AFE5932, 32-Channel Ultrasound AFE With 17-mW/Channel Power, 2-nV/√Hz Noise, 12-Bit, 50-MSPS Output

1 Features

- AFE5932 supports:
  - 32-channels attenuator, PGA+LPF, 12-bit ADC, digital features with a decimation block
- Input Attenuator (ATTEN) with DTGC
  - 24dB to 0dB attenuation range with 0.125dB step. Using in-built DTGC engine attenuation can be changed in real time.
- Post-gain Amplifier (PGA) and low-pass filter LPF
  - Programmable gain of 12, 15 & 18 dB
  - Maximum output swing support 1.6 Vpp
  - LPF supported corners: First order filter with corner 10, 15 & 20 MHz
- Analog to digital convertor
  - Maximum input swing support: 1.6 Vpp
  - Resolution: 12bit
  - Maximum ADC clock frequency (f_{ADC_CLK}): 50MHz
  - Full scale SNR: 62 dBFS
- Decimation: Optional decimation block after ADC to decimate data by 2 or 4.
- Compression block to combine data in fewer LVDS lanes as per the decimation factor
- Total Power: 17 mW/ch at ADC Clock of 50MHz
- Low speed CMOS serial programming interface to program front end and ADC upto 40MHz speed
- Supply: 1.8V and 1.15V
- Small package: FC-BGA-100 (10mm × 10mm) with 0.8mm pitch

2 Applications

- Ultrasound imaging system
- Piezoelectric driver
- In-probe ultrasound imaging

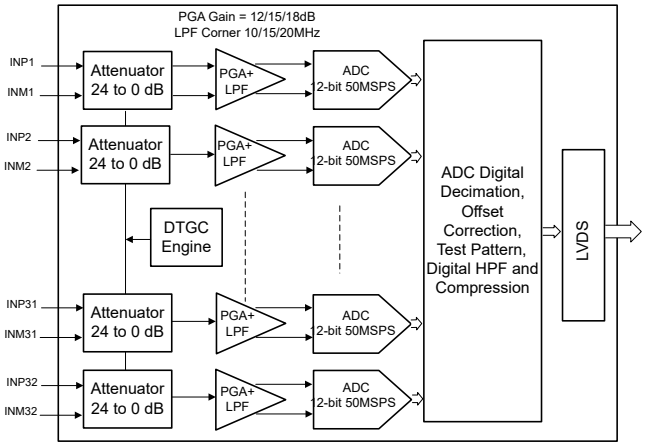
3 Description

The AFE5932 is a highly integrated, low power receiver device designed for portable ultrasound imaging systems. The device boasts a total of 32 receiver channels, each featuring an attenuator, PGA and low-pass filter, and ADC.

Package Information

PART NUMBER	PACKAGE(1)	PACKAGE SIZE(2)
AFE5932	FC-BGA (144)	10.0mm × 10.0mm

(1) For all available packages, see Section 6.
(2) The package size (length × width) is a nominal value and includes pins, where applicable.



Simplified Block Diagram

Table of Contents

4 Device and Documentation Support

TI offers an extensive line of development tools. Tools and software to evaluate the performance of the device, generate code, and develop solutions are listed below.

4.1 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on ti.com. Click on *Notifications* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

4.2 Support Resources

TI E2E™ support forums are an engineer's go-to source for fast, verified answers and design help — straight from the experts. Search existing answers or ask your own question to get the quick design help you need.

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4.3 Trademarks

TI E2E™ is a trademark of Texas Instruments.
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4.4 Electrostatic Discharge Caution

This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

4.5 Glossary

TI Glossary	This glossary lists and explains terms, acronyms, and definitions.

5 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

DATE	REVISION	NOTES
March 2026	*	Initial Release

6 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGING INFORMATION

Orderable part number	Status (1)	Material type (2)	Package | Pins	Package qty | Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
AFE5932ALH	Active	Production	null (null) |	240 | JEDEC TRAY (5+1)	-	SNAGCU	Level-3-260C-168 HR	0 to 70	AFE5932

(1) **Status:** For more details on status, see our product life cycle.

(2) **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

(3) **RoHS values:** Yes, No, RoHS Exempt. See the TI RoHS Statement for additional information and value definition.

(4) **Lead finish/Ball material:** Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

(5) **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

(6) **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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