AFE2256 适用于数字 X 射线平板检测器的 256 通道模拟前端

1 特性

- 256 通道
- 片上，16 位 ADC
- 光电二极管抗短路
- 高性能：
  - 噪声：750 电子 RMS（1.2pC 输入电荷范围）
  - 低相关噪声
  - 积分非线性：±2LSB，带内部 16 位 ADC
  - 扫描时间：< 20µs 至 204.8µs
- 积分：
  - 六种可选、满标量程输入范围：0.6pC（最小）至 9.6pC（最大）
  - 内部定时发生器 (TG)
  - 内置相关双采样器
  - 流水线式“集成和读取”，用于提高集成期间的吞吐量数据读取
  - 串行低压差分信令 (LVDS) 输出
- 简单电源方案：
  - AVDD1 = 1.85V
  - AVDD2 = 3.3V
- 低功耗
- 小睡模式和完全断电模式
- 定制 Chip-On-Film (COF) 封装

2 应用

- X 射线平板探测器
- 电荷探测器
- 电容测量

3 说明

AFE2256 是一款 256 通道模拟前端 (AFE)，旨在满足基于平板检测器 (FPD) 的数字 X 射线系统的要求。该器件包含 256 个集成器、1 个用于满量程电荷电平选择的可编程增益放大器 (PGA)、1 个带有双电源的相关双采样器和 256:4 模拟多路复用器。

该器件还具有四个 16 位逐次逼近寄存器 (SAR) 模数转换器 (ADC)。来自 ADC 的串行数据采用低压差分信令 (LVDS) 格式。

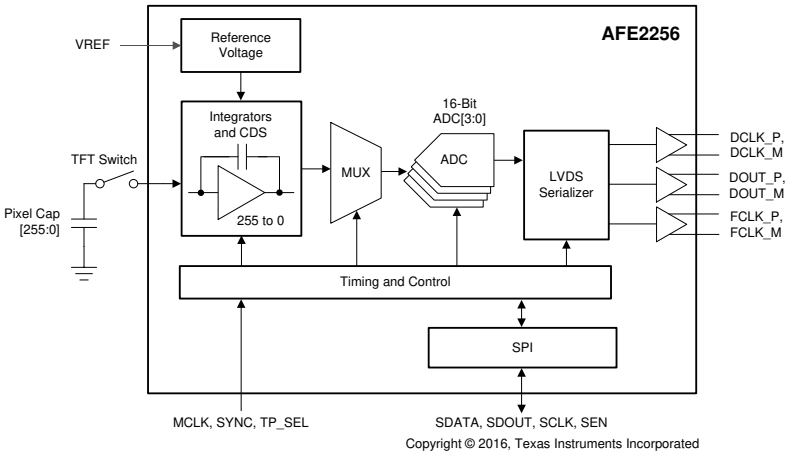
小睡和断电模式能够大幅降低功耗，在由电池供电的系统中极其实用。

申请完整数据表或其他设计资源：申请 AFE2256

封装信息

器件型号	封装(1)	封装尺寸(2)
AFE2256	TDU（COF，320）	38.00mm x 28.00mm
	TDR（COF，325）	48.35 mm × 21.5 mm
	TBN（COF，325）	48.35 mm × 21.5 mm

(1) 有关所有可用封装，请参阅节 6。
(2) 封装尺寸（长 × 宽）为标称值，并包括引脚（如适用）。



AFE2256 方框图

Table of Contents

4 Device and Documentation Support

4.1 Documentation Support

4.1.1 Related Documentation

For related documentation, see the following:

Texas Instruments, *TPS7A8300 2-μA, 6- μVRMS, RF, LDO Voltage Regulator* data sheet

4.2 Trademarks

所有商标均为其各自所有者的财产。

4.3 静电放电警告

静电放电 (ESD) 会损坏这个集成电路。德州仪器 (TI) 建议通过适当的预防措施处理所有集成电路。如果不遵守正确的处理和安装程序，可能会损坏集成电路。

ESD 的损坏小至导致微小的性能降级，大至整个器件故障。精密的集成电路可能更容易受到损坏，这是因为非常细微的参数更改都可能会导致器件与其发布的规格不相符。

4.4 术语表

TI 术语表　　本术语表列出并解释了术语、首字母缩略词和定义。

5 Revision History

注：以前版本的页码可能与当前版本的页码不同

Changes from Revision B (May 2016) to Revision C (December 2023)	Page
• 通篇添加了 *AFE2256TBN* 封装规格	1
• 为了清晰起见，更改了首页原理图	1

Changes from Revision A (July 2015) to Revision B (May 2016)	Page
• 添加了申请完整数据表的链接	1

Changes from Revision * (March 2015) to Revision A (July 2015)	Page
• 发布为量产	1

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 Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
AFE2256TBN	ACTIVE	COF	TBN	325	32	Non-RoHS & Non-Green	AU	N / A for Pkg Type	0 to 70	AFE2256TBN	Samples
AFE2256TDR	ACTIVE	COF	TDR	325	32	RoHS & Green	AU	Level-1-260C-UNLIM	0 to 85	AFE2256TDR	Samples
AFE2256TDU	ACTIVE	COF	TDU	320	35	RoHS & Green	AU	Level-1-260C-UNLIM	0 to 85	AFE2256TDU	Samples

(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) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".
RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.
Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

(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 finish/Ball material - Orderable Devices 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.

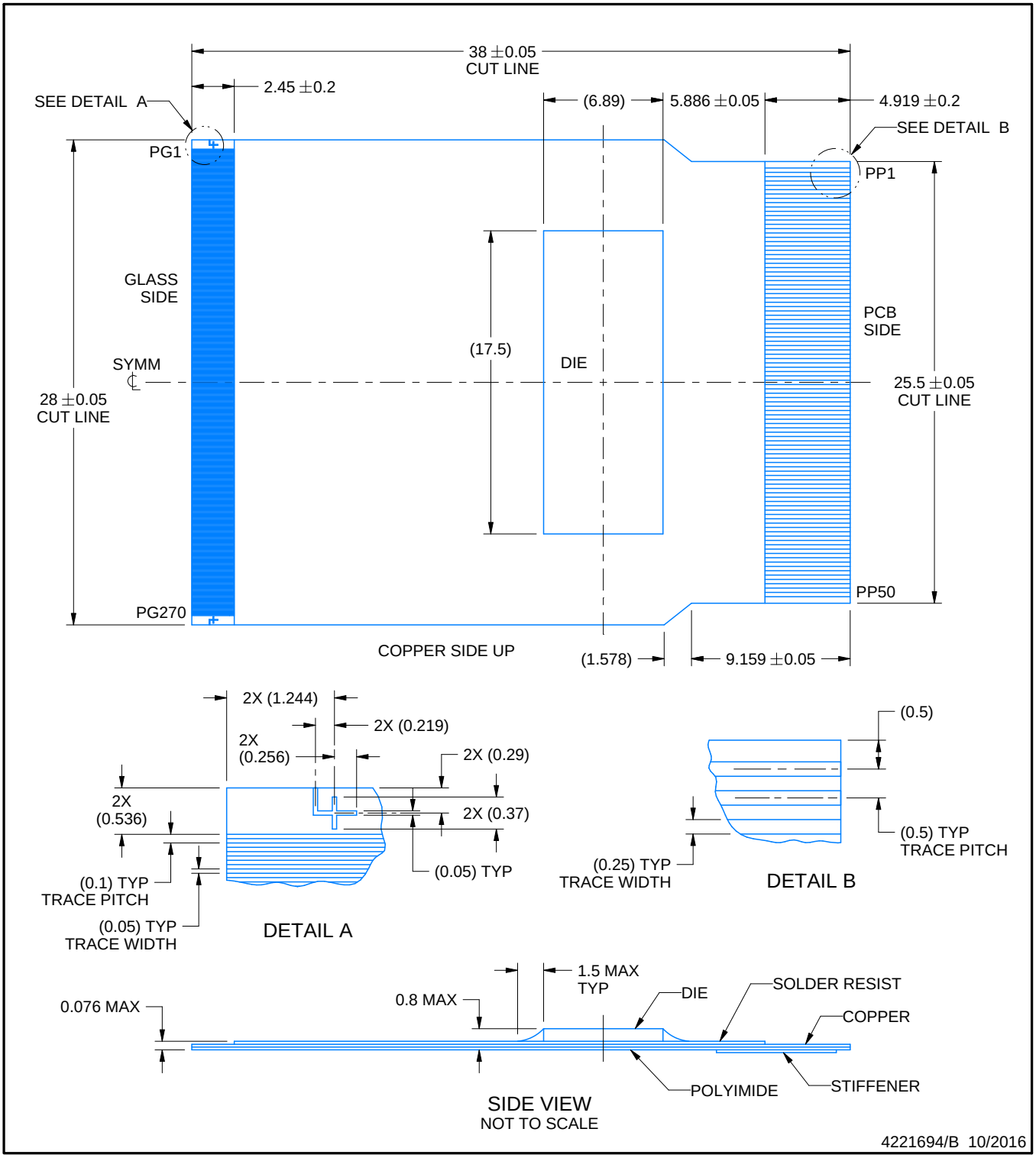
In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

PACKAGE OUTLINE

TDU0320A

COF - 0.8 mm max height

CHIP ON FLEX



NOTES:

1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. Flip chip application only.

重要声明和免责声明

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