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ICE-A2D-r13

Analog to Digital Converter

The ICE A2D-r13 is a 12-bit A/D module for use with the ICE-PIC5 or ICE-PIC6 (recommended) series of high-speed interface cards.

Software selection allows for use of an onboard clock synthesizer or direct clock input at a user desired sample rate. The onboard clock synthesizer uses a 10MHz reference from either an external source (J2) or via an onboard oscillator (TCXO) with sub 1 picosecond jitter performance.

The A2D-r13 module incorporates an input variable gain stage, which allows for gain settings of -4 to +20 dB in 1 dB steps and is user-software controlled.

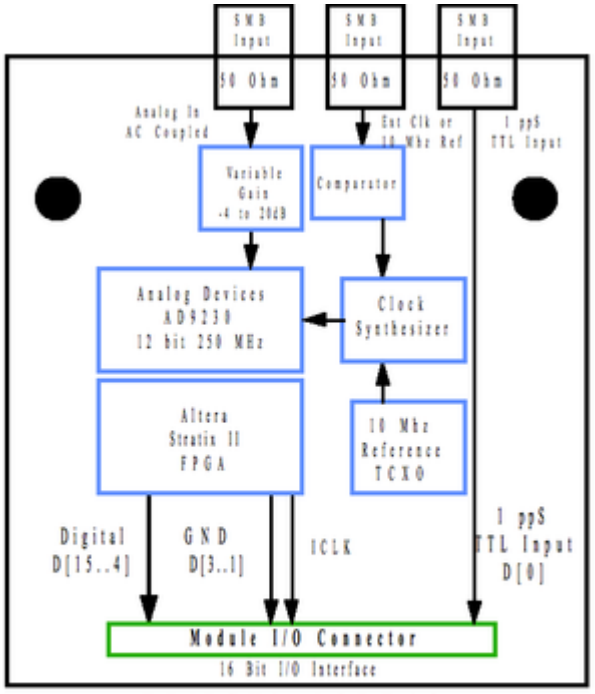
The use of external 10 MHz and 1 PPS reference signals allows for precision time stamping of digitized data.



Component Side View

Features

- Uses Analog Devices AD9230 A/D converter
- 12-bit resolution
- Up to 250 MSamp/sec
- 750mV p-p, AC-coupled input
- Ultra low jitter clock synthesizer
- 10 MHz onboard or external reference (software selectable)



A2D-r13 Functional Diagram

- Onboard input gain stage allows for software selection of between -4 and +20 dB of gain
- External 1PPS input for precision time stamp of data

Applications

- Multichannel, multimode receivers
- Base station infrastructure
- AMPS, IS-136, CDMA, GSM, WCDMA
- Single-channel digital receivers
- Antenna array processing
- Communications instrumentation
- Radar, infrared imaging
- Instrumentation

Specifications

Absolute Maximum Ratings

Parameter	Value	Units	Conditions
Electrical			
AVcc	0 to 2	V	
DVcc	0 to 2	V	
PPS Input	0 to 5	V	
External Clock Input	0 to 6	V	
Analog Input Power	0.25	W	
DC Current, Analog Input	30	mA	
Environmental			
Operating Temperature	-10 to +65	Degrees C	
Storage Temperature	-40 to +85	Degrees C	

WARNING: Operation of this module beyond any of these parameters may cause permanent damage. Exposure to absolute maximum ratings for extended periods may affect module reliability. Operation of the module beyond these specified parameters voids the factory warranty.

Miscellaneous

Parameter	Minimum	Typical	Maximum	Units
Analog Input		0 dBm	+3 dBm	dBm
Analog 3dB Passband	5		270	MHz
External Clock Input[1] (AC-coupled)	250	500	1100	mV p-p
External Ref.[1] (AC-coupled)	250	500	1100	mV p-p
Analog Input Impedance		50		Ohms
Sample Clock	40[2]		250	MHz

Notes:

1. Operation using external reference of 10MHz replaces the external clock input. Sample clock is then generated from the 10MHz reference.
2. Operation below 40 MSamp/sec is possible by over-sampling at 40MHz or above and then decimating the data.

Connector Information

Connectors

Analog In, Clock In, PPS In	Emerson 131-1701-371	Rt. Angle SMB Connector	S1, S2, S3,
Board Data Connector	Samtec QTE-020-03-F-D-A	40-Pin Connector	H1

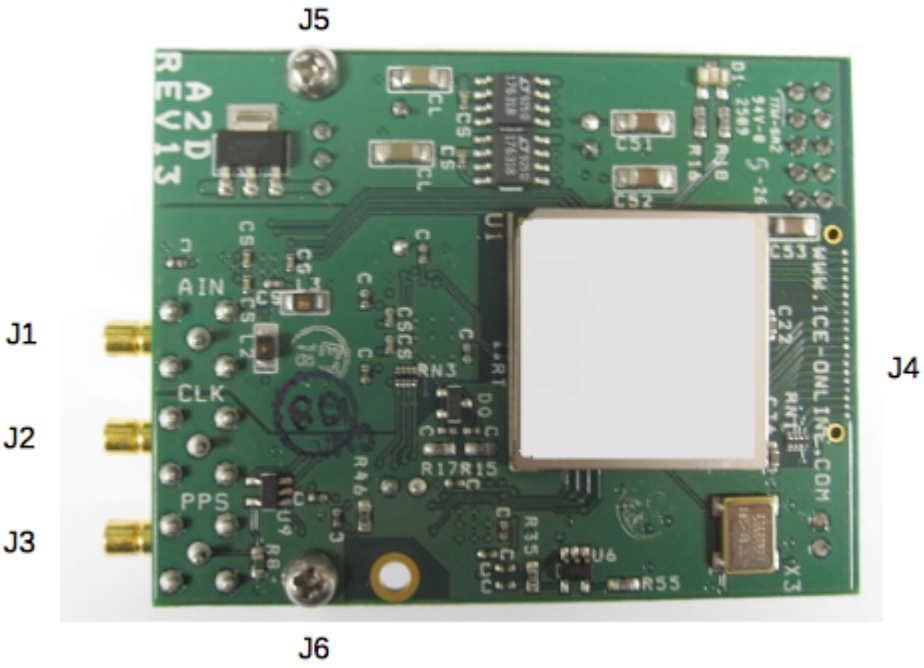
Mating Connectors

SMB	Amp # 414946-1, or Huber Suhner # 11SMB-50-2-40	
Board Data Connector (Mate)	Samtec QSE-020-01-F-D-A	40-Pin Connector

ICE Interface Cables

ICE-CAB-SB5	5 ft. BNC to SMB cable

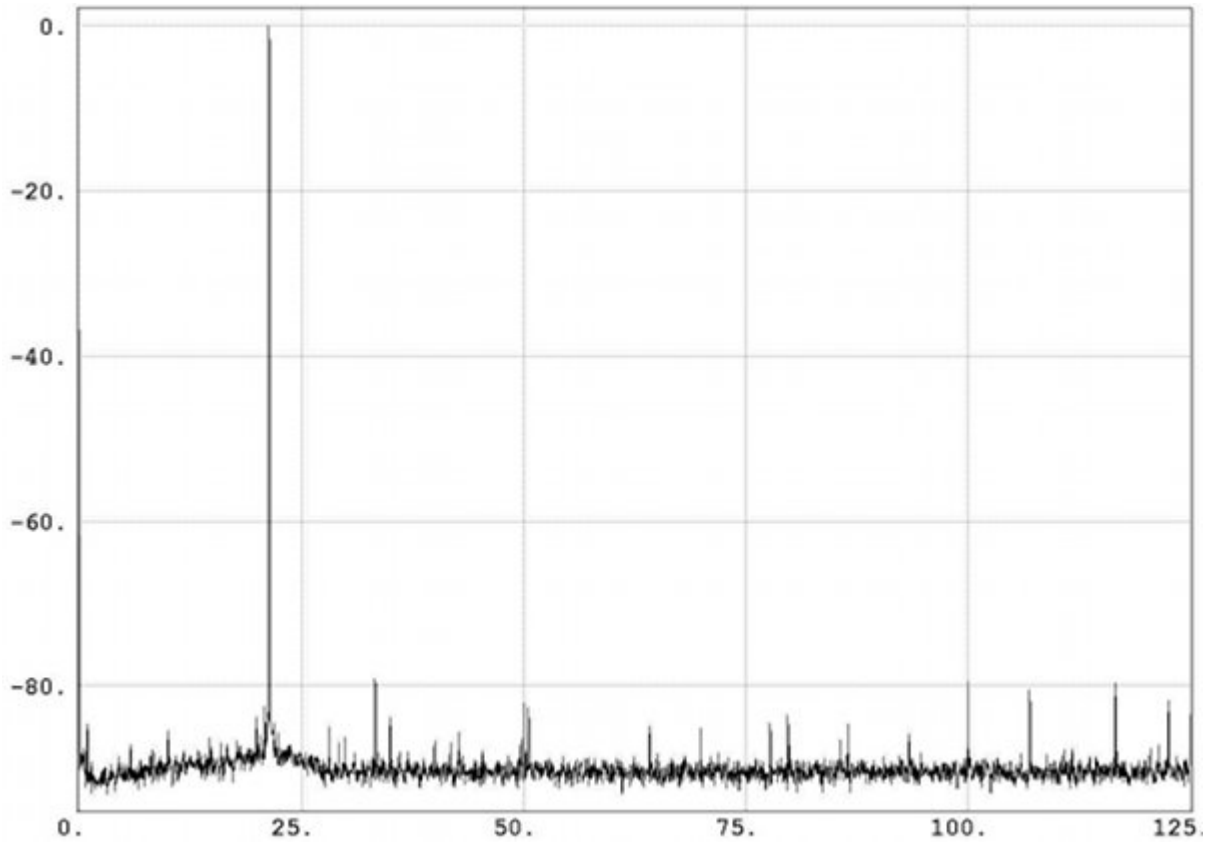
Connection Description



Connection	Description
J1	Analog Input
J2	Clock Input
J3	PPS Input
J4	Connection to ICE-PIC Card (Connector on back PCB Board)
J5	Retention Screw to standoff (1 of 2)
J6	Retention Screw to standoff (2 of 2)

Example Plot

- Single-tone performance
- Sample rate (MHz): 250
- Bits/Sample: 12
- Typical SFDR: >74dB
- ENOB: 12



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