

LP8862-Q1 具有两条 160mA 通道的低 EMI 汽车类 LED 驱动器

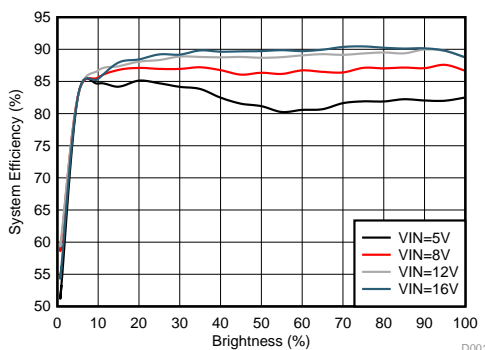
1 特性

- 适用于汽车电子 应用
- 具有符合 AEC-Q100 标准的下列结果：
 - 器件温度 1 级：-40°C 至 +125°C 的环境运行温度范围
- 输入工作电压范围：4.5V 至 40V
- 双路高精度电流阱
 - 电流匹配度为 1%（典型值）
 - LED 灯串电流高达 160mA/通道
 - 100Hz 下的调光比率高达 10000:1
- 适用于 LED 灯串电源的集成升压/SEPIC 转换器
 - 输出电压高达 45V
 - 开关频率：300kHz 至 2.2MHz
 - 开关同步输入
 - 扩展频谱可降低电磁干扰 (EMI)
- 电力线场效应晶体管 (FET) 控制，可实现浪涌电流保护和待机节能
- 丰富的故障检测功能 特性
 - 故障输出
 - 输入电压过压保护 (OVP)、欠压锁定 (UVLO) 和过流保护 (OCP)
 - 开路和短路 LED 故障检测
 - 热关断
- 最大限度减少外部组件数

2 应用

- 为以下应用提供背光：
 - 汽车信息娱乐系统
 - 汽车仪表板
 - 智能车镜
 - 抬头显示屏 (HUD)
 - 中央信息显示屏 (CID)
 - 音频 - 视频导航 (AVN)

系统效率



3 说明

LP8862-Q1 是一款带有集成 DC-DC 转换器的低 EMI 且易于使用的汽车类高效 LED 驱动器。该 DC-DC 转换器支持升压和 SEPIC 工作模式。该器件具有双路高精度电流阱，可通过脉宽调制 (PWM) 输入信号提供调光比率较高的亮度控制。

升压/SEPIC 转换器可基于 LED 电流阱余量电压提供自适应输出电压控制。该特性可在所有条件下将电压调节到能够满足需要的最低水平，从而最大限度地降低功耗。DC-DC 转换器支持针对开关频率进行扩频以及使用专用引脚实现外部同步。凭借较大可调节频率范围，LP8862-Q1 能够避免调幅 (AM) 射频频段干扰。

LP8862-Q1 的输入电压范围为 4.5V 至 40V，支持汽车启动/停止以及负载突降的情况。器件在 100Hz 下支持的 PWM 亮度调光比率高达 10000:1 输入 PWM 频率。LP8862-Q1 集成了丰富的故障检测功能。该器件可选择驱动外部 P 沟道场效应晶体管 (FET)，以在发生故障时断开输入电源与系统间的连接。该特性也可减少浪涌电流并降低待机功耗。

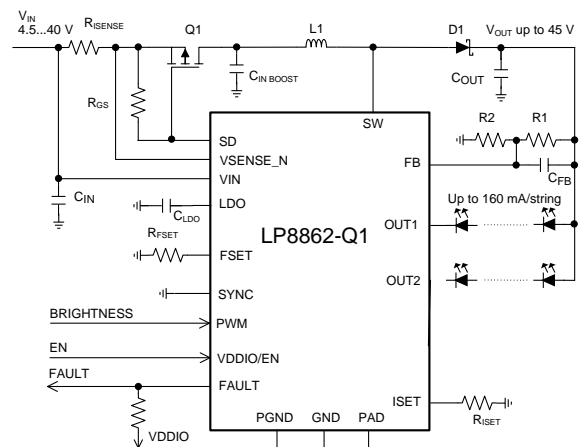
如需完整数据表或其他设计资源，请参见：[请求 LP8862-Q1](#)。

器件信息(1)

器件型号	封装	封装尺寸 (标称值)
LP8862-Q1	HTSSOP (20)	6.50mm x 4.40mm

(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。

简化电路原理图



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4 器件比较表

	LP8860-Q1	LP8862-Q1	LP8861-Q1	TPS61193-Q1	TPS61194-Q1	TPS61196-Q1
VIN 范围	3V 至 48V	4.5V 至 45V	4.5V 至 45V	4.5V 至 45V	4.5V 至 45V	8V 至 30V
LED 通道数量	4	2	4	3	4	6
LED 电流/通道	150mA	160mA	100mA	100mA	100mA	200mA
支持 I2C/SPI	有	无	无	无	无	无
支持 SEPIC	无	有	有	有	有	无

5 器件和文档支持

5.1 Third-Party Products Disclaimer

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5.2 文档支持

5.2.1 相关文档

相关文档如下：

- 《使用 LP8862-Q1EVM 评估模块》
- 《PowerPAD™ 耐热增强型封装应用手册》
- 《了解开关模式电源中的升压功率级》
- 《基于 SEPIC 拓扑设计 DC/DC 转换器》
- Power Stage Designer™ 工具可用于升压和 SEPIC 模式：<http://www.ti.com/tool/cn/powerstage-designer>

5.3 接收文档更新通知

如需接收文档更新通知，请访问 www.ti.com.cn 网站上的器件产品文件夹。点击右上角的提醒我 (Alert me) 注册后，即可每周定期收到已更改的产品信息。有关更改的详细信息，请查阅已修订文档中包含的修订历史记录。

5.4 社区资源

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

5.5 商标

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5.6 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。

5.7 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。

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
LP8862QPWRQ1	ACTIVE	HTSSOP	PWP	20	2000	RoHS & Green	NIPDAU	Level-2-260C-1 YEAR	-40 to 125	LP8862Q	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.

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THERMAL PAD MECHANICAL DATA

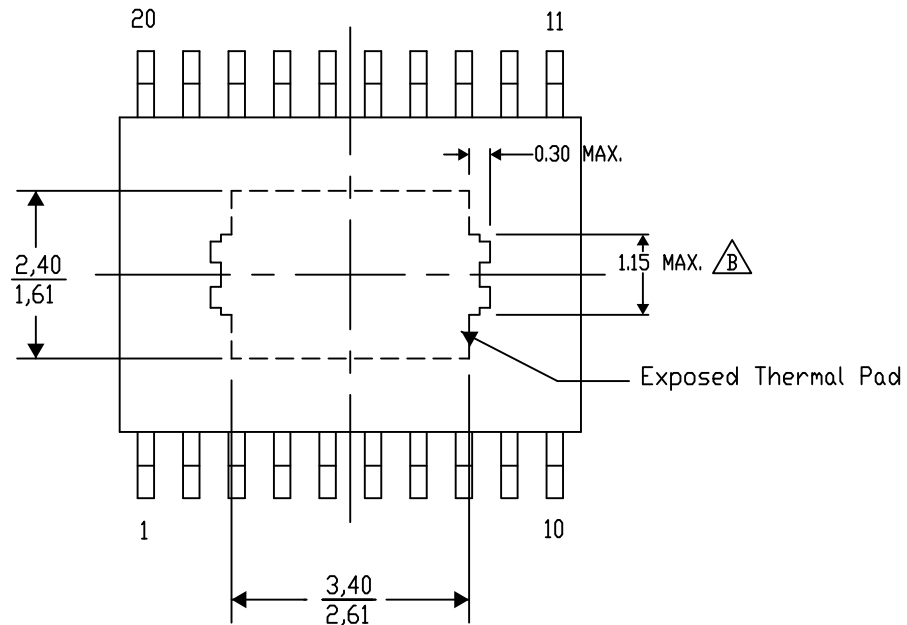
PWP (R-PDSO-G20) PowerPAD™ SMALL PLASTIC OUTLINE

THERMAL INFORMATION

This PowerPAD™ package incorporates an exposed thermal pad that is designed to be attached to a printed circuit board (PCB). The thermal pad must be soldered directly to the PCB. After soldering, the PCB can be used as a heatsink. In addition, through the use of thermal vias, the thermal pad can be attached directly to the appropriate copper plane shown in the electrical schematic for the device, or alternatively, can be attached to a special heatsink structure designed into the PCB. This design optimizes the heat transfer from the integrated circuit (IC).

For additional information on the PowerPAD package and how to take advantage of its heat dissipating abilities, refer to Technical Brief, PowerPAD Thermally Enhanced Package, Texas Instruments Literature No. SLMA002 and Application Brief, PowerPAD Made Easy, Texas Instruments Literature No. SLMA004. Both documents are available at www.ti.com.

The exposed thermal pad dimensions for this package are shown in the following illustration.



Top View

Exposed Thermal Pad Dimensions

4206332-15/AO 01/16

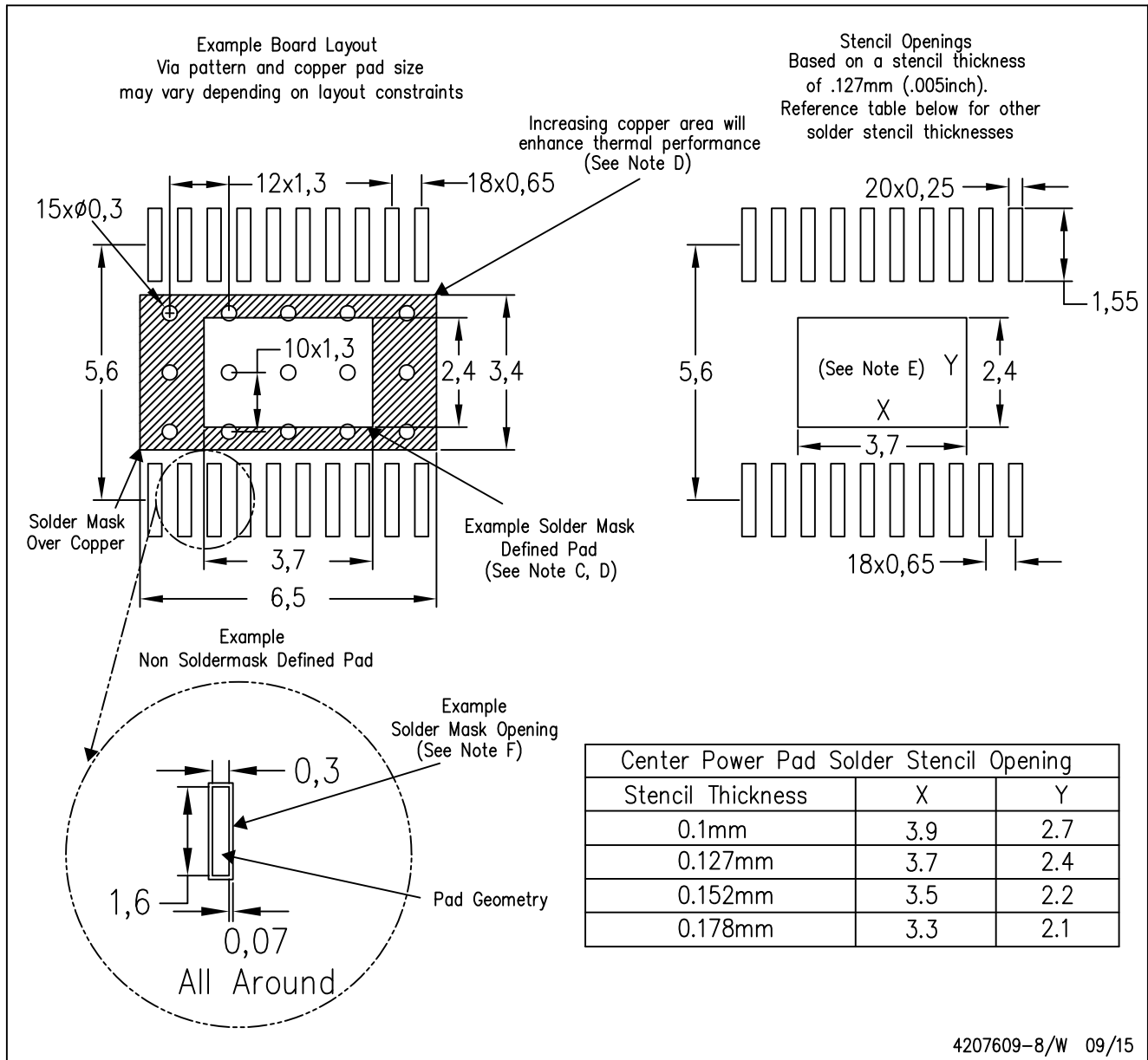
NOTE: A. All linear dimensions are in millimeters

 Exposed tie strap features may not be present.

PowerPAD is a trademark of Texas Instruments

PWP (R-PDSO-G20)

PowerPAD™ PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Customers should place a note on the circuit board fabrication drawing not to alter the center solder mask defined pad.
 - D. This package is designed to be soldered to a thermal pad on the board. Refer to Technical Brief, PowerPad Thermally Enhanced Package, Texas Instruments Literature No. SLMA002, SLMA004, and also the Product Data Sheets for specific thermal information, via requirements, and recommended board layout. These documents are available at www.ti.com <<http://www.ti.com>>. Publication IPC-7351 is recommended for alternate designs.
 - E. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Example stencil design based on a 50% volumetric metal load solder paste. Refer to IPC-7525 for other stencil recommendations.
 - F. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

THERMAL PAD MECHANICAL DATA

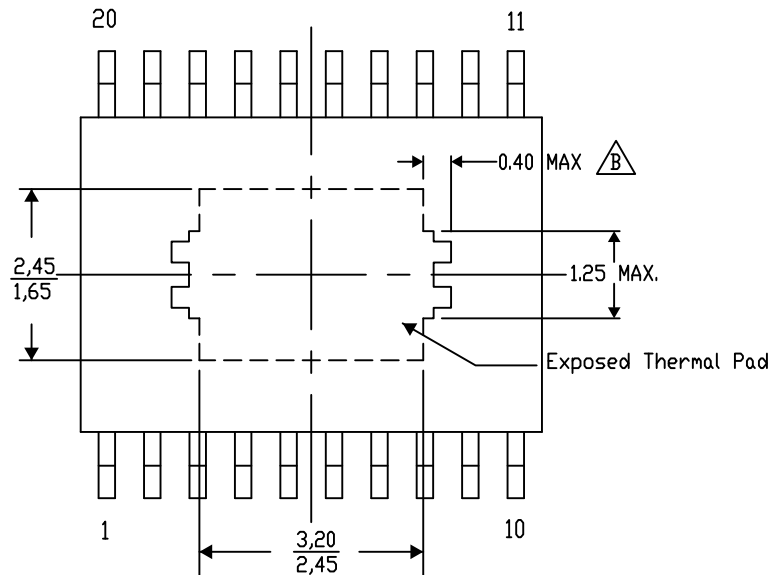
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Top View

Exposed Thermal Pad Dimensions

4206332-18/AO 01/16

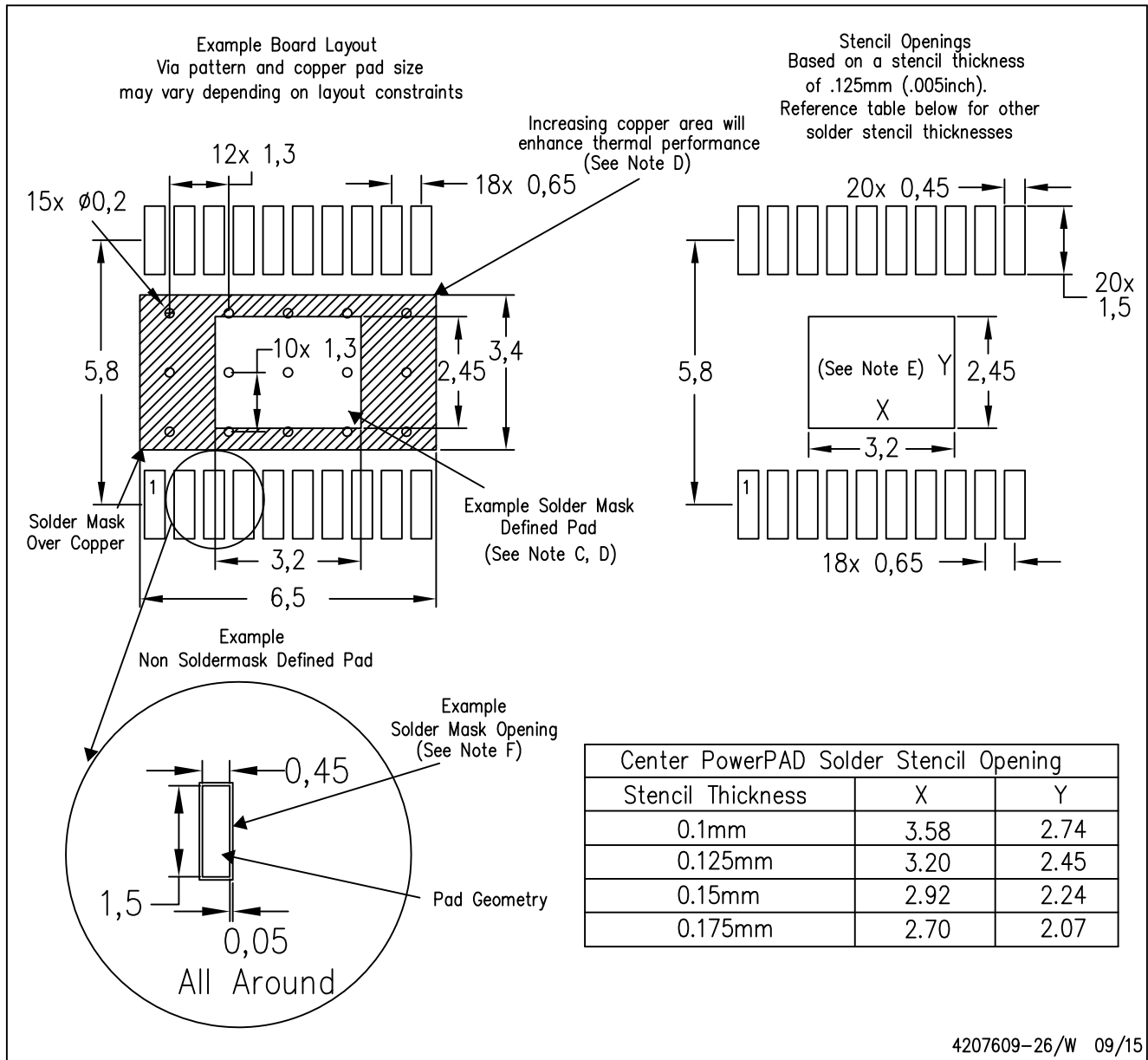
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