Dual, High-Speed, 16-, 14-, and 12-Bit, Simultaneous-Sampling, Analog-to-Digital Converter

Check for Samples: ADS8353, ADS7853, ADS7253

FEATURES

- **16-, 14-, and 12-Bit, Pin-Compatible Family**
- **Simultaneous Sampling of Two Channels**
- **Supports Single-Ended and Pseudo-Differential Inputs**
- **High Speed:**
  - **ADS8353: 16 Bits, 700 kSPS**
  - **ADS7853: 14 Bits, 1 MSPS**
  - **ADS7253: 12 Bits, 1 MSPS**
- **Excellent DC Performance:**
  - **ADS8353:**
    - **16-Bit NMC DNL, ±2.5-LSB Max INL**
  - **ADS7853:**
    - **14-Bit NMC DNL, ±2-LSB Max INL**
  - **ADS7253:**
    - **12-Bit NMC DNL, ±1-LSB Max INL**
- **Excellent AC Performance:**
  - **ADS8353:**
    - **89-dB SNR, –95-dB THD**
  - **ADS7853:**
    - **82-dB SNR, –90-dB THD**
  - **ADS7253:**
    - **72-dB SNR, –90-dB THD**
- **Dual, Programmable, and Buffered 2.5-V Internal Reference**
- **Fully-Specified Over the Extended Industrial Temperature Range: –40°C to +125°C**
- **Small Footprint: QFN-16 (3-mm × 3-mm) and TSSOP-16**

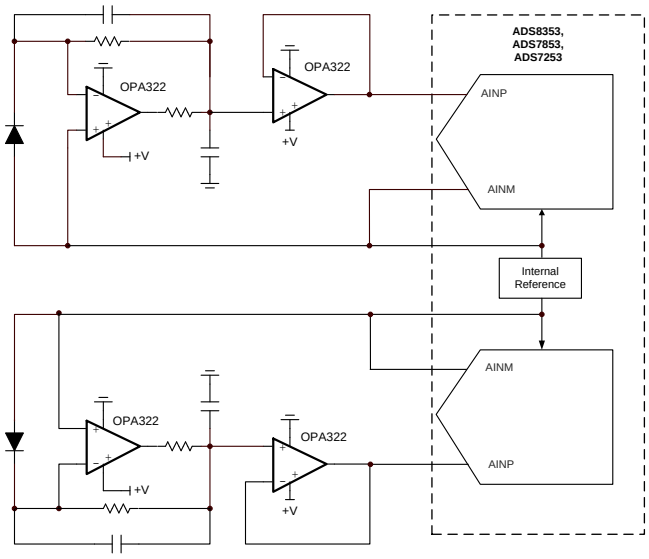
APPLICATIONS

- **Motor Control: Position Measurement Using Encoders**
- **Optical Networking: EDFA Gain Control Loop**
- **Protection Relays**
- **Power Quality Measurement**
- **Three-Phase Power Control**
- **Programmable Logic Controllers**
- **Industrial Automation**

DESCRIPTION

The ADS8353, ADS7853, and ADS7253 belong to a family of pin-compatible, dual, high-speed, simultaneous-sampling, analog-to-digital converters (ADC) that support single-ended and pseudo-differential analog inputs.

Each device includes two individually programmable reference sources that can be used for system-level gain calibration. Also, a flexible serial interface that can operate over a wide power-supply range, enables easy communication with a large variety of host controllers. Power consumption for a given throughput can be optimized by using the two low-power modes supported by the device. All devices are fully specified over the extended industrial temperature range (–40°C to +125°C) and are available in pin-compatible, QFN-16 (3-mm × 3-mm) and TSSOP-16 packages.



Functional Block Diagram

PRODUCT PREVIEW

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PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
ADS7253IPW	PREVIEW	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 125	ADS7253	
ADS7253IPWR	PREVIEW	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 125	ADS7253	
ADS7253IRTER	PREVIEW	WQFN	RTE	16	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 125	7253	
ADS7253IRTET	PREVIEW	WQFN	RTE	16	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 125	7253	
ADS7853IPW	PREVIEW	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 125	ADS7853	
ADS7853IPWR	PREVIEW	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 125	ADS7853	
ADS7853IRTER	PREVIEW	WQFN	RTE	16	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 125	7853	
ADS7853IRTET	PREVIEW	WQFN	RTE	16	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 125	7853	
ADS8353IPW	PREVIEW	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 125	ADS8353	
ADS8353IPWR	PREVIEW	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 125	ADS8353	
ADS8353IRTER	PREVIEW	WQFN	RTE	16	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 125	8353	
ADS8353IRTET	PREVIEW	WQFN	RTE	16	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 125	8353	

(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.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

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

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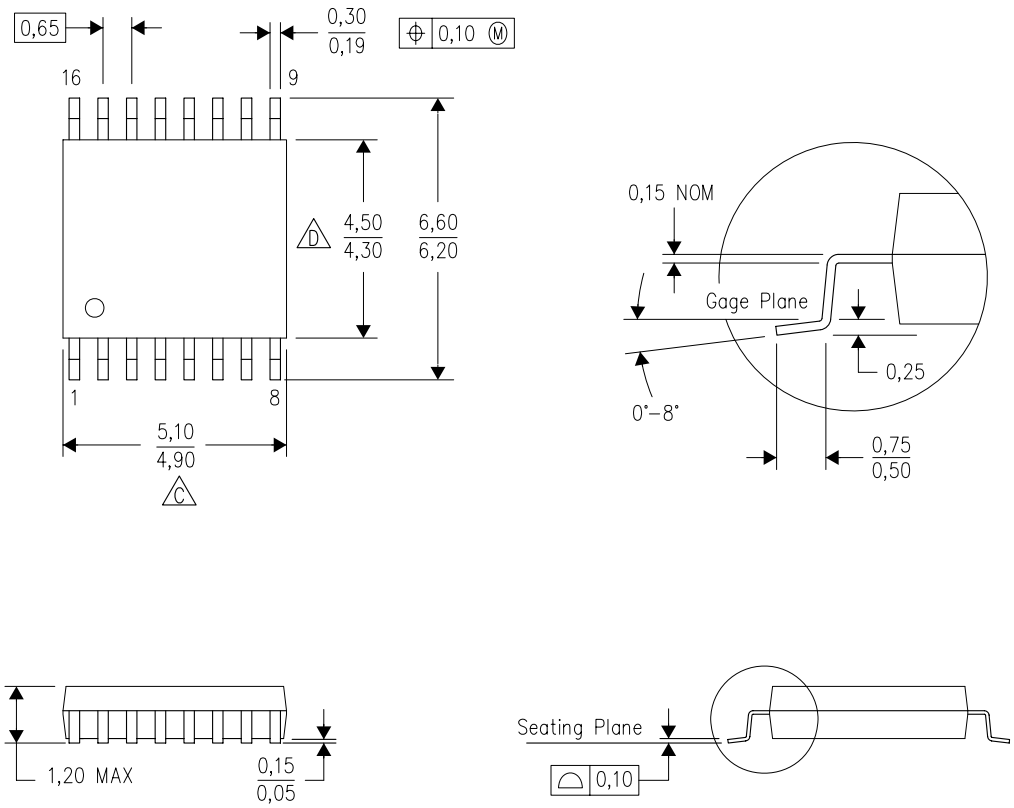
PW (R–PDSO–G16) PLASTIC SMALL OUTLINE



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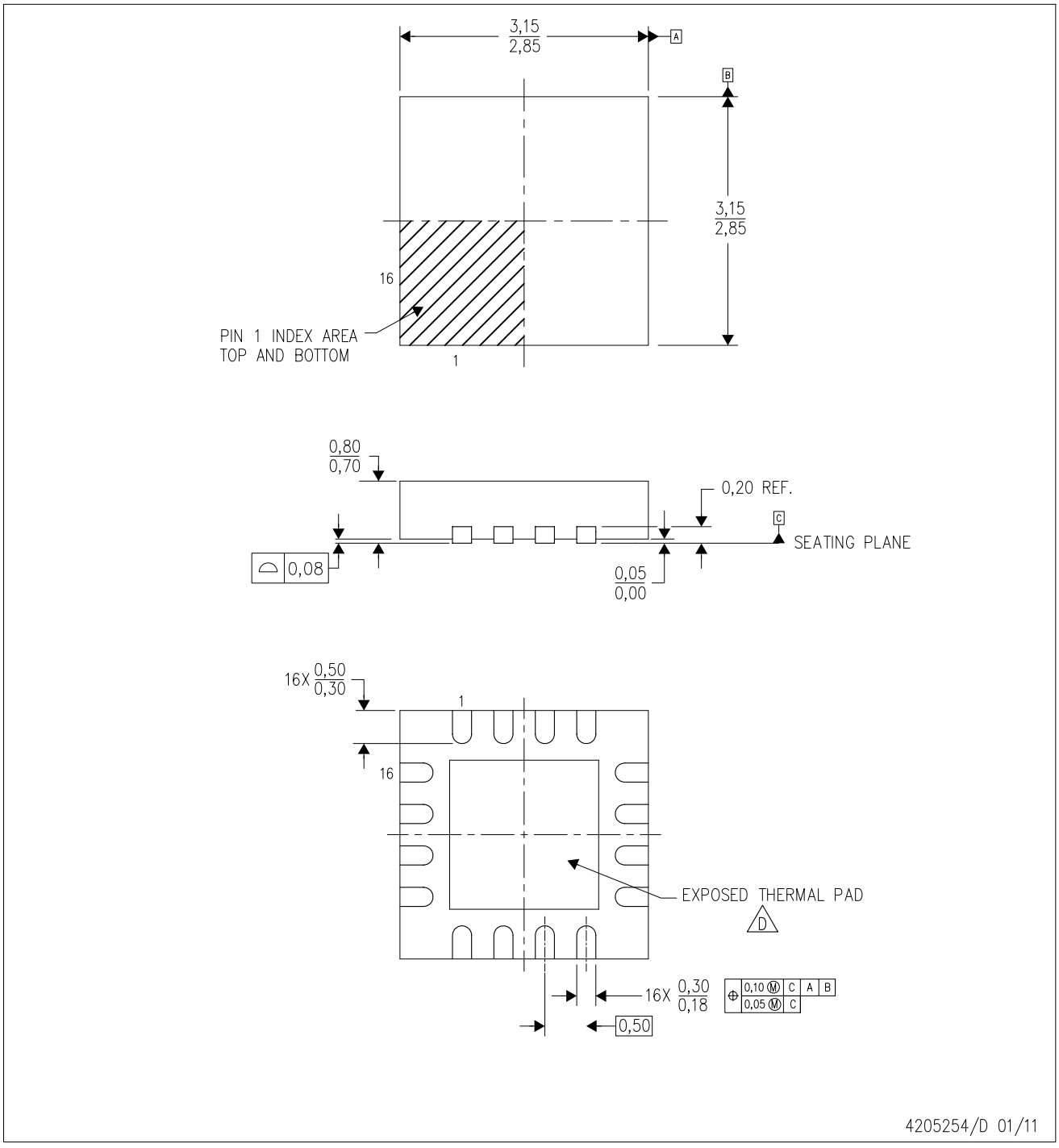
NOTES:
A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M–1994.
B. This drawing is subject to change without notice.
C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0,15 each side.
D. Body width does not include interlead flash. Interlead flash shall not exceed 0,25 each side.
E. Falls within JEDEC MO–153

RTE (S–PWQFN–N16) PLASTIC QUAD FLATPACK NO–LEAD



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.
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.

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