CC330x SimpleLink™ Wi-Fi 6 和低功耗 Bluetooth® 配套 IC

1 特性

关键特性

- Wi-Fi 6 (802.11ax)
- CC33x1 器件中的低功耗蓝牙 5.3
- 能够运行 TCP/IP 堆栈的任何处理器或 MCU 主机的配套 IC
- 集成 2.4GHz PA，适用于输出功率高达 +20dBm 的完整无线解决方案。
- 工作温度：-40°C 至 +105°C
- 应用吞吐量高达 50Mbps

扩展特性

- Wi-Fi 6
  - 2.4GHz、20MHz、单空间流
  - 支持 IEEE 802.11 b/g/n/ax 的 MAC、基带和射频收发器
  - 目标唤醒时间 (TWT)、OFDMA、MU-MIMO（下行链路）、基本服务集着色和触发帧，可提高效率
  - 基于硬件的加密和解密，支持 WPA2 和 WPA3
  - 出色的互操作性
  - 支持 4 位 SDIO 或 SPI 主机接口
- 低功耗蓝牙 5.3
  - LE 编码 PHY（远距离）、LE 2M PHY（高速）和广播扩展
  - 主机控制器接口 (HCI) 传输，具有 UART 或共享 SDIO 的选项
- 增强的安全性
  - 安全主机接口
  - 固件身份验证
  - 防回滚保护
- 多角色支持（例如，并发 STA 和 AP），可连接不同射频通道（Wi-Fi 网络）上的 Wi-Fi 设备
- 可选天线分集或选择
- 3 线或 1 线 PTA，用于与额外 2.4GHz 无线电（例如 Thread 或 Zigbee）在外部共存
- 电源管理
  - V_{MAIN}、V_{IO}、V_{pp}：1.8V
  - V_{PA}：3.0 V 至 4.2 V
- 时钟源
  - 40MHz XTAL 快速时钟
  - 内部 LFOSC 或外部 32.768kHz 慢速时钟
- 小封装尺寸
  - 易于设计，采用 40 引脚 5mm x 5mm 四方扁平无引线 (QFN) 封装，间距为 0.4mm

2 应用

- 电网基础设施
  - 电量计
  - 串式逆变器
  - 微型逆变器
  - 能量存储电源转换系统 (PCS)
  - 电动汽车充电基础设施
- 楼宇和家居自动化
  - HVAC 控制器
  - HVAC 网关
  - 恒温器
  - 楼宇安全网关
  - 车库门系统
  - IP 网络摄像头/可视门铃
  - 无线安防摄像头
- 电器
  - 冰箱和冷冻柜
  - 烤箱
  - 洗衣机和烘干机
  - 住宅热水器和供暖系统
  - 空气净化器和加湿器
  - 咖啡机
  - 空调室内机
  - 扫地机器人
  - 割草机器人
- 医疗
  - 输液泵
  - 电子病床和床控制器
  - 多参数患者监护仪
  - 血压监护仪
  - CPAP 呼吸机
  - 远程保健系统
  - 超声波扫描仪
  - 超声波智能探头
  - 电动牙刷
- 零售自动化和支付
- 打印机

ADVANCE INFORMATION

ADVANCE INFORMATION

3 说明

SimpleLink™ Wi-Fi CC33xx 系列器件兼具经济性和可靠性，可支持工程师放心地连接更多应用。CC33xx 是单芯片 Wi-Fi 6 和低功耗蓝牙 5.3 器件。CC3300 和 CC3301 是此引脚对引脚兼容系列中的首批器件。

- CC3300：2.4GHz Wi-Fi 6 配套 IC。
- CC3301：2.4GHz Wi-Fi 6 和低功耗蓝牙 5.3 配套 IC。

CC330x 提供 Wi-Fi 和 BLE 的最新标准，同时与 Wi-Fi 4 (802.11 b/g/n) 和 Wi-Fi 5 (802.11ac) 保持兼容。这些 CC330x 器件是德州仪器 (TI) 的第 10 代连接组合芯片。因此，CC330x 基于成熟的技术设计而成。这些器件非常适合用在通过 Linux 或 RTOS 主机运行 TCP/IP 的成本敏感型嵌入式应用中，CC330x 为物联网 (IoT) 的嵌入式设备应用带来了 Wi-Fi 6 的效率，并具有较小的 PCB 尺寸和高度优化的物料清单。

器件信息

器件型号	Wi-Fi 2.4GHz SISO	蓝牙低耗能
CC3300ENJARSBR	✓	
CC3301ENJARSBR	✓	✓

4 系统图

图 4-1 显示了 CC3301 的基本系统图。

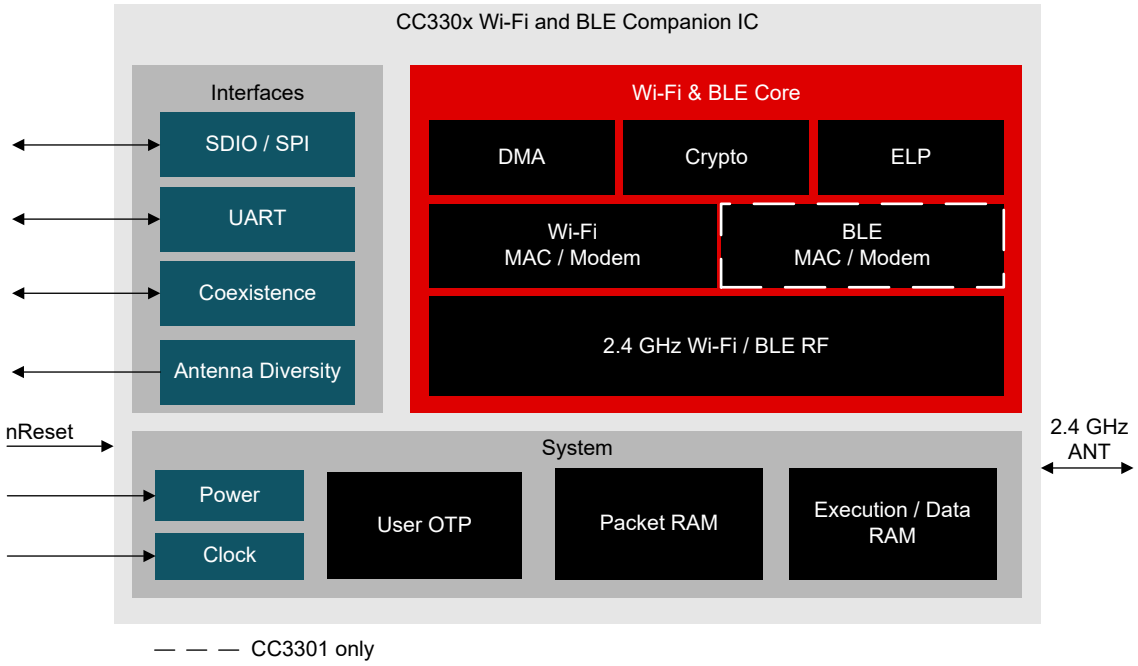


图 4-1. CC3301 系统简图

ADVANCE INFORMATION

Table of Contents

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 March 16, 2023 to April 24, 2023 (from Revision * (*) to Revision A (April 2023))	Page
• 更新了特性列表。更新了整个文档中的表格、图和交叉参考的编号格式。	1
• 更新了系统图。	3

ADVANCE INFORMATION

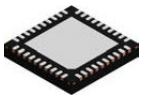
6 Mechanical, Packaging, and Orderable Information

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.

ADVANCE INFORMATION

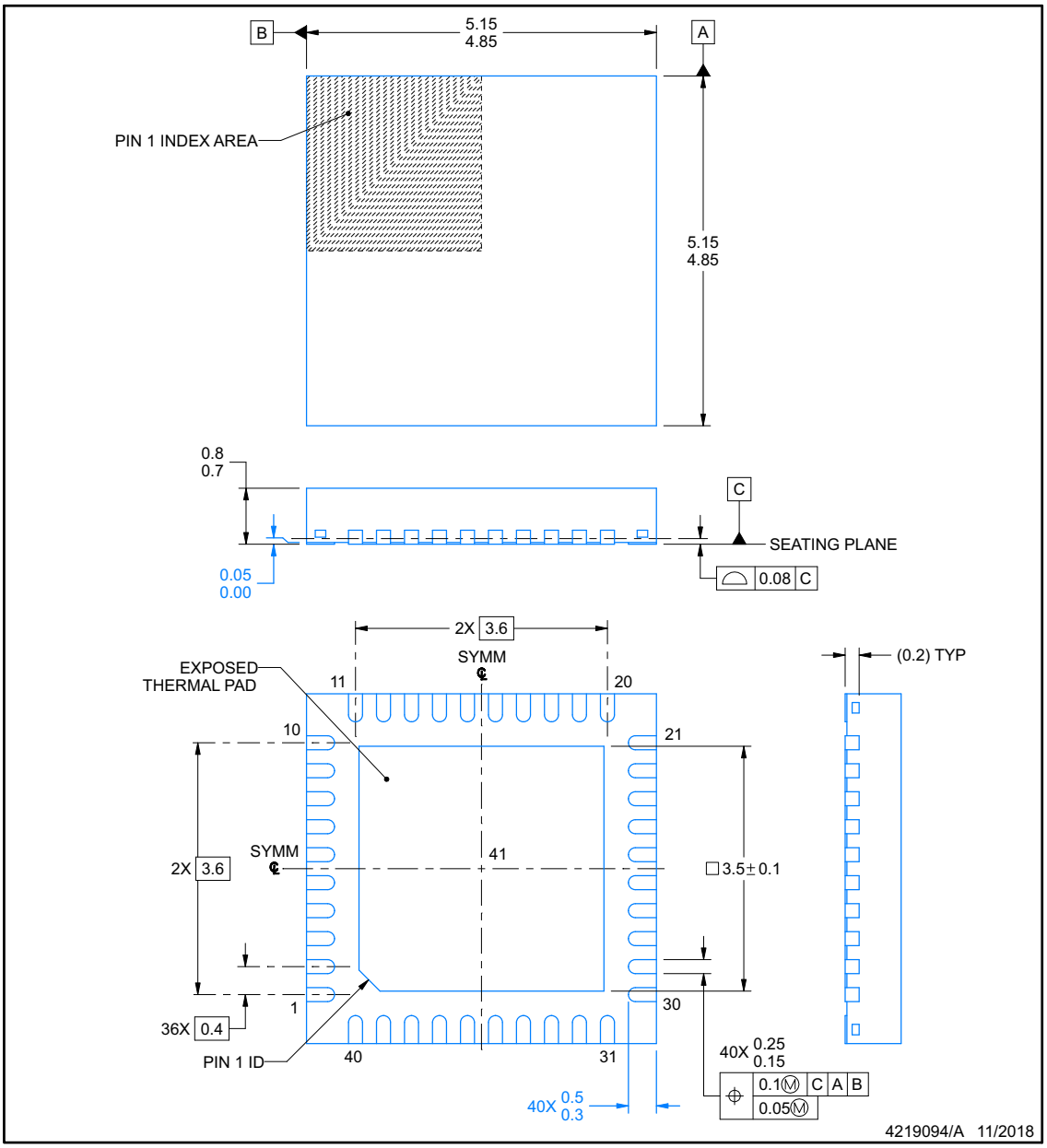
PACKAGE OUTLINE

RSB0040B



WQFN - 0.8 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



NOTES:

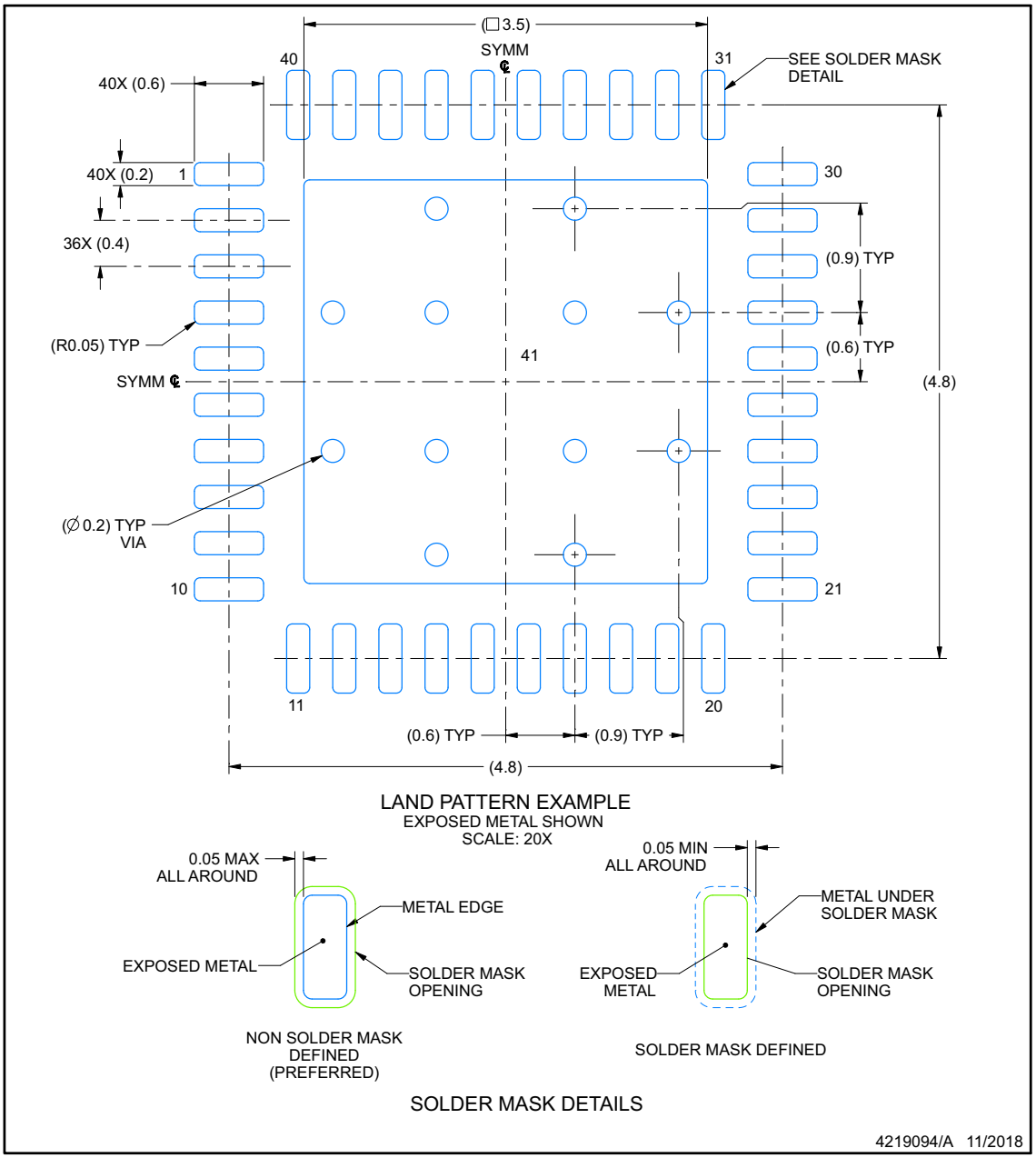
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. The package thermal pad must be soldered to the printed circuit board for thermal and mechanical performance.

EXAMPLE BOARD LAYOUT

RSB0040B

WQFN - 0.8 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



NOTES: (continued)

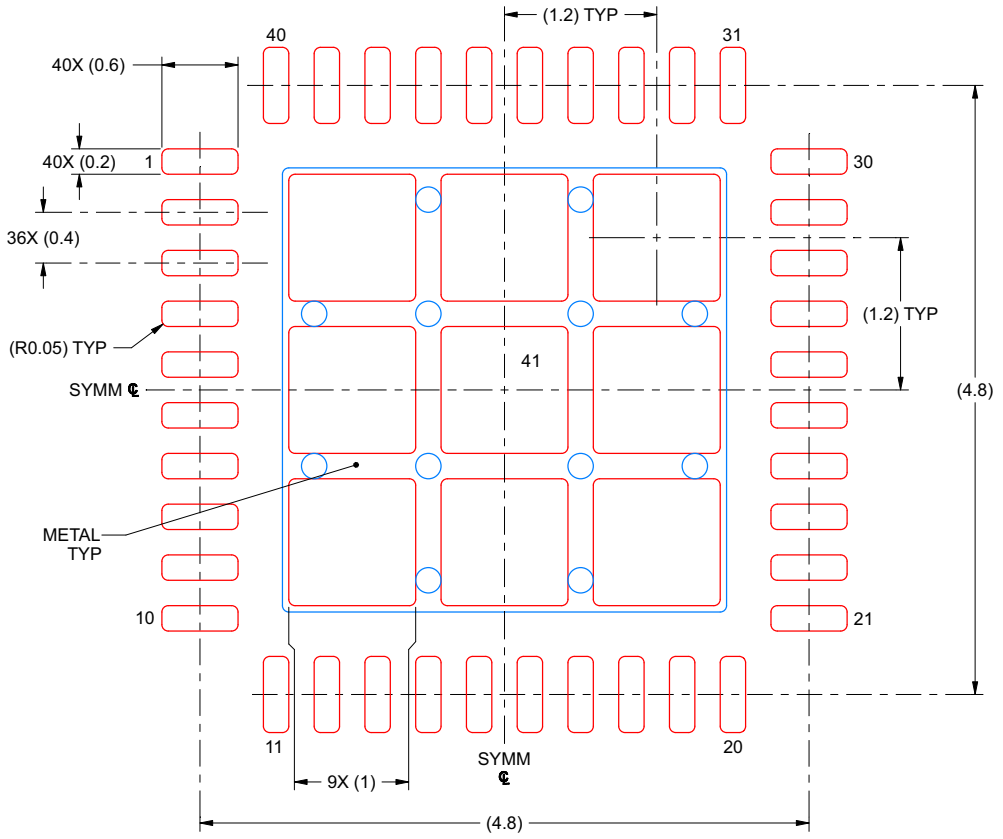
4. This package is designed to be soldered to a thermal pad on the board. For more information, see Texas Instruments literature number SLUA271 (www.ti.com/lit/slua271).
5. Vias are optional depending on application, refer to device data sheet. If any vias are implemented, refer to their locations shown on this view. It is recommended that vias under paste be filled, plugged or tented.

ADVANCE INFORMATION

EXAMPLE STENCIL DESIGN

RSB0040B — **WQFN - 0.8 mm max height**

PLASTIC QUAD FLATPACK - NO LEAD



SOLDER PASTE EXAMPLE
BASED ON 0.125 MM THICK STENCIL
SCALE: 20X

EXPOSED PAD 41
73% PRINTED SOLDER COVERAGE BY AREA UNDER PACKAGE

4219094/A 11/2018

NOTES: (continued)

6. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.

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)
CC3300ENJARSBR	Active	Production	WQFN (RSB) | 40	3000 | LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 105	CC3300 ENJA
CC3300ENJARSBR.A	Active	Production	WQFN (RSB) | 40	3000 | LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 105	CC3300 ENJA
CC3300ENJARSBR.B	Active	Production	WQFN (RSB) | 40	3000 | LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 105	CC3300 ENJA
CC3301ENJARSBR	Active	Production	WQFN (RSB) | 40	3000 | LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 105	CC3301 ENJA
CC3301ENJARSBR.A	Active	Production	WQFN (RSB) | 40	3000 | LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 105	CC3301 ENJA
CC3301ENJARSBR.B	Active	Production	WQFN (RSB) | 40	3000 | LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 105	CC3301 ENJA

(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.

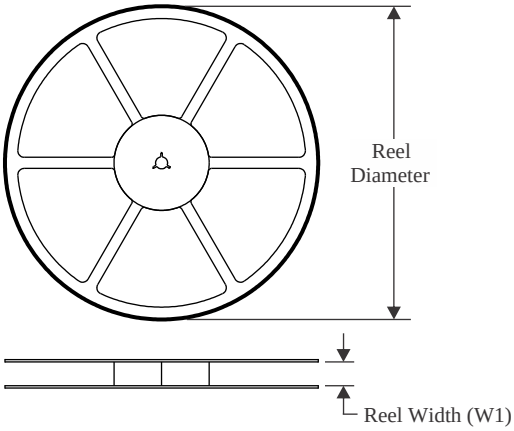
(5) **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will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

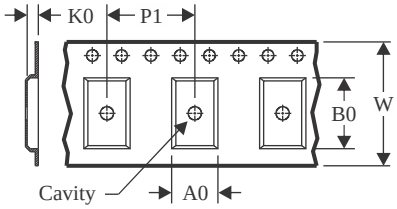
Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

TAPE AND REEL INFORMATION

REEL DIMENSIONS

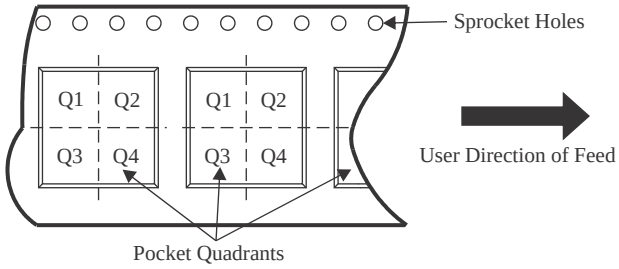


TAPE DIMENSIONS



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

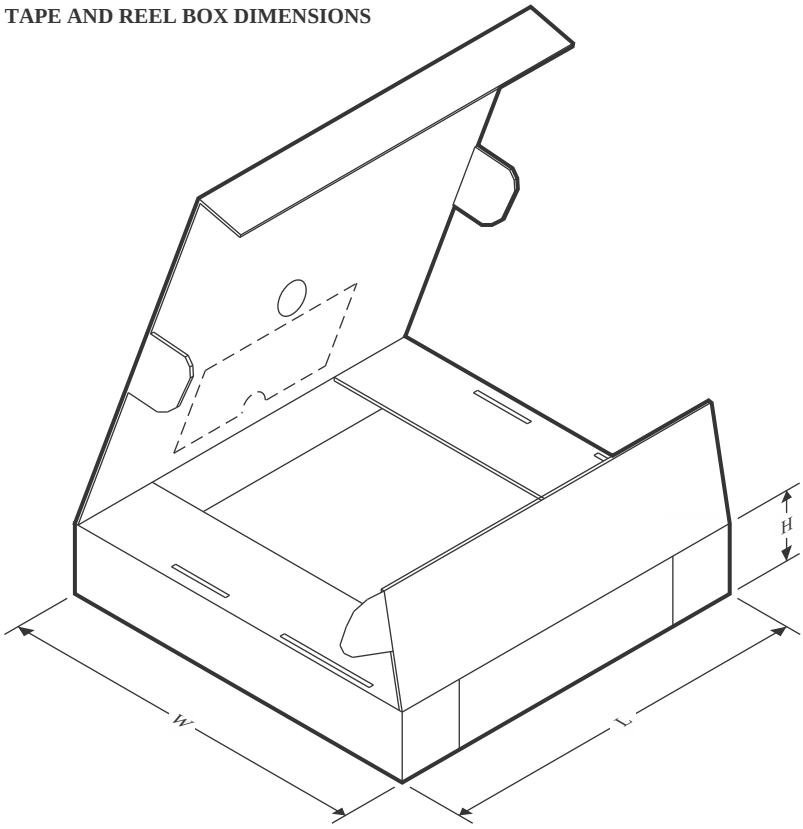
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*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
CC3300ENJARSBR	WQFN	RSB	40	3000	330.0	12.4	5.3	5.3	1.1	8.0	12.0	Q2
CC3301ENJARSBR	WQFN	RSB	40	3000	330.0	12.4	5.3	5.3	1.1	8.0	12.0	Q2

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

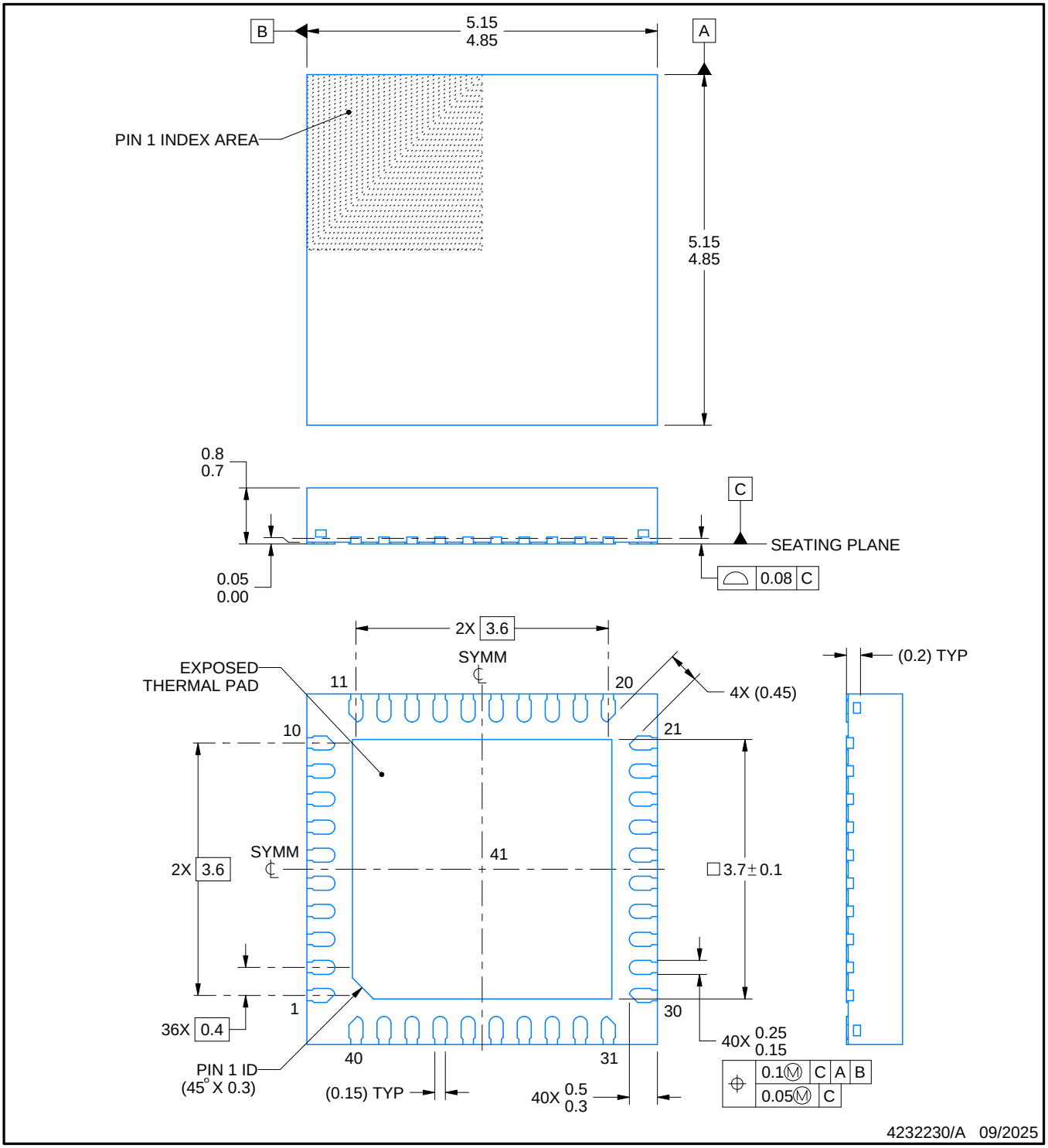
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
CC3300ENJARSBR	WQFN	RSB	40	3000	367.0	367.0	35.0
CC3301ENJARSBR	WQFN	RSB	40	3000	367.0	367.0	35.0

RSB0040F

PACKAGE OUTLINE

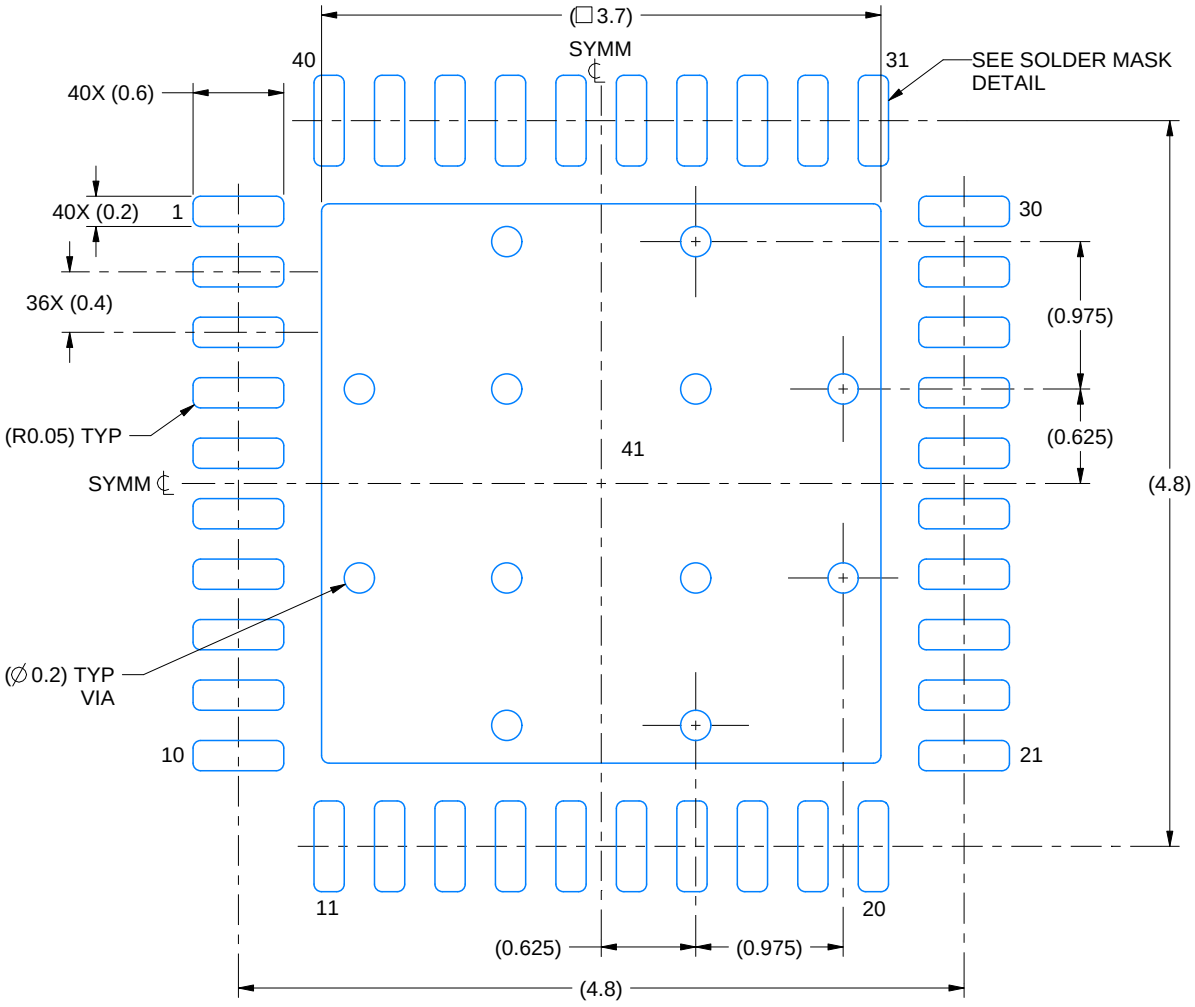
WQFN - 0.8 mm max height

PLASTIC QUAD FLATPACK - NO LEAD

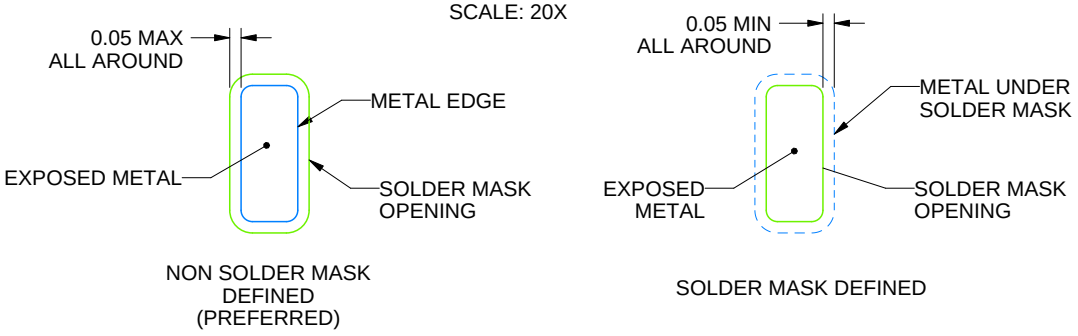


NOTES:

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. The package thermal pad must be soldered to the printed circuit board for thermal and mechanical performance.



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE: 20X

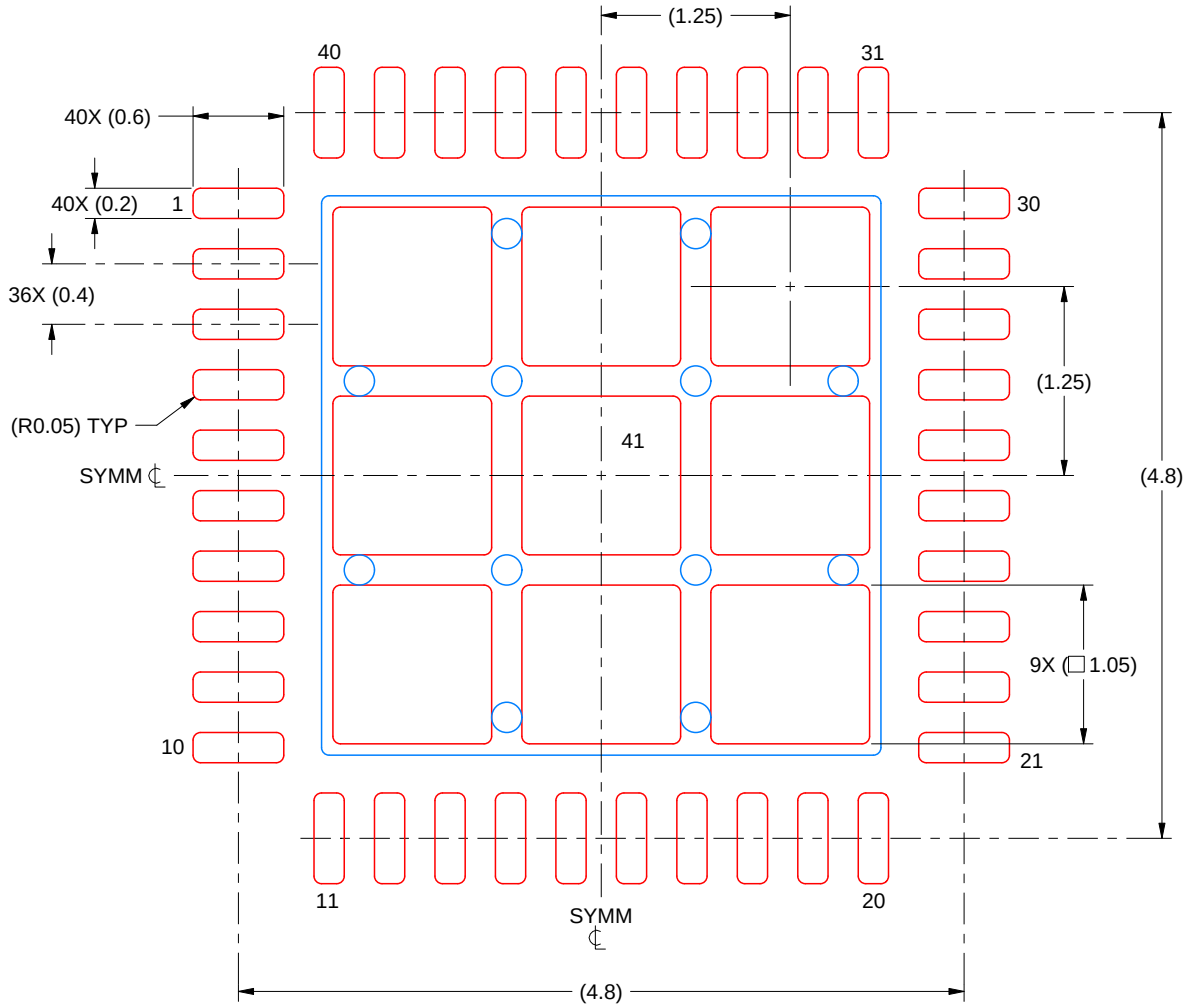


SOLDER MASK DETAILS

4232230/A 09/2025

NOTES: (continued)

4. This package is designed to be soldered to a thermal pad on the board. For more information, see Texas Instruments literature number SLUA271 (www.ti.com/lit/slua271).
5. Vias are optional depending on application, refer to device data sheet. If any vias are implemented, refer to their locations shown on this view. It is recommended that vias under paste be filled, plugged or tented.



SOLDER PASTE EXAMPLE
BASED ON 0.125 MM THICK STENCIL
SCALE: 20X

EXPOSED PAD 41
72% PRINTED SOLDER COVERAGE BY AREA UNDER PACKAGE

4232230/A 09/2025

NOTES: (continued)

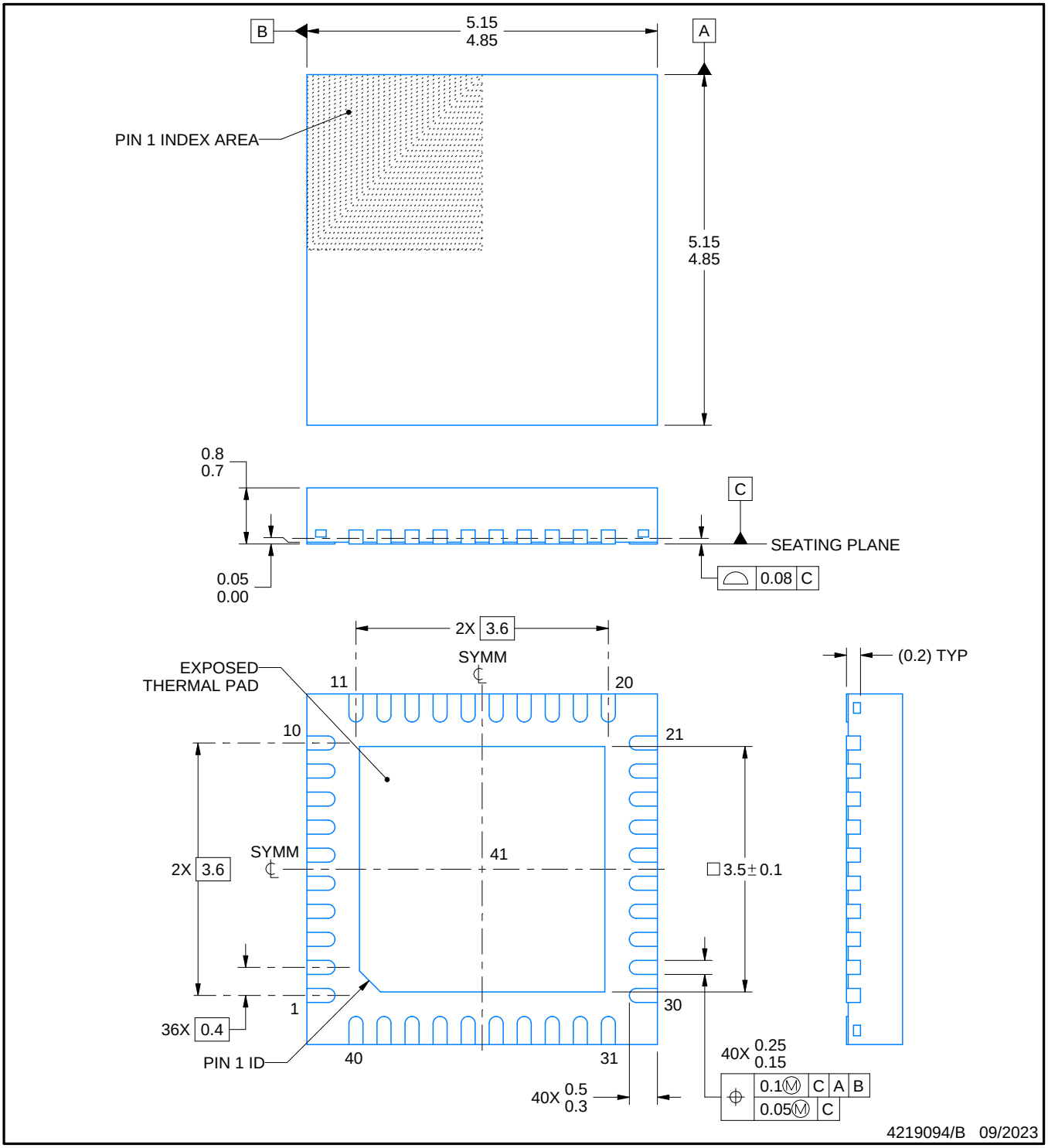
6. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.

RSB0040B

PACKAGE OUTLINE

WQFN - 0.8 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



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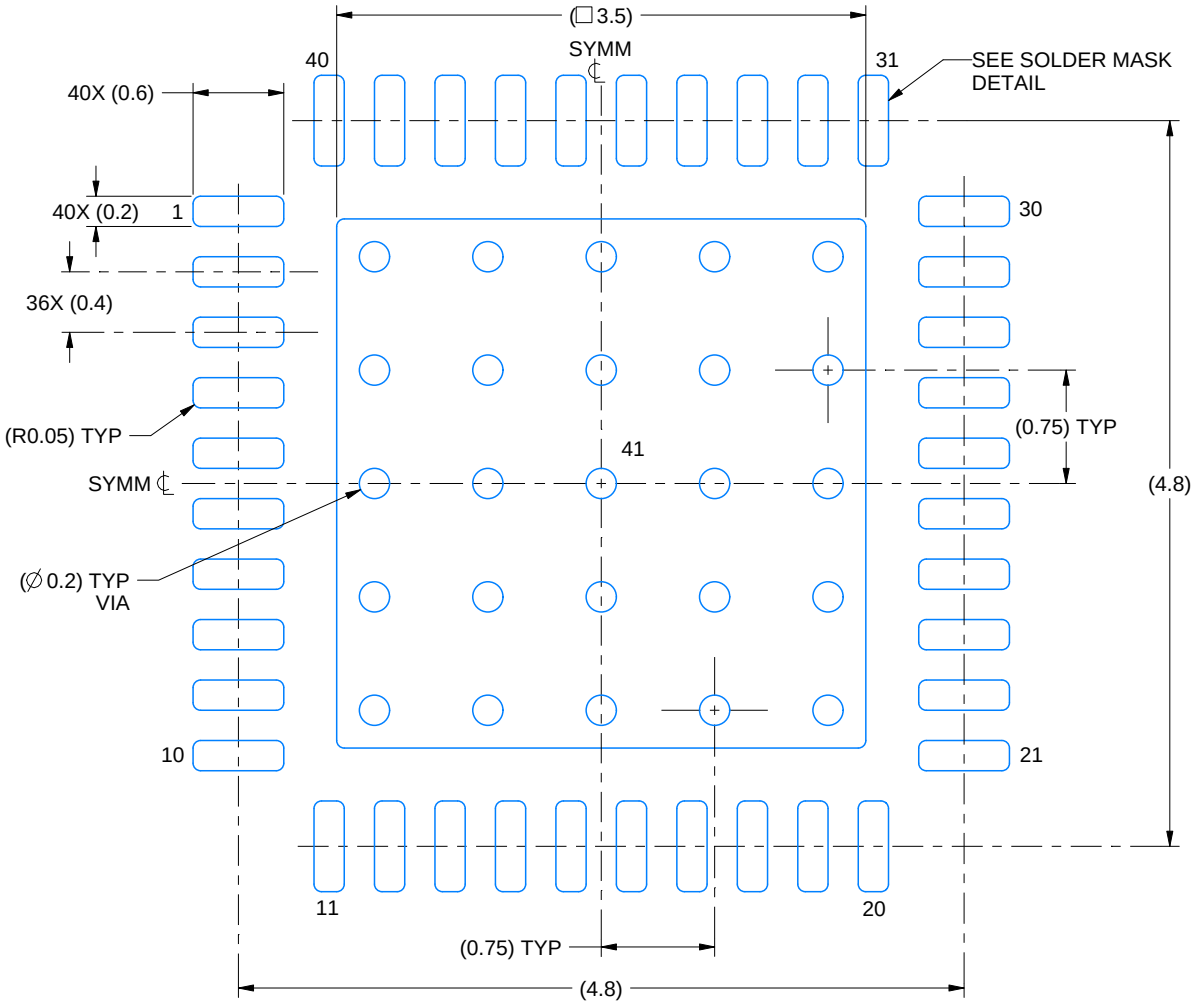
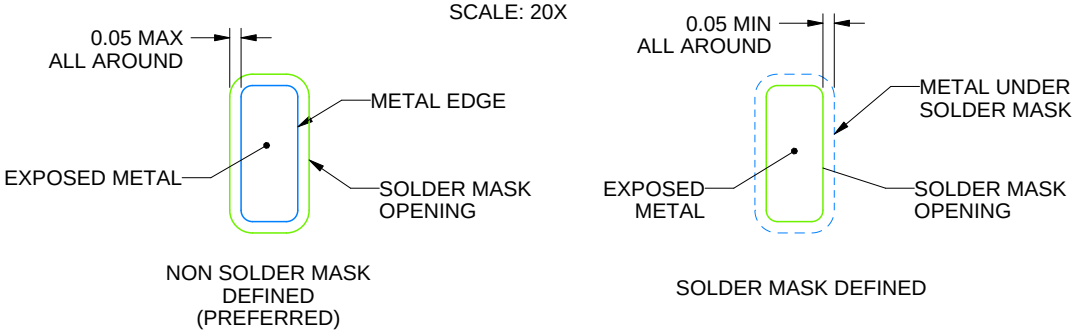


LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE: 20X



SOLDER MASK DETAILS

4219094/B 09/2023

NOTES: (continued)

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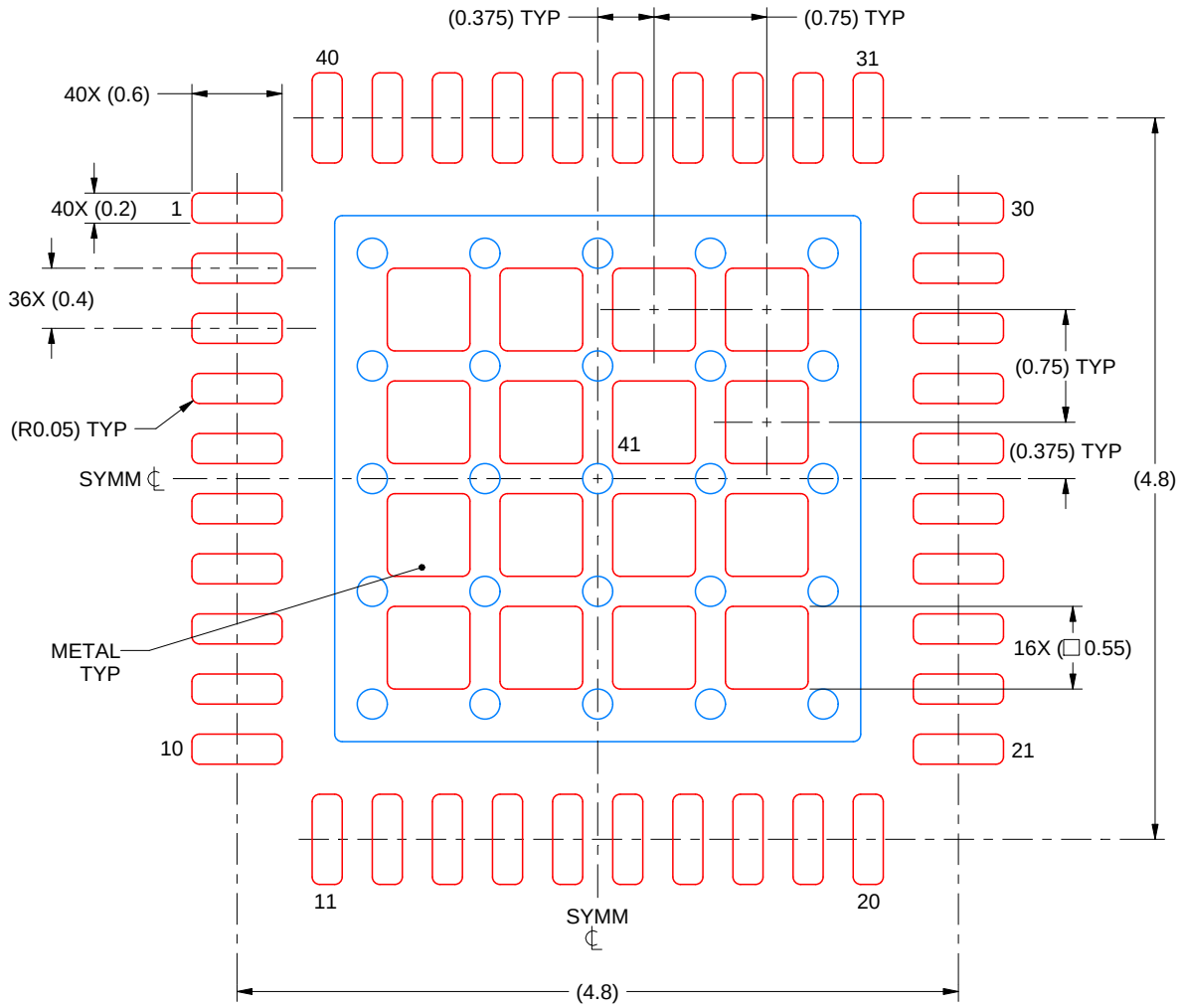


SOLDER PASTE EXAMPLE
BASED ON 0.125 MM THICK STENCIL
SCALE: 20X

EXPOSED PAD 41
40% PRINTED SOLDER COVERAGE BY AREA UNDER PACKAGE

4219094/B 09/2023

NOTES: (continued)

6. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.

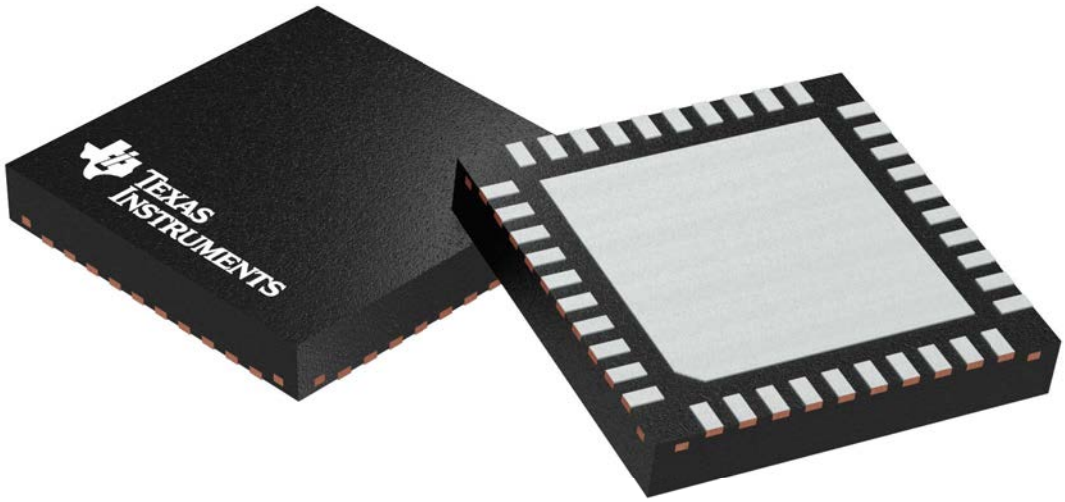
GENERIC PACKAGE VIEW

RSB 40

WQFN - 0.8 mm max height

5 x 5 mm, 0.4 mm pitch

PLASTIC QUAD FLATPACK - NO LEAD



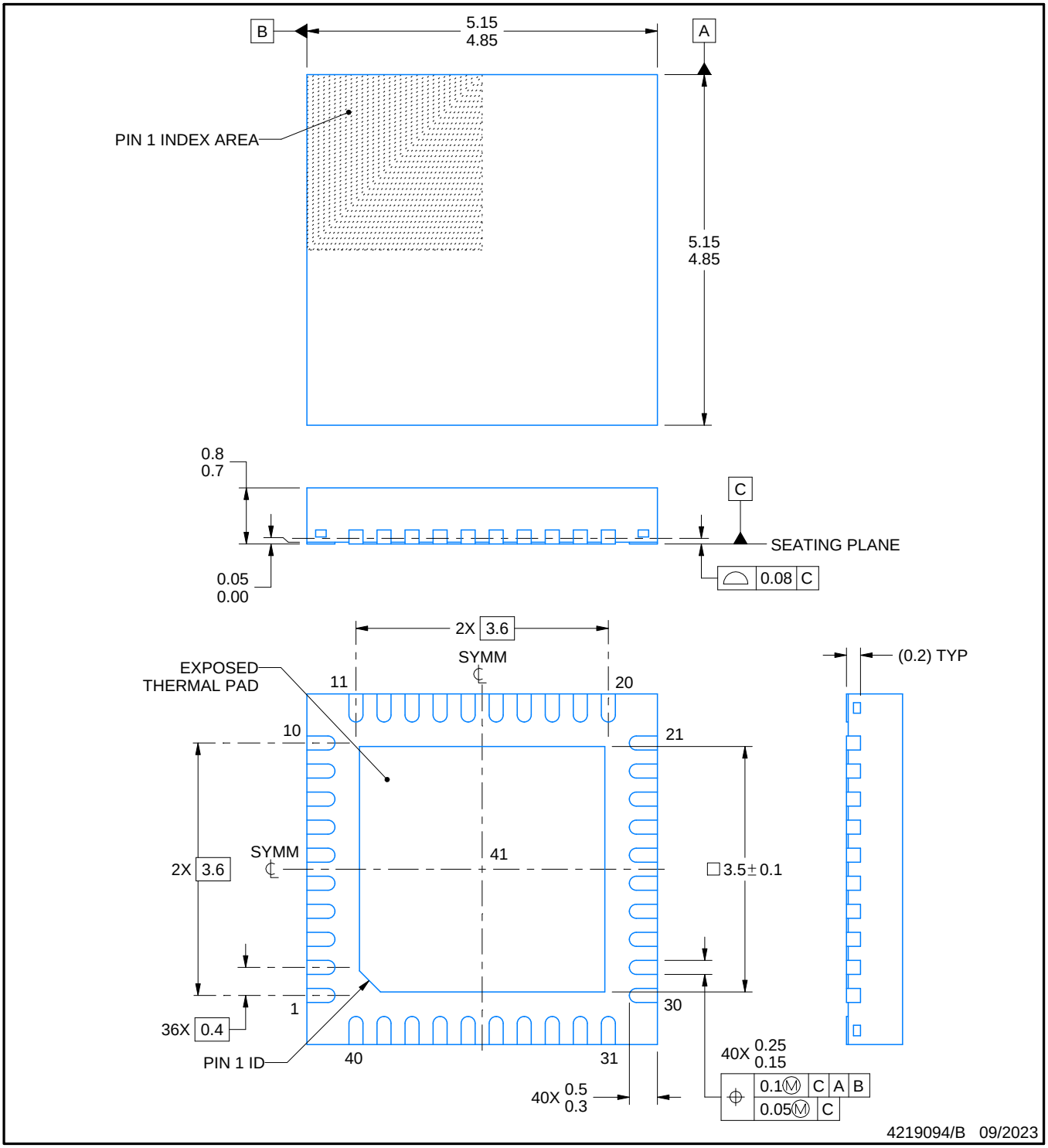
Images above are just a representation of the package family, actual package may vary.
Refer to the product data sheet for package details.

RSB0040B

PACKAGE OUTLINE

WQFN - 0.8 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



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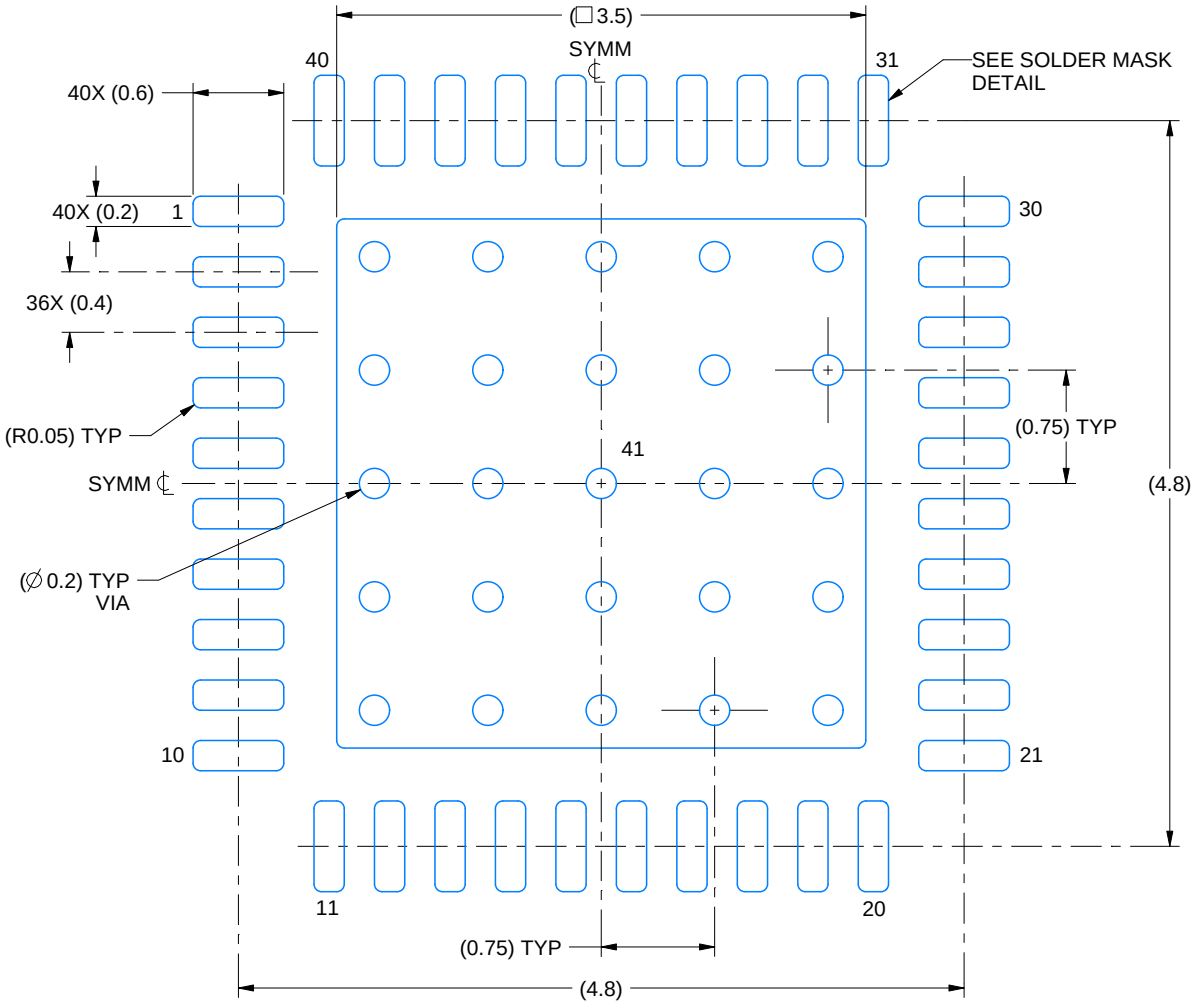
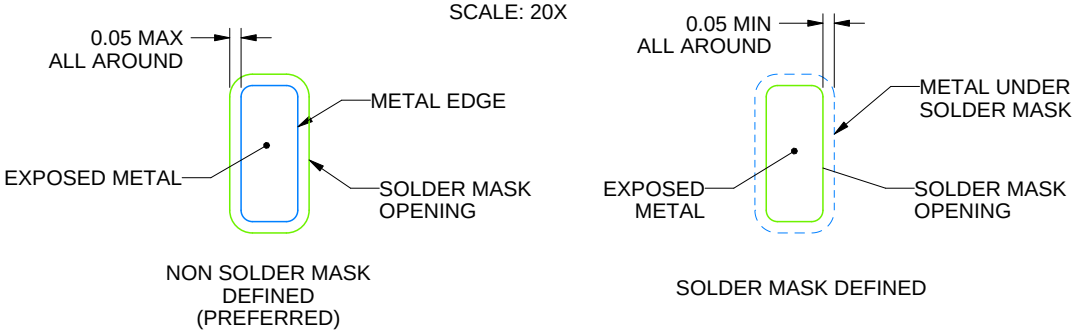


LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE: 20X



SOLDER MASK DETAILS

4219094/B 09/2023

NOTES: (continued)

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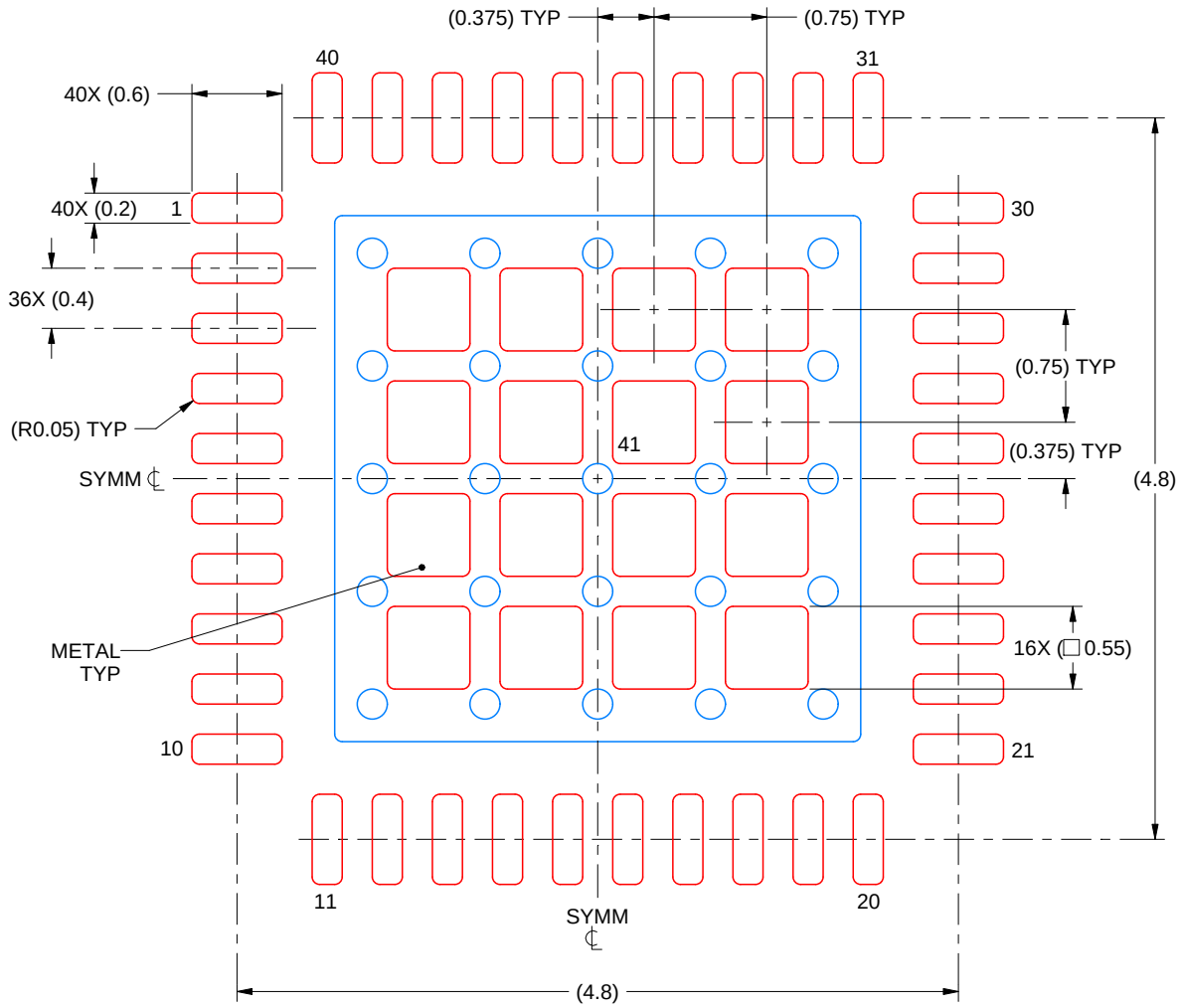

SOLDER PASTE EXAMPLE
BASED ON 0.125 MM THICK STENCIL
SCALE: 20X

EXPOSED PAD 41
40% PRINTED SOLDER COVERAGE BY AREA UNDER PACKAGE

4219094/B 09/2023

NOTES: (continued)

6. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.

重要通知和免责声明

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