500mA，高效 MicroSiP™ 降压转换器（尺寸 < 1mm）

查询样品: TPS82690, TPS82695, TPS82697

特性

- 整体解决方案尺寸 **< 6.7mm²**
- 运行频率为 **4MHz** 时，效率高达 **95%**
- **24µA** 静态电流
- 高占空比运行
- *同类产品最佳的*负载与线路瞬态
- **DC** 电压输出总精度为 **±2%**
- 自动脉冲频率调制 **(PFM) /** 脉冲宽度调制 **(PWM)** 模式切换
- 低纹波轻负载 **PFM** 模式
- 出色的 **AC** 负载稳压
- 内部软启动，**130µs** 启动时间
- 集成型有源断电排序（可选）
- 电流过载和热关断保护
- 厚度不到 **1mm** 的解决方案

应用范围

- 低压差 **(LDO)** 替代产品
- 手机、智能电话
- 负载点 **(PoL)** 应用

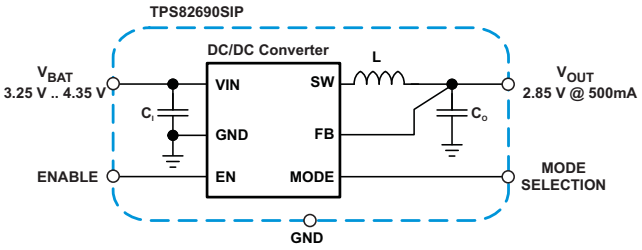


图 **1.** 典型应用

说明

TPS8269xSIP 器件是用于低功率应用的完全 500mA，DC/DC 降压电源。 封装中包括开关稳压器、电感和输入/输出电容器。 线路设计无需采用额外器件。

TPS8269xSIP 基于高频同步降压 dc-dc 转换器，此器件非常适合于电池供电的便携式应用。 本示例中使用的 MicroSIP™ DC/DC 转换器运行在经调节的 4MHz 开关频率下并且在轻负载电流上进入省电模式以在全部负载电流范围内保持高效率。

PFM 模式可在轻负载工作时将静态电流降至 24 µA（典型值），从而可延长电池使用寿命。 对于对噪声要求较高的应用，该器件具有 PWM 展频功能，可提供较低噪声的稳定输出并降低噪声对输入端的影响。结合高电源抑制比 (PSRR) 和 AC 负载调制性能，使得该器件适合用来替代线性稳压器以获得更高的电源转换效率。

TPS8269xSIP 封装在一个紧凑的 (2.3mm x 2.9mm) 和低厚度 (1.0mm) 的球状引脚栅格阵列 (BGA) 封装内，非常适合由标准表面贴装设备进行自动组装。

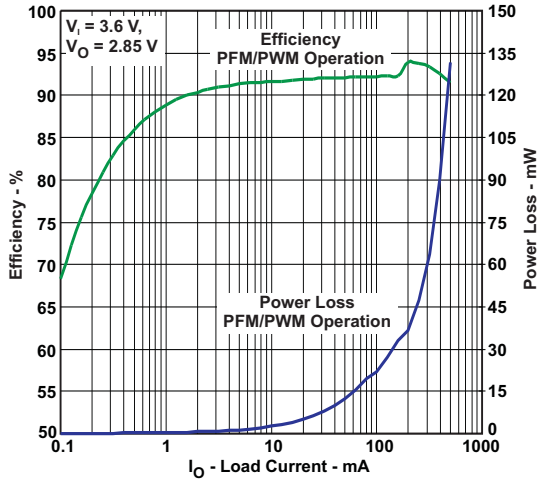


图 **2.** 效率与 负载电流

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)
TPS82695SIPR	Active	Production	uSiP (SIP) | 8	3000 | LARGE T&R	Yes	SNAGCU	Level-2-260C-1 YEAR	-40 to 85	UF
TPS82695SIPR.A	Active	Production	uSiP (SIP) | 8	3000 | LARGE T&R	Yes	SNAGCU	Level-2-260C-1 YEAR	-40 to 125	UF
TPS82695SIPT	Active	Production	uSiP (SIP) | 8	250 | SMALL T&R	Yes	SNAGCU	Level-2-260C-1 YEAR	-40 to 85	UF
TPS82695SIPT.A	Active	Production	uSiP (SIP) | 8	250 | SMALL T&R	Yes	SNAGCU	Level-2-260C-1 YEAR	-40 to 125	UF

(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.

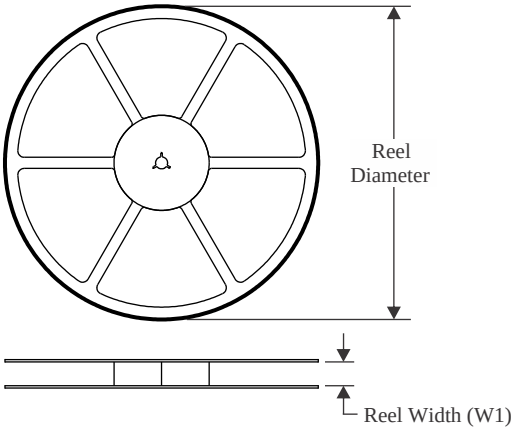
(5) **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will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

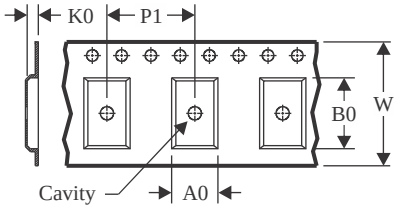
Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

TAPE AND REEL INFORMATION

REEL DIMENSIONS

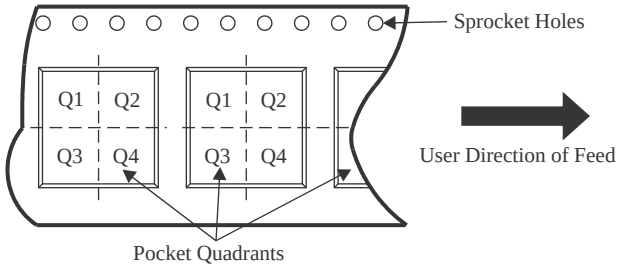


TAPE DIMENSIONS



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

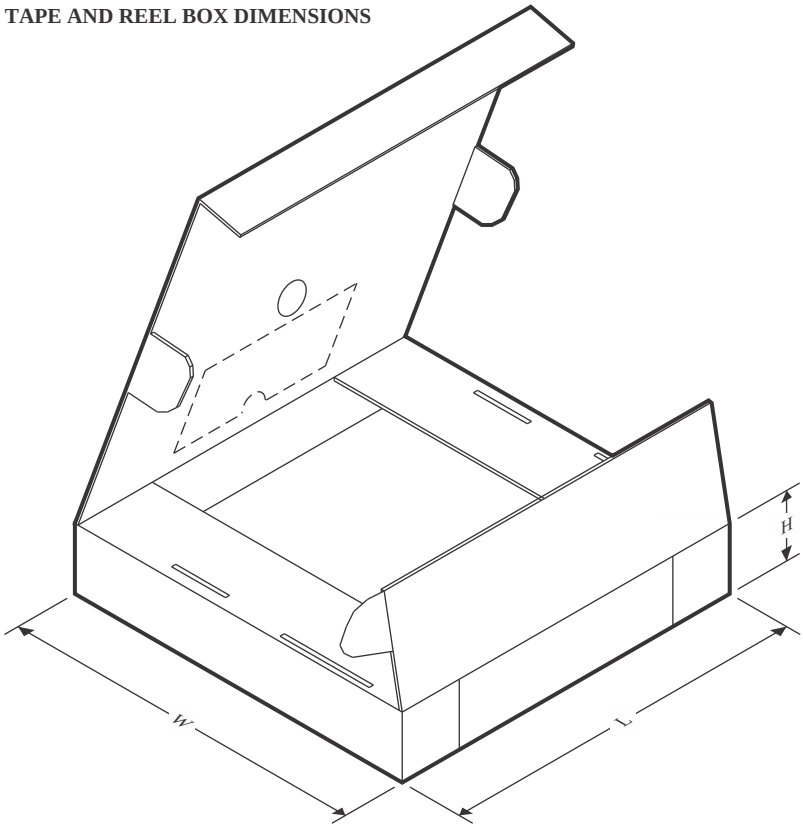
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*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
TPS82695SIPR	uSiP	SIP	8	3000	178.0	9.0	2.45	3.05	1.1	4.0	8.0	Q2
TPS82695SIPT	uSiP	SIP	8	250	178.0	9.0	2.45	3.05	1.1	4.0	8.0	Q2

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

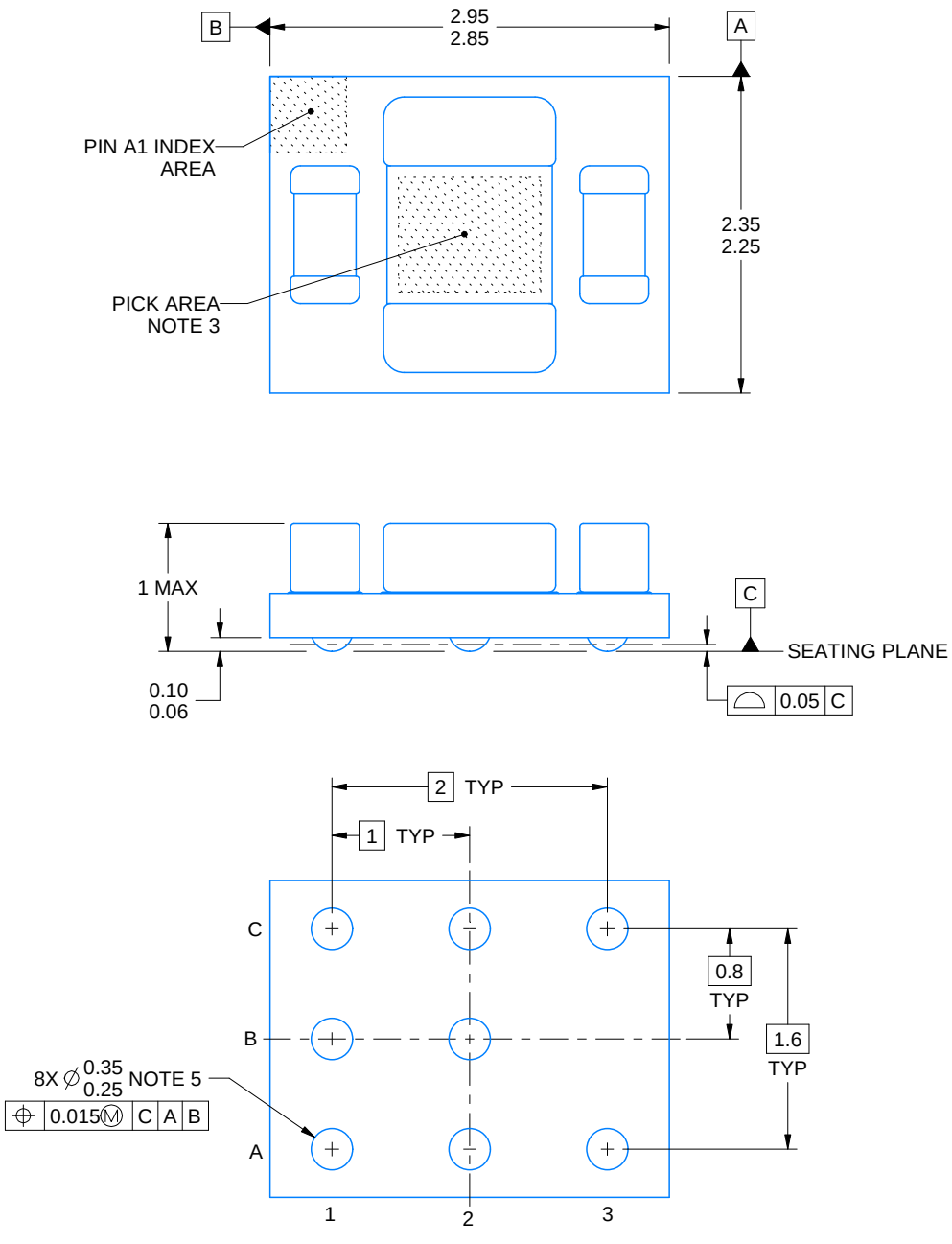
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
TPS82695SIPR	uSiP	SIP	8	3000	223.0	194.0	35.0
TPS82695SIPT	uSiP	SIP	8	250	223.0	194.0	35.0

PACKAGE OUTLINE

SIP0008A

MicroSiP™ - 1 mm max height

MICRO SYSTEM IN PACKAGE



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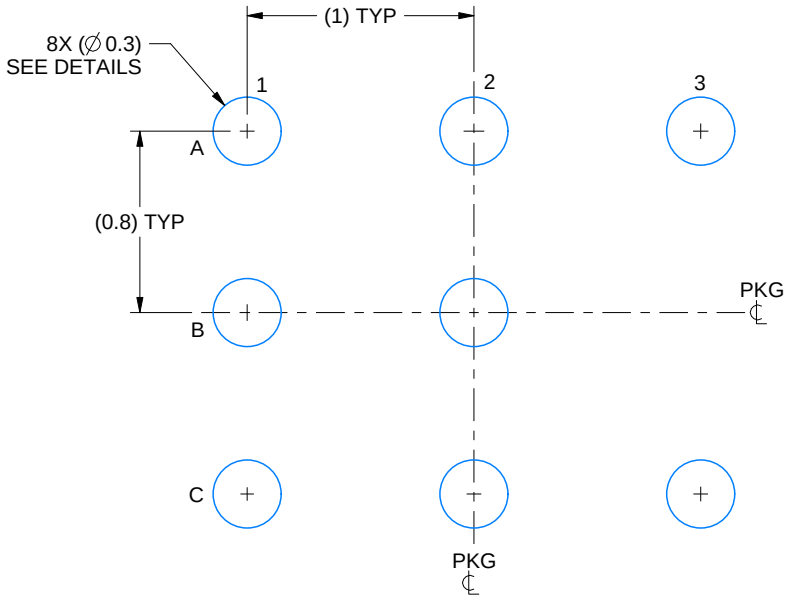
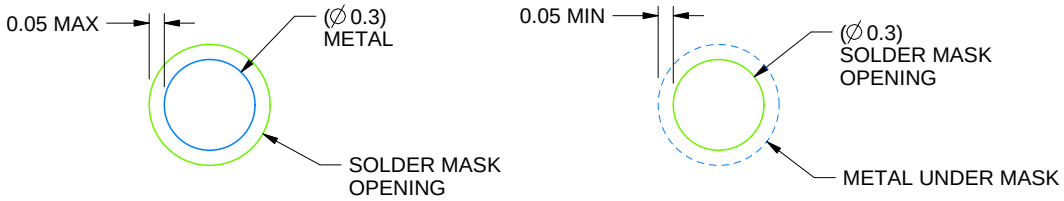
MicroSiP is a trademark of Texas Instruments.

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. For pick and place nozzle recommendation, see product datasheet.
4. Location, size and quantity of each component are for reference only and may vary.
5. This package contains Pb-free balls.



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE: 30X



SOLDER MASK DETAILS
NOT TO SCALE

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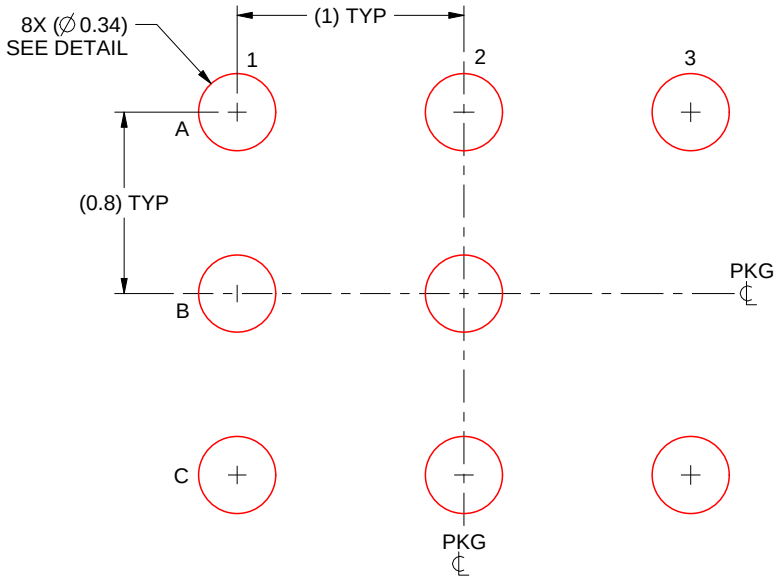
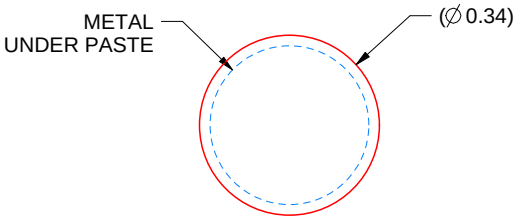
NOTES: (continued)

6. For more information, see Texas Instruments literature number SBVA017 (www.ti.com/lit/sbva017).



SOLDER PASTE EXAMPLE
BASED ON 0.1 mm THICK STENCIL
SCALE:30X



SOLDER PASTE DETAIL
TYPICAL

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NOTES: (continued)

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

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最后更新日期：2025 年 10 月