

具备自动主机唤醒功能且符合 ASIL-D 标准的 BQ79600-Q1 汽车类 SPI/UART 通信接口

1 特性

- 符合汽车类应用要求
- 具有符合 AEC-Q100 标准的下列特性：
 - 器件温度 1 级：-40°C 至 +125°C 的环境工作温度范围
 - 器件 HBM ESD 分类等级 2
 - 器件 CDM ESD 分类等级 C4B
- 符合功能安全标准
- 在环形架构中检测到故障时，自动唤醒 BMS/BMU 系统
- 支持的电源电压范围为 4.75V 至 40V
- UART/SPI 主机接口
- 兼容 3.3V/5V 逻辑
- 隔离式差分菊花链
 - 支持包含一台设备的环形架构
 - 支持变压器/电容器隔离
- 经过专门设计，旨在实现 BCI/EMI/EMC 稳健性
- 支持 BQ7961x-Q1 和 BQ79606A-Q1（不配备故障菊花链接口）

2 应用

- 电池管理系统 (BMS)
- 其他 HEV/EV
- 燃料电池
- 能源存储

3 说明

BQ79600-Q1 是一款通信（网桥）IC，旨在连接微控制器 (MCU) 和 TI 电池监控 IC，例如 BQ7961X-Q1 和 BQ79606A-Q1。器件将来自 MCU 的信息转换为信号，而 TI 的电池管理菊花链协议用于识别这种信号，并将其传输出来。来自菊花链的信号被解码为位流，然后发送回 MCU。

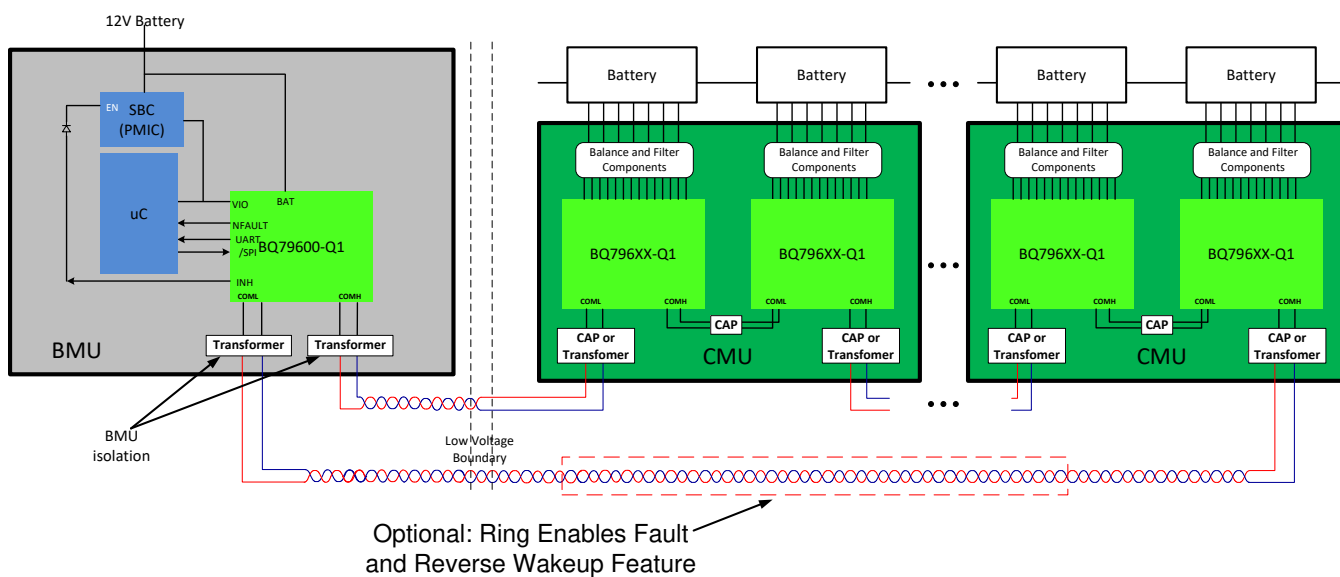
使用环形架构时如果检测到了任何未屏蔽的故障，则 BQ79600-Q1 可以将处于关断/睡眠模式的 MCU 和 PMIC 唤醒。

器件信息⁽¹⁾

器件型号	封装	封装尺寸（标称值）
BQ79600-Q1	TSSOP（16 引脚）	6.6mm × 5.1mm

(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。

简化系统图



4 器件和文档支持

4.1 器件支持

4.1.1 第三方产品免责声明

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4.3 支持资源

TI [E2E™ support forums](#) are an engineer's go-to source for fast, verified answers and design help — straight from the experts. Search existing answers or ask your own question to get the quick design help you need.

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4.4 商标

E2E is a trademark of Texas Instruments.

4.5 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 机械、封装和可订购信息

以下页面包含机械、封装和可订购信息。这些信息是指定器件的最新可用数据。数据如有变更，恕不另行通知，且不会对此文档进行修订。如需获取此数据表的浏览器版本，请查阅左侧的导航栏。

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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
BQ79600PWRQ1	ACTIVE	TSSOP	PW	16	2000	RoHS & Green	NIPDAU	Level-2-260C-1 YEAR	-40 to 125	BQ79600	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.

OBSELETE: 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.

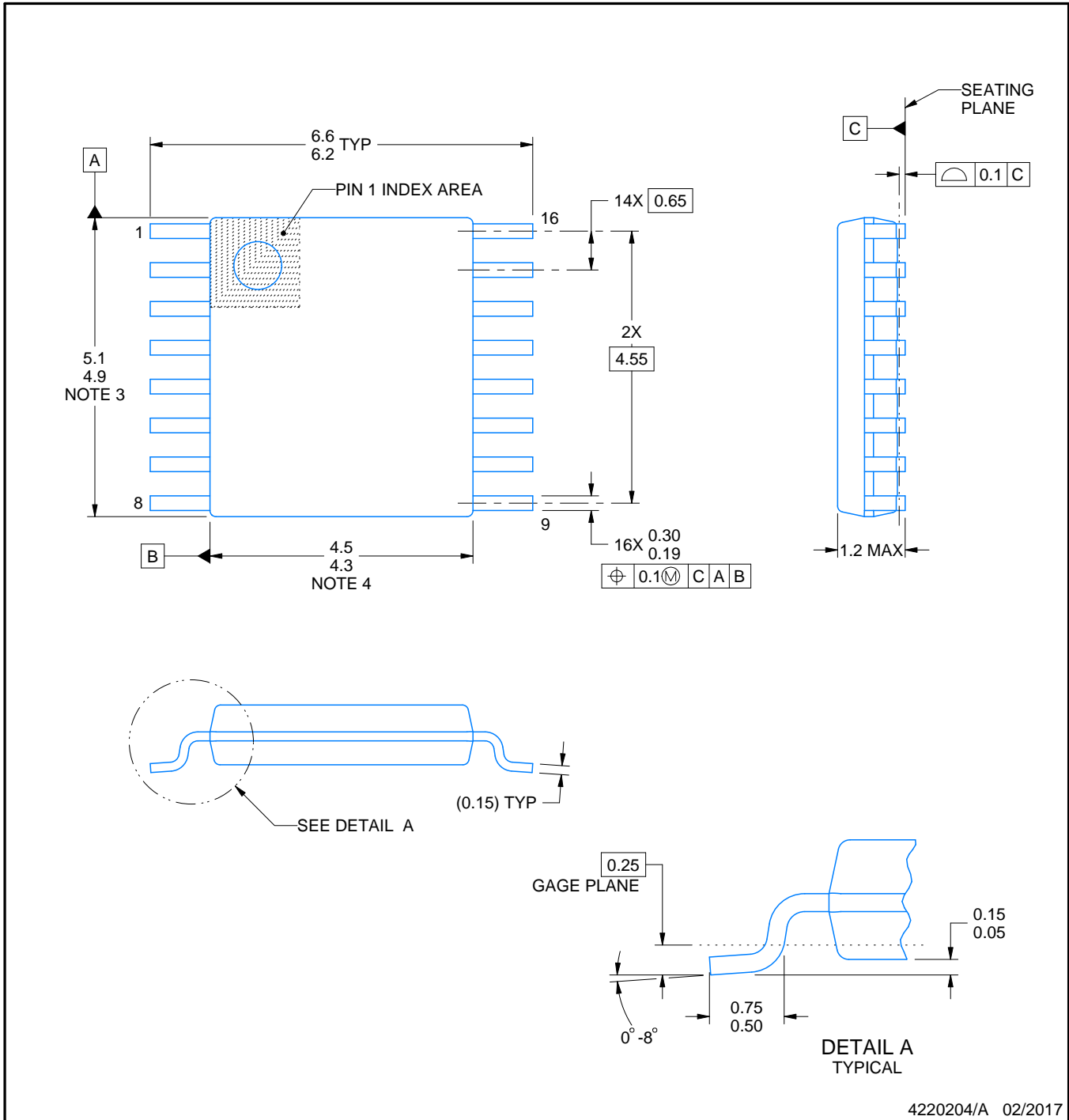
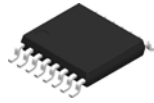
(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(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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NOTES:

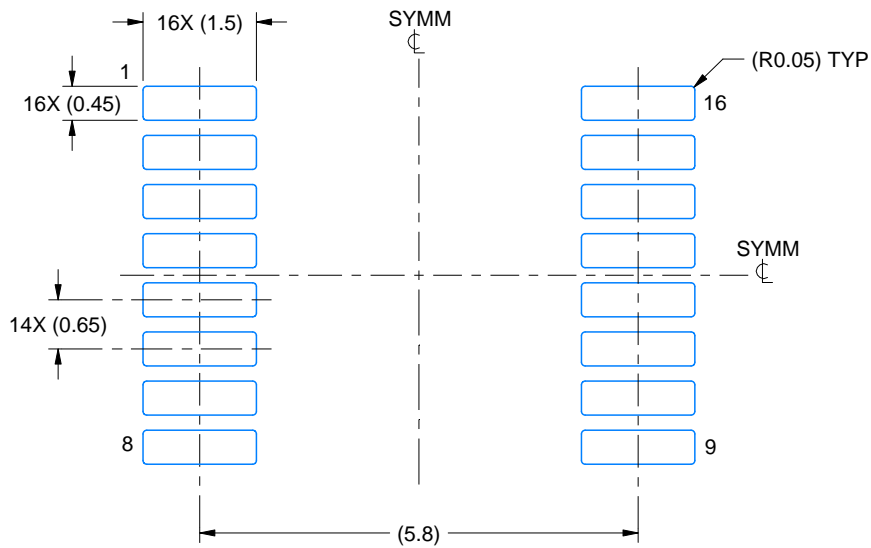
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm per side.
5. Reference JEDEC registration MO-153.

EXAMPLE BOARD LAYOUT

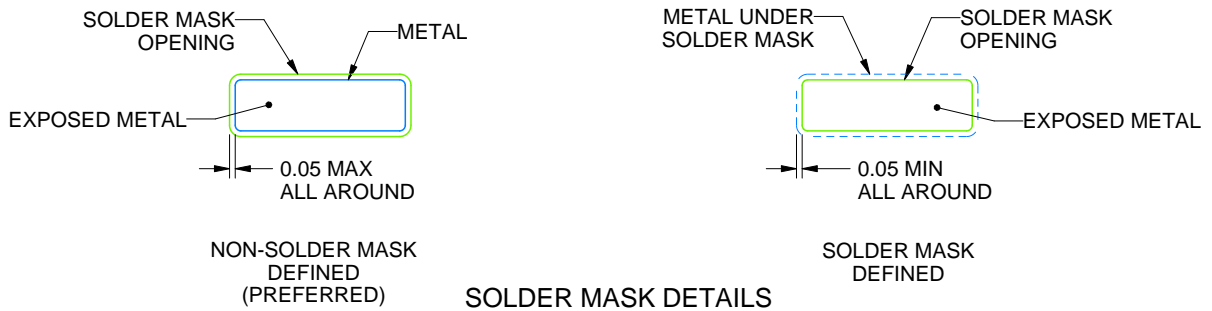
PW0016A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE: 10X



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NOTES: (continued)

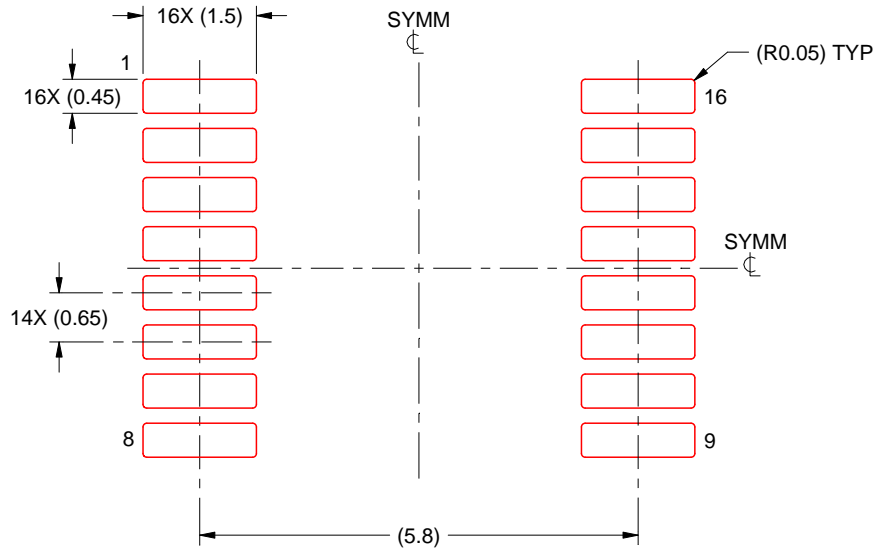
- 6. Publication IPC-7351 may have alternate designs.
- 7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

EXAMPLE STENCIL DESIGN

PW0016A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



SOLDER PASTE EXAMPLE
BASED ON 0.125 mm THICK STENCIL
SCALE: 10X

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NOTES: (continued)

8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
9. Board assembly site may have different recommendations for stencil design.

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