

AEC-Q100 qualified low skew, 1-to-4 LVCMOS/LVTTL Fanout Buffer

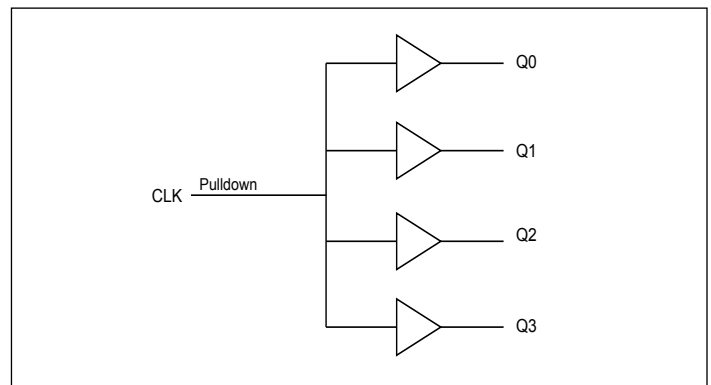
Features

- Four LVCMOS / LVTTL Outputs
- LVCMOS / LVTTL Clock Input
- CLK Accepts LVCMOS, LVTTL Input Levels
- Maximum Output Frequency: 200MHz
- Additive Phase Jitter, RMS: 0.05ps (Typical) @ 3.3V
- Output Skew: 45ps (Maximum) @ 3.3V
- Full 3.3V, 2.5V, 1.8V Operation Mode or 3.3V/2.5V/1.8V Core with 2.5V, 1.8V, 1.5V Supply Modes
- AEC-Q100 Qualified
- Automotive Grade 2 Temperature Range (-40°C to 105°C)
- Automotive Grade 3 Temperature Range (-40°C to 85°C)
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- The PI6C49CB04BQ is suitable for automotive applications requiring specific change control and is AEC-Q100 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.
<https://www.diodes.com/quality/product-definitions/>
- Packaging (Pb-free & Green):
 - Small 8-pin SOIC(W) package saves board space

Description

The PI6C49CB04BQ is a low-skew, 1-to-4 fanout buffer. Guaranteed output and part-to-part skew characteristics make the PI6C49CB04BQ ideal for clock distribution applications that demand well-defined performance and repeatability.

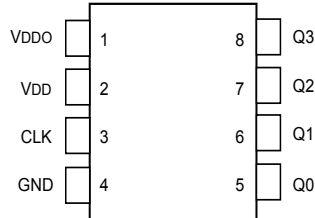
Block Diagram



Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Pin Configuration



Pin Descriptions

| Pin# | Pin Name | Pin Type | | Pin Description |
|------|------------------|----------|----------|---|
| 1 | V _{DDO} | Power | — | Output supply pin |
| 2 | V _{DD} | Power | — | Positive supply pin |
| 3 | CLK | Input | Pulldown | LVC MOS / LVTTL clock input |
| 4 | GND | Power | — | Power supply ground |
| 5 | Q0 | Output | — | Single clock output. LVC MOS / LVTTL interface levels |
| 6 | Q1 | Output | — | Single clock output. LVC MOS / LVTTL interface levels |
| 7 | Q2 | Output | — | Single clock output. LVC MOS / LVTTL interface levels |
| 8 | Q3 | Output | — | Single clock output. LVC MOS / LVTTL interface levels |

Note: *Pulldown* refers to internal input resistors. See Table 2, *Pin Characteristics*, for typical values.

Pin Characteristics

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units |
|-----------------------|--|---|------|------|------|-------|
| C _{IN} | Input Capacitance | — | — | 4 | — | pF |
| C _{PD} | Power Dissipation Capacitance (per Output) | V _{DD} , V _{DDO} = 3.465V | — | — | 15 | pF |
| R _{PULLDOWN} | Input Pulldown Resistor | — | — | 51 | — | kΩ |
| R _{OUT} | Output Impedance | V _{DD} , V _{DDO} > 2.5V | 5 | 7 | 12 | Ω |

Maximum Ratings

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

| | |
|--------------------------------|---------------------------|
| Supply Voltage, V_{DD} | 4.6V |
| Inputs, V_I | -0.5V to $V_{DD} + 0.5V$ |
| Output, V_O | -0.5V to $V_{DDO} + 0.5V$ |
| Storage Temperature, T_{STG} | -65°C to 150°C |
| ESD Protection (HBM) | 2000V |
| Junction Temperature | 125 °C max |

Note:

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These ratings are stress specifications only. Functional operation of product at these conditions or any conditions beyond those listed in the DC Characteristics or AC Characteristics is not implied. Exposure to absolute maximum rating conditions for extended periods may affect product reliability.

Recommended Operation Conditions

| Parameter | Min. | Typ. | Max. | Units |
|--|--------|------|------|-------|
| Ambient Operating Temperature (Automotive Grade 2) | -40 | — | +105 | °C |
| Ambient Operating Temperature (Automotive Grade 3) | -40 | — | +85 | °C |
| Power Supply Voltage (Measured in Respect to GND) | +1.425 | — | +3.6 | V |

Power Supply DC Characteristics

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|--------------------|-----------------------------|----------------|-------|------|-------|-------|
| VDD | Core Supply Voltage | 3.3V Operation | 3.135 | 3.3 | 3.465 | V |
| | | 2.5V Operation | 2.375 | 2.5 | 2.625 | |
| | | 1.8V Operation | 1.6 | 1.8 | 2.0 | |
| VDDO | Output Power Supply Voltage | 3.3V Supply | 3.135 | 3.3 | 3.465 | V |
| | | 2.5V Supply | 2.375 | 2.5 | 2.625 | |
| | | 1.8V Supply | 1.6 | 1.8 | 2.0 | |
| | | 1.5V Supply | 1.425 | 1.5 | 1.575 | |
| $I_{DD} + I_{DDO}$ | Total Power Supply Current | 5pF, 100MHz | — | — | 38 | mA |

DC ELECTRICAL CHARACTERISTICS
VDD = 1.8V, VDDO = 1.5 V ±5%, Ambient temperature -40°C to +105°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------------|--------------------------|------------------------|-------|------|-------|-------|
| VDD | Operating Voltage | — | 1.7 | 1.8 | 1.89 | V |
| VDDO | Output Operating Voltage | — | 1.425 | 1.5 | 1.575 | V |
| V _{IH} | Input High Voltage | CLK ⁽¹⁾ | 0.9 | — | 3.6 | V |
| V _{IL} | Input Low Voltage | CLK ⁽¹⁾ | — | — | 0.575 | V |
| I _{IH} | Input High Current | CLK ⁽¹⁾ | — | — | 40 | μA |
| I _{IL} | Input Low Current | CLK ⁽¹⁾ | — | — | 1 | μA |
| V _{OH} | Output High Voltage | I _{OH} = -6mA | 0.95 | — | — | V |
| V _{OL} | Output Low Voltage | I _{OL} = 6mA | — | — | 0.45 | V |
| IDD | Operating Supply Current | 5pF, 160MHz | — | 15 | 21 | mA |
| | | 5pF, 100MHz | — | 13 | 17 | mA |
| | | 5pF, 50MHz | — | 7 | 9 | mA |
| | | 5pF, 25MHz | — | 4 | 5.5 | mA |
| Z _O | Nominal Output Impedance | — | — | 20 | — | Ω |
| C _{IN} | Input Capacitance | CLK | — | 5 | — | pF |
| I _{OS} | Short-Circuit Current | — | — | ±12 | — | mA |

Notes: 1. Nominal switching threshold is VDD/2.

VDD, VDDO=1.8 V ±5%, Ambient temperature -40°C to +105°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------------|--------------------------|------------------------|------|------|------|-------|
| VDD, VDDO | Operating Voltage | — | 1.7 | 1.8 | 1.89 | V |
| V _{IH} | Input High Voltage | CLK ⁽¹⁾ | 1.1 | — | 3.6 | V |
| V _{IL} | Input Low Voltage | CLK ⁽¹⁾ | — | — | 0.6 | V |
| I _{IH} | Input High Current | CLK ⁽¹⁾ | — | — | 50 | μA |
| I _{IL} | Input Low Current | CLK ⁽¹⁾ | — | — | 1 | μA |
| V _{OH} | Output High Voltage | I _{OH} = -8mA | 1.4 | — | — | V |
| V _{OL} | Output Low Voltage | I _{OL} = 8mA | — | — | 0.4 | V |
| IDD | Operating Supply Current | 5pF, 160MHz | — | 22 | 28 | mA |
| | | 5pF, 100MHz | — | 17 | 21 | mA |
| | | 5pF, 50MHz | — | 9 | 12 | mA |
| | | 5pF, 25MHz | — | 5 | 7 | mA |
| Z _O | Nominal Output Impedance | — | — | 20 | — | Ω |
| C _{IN} | Input Capacitance | CLK | — | 5 | — | pF |
| I _{OS} | Short-Circuit Current | — | — | ±20 | — | mA |

Notes: 1. Nominal switching threshold is VDD/2.

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VDD, VDDO = 2.5 V ±5%, Ambient temperature -40°C to +105°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------------|--------------------------|------------------------|-------|------|-------|-------|
| VDD, VDDO | Operating Voltage | — | 2.375 | 2.5 | 2.625 | V |
| V _{IH} | Input High Voltage | CLK ⁽¹⁾ | 1.7 | — | 3.6 | V |
| V _{IL} | Input Low Voltage | CLK ⁽¹⁾ | — | — | 0.7 | V |
| I _{IH} | Input High Current | CLK ⁽¹⁾ | — | — | 60 | μA |
| I _{IL} | Input Low Current | CLK ⁽¹⁾ | — | — | 1 | μA |
| V _{OH} | Output High Voltage | I _{OH} = -8mA | 2 | — | — | V |
| V _{OL} | Output Low Voltage | I _{OL} = 8mA | — | — | 0.4 | V |
| IDD | Operating Supply Current | 5pF, 100MHz | — | 24 | 30 | mA |
| | | 5pF, 50MHz | — | 12 | 15 | mA |
| | | 5pF, 25MHz | — | 7 | 9 | mA |
| Z _O | Nominal Output Impedance | — | — | 20 | — | Ω |
| C _{IN} | Input Capacitance | CLK | — | 5 | — | pF |
| I _{OS} | Short-Circuit Current | — | — | ±50 | — | mA |

Notes: 1. Nominal switching threshold is VDD/2.

VDD, VDDO = 3.3 V ±10%, Ambient temperature -40°C to +105°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------------|--------------------------|-------------------------|------|------|------|-------|
| VDD, VDDO | Operating Voltage | — | 3.0 | 3.3 | 3.6 | V |
| V _{IH} | Input High Voltage | CLK ⁽¹⁾ | 2.4 | — | 3.6 | V |
| V _{IL} | Input Low Voltage | CLK ⁽¹⁾ | — | — | 0.7 | V |
| I _{IH} | Input High Current | CLK ⁽¹⁾ | — | — | 85 | μA |
| I _{IL} | Input Low Current | CLK ⁽¹⁾ | — | — | 1 | μA |
| V _{OH} | Output High Voltage | I _{OH} = -8 mA | 2.8 | — | — | V |
| V _{OL} | Output Low Voltage | I _{OL} = 8 mA | — | — | 0.2 | V |
| IDD | Operating Supply Current | 5pF, 100MHz | — | 32 | 38 | mA |
| | | 5pF, 50MHz | — | 16 | 19 | mA |
| | | 5pF, 25MHz | — | 10 | 12 | mA |
| Z _O | Nominal Output Impedance | — | — | 20 | — | Ω |
| C _{IN} | Input Capacitance | CLK | — | 5 | — | pF |
| I _{OS} | Short-Circuit Current | — | — | ±50 | — | mA |

Notes: 1. Nominal switching threshold is VDD/2.

AC ELECTRICAL CHARACTERISTICS

VDD = 1.8V, VDDO=1.5 V ±5%, Ambient temperature -40°C to +105° C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|------------------|-------------------------------|-----------------------|------|------|------|-------|
| F _{OUT} | Output Frequency | — | 0 | — | 160 | MHz |
| t _{OR} | Output Rise Time | 20% to 80% | — | 1.0 | 1.5 | ns |
| t _{OF} | Output Fall Time | 20% to 80% | — | 1.0 | 1.5 | ns |
| T _{PD} | Propagation Delay (Note1) | — | 2 | 3 | 5 | ns |
| T _{SK} | Output-to-Output Skew (Note2) | Rising edges at VDD/2 | — | 0 | ±250 | ps |

VDD, VDDO =1.8 V ±5%, Ambient temperature -40°C to +105° C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|------------------|--------------------------------|------------------------------|------|------|------|-------|
| F _{OUT} | Output Frequency | — | 0 | — | 160 | MHz |
| t _{OR} | Output Rise Time | 20% to 80% | — | 1.0 | 1.5 | ns |
| t _{OF} | Output Fall Time | 20% to 80% | — | 1.0 | 1.5 | ns |
| T _{PD} | Propagation Delay (Note 1) | — | 1.3 | 2 | 4 | ns |
| T _{SK} | Output-to-Output Skew (Note 2) | Rising edges at VDD/2 | — | 0 | ±250 | ps |
| J _{ADD} | Additive Jitter | @ 156.25MHz, 12k to 20MHz | — | 0.1 | — | ps |

VDD, VDDO =2.5 V ±5%, Ambient temperature -40°C to +105°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|------------------|--------------------------------------|------------------------------|------|------|------|-------|
| F _{OUT} | Output Frequency | — | 0 | — | 160 | MHz |
| t _{OR} | Output Rise Time | 20% TO 80% | — | 1.0 | 1.5 | ns |
| t _{OF} | Output Fall Time | 20% TO 80% | — | 1.0 | 1.5 | ns |
| T _{PD} | Propagation Delay ⁽¹⁾ | — | 0.8 | 1.5 | 3 | ns |
| T _{SK} | Output-to-Output Skew ⁽²⁾ | Rising edges at VDD/2 | — | 0 | ±250 | ps |
| J _{ADD} | Additive Jitter | @ 156.25MHz, 12k to 20MHz | — | 0.05 | — | ps |

Notes:

1. With rail-to-rail input clock.
2. Between any two outputs with equal loading.

VDD, VDDO = 3.3 V ±10%, Ambient temperature -40°C to +105°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------|--------------------------------------|------------------------------|------|------|------|-------|
| F_{OUT} | Output Frequency | — | 0 | — | 100 | MHz |
| tOR | Output Rise Time | 20% TO 80% | — | 1.0 | 1.5 | ns |
| tOF | Output Fall Time | 20% TO 80% | — | 1.0 | 1.5 | ns |
| T_{PD} | Propagation Delay ⁽¹⁾ | — | 0.8 | 1.0 | 2.5 | ns |
| T_{SK} | Output-to-Output Skew ⁽²⁾ | Rising edges at VDD/2 | — | 0 | ±250 | ps |
| J_{ADD} | Additive Jitter | @ 156.25MHz, 12k to 20MHz | — | 0.05 | — | ps |

Notes:

1. With rail-to-rail input clock.
2. Between any two outputs with equal loading.

DC ELECTRICAL CHARACTERISTICS
VDD = 1.8V, VDDO = 1.5 V ±5%, Ambient temperature -40°C to +85°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------------|--------------------------|-------------------------|-------|------|-------|-------|
| VDD | Operating Voltage | — | 1.7 | 1.8 | 1.89 | V |
| VDDO | Output Operating Voltage | — | 1.425 | 1.5 | 1.575 | V |
| V _{IH} | Input High Voltage | CLK ⁽¹⁾ | 0.9 | — | 3.6 | V |
| V _{IL} | Input Low Voltage | CLK ⁽¹⁾ | — | — | 0.575 | V |
| I _{IH} | Input High Current | CLK ⁽¹⁾ | — | — | 40 | μA |
| I _{IL} | Input Low Current | CLK ⁽¹⁾ | — | — | 1 | μA |
| V _{OH} | Output High Voltage | I _{OH} = -6 mA | 0.95 | — | — | V |
| V _{OL} | Output Low Voltage | I _{OL} = 6 mA | — | — | 0.45 | V |
| IDD | Operating Supply Current | 5pF, 160MHz | — | 15 | 21 | mA |
| | | 5pF, 100MHz | — | 13 | 17 | mA |
| | | 5pF, 50MHz | — | 7 | 9 | mA |
| | | 5pF, 25MHz | — | 4 | 5.5 | mA |
| Z _O | Nominal Output Impedance | — | — | 20 | — | Ω |
| C _{IN} | Input Capacitance | CLK | — | 5 | — | pF |
| I _{OS} | Short-Circuit Current | — | — | ±12 | — | mA |

Notes: 1. Nominal switching threshold is VDD/2.

VDD, VDDO = 1.8 V ±5%, Ambient temperature -40°C to +85°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------------|--------------------------|------------------------|------|------|------|-------|
| VDD, VDDO | Operating Voltage | — | 1.7 | 1.8 | 1.89 | V |
| V _{IH} | Input High Voltage | CLK ⁽¹⁾ | 1.1 | — | 3.6 | V |
| V _{IL} | Input Low Voltage | CLK ⁽¹⁾ | — | — | 0.6 | V |
| I _{IH} | Input High Current | CLK ⁽¹⁾ | — | — | 50 | μA |
| I _{IL} | Input Low Current | CLK ⁽¹⁾ | — | — | 1 | μA |
| V _{OH} | Output High Voltage | I _{OH} = -8mA | 1.4 | — | — | V |
| V _{OL} | Output Low Voltage | I _{OL} = 8mA | — | — | 0.4 | V |
| IDD | Operating Supply Current | 5pF, 160MHz | — | 22 | 28 | mA |
| | | 5pF, 100MHz | — | 17 | 21 | mA |
| | | 5pF, 50MHz | — | 9 | 12 | mA |
| | | 5pF, 25MHz | — | 5 | 7 | mA |
| Z _O | Nominal Output Impedance | — | — | 20 | — | Ω |
| C _{IN} | Input Capacitance | CLK | — | 5 | — | pF |
| I _{OS} | Short-Circuit Current | — | — | ±20 | — | mA |

Notes: 1. Nominal switching threshold is VDD/2.

VDD, VDDO =2.5 V ±5%, Ambient temperature -40°C to +85°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------------|--------------------------|-------------------------|-------|------|-------|-------|
| VDD | Operating Voltage | — | 2.375 | 2.5 | 2.625 | V |
| V _{IH} | Input High Voltage | CLK ⁽¹⁾ | 1.7 | — | 3.6 | V |
| V _{IL} | Input Low Voltage | CLK ⁽¹⁾ | — | — | 0.7 | V |
| I _{IH} | Input High Current | CLK ⁽¹⁾ | — | — | 60 | μA |
| I _{IL} | Input Low Current | CLK ⁽¹⁾ | — | — | 1 | μA |
| V _{OH} | Output High Voltage | I _{OH} = -8 mA | 2 | — | — | V |
| V _{OL} | Output Low Voltage | I _{OL} = 8 mA | — | — | 0.4 | V |
| IDD | Operating Supply Current | 5pF, 200MHz | — | 46 | 56 | mA |
| | | 5pF, 100MHz | — | 24 | 30 | mA |
| | | 5pF, 50MHz | — | 12 | 15 | mA |
| | | 5pF, 25MHz | — | 7 | 9 | mA |
| Z _O | Nominal Output Impedance | — | — | 20 | — | Ω |
| C _{IN} | Input Capacitance | CLK | — | 5 | — | pF |
| I _{OS} | Short-Circuit Current | — | — | ±50 | — | mA |

Notes: 1. Nominal switching threshold is VDD/2.

VDD, VDDO =3.3 V ±10%, Ambient temperature -40°C to +85°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------------|--------------------------|------------------------|------|------|------|-------|
| VDD | Operating Voltage | — | 3.0 | 3.3 | 3.6 | V |
| V _{IH} | Input High Voltage | CLK ⁽¹⁾ | 2.4 | — | 3.6 | V |
| V _{IL} | Input Low Voltage | CLK ⁽¹⁾ | — | — | 0.7 | V |
| I _{IH} | Input High Current | CLK ⁽¹⁾ | — | — | 85 | μA |
| I _{IL} | Input Low Current | CLK ⁽¹⁾ | — | — | 1 | μA |
| V _{OH} | Output High Voltage | I _{OH} = -8mA | 2.8 | — | — | V |
| V _{OL} | Output Low Voltage | I _{OL} = 8mA | — | — | 0.2 | V |
| IDD | Operating Supply Current | 5pF, 200MHz | — | 62 | 75 | mA |
| | | 5pF, 100MHz | — | 32 | 38 | mA |
| | | 5pF, 50MHz | — | 16 | 19 | mA |
| | | 5pF, 25MHz | — | 10 | 12 | mA |
| Z _O | Nominal Output Impedance | — | — | 20 | — | Ω |
| C _{IN} | Input Capacitance | CLK | — | 5 | — | pF |
| I _{OS} | Short-Circuit Current | — | — | ±50 | — | mA |

Notes: 1. Nominal switching threshold is VDD/2.

AC ELECTRICAL CHARACTERISTICS

VDD = 1.8V, VDDO = 1.5 V ±5%, Ambient temperature -40°C to +85°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------|--------------------------------|-----------------------|------|------|------|-------|
| F_{OUT} | Output Frequency | — | 0 | — | 166 | MHz |
| tOR | Output Rise Time | 20% to 80% | — | 1.0 | 1.5 | ns |
| tOF | Output Fall Time | 20% to 80% | — | 1.0 | 1.5 | ns |
| T_{PD} | Propagation Delay (Note 1) | — | 2 | 3 | 5 | ns |
| T_{SK} | Output-to-Output Skew (Note 2) | Rising edges at VDD/2 | — | 0 | ±250 | ps |

VDD, VDDO = 1.8 V ±5%, Ambient temperature -40°C to +85°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------|--------------------------------|-----------------------------|------|------|------|-------|
| F_{OUT} | Output Frequency | — | 0 | — | 166 | MHz |
| tOR | Output Rise Time | 20% to 80% | — | 1.0 | 1.5 | ns |
| tOF | Output Fall Time | 20% to 80% | — | 1.0 | 1.5 | ns |
| T_{PD} | Propagation Delay (Note 1) | — | 1.3 | 2 | 4 | ns |
| T_{SK} | Output-to-Output Skew (Note 2) | Rising edges at VDD/2 | — | 0 | ±250 | ps |
| J_{ADD} | Additive Jitter | @156.25MHz, 12k to 20MHz | — | 0.1 | — | ps |

VDD, VDDO = 2.5 V ±5%, Ambient temperature -40°C to +85°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------|--------------------------------------|------------------------------|------|------|------|-------|
| F_{OUT} | Output Frequency | — | 0 | — | 200 | MHz |
| tOR | Output Rise Time | 20% TO 80% | — | 1.0 | 1.5 | ns |
| tOF | Output Fall Time | 20% TO 80% | — | 1.0 | 1.5 | ns |
| T_{PD} | Propagation Delay ⁽¹⁾ | — | 0.8 | 1.5 | 3 | ns |
| T_{SK} | Output-to-Output Skew ⁽²⁾ | Rising edges at VDD/2 | — | 0 | ±250 | ps |
| J_{ADD} | Additive Jitter | @ 156.25MHz, 12k to 20MHz | — | 0.05 | — | ps |

Notes:

1. With rail-to-rail input clock.
2. Between any two outputs with equal loading.

VDD, VDDO = 3.3 V ±10%, Ambient temperature -40°C to +85°C, unless stated otherwise

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------|--------------------------------------|------------------------------|------|------|------|-------|
| F_{OUT} | Output Frequency | — | 0 | — | 200 | MHz |
| tOR | Output Rise Time | 20% TO 80% | — | 1.0 | 1.5 | ns |
| tOF | Output Fall Time | 20% TO 80% | — | 1.0 | 1.5 | ns |
| T_{PD} | Propagation Delay ⁽¹⁾ | — | 0.8 | 1.0 | 2.5 | ns |
| T_{SK} | Output-to-Output Skew ⁽²⁾ | Rising edges at VDD/2 | — | 0 | ±250 | ps |
| J_{ADD} | Additive Jitter | @ 156.25MHz, 12k to 20MHz | — | 0.05 | — | ps |

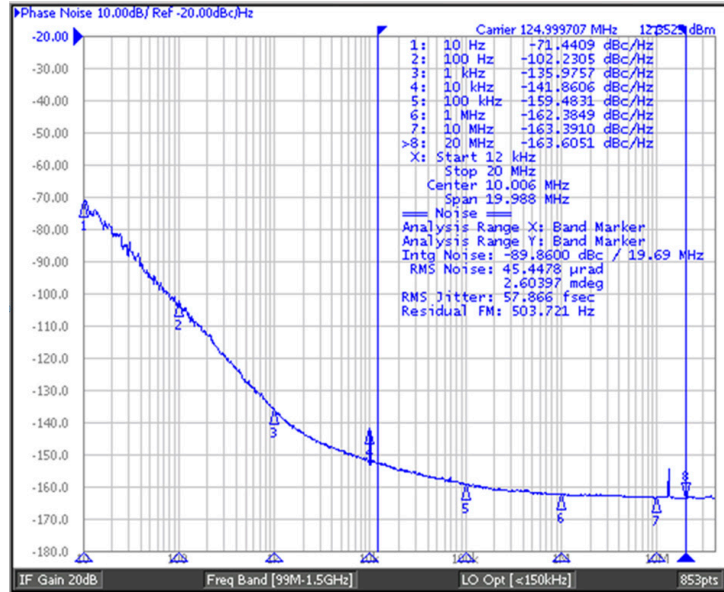
Notes:

1. With rail-to-rail input clock.
2. Between any two outputs with equal loading.

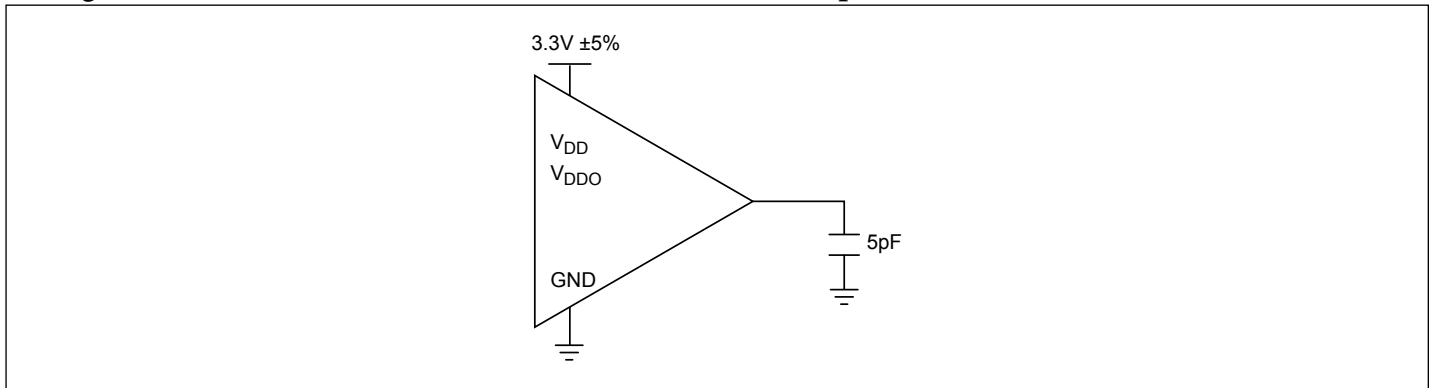
Phase Noise and Additive Jitter

Output phase noise plot provided below.

$$\text{Additive jitter} = \sqrt{(\text{Output jitter}^2 - \text{Input jitter}^2)}$$



Configuration Test Load Board Termination for LVCMOS Outputs



Thermal Information

| Symbol | Description | Condition | |
|-----------------|--|-----------|---------|
| Θ _{JA} | Junction-to-Ambient Thermal Resistance | Still air | 157°C/W |
| Θ _{JC} | Junction-to-Case Thermal Resistance | — | 42°C/W |

PI6C49CB04BQ

Part Marking

W Package-Q2

PI6C49CB
04BQ2WE
YYWWXX



YY: Year
WW: Workweek
1st X: Assembly Code
2nd X: Fab Code

W Package-Q3

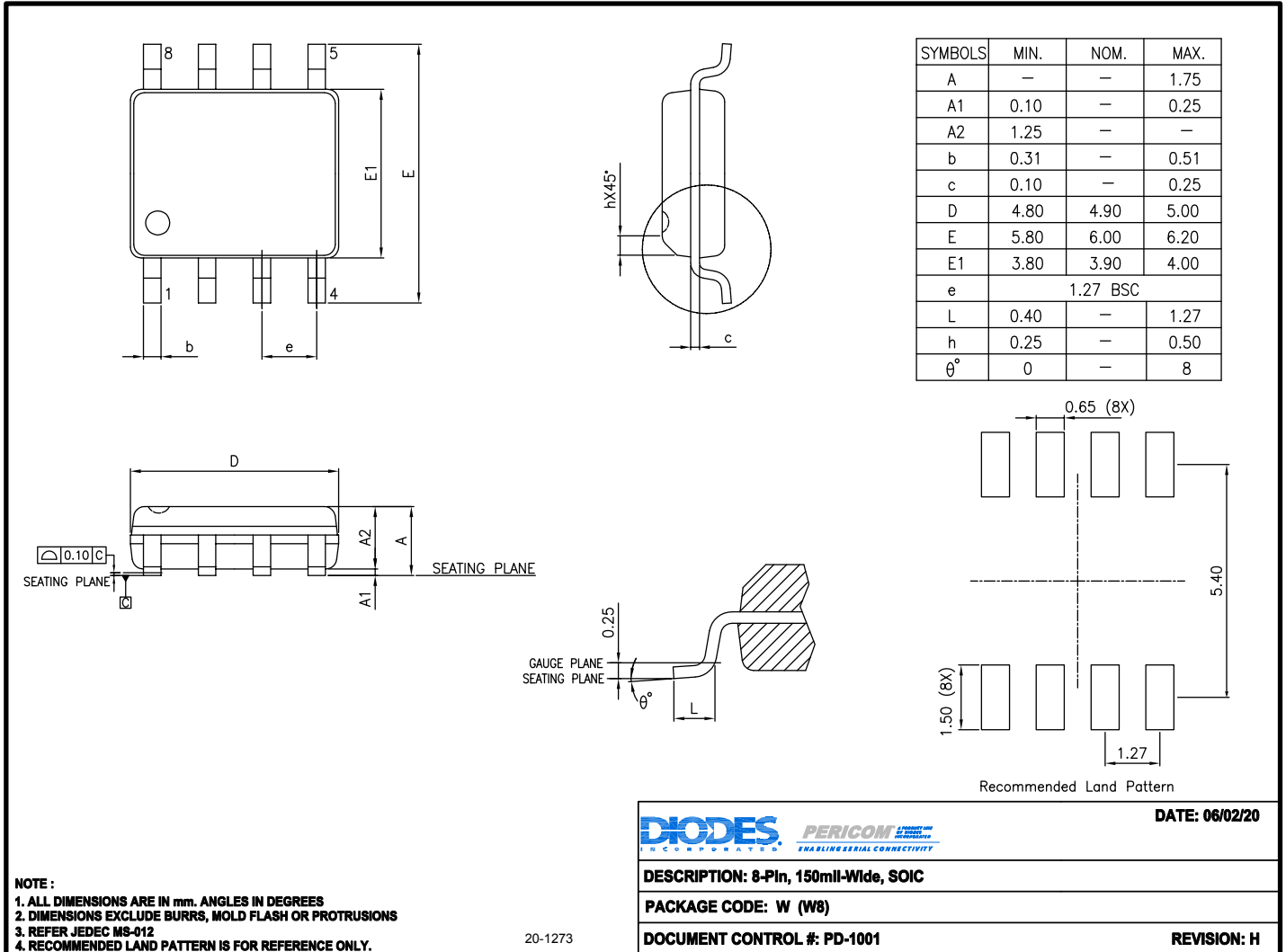
PI6C49CB
04BQ3WE
YYWWXX



YY: Year
WW: Workweek
1st X: Assembly Code
2nd X: Fab Code

Packaging Mechanical

8-SOIC (W)



For latest package information:

See <http://www.diodes.com/design/support/packaging/pericom-packaging/packaging-mechanicals-and-thermal-characteristics/>.

Ordering Information

| Ordering Code | Package Code | Package Description | Operating Temperature |
|------------------|--------------|---------------------------|-----------------------|
| PI6C49CB04BQ2WEX | W | 8-pin, 150mil-Wide (SOIC) | -40°C to 105°C |
| PI6C49CB04BQ3WEX | W | 8-pin, 150mil-Wide (SOIC) | -40°C to 85°C |

Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
- See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- Q = Automotive Compliant
- 2 and 3 = AEC-Q100 Grade Level
- E = Pb-free and Green
- X suffix = Tape/Reel

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