

CSD95410 同步降压 NexFET™ 智能功率级

1 特性

- 90A 峰值持续电流
- 30A 电流下系统效率超过 95%
- 工作频率高 (高达 1.75 MHz)
- 二极管仿真功能
- 温度补偿双向电流检测
- 模拟温度输出
- 故障监控
- 兼容 3.3V 和 5V PWM 信号
- 三态 PWM 输入
- 集成自举开关
- 优化了击穿保护死区时间
- 高密度行业通用 5mm × 6mm QFN 封装
- 超低电感封装
- 系统已优化的 PCB 空间占用
- 耐热增强型顶部散热
- 符合 RoHS 标准、无铅端子镀层
- 无卤素

2 应用

- 多相同步降压转换器
 - 高频应用
 - 大电流、低占空比应用
- 负载点直流/直流转换器
- 存储器和显卡
- 台式机和服务器的 VR12.x/VR13.x/VR14.x 电压内核同步降压转换器

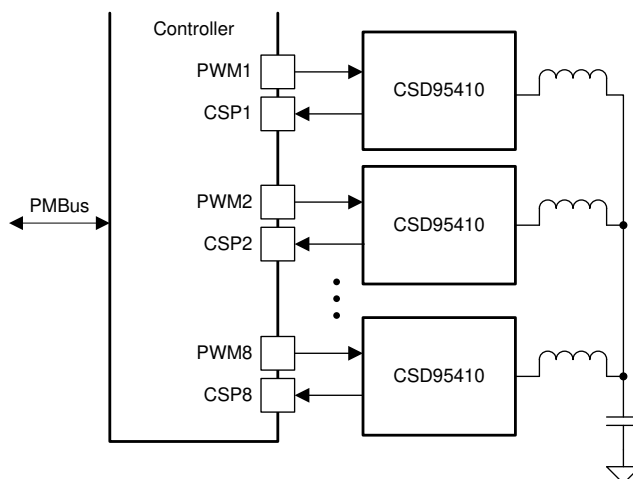
3 说明

CSD95410 NexFET™ 功率级是经过高度优化的设计，用于高功率、高密度同步降压转换器。此产品集成了驱动器 IC 和功率 MOSFET 以实现功率级开关功能。该组合采用 5mm × 6mm 小型封装，可实现高电流、高效率以及高速切换功能。它还集成了准确电流检测和温度感测功能，以简化系统设计并提高准确度。此外，已对 PCB 封装进行了优化以帮助减少设计时间并简化总体系统设计的完成。

器件信息

器件	介质	数量	封装 ⁽¹⁾	配送
CSD95410	13 英寸卷带	2500	QFN 5.00mm × 6.00mm	卷带 包装
CSD95410T	7 英寸卷带	250		

(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。



简化版应用



Table of Contents

1 特性	1	5.7 术语表.....	3
2 应用	1	6 Mechanical, Packaging, and Orderable Information ...	4
3 说明	1	6.1 Mechanical Drawing.....	4
4 Revision History	2	6.2 Recommended PCB Land Pattern.....	5
5 Device and Documentation Support	3	6.3 Recommended Stencil Opening.....	6
5.1 Device Support.....	3	6.4 Alternate Industry Standard Compatible PCB Land Pattern.....	7
5.2 Documentation Support.....	3	6.5 Alternate Industry Standard Compatible Stencil Opening.....	8
5.3 接收文档更新通知.....	3	6.6 Package Option Addendum.....	9
5.4 支持资源.....	3		
5.5 Trademarks.....	3		
5.6 静电放电警告.....	3		

4 Revision History

DATE	REVISION	NOTES
September 2020	*	Initial release.

5 Device and Documentation Support

5.1 Device Support

5.1.1 第三方产品免责声明

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5.2 Documentation Support

5.3 接收文档更新通知

要接收文档更新通知，请导航至 [ti.com](https://www.ti.com) 上的器件产品文件夹。点击 [订阅更新](#) 进行注册，即可每周接收产品信息更改摘要。有关更改的详细信息，请查看任何已修订文档中包含的修订历史记录。

5.4 支持资源

[TI E2E™ 支持论坛](#) 是工程师的重要参考资料，可直接从专家获得快速、经过验证的解答和设计帮助。搜索现有解答或提出自己的问题可获得所需的快速设计帮助。

链接的内容由各个贡献者“按原样”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》](#)。

5.5 Trademarks

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5.6 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。

5.7 术语表

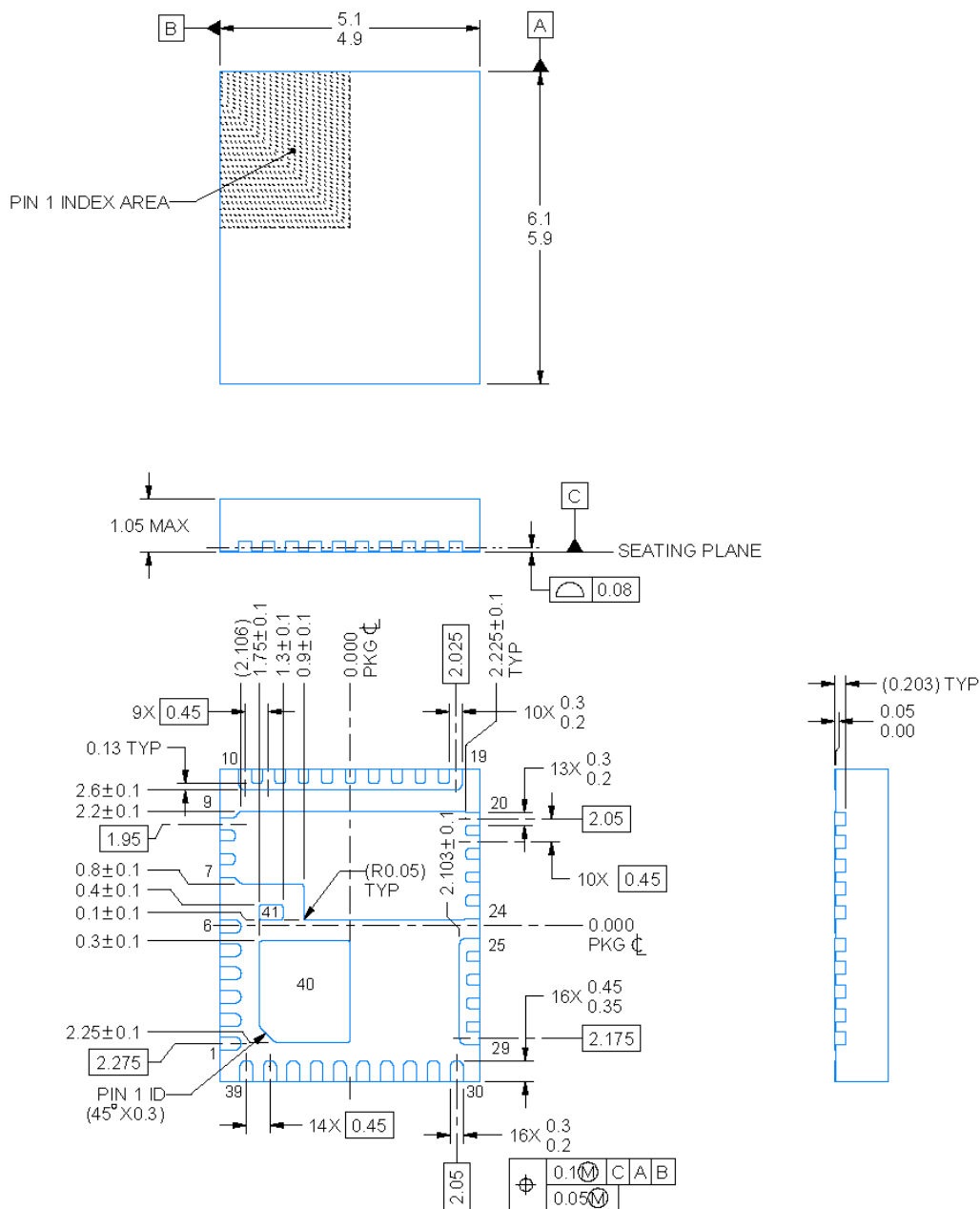
TI 术语表

本术语表列出并解释了术语、首字母缩略词和定义。

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.

6.1 Mechanical Drawing

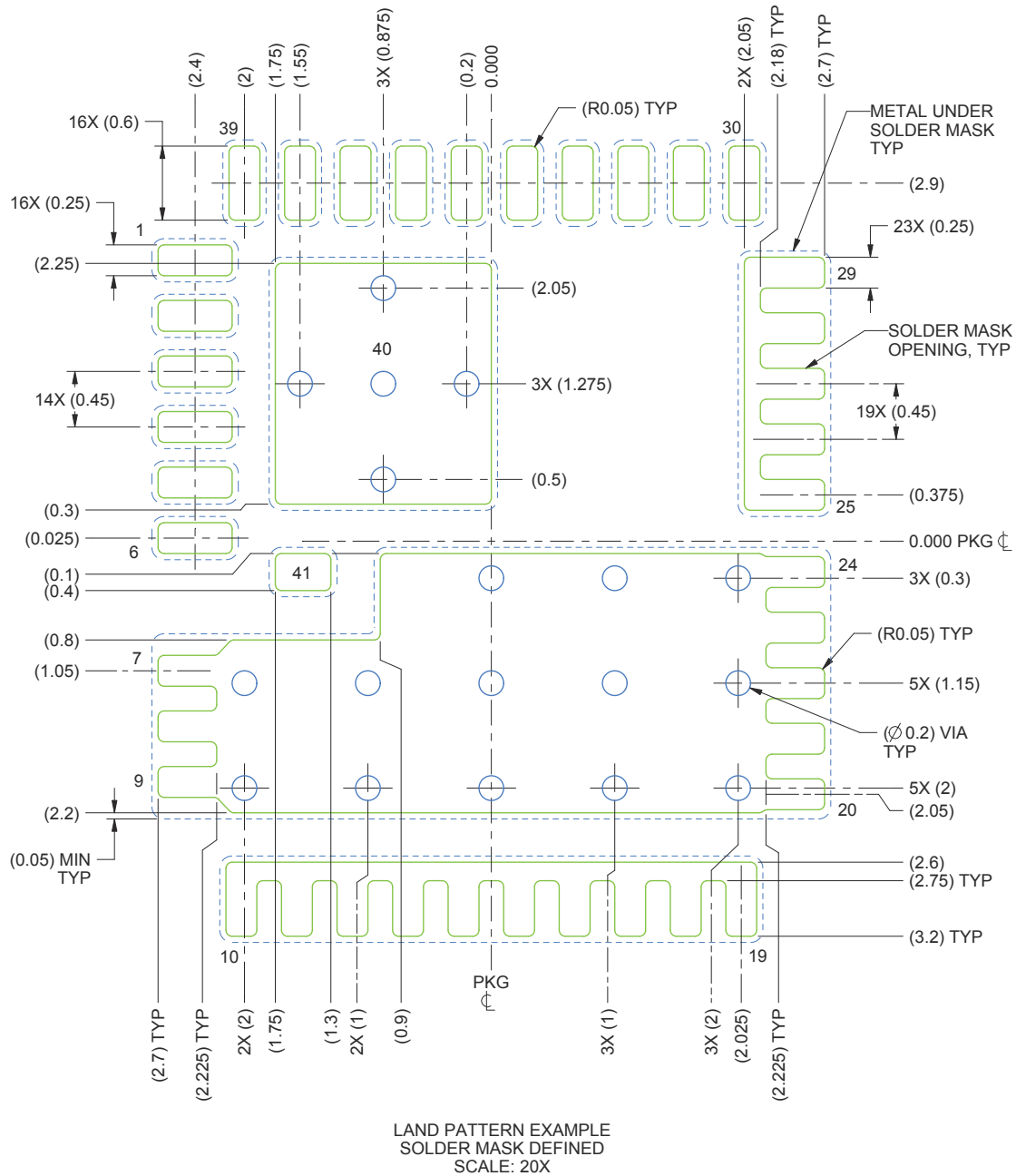


4224073/C 10/2018

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.

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

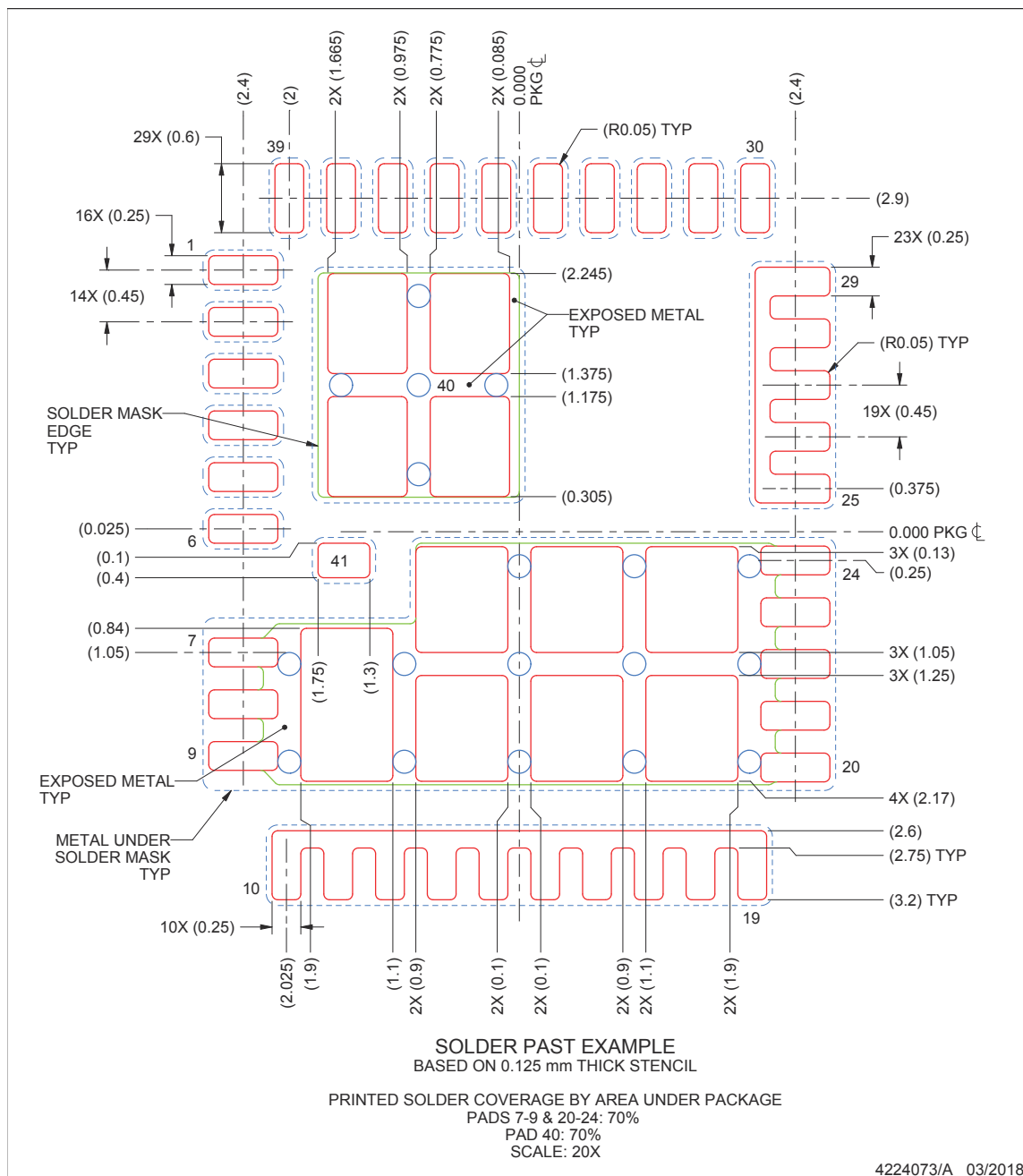
6.2 Recommended PCB Land Pattern



4224073/A 03/2018

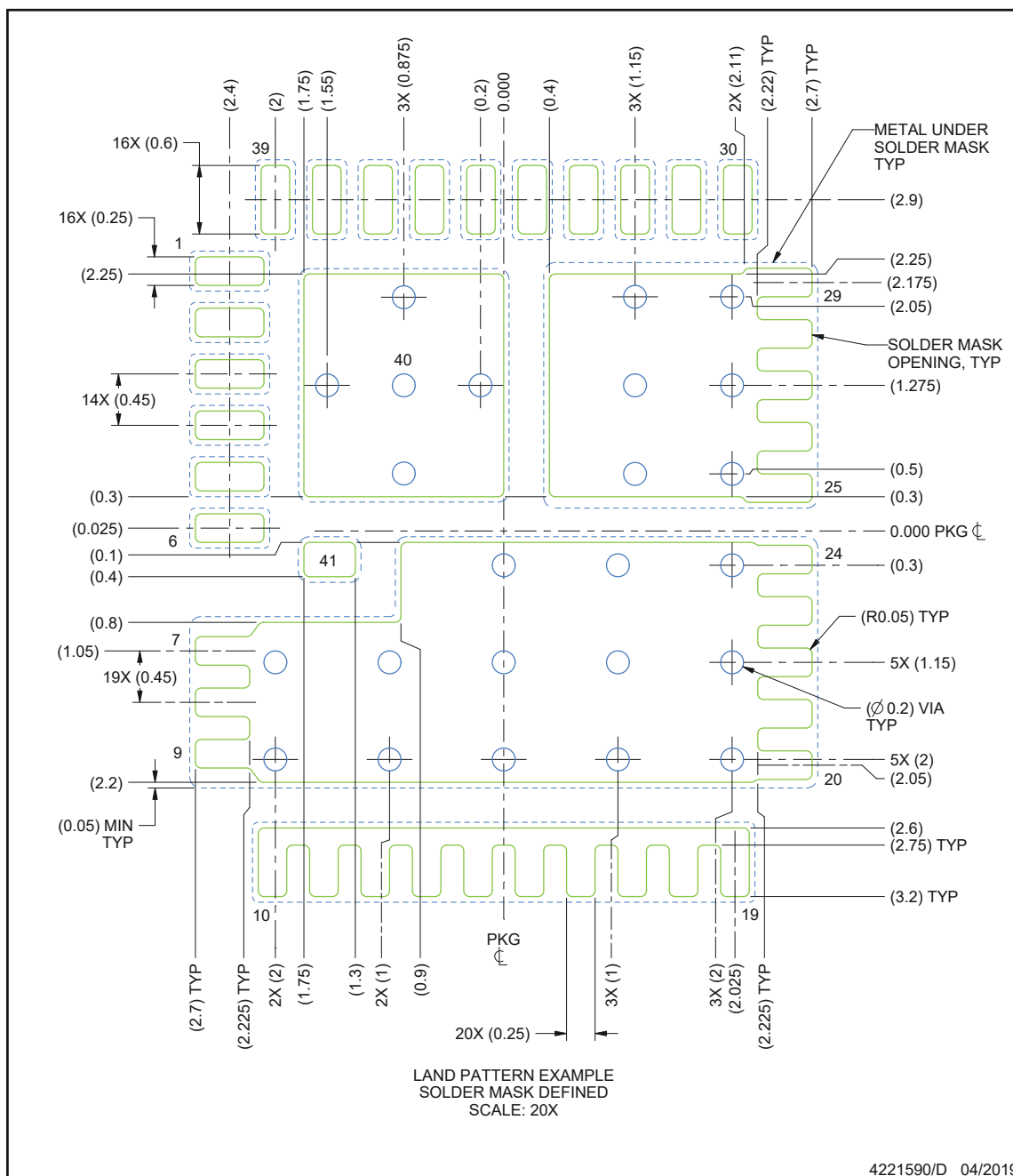
- All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
- This drawing is subject to change without notice.
- This package is designed to be soldered to thermal pads on the board. For more information, see [QFN/SON PCB Attachment](#) (SLUA271).

6.3 Recommended Stencil Opening



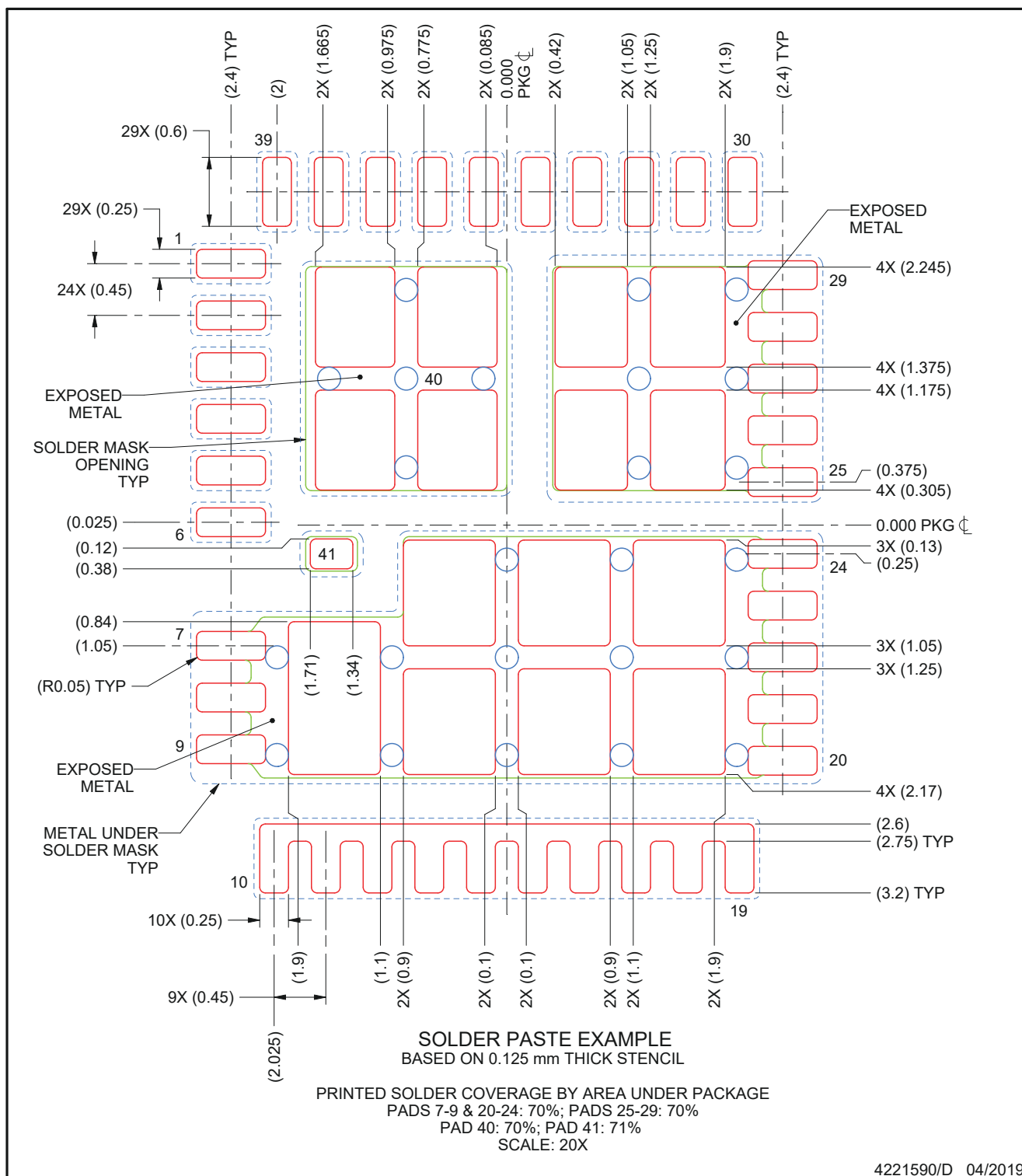
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.

6.4 Alternate Industry Standard Compatible PCB Land Pattern



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

6.5 Alternate Industry Standard Compatible Stencil Opening



4221590/D 04/2019

6.6 Package Option Addendum

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)
CSD95410RRB	Active	Production	VQFN-CLIP (RRB) 41	2500 LARGE T&R	ROHS Exempt	NIPDAU SN	Level-2-260C-1 YEAR	-40 to 125	95410RRB
CSD95410RRB.A	Active	Production	VQFN-CLIP (RRB) 41	2500 LARGE T&R	ROHS Exempt	NIPDAU	Level-2-260C-1 YEAR	-40 to 125	95410RRB
CSD95410RRB.B	Active	Production	VQFN-CLIP (RRB) 41	2500 LARGE T&R	-	Call TI	Call TI	-40 to 125	
CSD95410RRBT	Active	Production	VQFN-CLIP (RRB) 41	250 SMALL T&R	ROHS Exempt	NIPDAU SN	Level-2-260C-1 YEAR	-40 to 125	95410RRB
CSD95410RRBT.A	Active	Production	VQFN-CLIP (RRB) 41	250 SMALL T&R	ROHS Exempt	NIPDAU	Level-2-260C-1 YEAR	-40 to 125	95410RRB
CSD95410RRBT.B	Active	Production	VQFN-CLIP (RRB) 41	250 SMALL T&R	-	Call TI	Call TI	-40 to 125	

⁽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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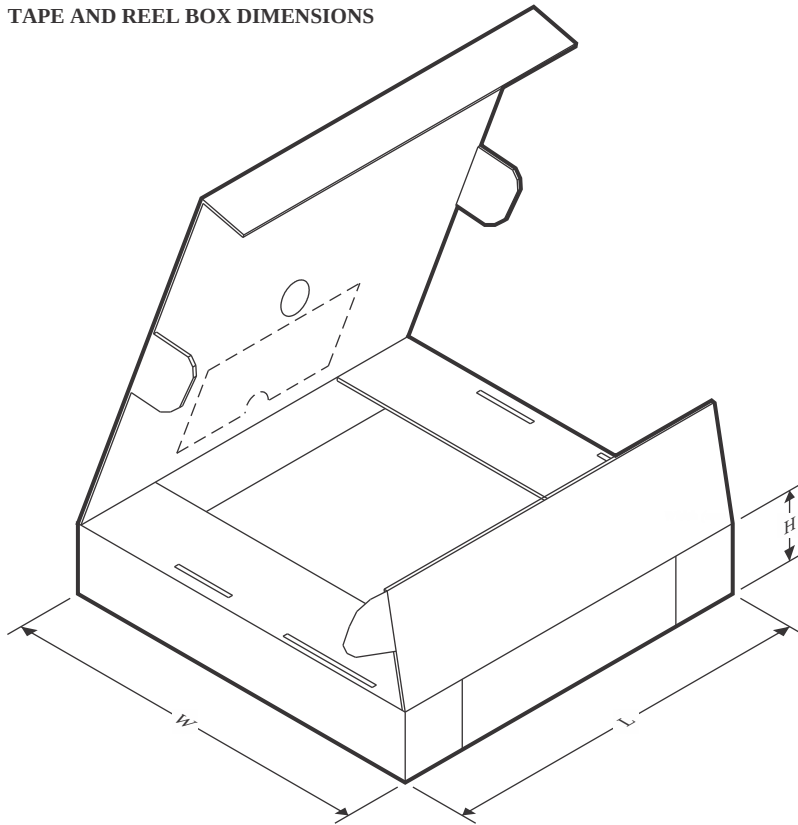
TAPE AND REEL INFORMATION



*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
CSD95410RRB	VQFN-CLIP	RRB	41	2500	330.0	12.4	5.3	6.3	1.2	8.0	12.0	Q1
CSD95410RRBT	VQFN-CLIP	RRB	41	250	180.0	12.4	5.3	6.3	1.2	8.0	12.0	Q1

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
CSD95410RRB	VQFN-CLIP	RRB	41	2500	367.0	367.0	38.0
CSD95410RRBT	VQFN-CLIP	RRB	41	250	213.0	191.0	35.0

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