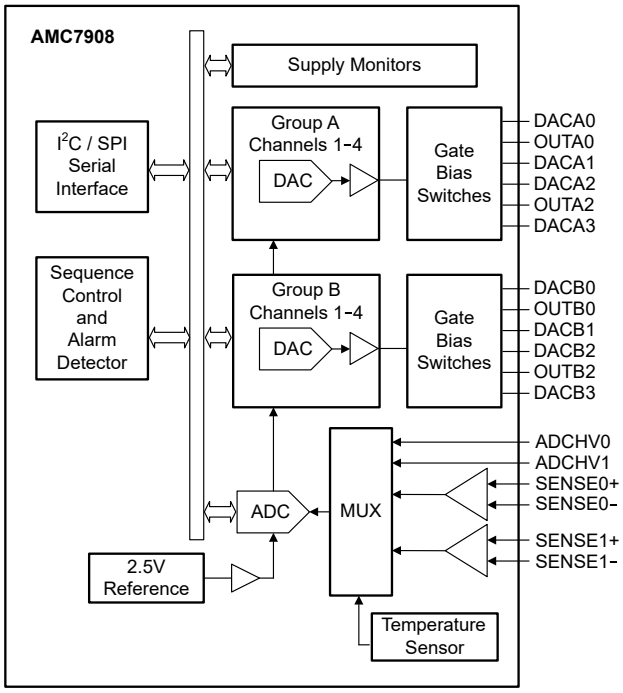
# AMC7908 8-Channel Power-Amplifier Monitor and Controller

## 1 Features

- Eight analog outputs
  - Eight monotonic DACs: 1.22mV resolution
  - Automatically configured output ranges:
    - Positive output voltage: 0V to 10V
    - Negative output voltage: –10V to 0V
  - High current drive capability
  - High capacitive load tolerance
- Output on and off control switches
  - Fast switching time
  - Low resistance
- Multichannel ADC monitor
  - Two high-voltage external inputs: 0V to 85V
  - Two high-side current-sense amplifiers: up to 85V common-mode range
  - Local temperature sensor: ±2.5°C accuracy
- Output sequence control for start-up and shutdown events
- Internal 2.5V reference
- SPI and $I^2C$ interface: 1.65V to 3.6V operation
  - SPI: 4-wire interface
  - $I^2C$: 16 target addresses
- Specified temperature range: –40°C to +125°C
- Operating temperature range: –40°C to +150°C




**Simplified Block Diagram**

## 2 Applications

- Macro remote radio unit (RRU)
- Active antenna system mMIMO (AAS)
- Outdoor backhaul unit
- Radar

## 3 Description

The AMC7908 is a highly integrated power-amplifier (PA) monitor and control device capable of temperature, current, and voltage supervision.

The AMC7908 bias controller is based around eight digital-to-analog converters (DAC) with programmable output ranges. The eight gate bias outputs are switched on and off through dedicated control pins. The gate bias switches are designed for fast response and enable correct power sequencing and protection of depletion-mode transistors, such as GaAs and GaN.

The AMC7908 supervisor is based around an accurate multichannel analog-to-digital converter (ADC). The device integrates two high-voltage inputs, two high-side current-sense amplifiers and an accurate on-chip temperature sensor.

The function integration and wide operating temperature range make the AMC7908 an excellent choice as an all-in-one, bias control circuit for the power amplifiers found in RF communication systems. The flexible DAC output ranges and built-in sequencing features let the device be used as a biasing controller for a large variety of transistor technologies, such as LDMOS, GaAs, and GaN.

**Package Information**

| PART NUMBER | PACKAGE(1) | PACKAGE SIZE(2) |
|---|---|---|
| AMC7908 | RHB (VQFN, 32) | 5mm × 5mm |

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

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# 4 Device and Documentation Support

## 4.1 Documentation Support

### *4.1.1 Related Documentation*

For related documentation see the following:

- Texas Instruments, *AMC7908EVM User's Guide*

## 4.2 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.

## 4.3 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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## 4.4 Trademarks

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## 4.5 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.

## 4.6 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 |
|---|---|---|
| August 2024 | * | 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.

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265