

AS3125 “Idyle”, MEMS companion chip

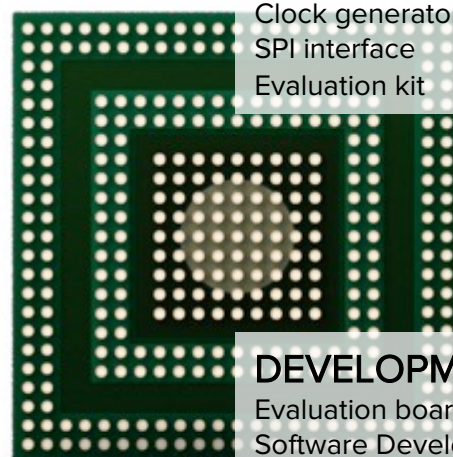
Open- or closed-loop, resonant or not, single or multi-axis, resistive or capacitive, the Idyle platform offers the chip, IP and software enabling rapid **high-performance** sensor system development.

DRIVE

10 simultaneous drive channels
 2 DACs per channel
 Low voltage, High voltage, Current modes
 Arbitrary or square waveforms
 Internal or external commands

UTILITIES

Analog PLL
 10V Charge Pump
 On-chip temperature sensor
 Clock generator
 SPI interface
 Evaluation kit



DEVELOPMENT KIT

Evaluation board
 Software Development kit
 Simulation software
 Chip programming UI
 Digital IP
 Application notes

SENSE

6 simultaneous readout channels
 Ultra low noise instrumentation and charge amplifiers
 Up to 19 inputs with multiplexing
 3 gain stages per channel with inter-stage I/O
 1 or 2 mixers per channel
 1 low- or band-pass , high resolution ADC per channel

Applications

Typical applications range from high-performance 9-axis IMUs to heterogeneous environmental sensors:

- Inertial sensors
- Pressure, Temperature, Humidity
- Gas
- Microphones
- Strain gages
- Angular position
- And many more...

Usage

AS3125 “Idyle” is ideally suited to high-performance sensor systems development, in the multiple steps from sensor evaluation to small-volume production:

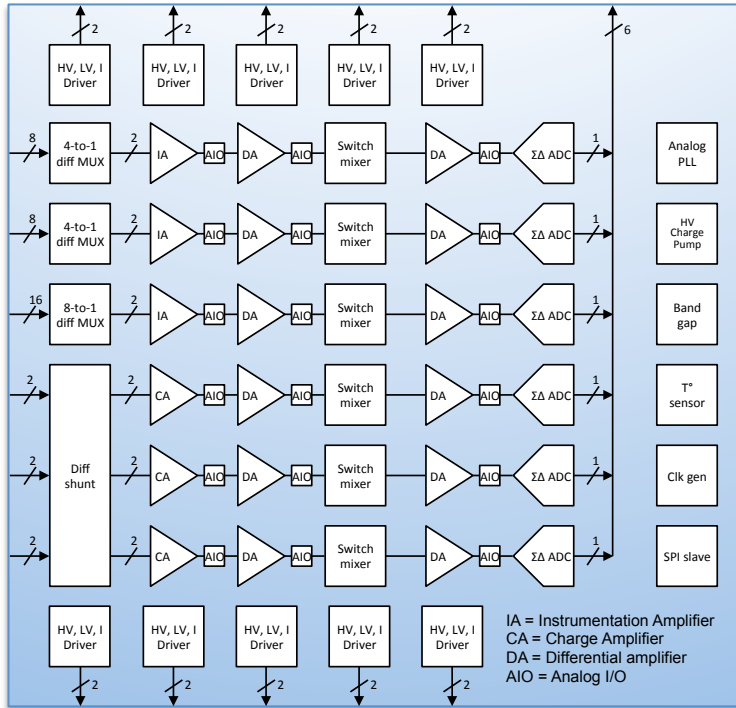
- Transducer characterization
- Architecture evaluation
- Prototyping and small series
- Electronics streamlining
- Dedicated ASIC design acceleration

AS3125 is available as packaged or bare dies.

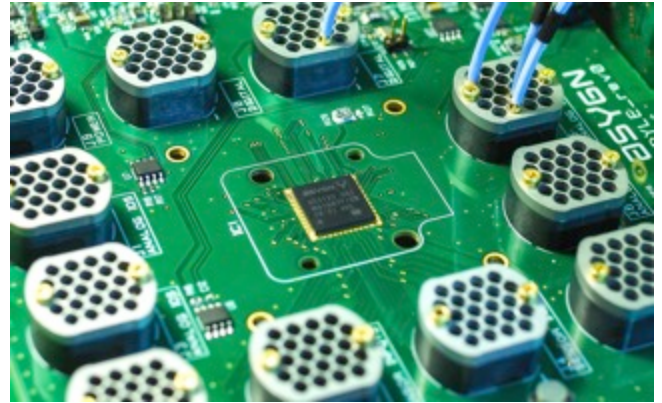
For further enquiries, please contact us on contact@asygn.com

AS3125 specifications

Circuit architecture



Evaluation kit



The “Odyle” EVK board enables rapid assessment of AS3125 performance and the testing of multiple sensor readout / actuation configurations.

Based on Asygn’s Tactyle® simulation software, any AS3125-based sensor system can be simulated, programmed, its algorithms designed and its performance assessed in reduced time.

Amplifiers performance

Quantity	IA	CA	DA
Gain	[6;40]dB	[0.02;6]V/pF/V	[0;20]dB
THD	-102dB	-104dB	-105dB
RTI noise @10kHz	3nV/VHz @G=40dB	0.04aF/VHz @C0=5pF, ΔC=1.5pF, Cp=50pF, Vout=0.4V	2.8nV/VHz @G=20dB
Input offset	315μV	230μV	650μV
Input offset drift	1μV/degC	1μV/degC	1μV/degC
Supply current	7.1mA	3.4mA	5.2mA

DACs performance (2 DACs per driver)

Quantity	DAC
Resolution	10bits
INL	1 LSB
DNL	0.5LSB
Update rate	2.5MHz
Thermal noise floor	22nV/VHz
Output impedance	20kΩ
Supply current	50μA

ADCs performance (1 ADC per channel)

Quantity	LP	BP
Resolution	17bits @1kHz BW	16bits @1kHz BW
Dynamic range	105dB	105dB
THD	-110dB	-110dB
Max Fs	2MHz	1.5MHz
Supply current	14mA	28mA

Drivers performance

Quantity	LVA	HVA	ISRC
Gain	0dB	[1;6]	[10μ;0.35]S
Gain drift	3ppm/degC	1ppm/degC	[0.04;1.2]%/C
Offset	800μV	1.1mV	TBC
Offset drift	5μV/°C	1.5μV/°C	TBC
Bandwidth	3MHz	100kHz	10MHz
Noise floor	15nV/VHz	20nV/VHz	TBC
Drive current	100μA	10μA	1mA
Supply current	200μA	20μA	2mA

Disclaimer

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More info

About ASYGN

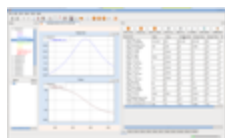
ASYGN designs scientific instruments, integrated circuits and simulation software for research and industrial applications. ASYGN specializes in sensor and RF applications. Headquartered in Montbonnot, France, ASYGN is a privately-owned company established in 2008. ASYGN's customers include leading research labs and industrial organizations.

Methodology

ASYGN strongly believes in the benefits of a high-quality design methodology. Therefore ASYGN uses state-of-the-art, widely recognized tools and methods throughout the complete design process to maximize product quality while reducing time-to-market.

Application Software

All ASYGN products come with their own software drivers and Windows/Linux graphical user interfaces.



Dedicated software developments can be ordered to comply with specific user requirements.

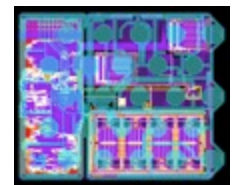
OEM products



ASYGN products are also available as naked boards or chips for integration into wider system setups. Provided with full integration guidelines & documentation.

Support

Products with high technical contents can sometimes be difficult to fully master. ASYGN's Support team is dedicated to help our customers make the most out of our products.



Technologies

ASYGN bring its customers the technologies best suited to the application. From dual-layer PCB to the most advanced IC technologies, ASYGN is committed to select the most appropriate technology for a given task, on a performance, cost and sustainability basis.

Customization

ASYGN Design Services can help you with the specification and design of customized hardware and software, either from existing products or from scratch.

For further enquiries, please contact us on contact@asygn.com

