

DDC2256A 256 通道、电流输入模数转换器

1 特性

- 单芯片解决方案，可同时直接测量 256 个低电平电流
- 用户可调的满量程范围
- 可调整速度，积分时间短至 58.8 μ s（每条通道 17KSPS），24 位分辨率
- 每条通道的功耗低至 1.7mW
- 积分线性度： $\pm 0.025\%$ ， ± 1 ppm FSR（所有通道均处于活动状态）
- 低噪声
- 24 位 ADC
- 同时采样且无电荷损失
- 板载温度传感器
- 封装内置旁路电容和基准缓冲器，可减小 PCB 面积并降低设计复杂度
- 串行 LVDS 和 CMOS 输出接口选项

2 应用

- CT 扫描仪数据采集系统
- 发光二极管传感器
- X 射线检测系统
- 光纤功耗监测
- 多通道电流/电压仪表

3 说明

DDC2256A 是一款 24 位、256 通道、电流输入模数 (A/D) 转换器。该器件将电流电压积分和 A/D 转换完美结合，能够直接将 256 个单独的低电平电流输出器件（例如二极管）接至其输入端，从而并行（同时）实施数字化。

对于全部路输入，DDC2256A 都分别提供了一个低噪声/低功耗积分器，专用于捕捉传感器中的全部电荷。积分时间可在 58.8 μ s 到 100ms 范围内调整，从而允许以出色的精度连续测量 fA 到 μ A 级别的电流。积分器的输出通过十六个 24 位低功耗 ADC 进行数字化，生成的所有数据通过单个 LVDS 串行接口对输出，该接口经设计可最大限度减少高通道数应用中的噪声耦合。

DDC2256A 由 ± 2.5 V 模拟电源、1.8V 模拟电源 (AVDD_18) 以及 1.8V 数字电源 (DVDD) 供电运行。该器件的运行温度范围为 0°C 至 70°C，并且采用 14mm x 16mm² 323 焊球 0.8mm 间距 BGA 封装。最后，板载基准缓冲器和旁路电容有助于最大程度降低外部组件需求，从而进一步减小电路板空间。

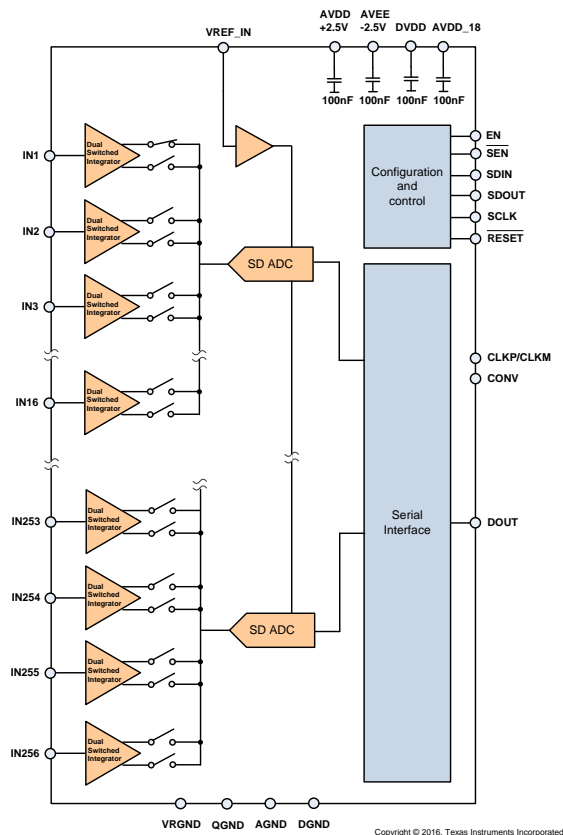
更多信息，请点击德州仪器 (TI) 网站上 DDC2256A 页面的链接。

器件信息 (1)

| 部件号 | 封装 | 封装尺寸 (标称值) |
|----------|-------------|-----------------|
| DDC2256A | NFBGA (323) | 16.0mm x 14.0mm |

(1) 要了解所有可用封装，请见数据表末尾的可订购产品附录。

方框图



4 修订历史记录

注：之前版本的页码可能与当前版本有所不同。

| Changes from Original (March 2016) to Revision A | Page |
|--|------|
| • 已从“产品预览”更改为“量产数据” | 1 |

5 器件和文档支持

5.1 文档支持

《1A 超低噪声负电压稳压器》，[SBVS169](#)

5.2 社区资源

The following links connect to TI community resources. Linked contents are provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's [Terms of Use](#).

TI E2E™ Online Community *TI's Engineer-to-Engineer (E2E) Community*. Created to foster collaboration among engineers. At [e2e.ti.com](#), you can ask questions, share knowledge, explore ideas and help solve problems with fellow engineers.

Design Support *TI's Design Support* Quickly find helpful E2E forums along with design support tools and contact information for technical support.

5.3 商标

E2E is a trademark of Texas Instruments.

5.4 静电放电警告



这些装置包含有限的内置 ESD 保护。存储或装卸时，应将导线一起截短或将装置放置于导电泡棉中，以防止 MOS 门极遭受静电损伤。

5.5 Glossary

[SLYZ022](#) — *TI Glossary*.

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

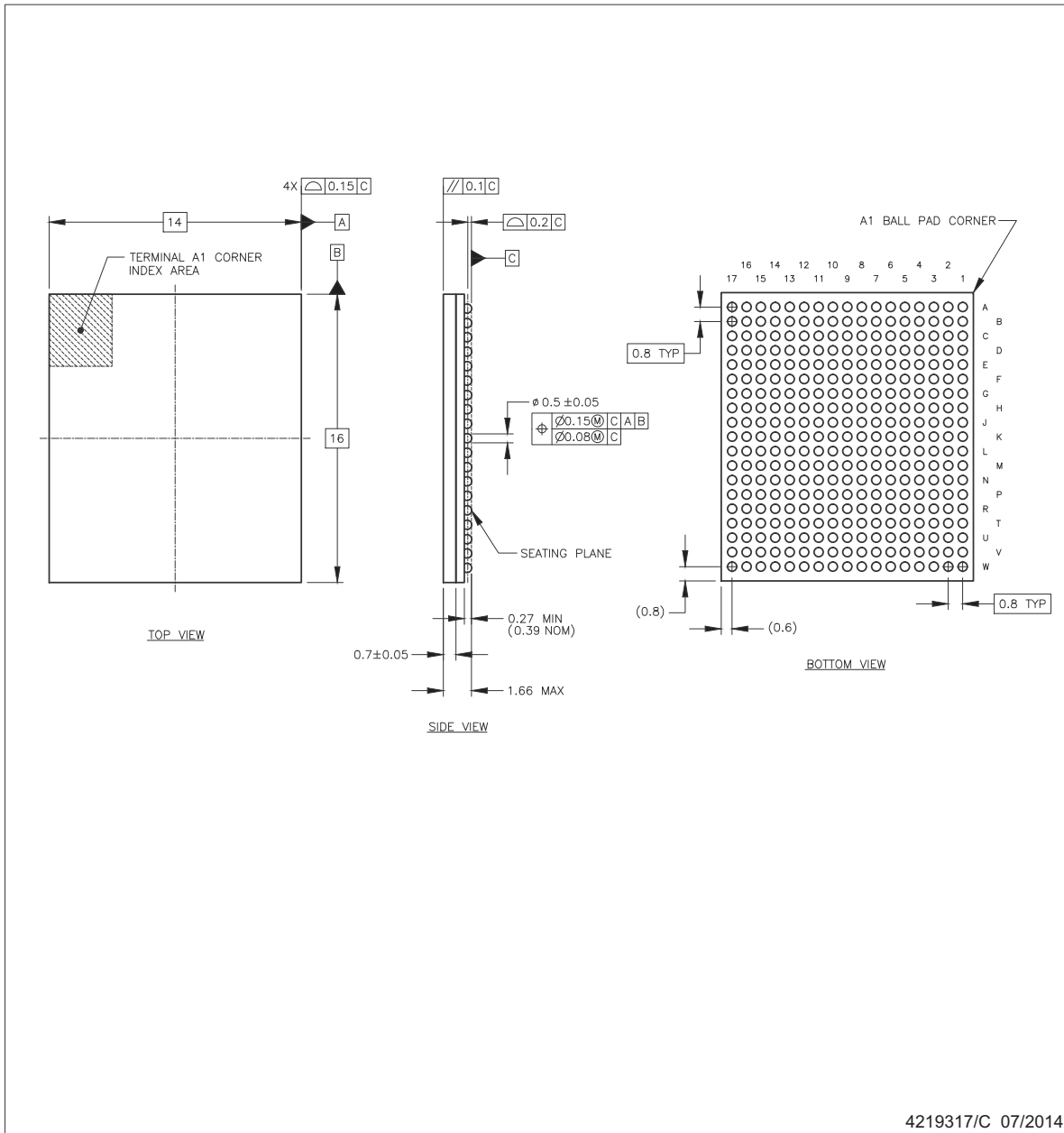
6 机械、封装和可订购信息

以下页中包括机械、封装和可订购信息。这些信息是针对指定器件可提供的最新数据。这些数据会在无通知且不对本文档进行修订的情况下发生改变。欲获得该数据表的浏览器版本，请查阅左侧的导航栏。

ZZF0323A

PACKAGE OUTLINE
NFBGA - 1.66 mm max height

BGA



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.

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) |
|-----------------------------|---------------|----------------------|-------------------|-----------------------|-------------|--------------------------------------|-----------------------------------|--------------|---------------------|
| DDC2256AZZF | Active | Production | NFBGA (ZZF) 323 | 84 JEDEC TRAY (5+1) | Yes | Call TI Snagcu | Level-3-260C-168 HR | 0 to 70 | DDC2256A |
| DDC2256AZZF.Z | Active | Production | NFBGA (ZZF) 323 | 84 JEDEC TRAY (5+1) | Yes | Call TI | Level-3-260C-168 HR | 0 to 70 | DDC2256A |

(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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