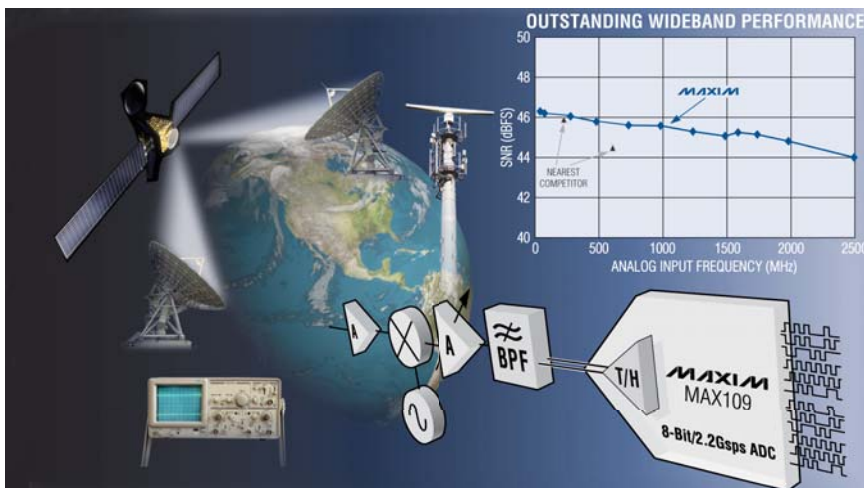


MAX109

High Speed ADC



Christian Bangert, Silica Europe



- Excellent Signal-to-Noise Performance
 - 44.6dB SNR at $f_{IN} = 300\text{MHz}$
 - 44dB SNR at $f_{IN} = 1600\text{MHz}$
- Superior Dynamic Range at High-IF
 - 61.7dBc SFDR at $f_{IN} = 300\text{MHz}$
 - 50.3dBc SFDR at $f_{IN} = 1600\text{MHz}$
 - -60dBc IM3 at $f_{IN1} = 1590\text{MHz}$ and $f_{IN2} = 1610\text{MHz}$
- 500mV_{P-P} Differential Analog Inputs
- 6.8W Typical Power Including the Demultiplexer
- Adjustable Range for Offset, Full-Scale, and Sampling Instance
- 50Ω Differential Analog Inputs
- 1:4 Demultiplexed LVDS Outputs
- Interfaces Directly to Common FPGAs with DDR and QDR Modes

The MAX109, 2.2Gsp/s, 8-bit ADC enables the accurate digitizing of analog signals with frequencies up to 2.5GHz. Fabricated on an advanced SiGe process, the MAX109 integrates a high-performance track/hold (T/H) amplifier, a quantizer and a 1:4 demultiplexer on a single monolithic die. The MAX109 also features adjustable offset, full-scale voltage (via REFIN) and sampling instance allowing multiple ADCs to be interleaved in time.

The innovative design of the internal T/H amplifier, which has a wide 2.8GHz full-power bandwidth, enables a flat-frequency response through the second Nyquist region. This results in excellent ENOB performance of 6.9bits. A fully differential comparator design and decoding circuitry reduce out-of-sequence code errors (thermometer bubbles or sparkle codes) and provide excellent metastability performance (10^{14} clock cycles). This design guarantees no missing codes.

The analog input is designed for both differential and single-ended use with a 500mV_{P-P} input-voltage range. The output data is in standard LVDS format and is demultiplexed by an internal 1:4 demultiplexer. The LVDS outputs operate from a supply-voltage range of 3...3.6V for compatibility with single 3V-reference systems. Control inputs are provided for interleaving additional MAX109 devices to increase the effective system-sampling rate.

The MAX109 is offered in a 256-pin Super Ball-Grid Array (SBGA) package and is specified over the extended industrial temperature range (-40 to +85°C).

Key Features

- Ultra-High-Speed, 8-bit, 2.2Gsp/s ADC
- 2.8GHz Full-Power Analog Input Bandwidth

Key Applications

- ATE Systems
- Digital Oscilloscopes
- Digital RF/IF Signal Processing
- Electronic Warfare (EW) Systems
- High-Energy Physics Instrumentation
- High-Speed Data-Acquisition Systems
- Light Detection and Ranging (LIDAR)
- Radar Warning Receivers (RWR)

Service available or already delivered T&R from Manufacturer.
Tapes are available, but not stocked at Avnet Logistics due to low demand.
Device supported by or programming equipment, but the socket for this package must be provided by customer.

P/N	Package	Programming	Taping & Reeling	Marking
MAX109EHF-D	256-ball SBGA			