

TPS68470 用于紧凑型摄像机模块 (CCM) 应用且具有 LED 闪存驱动器和参考时钟生成功能的电源管理单元

1 特性

- 高效降压转换器
 - 输出电流高达 500mA
 - 输出电压可选范围：0.9V 至 1.95V
- 双闪存 LED 驱动器
 - 高效升压转换器
 - 基于 LED 基准电压 (Vf) 的自适应输出电压调节
 - 低侧 LED 电流驱动器
 - 两个 1A 电流驱动器
 - LED 温度监视
 - 开路/短路 LED 检测/保护
 - 受控 LED 电流斜升/斜降
- 传感器模拟电源的线性稳压器
 - 输出电压可编程范围是 0.875V 到 3.1V (17.8mV 步长)
 - 输出电流高达 200mA
- IO 电源的线性稳压器
 - 输出电压可编程范围是 0.875V 到 3.1V (17.8mV 步长)
 - 输出电流高达 50mA
- VCM (音圈电机) 驱动器电源的线性稳压器
 - 输出电压可编程范围是 0.875V 到 3.1V (17.8mV 步长)
 - 输出电流高达 500mA
- 辅助电源的线性稳压器
 - 输出电压可编程范围是 0.875V 到 3.1V (17.8mV 步长)
 - 输出电流高达 150mA
- 辅助电源的线性稳压器
 - 输出电压可编程范围是 0.875V 到 3.1V (17.8mV 步长)
 - 输出电流高达 50mA
- 传感器 IO 电源的线性稳压器
 - 输出电压可编程范围是 0.875V 到 3.1V (17.8mV 步长)
 - 输出电流高达 150mA
- 时钟发生
 - 可编程锁相环 (PLL)
 - 晶振
- I²C 接口
- 7 个通用输入输出 (GPIO)

- 系统复位
- 工作温度范围：0°C 至 85°C
- 封装厚度 0.625mm 的芯片级球状引脚栅格阵列 (DSBGA)

2 应用

- 可拆卸式超级本
- 平板电脑
- 智能手机
- 紧凑型摄像机模块 (CCM)

3 说明

TPS68470 器件是高级电源管理单元，可为紧凑型摄像机模块 (CCM) 供电、为图像传感器生成时钟、驱动闪存的双 LED 并集成两个用于通用指示器的 LED 驱动器。TPS68470 能够生成 CCM 中所需的全部电源轨。

CORE 电压稳压器是目前最先进的降压转换器，可用于图像传感器数字电源。线性稳压器 (LDO) (LDO_ANA) 可用于图像传感器模拟电源。

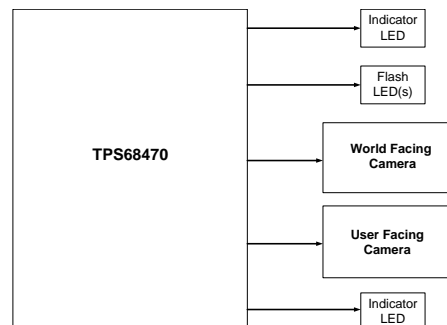
TPS68470 还具有高效升压转换器，可支持两个 1A LED 闪存驱动器。可通过低侧稳压电流源控制 LED 电流。

TPS68470 还有五个 LDO。其中两个可用于通用电源电压生成及传感器 IO 电源电压生成 (LDO_IO 和 LDO_S_IO)。其中一个可专门用于 VCM 驱动器电源 (LDO_VCM)。其余两个是辅助 LDO (LDO_AUX1 和 LDO_AUX2)。

器件信息⁽¹⁾

部件号	封装	封装尺寸 (标称值)
TPS68470	DSBGA (56)	3.325mm x 2.930mm

(1) 如需了解所有可用封装，请见数据表末尾的可订购产品附录。



4 器件和文档支持

4.1 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。

4.2 术语表

[SLYZ022](#) — *TI* 术语表。

这份术语表列出并解释术语、首字母缩略词和定义。

5 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 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)
TPS68470YFFR	Active	Production	DSBGA (YFF) 56	3000 LARGE T&R	Yes	SNAGCU	Level-1-260C-UNLIM	0 to 85	TPS68470
TPS68470YFFR.A	Active	Production	DSBGA (YFF) 56	3000 LARGE T&R	Yes	SNAGCU	Level-1-260C-UNLIM	0 to 85	TPS68470
TPS68470YFFT	Active	Production	DSBGA (YFF) 56	250 SMALL T&R	Yes	SNAGCU	Level-1-260C-UNLIM	0 to 85	TPS68470
TPS68470YFFT.A	Active	Production	DSBGA (YFF) 56	250 SMALL T&R	Yes	SNAGCU	Level-1-260C-UNLIM	0 to 85	TPS68470

(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.

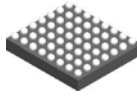
(6) **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

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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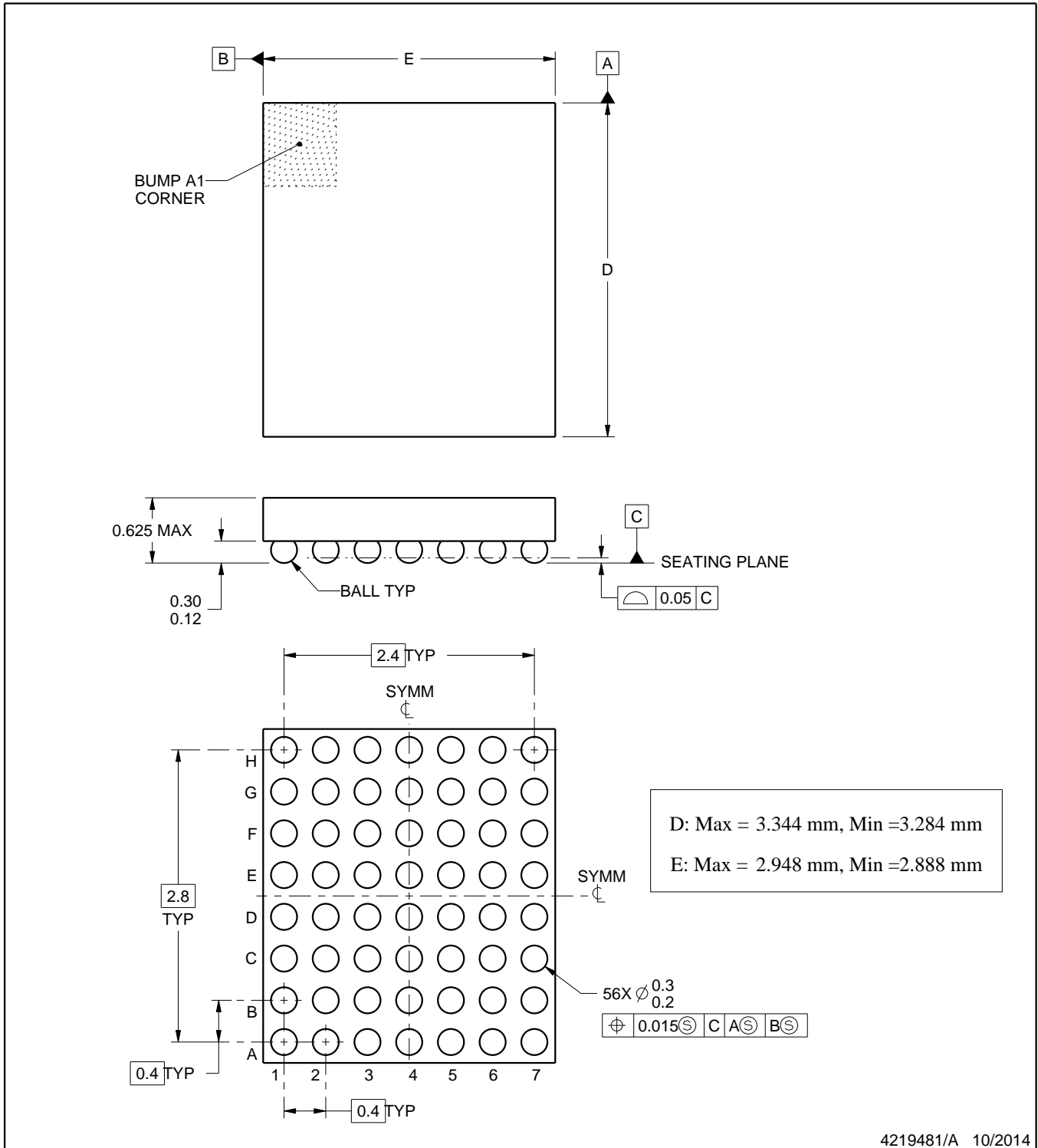
YFF0056



PACKAGE OUTLINE

DSBGA - 0.625 mm max height

DIE SIZE BALL GRID ARRAY



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NOTES:

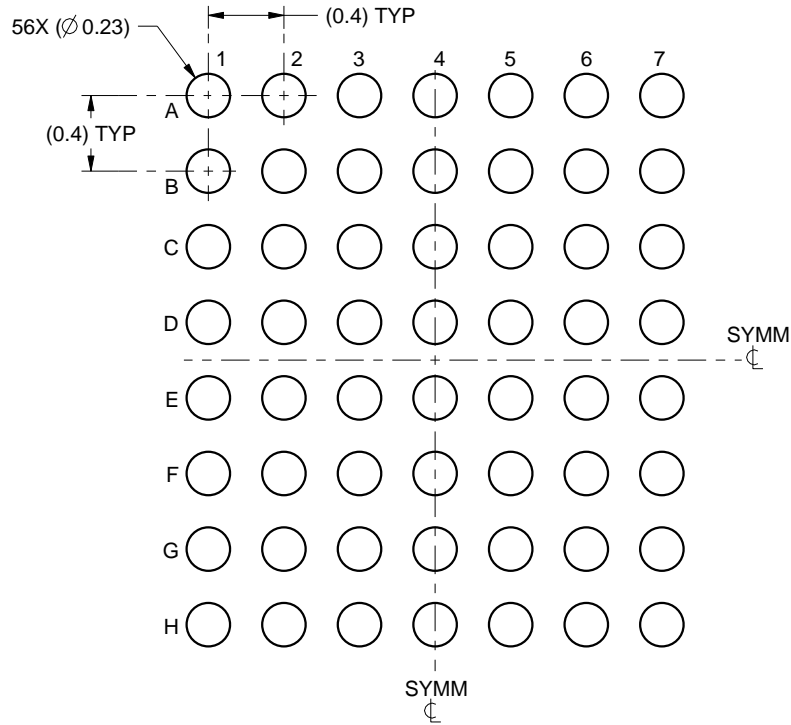
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.

EXAMPLE BOARD LAYOUT

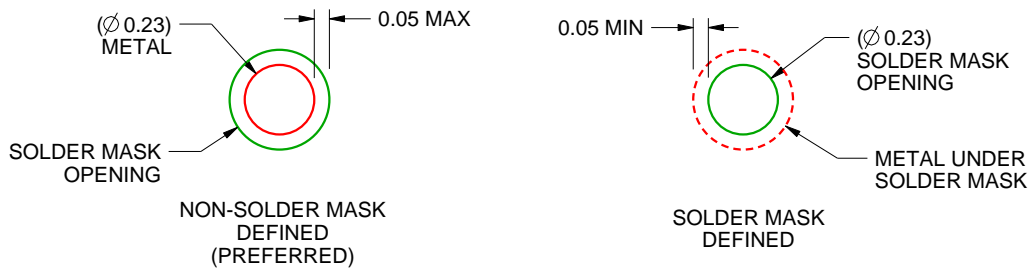
YFF0056

DSBGA - 0.625 mm max height

DIE SIZE BALL GRID ARRAY



LAND PATTERN EXAMPLE
SCALE:25X



SOLDER MASK DETAILS
NOT TO SCALE

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NOTES: (continued)

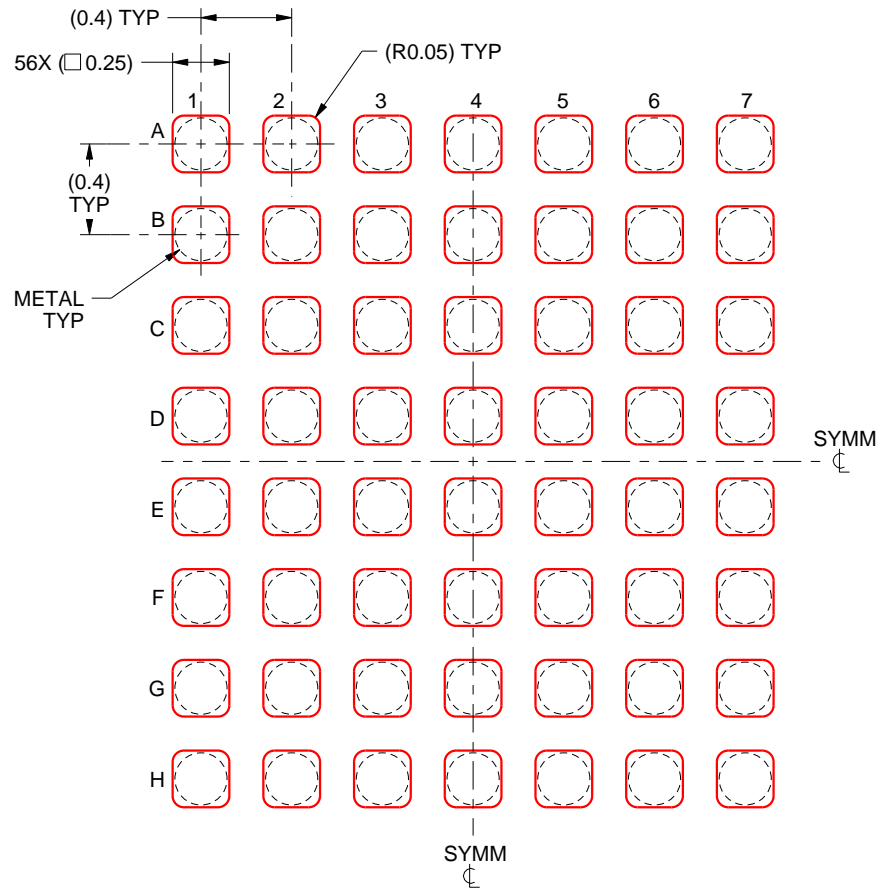
- Final dimensions may vary due to manufacturing tolerance considerations and also routing constraints. For more information, see Texas Instruments literature number SBVA017 (www.ti.com/lit/sbva017).

EXAMPLE STENCIL DESIGN

YFF0056

DSBGA - 0.625 mm max height

DIE SIZE BALL GRID ARRAY



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

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NOTES: (continued)

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

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最后更新日期：2025 年 10 月