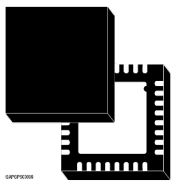
STA5635S

Data brief

Automotive universal GNSS RF receiver



VFQFPN32

Features

- AEC-Q100 Grade 2
- Multi GNSS band support (L1/E1, L2C, L5/E5/E6)
- Programmable IF bandwidth (7 or 13 MHz range)
- 3.3 V supply voltage
- Fractional-N synthesizer with embedded loop filter
- SPI Interface for full programmability
- 2 Bit A/D converter
- ASIL compliance
- Operating temperature (-40, +105 °C)
- CMOS040 technology
- QFN5x5 32 leads package

Description

The STA5635S is a fully integrated RF front-end able to support different bands (L1/E1, L2C, L5/E5/E6) thanks to a programmable and flexible RF-IF chain driven by a fractional PLL. In particular, STA5635S is able to manage all the GNSS constellations available and planned in the next future like GPS, Galileo, Glonass, BeiDou, IRNSS and QZSS.

The RF_IF chain is followed from a 2-bit ADC able to convert the IF signal to Sign (SIGN) and Magnitude (MAG) bit. The MAG bit is internally integrated in order to control the variable gain amplifiers. The VGA gain can be also set by the SPI interface.

The embedded fractional PLL allows supporting a wide range of reference clocks (10 to 55 MHz) and generates a sampling clock available for the baseband.

The STA5635S embeds two LDOs to supply at 1.1 V the analog and digital cores of the device facilitating requirements to external power supply. A third LDO can be turned-on to supply at 1.8 V external active components as a TCXO.

The chip is manufactured in CMOS040nm technology and housed in a QFN package.

Product status link
STA5635S

Product summary	
Order code	**STA5635S**
Package	QFN5x5
Packing	Tray
Order code	**STA5635STR**
Package	QFN5x5
Packing	Tape and reel

1 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

1.1 VFQFPN32 5x5x1 mm package information

Figure 1. **VFQFPN32 5x5x1 mm package outline**

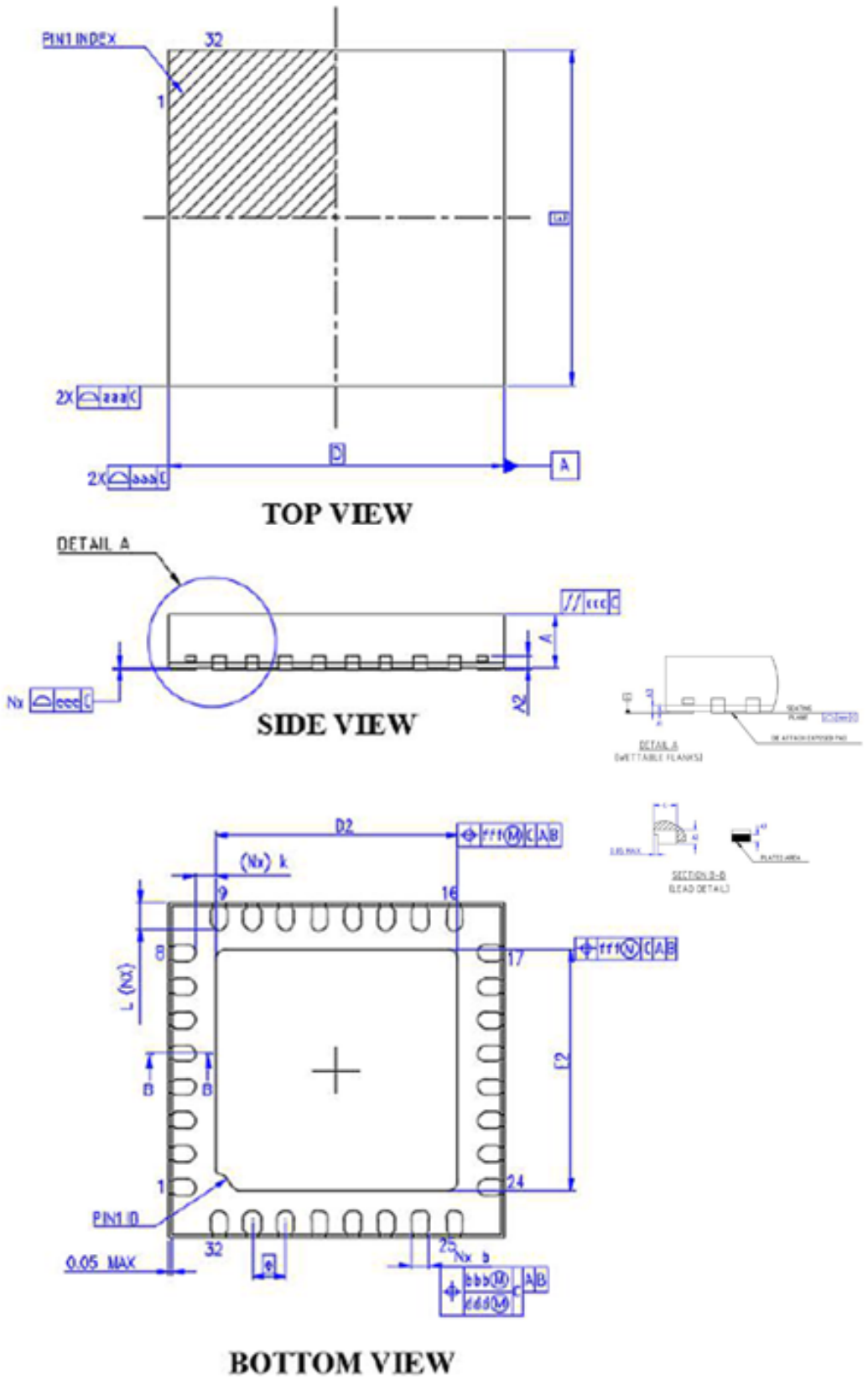


Table 1. VFQFPN32 5x5x1 mm mechanical data

Ref.	Dimension (mm)			Note
	Min.	Typ.	Max.	
A	0.80	0.90	1.00	12
A1	0.00	-	0.05	9, 12
A2		0.2 REF.		-
A3	0.10			12
b	0.20	0.25	0.30	5, 6, 7, 12, 13
D		5.00 BSC		4, 12
D2	3.50	3.60	3.70	10, 12
e		0.50 BSC		12
E		5.00 BSC		4, 12
E2	3.50	3.60	3.70	10, 12
L	0.30	0.40	0.50	12, 13
k	0.20	-	-	-
N		32		8
		Tolerance of form and position		-
aaa		0.15		-
bbb		0.10		
ccc		0.10		
ddd		0.05		
eee		0.08		
fff		0.10		-
NOTE		112		-
REF		-		

Notes:

1. Dimensioning and tolerancing schemes conform to ASME Y14.5M-1994.
2. All Dimensions are in millimeters
3. Terminal A1 identifier and terminal numbering convention shall conform to JEP95 SPP-002. Terminal A1 identifier must be located within the zone indicated on the outline drawing. Topside terminal A1 indicator may be a molded, or metalized feature. Optional indicator on bottom surface may be a molded, marked or metallized feature.
4. Outlines with “D” and “E” increments less than 0.5 mm should be registered as “stand alone” outlines. These outlines should use as many of the algorithms and dimensions states in the design standard as possible to insure predictability in manufacturing.
5. Dimension ‘b’ / ‘b1’ / ‘b2’ applies to metallized terminal and is measured between 0.15mm and 0.30mm from the terminal tip. If the terminal has the optional radius on the other end of the terminal, the dimension ‘b’ / ‘b1’ / ‘b2’ should not be measured in that radius area.
6. Inner edge of corner terminals may be chamfered or rounded in order to achieve minimum gap “k”. This feature should not affect the terminal width “b” / ‘b1’ / ‘b2’, which is measured L/2 from the edge of the package body.
7. Exact shape of the leads at the edge of the package is optional.

8. “N” is the maximum number of terminal positions for the specified body size. Depopulation is allowed, but only under the following conditions.
   – Depopulation scheme must be consistent in each quadrant of the package.
   – Non-symmetric variations should be broken out as separate mechanical outline variations, including depopulation graphics.
9. A1 is defined as the distance from the seating plane to the lowest point on the package body (standoff).
10. Dimension D2 and E2 refer to exposed pad.
11. Tolerance of Form and Position.
12. Critical dimensions: 12.1 A 12.2 A1 12.3 A3 12.4 D & E 12.5 B & L 12.6 e 12.7 D2 & E2
13. Dimensions “b” / ‘b1’ / ‘b2’ and “L” are measured at terminal plating surface.

Revision history

Table 2. **Document revision history**

Date	Version	Changes
16-Nov-2020	1	Initial release.