GFT6822

High Speed Digitizer Board Level

(preliminary)

KEY FEATURES

- 2 or 1 analog channels in only one board
- Up to 8 GS/s sampling rate (in 1 channel)
- 12 bits vertical resolution
- AC coupled 10 MHz to 3.0 GHz analog bandwidth
- DC coupled Analog Input in option with variable gain and DC-offset
- Internal and external clock reference
- External trigger
- Time stamp for real time application
- 1 mega sample memory per channel
- Calibrator output
- Controlled via USB or Ethernet in option
- Compact packaging: 100 X 160 mm
- DC 12 V power supply. An external AC (80 to 230 V) to DC power supply is furnished.

APPLICATIONS

- OEM application
- Wireless communication
- High speed data acquisition
- Test and measurement
- Ultrasonic ranging
- RADA, LIDAR
- Spectroscopy
- Test on high speed circuits
- Automatic Test Equipment
- Time of Flight

DESCRIPTION

The GFT6822 is a versatile 12-bit data acquisition system designed to meet the most challenging measurement situations in OEM application. This compact digitizer can record 1 (or 2) analog inputs at speeds of 8 GS/s (or 4 GS/s) per channel with 12 bits resolution. The digitizer can select number of channels 1 or 2.

In option a full flexible DC coupled analog front end meet the requirement of a large variety of detectors in the most advanced measurement situation. This flexible DC coupled analog front end option, contains a variable gain, variable bias control, over voltage protection and anti-aliasing noise suppression filter.

The digitizer is supplied with a software application which includes a front panel graphical interface via USB that provide a remote control via a standard PC. This application can be used to control and explore the capabilities of the high speed digitizer.

The GFT6822 is compact 100 mm X 160 mm board level instrument.

SPECIFICATIONS

General parameters			
Vertical resolution		12-bit	
Data memory		1 Mega sample per channel	
Sample rate			
	Number of channels	2	1
	Sampling rate per channel (GS/s)	4	8
Analog inputs fixed gain			
	Input impedance (Ω)	50	
	Input Range Vp-p	750 mV P-P	
	Analog bandwidth -3dB (MHz)	10 to 3000	
	DC-offset	Fixed at center of FS	
Analog inputs Variable Gain (option 1)			
	Input Range setting	200 to 5000 mV (TBC)	
	Analog bandwidth -3 dB	0 to 2000 MHz	
	DC-offset	Variable (TBD)	
Clock reference			
Internal clock reference			
	Frequency	10 MHz	
	Accuracy	+/- 3 ppm, +/- 1/year ppm	
External clock reference input			
	Frequency (min-max)	10 MHz +/- 5 ppm	
	Signal level (min –max)	0.5 – 3.3 Vpp	
	Impedance AC	50 Ω	
Clock reference output			
	Frequency	10 MHz	
	Signal level	1.2 Vpp (into 50 Ω load)	
	Impedance AC	50 Ω	
Trigger			
External trigger input			
	Trigger frequency	>1 MHz	
	Impedance DC	50 Ω	
	Input range	–4 to +4 V	
	Threshold	Programmable	
	Sensitivity	200 mV	
	Time resolution	125 ps (TBC)	
General specifications			
Interface control		USB or Ethernet (option 2)	
Power and Voltage requirements		DC, + 12 V, 3 A (TBC)	
External Power supply is furnished		AC (80 to 230 V) to DC (12 V)	
Physical size		100 mm W x 160 mm D	
Operating temperature range		0 to 40 °C	
Dynamic performance			
	ENOB (bits) @ 100 MHz -1dBFS	8.0	
	Signal Noise Ratio	>60 dB	
Options			
Option 1: Analog inputs with variable gain and variable DC-offset			
Option 2: Ethernet interface control			

FUNCTIONNAL OVERVIEW

Block diagram

The digitizer includes an analog front-end with signal conditioning and A/D conversions and a digital back-end for data flow control, triggering and host communication, see figure 1.

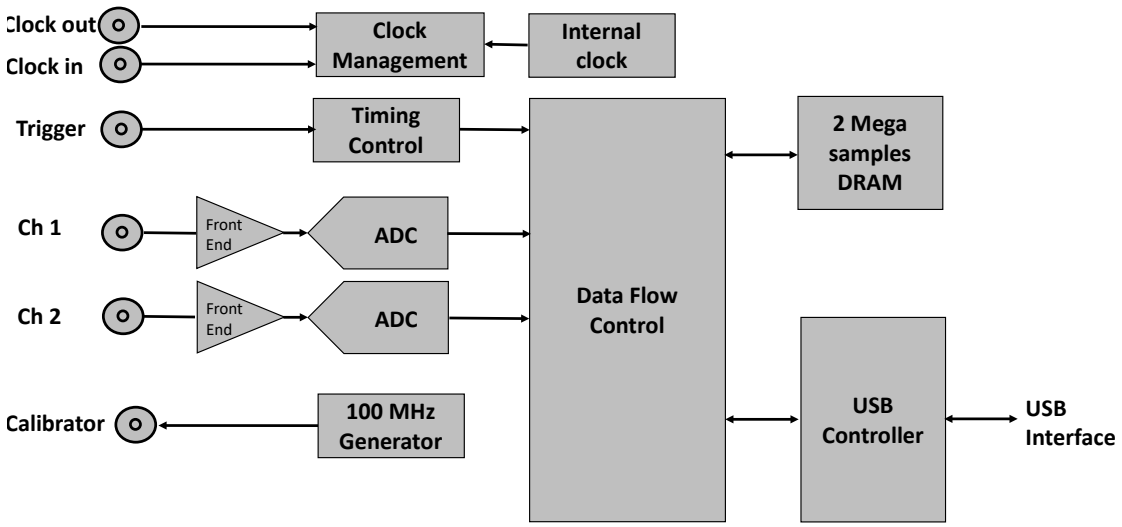


Figure 1: Block diagram 2-channel mode

Analog front end

The analog front end contains over-voltage protection and a fixed gain.
In option variable gain, variable DC offset and noise suppression filter is available. The settings gain and dc-offset are user controlled via software.
When the GFT6824 is configured in a 4 GS sample rate, each ADC is connected to one analog input channel (see figure 1). In a 8 GS sample rate mode, two ADCs operate on the same analog input in an interleaved mode.

Data recording

The data recording started from the selected trigger source is continuous recording in on board DRAM.

Trigger

There are several trigger source for data recording

- External for synchronization
- Software for user's control

Clock

There are several modes to clocking the digitizer:

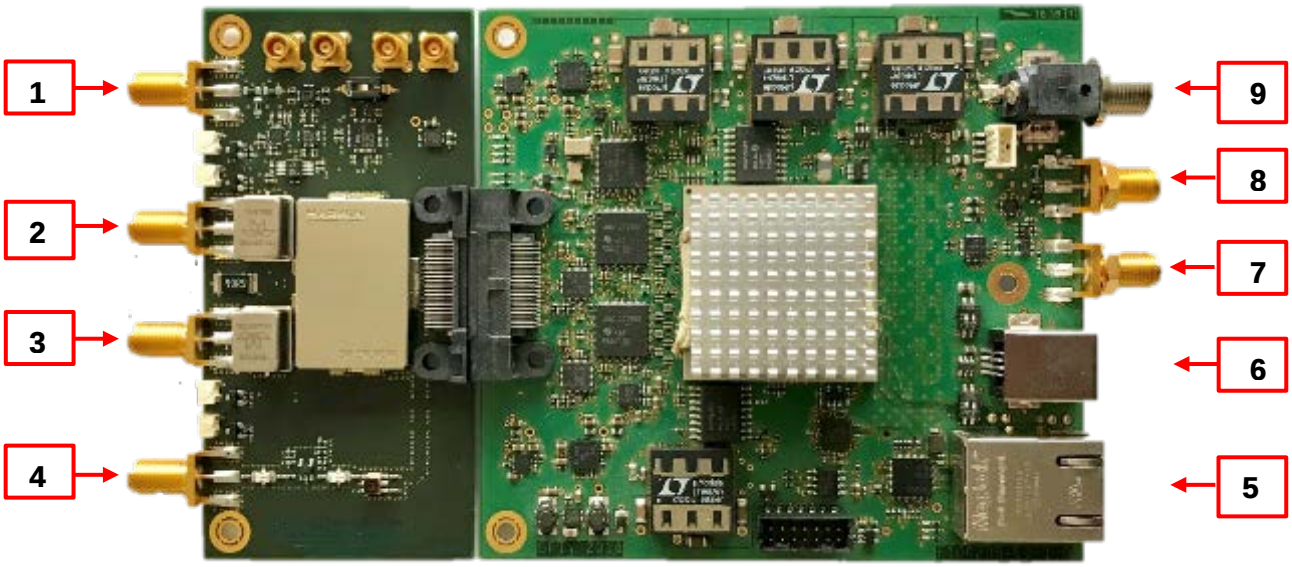
- Internal clock for stand-alone operation
- External clock for synchronization

There is also a clock reference output for clocking external equipment.

USB Controller

With the high speed USB 2.0 interface the digitizer is easily connected to any computer for stand-alone operation. Ethernet interface is available in option.
The GF6822 is supplied with software application that provides easy control of the high speed digitizer. Data can be saved for off-line analysis.

INPUT & OUTPUT



GFT6822 Top view

Connectors

1	Trigger input: SMA input		5	LAN: RJ45 connector
2	Channel 1 input: SMA input		6	USB: B connector
3	Channel 2 input/ SMA input		7	Clock input: SMA connector
4	Calibrator output: SMA connector		8	Clock output: SMA connector
			9	+12 V power: Jack connector

ORDERING INFORMATION

GFT6822 High speed Digitizer part numbering is: GFT6822-X (where “X” is option number)

Ordering example: GFT6822-2 (model GFT6822, with Ethernet interface control)