

### Features

- 4 LVPECL outputs
- Up to 266MHz output frequency
- Ultra low additive phase jitter: < 0.03 ps (typ)
- Two selectable inputs
- Low delay from input to output (Tpd typ. < 1.5ns)
- 2.5V / 3.3V power supply
- Industrial temperature support
- TSSOP-20 package

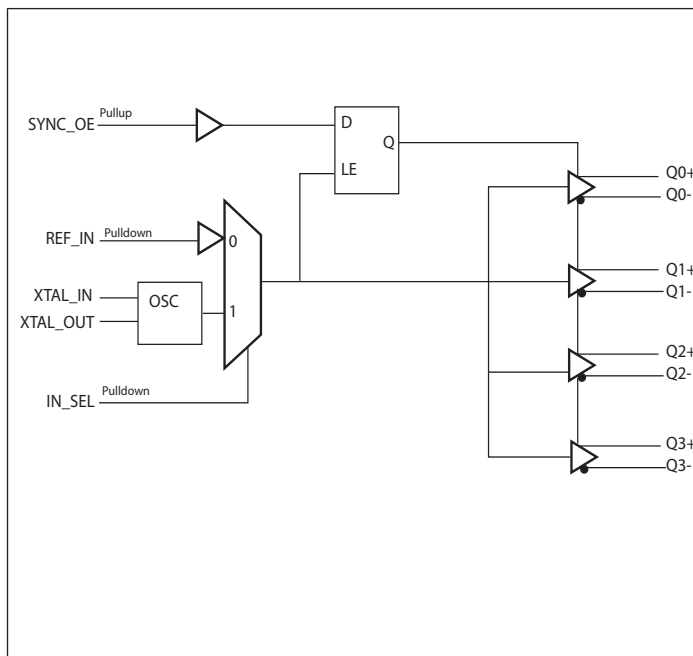
### Description

The PI6C48535-11C is a fanout buffer device with embedded oscillator circuit which supports up to 266MHz frequency. This device is ideal for systems that need to generate and distribute low jitter clock signals to multiple destinations.

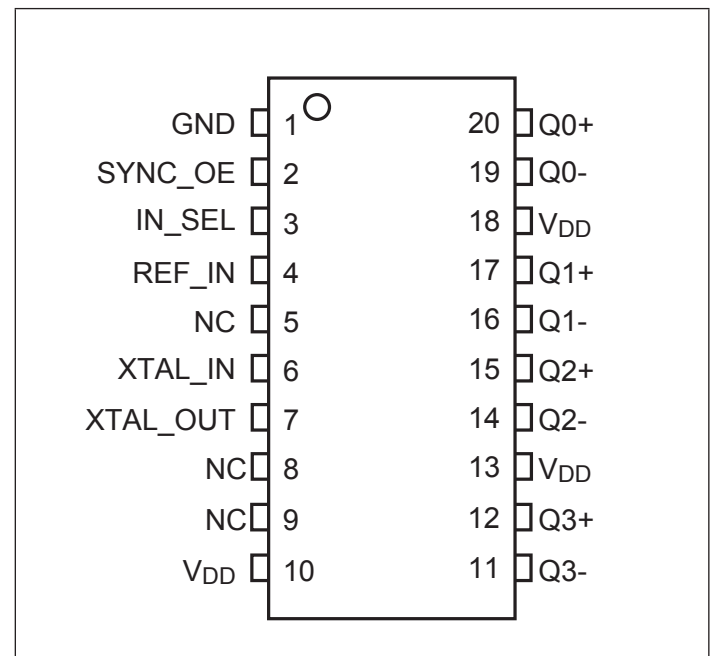
### Applications

- Networking systems including switches and Routers
- High frequency backplane based computing and telecom platforms

### Block Diagram



### Pin Configuration (20-Pin TSSOP)



## Pinout Table

Pin #	Pin Name	Type		Description
1	GND	Power		Ground
2	SYNC_OE	Input	Pullup	Synchronous clock enable. When High, clock outputs follow REF_IN. When low, Q+ outputs are forced low, Q- are forced high
3	IN_SEL	Input	Pulldown	Clock input source selection pin
4	REF_IN	Input	Pulldown	Clock input
5, 8, 9	NC	-		No connect
6, 7	XTAL_IN XTAL_OUT	Input		Crystal Oscillator connection
10, 13, 18	V <sub>DD</sub>	Power		Power supply
11, 12	Q3+ Q3-	Output		LVPECL output clock 3
14, 15	Q2+ Q2-	Output		LVPECL output clock 2
16, 17	Q1+ Q1-	Output		LVPECL output clock 1
19, 20	Q0+ Q0-	Output		LVPECL output clock 0

## Function Table

Table 1: Clock source input select function

IN_SEL	Function
0	REF_IN is the selected reference input
1	XTAL_IN is the selected reference input

Table 2: SYNC\_OE select function

SYNC_OE	Function
0	All outputs disabled. Q+ disabled low, Q- disabled High.
1	All outputs enabled.

## Pin Characteristics

Symbol	Parameter	Min	Typ	Max	Units
R <sub>PULLUP</sub>	Input Pullup Resistor		51		kΩ
R <sub>PULLDOWN</sub>	Input Pulldown Resistor		51		kΩ

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

Storage temperature.....	-55 to +150°C
Supply Voltage to Ground Potential ( $V_{DD}$ ).....	-0.5 to +4.65V
Inputs (Referenced to GND) .....	-0.5 to $V_{DD}+0.5V$
Clock Output (Referenced to GND).....	-0.5 to $V_{DD}+0.5V$
Latch up .....	200mA
ESD Protection (Input) .....	2000 V min (HBM)

**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.

**Power Supply Characteristics and Operating Conditions ( $T_A = -40$  to  $85$  °C)**

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{DD}$	Supply Voltage		3.135	3.3	3.465	V
			2.375	2.5	2.625	V
$I_{DD}$	Power Supply Current				85	mA

**LVCMOS/ LVTTTL DC Characteristics ( $T_A = -40$  to  $85$  °C)**

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{IH}$	Input High Voltage	$V_{DD} = V_{IN} = 3.465V$	2		$V_{DD}+0.3$	V
		$V_{DD} = V_{IN} = 2.625V$	1.6		$V_{DD}+0.3$	V
$V_{IL}$	Input Low Voltage	$V_{DD} = V_{IN} = 3.465V$	-0.3		0.8	V
		$V_{DD} = V_{IN} = 2.625V$	-0.3		0.6	V
$I_{IH}$	Input High Current	SYNC_OE	$V_{DD} = V_{IN} = 3.465V$		5	$\mu A$
			$V_{DD} = V_{IN} = 2.625V$		5	$\mu A$
		IN_SEL	$V_{DD} = V_{IN} = 3.465V$		150	$\mu A$
			$V_{DD} = V_{IN} = 2.625V$		150	$\mu A$
$I_{IL}$	Input Low Current	SYNC_OE	$V_{DD} = V_{IN} = 3.465V$	-150		$\mu A$
			$V_{DD} = V_{IN} = 2.625V$	-150		
		IN_SEL	$V_{DD} = V_{IN} = 3.465V$	-5		$\mu A$
			$V_{DD} = V_{IN} = 2.625V$	-5		

**DC Electrical Specifications- LVPECL Outputs ( $T_A = -40$  to  $85$  °C)**

Parameter	Description	Conditions	Min.	Typ.	Max.	Units
$V_{OH}$	Output High voltage		$V_{DD}-1.4$		$V_{DD}-0.9$	V
$V_{OL}$	Output Low voltage		$V_{DD}-2.0$		$V_{DD}-1.7$	V
$V_{SWING}$	Peak to Peak Output Voltage Swing		0.6		1.0	V

**AC Electrical Specifications – Differential Outputs ( $T_A = -40$  to  $85$  °C)**

Parameter	Description	Conditions	Min.	Typ.	Max.	Units
$F_{OUT}$	Clock output frequency	LVPECL			266	MHz
$T_r$	Output rise time	From 20% to 80%	300		700	ps
$T_f$	Output fall time	From 80% to 20%	300		700	ps
$T_{ODC}$	Output duty cycle		48		52	%
$V_{PP}$	Output swing Single-ended	LVPECL outputs	400			
$T_{addjitter}$	Buffer additive jitter RMS			0.03		ps
$T_{SK}$	Output Skew	4 outputs devices, outputs in same tank, with same load, at DUT.			30	ps
$T_{PD}$	Propagation Delay		1450		1600	ps
$T_{OD}$	Valid to HiZ		200			ns
$T_{OE}$	HiZ to valid		200			ns
$T_{P2P\ Skew}$	Part to Part Skew <sup>1</sup>				TBD	ns

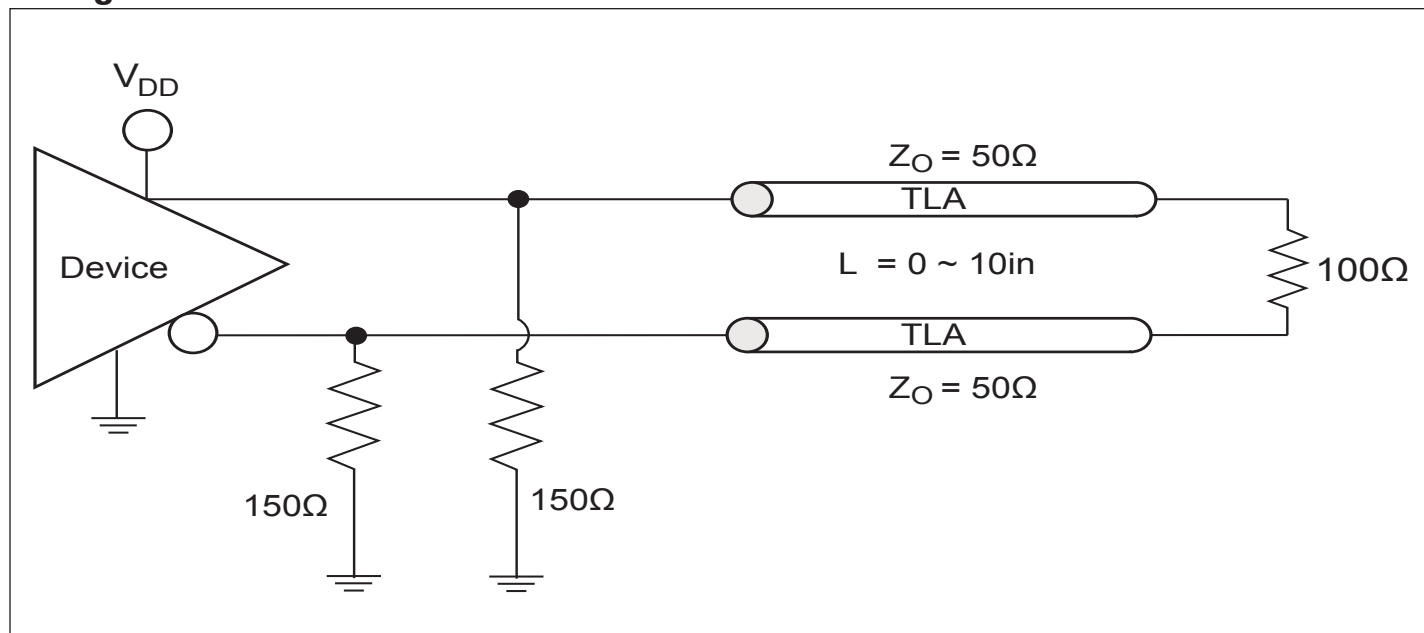
**Notes:**

1. This parameter is guaranteed by design

**Crystal Characteristics**

Parameter	Test Condition	Min.	Typ.	Max.	Units
Mode of Oscillation		Fundamental			
Frequency		12		50	MHz
Equivalent Series Resistance (ESR)				50	$\Omega$
Shunt Capacitance				7	pF
Drive Level				1	mW

**Configuration Test Load Board Termination for LVPECL**



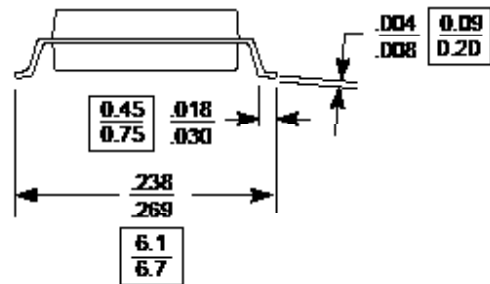
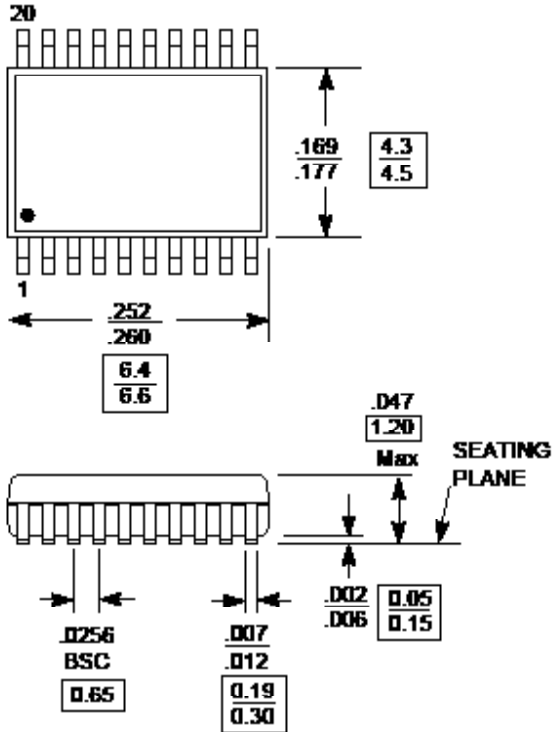
**Thermal Information**

Symbol	Description	
$\Theta_{JA}$	Junction-to-ambient thermal resistance	84.0 °C/W
$\Theta_{JC}$	Junction-to-case thermal resistance	17.0 °C/W

**Packaging Mechanical: 20-Contact TSSOP (L)**

DOCUMENT CONTROL NO.  
PD - 1311

REVISION: E  
DATE: 03/09/05



- Note:
1. Package Outline Exclusive of Mold Flash and Metal Burr
  2. Controlling dimensions in millimeters
  3. Ref: JEDEC MO-153F1AG



Pericom Semiconductor Corporation  
3545 N. 1st Street, San Jose, CA 95134  
1-800-435-2336 • www.pericom.com

DESCRIPTION: 20-Pin, 173-Mil Wide, TSSOP

PACKAGE CODE: L

**Ordering Information**

Ordering Number	Package Code	Package Description	Operating Temperature
PI6C48535-11CLIE	L	Pb-free & Green 20-Contact TSSOP	-40 to 85 °C
PI6C48535-11CLIEX	L	Pb-free & Green 20-Contact TSSOP, Tape and Reel	-40 to 85 °C

- Thermal characteristics can be found on the company web site at [www.pericom.com/packaging/](http://www.pericom.com/packaging/)
- E = Pb-free and Green
- X suffix = Tape/Reel