

DLPC3434 显示控制器

1 特性

- DLP230KP (0.23 HD) DMD 显示控制器
 - 支持高达 720p 的输入分辨率
 - 支持接口训练的低功耗 DMD 接口
- 输入帧速率高达 120Hz (720p 分辨率时为 60Hz)
- 24 位输入像素接口, 包括:
 - 并行接口协议
 - 高达 150MHz 的像素时钟
 - 多个输入像素数据格式选项
- 像素数据处理包括:
 - IntelliBright™ 图像处理算法套件
 - 内容自适应照明控制
 - 局部亮度增强
 - 色彩坐标调整
 - 主动电源管理处理
- 支持外部闪存
- 嵌入式帧存储器 (eDRAM)
- 系统特性包括:
 - 器件配置的 I²C 控制
 - 可编程 LED 电流控制
 - 一帧延迟

2 应用

- 智能手机、平板电脑、笔记本电脑
- 电池供电的移动式附件
- 可穿戴 (近眼) 显示屏
- 智能家用能源显示设备
- 智能扬声器

3 说明

DLPC3434 数字控制器是 DLP230KP (0.23 720p) 芯片组的组件, 可为 DLP230KP 数字微镜器件 (DMD) 的可靠运行提供支持。DLP230KP 芯片组可用于各种小尺寸、低功耗和高分辨率高清显示。

请访问 [TI DLP® Pico™ 显示技术入门页](#), 了解有关 DLP230KP 芯片组的更多信息。

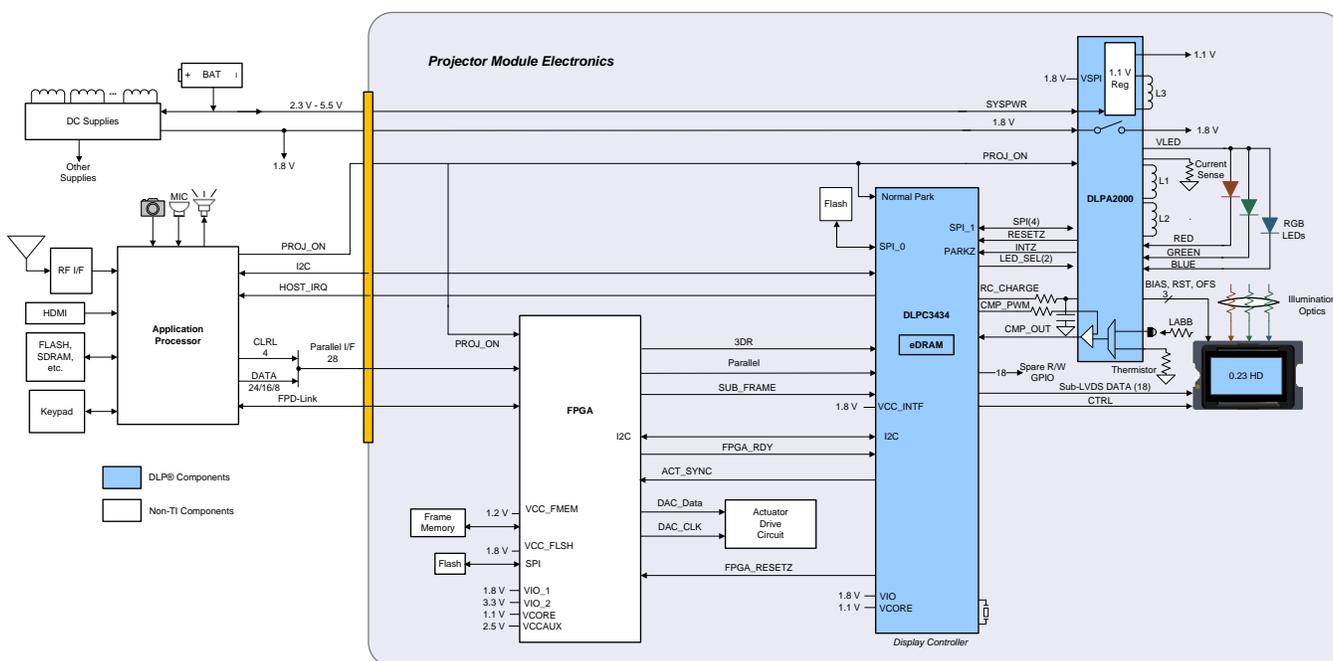
DLP230KP 芯片组包含现成的资源, 可帮助用户加快设计周期。这些资源包括可直接用于生产环境的光学模块、光学模块制造商和设计公司。

器件信息(1)

器件型号	封装	封装尺寸 (标称值)
DLPC3434	NFBGA (176)	7.00mm x 7.00mm

(1) 如需了解所有可用封装, 请参阅数据表末尾的可订购产品附录。

简化应用



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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 (July 2018) to Revision A	Page
• 已更改 文档状态从 预告信息 改为 生产数据	1

5 器件和文档支持

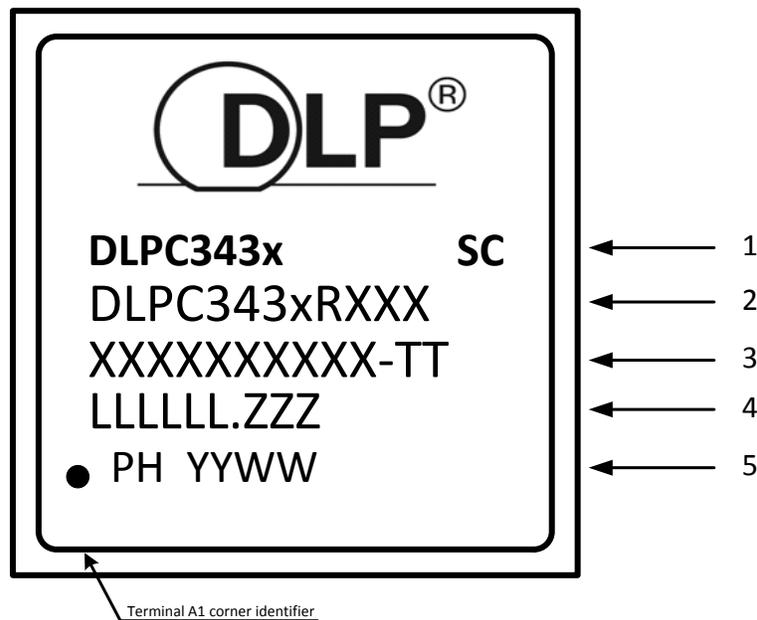
5.1 器件支持

5.1.1 第三方产品免责声明

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5.1.2 器件命名规则

5.1.2.1 器件标记



标记定义：

- 第 1 行： DLP® 器件名称：DLPC343x，对于本器件 **x** 为“4”。
 SC：焊锡球成分
 e1：表示含 SnAgCu 的无铅焊锡球
 G8：表示含 SnAgCu 的无铅焊锡球，其中银含量小于等于 1.5%，模压混合物满足德州仪器 (TI) 的绿色定义。
- 第 2 行： TI 器件编号
 DLP® 器件名称：DLPC343x，对于本器件 **x** 为“4”。
R 对应于 TI 器件版本字母，例如 A、B 或 C
XXX 对应于器件封装标识符。
- 第 3 行： XXXXXXXXXXXX-TT 制造部件号
- 第 4 行： LLLLLL.ZZZ 半导体晶圆的铸造批次代码
 LLLLLL：生产批次代码
 ZZZ：分批编号
- 第 5 行： PH YYWW ES：封装组件信息
 PH：制造工厂
 YYWW：日期代码（YY = 年 :: WW = 周）

器件支持 (接下页)

注

1. 工程原型样品则在 TI 部件号之后加 X 后缀表示。例如：2512737-0001X。

5.1.3 视频时序参数定义

每帧有效扫描行数 (ALPF) 定义一帧中包含可显示数据的行数：ALPF 是每帧总行数 (TLPF) 的子集。

每行有效像素 (APPL) 定义包含可显示数据的一行中的像素时钟数：APPL 是每行总像素 (TPPL) 的子集。

水平后沿 (HBP) 消隐 水平同步之后，第一个有效像素之前的消隐像素时钟数量。注意：HBP 时间参考各自同步信号的前缘（有效）边沿。

水平前沿 (HFP) 消隐 最后一个有效时钟之后，水平同步之前的消隐像素时钟的数量。

水平同步 (HS) 定义水平间隔（行）开始的时序基准点。绝对基准点由 HS 信号的有效边沿定义。有效边沿（源定义的上升沿或下降沿）是测量所有水平消隐参数的基准。

每帧总行数 (TLPF) 以行数定义垂直扫描时间（帧时间）：TLPF = 每帧总行数（有效和无效行）。

每行总像素 (TPPL) 以像素时钟数定义水平扫描时间：TPPL = 每行总像素时钟数（有效和无效像素时钟）

垂直同步 (VS) 定义垂直间隔（帧）开始的时序基准点。这个绝对基准点由 VS 信号的有效边沿定义。有效边沿（源定义的上升沿或下降沿）是测量所有垂直消隐参数的基准。

垂直后沿 (VBP) 消隐 垂直同步的前沿之后，第一个有效行之前的消隐行的数量。

垂直前沿 (VFP) 消隐 最后一个有效行之后，垂直同步的前沿之前的消隐行的数量。

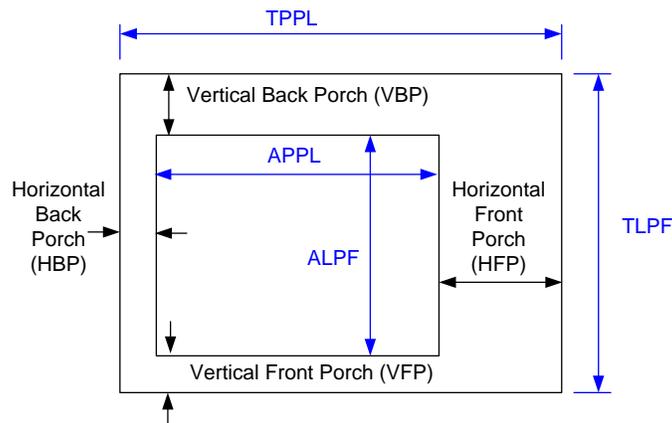


图 1. 时序参数图

5.2 相关链接

下表列出了快速访问链接。类别包括技术文档、支持与社区资源、工具和软件，以及申请样片或购买产品的快速链接。

表 1. 相关链接

器件	产品文件夹	样片与购买	技术文档	工具与软件	支持和社区
DLPC3434	请单击此处				
DLP230KP	请单击此处				
DLPA3000	请单击此处				

5.3 社区资源

下列链接提供到 TI 社区资源的连接。链接的内容由各个分销商“按照原样”提供。这些内容并不构成 TI 技术规范，并且不一定反映 TI 的观点；请参阅 TI 的《使用条款》。

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设计支持 *TI 参考设计支持* 可帮助您快速查找有帮助的 E2E 论坛、设计支持工具以及技术支持的联系信息。

5.4 商标

IntelliBright, E2E are trademarks of Texas Instruments.
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5.5 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。

5.6 术语表

SLYZ022 — *TI 术语表*。

这份术语表列出并解释术语、缩写和定义。

6 机械、封装和可订购信息

以下页面包含机械、封装和可订购信息。这些信息是指定器件的最新可用数据。数据如有变更，恕不另行通知，且不会对此文档进行修订。如需获取此数据表的浏览器版本，请查阅左侧的导航栏。

6.1 Package Option Addendum

6.1.1 Packaging Information

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾	Op Temp (°C)	Device Marking ⁽⁴⁾⁽⁵⁾
DLPC3434CZEZ	ACTIVE	NFBGA	ZEZ	201	160	TBD	Call TI	Level-3-260C-168 HRS	-30 to 85°C	

- (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.
PRE_PROD Unannounced device, not in production, not available for mass market, nor on the web, samples not available.
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 on 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.

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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)
DLPC3434CZVB	Active	Production	NFBGA (ZVB) 176	260 JEDEC TRAY (5+1)	Yes	SNAGCU	Level-3-260C-168Hrs	-30 to 85	(DLPC3434, DLPC3434 G8, DLPC3434 G8) DLPC3434CZVB P292547C-5G
DLPC3434CZVB.B	Active	Production	NFBGA (ZVB) 176	260 JEDEC TRAY (5+1)	Yes	SNAGCU	Level-3-260C-168Hrs	-30 to 85	(DLPC3434, DLPC3434 G8, DLPC3434 G8) DLPC3434CZVB P292547C-5G

(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.

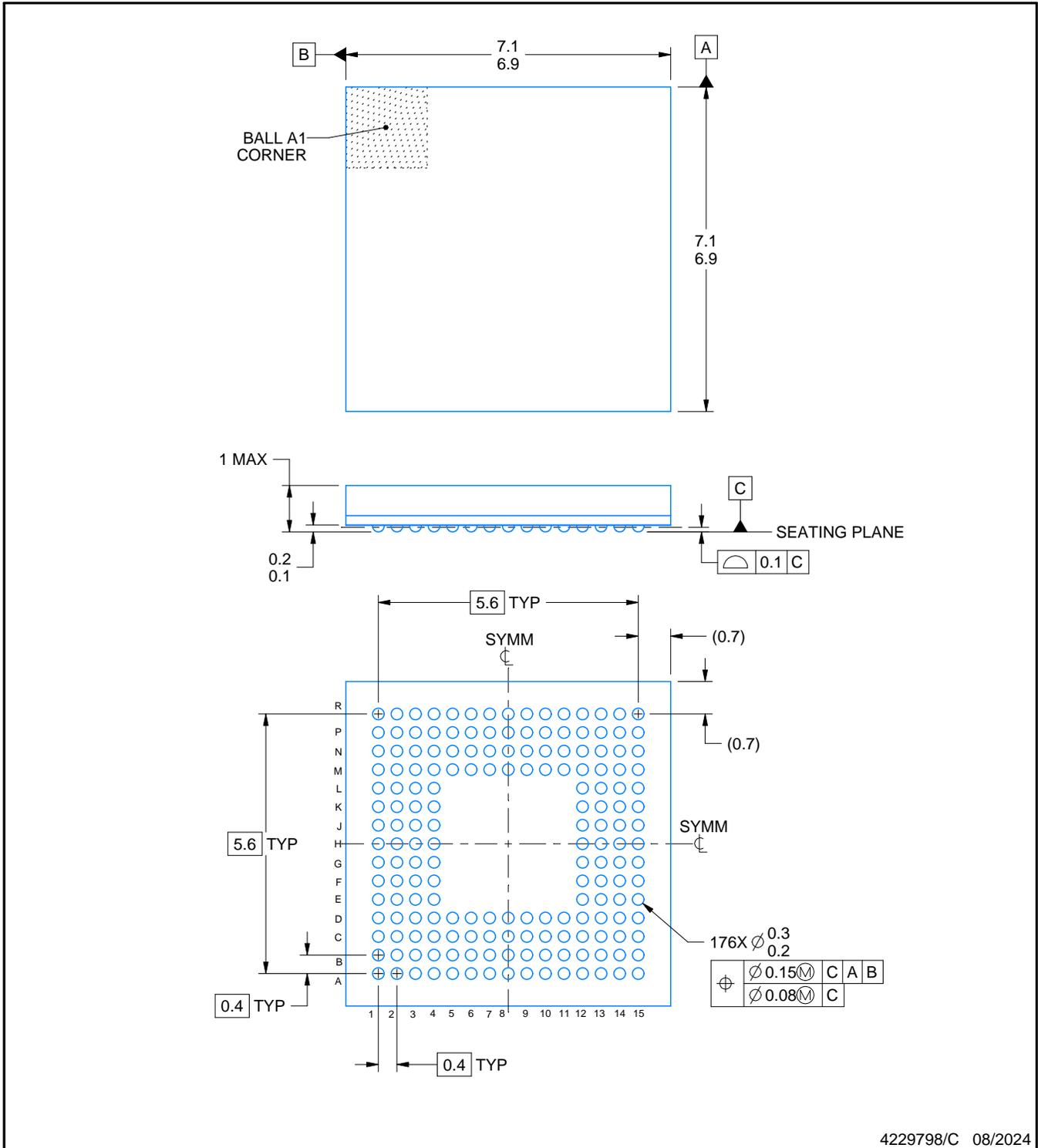
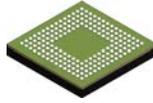
(5) **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will 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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NOTES:

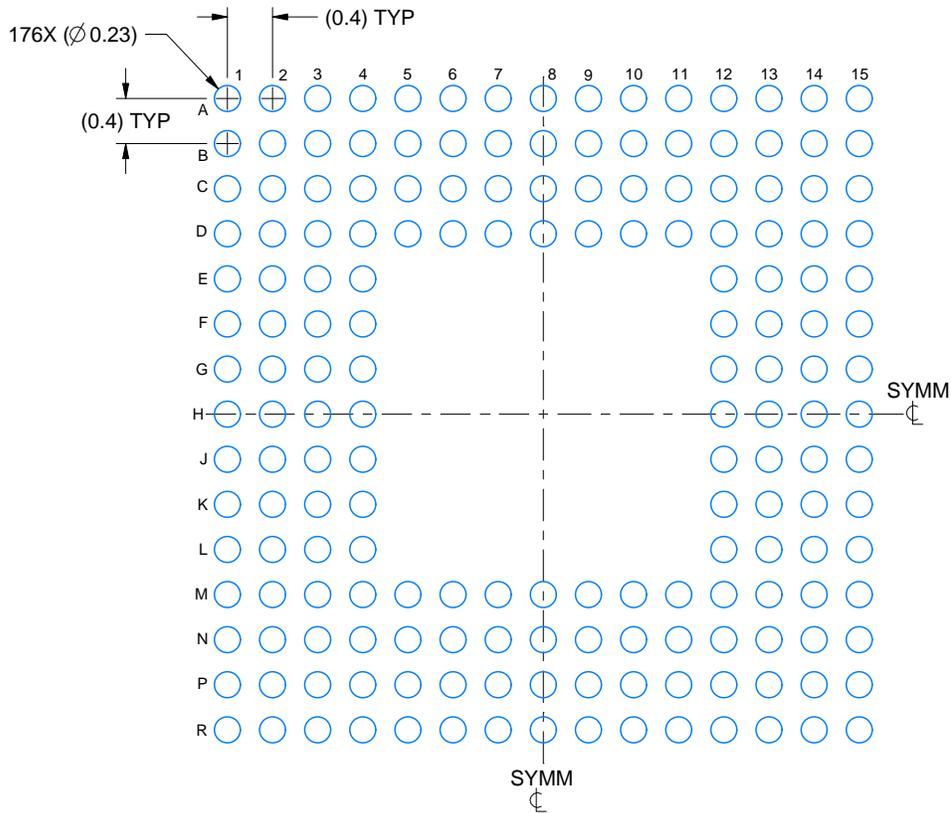
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.

EXAMPLE BOARD LAYOUT

ZVB0176A

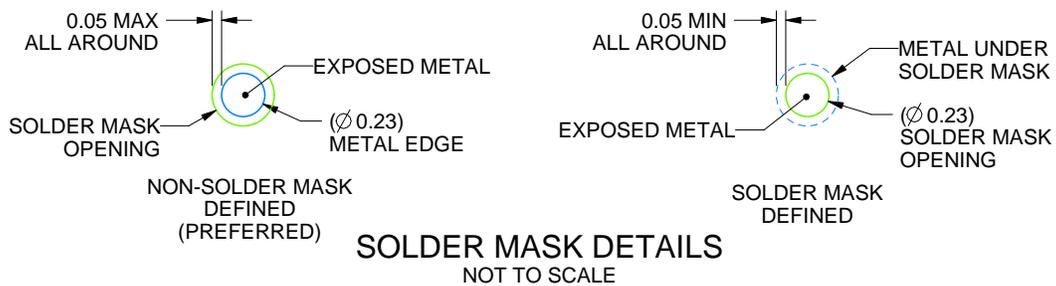
NFBGA - 1 mm max height

PLASTIC BALL GRID ARRAY



LAND PATTERN EXAMPLE

EXPOSED METAL SHOWN
SCALE: 15X



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NOTES: (continued)

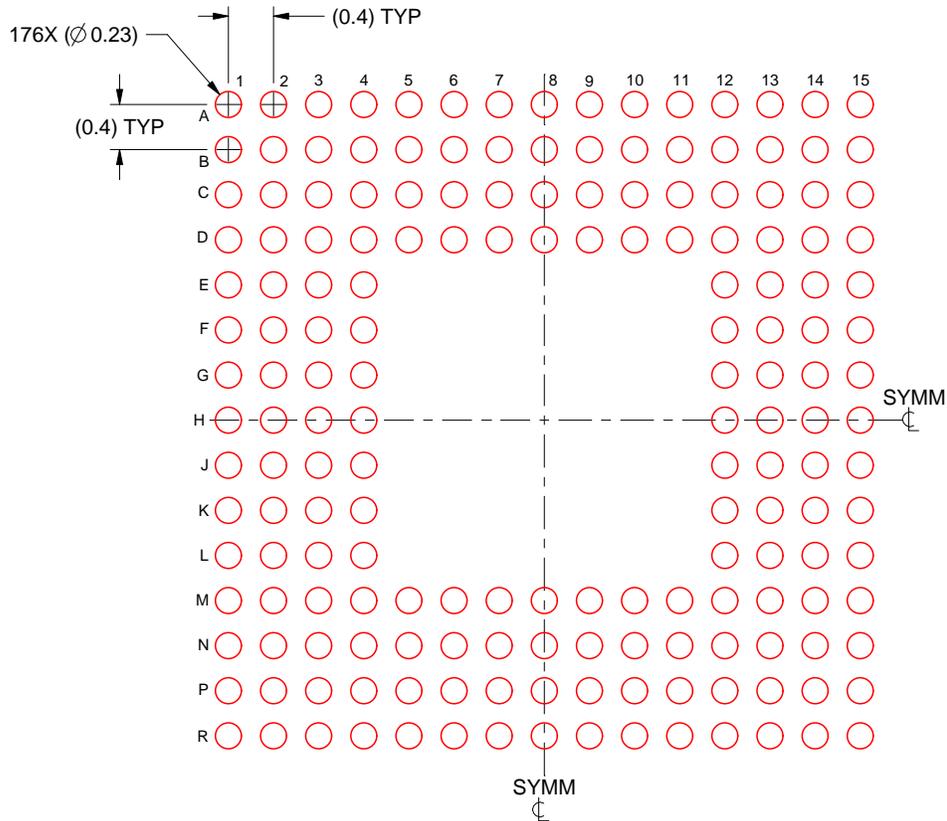
- Final dimensions may vary due to manufacturing tolerance considerations and also routing constraints. For information, see Texas Instruments literature number SPRAA99 (www.ti.com/lit/spraa99).

EXAMPLE STENCIL DESIGN

ZVB0176A

NFBGA - 1 mm max height

PLASTIC BALL GRID ARRAY



SOLDER PASTE EXAMPLE
BASED ON 0.1 mm THICK STENCIL
SCALE: 15X

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NOTES: (continued)

4. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release.

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