



## Four Output PCI-X and General Purpose Buffer

### Features

- One input to four Output Buffer/Driver
- General-purpose or PCI-X clock buffer
- Buffers all frequencies from DC to 140 MHz
- Output-to-output skew less than 100 pS
- Space-saving 8-pin TSSOP Package
- 3.3V operation

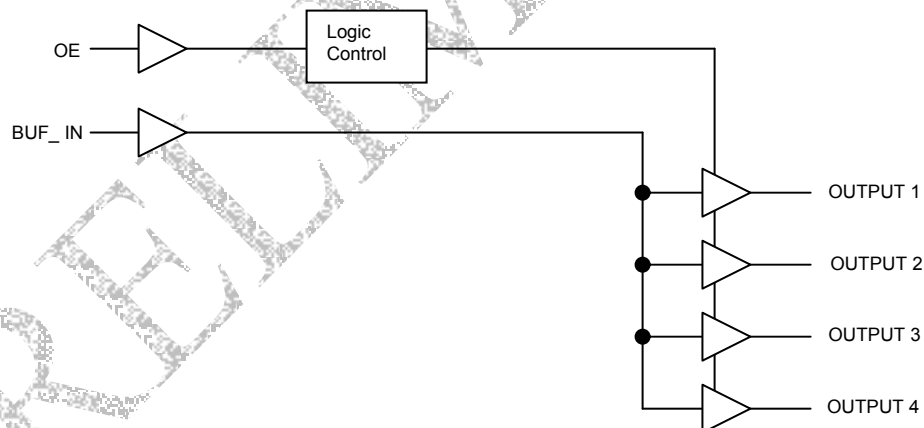
### Functional Description

The ASM2P2304NZ is a low-cost buffer designed to distribute high-speed clocks for PCI-X and other applications. The device operates at 3.3V and outputs can run up to 140 MHz.

**Table 1. Function Table.**

Inputs		Outputs
BUF_IN	OE	Output [1:4]
L	L	L
H	L	L
L	H	L
H	H	H

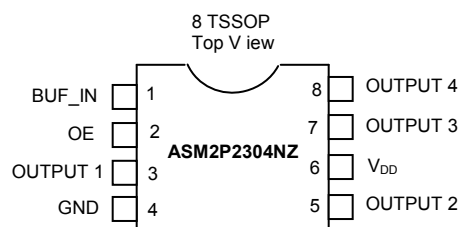
### Block Diagram





rev 0.4

## Pin Configuration



## Pin Description

Pin #	Pin Name	Type	Description
1	BUF_IN	I	Input clock. 5V Tolerant Input
2	OE	I	Input pin for Output Enable, active HIGH.
3	Output 1	O	Output 1
4	GND	P	Ground
5	Output 2	O	Output 2
6	V <sub>DD</sub>	P	3.3V Voltage Supply
7	Output 3	O	Output 3
8	Output 4	O	Output 4



rev 0.4

**Absolute Maximum Ratings**

Parameter	Min	Max	Unit
Supply Voltage to Ground Potential	-0.5	7	V
DC Input Voltage (Except REF)	-0.5	$V_{DD} + 0.5$	V
DC Input Voltage (REF)	-0.5	7	V
Storage Temperature	-65	+150	°C
Max. Soldering Temperature (10 sec)		260	°C
Junction Temperature		150	°C
Static Discharge Voltage (As per JEDEC STD22- A114-B)		2000	V
Note: These are stress ratings only and functional usage is not implied. Exposure to absolute maximum ratings for prolonged periods can affect device reliability.			

**Operating Conditions**

Parameter	Description	Min	Max	Unit
$V_{DD}$	Supply Voltage	3.0	3.6	V
$T_A$	Operating Temperature (Ambient Temperature)	-40	85	°C
$C_L$	Load Capacitance	-	25	pF
$C_{IN}$	Input Capacitance	-	7	pF
BUF_IN, OUTPUT [1:4]	Operating Frequency	DC	140	MHz
$t_{PU}$	Power-up time for all $V_{DD}$ 's to reach minimum specified Voltage (Power ramps must be monotonic)	0.05	50	mS



rev 0.4

## Electrical Characteristics

Parameter	Description	Test Conditions	Min	Max	Unit
$V_{IL}$	Input LOW Voltage <sup>1</sup>		-	0.8	V
$V_{IH}$	Input HIGH Voltage <sup>1</sup>		2.0	-	V
$I_{IL}$	Input LOW Current	$V_{IN} = 0V$	-5	5	$\mu A$
$I_{IH}$	Input HIGH Current	$V_{IN} = V_{DD}$	-5	5	$\mu A$
$V_{OL}$	Output LOW Voltage <sup>2</sup>	$I_{OL} = 24\text{ mA}$	-	0.8	V
		$I_{OL} = 12\text{ mA}$	-	0.55	V
$V_{OH}$	Output HIGH Voltage <sup>2</sup>	$I_{OH} = -24\text{ mA}$	2.0	-	V
		$I_{OH} = -12\text{ mA}$	2.4	-	V
$I_{DD}$	Supply Current	Unloaded outputs at 66.66 MHz	-	25	mA

Switching Characteristics for Commercial and Industrial Temperature Devices<sup>3</sup>

Parameter	Name	Description	Min	Typ	Max	Unit
$t_D$	Duty Cycle <sup>2</sup> = $t_2 \div t_1$	Measured at 1.5V	40.0	50.0	60.0	%
$t_3$	Rise Time <sup>2</sup>	Measured between 0.8V and 2.0V	-	-	1.50	nS
$t_4$	Fall Time <sup>2</sup>	Measured between 0.8V and 2.0V	-	-	1.50	nS
$t_5$	Output to Output Skew <sup>2</sup>	All outputs equally loaded	-	-	200	pS
$t_6$	Propagation Delay, BUF_IN Rising Edge to OUTPUT Rising Edge <sup>2</sup>	Measured at $V_{DD}/2$	2.5	3.5	5	nS

Note:

1. BUF\_IN input has a threshold voltage of  $V_{DD}/2$ .

2. Parameter is guaranteed by design and characterization. It is not 100% tested in production.

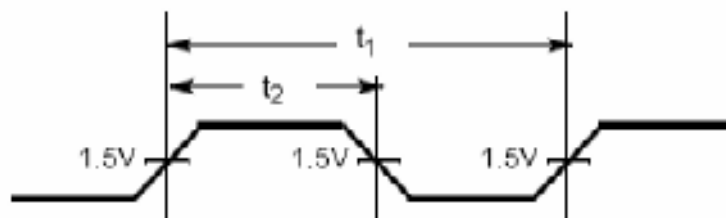
3. All parameters specified with loaded outputs.



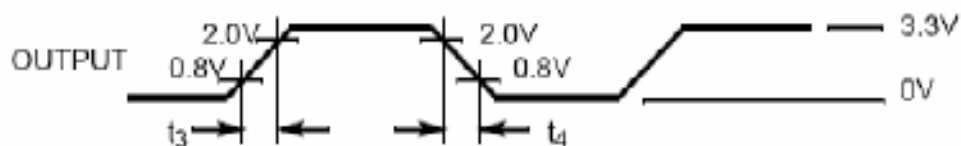
rev 0.4

## Switching Waveforms

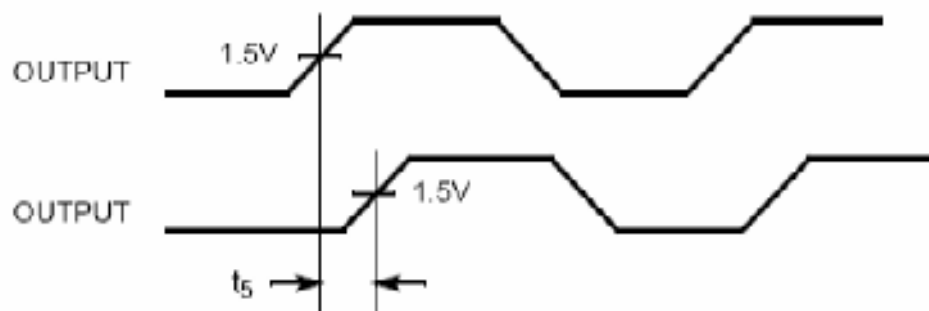
## Duty Cycle Timing



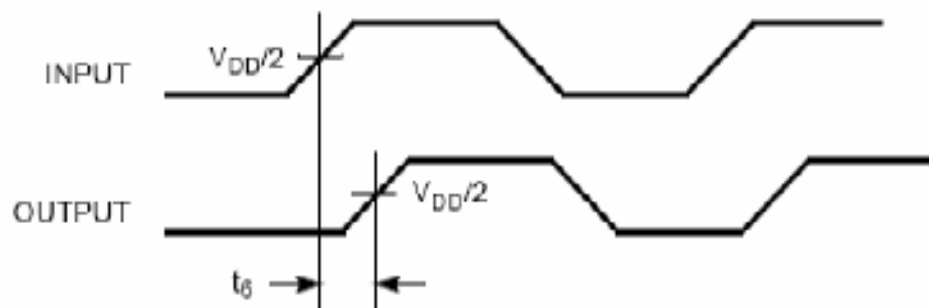
## All Outputs Rise/Fall Time



## Output-Output Skew



## Input-Output Propagation Delay

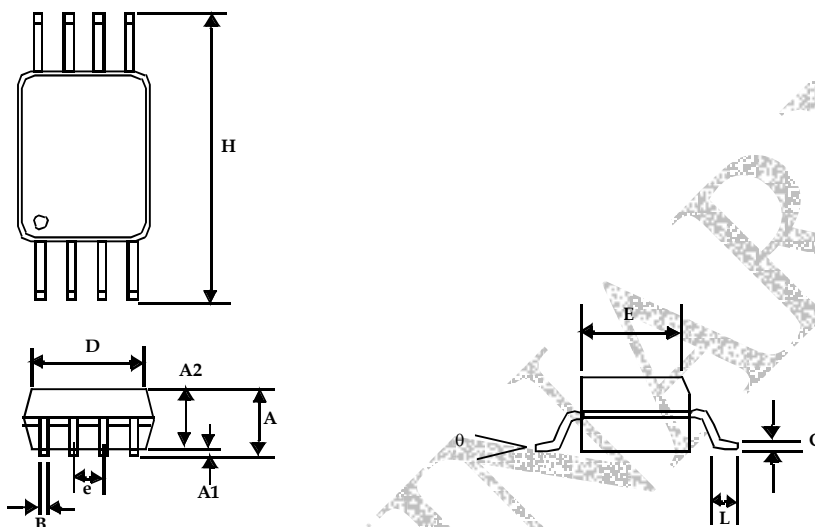




rev 0.4

## Package Information

## 8-lead Thin Shrunk Small Outline Package (4.40-MM Body)



Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A		0.043		1.10
A1	0.002	0.006	0.05	0.15
A2	0.033	0.037	0.85	0.95
B	0.008	0.012	0.19	0.30
c	0.004	0.008	0.09	0.20
D	0.114	0.122	2.90	3.10
E	0.169	0.177	4.30	4.50
e	0.026 BSC		0.65 BSC	
H	0.252 BSC		6.40 BSC	
L	0.020	0.028	0.50	0.70
θ	0°	8°	0°	8°



rev 0.4

## Ordering Codes

Part Number	Marking	Package Type	Temperature
ASM2P2304NZF-08-TT	2P2304NZF	8-pin TSSOP, Pb Free	Commercial
ASM2P2304NZF-08-TR	2P2304NZF	8-pin TSSOP - Tape and Reel, Pb Free	Commercial
ASM2I2304NZF-08-TT	2I2304NZF	8-pin TSSOP, Pb Free	Industrial
ASM2I2304NZF-08-TR	2I2304NZF	8-pin TSSOP - Tape and Reel, Pb Free	Industrial
ASM2P2304NZG-08-TT	2P2304NZG	8-pin TSSOP, Green	Commercial
ASM2P2304NZG-08-TR	2P2304NZG	8-pin TSSOP - Tape and Reel, Green	Commercial
ASM2I2304NZG-08-TT	2I2304NZG	8-pin TSSOP, Green	Industrial
ASM2I2304NZG-08-TR	2I2304NZG	8-pin TSSOP - Tape and Reel, Green	Industrial

## Device Ordering Information

A S M 2 P 2 3 0 4 N Z F - 0 8 - T R

R = Tape & reel, T = Tube or Tray

O = SOT  
 S = SOIC  
 T = TSSOP  
 A = SSOP  
 V = TVSOP  
 B = BGA  
 Q = QFN  
 U = MSOP  
 E = TQFP  
 L = LQFP  
 U = MSOP  
 P = PDIP  
 D = QSOP  
 X = SC-70

DEVICE PIN COUNT

F = LEAD FREE AND RoHS COMPLIANT PART  
 G = GREEN PACKAGE

PART NUMBER

X = Automotive (-40C to +125C)    I = Industrial (-40C to +85C)    P or n/c = Commercial (0C to +70C)  
 1 = Reserved    6 = Power Management  
 2 = Non PLL based    7 = Power Management  
 3 = EMI Reduction    8 = Power Management  
 4 = DDR support products    9 = Hi Performance  
 5 = STD Zero Delay Buffer    0 = Reserved

ALLIANCE SEMICONDUCTOR MIXED SIGNAL PRODUCT



Alliance Semiconductor Corporation  
2575, Augustine Drive,  
Santa Clara, CA 95054  
Tel# 408-855-4900  
Fax: 408-855-4999  
www.alsc.com

Copyright © Alliance Semiconductor  
All Rights Reserved  
Part Number: ASM2P2304NZ  
Document Version: 0.4

Note: This product utilizes US Patent # 6,646,463 Impedance Emulator Patent issued to Alliance Semiconductor, dated 11-11-2003

© Copyright 2003 Alliance Semiconductor Corporation. All rights reserved. Our three-point logo, our name and Intelliwatt are trademarks or registered trademarks of Alliance. All other brand and product names may be the trademarks of their respective companies. Alliance reserves the right to make changes to this document and its products at any time without notice. Alliance assumes no responsibility for any errors that may appear in this document. The data contained herein represents Alliance's best data and/or estimates at the time of issuance. Alliance reserves the right to change or correct this data at any time, without notice. If the product described herein is under development, significant changes to these specifications are possible. The information in this product data sheet is intended to be general descriptive information for potential customers and users, and is not intended to operate as, or provide, any guarantee or warranty to any user or customer. Alliance does not assume any responsibility or liability arising out of the application or use of any product described herein, and disclaims any express or implied warranties related to the sale and/or use of Alliance products including liability or warranties related to fitness for a particular purpose, merchantability, or infringement of any intellectual property rights, except as express agreed to in Alliance's Terms and Conditions of Sale (which are available from Alliance). All sales of Alliance products are made exclusively according to Alliance's Terms and Conditions of Sale. The purchase of products from Alliance does not convey a license under any patent rights, copyrights; mask works rights, trademarks, or any other intellectual property rights of Alliance or third parties. Alliance does not authorize its products for use as critical components in life-supporting systems where a malfunction or failure may reasonably be expected to result in significant injury to the user, and the inclusion of Alliance products in such life-supporting systems implies that the manufacturer assumes all risk of such use and agrees to indemnify Alliance against all claims arising from such use.

Copyright © Each Manufacturing Company.

All Datasheets cannot be modified without permission.

This datasheet has been download from :

[www.AllDataSheet.com](http://www.AllDataSheet.com)

100% Free DataSheet Search Site.

Free Download.

No Register.

Fast Search System.

[www.AllDataSheet.com](http://www.AllDataSheet.com)