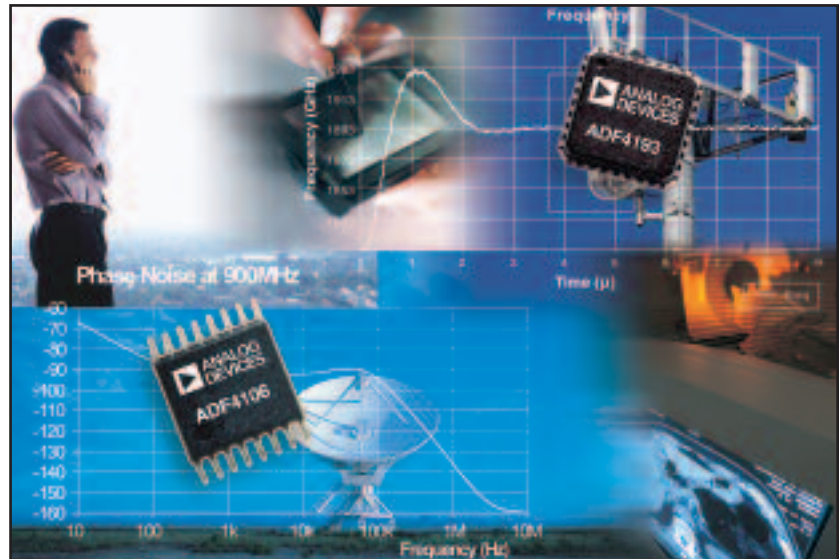


PLLs/Synthesizers

1

Applications

- Wireless base stations: GSM/EDGE, 3G WCDMA, WiMAX, PDC, PHS
- Point-to-point cellular radio links
- Clock generation
- Low jitter clocks for ADCs/DACs
- Instrumentation PLLs
- Private mobile radio systems
- Fixed frequency LO signals



Main Features

- Best-in-class phase noise performance (-222 dBc/Hz)
- Fastest switching fractional-N PLL (less than $20 \mu\text{s}$)
- PLL with integrated VCO
- Operation to 8 GHz
- Free design software—ADIsimPLL
- Phase detector to 200 MHz
- Full set of evaluation boards
- Fractional-N to 6 GHz

Analog Devices DSPS-RFWS-RFL Product Selection Guide

Single RF PLLs

PLL Type	ADI Model	2nd Source	Status	Maximum RF Input (MHz)	Normalized Phase Noise (dBc/Hz)	Maximum REF _{IN} Frequency (MHz)	Current (mA)	Package (RoHS-Compliant)	Package (RoHS-Compliant)	Application Recommendations	Recommended for New Designs
Int-N	AD809	Proprietary	Released	155.52	1.6 deg. rms	19.44	17	16-lead SOIC	—	SONET/SDH/fiber systems	✓
Int-N	ADF4001	Proprietary	Released	200	−214	104	4.5	16-lead TSSOP	20-lead CSP	High speed clocking applications	✓
Int-N	ADF4002	Proprietary	Released	400	−222	300	5	16-lead TSSOP	20-lead CSP	High speed clocking applications	✓
Int-N	ADF4007	Proprietary	Released	7500	−219	240	13	20-lead CSP	—	Fixed frequency and divider applications	✓
Int-N	ADF4110	Proprietary	Released	550	−215	104	4.5	16-lead TSSOP	20-lead CSP	ADF4106 suggested for new designs	
Int-N	ADF4111	Proprietary	Released	1200	−215	104	4.5	16-lead TSSOP	20-lead CSP	ADF4106 suggested for new designs	
Int-N	ADF4112	Proprietary	Released	3000	−215	104	6.5	16-lead TSSOP	20-lead CSP	ADF4106 suggested for new designs	
Int-N	ADF4113	Proprietary	Released	4000	−215	104	8.5	16-lead TSSOP	20-lead CSP	ADF4106 suggested for new designs	
Int-N	ADF4106	Proprietary	Released	6000	−219	300	13	16-lead TSSOP	20-lead CSP	Best int-N phase noise, recommended for new designs	✓
Int-N	ADF4107	Proprietary	Released	7000	−219	250	13	16-lead TSSOP	20-lead CSP	Best int-N phase noise, recommended for new designs	✓
Int-N	ADF4108	Proprietary	Released	8000	−219	250	15	20-lead CSP	—	Best int-N phase noise, recommended for new designs	✓
Int-N	ADF4116	LMX2306TM	Released	550	−211	100	4.5	16-lead TSSOP	—	4 dB to 6 dB phase noise better than competition	✓
Int-N	ADF4117	LMX2316TM	Released	1200	−213	100	4.5	16-lead TSSOP	—	4 dB to 6 dB phase noise better than competition	✓
Int-N	ADF4118	LMX2326TM	Released	3000	−216	100	6.5	16-lead TSSOP	—	4 dB to 6 dB phase noise better than competition	✓
Frac-N	ADF4153	Proprietary	Released	4000	−213	250	12	16-lead TSSOP	20-lead CSP	ADF4113/ADF4106 pin-compatible F-N upgrade	✓
Frac-N	ADF4154	Proprietary	Released	4000	−213	250	12	16-lead TSSOP	20-lead CSP	ADF4153 frac-N with fastlock feature	✓
Frac-N	ADF4156	Proprietary	Released	6000	−211	250	12	16-lead TSSOP	20-lead CSP	Upgrade ADF4153 F-N to 6 GHz operation	✓
Frac-N	ADF4193	Proprietary	Released	3500	−216	300	68	32-lead CSP	—	UltraFast Settling PLL	✓
Int-N HV	ADF4113HV	Proprietary	Samples Q306	4000	−215	104	8.5	16-lead TSSOP	20-lead CSP	ADF4113 with HV charge pump	✓

Single RF Synthesizers

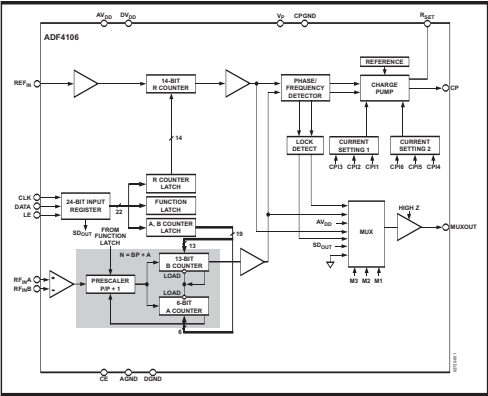
PLL Type	Integrated Synthesizer/VCO	2nd Source	Status	Frequency Range (MHz)	Normalized Phase Niose (dBc/Hz)	Phase Noise @ 1 kHz offset, 200 kHz Channel Spacing (dBc/Hz)	Phase Noise Frequency (MHz)	Maximum REF _{IN} Frequency (MHz)	Programmable Power Consumption (mA)	Output Power (dBm)	Package (RoHs-Compliant)	Instructor	Comments	Recommended for New Design
Int-N	ADF4360-0	Proprietary	Released	2450 to 2725	−217	−79	2500	250	25 to 50	−13 to −3	CSP-24	Internal		✓
Int-N	ADF4360-1	Proprietary	Released	2050 to 2450	−217	−80	2250	250	25 to 50	−13 to −3	CSP-24	Internal		✓
Int-N	ADF4360-2	Proprietary	Released	1850 to 2150	−217	−83	2000	250	25 to 50	−12 to −3	CSP-24	Internal		✓
Int-N	ADF4360-3	Proprietary	Released	1600 to 1950	−217	−84	1800	250	25 to 50	−12 to −3	CSP-24	Internal		✓
Int-N	ADF4360-4	Proprietary	Released	1450 to 1750	−217	−85	1600	250	25 to 50	−13 to −4	CSP-24	Internal		✓
Int-N	ADF4360-5	Proprietary	Released	1200 to 1400	−217	−87	1300	250	25 to 45	−13 to −4	CSP-24	Internal		✓
Int-N	ADF4360-6	Proprietary	Released	1050 to 1250	−217	−89	1150	250	25 to 45	−13 to −4	CSP-24	Internal		✓
Int-N	ADF4360-7	Proprietary	Released	350 to 1800	−217	−92	900	250	25 to 45	−13 to −4	CSP-24	External	Center frequency set by external inductors	✓
Int-N	ADF4360-8	Proprietary	Released	65 to 400	−217	−103	200	250	20 to 40	−13 to −4	CSP-24	External	Center frequency set by external inductors	✓

Dual RF/IF PLLs

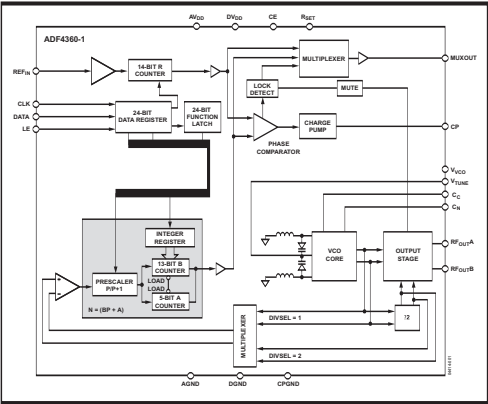
PLL Type	ADI Model	2nd Source	Status	Frequency Range (MHz)	Normalized Phase Noise (dBc/Hz)	Phase Noise @ 1 kHz offset, 200 kHz Channel Spacing (dBc/Hz)	Phase Noise Frequency (MHz)	MAX REF _{IN} Frequency(MHz)	Current (mA)	Package (RoHS-Compliant)	Package (RoHS-Compliant)	Comments	Recommended for New Design
Int-N	ADF4212L	Proprietary	Released	2400	−215	−91	900	115	6.0	20-lead TSSOP	20-lead CSP	Int-N RF/Int-N IF	✓
Int-N	ADF4218L	LMX2331LTM	Released	3000	−216	−90	900	110	7	20-lead TSSOP	—	Not recommended for new designs	
Frac-N	ADF4252	Proprietary	Released	3000	−214	−103	1740	150	12	24-lead CSP	—	Premium frac-N RF/Int-N IF	✓

NOTE: The synthesizer normalized phase noise floor is estimated by measuring the in-band phase noise at the output of the VCO and subtracting 20 log N (where N is the N divider value) and 10 log FPPD (where FPPD is the phase comparator frequency), i.e., PNSYNTH = PNTOT _ 10 log FPPD _ 20 log N.

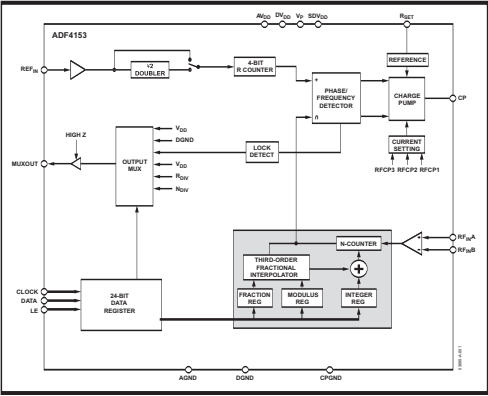
For further information on ADI PLL products, visit www.analog.com/pll.



Integer-N PLL: ADF4106



PLL with integrated VCO: ADF4360-1



Fractional-N PLL: ADF4153

ADIsimPLL™**Free PLL Design and Simulation Software**

Analog Devices ADIsimPLL development tool continues to be the industry standard in PLL circuit design and evaluation software. Since its introduction in early 2002, the patented and award-winning ADIsimPLL has been used by more than 25,000 RF design engineers worldwide. The ADIsimPLL user family continues to grow at an incredible rate due to its proven ease of use and system design capabilities that the tool delivers to the end user. In an effort to provide RF engineers with the best software design tools, Analog Devices continually monitors and solicits feedback from selected RF user groups to find out what existing features could be improved upon and what new features are desired. As a result, Analog Devices' latest version, ADIsimPLL version 3.0, offers enhanced synthesis and simulation capabilities, as well as expanded libraries and Web access, thereby further streamlining the RF



development process for customers of Analog Devices fractional-N and integrated VCO/PLL products. For a free download of the complete software package, please visit www.analog.com/adisimpll.

PLL Evaluation Boards and Driver Software

Analog Devices provides a complete range of evaluation boards for its portfolio of PLL and synthesizer products. These evaluation boards come with user-friendly driver software, which allows our customers to rapidly evaluate the actual performance of our PLLs and synthesizers. Used in conjunction with ADIsimPLL, a customer can quickly and accurately design, optimize, and breadboard a new PLL, thereby reducing design cycle time and improving time to market. A complete list of evaluation boards, associated documentation, and driver software are available via our website at www.analog.com/pll_evals.

**For further information on:**

ADI PLL products, visit www.analog.com/pll

ADI PLL evaluation boards, visit www.analog.com/pll_evals

ADIsimPLL free design and simulation software, visit www.analog.com/adisimpll

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