

AFE8030 Octal-Channel RF Transceiver with Feedback Paths

1 Features

- Octal RF sampling 12GSPS transmit DACs
- Octal RF sampling 3GSPS receive ADCs
- Dual RF sampling 3GSPS feedback ADCs
- Maximum RF signal bandwidth:
 - TX/FB: 800MHz
 - 1200MHz in 4-channel mode
 - RX: 600MHz
- RF frequency range: up to 6GHz
- Digital Step Attenuators (DSA):
 - TX: 40dB range, 1dB analog and 0.125dB digital steps
 - RX/FB: 31/25dB range, 1dB step
- Single or dual-band DUC/DDCs
- Dual NCOs per chain for fast frequency switching
- Supports TDD operation with fast switching between TX and RX
- Internal PLL/VCO to generate DAC/ADC clocks
- Optional external CLK at DAC or ADC rate
- SerDes data interface:
 - JESD204B and JESD204C
 - 8 SerDes transceivers up to 32.5Gbps
 - 8b/10b and 64b/66b Encoding
 - 12-bit, 16-bit, 24-bit and 32-bit resolution
 - Subclass one multi-device synchronization
- Package:
 - 17mm × 17mm FCBGA, 0.8mm pitch

2 Applications

- Macro remote radio unit (RRU)
- Active antenna system mMIMO (AAS)
- Small cell base station
- Distributed Antenna Systems (DAS)
- Repeater

3 Description

The AFE8030 is a high performance, wide bandwidth multichannel transceiver, integrating eight RF sampling transmitter chains, eight RF sampling receiver chains and two separate RF front end for the auxiliary chains (feedback paths). The high dynamic range of the transmitter and receiver chains allows generating and receiving 3G, 4G and 5G signals for wireless base stations, and the AFE8030 wide bandwidth capability is designed for multi-band 4G and 5G base stations.

Each receiver chain includes a 31dB range DSA (Digital Step Attenuator), followed by a 3GSPS ADC (analog-to-digital converter). Each receiver channel has analog peak power detectors and digital peak and power detectors to assist an external or internal autonomous automatic gain controller, and RF overload detectors for device reliability protection. The single or dual digital down converter (DDC) provides up to 600MHz of combined signal BW. In TDD mode, the receiver channel can be configured to dynamically switching between traffic receiver (TDD RX) and wideband feedback receiver (TDD FB), with the capability of re-using the same analog input for both purposes.

The feedback path includes a 25dB range DSA driving a 3GSPS RF sampling ADC, followed by a single wide DDC or two narrower DDCs with up to combined 800MHz bandwidth (1200MHz in 4-channel mode).

Package Information

PART NUMBER	PACKAGE ⁽¹⁾	PACKAGE SIZE ⁽²⁾
AFE8030	ABJ (FCBGA, 400)	17.00mm × 17.00mm
	ALK (FCBGA, 400)	17.00mm × 17.00mm

- (1) For all available packages, see the orderable addendum at the end of the data sheet.
- (2) The package size (length × width) is a nominal value and includes pins, where applicable.



4 AFE8030 Functional Block Diagram

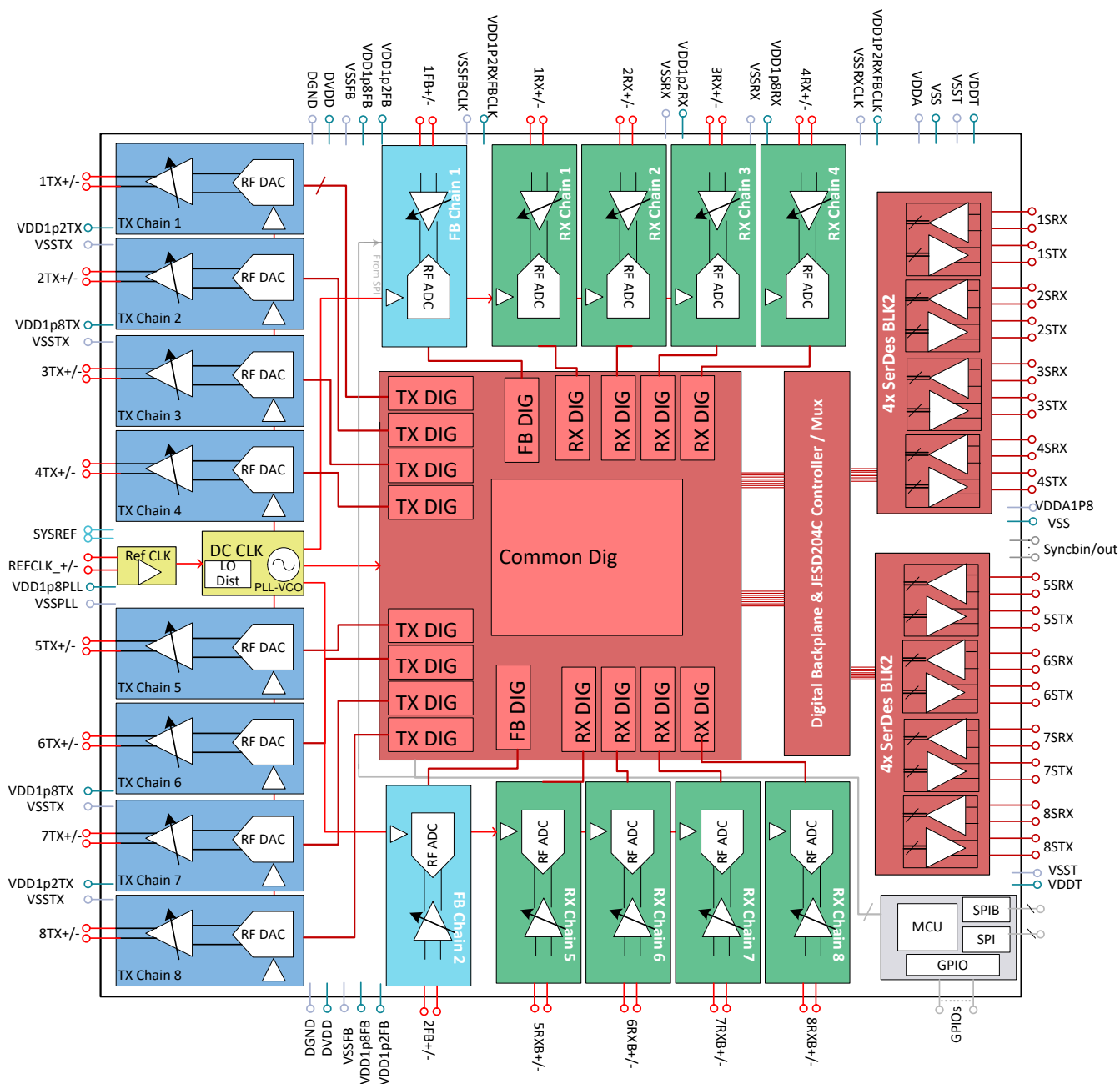


Table of Contents

1 Features	1	5.3 Support Resources.....	4
2 Applications	1	5.4 Trademarks.....	4
3 Description	1	5.5 Electrostatic Discharge Caution.....	4
4 AFE8030 Functional Block Diagram	2	5.6 Glossary.....	4
5 Device and Documentation Support	4	6 Revision History	4
5.1 Device Support.....	4	7 Mechanical, Packaging, and Orderable Information	4
5.2 Receiving Notification of Documentation Updates.....	4		

5 Device and Documentation Support

5.1 Device Support

5.2 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on [ti.com](https://www.ti.com). Click on *Notifications* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

5.3 Support Resources

[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.

Linked content is 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](#).

5.4 Trademarks

TI E2E™ is a trademark of Texas Instruments.

All trademarks are the property of their respective owners.

5.5 Electrostatic Discharge Caution



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

5.6 Glossary

[TI Glossary](#) This glossary lists and explains terms, acronyms, and definitions.

6 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

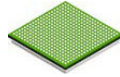
Changes from Revision A (September 2022) to Revision B (June 2025)	Page
• Removed 4GSPS ADC clock support.....	1

Changes from Revision * (December 2021) to Revision A (September 2022)	Page
• Added ALK (FCBGA) package to the data sheet.....	1
• Changed the <i>Device Information</i> table to <i>Package Information</i>	1

7 Mechanical, Packaging, and Orderable Information

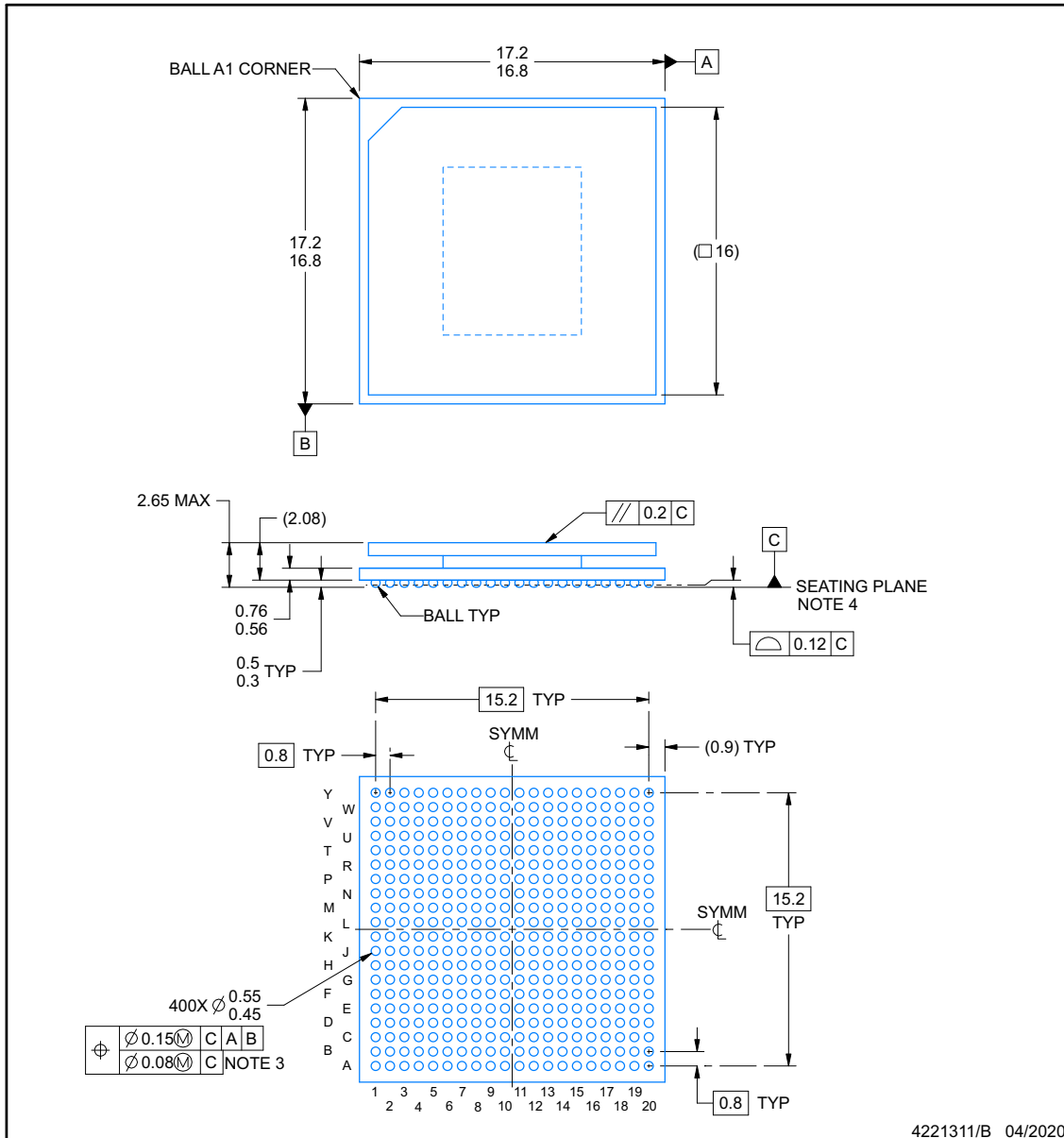
The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

ABJ0400A



PACKAGE OUTLINE FCBGA - 2.65 mm max height

BALL GRID ARRAY

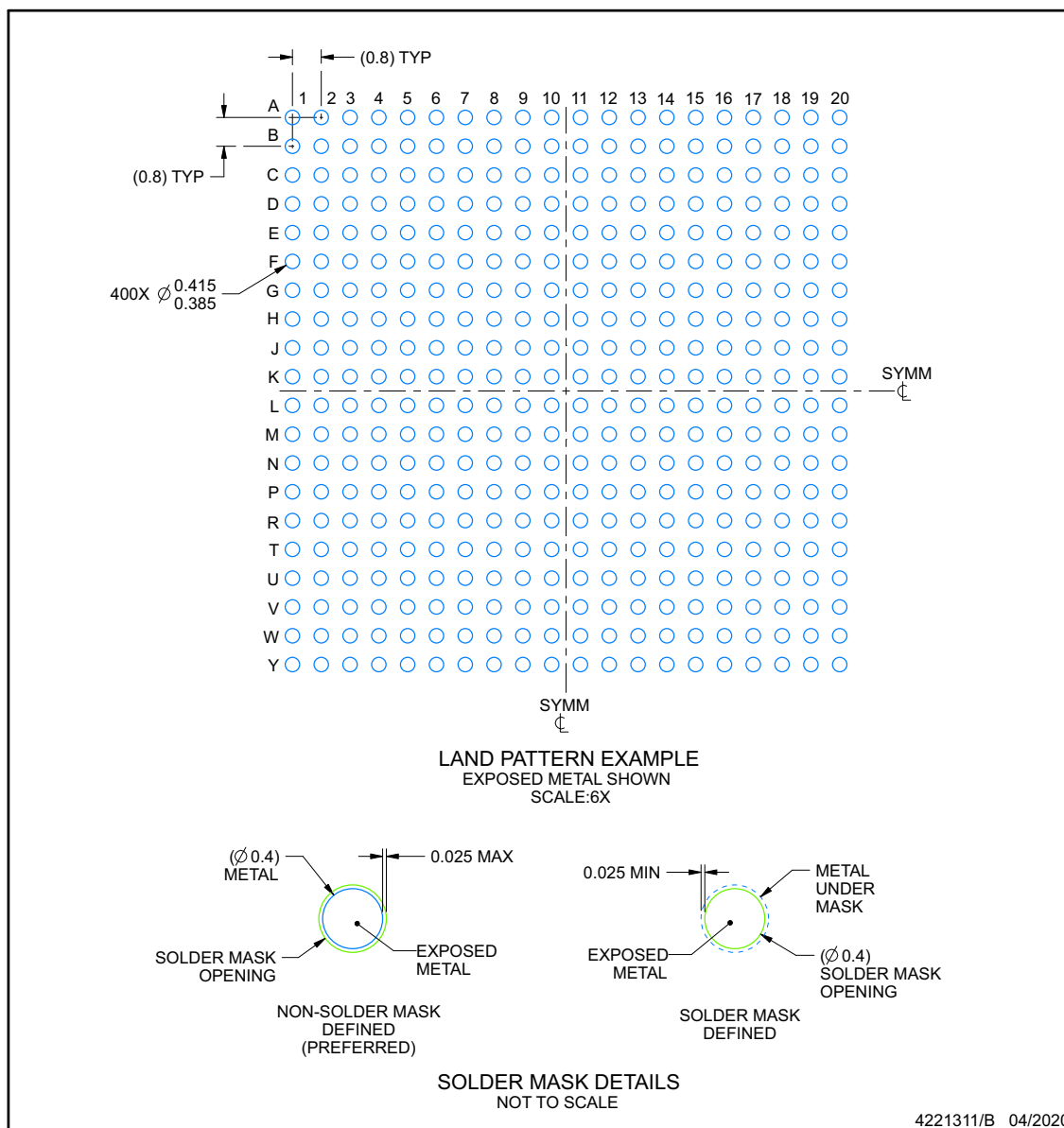


NOTES:

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. Dimension is measured at the maximum solder ball diameter, parallel to primary datum C.
4. Primary datum C and seating plane are defined by the spherical crowns of the solder balls.

EXAMPLE BOARD LAYOUT**ABJ0400A****FCBGA - 2.65 mm max height**

BALL GRID ARRAY



NOTES: (continued)

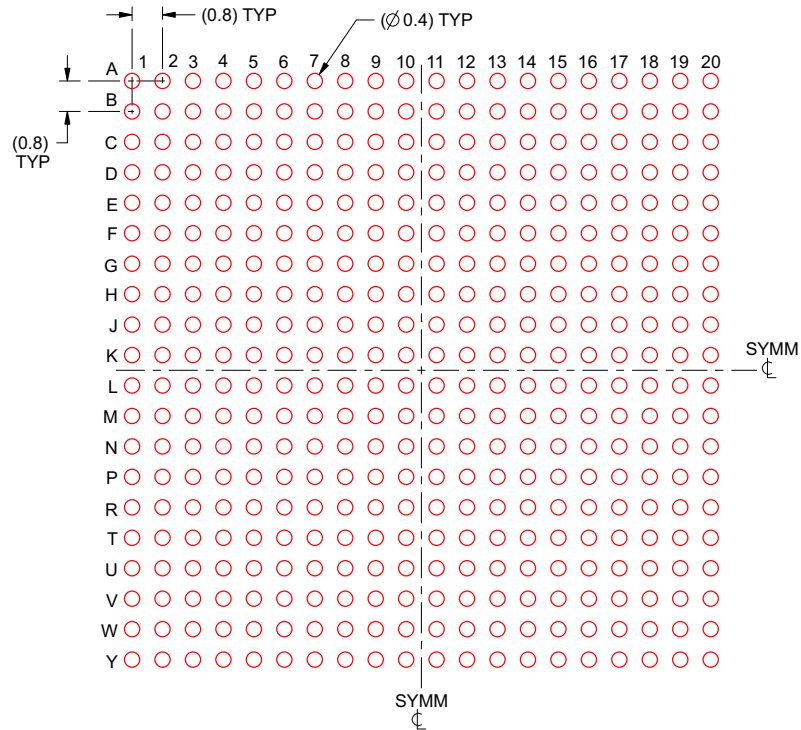
5. Final dimensions may vary due to manufacturing tolerance considerations and also routing constraints.
For more information, see Texas Instruments literature number SPRU811 (www.ti.com/lit/spru811).

EXAMPLE STENCIL DESIGN

ABJ0400A

FCBGA - 2.65 mm max height

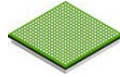
BALL GRID ARRAY



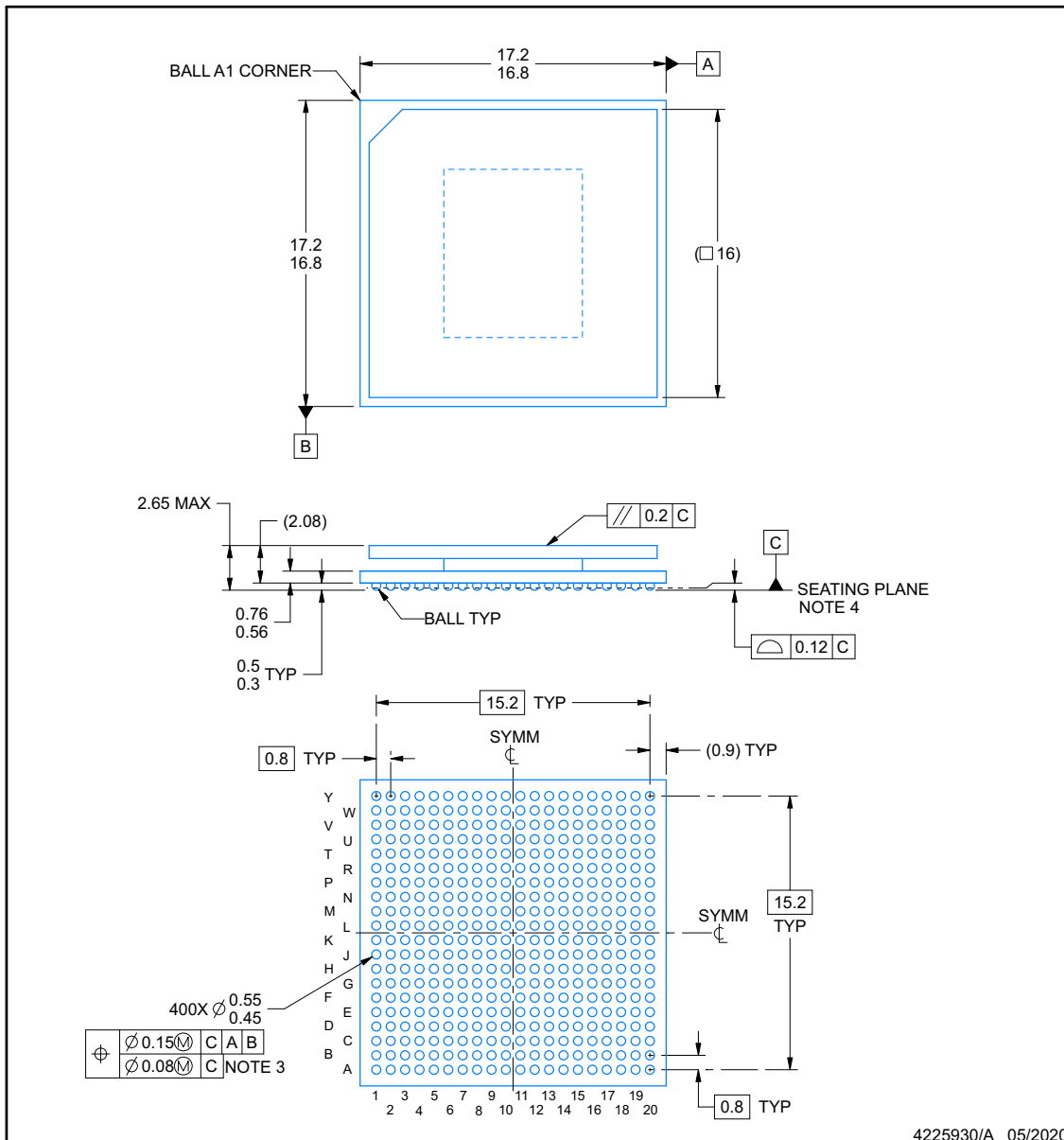
4221311/B 04/2020

NOTES: (continued)

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

ALK0400A**PACKAGE OUTLINE****FCBGA - 2.65 mm max height**

BALL GRID ARRAY



4225930/A 05/2020

NOTES:

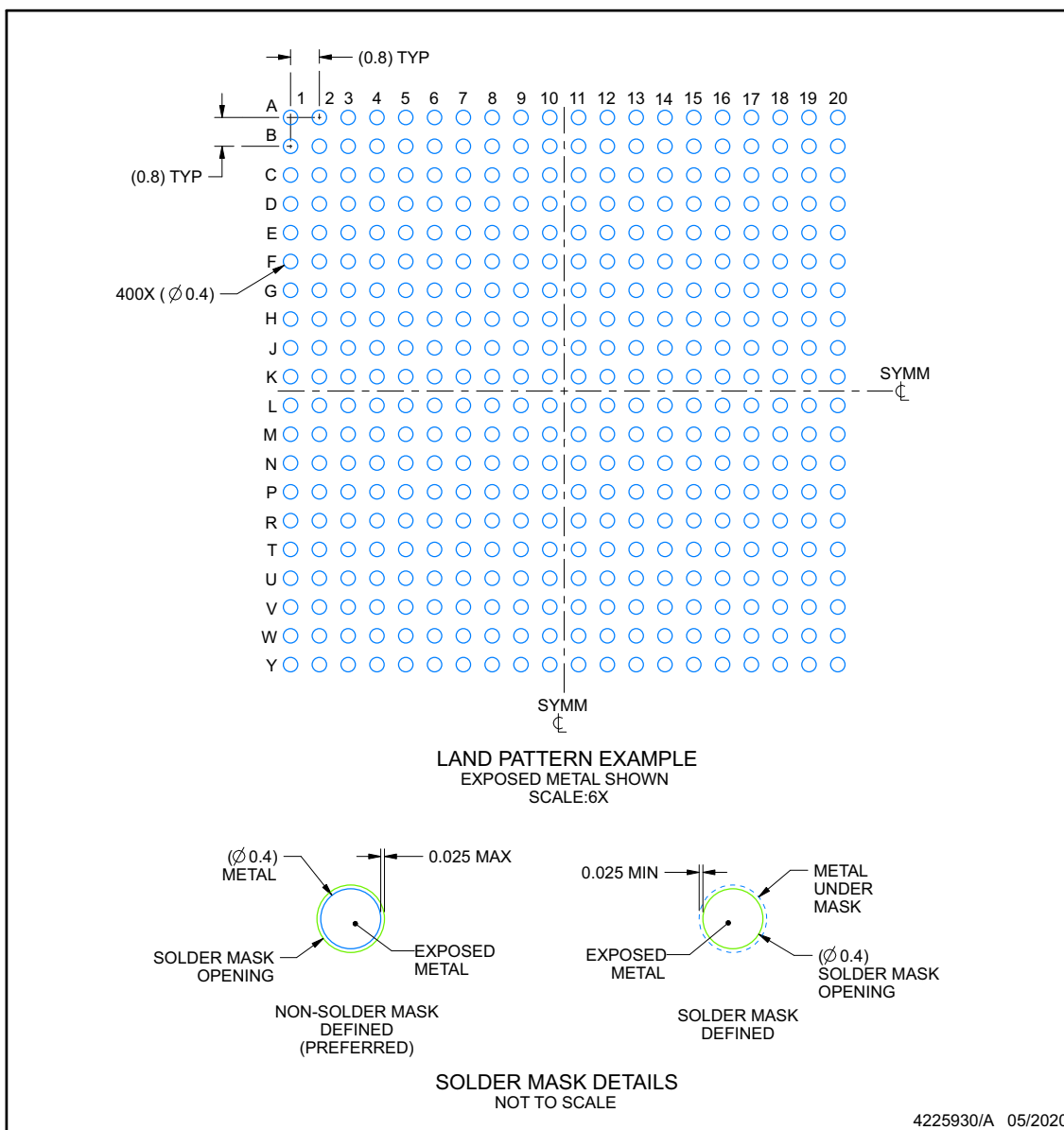
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. Dimension is measured at the maximum solder ball diameter, parallel to primary datum C.
4. Primary datum C and seating plane are defined by the spherical crowns of the solder balls.
5. Pb-Free die bump and SnPb solder ball.

EXAMPLE BOARD LAYOUT

ALK0400A

FCBGA - 2.65 mm max height

BALL GRID ARRAY

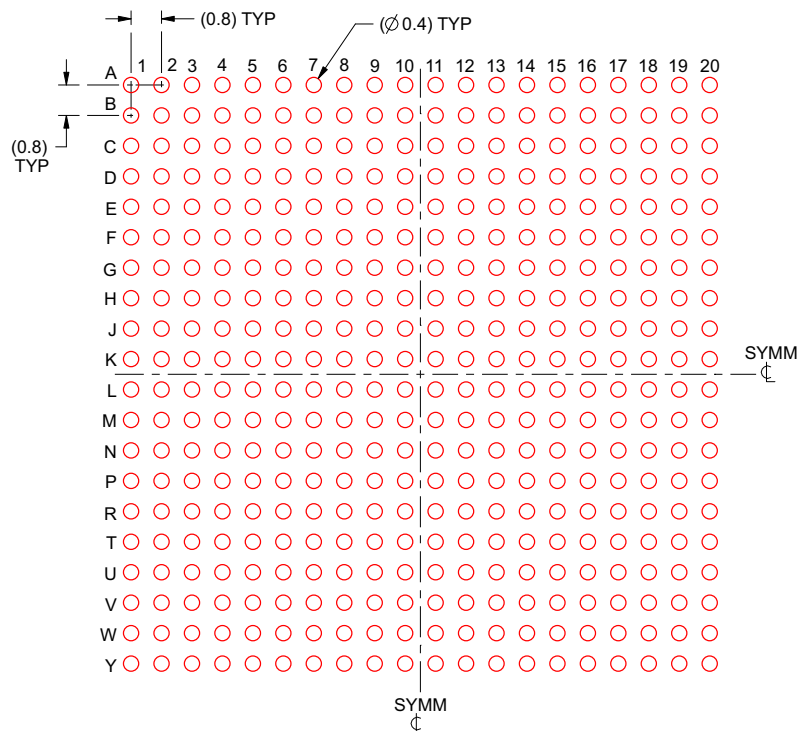


NOTES: (continued)

- Final dimensions may vary due to manufacturing tolerance considerations and also routing constraints. For more information, see Texas Instruments literature number SPRU811 (www.ti.com/lit/spru811).

EXAMPLE STENCIL DESIGN**ALK0400A****FCBGA - 2.65 mm max height**

BALL GRID ARRAY



4225930/A 05/2020

NOTES: (continued)

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

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)
AFE8030EDIABJ	Active	Production	FCBGA (ABJ) 400	90 JEDEC TRAY (5+1)	Yes	SNAGCU	Level-3-260C-168 HR	-40 to 85	AFE8030
AFE8030EDIALK	Active	Production	FCBGA (ALK) 400	90 JEDEC TRAY (5+1)	No	Call TI	Call TI	-40 to 85	AFE8030 SNPB
AFE8030IABJ	Active	Production	FCBGA (ABJ) 400	90 JEDEC TRAY (5+1)	Yes	SNAGCU	Level-3-260C-168 HR	-40 to 85	AFE8030

⁽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.

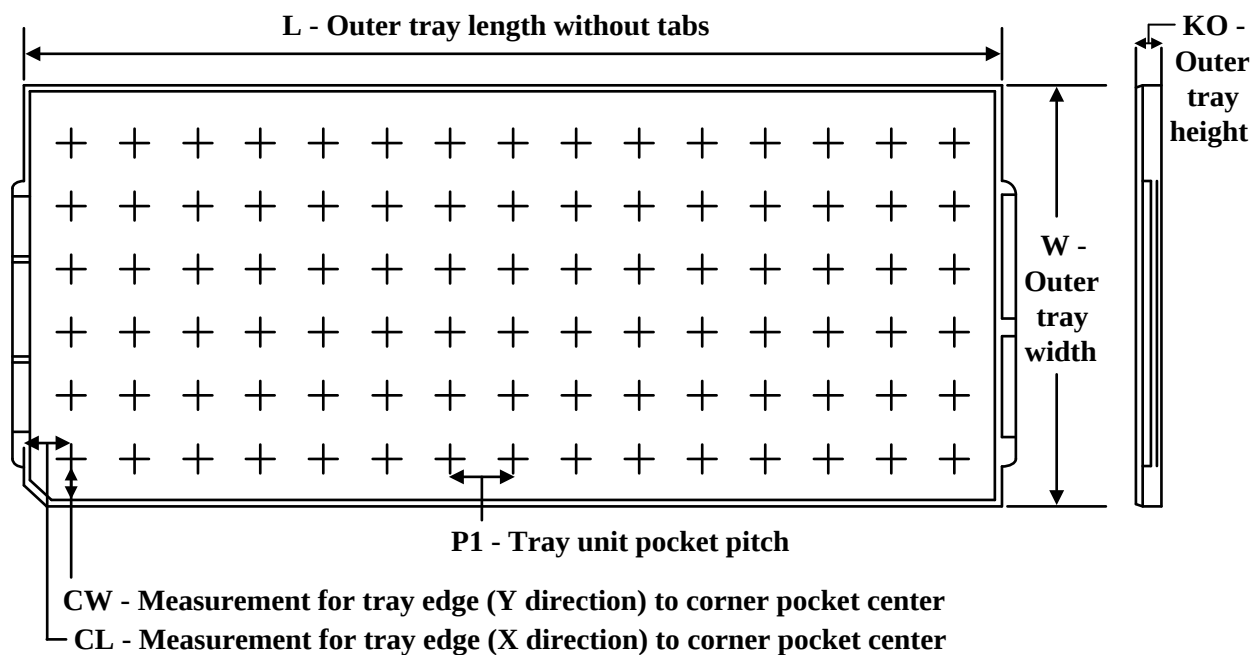
⁽⁶⁾ **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

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.

Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

TRAY



Chamfer on Tray corner indicates Pin 1 orientation of packed units.

*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	Unit array matrix	Max temperature (°C)	L (mm)	W (mm)	K0 (μm)	P1 (mm)	CL (mm)	CW (mm)
AFE8030EDIABJ	ABJ	FCBGA	400	90	6 x 15	150	315	135.9	7620	19.5	21	19.2
AFE8030EDIALK	ALK	FCBGA	400	90	6 x 15	150	315	135.9	7620	19.5	21	19.2
AFE8030IABJ	ABJ	FCBGA	400	90	6 x 15	150	315	135.9	7620	19.5	21	19.2

FCBGA - 2.65 mm max height

Technical drawing of a 400X ball grid array (BGA) component. The drawing includes three views: a top view showing the square footprint with dimensions 17.2 x 17.2 mm (16.8 mm BGA core), a side view showing the component profile with a 0.2 mm thickness and a 0.12 mm seating plane, and a detailed grid view of the 400 balls (20x20 array) with a pitch of 0.55 mm. The grid is labeled with letters Y through A and numbers 1 through 20. A note indicates that the balls are 0.55 mm diameter and 0.45 mm height. A table at the bottom left shows the component is a 400X BGA with a 0.55 mm pitch and 0.45 mm height, and a note 3.

50	C	A	B
18	C	NOTE 3	

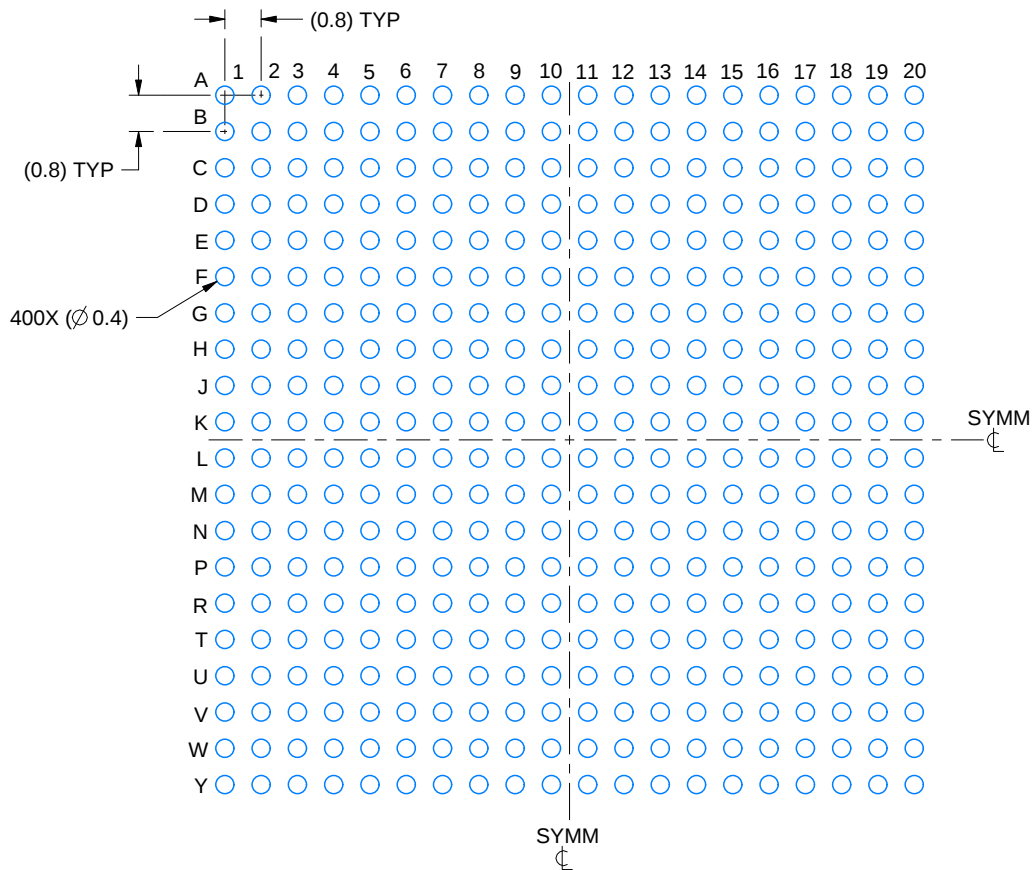
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. Dimension is measured at the maximum solder ball diameter, parallel to primary datum C.
4. Primary datum C and seating plane are defined by the spherical crowns of the solder balls.
5. The lids are electrically floating (e.g. not tied to GND).

EXAMPLE BOARD LAYOUT

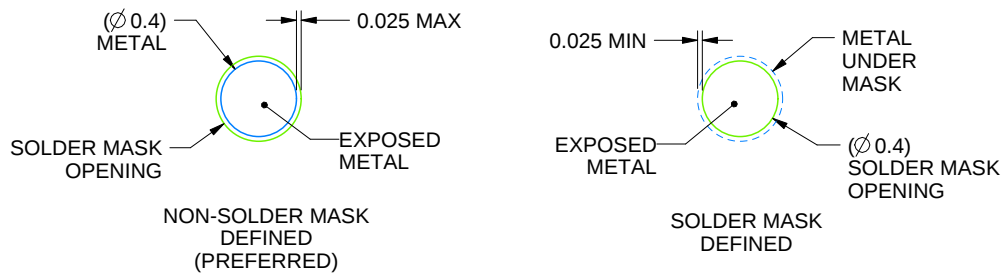
ABJ0400A

FCBGA - 2.65 mm max height

BALL GRID ARRAY



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE:6X



SOLDER MASK DETAILS
NOT TO SCALE

4221311/D 03/2023

NOTES: (continued)

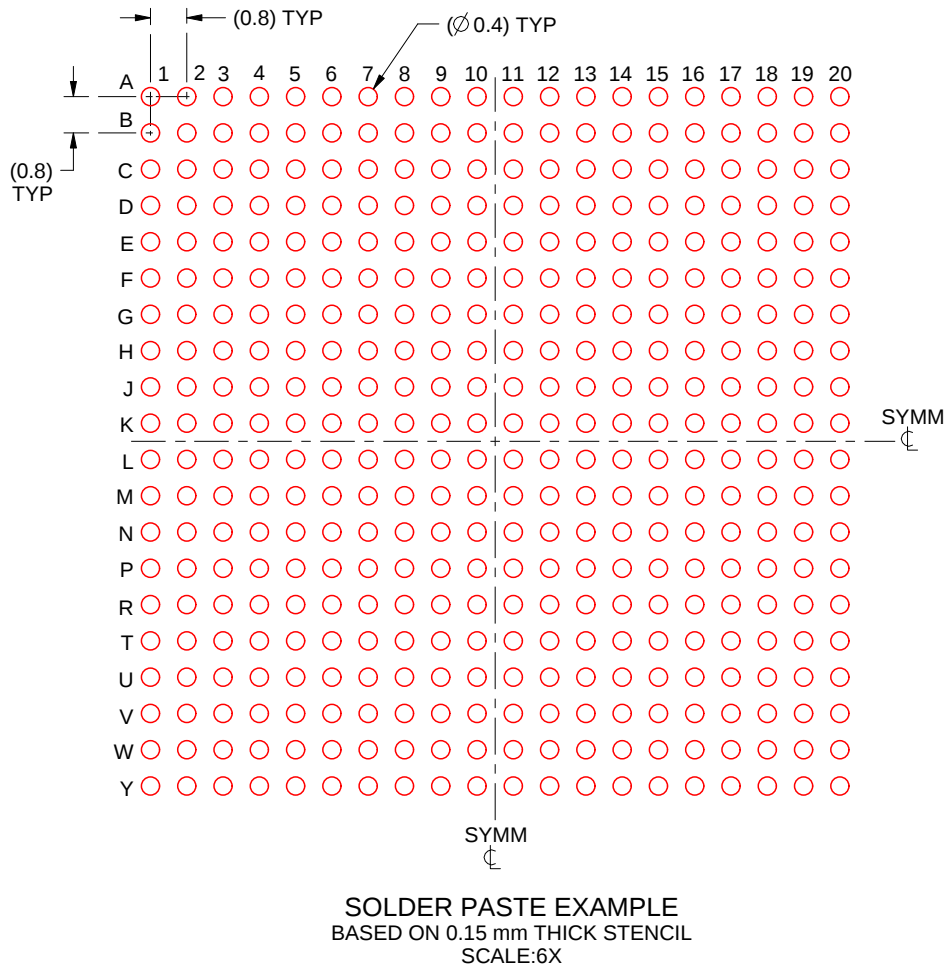
6. Final dimensions may vary due to manufacturing tolerance considerations and also routing constraints. For more information, see Texas Instruments literature number SPRU811 (www.ti.com/lit/spru811).

EXAMPLE STENCIL DESIGN

ABJ0400A

FCBGA - 2.65 mm max height

BALL GRID ARRAY



4221311/D 03/2023

NOTES: (continued)

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

FCBGA - 2.65 mm max height

Technical drawing of a 400X ball grid array (BGA) component. The drawing includes three views: a top view showing the overall dimensions (17.2 x 17.2 mm) and a 16x16 grid of balls; a side view showing the component's profile with dimensions for the balls (0.56 mm diameter, 0.3 mm height) and the component body (2.29 mm height); and a detailed view of the ball grid showing a 16x16 array of balls with a pitch of 0.55 mm. The drawing also includes various callouts for dimensions, tolerances, and material specifications.

Top View:

- Overall dimensions: 17.2 x 17.2 mm.
- Inner dimensions: 16.8 x 16.8 mm.
- Feature A: 17.2 mm x 16.8 mm.
- Feature B: 17.2 mm x 16.8 mm.
- Feature C: 16 mm.

Side View:

- Overall height: 2.65 mm.
- Ball diameter: 0.56 mm.
- Ball height: 0.3 mm.
- Component body height: 2.29 mm.
- Feature A: 0.2 mm.
- Feature B: 0.76 mm.
- Feature C: 0.56 mm.
- Feature D: 0.5 mm.
- Feature E: 0.3 mm.
- Feature F: 0.12 mm.
- Feature G: 0.12 mm.
- Feature H: 0.12 mm.
- Feature I: 0.12 mm.
- Feature J: 0.12 mm.
- Feature K: 0.12 mm.
- Feature L: 0.12 mm.
- Feature M: 0.12 mm.
- Feature N: 0.12 mm.
- Feature O: 0.12 mm.
- Feature P: 0.12 mm.
- Feature Q: 0.12 mm.
- Feature R: 0.12 mm.
- Feature S: 0.12 mm.
- Feature T: 0.12 mm.
- Feature U: 0.12 mm.
- Feature V: 0.12 mm.
- Feature W: 0.12 mm.
- Feature X: 0.12 mm.
- Feature Y: 0.12 mm.
- Feature Z: 0.12 mm.
- Feature AA: 0.12 mm.
- Feature AB: 0.12 mm.
- Feature AC: 0.12 mm.
- Feature AD: 0.12 mm.
- Feature AE: 0.12 mm.
- Feature AF: 0.12 mm.
- Feature AG: 0.12 mm.
- Feature AH: 0.12 mm.
- Feature AI: 0.12 mm.
- Feature AJ: 0.12 mm.
- Feature AK: 0.12 mm.
- Feature AL: 0.12 mm.
- Feature AM: 0.12 mm.
- Feature AN: 0.12 mm.
- Feature AO: 0.12 mm.
- Feature AP: 0.12 mm.
- Feature AQ: 0.12 mm.
- Feature AR: 0.12 mm.
- Feature AS: 0.12 mm.
- Feature AT: 0.12 mm.
- Feature AU: 0.12 mm.
- Feature AV: 0.12 mm.
- Feature AW: 0.12 mm.
- Feature AX: 0.12 mm.
- Feature AY: 0.12 mm.
- Feature AZ: 0.12 mm.
- Feature BA: 0.12 mm.
- Feature BB: 0.12 mm.
- Feature BC: 0.12 mm.
- Feature BD: 0.12 mm.
- Feature BE: 0.12 mm.
- Feature BF: 0.12 mm.
- Feature BG: 0.12 mm.
- Feature BH: 0.12 mm.
- Feature BI: 0.12 mm.
- Feature BJ: 0.12 mm.
- Feature BK: 0.12 mm.
- Feature BL: 0.12 mm.
- Feature BM: 0.12 mm.
- Feature BN: 0.12 mm.
- Feature BO: 0.12 mm.
- Feature BP: 0.12 mm.
- Feature BQ: 0.12 mm.
- Feature BR: 0.12 mm.
- Feature BS: 0.12 mm.
- Feature BT: 0.12 mm.
- Feature BU: 0.12 mm.
- Feature BV: 0.12 mm.
- Feature BW: 0.12 mm.
- Feature BX: 0.12 mm.
- Feature BY: 0.12 mm.
- Feature BZ: 0.12 mm.
- Feature CA: 0.12 mm.
- Feature CB: 0.12 mm.
- Feature CC: 0.12 mm.
- Feature CD: 0.12 mm.
- Feature CE: 0.12 mm.
- Feature CF: 0.12 mm.
- Feature CG: 0.12 mm.
- Feature CH: 0.12 mm.
- Feature CI: 0.12 mm.
- Feature CJ: 0.12 mm.
- Feature CK: 0.12 mm.
- Feature CL: 0.12 mm.
- Feature CM: 0.12 mm.
- Feature CN: 0.12 mm.
- Feature CO: 0.12 mm.
- Feature CP: 0.12 mm.
- Feature CQ: 0.12 mm.
- Feature CR: 0.12 mm.
- Feature CS: 0.12 mm.
- Feature CT: 0.12 mm.
- Feature CU: 0.12 mm.
- Feature CV: 0.12 mm.
- Feature CW: 0.12 mm.
- Feature CX: 0.12 mm.
- Feature CY: 0.12 mm.
- Feature CZ: 0.12 mm.
- Feature DA: 0.12 mm.
- Feature DB: 0.12 mm.
- Feature DC: 0.12 mm.
- Feature DD: 0.12 mm.
- Feature DE: 0.12 mm.
- Feature DF: 0.12 mm.
- Feature DG: 0.12 mm.
- Feature DH: 0.12 mm.
- Feature DI: 0.12 mm.
- Feature DJ: 0.12 mm.
- Feature DK: 0.12 mm.
- Feature DL: 0.12 mm.
- Feature DM: 0.12 mm.
- Feature DN: 0.12 mm.
- Feature DO: 0.12 mm.
- Feature DP: 0.12 mm.
- Feature DQ: 0.12 mm.
- Feature DR: 0.12 mm.
- Feature DS: 0.12 mm.
- Feature DT: 0.12 mm.
- Feature DU: 0.12 mm.
- Feature DV: 0.12 mm.
- Feature DW: 0.12 mm.
- Feature DX: 0.12 mm.
- Feature DY: 0.12 mm.
- Feature DZ: 0.12 mm.
- Feature EA: 0.12 mm.
- Feature EB: 0.12 mm.
- Feature EC: 0.12 mm.
- Feature ED: 0.12 mm.
- Feature EE: 0.12 mm.
- Feature EF: 0.12 mm.
- Feature EG: 0.12 mm.
- Feature EH: 0.12 mm.
- Feature EI: 0.12 mm.
- Feature EJ: 0.12 mm.
- Feature EK: 0.12 mm.
- Feature EL: 0.12 mm.
- Feature EM: 0.12 mm.
- Feature EN: 0.12 mm.
- Feature EO: 0.12 mm.
- Feature EP: 0.12 mm.
- Feature EQ: 0.12 mm.
- Feature ER: 0.12 mm.
- Feature ES: 0.12 mm.
- Feature ET: 0.12 mm.
- Feature EU: 0.12 mm.
- Feature EV: 0.12 mm.
- Feature EW: 0.12 mm.
- Feature EX: 0.12 mm.
- Feature EY: 0.12 mm.
- Feature EZ: 0.12 mm.
- Feature FA: 0.12 mm.
- Feature FB: 0.12 mm.
- Feature FC: 0.12 mm.
- Feature FD: 0.12 mm.
- Feature FE: 0.12 mm.
- Feature FF: 0.12 mm.
- Feature FG: 0.12 mm.
- Feature FH: 0.12 mm.
- Feature FI: 0.12 mm.
- Feature FJ: 0.12 mm.
- Feature FK: 0.12 mm.
- Feature FL: 0.12 mm.
- Feature FM: 0.12 mm.
- Feature FN: 0.12 mm.
- Feature FO: 0.12 mm.
- Feature FP: 0.12 mm.
- Feature FQ: 0.12 mm.
- Feature FR: 0.12 mm.
- Feature FS: 0.12 mm.
- Feature FT: 0.12 mm.
- Feature FU: 0.12 mm.
- Feature FV: 0.12 mm.
- Feature FW: 0.12 mm.
- Feature FX: 0.12 mm.
- Feature FY: 0.12 mm.
- Feature FZ: 0.12 mm.
- Feature GA: 0.12 mm.
- Feature GB: 0.12 mm.
- Feature GC: 0.12 mm.
- Feature GD: 0.12 mm.
- Feature GE: 0.12 mm.
- Feature GF: 0.12 mm.
- Feature GH: 0.12 mm.
- Feature GI: 0.12 mm.
- Feature GJ: 0.12 mm.
- Feature GK: 0.12 mm.
- Feature GL: 0.12 mm.
- Feature GM: 0.12 mm.
- Feature GN: 0.12 mm.
- Feature GO: 0.12 mm.
- Feature GP: 0.12 mm.
- Feature GQ: 0.12 mm.
- Feature GR: 0.12 mm.
- Feature GS: 0.12 mm.
- Feature GT: 0.12 mm.
- Feature GU: 0.12 mm.
- Feature GV: 0.12 mm.
- Feature GW: 0.12 mm.
- Feature GX: 0.12 mm.
- Feature GY: 0.12 mm.
- Feature GZ: 0.12 mm.
- Feature HA: 0.12 mm.
- Feature HB: 0.12 mm.
- Feature HC: 0.12 mm.
- Feature HD: 0.12 mm.
- Feature HE: 0.12 mm.
- Feature HF: 0.12 mm.
- Feature HG: 0.12 mm.
- Feature HH: 0.12 mm.
- Feature HI: 0.12 mm.
- Feature HJ: 0.12 mm.
- Feature HK: 0.12 mm.
- Feature HL: 0.12 mm.
- Feature HM: 0.12 mm.
- Feature HN: 0.12 mm.
- Feature HO: 0.12 mm.
- Feature HP: 0.12 mm.
- Feature HQ: 0.12 mm.
- Feature HR: 0.12 mm.
- Feature HS: 0.12 mm.
- Feature HT: 0.12 mm.
- Feature HU: 0.12 mm.
- Feature HV: 0.12 mm.
- Feature HW: 0.12 mm.
- Feature HX: 0.12 mm.
- Feature HY: 0.12 mm.
- Feature HZ: 0.12 mm.
- Feature IA: 0.12 mm.
- Feature IB: 0.12 mm.
- Feature IC: 0.12 mm.
- Feature ID: 0.12 mm.
- Feature IE: 0.12 mm.
- Feature IF: 0.12 mm.
- Feature IG: 0.

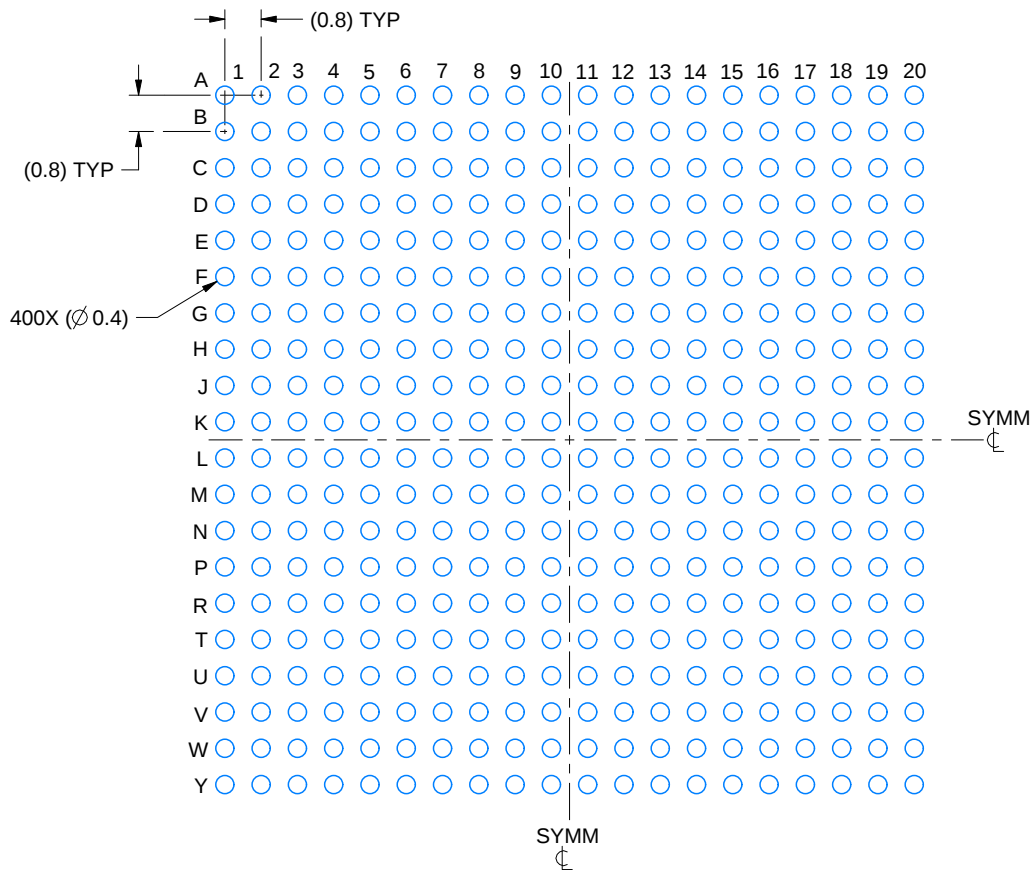
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. Dimension is measured at the maximum solder ball diameter, parallel to primary datum C.
4. Primary datum C and seating plane are defined by the spherical crowns of the solder balls.
5. Pb-Free die bump and SnPb solder ball.
6. The lids are electrically floating (e.g. not tied to GND).

EXAMPLE BOARD LAYOUT

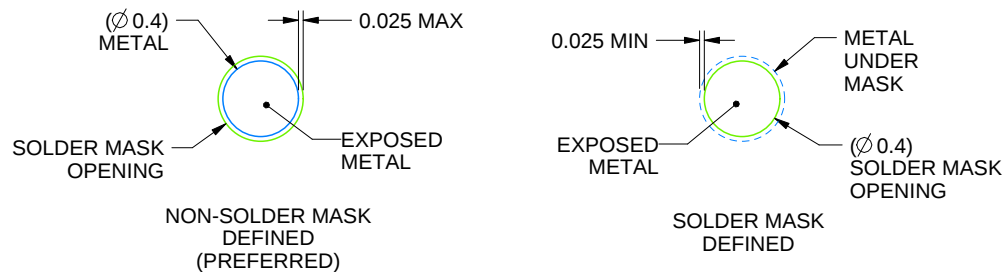
ALK0400A

FCBGA - 2.65 mm max height

BALL GRID ARRAY



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE:6X



SOLDER MASK DETAILS
NOT TO SCALE

4225930/C 03/2023

NOTES: (continued)

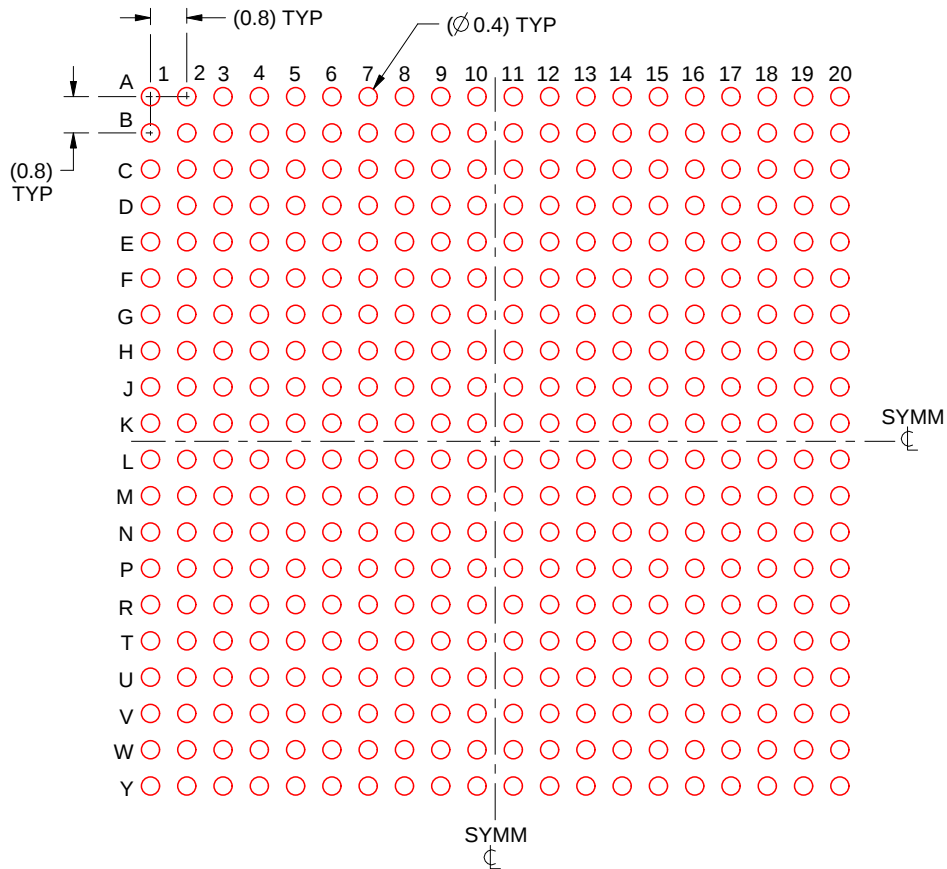
- Final dimensions may vary due to manufacturing tolerance considerations and also routing constraints. For more information, see Texas Instruments literature number SPRU811 (www.ti.com/lit/spru811).

EXAMPLE STENCIL DESIGN

ALK0400A

FCBGA - 2.65 mm max height

BALL GRID ARRAY



SOLDER PASTE EXAMPLE
 BASED ON 0.15 mm THICK STENCIL
 SCALE:6X

4225930/C 03/2023

NOTES: (continued)

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

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, regulatory or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you fully indemnify TI and its representatives against any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to [TI's Terms of Sale](#), [TI's General Quality Guidelines](#), or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products. Unless TI explicitly designates a product as custom or customer-specified, TI products are standard, catalog, general purpose devices.

TI objects to and rejects any additional or different terms you may propose.

Copyright © 2026, Texas Instruments Incorporated

Last updated 10/2025