


## AFE General Purpose 8 ADC 14bit 1.8V/3.3V/5V 135-Pin BGA

### Tray

<b>Manufacturer:</b>	<a href="#">Texas Instruments, Inc</a>
<b>Package/Case:</b>	BGA
<b>Product Type:</b>	Data Conversion ICs
<b>RoHS:</b>	RoHS Compliant/Lead free 
<b>Lifecycle:</b>	Active



Images are for reference only

[Inquiry](#)

### General Description

The AFE5807 is an integrated Analog Front-End (AFE) solution specifically designed for ultrasound systems in which high performance and small size are required. The AFE5807 integrates a complete time-gain-control (TGC) imaging path and a continuous wave Doppler (CWD) path. It also enables users to select one of various power/noise combinations to optimize system performance. Therefore, the AFE5807 is a suitable ultrasound analog front end solution not only for high-end systems, but also for portable systems.

The AFE5807 contains eight channels of voltage controlled amplifier (VCA), 12-bit Analog-to-Digital Converter (ADC), and CW mixer. The VCA includes Low noise Amplifier (LNA), Voltage controlled Attenuator (VCAT), Programmable Gain Amplifier (PGA), and Low-Pass Filter (LPF). The LNA gain is programmable to support 250 mVPP to 1 VPP input signals. Programmable active termination is also supported by the LNA. The ultra-low noise VCAT provides an attenuation control range of 40 dB and improves overall low gain SNR which benefits harmonic imaging and near field imaging. The PGA provides gain options of 24 dB and 30 dB. Before the ADC, a LPF can be configured as 10 MHz, 15 MHz, 20 MHz or 30 MHz to support ultrasound applications with different frequencies. The high-performance 12 bit/80 MSPS ADC in the AFE5807 achieves 70 dBFS SNR. It ensures excellent SNR at low chain gain. The ADC's LVDS outputs enable flexible system integration desired for miniaturized systems. The AFE5807 also integrates a low power passive mixer and a low noise summing amplifier to accomplish on-chip CWD beamformer. 16 selectable phase-delays can be applied to each analog input signal. Meanwhile a unique 3rd and 5th order harmonic suppression filter is implemented to enhance CW sensitivity.

The AFE5807 is available in a 15mm × 9mm, 135-pin BGA package and it is specified for operation from 0°C to 85°C. It is also pin-to-pin compatible to the AFE5808, AFE5803, and AFE5808A. In addition, AFE5809 is another member with enhanced digital demodulation features in this family.

### Key Features

8-Channel Complete Analog Front-End

LNA, VCAT, PGA, LPF,

ADC, and CW Mixer

Programmable Gain Low-Noise Amplifier (LNA)

24/18/12 dB Gain

0.25/0.5/1 VPP Linear Input Range

0.63/0.7/0.9 nV/rtHz IRN (Low Noise Mode)

0.99/1.0/1.05 nV/rtHz IRN (Low Power Mode)

Programmable Active Termination

40 dB Low Noise Voltage Controlled Attenuator (VCAT)

24/30 dB Programmable Gain Amplifier (PGA)

3rd Order Linear Phase Low-Pass Filter (LPF)

10, 15, 20, 30 MHz

12-bit Analog to Digital Converter (ADC)

70 dBFS SNR at 80 MSPS

LVDS Outputs

Noise/Power Optimizations (Full Chain)

117 mW/CH at 1.05 nV/rtHz, 80 MSPS

159 mW/CH at 0.75 nV/rtHz, 80 MSPS

80 mW/CH at CW Mode

Excellent Device-to-Device Gain Matching

Low Harmonic Distortion

Fast and Consistent Overload Recovery

Passive Mixer for Continuous Wave Doppler(CWD)

Low Close-in Phase Noise  $-156$  dBc/Hz

at 1 KHz off 2.5 MHz Carrier

Phase Resolution of  $1/16\lambda$ ;

Support 16X, 8X, 4X and 1X CW Clocks

12dB Suppression on 3rd and 5th Harmonics

Flexible Input Clocks

Small Package: 15 mm  $\times$  9 mm, 135-BGA

Medical Ultrasound Imaging

Nondestructive Evaluation Equipments



## Recommended For You

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### **AFE1205E**

Texas Instruments, Inc

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### **AFE1104E**

Texas Instruments, Inc

SSOP

### **AFE2124E**

Texas Instruments, Inc

SSOP48

### **AFE4300PNR**

Texas Instruments, Inc

LQFP80

### **AFE1103E**

Texas Instruments, Inc

SSOP

### **AFE5818ZBV**

Texas Instruments, Inc

BGA

### **AFE4403YZPT**

Texas Instruments, Inc

DSBGA36

### **AFE4403YZPR**

Texas Instruments, Inc

DSBGA36

### **AFE4404YZPR**

Texas Instruments, Inc

DSBGA15

### **AFE4400RHAT**

Texas Instruments, Inc

VQFN40

### **AFE4490RHAT**

Texas Instruments, Inc

QFN

### **AFE4405YZR**

Texas Instruments, Inc

DSBGA

### **AFE4404YZPT**

Texas Instruments, Inc

DSBGA15

### **AFE5808AZCF**

Texas Instruments, Inc

BGA

### **AFE5812ZCF**

Texas Instruments, Inc

BGA135