rev 0.4

Low Cost Frequency Multiplier

Features

- Generates 2X and 4X clocks of the input clock frequency
- Input clock frequency range from 3 MHz to 78 MHz
- Provides up to:
  P2082A: 156 MHz output clock frequency
  P2084A: 312 MHz output clock frequency
- External loop filter
- Low cycle-to-cycle jitter
- 3.3 V operating voltage range
- 10 mA output drives
- TTL or CMOS compatible outputs
- Ultra-low power CMOS design
- Available in industrial temperature range (-25C to +85C)
- Available in 8-pin SOIC and TSSOP

Product Description

The P2082A and P2084A are versatile frequency multipliers that are designed specifically as cost effective alternatives to the high precision frequency oscillator.

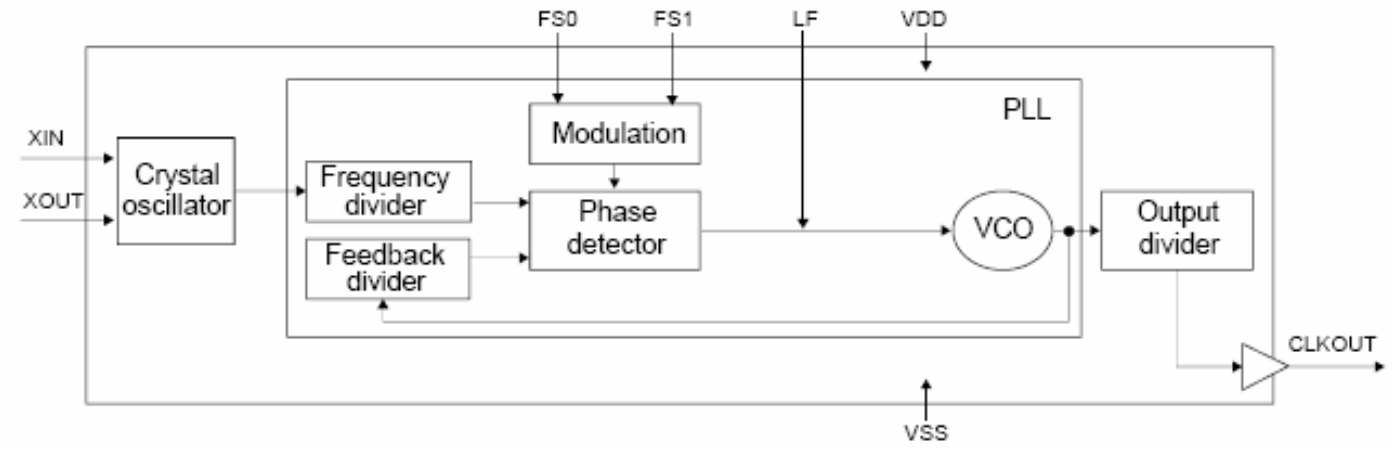
The P2082A/84A can generate a 2X and 4X output clock respectively of the input frequency which allows system cost savings by using an inexpensive crystal or resonator to achieve high frequency multiplication.

The P2082A/84A provides up to 156 MHz and 312 MHz output clock frequencies respectively through the use of the Phase-Lock-Loop (PLL) technique which delivers low jitter and high precision synthesized clocks.

Applications

The P2082A/84A is targeted towards the high frequency CAN OSC replacement market. Applications include xDSL, routers, networking, PC peripherals, and embedded systems.

Block Diagram

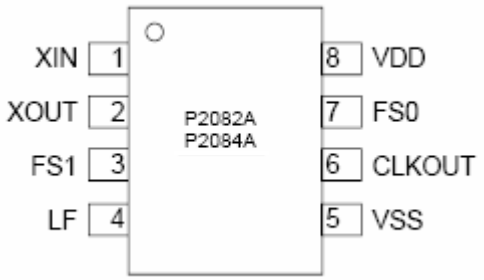


Alliance Semiconductor
2575, Augustine Drive • Santa Clara, CA • Tel: 408.855.4900 • Fax: 408.855.4999 • www.alsc.com

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

rev 0.4

Pin Configuration



Pin Description

Pin#	Pin Name	Type	Description
1	XIN/CLKIN	I	Connect to crystal or clock input.
2	XOUT	I	Crystal output.
3	FS1	I	Digital logic input used to select input frequency range. (See Input Frequency Selection.) This pin has an internal pull-up resistor.
4	LF	I	External loop filter for the PLL. (See Loop Filter Selection Table for value.)
5	VSS	P	Ground connection. Connect to system ground.
6	CLKOUT	O	Clock output.
7	FS0	I	Digital logic input used to select input frequency range. (See Input Frequency Selection.) This pin has an internal pull-up resistor.
8	VDD	P	Connect to +3.3 V.

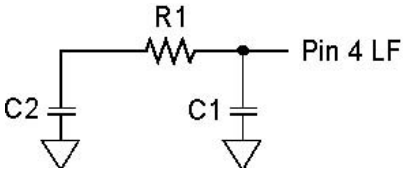
Input Frequency Selection

FS1	FS0	Input (MHz)	Output Frequency Scaling	
			P2082A	P2084A
0	0	3 to 9	6 to 18	12 to 36
0	1	10 to 19	20 to 38	40 to 76
1	0	20 to 38	40 to 76	80 to 152
1	1	39 to 78	78 to 156	156 to 312

ADVANCE

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

Loop Filter Selection Table VDD 3.3 V



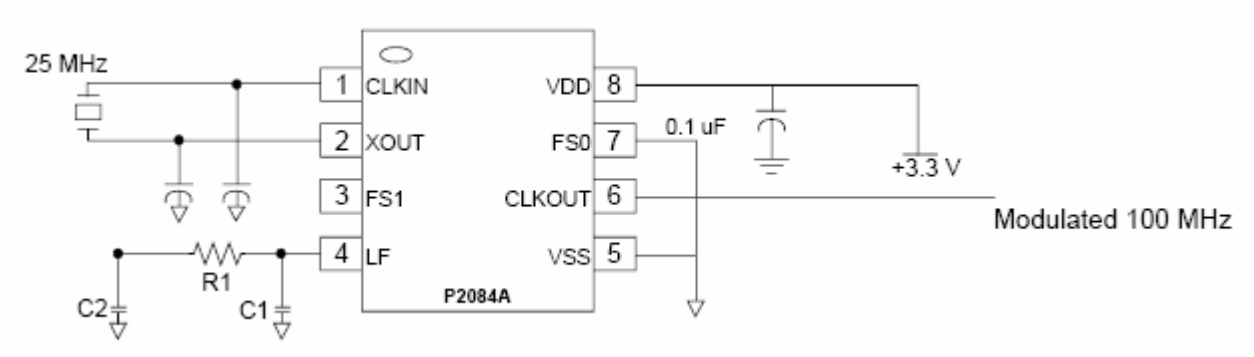
Input (MHz)	FS1	FS0	C1(pF)	C2(pF)	R1 (ohms)
3	0	0	270	330,000	220
4	0	0	270	100,000	270
5	0	0	270	100,000	390
6	0	0	270	100,000	510
7	0	0	270	100,000	620
8	0	0	270	100,000	820
9	0	0	270	100,000	1,000
10	0	1	270	100,000	330
11	0	1	270	100,000	390
12	0	1	270	100,000	510
13	0	1	270	100,000	560
14	0	1	270	100,000	620
15	0	1	270	100,000	750
16	0	1	270	100,000	820
17	0	1	270	100,000	910
18	0	1	270	100,000	1,000
19	0	1	270	100,000	1,200
20	1	0	270	100,000	330
21 - 22	1	0	270	100,000	390
23 - 24	1	0	270	100,000	510
25 - 26	1	0	270	100,000	560
27 - 28	1	0	270	100,000	620
29 - 30	1	0	270	100,000	750
31 - 32	1	0	270	100,000	820
33 - 34	1	0	270	100,000	910
35 - 36	1	0	270	100,000	1,000
37 - 38	1	0	270	100,000	1,200
39 - 42	1	1	270	100,000	330
43 - 46	1	1	270	100,000	390
47 - 50	1	1	270	100,000	510
51 - 54	1	1	270	100,000	560
55 - 58	1	1	270	100,000	620
59 - 62	1	1	270	100,000	750
63 - 66	1	1	270	100,000	820
67 - 70	1	1	270	100,000	910
71 - 74	1	1	270	100,000	1,000
75 - 78	1	1	270	100,000	1,200

ADVANCE

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

Output Clock Selection Example

The P2084A can generate 4X from the input reference frequency. P2084A's internal crystal oscillator circuits allow the use of an inexpensive crystal of resonator to replace expensive can oscillators that are used in networking, PC peripherals, xDSL, and consumer applications for high frequency generation. Its input frequency range is optimized for operation from 3 MHz to 78 MHz, and its output frequency can deliver up to 312 MHz.



ADVANCE

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

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
V_{DD}, V_{IN}	Voltage on any pin with respect to GND	-0.5 to + 7.0	V
T_{STG}	Storage temperature	-65 to +125	°C
T_A	Operating temperature	0 to 70	°C

DC Electrical Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
V_{IL}	Input low voltage	GND - 0.3	–	0.8	V
V_{IH}	Input high voltage	2.0	–	V_{DD} + 0.3	V
I_{IL}	Input low current (internal input pull-up resistor on FS0 and FS1)	–	60	–	µA
I_{IH}	Input high current (internal input pull-up resistor on FS0 and FS1)	–	0	–	µA
I_{XOL}	XOUT output low current	–	10	–	mA
I_{XOH}	XOUT output high current	–	10	–	mA
V_{OL}	Output low voltage (V_{DD} = 3.3 V, I_{OL} = 20 mA)	–	–	0.4	V
V_{OH}	Output high voltage (V_{DD} = 3.3 V, I_{OH} = 20 mA)	2.5	–	–	V
I_{DD}	Static supply current	–	3	–	mA
I_{CC}	Typical dynamic supply current (25 pF scope probe loading)	5.2 at 3 MHz		21.2 at 82 MHz	mA
V_{DD}	Operating voltage	3.0	3.3	3.6	V
t_{ON}	Power-up time (C_{LOOP} = 0.1 µF at 16 MHz, first locked cycle after power up)	–	7	–	mS
Z_{OUT}	Clock output impedance (at 16 MHz)	–	28	–	Ω

AC Electrical Characteristics

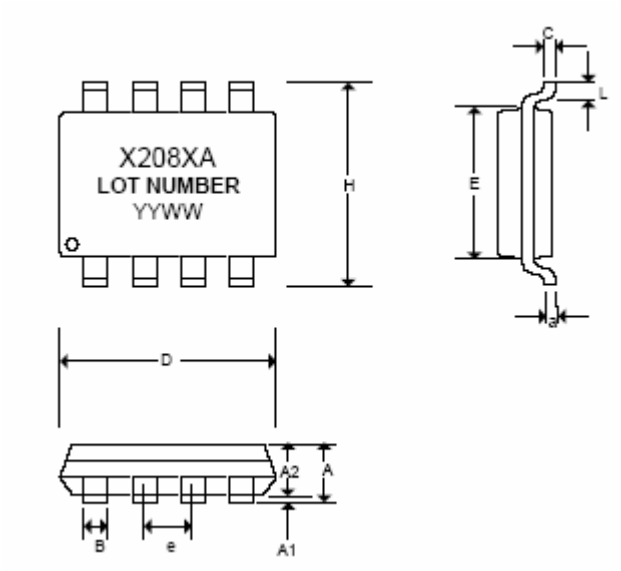
Symbol	Parameter	Min	Typ	Max	Unit
f_{IN}	Input frequency	3	–	78	MHz
f_{OUT}	P2082A	6	–	156	MHz
	P2084A	12		312	MHz
t_{LH} [1]	Output rise time (measured at 0.8 V to 2.0 V)		1		ns
t_{HL} [1]	Output fall time (measured at 2.0 V to 0.8 V)		1		ns
t_{JC}	Jitter (cycle to cycle)	–	±200	–	ps
t_D	Output duty cycle	45	50	55	%

1 t_{LH} and t_{HL} are measured into a capacitive load of 15 pF

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

Package Information

Mechanical Package Outline 8-Pin SOIC



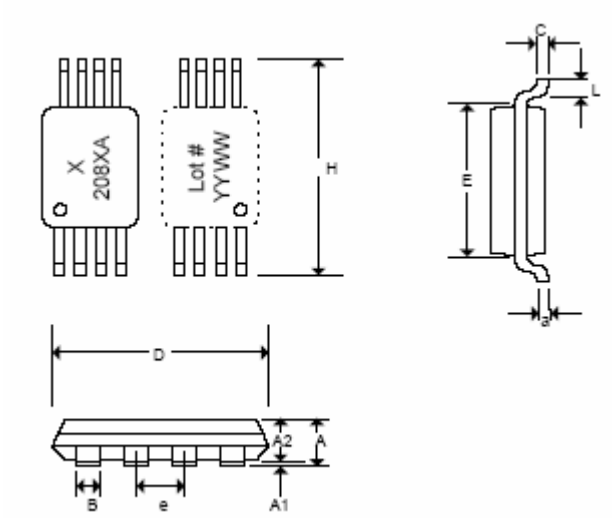
Symbol	Dimensions in inches			Dimensions in millimeters		
	Min	Nor	Max	Min	Nor	Max
A	0.057	0.064	0.071	1.45	1.63	1.80
A1	0.004	0.007	0.010	0.10	0.18	0.25
A2	0.053	0.061	0.069	1.35	1.55	1.75
B	0.012	0.016	0.020	0.31	0.41	0.51
C	0.004	0.006	0.01	0.10	0.15	0.25
D	0.186	0.194	0.202	4.72	4.92	5.12
E	0.148	0.156	0.164	3.75	3.95	4.15
e	0.050 BSC			1.27 BSC		
H	0.224	0.236	0.248	5.70	6.00	6.30
L	0.012	0.020	0.028	0.30	0.50	0.70
a	0°	5°	8°	0°	5°	8°

Note: Controlling dimensions are millimeters
SOIC – 0.074 grams unit weight

ADVANCE

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

Mechanical Package Outline 8-Pin TSSOP



	Dimensions in inches			Dimensions in millimeters		
Symbol	**Min**	**Nor**	**Max**	**Min**	**Nor**	**Max**
A			0.047			1.10
A1	0.002		0.006	0.05		0.15
A2	0.031	0.039	0.041	0.80	1.00	1.05
B	0.007		0.012	0.19		0.30
C	0.004		0.008	0.09		0.20
D	0.114	0.118	0.122	2.90	3.00	3.10
E	0.169	0.173	0.177	4.30	4.40	4.50
e	0.026 BSC			0.65 BSC		
H	0.244	0.252	0.260	6.20	6.40	6.60
L	0.018	0.024	0.030	0.45	0.60	0.75
a	0°	5°	8°	0°	5°	8°

Note: Controlling dimensions are millimeters
TSSOP – 0.034 grams unit weight

ADVANCE

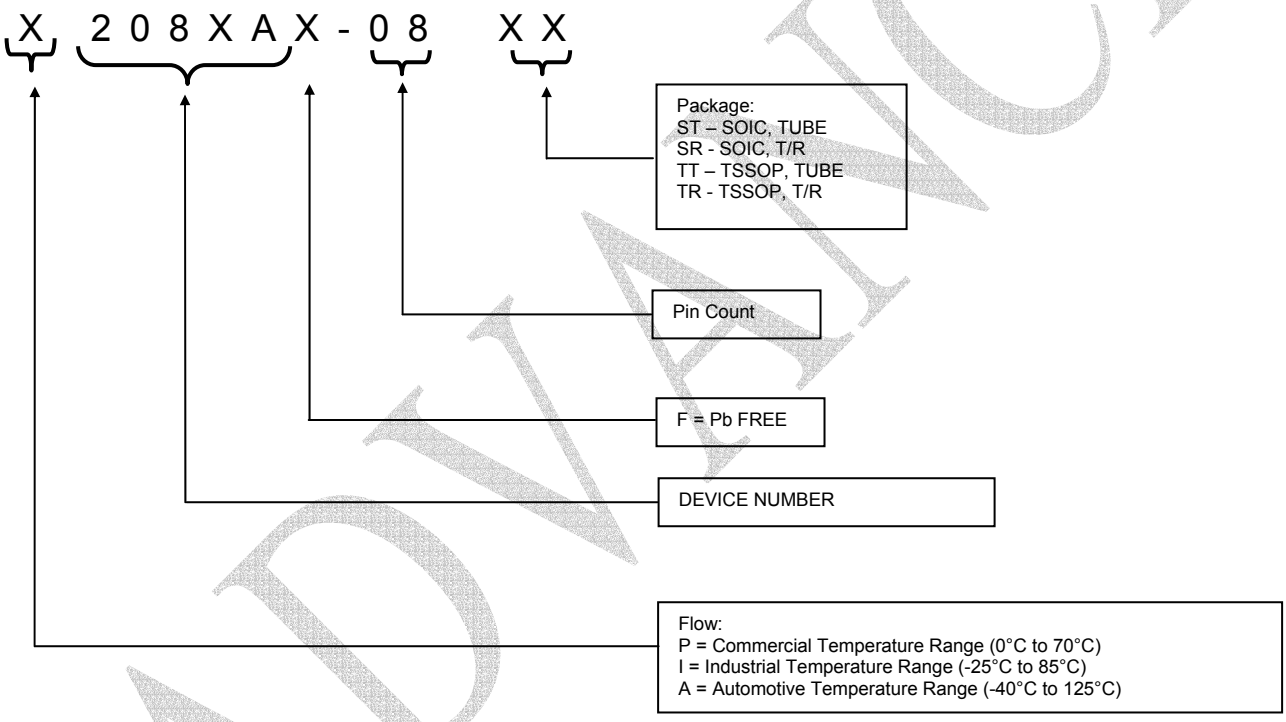
Notice: The information in this document is subject to change without notice.

rev 0.4

Ordering Codes

Part Number	Marking	Package Type	Qty per reel	Temperature (°C)
P208XA-08ST	P208XA	8-pin SOIC, tube		0 to 70
P208XA-08SR	P208XA	8-pin SOIC, tape & reel	2500	0 to 70
P208XA-08TT	P208XA	8-pin TSSOP, tube		0 to 70
P208XA-08TR	P208XA	8-pin TSSOP, tape & reel	2500	0 to 70

Device Ordering Information



ADVANCE

Licensed under US patent Nos 5,488,627 and 5,631,920.
Advance datasheet. Specification subject to change without notice.

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

Alliance Semiconductor Corporation
2595, Augustine Drive,
Santa Clara, CA 95054
Tel# 408-855-4900
Fax: 408-855-4999
www.alsc.com

Copyright © Alliance Semiconductor
All Rights Reserved
Advance Information
Part Number: P2082A/P2084A
Document Version: v 0.4

© 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.

OCEAN CHIPS
Океан Электроники
Поставка электронных компонентов

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «**JONHON**», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «**FORSTAR**».

AVIC JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).

FORSTAR®

Телефон: 8 (812) 309-75-97 (многоканальный)
Факс: 8 (812) 320-03-32
Электронная почта: ocean@oceanchips.ru
Web: http://oceanchips.ru/
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А