

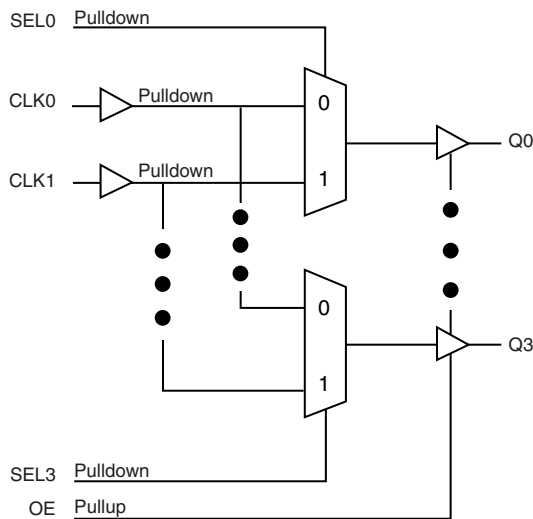
GENERAL DESCRIPTION

The 83054I-01 is a 4-bit, 2:1, Single-ended Multiplexer and a member of the family of High Performance Clock Solutions from IDT. The 83054I-01 has two selectable single-ended clock inputs and four single-ended clock outputs. The output has a V_{DDO} pin which may be set at 3.3V, 2.5V, or 1.8V, making the device ideal for use in voltage translation applications. An output enable pin places the output in a high impedance state which may be useful for testing or debug. Possible applications include systems with up to four transceivers which need to be independently set for different rates. For example, a board may have four transceivers, each of which need to be independently configured for 1 Gigabit Ethernet or 1 Gigabit Fibre Channel rates. Another possible application may require the ports to be independently set for FEC (Forward Error Correction) or non-FEC rates. The device operates up to 250MHz and is packaged in a 16 TSSOP.

FEATURES

- Four-bit, 2:1 single-ended multiplexer
- Nominal output impedance: 15Ω ($V_{DDO} = 3.3V$)
- Maximum output frequency: 250MHz
- Propagation delay: 3.2ns (maximum), $V_{DD} = V_{DDO} = 3.3V$
- Input skew: 170ps (maximum), $V_{DD} = V_{DDO} = 3.3V$
- Output skew: 90ps (maximum), $V_{DD} = V_{DDO} = 3.3V$
- Part-to-part skew: 800ps (maximum), $V_{DD} = V_{DDO} = 3.3V$
- Additive phase jitter, RMS at 155.52MHz, (12kHz – 20MHz): 0.18ps (typical)
- Operating supply modes:
 - V_{DD}/V_{DDO}
 - 3.3V/3.3V
 - 3.3V/2.5V
 - 3.3V/1.8V
 - 2.5V/2.5V
 - 2.5V/1.8V
- -40°C to 85°C ambient operating temperature
- Available in lead-free (RoHS 6) package

BLOCK DIAGRAM



PIN ASSIGNMENT

| | | | |
|-----------|---|----|-----------|
| SEL3 | 1 | 16 | SEL0 |
| Q3 | 2 | 15 | Q0 |
| V_{DDO} | 3 | 14 | V_{DDO} |
| GND | 4 | 13 | GND |
| Q2 | 5 | 12 | Q1 |
| SEL2 | 6 | 11 | SEL1 |
| CLK1 | 7 | 10 | CLK0 |
| V_{DD} | 8 | 9 | OE |

83054I-01

16-Lead TSSOP

4.4mm x 5.0mm x 0.92mm package body

G Package

Top View

TABLE 1. PIN DESCRIPTIONS

| Number | Name | Type | | Description |
|----------------|---------------------------|--------|----------|---|
| 1, 6 11, 16 | SEL3, SEL2, SEL1, SEL0 | Input | Pulldown | Clock select inputs. See Control Input Function Table. LVCMOS / LVTTTL interface levels. |
| 2, 5, 12, 15 | Q3, Q2, Q1, Q0 | Output | | Single-ended clock output. LVCMOS/LVTTTL interface levels. |
| 3, 14 | V_{DDO} | Power | | Output supply pins. |
| 4, 13 | GND | Power | | Power supply ground. |
| 7, 10 | CLK1, CLK0 | Input | Pulldown | Single-ended clock inputs. LVCMOS/LVTTTL interface levels. |
| 8 | V_{DD} | Power | | Positive supply pin. |
| 9 | OE | Input | Pullup | Output enable. When LOW, outputs are in HIGH impedance state. When HIGH, outputs are active. LVCMOS / LVTTTL interface levels. |

NOTE: *Pullup* and *Pulldown* refer to internal input resistors. See Table 2, Pin Characteristics, for typical values.

TABLE 2. PIN CHARACTERISTICS

| Symbol | Parameter | Test Conditions | Minimum | Typical | Maximum | Units |
|----------------|---|--------------------|---------|---------|---------|------------|
| C_{IN} | Input Capacitance | | | 4 | | pF |
| R_{PULLUP} | Input Pullup Resistor | | | 51 | | k Ω |
| $R_{PULLDOWN}$ | Input Pulldown Resistor | | | 51 | | k Ω |
| C_{PD} | Power Dissipation Capacitance (per output) | $V_{DDO} = 3.465V$ | | 18 | | pF |
| | | $V_{DDO} = 2.625V$ | | 19 | | pF |
| | | $V_{DDO} = 2.0V$ | | 19 | | pF |
| R_{OUT} | Output Impedance | $V_{DDO} = 3.465V$ | | 15 | | Ω |
| | | $V_{DDO} = 2.625V$ | | 17 | | Ω |
| | | $V_{DDO} = 2.0V$ | | 25 | | Ω |

TABLE 3. CONTROL INPUT FUNCTION TABLE

| Control Inputs | Outputs |
|----------------|---------|
| SELx | Qx |
| 0 | CLK0 |
| 1 | CLK1 |

ABSOLUTE MAXIMUM RATINGS

| | |
|--|---------------------------|
| Supply Voltage, V_{DD} | 4.6V |
| Inputs, V_I | -0.5V to $V_{DD} + 0.5V$ |
| Outputs, V_O | -0.5V to $V_{DDO} + 0.5V$ |
| Package Thermal Impedance, θ_{JA} | 100.3°C/W (0 mps) |
| Storage Temperature, T_{STG} | -65°C to 150°C |

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.

TABLE 4A. POWER SUPPLY DC CHARACTERISTICS, $V_{DD} = 3.3V \pm 5\%$, $V_{DDO} = 3.3V \pm 5\%$, OR $2.5V \pm 5\%$, OR $1.8V \pm 0.2V$, $T_A = -40^\circ\text{C}$ TO 85°C

| Symbol | Parameter | Test Conditions | Minimum | Typical | Maximum | Units |
|-----------|-----------------------|-----------------|---------|---------|---------|-------|
| V_{DD} | Power Supply Voltage | | 3.135 | 3.3 | 3.465 | V |
| V_{DDO} | Output Supply Voltage | | 3.135 | 3.3 | 3.465 | V |
| | | | 2.375 | 2.5 | 2.625 | V |
| | | | 1.6 | 1.8 | 2.0 | V |
| I_{DD} | Power Supply Current | | | 45 | mA | |
| I_{DDO} | Output Supply Current | No Load | | | 5 | mA |

TABLE 4B. POWER SUPPLY DC CHARACTERISTICS, $V_{DD} = 2.5V \pm 5\%$, $V_{DDO} = 2.5V \pm 5\%$, OR $1.8V \pm 0.2V$, $T_A = -40^\circ\text{C}$ TO 85°C

| Symbol | Parameter | Test Conditions | Minimum | Typical | Maximum | Units |
|-----------|-----------------------|-----------------|---------|---------|---------|-------|
| V_{DD} | Power Supply Voltage | | 2.375 | 2.5 | 2.625 | V |
| V_{DDO} | Output Supply Voltage | | 2.375 | 2.5 | 2.625 | V |
| | | | 1.6 | 1.8 | 2.0 | V |
| | | | | | | |
| I_{DD} | Power Supply Current | | | 40 | mA | |
| I_{DDO} | Output Supply Current | No Load | | | 5 | mA |

TABLE 4C. LVCMOS/LVTTL DC CHARACTERISTICS, $T_A = -40^\circ\text{C}$ TO 85°C

| Symbol | Parameter | Test Conditions | Minimum | Typical | Maximum | Units |
|----------|-----------------------------|--|----------------|---------|----------------|---------------|
| V_{IH} | Input High Voltage | $V_{DD} = 3.3V \pm 5\%$ | 2 | | $V_{DD} + 0.3$ | V |
| | | $V_{DD} = 2.5V \pm 5\%$ | 1.7 | | $V_{DD} + 0.3$ | V |
| V_{IL} | Input Low Voltage | $V_{DD} = 3.3V \pm 5\%$ | -0.3 | | 1.3 | V |
| | | $V_{DD} = 2.5V \pm 5\%$ | -0.3 | | 0.7 | V |
| I_{IH} | Input High Current | CLK0, CLK1, SEL0:SEL3 $V_{DD} = 3.3V$ or $2.5V \pm 5\%$ | | | 150 | μA |
| | | OE $V_{DD} = 3.3V$ or $2.5V \pm 5\%$ | | | 5 | μA |
| I_{IL} | Input Low Current | CLK0, CLK1, SEL0:SEL3 $V_{DD} = 3.3V$ or $2.5V \pm 5\%$ | -5 | | | μA |
| | | OE $V_{DD} = 3.3V$ or $2.5V \pm 5\%$ | -150 | | | μA |
| V_{OH} | Output High Voltage; NOTE 1 | $V_{DDO} = 3.3V \pm 5\%$ | 2.6 | | | V |
| | | $V_{DDO} = 2.5V \pm 5\%$ | 1.8 | | | V |
| | | $V_{DDO} = 1.8V \pm 0.2V$ | $V_{DD} - 0.3$ | | | V |
| V_{OL} | Output Low Voltage; NOTE 1 | $V_{DDO} = 3.3V \pm 5\%$ | | | 0.5 | V |
| | | $V_{DDO} = 2.5V \pm 5\%$ | | | 0.45 | V |
| | | $V_{DDO} = 1.8V \pm 0.2V$ | | | 0.35 | V |

NOTE 1: Outputs terminated with 50Ω to $V_{DDO}/2$. See Parameter Measurement section, "Load Test Circuit" diagrams.

TABLE 5A. AC CHARACTERISTICS, $V_{DD} = V_{DDO} = 3.3V \pm 5\%$, $T_A = -40^\circ\text{C}$ TO 85°C

| Symbol | Parameter | Test Conditions | Minimum | Typical | Maximum | Units |
|--------------|---|--|---------|---------|---------|-------|
| f_{MAX} | Output Frequency | | | | 250 | MHz |
| t_{pLH} | Propagation Delay, Low to High; NOTE 1 | | 1.8 | 2.5 | 3.2 | ns |
| t_{pHL} | Propagation Delay, High to Low; NOTE 1 | | 2.0 | 2.6 | 3.2 | ns |
| $t_{sk(o)}$ | Output Skew; NOTE 2, 3 | | | 30 | 90 | ps |
| $t_{sk(i)}$ | Input Skew; NOTE 2 | | | 40 | 170 | ps |
| $t_{sk(pp)}$ | Part-to-Part Skew; NOTE 2, 4 | | | | 800 | ps |
| t_{jit} | Buffer Additive Phase Jitter, RMS; refer to Additive Phase Jitter section, NOTE 5 | 155.52, Integration Range: 12kHz – 20MHz | | 0.18 | | ps |
| t_r / t_f | Output Rise/Fall Time | 20% to 80% | 300 | | 800 | ps |
| odc | Output Duty Cycle | $f_{out} \leq 175\text{MHz}$ | 40 | | 60 | % |
| MUX_{ISOL} | MUX Isolation | @ 100MHz | | 45 | | dB |

NOTE 1: Measured from $V_{DD}/2$ of the input to $V_{DDO}/2$ of the output.

NOTE 2: This parameter is defined in accordance with JEDEC Standard 65.

NOTE 3: Defined as skew between outputs at the same voltage and with equal load conditions. Measured at $V_{DDO}/2$.

NOTE 4: Defined as skew between outputs on different devices operating at the same supply voltages and with equal load conditions. Using the same type of input on each device, the output is measured at $V_{DDO}/2$.

NOTE 5: Driving only one input clock.

TABLE 5B. AC CHARACTERISTICS, $V_{DD} = 3.3V \pm 5\%$, $V_{DDO} = 2.5V \pm 5\%$, $T_A = -40^\circ C$ TO $85^\circ C$

| Symbol | Parameter | Test Conditions | Minimum | Typical | Maximum | Units |
|--------------|---|---|---------|---------|---------|-------|
| f_{MAX} | Output Frequency | | | | 250 | MHz |
| tp_{LH} | Propagation Delay, Low to High; NOTE 1 | | 2.1 | 2.6 | 3.1 | ns |
| tp_{HL} | Propagation Delay, High to Low; NOTE 1 | | 2.3 | 2.7 | 3.1 | ns |
| $tsk(o)$ | Output Skew; NOTE 2, 3 | | | 40 | 125 | ps |
| $tsk(i)$ | Input Skew; NOTE 2 | | | 35 | 190 | ps |
| $tsk(pp)$ | Part-to-Part Skew; NOTE 2, 4 | | | | 800 | ps |
| t_{jit} | Buffer Additive Phase Jitter, RMS; refer to Additive Phase Jitter section, NOTE 5 | 155.52, Integration Range: 12kHz – 20MHz | | 0.14 | | ps |
| t_R / t_F | Output Rise/Fall Time | 20% to 80% | 300 | | 800 | ps |
| odc | Output Duty Cycle | | 40 | | 60 | % |
| MUX_{ISOL} | MUX Isolation | @ 100MHz | | 45 | | dB |

NOTE 1: Measured from $V_{DD}/2$ of the input to $V_{DDO}/2$ of the output.

NOTE 2: This parameter is defined in accordance with JEDEC Standard 65.

NOTE 3: Defined as skew between outputs at the same voltage and with equal load conditions. Measured at $V_{DDO}/2$.

NOTE 4: Defined as skew between outputs on different devices operating at the same supply voltages and with equal load conditions. Using the same type of input on each device, the output is measured at $V_{DDO}/2$.

NOTE 5: Driving only one input clock.

TABLE 5C. AC CHARACTERISTICS, $V_{DD} = 3.3V \pm 5\%$, $V_{DDO} = 1.8V \pm 0.2V$, $T_A = -40^\circ C$ TO $85^\circ C$

| Symbol | Parameter | Test Conditions | Minimum | Typical | Maximum | Units |
|--------------|---|---|---------|---------|---------|-------|
| f_{MAX} | Output Frequency | | | | 250 | MHz |
| tp_{LH} | Propagation Delay, Low to High; NOTE 1 | | 2.6 | 3.1 | 3.6 | ns |
| tp_{HL} | Propagation Delay, High to Low; NOTE 1 | | 2.7 | 3.2 | 3.7 | ns |
| $tsk(o)$ | Output Skew; NOTE 2, 3 | | | 40 | 125 | ps |
| $tsk(i)$ | Input Skew; NOTE 2 | | | 35 | 195 | ps |
| $tsk(pp)$ | Part-to-Part Skew; NOTE 2, 4 | | | | 800 | ps |
| t_{jit} | Buffer Additive Phase Jitter, RMS; refer to Additive Phase Jitter section, NOTE 5 | 155.52, Integration Range: 12kHz – 20MHz | | 0.16 | | ps |
| t_R / t_F | Output Rise/Fall Time | 20% to 80% | 450 | | 850 | ps |
| odc | Output Duty Cycle | | 40 | | 60 | % |
| MUX_{ISOL} | MUX Isolation | @ 100MHz | | 45 | | dB |

NOTE 1: Measured from $V_{DD}/2$ of the input to $V_{DDO}/2$ of the output.

NOTE 2: This parameter is defined in accordance with JEDEC Standard 65.

NOTE 3: Defined as skew between outputs at the same voltage and with equal load conditions. Measured at $V_{DDO}/2$.

NOTE 4: Defined as skew between outputs on different devices operating at the same supply voltages and with equal load conditions. Using the same type of input on each device, the output is measured at $V_{DDO}/2$.

NOTE 5: Driving only one input clock.

TABLE 5D. AC CHARACTERISTICS, $V_{DD} = V_{DDO} = 2.5V \pm 5\%$, $T_A = -40^\circ C$ TO $85^\circ C$

| Symbol | Parameter | Test Conditions | Minimum | Typical | Maximum | Units |
|--------------|---|---|---------|---------|---------|-------|
| f_{MAX} | Output Frequency | | | | 250 | MHz |
| $t_{p_{LH}}$ | Propagation Delay, Low to High; NOTE 1 | | 1.5 | 3.0 | 4.5 | ns |
| $t_{p_{HL}}$ | Propagation Delay, High to Low; NOTE 1 | | 2.2 | 2.8 | 3.4 | ns |
| $t_{sk(o)}$ | Output Skew; NOTE 2, 3 | | | 30 | 90 | ps |
| $t_{sk(i)}$ | Input Skew; NOTE 2 | | | 45 | 190 | ps |
| $t_{sk(pp)}$ | Part-to-Part Skew; NOTE 2, 4 | | | | 800 | ps |
| t_{jit} | Buffer Additive Phase Jitter, RMS; refer to Additive Phase Jitter section, NOTE 5 | 155.52, Integration Range: 12kHz – 20MHz | | 0.22 | | ps |
| t_R / t_F | Output Rise/Fall Time | 20% to 80% | 300 | | 700 | ps |
| odc | Output Duty Cycle | $f_{out} \leq 175MHz$ | 40 | | 60 | % |
| MUX_{ISOL} | MUX Isolation | @100MHz | | 45 | | dB |

NOTE 1: Measured from $V_{DD}/2$ of the input to $V_{DDO}/2$ of the output.

NOTE 2: This parameter is defined in accordance with JEDEC Standard 65.

NOTE 3: Defined as skew between outputs at the same voltage and with equal load conditions. Measured at $V_{DDO}/2$.

NOTE 4: Defined as skew between outputs on different devices operating at the same supply voltages and with equal load conditions. Using the same type of input on each device, the output is measured at $V_{DDO}/2$.

NOTE 5: Driving only one input clock.

TABLE 5E. AC CHARACTERISTICS, $V_{DD} = 2.5V \pm 5\%$, $V_{DDO} = 1.8V \pm 0.2V$, $T_A = -40^\circ C$ TO $85^\circ C$

| Symbol | Parameter | Test Conditions | Minimum | Typical | Maximum | Units |
|--------------|---|---|---------|---------|---------|-------|
| f_{MAX} | Output Frequency | | | | 250 | MHz |
| $t_{p_{LH}}$ | Propagation Delay, Low to High; NOTE 1 | | 2.2 | 3.2 | 4.2 | ns |
| $t_{p_{HL}}$ | Propagation Delay, High to Low; NOTE 1 | | 2.5 | 3.2 | 4.0 | ns |
| $t_{sk(o)}$ | Output Skew; NOTE 2, 3 | | | 40 | 125 | ps |
| $t_{sk(i)}$ | Input Skew; NOTE 2 | | | 30 | 145 | ps |
| $t_{sk(pp)}$ | Part-to-Part Skew; NOTE 2, 4 | | | | 800 | ps |
| t_{jit} | Buffer Additive Phase Jitter, RMS; refer to Additive Phase Jitter section, NOTE 5 | 155.52, Integration Range: 12kHz – 20MHz | | 0.19 | | ps |
| t_R / t_F | Output Rise/Fall Time | 20% to 80% | 450 | | 850 | ps |
| odc | Output Duty Cycle | $f_{out} \leq 200MHz$ | 40 | | 60 | % |
| MUX_{ISOL} | MUX Isolation | @100MHz | | 45 | | dB |

NOTE 1: Measured from $V_{DD}/2$ of the input to $V_{DDO}/2$ of the output.

NOTE 2: This parameter is defined in accordance with JEDEC Standard 65.

NOTE 3: Defined as skew between outputs at the same voltage and with equal load conditions. Measured at $V_{DDO}/2$.

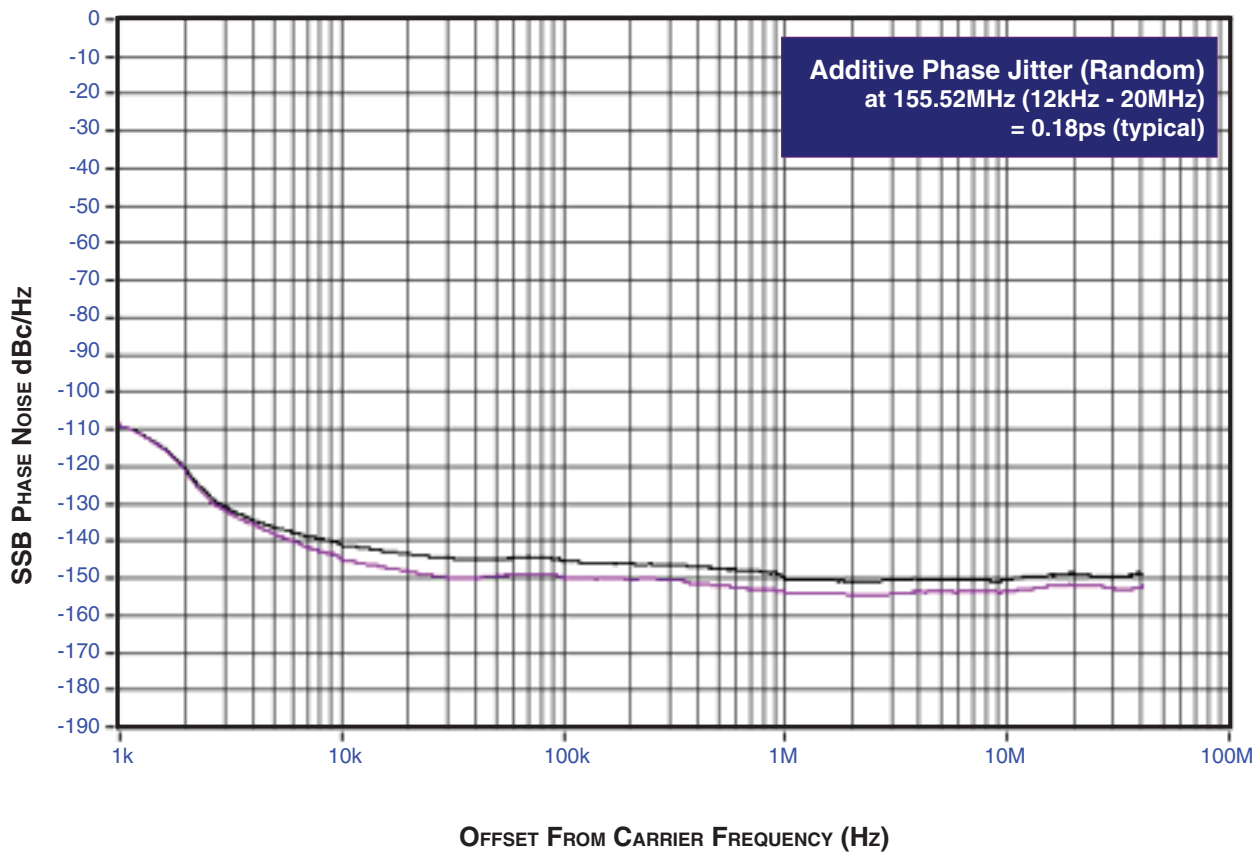
NOTE 4: Defined as skew between outputs on different devices operating at the same supply voltages and with equal load conditions. Using the same type of input on each device, the output is measured at $V_{DDO}/2$.

NOTE 5: Driving only one input clock.

ADDITIVE PHASE JITTER

The spectral purity in a band at a specific offset from the fundamental compared to the power of the fundamental is called the **dBc Phase Noise**. This value is normally expressed using a Phase noise plot and is most often the specified plot in many applications. Phase noise is defined as the ratio of the noise power present in a 1Hz band at a specified offset from the fundamental frequency to the power value of the fundamental. This ratio is expressed in decibels

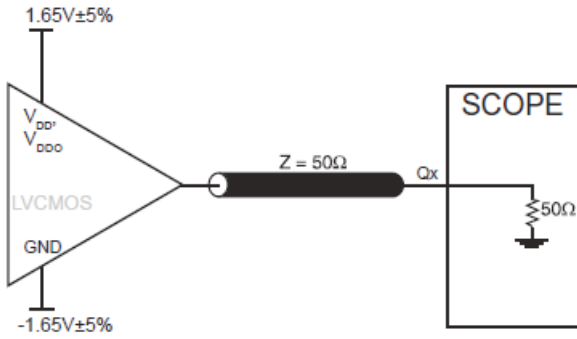
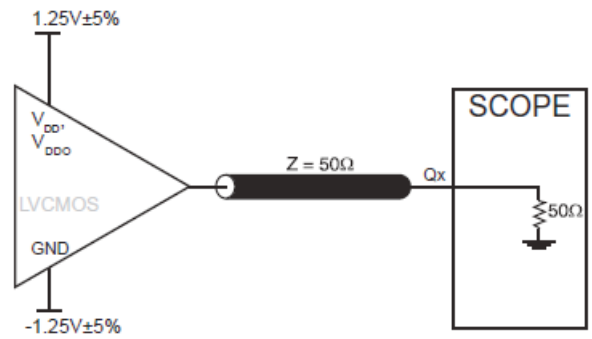
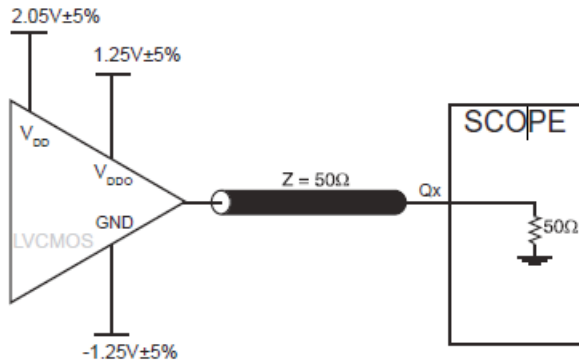
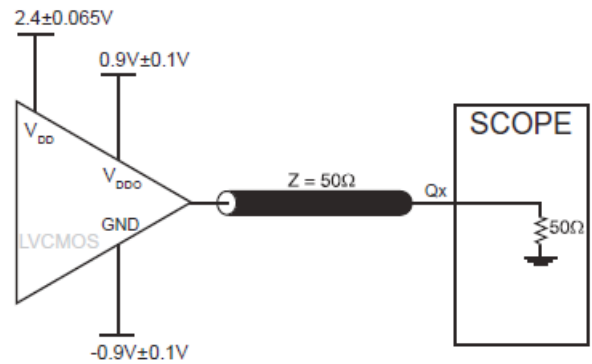
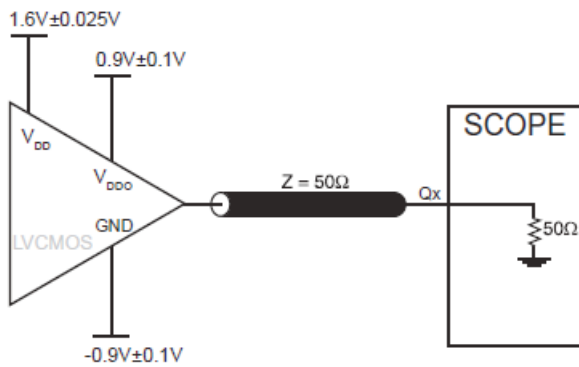
(dBm) or a ratio of the power in the 1Hz band to the power in the fundamental. When the required offset is specified, the phase noise is called a **dBc** value, which simply means dBm at a specified offset from the fundamental. By investigating jitter in the frequency domain, we get a better understanding of its effects on the desired application over the entire time record of the signal. It is mathematically possible to calculate an expected bit error rate given a phase noise plot.



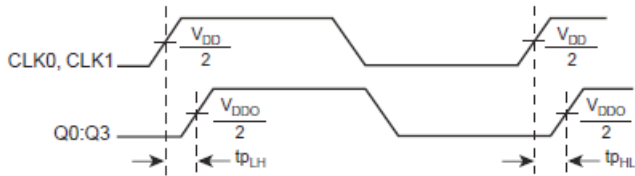
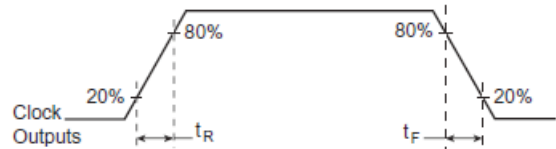
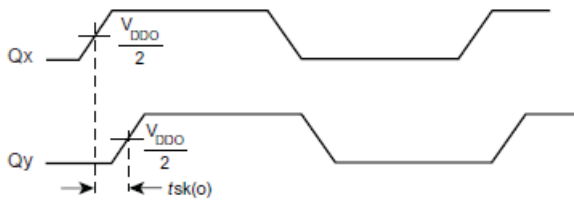
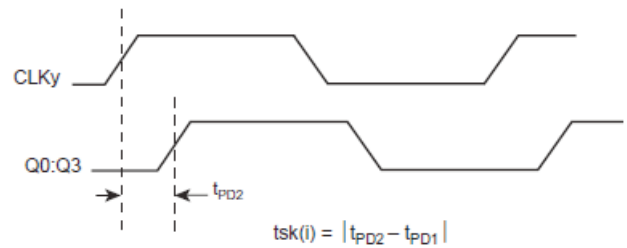
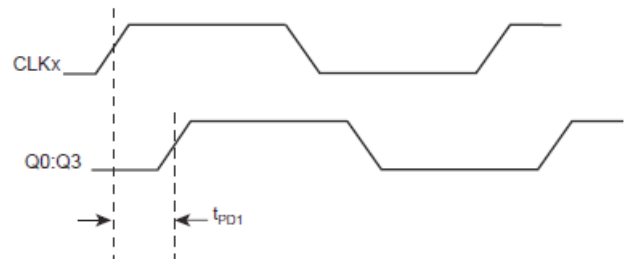
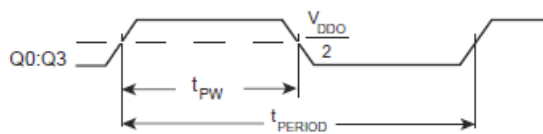
As with most timing specifications, phase noise measurements has issues relating to the limitations of the equipment. Often the noise floor of the equipment is higher than the noise floor of the device.

This is illustrated above. The device meets the noise floor of what is shown, but can actually be lower. The phase noise is dependent on the input source and measurement equipment.

PARAMETER MEASUREMENT INFORMATION


3.3V CORE/3.3V OUTPUT LOAD AC TEST CIRCUIT

2.5V CORE/2.5V OUTPUT LOAD AC TEST CIRCUIT

3.3V CORE/2.5V OUTPUT LOAD AC TEST CIRCUIT

3.3V CORE/1.8V OUTPUT LOAD AC TEST CIRCUIT

2.5 CORE/1.8V OUTPUT LOAD AC TEST CIRCUIT

PART-TO-PART SKEW


PROPAGATION DELAY

OUTPUT RISE/FALL TIME

OUTPUT SKEW

INPUT SKEW


$$\text{odc} = \frac{t_{PW}}{t_{PERIOD}} \times 100\%$$

OUTPUT DUTY CYCLE/PULSE WIDTH/PERIOD

APPLICATION INFORMATION

RECOMMENDATIONS FOR UNUSED INPUT AND OUTPUT PINS

INPUTS:

CLK INPUTS

For applications not requiring the use of a clock input, it can be left floating. Though not required, but for additional protection, a 1k Ω resistor can be tied from the CLK input to ground.

LVC MOS CONTROL PINS

All control pins have internal pull-ups or pull-downs; additional resistance is not required but can be added for additional protection. A 1k Ω resistor can be used.

OUTPUTS:

LVC MOS OUTPUTS

All unused LVC MOS output can be left floating. There should be no trace attached.

RELIABILITY INFORMATION

TABLE 5. θ_{JA} vs. AIR FLOW TABLE FOR 16 LEAD TSSOP

| θ_{JA} by Velocity (Meters per Second) | | | |
|---|-----------|----------|----------|
| | 0 | 1 | 2.5 |
| Multi-Layer PCB, JEDEC Standard Test Boards | 100.3°C/W | 96.0°C/W | 93.9°C/W |

TRANSISTOR COUNT

The transistor count for 83054I-01 is: 967

PACKAGE OUTLINE - G SUFFIX FOR 16 LEAD TSSOP

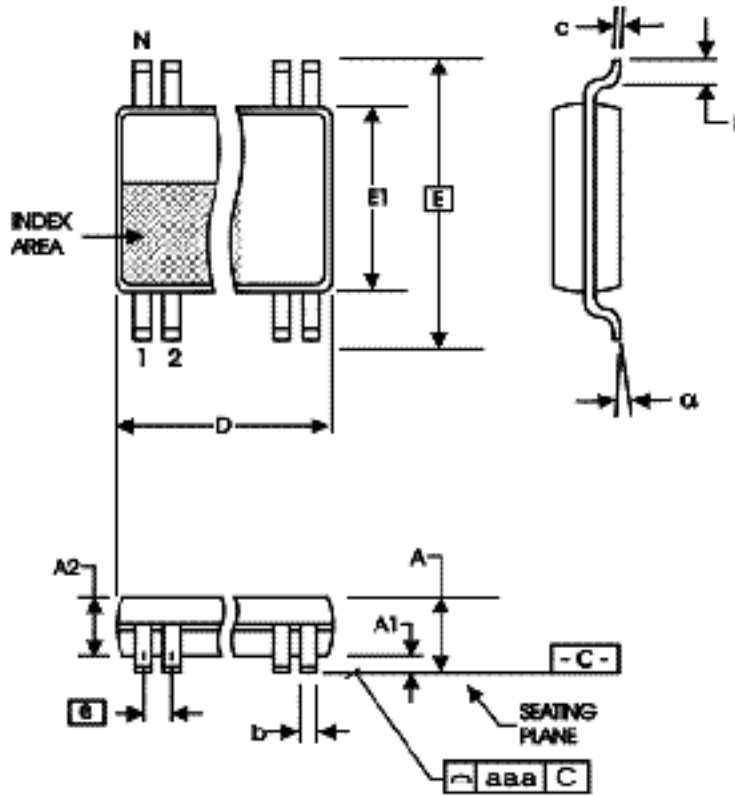


TABLE 6. PACKAGE DIMENSIONS

| SYMBOL | Millimeters | |
|--------|-------------|---------|
| | Minimum | Maximum |
| N | 16 | |
| A | -- | 1.20 |
| A1 | 0.05 | 0.15 |
| A2 | 0.80 | 1.05 |
| b | 0.19 | 0.30 |
| c | 0.09 | 0.20 |
| D | 4.90 | 5.10 |
| E | 6.40 BASIC | |
| E1 | 4.30 | 4.50 |
| e | 0.65 BASIC | |
| L | 0.45 | 0.75 |
| α | 0° | 8° |
| aaa | -- | 0.10 |

Reference Document: JEDEC Publication 95, MO-153

TABLE 7. ORDERING INFORMATION

| Part/Order Number | Marking | Package | Shipping Packaging | Temperature |
|-------------------|----------|---------------------------|--------------------|----------------|
| 83054AGI-01LF | 054AI01L | 16 lead "Lead Free" TSSOP | Tray | -40°C to +85°C |
| 83054AGI-01LFT | 054AI01L | 16 lead "Lead Free" TSSOP | Tape and Reel | -40°C to +85°C |

REVISION HISTORY SHEET

| Rev | Table | Page | Description of Change | Date |
|------------|--------------|-------------|--|-------------|
| A | T7 | 1 | General Description - removed ICS chip and HiPerClocks. | 12-15-15 |
| | | 1 | Features Section - removed reference to leaded package. | |
| | | 12 | Ordering Information - removed leaded parts and the LF note below the table. | |
| | | | Updated header and footer. | |



Corporate Headquarters
6024 Silver Creek Valley Road
San Jose, CA 95138 USA
www.IDT.com

Sales
1-800-345-7015 or 408-284-8200
Fax: 408-284-2775
www.IDT.com/go/sales

Tech Support
www.idt.com/go/support

DISCLAIMER Integrated Device Technology, Inc. (IDT) reserves the right to modify the products and/or specifications described herein at any time, without notice, at IDT's sole discretion. Performance specifications and operating parameters of the described products are determined in an independent state and are not guaranteed to perform the same way when installed in customer products. The information contained herein is provided without representation or warranty of any kind, whether express or implied, including, but not limited to, the suitability of IDT's products for any particular purpose, an implied warranty of merchantability, or non-infringement of the intellectual property rights of others. This document is presented only as a guide and does not convey any license under intellectual property rights of IDT or any third parties.

IDT's products are not intended for use in applications involving extreme environmental conditions or in life support systems or similar devices where the failure or malfunction of an IDT product can be reasonably expected to significantly affect the health or safety of users. Anyone using an IDT product in such a manner does so at their own risk, absent an express, written agreement by IDT.

Integrated Device Technology, IDT and the IDT logo are trademarks or registered trademarks of IDT and its subsidiaries in the United States and other countries. Other trademarks used herein are the property of IDT or their respective third party owners.

For datasheet type definitions and a glossary of common terms, visit www.idt.com/go/glossary.

Copyright ©2015 Integrated Device Technology, Inc. All rights reserved.

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9