Nine Output 3.3V Buffer

Features

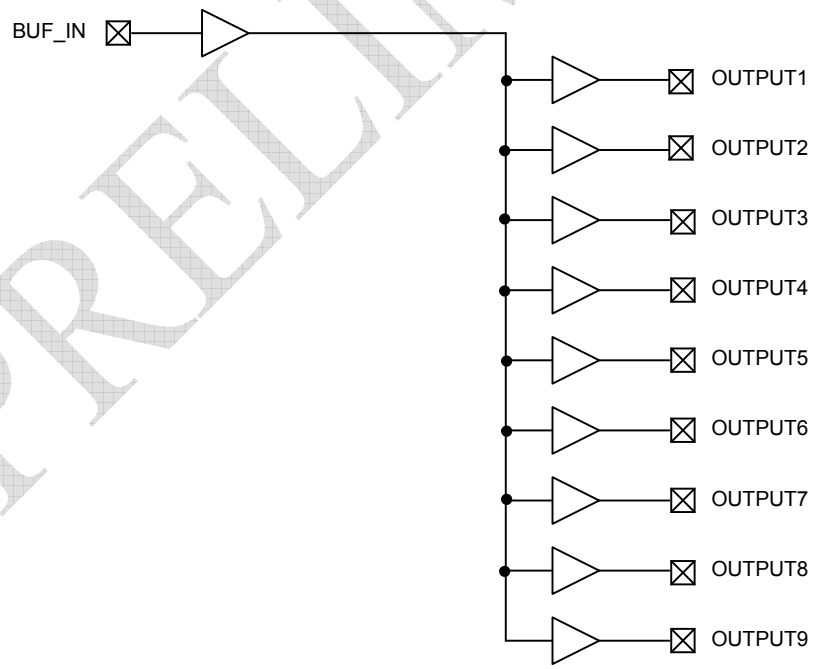
- One-input to Nine-Output Buffer/Driver
- Supports two DIMMs or four SO-DIMMs with one additional output for feedback to an external or chipset PLL
- Low power consumption for mobile applications Less than 32mA at 66.6MHz with unloaded outputs
- 1nS Input-Output delay
- Buffers all frequencies from DC to 133.33MHz
- Output-output skew less than 250pS
- Multiple V_{DD} and V_{SS} pins for noise and electromagnetic interference (EMI) reduction
- Space-saving 16-pin 150-mil SOIC Package
- 3.3V operation
- Commercial and Industrial temperature parts are available

Functional Description

The ASM2P2309NZ is a low-cost buffer designed to distribute high-speed clocks in mobile PC systems and desktop PC systems with SDRAM support. The part has nine outputs, eight of which can be used to drive two DIMMs or four SO-DIMMs, and the remaining can be used for external feedback to a PLL. The device operates at 3.3V and outputs can run up to 133.33MHz.

The ASM2P2309NZ is designed for low EMI and power optimization. It has multiple V_{SS} and V_{DD} pins for noise optimization and consumes less than 32mA at 66.6MHz, making it ideal for the low-power requirements of mobile systems. It is available in an ultra-compact 150-mil 16-pin SOIC Package.

Block Diagram

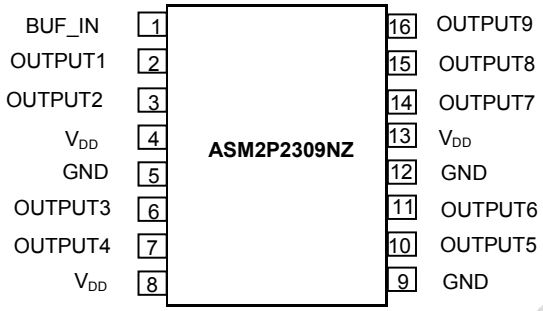


PRELIMINARY

Notice: The information in this document is subject to change without notice.

rev 0.2

Pin Configuration



Pin Description

Pin	Signal	Description
4, 8, 13	V_{DD}	3.3V Digital Voltage Supply
5, 9, 12	GND	Ground
1	BUF_IN	Input Clock
2, 3, 6, 7, 10, 11, 14, 15, 16	OUTPUT [1:9]	Outputs

PRELIMINARY

Notice: The information in this document is subject to change without notice.

rev 0.2

Absolute Maximum Ratings

Parameter	Min	Max	Unit
Supply Voltage to Ground Potential	-0.5	7.0	V
DC Input Voltage (Except BUF_IN)	-0.5	V_{DD} + 0.5	V
Storage Temperature	-65	+150	°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	(Ambient Operating Temperature), Commercial	0	70	°C
	(Ambient Operating Temperature), Industrial	–40	85	°C
C_L	Load Capacitance, Fout < 100MHz	-	30	pF
	Load Capacitance,100MHz < Fout < 133.33MHz	-	15	pF
C_{IN}	Input Capacitance	-	7	pF
BUF_IN, OUTPUT [1:9]	Operating Frequency	DC	133.33	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

PRELIMINARY

Notice: The information in this document is subject to change without notice.

rev 0.2

Electrical Characteristics for Commercial and Industrial Temperature Devices

Parameter	Description	Test Conditions	Min	Max	Unit
V_{IL}	Input LOW Voltage[1]		-	0.8	V
V_{IH}	Input HIGH Voltage[1]		2.0	-	V
I_{IL}	Input LOW Current	V_{IN} = 0V	-	50.0	µA
I_{IH}	Input HIGH Current	V_{IN}= V_{DD}	-	100.0	µA
V_{OL}	Output LOW Voltage[2]	I_{OL}= 8 mA	-	0.4	V
V_{OH}	Output HIGH Voltage[2]	I_{OH} = –8 mA	2.4	-	V
I_{DD}	Supply Current	Unloaded outputs at 66.66MHz	-	32	mA

Switching Characteristics for Commercial and Industrial Temperature Devices[3]

Parameter	Name	Description	Min	Typ	Max	Unit
t_D	Duty Cycle[2]= $t_2 \div t_1$	Measured at 1.4V	40.0	50.0	60.0	%
t_3	Rise Time[2]	Measured between 0.8V and 2.0V	-	-	1.50	nS
t_4	Fall Time[2]	Measured between 0.8V and 2.0V	-	-	1.50	nS
t_5	Output to Output Skew[2]	All outputs equally loaded	-	-	250	pS
t_6	Propagation Delay, BUF_IN Rising Edge to OUTPUT Rising Edge[2]	Measured at V_{DD}/2	1	5	9.2	nS

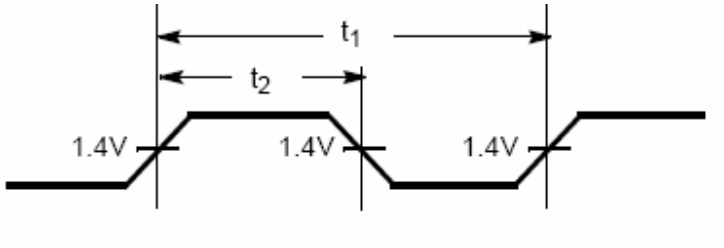
Note:
1. BUF_IN input has a threshold voltage of V_{DD}/2.
2. Parameter is guaranteed by design and characterization. It is not 100% tested in production.
3. All parameters specified with loaded outputs.

PRELIMINARY

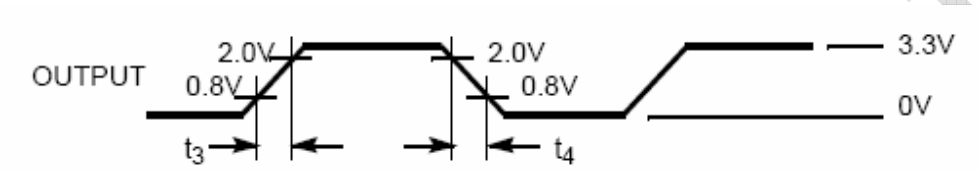
Notice: The information in this document is subject to change without notice.

Switching Waveforms

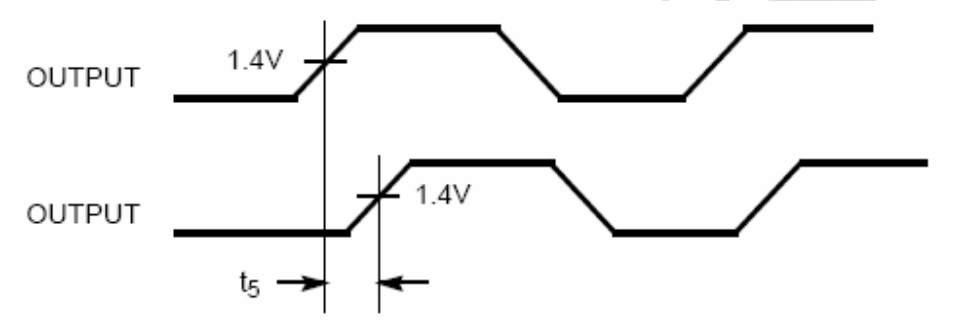
Duty Cycle Timing



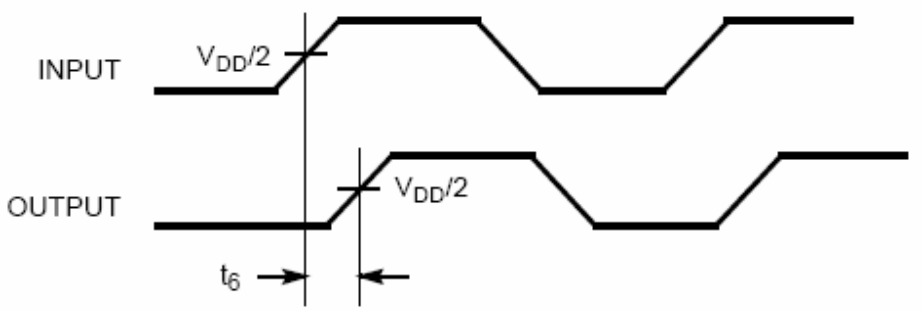
All Outputs Rise/Fall Time



Output-Output Skew

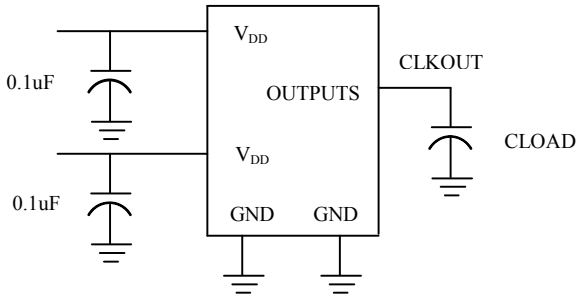


Input-Output Propagation Delay



Notice: The information in this document is subject to change without notice.

Test Circuits

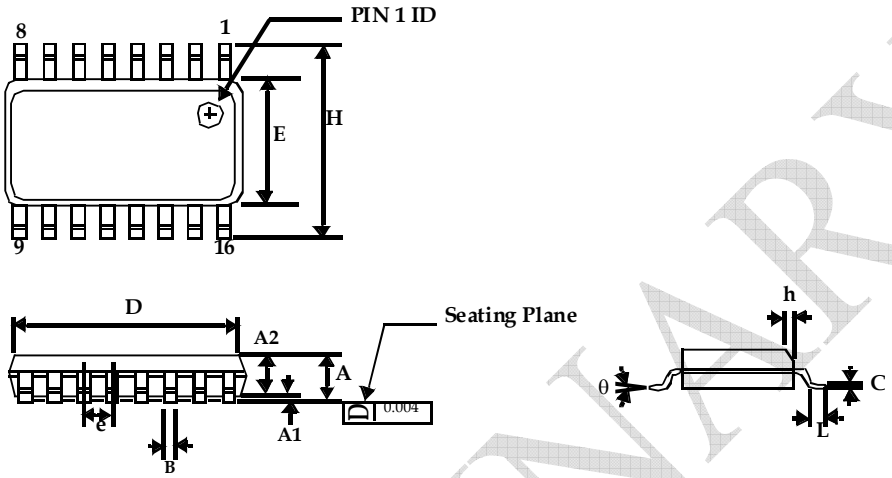


PRELIMINARY

Notice: The information in this document is subject to change without notice.

Package Information

16-lead (150 Mil) Molded SOIC Package



Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.053	0.069	1.35	1.75
A1	0.004	0.010	0.10	0.25
A2	0.049	0.059	1.25	1.50
B	0.013	0.022	0.33	0.53
C	0.008	0.012	0.19	0.27
D	0.386	0.394	9.80	10.01
E	0.150	0.157	3.80	4.00
e	0.050 BSC		1.27 BSC	
H	0.228	0.244	5.80	6.20
h	0.010	0.016	0.25	0.41
L	0.016	0.035	0.40	0.89
θ	0°	8°	0°	8°

PRELIMINARY

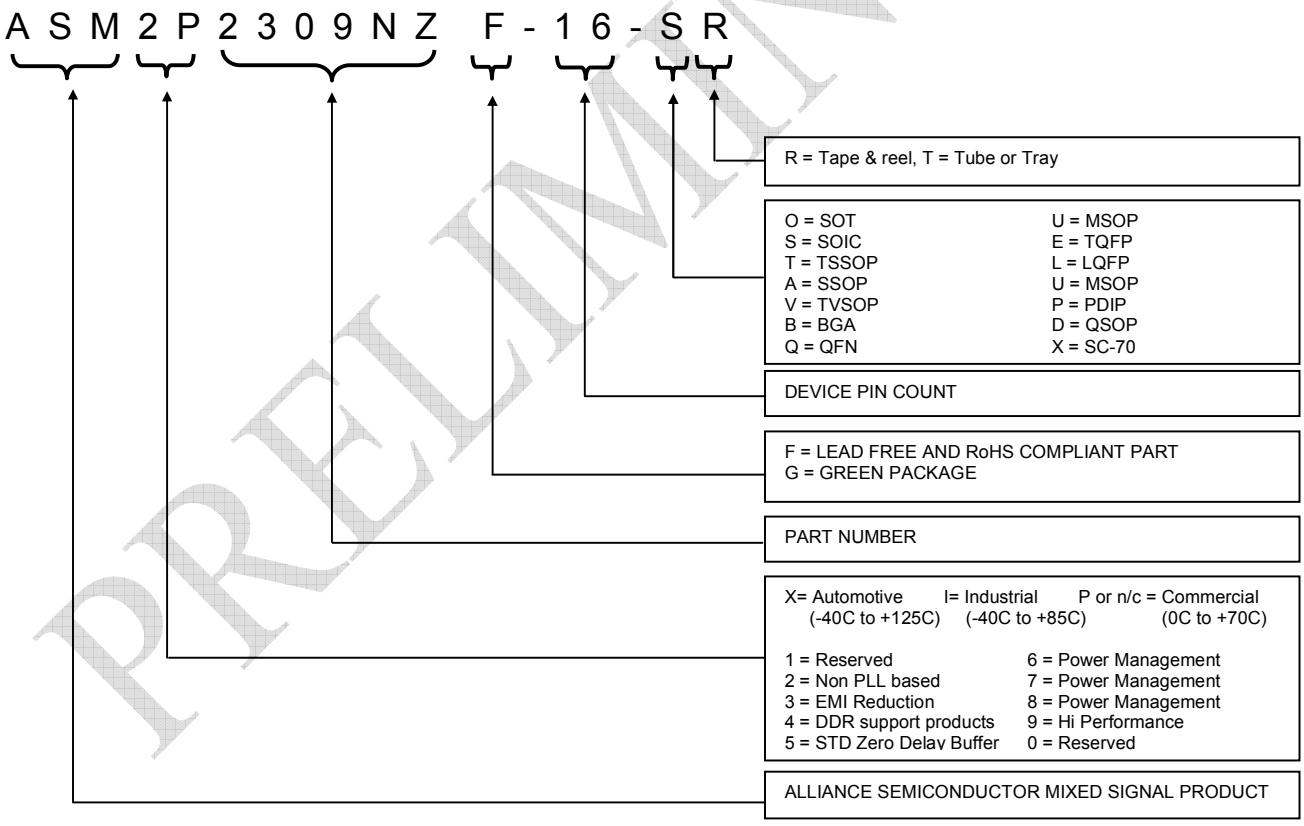
Notice: The information in this document is subject to change without notice.

rev 0.2

Ordering Codes

Part Number	Marking	Package Type	Operating Range
ASM2P2309NZF-16-ST	2P2309NZF	16-pin 150-mil SOIC, Pb Free	Commercial
ASM2P2309NZF-16-SR	2P2309NZF	16-pin 150-mil SOIC, Tape and Reel, Pb Free	Commercial
ASM2I2309NZF-16-ST	2I2309NZF	16-pin 150-mil SOIC, Pb Free	Industrial
ASM2I2309NZF-16-SR	2I2309NZF	16-pin 150-mil SOIC, Tape and Reel, Pb Free	Industrial
ASM2P2309NZG-16-ST	2P2309NZG	16-pin 150-mil SOIC, Green	Commercial
ASM2P2309NZG-16-SR	2P2309NZG	16-pin 150-mil SOIC, Tape and Reel, Green	Commercial
ASM2I2309NZG-16-ST	2I2309NZG	16-pin 150-mil SOIC, Green	Industrial
ASM2I2309NZG-16-SR	2I2309NZG	16-pin 150-mil SOIC ,Tape and Reel, Green	Industrial
ASM2P2309NZ-16-ST	2P2309NZ	16-pin 150-mil SOIC	Commercial
ASM2P2309NZ-16-SR	2P2309NZ	16-pin 150-mil SOIC, Tape and Reel	Commercial
ASM2I2309NZ-16-ST	2I2309NZ	16-pin 150-mil SOIC	Industrial
ASM2I2309NZ-16-SR	2I2309NZ	16-pin 150-mil SOIC ,Tape and Reel	Industrial

Device Ordering Information



PRELIMINARY

Licensed under US patent #5,488,627, #6,646,463 and #5,631,920.

Notice: The information in this document is subject to change without notice.

PRELIMINARY

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: ASM2P2309NZ
Document Version: 0.2

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 warrantee 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.

Notice: The information in this document is subject to change without notice.