

2.2V, 12-Bit, 4-Channel, *microPOWER*[™], MINIATURE ANALOG-TO-DIGITAL CONVERTER WITH I²C INTERFACE

Check for Samples: [ADS7924](#)

FEATURES

- **Intelligent System Power Management:**
 - Low-Power, 12-Bit SAR Core:
 - 660µW at 17kSPS
 - 4.4µW at 5SPS
 - < 1µA of Power-Down Current
 - Programmable Interrupt Pin Controls Wakeup of the Microcontroller
 - Auto Power-Down Control
 - PWRCON Pin Controls Shutdown and Wakes Up External Op Amp
- **Intelligent Self System Monitoring:**
 - Auto-Sequencing, 4-Channel Multiplexer
 - Individual Alarm Threshold for Each Channel
 - Programmable Monitoring Rate:
 - Up to 100kHz
- **Wide Supply Range:**
 - Analog Supply: 2.2V to 5.5V
 - Digital Supply: 1.65V to 5.5V
- **I²C[™] Interface:**
 - Supports Standard and Fast Modes
- **Package: 3mm × 3mm QFN**

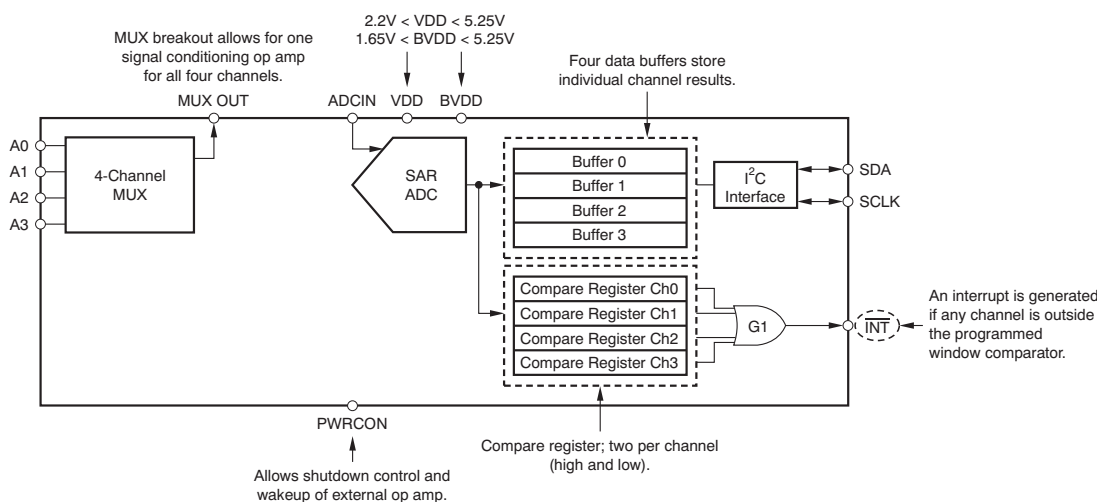
APPLICATIONS

- **Portable and Battery-Powered Systems:**
 - Medical, Communications, Remote Sensor Signal Monitoring
- **Isolated Data Acquisition Systems**
- **Energy Harvesting**

DESCRIPTION

The ADS7924 is a 12-bit, sampling, analog-to-digital converter (ADC) with I²C interface. The ADS7924 is offered in a miniature 3mm × 3mm QFN package. The device can operate from 2.2V to 5.5V with analog supply and 1.65V to 5.5V with digital I/O supply. The combination of an I²C serial, two-wire interface, and *microPOWER* consumption makes the ADS7924 ideal for applications requiring the ADC to be close to the input source in remote locations and for applications requiring isolation. The ADS7924 is available in a 3mm × 3mm QFN package.

The ADS7924 is fully specified for operation over the industrial –40°C to +85°C temperature range.



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PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
ADS7924IRTER	PREVIEW	WQFN	RTE	16	3000	TBD	Call TI	Call TI
ADS7924IRTET	PREVIEW	WQFN	RTE	16	250	TBD	Call TI	Call TI

⁽¹⁾ The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBsolete: TI has discontinued the production of the device.

⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

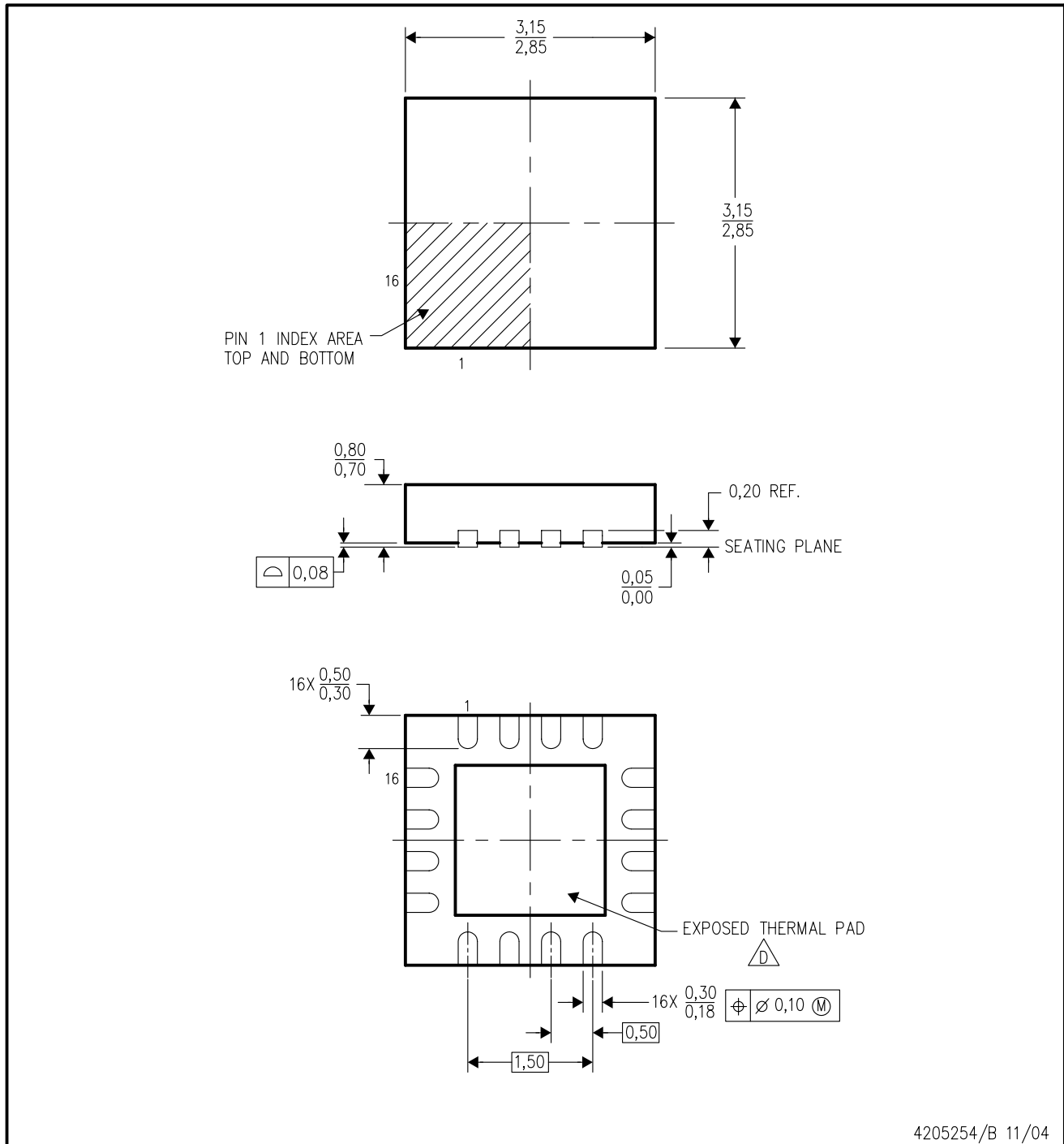
⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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RTE (S-PQFP-N16)

PLASTIC QUAD FLATPACK



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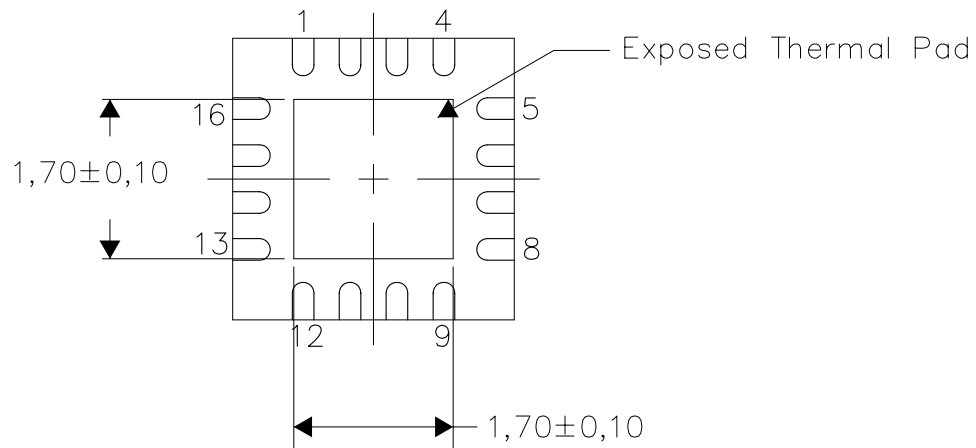
- NOTES:
- A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
 - B. This drawing is subject to change without notice.
 - C. Quad Flatpack, No-leads (QFN) package configuration.
 - $\triangle D$ The package thermal pad must be soldered to the board for thermal and mechanical performance. See the Product Data Sheet for details regarding the exposed thermal pad dimensions.
 - E. Falls within JEDEC MO-220.

THERMAL INFORMATION

This package incorporates an exposed thermal pad that is designed to be attached directly to an external heatsink. The thermal pad must be soldered directly to the printed circuit board (PCB). After soldering, the PCB can be used as a heatsink. In addition, through the use of thermal vias, the thermal pad can be attached directly to the appropriate copper plane shown in the electrical schematic for the device, or alternatively, can be attached to a special heatsink structure designed into the PCB. This design optimizes the heat transfer from the integrated circuit (IC).

For information on the Quad Flatpack No-Lead (QFN) package and its advantages, refer to Application Report, QFN/SON PCB Attachment, Texas Instruments Literature No. SLUA271. This document is available at www.ti.com.

The exposed thermal pad dimensions for this package are shown in the following illustration.

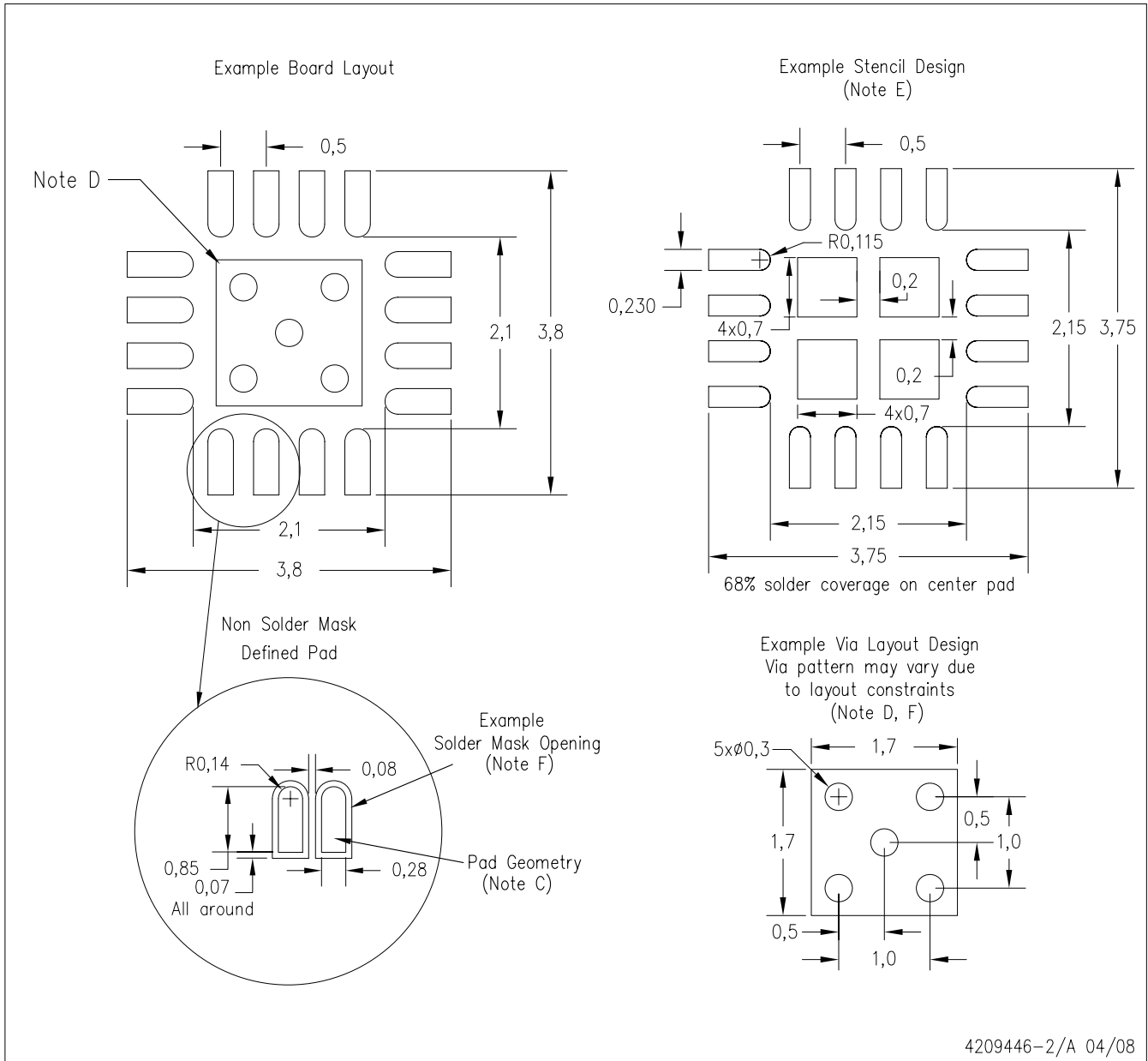


Bottom View

NOTE: All linear dimensions are in millimeters

Exposed Thermal Pad Dimensions

RTE (S-PWQFN-N16)



- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Publication IPC-7351 is recommended for alternate designs.
 - D. This package is designed to be soldered to a thermal pad on the board. Refer to Application Note, Quad Flat-Pack Packages, Texas Instruments Literature No. SCBA017, SLUA271, and also the Product Data Sheets for specific thermal information, via requirements, and recommended board layout. These documents are available at www.ti.com <<http://www.ti.com>>.
 - E. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC 7525 for stencil design considerations.
 - F. Customers should contact their board fabrication site for minimum solder mask web tolerances between signal pads.

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