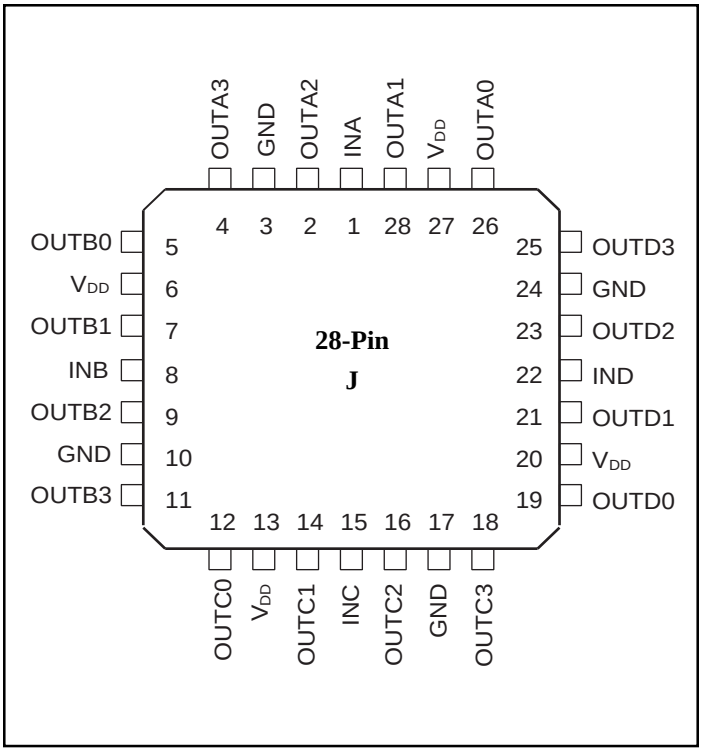
The P6C1816 is designed by CMOS technology to achieve fast speed, low skew, low propagation delay and fast rise and fall time for applications requiring large fanouts, like datacom, telecom and network systems.

The P6C1816 is composed of non-inverting 4 groups of 1-in to 4-out driver. Each group of output has a pair of power and ground pins to minimize noise and also improve performance.

Block Diagram



Pin Configuration



Pin Description

Pin	Signal	Description
1,8,15,22	IN[A-D]	Reference Clock Inputs
26, 28, 2, 4	OUTA[0-3]	Clock Outputs (Group A)
5, 7, 9, 11	OUTB[0-3]	Clock Outputs (Group B)
12, 14, 16, 18	OUTC[0-3]	Clock Outputs (Group C)
19, 21, 23, 25	OUTD[0-3]	Clock Outputs (Group D)
3, 10, 17, 24	GND	Ground
6, 13, 20, 27	V_{DD}	3.3V Power Supply

Maximum Ratings

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

Storage Temperature ..... -65°C to 150°C
Supply Voltage V_{DD} ..... -0.5V to +5.5V
Input Voltage ..... -0.5V to +5.5V
Outputs Voltage ..... -0.5V to V_{DD}+0.5V
Junction Temperature ..... 150°C
Maximum Soldering Temperature
(10 seconds) ..... 260°C
Static Discharge Voltage
(per MIL-STD-883, Method 3015) ..... >2000V

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 indicated in operational sections of this specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

Recommended Operating Conditions

Parameter	Description	Min.	Typ.	Max.	Units
V_{DD}	3.3V Supply Voltage	3.0	3.3	3.6	V
T_A	Ambient Temperature (Industrial)	-40		85	°C
	Ambient Temperature (Commercial)	0		70	
C_L	Load Capacitance		50		pF

DC Electrical Characteristics (Over recommended operating conditions) V_{CC} = 3.3V, T_A = 25°C

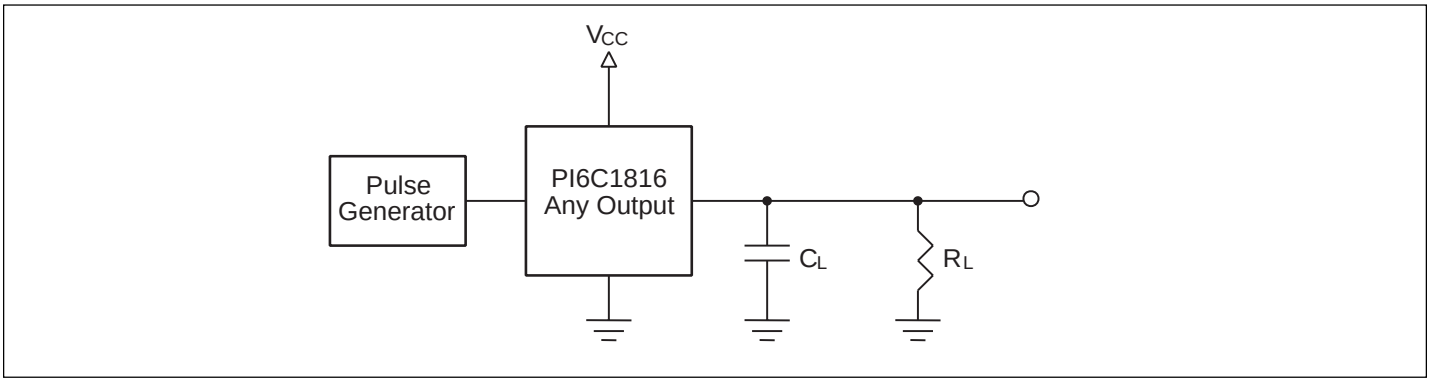
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{IH}	Input HIGH Voltage		2.1			V
V_{IL}	Input LOW Voltage				0.9	V
V_{IK}	Input Clamp Voltage	I_I = -18mA			-1.2	V
V_{OH}	Output HIGH Voltage	I_{OH} = -24mA	2.46			V
V_{OL}	Output LOW Voltage	I_{OH} = 24mA			0.44	V
I_I	Input Current				±1	mA
I_{CC}	Supply Current				75	mA
C_{IN}	Input Capacitance			5		pF

AC Electrical Characteristics (Over recommended operating conditions) V_{CC} = 3.3V, R_L = 500ohm, T_A = 85°C

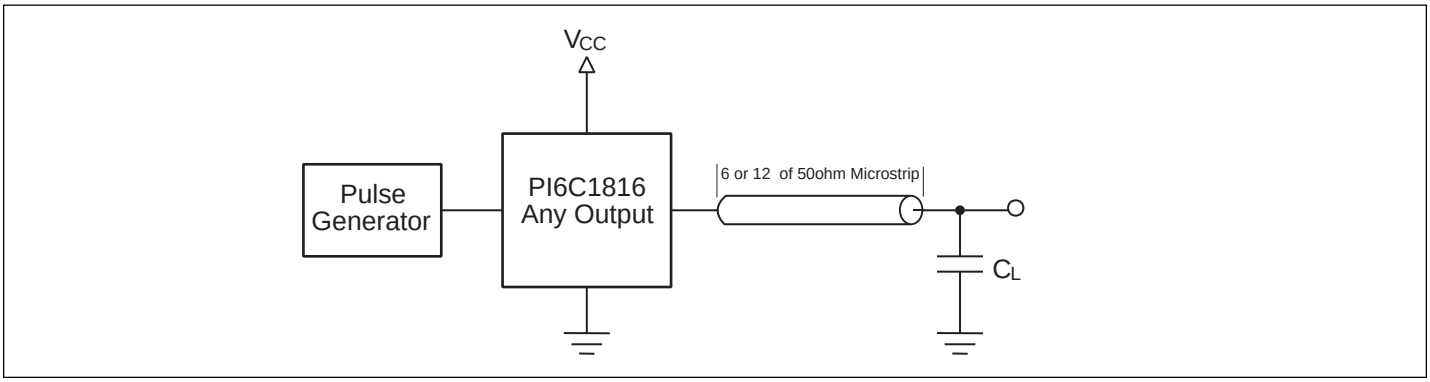
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
f_O	Output Frequency	C_L = 50pF			100	MHz
		C_L = 25pF			133	
t_{PLH}/t_{PHL}	Propagation Delay	C_L = 50pF @ < 100MHz			4.0	ns
		C_L = 25pF @ < =133MHz			3.5	
t_R / t_F	Rise / Fall Time Measured between 0.8V ~ 2.0V	C_L = 50pF @ < 100MHz			3.5	
		C_L = 25pF @ < =133MHz			1	
		C_L = 25pF, (1,2)			1	
$t_{SK(O)}$	Output to Output Skew Same Bank	C_L = 50pF @ < 80MHz(3)			250	ps
		C_L = 25pF @ < =133MHz(3)			250	
	Output to Output Skew Different Bank	C_L = 50pF @ < 80MHz(3)			375	
		C_L = 25pF @ < =133MHz(3)			375	
$t_{SK(P)}$	Pulse Skew	C_L = 15pF @ < =133MHz			550	
$t_{SK(D)}$	Device to Device Skew				750	
t_{LOW}/t_{HIGH}	Pulse Width Duration	Fin = 66.67MHz(3)	4			ns
t_{DC}	Duty Cycle		40		60	%

Note:
1. This measurement includes 12 inches of 50ohm microstrip terminated when frequency is 100MHz or below (See Test Circuit2).
2. This measurement includes 6 inches of 50ohm microstrip terminated when frequency is 101MHz to 133MHz (See Test Circuit2).
3. Input frequency duty cycle = 50% and rise /fall time ⇐2.5ns

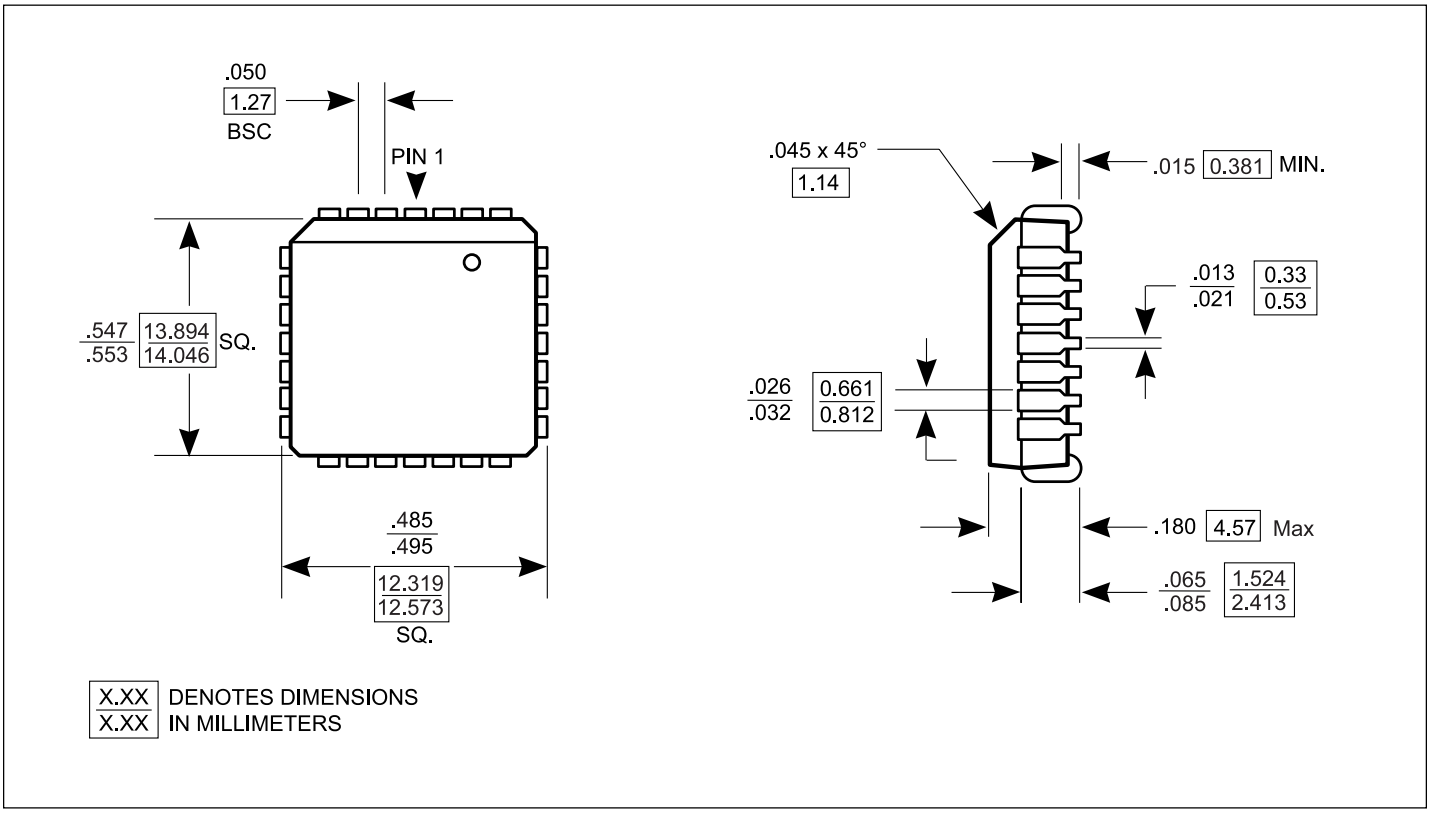
Test Circuit 1



Test Circuit 2



28-Pin PLCC (J) Package



Ordering Information

Part	Pin - Package	Operating Range
PI6C1816J	28-Pin PLCC	Industrial