



LM36274 具有集成式 LCD 偏置的集成背光驱动器

1 特性

- 可驱动多达四个并联的白色发光二极管 (LED) 串 (V_{OUT} 最大值为 29V)
- 11 位指数和线性调光控制
- 脉宽调制 (PWM) 和 I^2C 亮度控制
- 采用 4.7 μ H 到 15 μ H 电感的背光操作
- 背光和液晶显示屏 (LCD) 偏置效率高达 92%
- 可编程 LCD 偏置电压 ($\pm 4V$ 到 $\pm 6.5V$, 分辨率为 50mV), 每个输出的电流高达 80mA
- 60 μ A 到 30mA 范围内的 LED 电流匹配度为 0.2%
- 60 μ A 到 30mA 范围内的 LED 电流精度为 1%
- 输入电压范围: 2.7V 至 5V

2 应用

- LED 数最多可达 24 个的 LCD 面板
- 智能手机
- 平板电脑和游戏平板电脑
- 家庭自动化面板

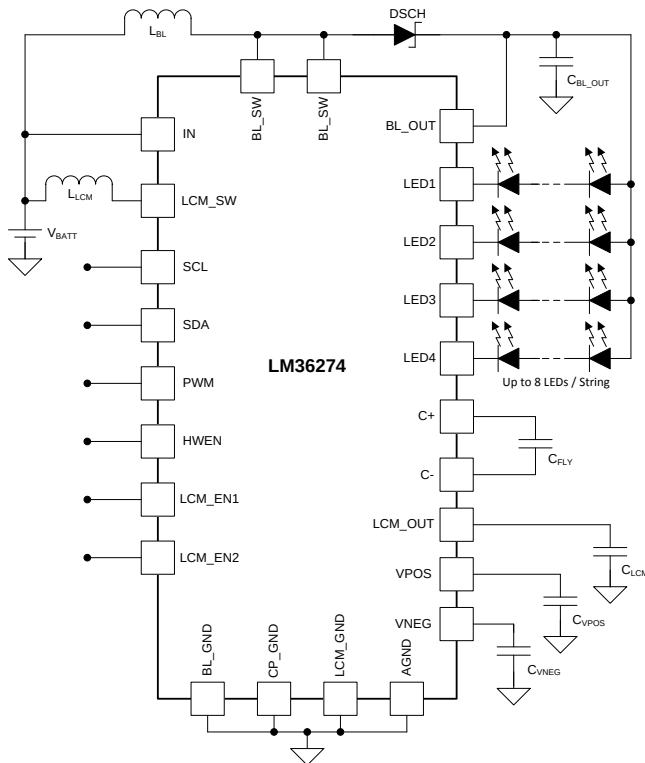
3 说明

LM36274 是一款集成式四通道 WLED 驱动器及 LCD 偏置电源。LM36274 拥有超紧凑外形、高效率、高集成度和可编程性等特性, 因此适用于各种应用, 而且无需更换硬件, 同时还能够最大限度地减小整体解决方案尺寸。

背光升压转换器可提供电源以偏置四个并联 LED 串, 总输出电压最高可达 29V。11 位 LED 电流可通过 I^2C 总线进行编程, 并且/或者可通过介于 60 μ A 和 30mA 之间的逻辑电平 PWM 输入进行控制。每个 LED 串均可单独使能或禁用, 从而实现区域调光功能。采用 4.7 μ H 到 15 μ H 的电感即可高效操作背光升压转换器, 从而优化效率和解决方案尺寸。

LCD 偏置升压转换器为正低压降稳压器 (LDO) 和反向电荷泵供电。正负偏置电源均提供了可编程的输出电压 ($\pm 4V$ 到 $\pm 6.5V$, 步长为 50mV) 以及高达 $\pm 80mA$ 的电流能力。自动排序功能可通过编程设定从正到负偏置激活的延迟, 并且具有附加的可编程电压转换率控制。凭借两种唤醒模式, 两个偏置输出可通过单一外部信号进行控制, 并且能够以超低的静态电流消耗保持工作状态。

简化电路原理图

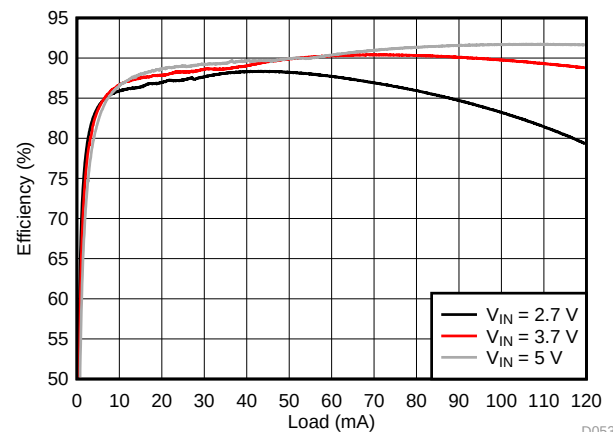


器件信息⁽¹⁾

器件型号	封装	封装尺寸 (最大值)
LM36274	DSBGA (24)	2.44mm × 1.67mm

(1) 要了解所有可用封装, 请参见数据表末尾的可订购产品附录。

背光效率, 4P6S



D053



4 修订历史记录

Changes from Original (February 2016) to Revision A	Page
• 已更改 器件状态，从“预览”改为“量产”	1

5 器件和文档支持

5.1 器件支持

5.1.1 Third-Party Products Disclaimer

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5.1.2 开发支持

Power Stage Designer™ 工具可用于升压计算: <http://www.ti.com.cn/tool/cn/powerstage-designer>

5.2 文档支持

5.2.1 相关文档

相关文档如下:

- AN-1112 《DSBGA 晶圆级芯片规模封装》(文献编号: SNVA009)
- 《了解开关模式电源中的升压功率级》
<http://focus.ti.com/lit/an/slva061/slva061.pdf>

5.3 社区资源

The following links connect to TI community resources. Linked contents are provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's [Terms of Use](#).

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5.4 商标

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5.5 静电放电警告



ESD 可能会损坏该集成电路。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措施和安装程序, 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。

5.6 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
LM36274YFFR	ACTIVE	DSBGA	YFF	24	3000	RoHS & Green	SNAGCU	Level-1-260C-UNLIM	-40 to 85	LM36274	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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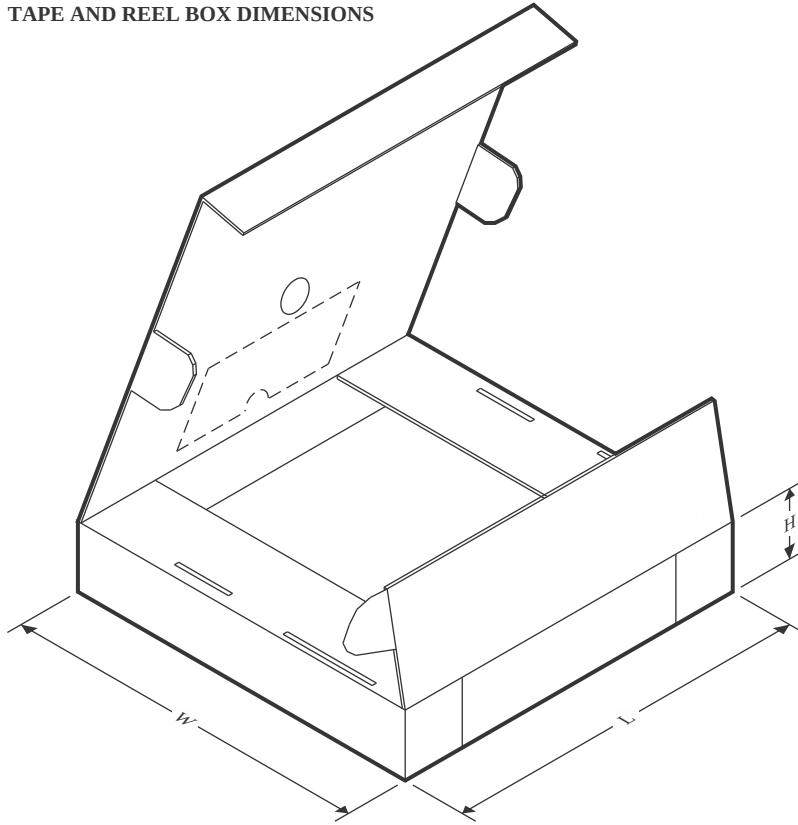
TAPE AND REEL INFORMATION



*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
LM36274YFFR	DSBGA	YFF	24	3000	180.0	8.4	1.72	2.51	0.69	4.0	8.0	Q1
LM36274YFFR	DSBGA	YFF	24	3000	180.0	8.4	1.82	2.74	0.75	4.0	8.0	Q1

TAPE AND REEL BOX DIMENSIONS

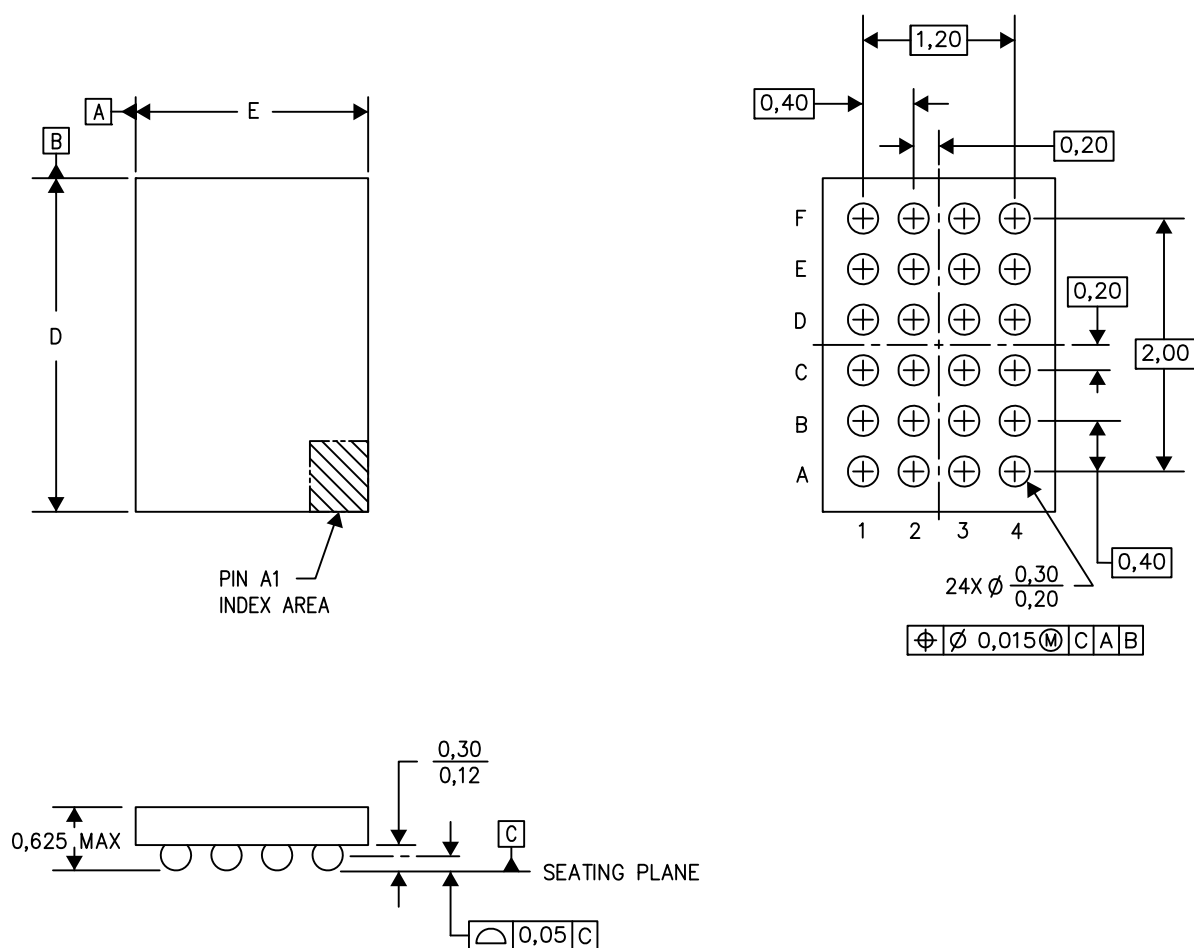


*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
LM36274YFFR	DSBGA	YFF	24	3000	182.0	182.0	20.0
LM36274YFFR	DSBGA	YFF	24	3000	182.0	182.0	20.0

YFF (R-XBGA-N24)

DIE-SIZE BALL GRID ARRAY



D: Max = 2.44 mm, Min = 2.38 mm

E: Max = 1.671 mm, Min = 1.61 mm

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- NOTES:
- A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
 - B. This drawing is subject to change without notice.
 - C. NanoFree™ package configuration.

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