

## Universal Evaluation Board for Triple, High Speed Op Amps with Charge Pump Offered in 16-Lead, 4 mm × 4 mm LFCSP Packages

### FEATURES

- Enables quick breadboarding/prototyping
- User-defined circuit configuration
- Edge-mounted SMA connector provisions
- Easy connection to test equipment and other circuits

### GENERAL DESCRIPTION

The EB-O16CP44CP-3Z universal evaluation board is designed to help users evaluate the triple, high speed op amps with charge pump offered in 16-lead LFCSP packages. The EB-O16CP44CP-3Z is a bare board (that is, there are no components soldered to the board) that enables users to quickly prototype a variety of triple op amp circuits, which minimizes risk and reduces time to market. Figure 1 shows the component side of the bare evaluation board, and Figure 2 shows the circuit side of the bare evaluation board.

The evaluation board is a 2-layer printed circuit board (PCB) that accepts SMA edge-mounted connectors on the inputs and outputs for efficient connection to test equipment or other circuitry. The ground plane, component placement, and supply bypassing are designed to minimize parasitic inductances and capacitances.

Figure 3 shows the evaluation board schematic. The PCB layout pattern for the component side is shown in Figure 4, and the PCB layout pattern for the circuit side is shown in Figure 6. The board assembly drawing for the component side is shown in Figure 5, and the board assembly drawing for the circuit side is shown in Figure 7.

The C6 to C9, C11 to C14, C17 to C19, and C22 capacitors are not needed for normal operation.

### EVALUATION BOARD COMPONENT AND CIRCUIT SIDE DIAGRAMS



Figure 1. EB-O16CP44CP-3Z Evaluation Board, Component Side

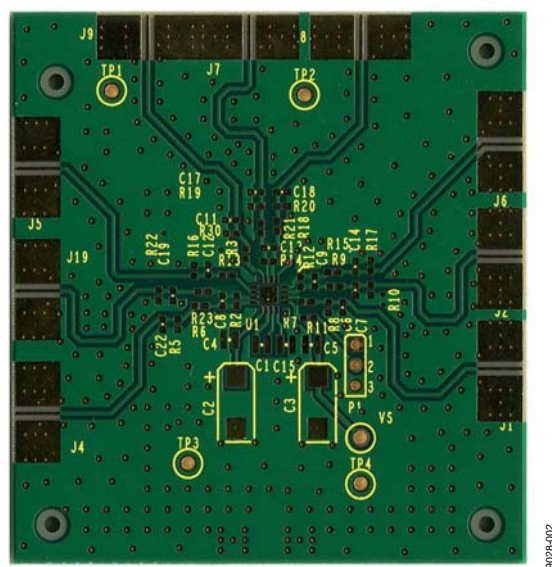


Figure 2. EB-O16CP44CP-3Z Evaluation Board, Circuit Side

TABLE OF CONTENTS

Features .....	1	Evaluation Board Schematic and Artwork.....	3
General Description .....	1	Ordering Information.....	5
Evaluation Board Component and Circuit Side Diagrams.....	1	Bill of Materials.....	5
Revision History .....	2		

REVISION HISTORY

5/10—Revision 0: Initial Version

## EVALUATION BOARD SCHEMATIC AND ARTWORK

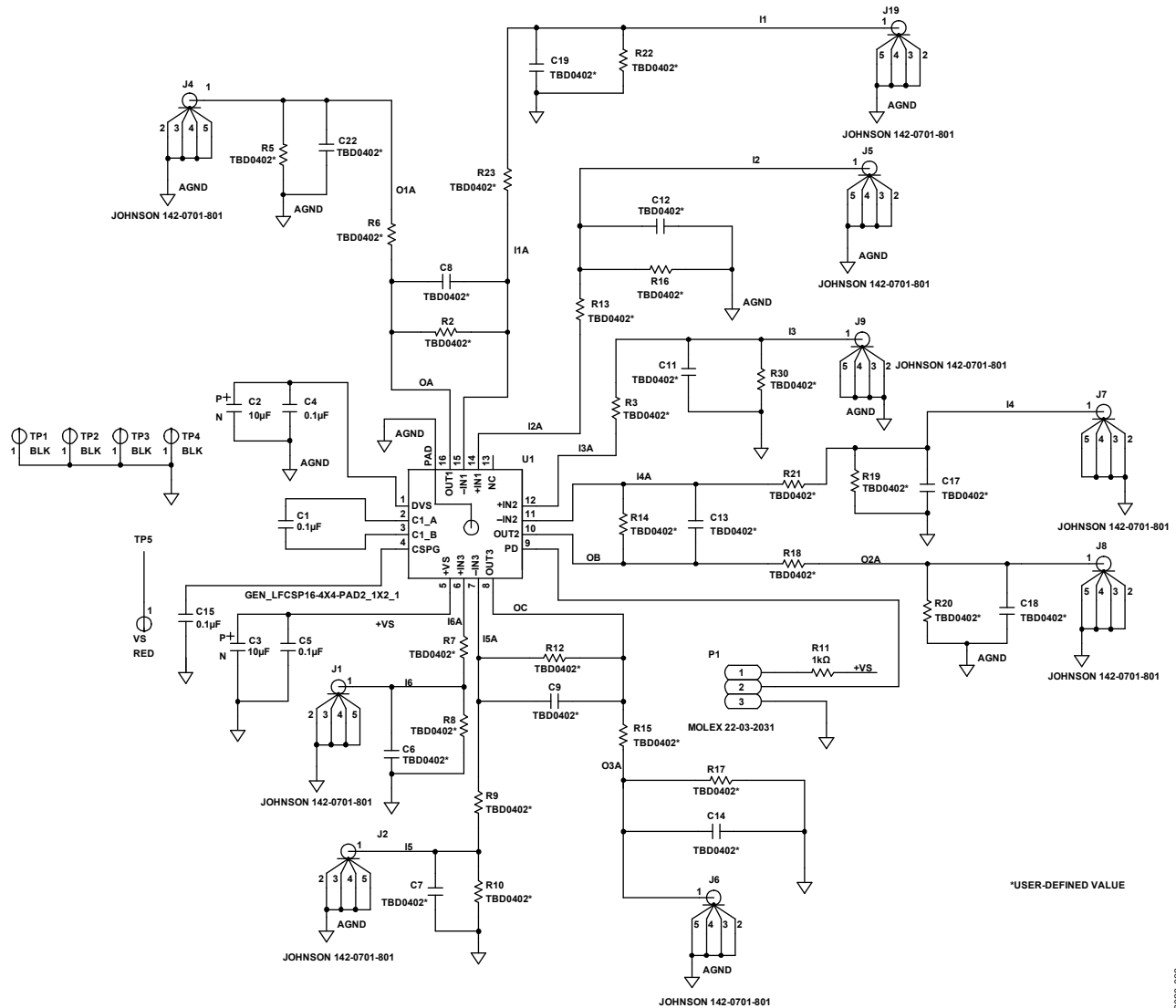


Figure 3. EB-O16CP44CP-3Z Universal Evaluation Board Schematic

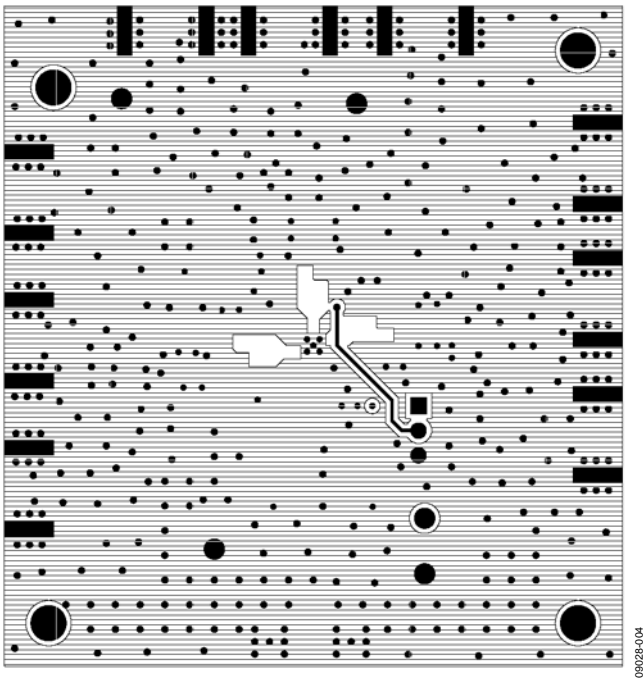


Figure 4. Board Layout Pattern, Component Side

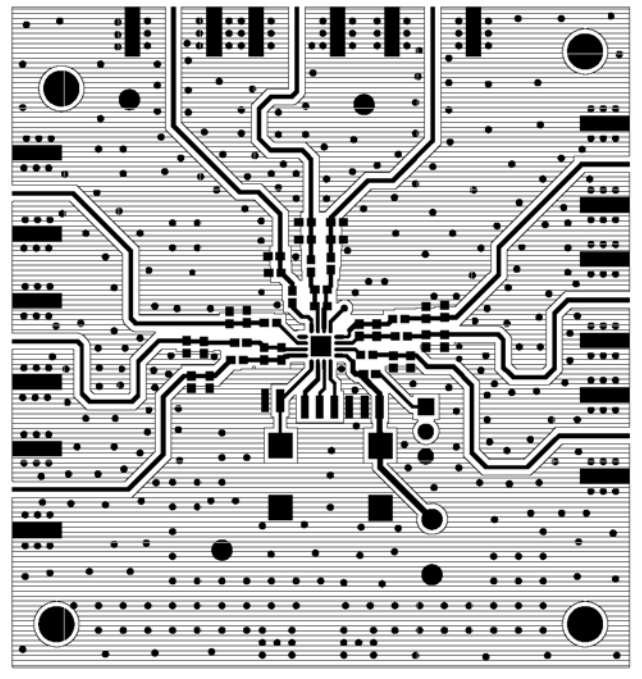


Figure 6. Board Layout Pattern, Circuit Side

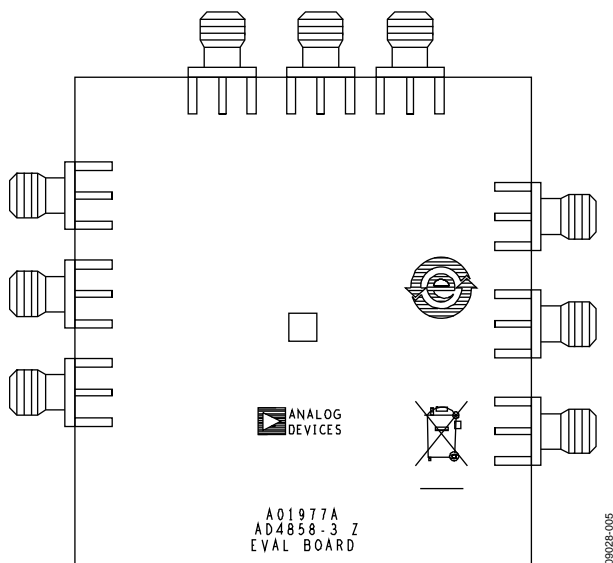


Figure 5. Board Assembly Drawing, Component Side

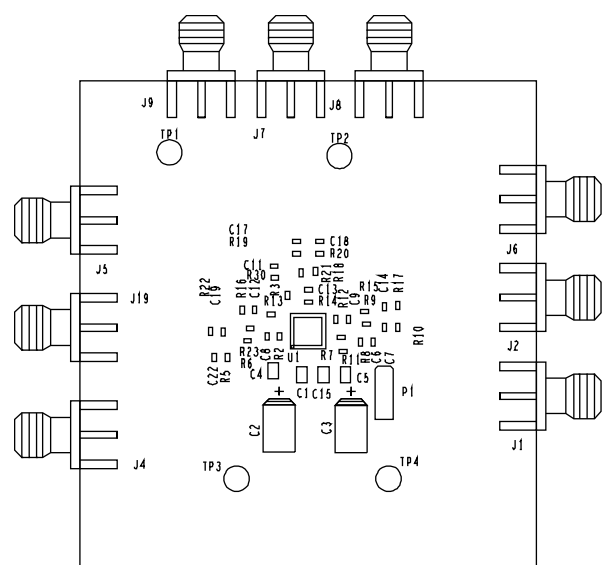


Figure 7. Board Assembly Drawing, Circuit Side

## ORDERING INFORMATION

### BILL OF MATERIALS

Table 1.

Quantity	Reference Designator	Description	Package
1	U1	GEN_LFCSP16-4X4-PAD2_1X2_1	4 mm × 4 mm LFCSP
1	R11	1 k $\Omega$ resistor	R0402
2	C2, C3	10 $\mu$ F, 15 V capacitor	C7343
4	C1, C4, C5, C15	0.1 $\mu$ F capacitor	C0508
1	P1	Connector, PCB, straight, header	Molex 22-03-2031
9	J1, J2, J4 to J9, J19	SMA, end launch receptacle connector	Johnson 142-0701-801
1	TP5	Test point, red	Components Corp. TP-104-01-02
4	TP1 to TP4	Test point, black	Components Corp. TP-104-01-00
12	C6 to C9, C11 to C14, C17 to C19, C22	User-defined capacitor	C0402
21	R2, R3, R5 to R10, R12 to R23, R30	User-defined resistor	R0402

**NOTES**

## NOTES

## NOTES

**ESD Caution**

**ESD (electrostatic discharge) sensitive device.** Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

**Legal Terms and Conditions**

By using the evaluation board discussed herein (together with any tools, components documentation or support materials, the "Evaluation Board"), you are agreeing to be bound by the terms and conditions set forth below ("Agreement") unless you have purchased the Evaluation Board, in which case the Analog Devices Standard Terms and Conditions of Sale shall govern. Do not use the Evaluation Board until you have read and agreed to the Agreement. Your use of the Evaluation Board shall signify your acceptance of the Agreement. This Agreement is made by and between you ("Customer") and Analog Devices, Inc. ("ADI"), with its principal place of business at One Technology Way, Norwood, MA 02062, USA. Subject to the terms and conditions of the Agreement, ADI hereby grants to Customer a free, limited, personal, temporary, non-exclusive, non-sublicensable, non-transferable license to use the Evaluation Board FOR EVALUATION PURPOSES ONLY. Customer understands and agrees that the Evaluation Board is provided for the sole and exclusive purpose referenced above, and agrees not to use the Evaluation Board for any other purpose. Furthermore, the license granted is expressly made subject to the following additional limitations: Customer shall not (i) rent, lease, display, sell, transfer, assign, sublicense, or distribute the Evaluation Board; and (ii) permit any Third Party to access the Evaluation Board. As used herein, the term "Third Party" includes any entity other than ADI, Customer, their employees, affiliates and in-house consultants. The Evaluation Board is NOT sold to Customer; all rights not expressly granted herein, including ownership of the Evaluation Board, are reserved by ADI. **CONFIDENTIALITY.** This Agreement and the Evaluation Board shall all be considered the confidential and proprietary information of ADI. Customer may not disclose or transfer any portion of the Evaluation Board to any other party for any reason. Upon discontinuation of use of the Evaluation Board or termination of this Agreement, Customer agrees to promptly return the Evaluation Board to ADI. **ADDITIONAL RESTRICTIONS.** Customer may not disassemble, decompile or reverse engineer chips on the Evaluation Board. Customer shall inform ADI of any occurred damages or any modifications or alterations it makes to the Evaluation Board, including but not limited to soldering or any other activity that affects the material content of the Evaluation Board. Modifications to the Evaluation Board must comply with applicable law, including but not limited to the RoHS Directive. **TERMINATION.** ADI may terminate this Agreement at any time upon giving written notice to Customer. Customer agrees to return to ADI the Evaluation Board at that time. **LIMITATION OF LIABILITY.** THE EVALUATION BOARD PROVIDED HEREUNDER IS PROVIDED "AS IS" AND ADI MAKES NO WARRANTIES OR REPRESENTATIONS OF ANY KIND WITH RESPECT TO IT. ADI SPECIFICALLY DISCLAIMS ANY REPRESENTATIONS, ENDORSEMENTS, GUARANTEES, OR WARRANTIES, EXPRESS OR IMPLIED, RELATED TO THE EVALUATION BOARD INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, TITLE, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS. IN NO EVENT WILL ADI AND ITS LICENSORS BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES RESULTING FROM CUSTOMER'S POSSESSION OR USE OF THE EVALUATION BOARD, INCLUDING BUT NOT LIMITED TO LOST PROFITS, DELAY COSTS, LABOR COSTS OR LOSS OF GOODWILL. ADI'S TOTAL LIABILITY FROM ANY AND ALL CAUSES SHALL BE LIMITED TO THE AMOUNT OF ONE HUNDRED US DOLLARS (\$100.00). **EXPORT.** Customer agrees that it will not directly or indirectly export the Evaluation Board to another country, and that it will comply with all applicable United States federal laws and regulations relating to exports. **GOVERNING LAW.** This Agreement shall be governed by and construed in accordance with the substantive laws of the Commonwealth of Massachusetts (excluding conflict of law rules). Any legal action regarding this Agreement will be heard in the state or federal courts having jurisdiction in Suffolk County, Massachusetts, and Customer hereby submits to the personal jurisdiction and venue of such courts. The United Nations Convention on Contracts for the International Sale of Goods shall not apply to this Agreement and is expressly disclaimed.