DS250DF810 25Gbps 多速率 8 通道重定时器

1 特性

- 具有集成信号调节功能的八通道多速率重定时器
- 所有通道均可独立锁定至 20.6Gbps 至 25.8Gbps（包括 10.3125Gbps、12.5Gbps 等子速率）
- 超低延迟：25.78125Gbps 数据速率下的典型延迟 < 500ps
- 单电源，无需低抖动基准时钟，集成了交流耦合电容以降低电路板布线复杂程度并节省物料清单 (BOM) 成本
- 集成 2×2 交叉点
- 自适应性连续时间线性均衡器 (CTLE)
- 自适应判决反馈均衡器 (DFE)
- 带有 3 抽头有限冲激响应 (FIR) 滤波器的低抖动发射器
- 组合式均衡，在 12.9GHz 频率下支持 35dB 以上的通道损耗
- 可调节发送幅值：205 mVppd 至 1225 mVppd（典型值）
- 片上眼图监视器 (EOM)，伪随机二进制序列 (PRBS) 模式校验器/发生器
- 小型 8mm x 13mm 小型球状引脚栅格阵列 (BGA) 封装，可轻松实现直通布线
- 独特的引脚分配支持在封装下对高速信号进行路由
- 提供引脚兼容的中继器

2 应用

- 背板/中板长度延长
- 针对前端口光学模块的抖动消除
- IEEE802.3bj 100GbE、无线带宽增强型数据速率 (EDR) 以及 OIF-CEI-25G-LR/MR/SR/VSR 电气接口
- SFP28、QSFP28、CFP2/CFP4、CDFP

3 描述

DS250DF810 是一款具有集成信号调节功能的八通道多速率重定时器。该器件用于扩展有损且存在串扰的远距离高速串行链路的延伸长度并提升稳定性，同时实现不高于 10^{-15} 的比特误码率 (BER)。

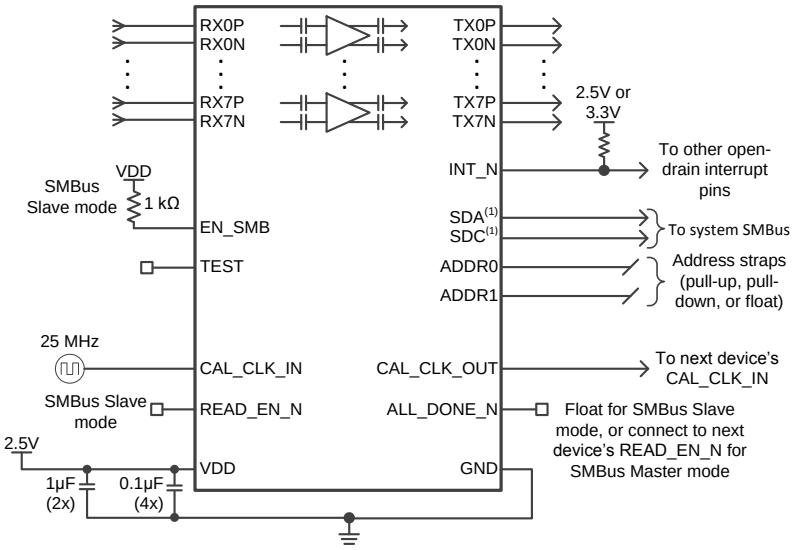
DS250DF810 各通道的串行数据速率均可独立锁定在 20.6Gbps 至 25.8Gbps 的连续范围内或者支持的任意子速率（速率的一半和四分之一），包括 10.3125Gbps 和 12.5Gbps 等关键数据速率，从而允许 DS280BR810 进行独立通道前向纠错 (FEC)。

器件信息(1)

器件型号	封装	封装尺寸（标称值）
DS250DF810	135 引脚 FCBGA (135)	8.0mm x 13.0mm

(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。

4 简化电路原理图



(1) SMBus signals need to be pulled up elsewhere in the system.

目录

5 修订历史记录

Changes from Original (September 2015) to Revision A **Page**

- 产品预览至量产数据版本 ... 1

6 说明 （续）

印刷电路板 (PCB) 上集成了物理交流耦合电容（TX 与 RX），无需使用外部电容。DS250DF810 具备一个单电源，能够最大限度地减少外部组件的数量。这些 功能 可降低 PCB 布线的复杂程度并节省 BOM 成本。

DS250DF810 的高级均衡 特性 包括：一个低抖动 3 抽头发送有限冲激响应 (FIR) 滤波器、一个自适应连续时间线性均衡器 (CTLE) 以及一个自适应判决反馈均衡器 (DFE)。支持针对具有多个连接器且存在串扰的有损互连和背板进行扩展。集成的时钟和数据恢复 (CDR) 功能可重置抖动预算并对高速串行数据进行重定时， 非常适用于前端口光学模块 应用。DS250DF810 对每个通道对采用 2x2 交叉点，可为主机同时提供通道交叉和扇出选项。

DS250DF810 可通过 SMBus 或外部 EEPROM 进行配置。单个 EEPROM 最多可由 16 个器件共享。非破坏性片上眼图监视器和 PRBS 发生器/校验器为系统内诊断提供支持。

7 器件和文档支持

7.1 器件支持

7.1.1 开发支持

更多相关信息，请参见 TI 表面贴装技术 (SMT) 参考资料（位于

http://focus.ti.com/quality/docs 页面的“质量和无铅 (Pb) 数据”菜单下）。

7.2 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.

7.3 商标

E2E is a trademark of Texas Instruments.

7.4 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。

7.5 Glossary

SLYZ022 — *TI Glossary*.

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

8 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。

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
DS250DF810ABVR	ACTIVE	FCCSP	ABV	135	1000	RoHS & Green	SNAGCU	Level-3-260C-168 HR	-10 to 85	DS250DF8	Samples
DS250DF810ABVT	ACTIVE	FCCSP	ABV	135	250	RoHS & Green	SNAGCU	Level-3-260C-168 HR	-10 to 85	DS250DF8	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.

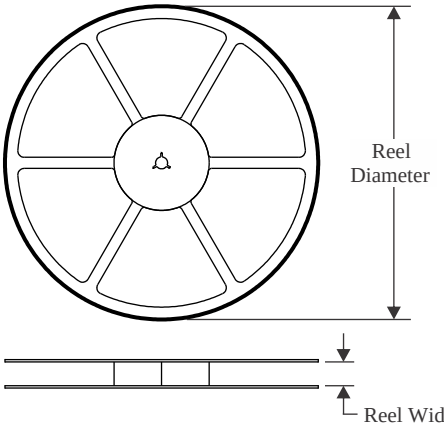
(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(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.

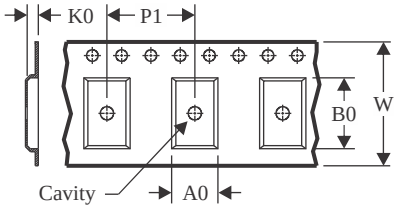
(6) Lead finish/Ball material - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

TAPE AND REEL INFORMATION

REEL DIMENSIONS

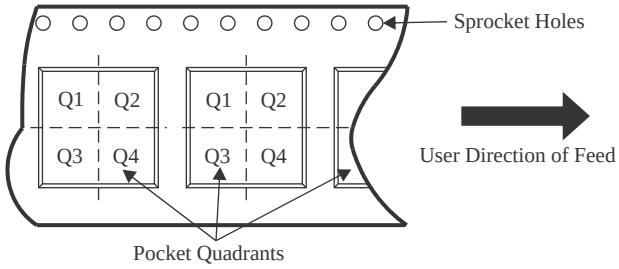


TAPE DIMENSIONS



A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

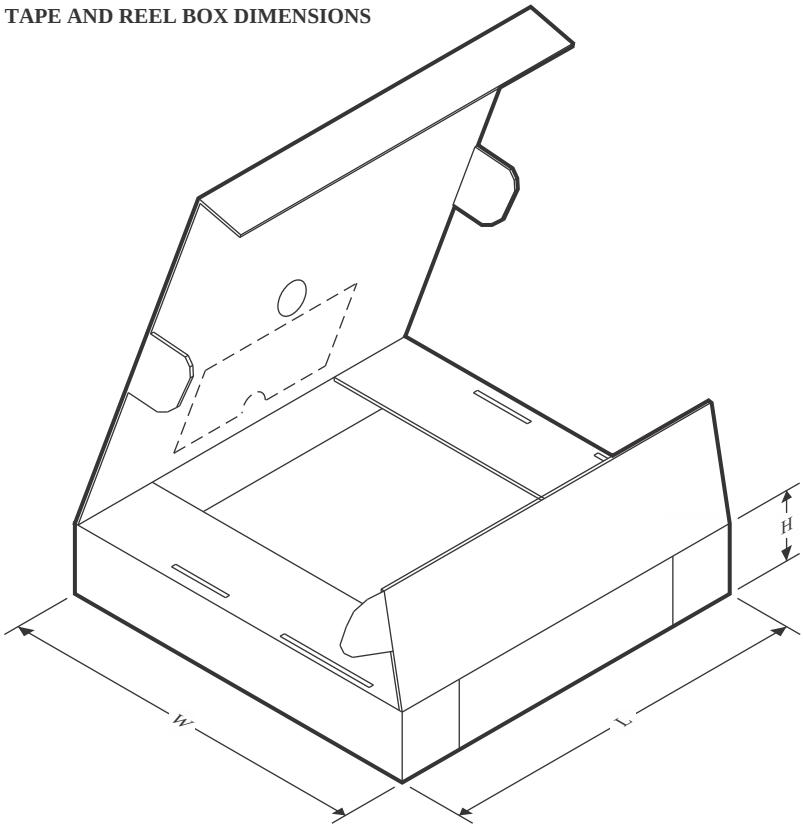
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
DS250DF810ABVR	FCCSP	ABV	135	1000	330.0	24.4	8.4	13.4	3.0	12.0	24.0	Q2
DS250DF810ABVT	FCCSP	ABV	135	250	178.0	24.4	8.4	13.4	3.0	12.0	24.0	Q2

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

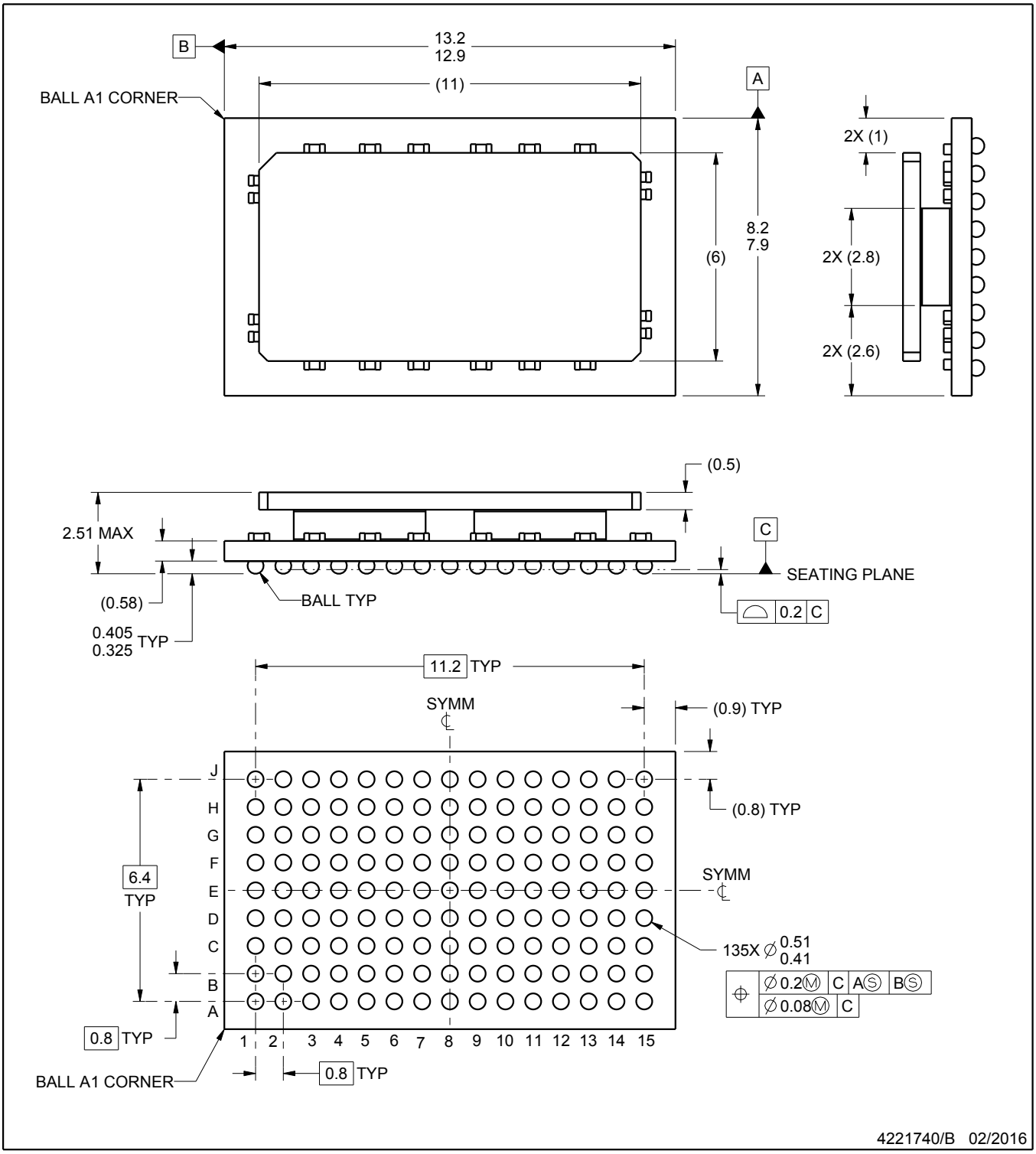
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
DS250DF810ABVR	FCCSP	ABV	135	1000	356.0	356.0	45.0
DS250DF810ABVT	FCCSP	ABV	135	250	213.0	191.0	55.0

PACKAGE OUTLINE

ABV0135A

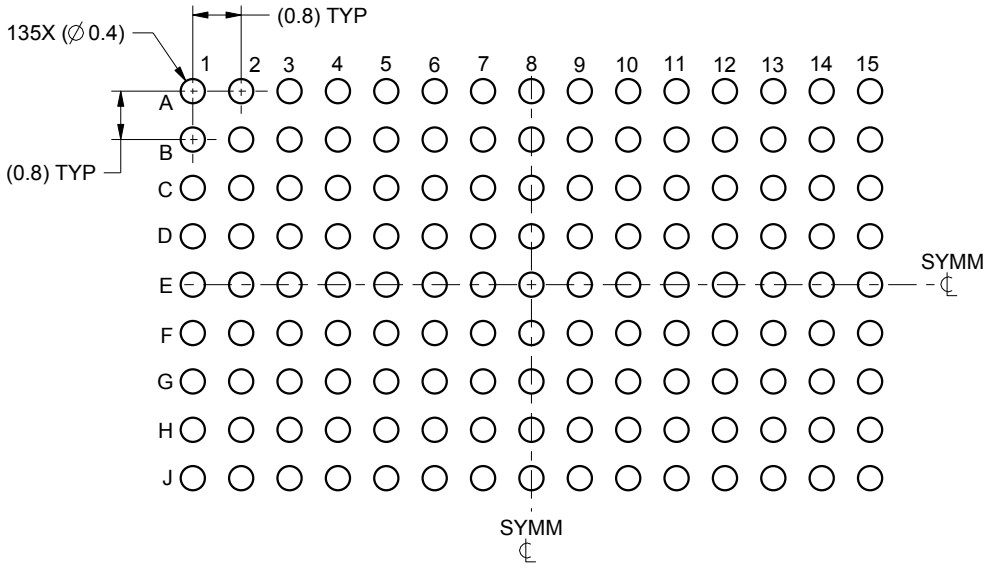
FCBGA - 2.51 mm max height

BALL GRID ARRAY

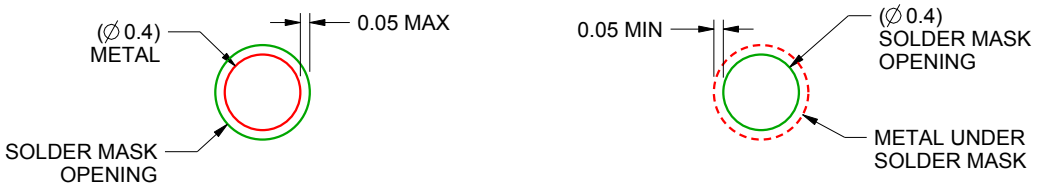


NOTES:

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.



LAND PATTERN EXAMPLE
SCALE:8X



NON-SOLDER MASK
DEFINED
(PREFERRED)

SOLDER MASK
DEFINED

SOLDER MASK DETAILS
NOT TO SCALE

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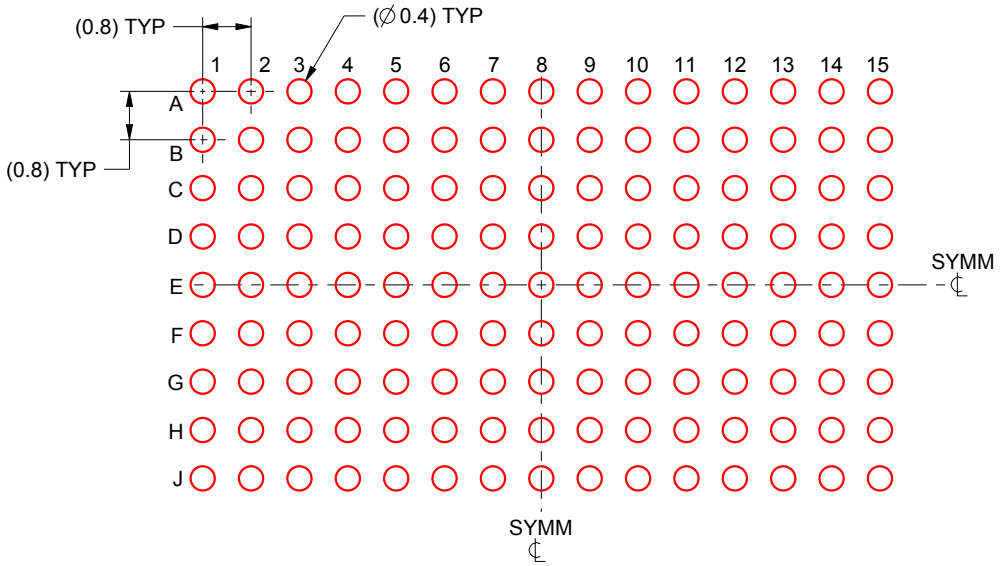
NOTES: (continued)

3. Final dimensions may vary due to manufacturing tolerance considerations and also routing constraints.
For information, see Texas Instruments literature number SPRU811 (www.ti.com/lit/spru811).



SOLDER PASTE EXAMPLE
BASED ON 0.15 mm THICK STENCIL
SCALE:8X

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NOTES: (continued)

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

重要声明和免责声明

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