

## AFE5401-Q1 四通道，模拟前端，用于汽车雷达基带接收器

### 1 特性

- 集成模拟前端包括：
  - 四通道低噪声放大器 (LNA)，均衡器，可编程增益放大器 (PGA)，抗混叠滤波器和模数转换器 (ADC)
- 与 PGA 输入相关的噪声： $3.0\text{nV}/\sqrt{\text{Hz}}$
- 通道上的同时采样
- 可编程 LNA 增益
- 可选均衡器模式
- 可编程增益放大器 (PGA)
- 可编程、三阶、抗混叠滤波器：
  - 7MHz, 8MHz, 10.5MHz 和 12MHz
- 并行 CMOS 输出
- 每通道 64mW 总内核功率
- 电源：1.8V 和 3.3V

### 2 应用

- 汽车雷达
- 数据采集
- SONAR™

### 3 说明

AFE5401-Q1 包括四个通道，其中每个通道由一个低噪声放大器 (LNA)，一个可选均衡器 (EQ)，一个可编程增益放大器 (PGA)，和一个抗混叠滤波器，以及后面的高速，12 位模数转换器 (ADC) 组成，每通道速度 25MSPS。

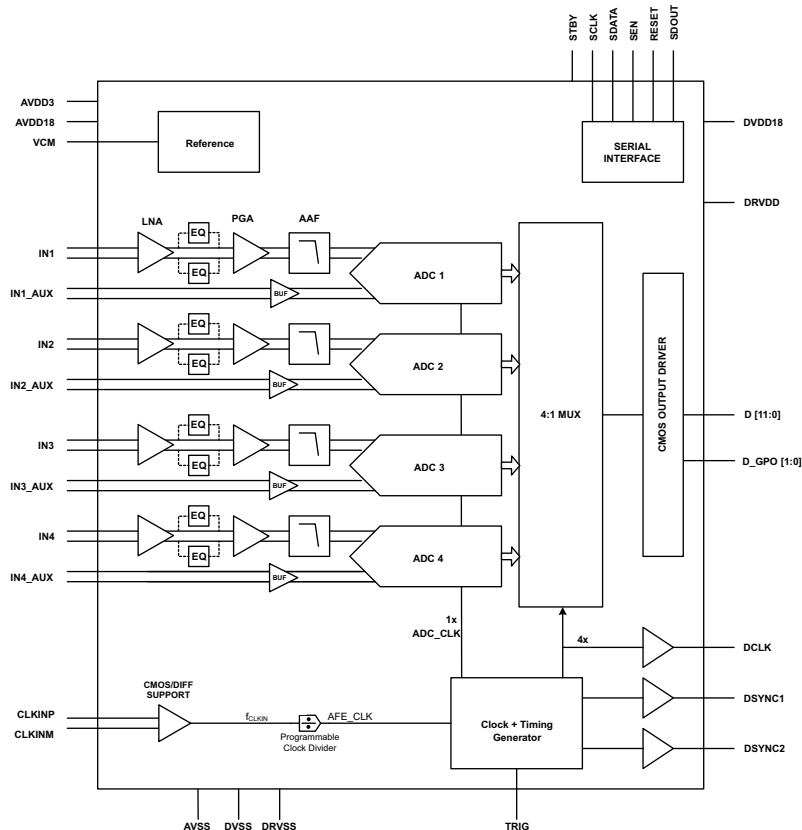
四个 ADC 输出在一条 12 位，并行，CMOS 兼容输出总线上复用。

如需完整数据表或其他设计资源，请点击：[请求获取 AFE5401-Q1](#)

#### 器件信息

订货编号	封装	封装尺寸
AFE5401TRGCRQ1	VQFN (64)	9mm x 9mm
AFE5401TRGCTQ1	VQFN (64)	9mm x 9mm

功能方框图



## 4 修订历史记录

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**Changes from Revision B (March 2014) to Revision C** **Page**

- 已添加 请求获取完整数据表的链接 ..... 1
- 

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**Changes from Revision A (February 2014) to Revision B** **Page**

- 已将器件状态从产品预览更改为生产数据 ..... 1
- 

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**Changes from Original (December 2013) to Revision A** **Page**

- 已更改数据表标题 ..... 1
  - 已添加 应用 部分 ..... 1
  - 已添加器件信息表 ..... 1
-

## 5 器件和文档支持

### 5.1 商标

SONAR is a trademark of Cakewalk, Inc.

All other trademarks are the property of their respective owners.

### 5.2 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。

### 5.3 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 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)
<a href="#">AFE5401TRGCRQ1</a>	Active	Production	VQFN (RGC)   64	2000   LARGE T&R	Yes	NIPDAU	Level-3-260C-168 HR	-40 to 105	AFE5401
AFE5401TRGCRQ1.A	Active	Production	VQFN (RGC)   64	2000   LARGE T&R	Yes	NIPDAU	Level-3-260C-168 HR	-40 to 105	AFE5401

(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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**OTHER QUALIFIED VERSIONS OF AFE5401-Q1 :**

- Enhanced Product : [AFE5401-EP](#)

NOTE: Qualified Version Definitions:

- Enhanced Product - Supports Defense, Aerospace and Medical Applications

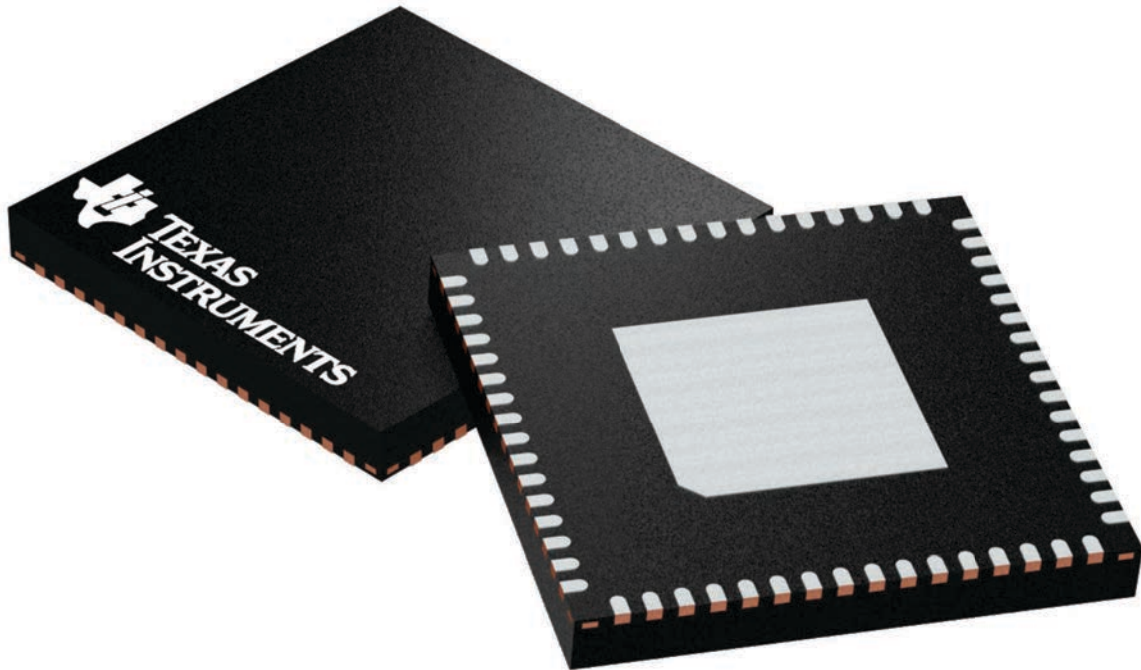
## GENERIC PACKAGE VIEW

**RGC 64**

**VQFN - 1 mm max height**

9 x 9, 0.5 mm pitch

PLASTIC QUAD FLATPACK - NO LEAD



Images above are just a representation of the package family, actual package may vary.  
Refer to the product data sheet for package details.

4224597/A

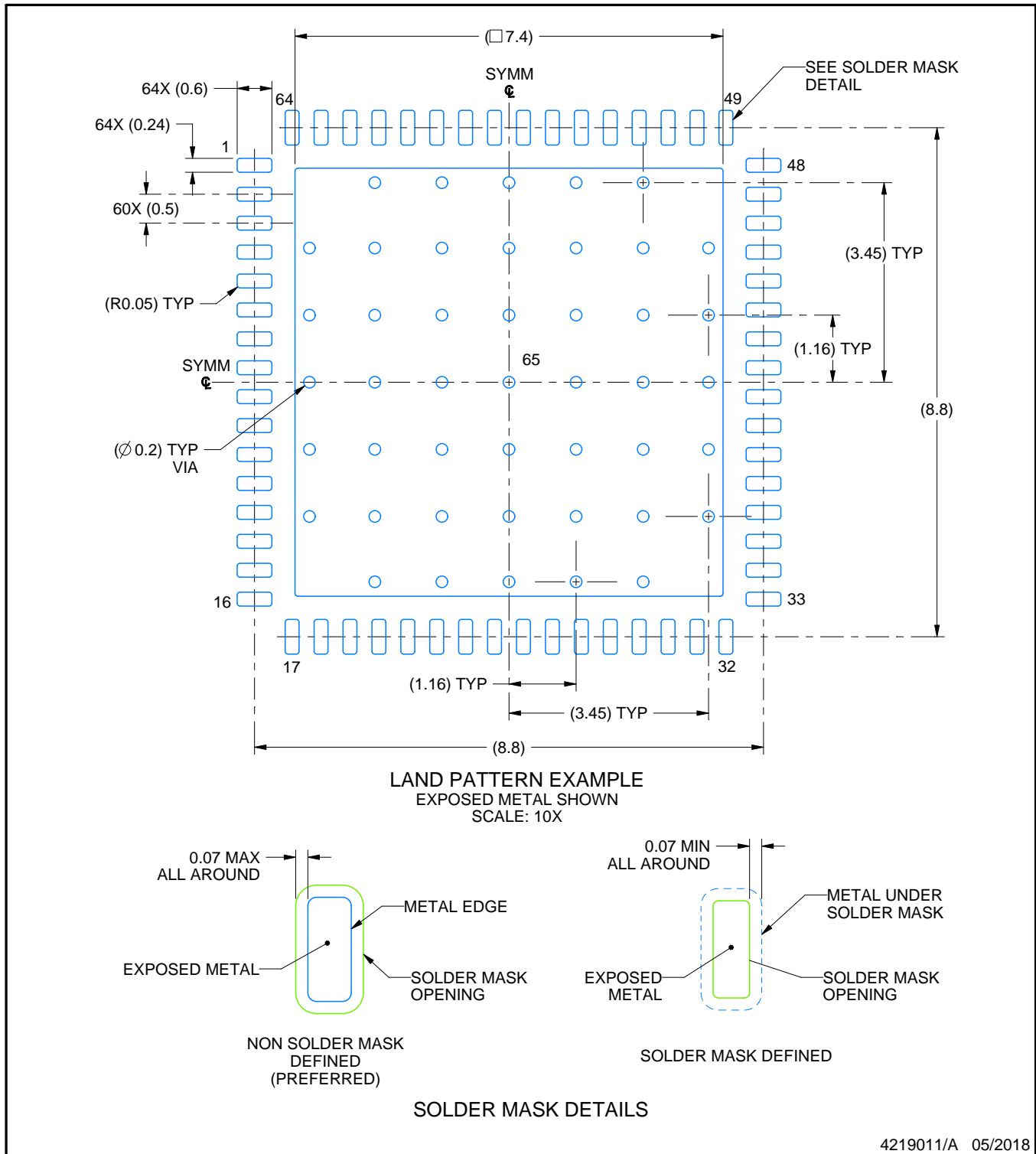


# EXAMPLE BOARD LAYOUT

RGC0064H

VQFN - 1 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



NOTES: (continued)

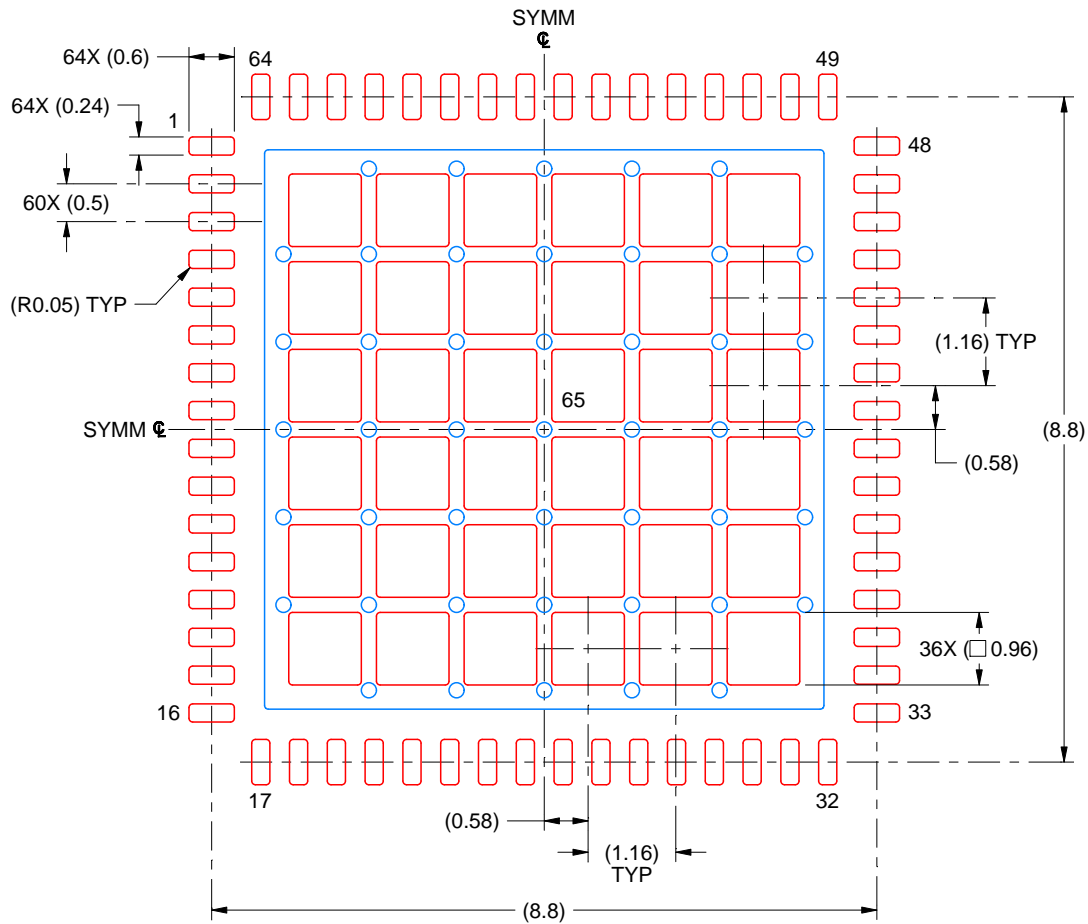
4. This package is designed to be soldered to a thermal pad on the board. For more information, see Texas Instruments literature number SLUA271 ([www.ti.com/lit/sluea271](http://www.ti.com/lit/sluea271)).
5. Vias are optional depending on application, refer to device data sheet. If any vias are implemented, refer to their locations shown on this view. It is recommended that vias under paste be filled, plugged or tented.

# EXAMPLE STENCIL DESIGN

RGC0064H

VQFN - 1 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



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

EXPOSED PAD 65  
 61% PRINTED SOLDER COVERAGE BY AREA UNDER PACKAGE

4219011/A 05/2018

NOTES: (continued)

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

## 重要通知和免责声明

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