

## OPA835DBV, OPA836DBV EVM

The OPA835DBV EVM is an evaluation module for the single, OPA835 in the DBV (6-lead SOT-23) package.

The OPA836DBV EVM is an evaluation module for the single, OPA836 in the DBV (6-lead SOT-23) package.

The OPA835DBV and OPA836DBV EVMs are designed to quickly demonstrate the functionality and versatility of the amplifier(s). The EVM is ready to connect to power, signal source, and test instruments through the use of on-board connectors. The default amplifier configuration is non-inverting gain of 2 configuration and split supply. It can be easily configured for other gains, and single supply operation.

### 1 Features

- Configured for split supply operation and modified for single supply
- Default non-inverting gain of 2 configuration can be reconfigured for other gains
- Designed for connection to standard 50-Ω input/output impedance test equipment
- Inputs and Outputs include SMA connectors

### 2 EVM Specifications

This section gives a general description of the OPA835DBV and OPA836DBV EVMs.

Parameters		MIN	TYP	MAX
Single Supply voltage range ( $V_{S-}$ = ground )		2.5V		5.5V
Split Supply voltage range ( $V_{S\pm}$ )		±1.25V		±2.75V
Supply current, $I_S$	OPA835DBV		250μA/amp	
	OPA836DBV		1mA/amp	
Input voltage, $V_I$				$V_{S\pm}$
Output drive, $I_O$ with ±2.5V or 5V Supply	OPA835DBV		±40mA	
	OPA836DBV		±50mA	

#### 2.1 Power Connections

The OPA835DBV and OPA836DBV EVMs are equipped with banana jacks for easy connection of power. The positive supply input is labeled  $V_{S+}$ . The Negative supply input is labeled  $V_{S-}$ . Ground is labeled GND.

##### 2.1.1 Split Supply Operation

To operate split supply, apply the positive supply voltage to  $V_{S+}$ , negative supply voltage to  $V_{S-}$ , and the ground reference from supply to GND.

##### 2.1.2 Single Supply Operation

To operate single supply, jumper  $V_{S-}$  to GND and apply the positive supply voltage to  $V_{S+}$ . Inputs and outputs must be biased per data sheet specifications for proper operation.

## 2.2 Input and Output Connections

The OPA835DBV and OPA836DBV EVMs are equipped with SMA connectors for easy connection of signal generators and analysis equipment. As shipped the EVMs are configured for non-inverting gain of 2 configuration and split supply with termination for connection to 50- $\Omega$  test equipment. For best results, signals should be routed to and from the EVM with cables having 50- $\Omega$  characteristic impedance. See the OPA835 data sheet ([SLOS713](#)) and the OPA836 data Sheet ([SLOS712](#)), and schematics and layouts for details on how to reconfigure for other gain configurations.

## 3 EVM Schematic, Layout, and Bill of Material (BOM)

This section provides a complete schematic diagram, board layouts, and bill of materials for the OPA835DBV and OPA836DBV EVMs.



## 3.2 EVM Layers

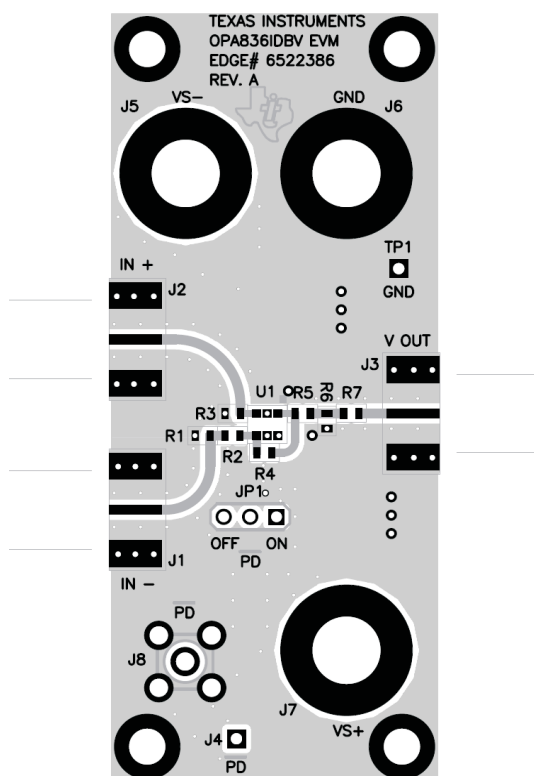


Figure 2. Top Layer

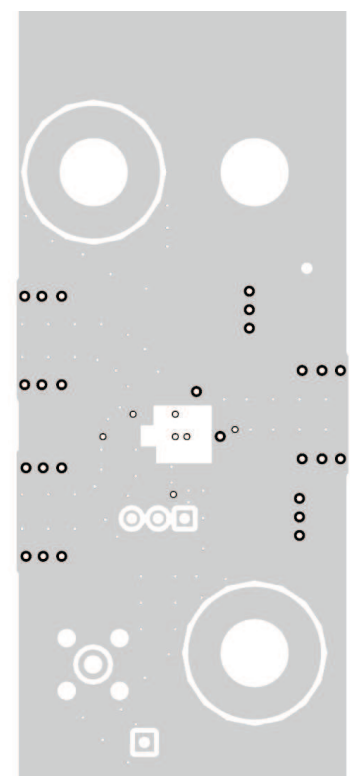


Figure 3. Ground Layer 2

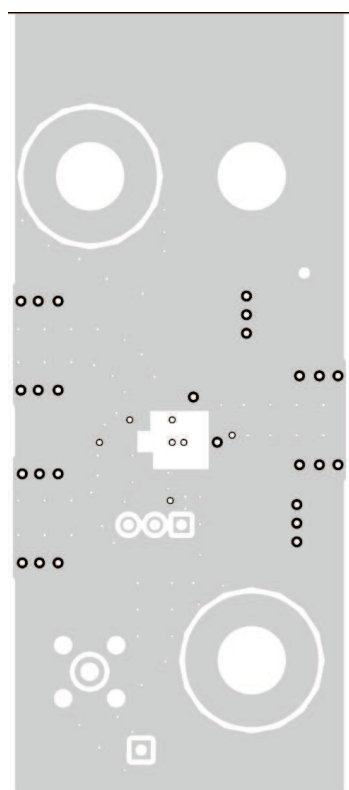


Figure 4. Ground Layer 3

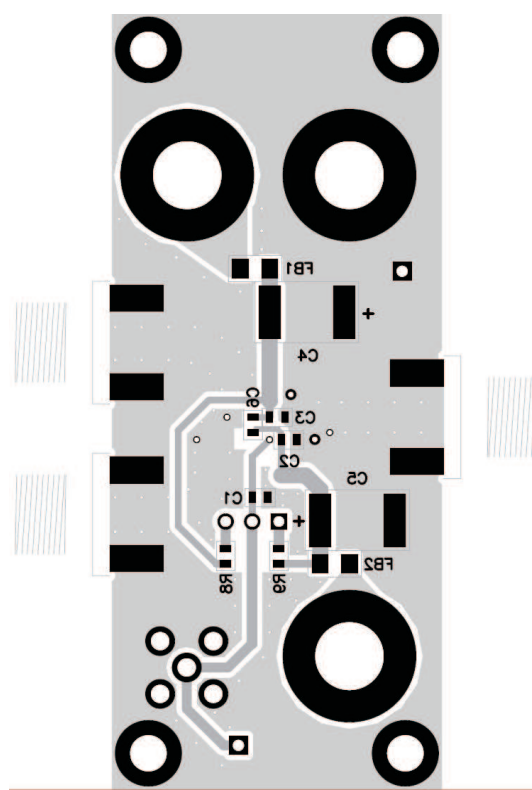


Figure 5. Bottom Layer

### 3.3 Bill of Materials

**Table 1. OPA835DBV EVM Bill of Materials**

ITEM	DESCRIPTION	SMD	REFERENCE	PCB	MANUFACTURER'S
		SIZE	DESIGNATOR	QUANTITY	PART NUMBER
1	BEAD, FERRITE, 3A, 80 OHM	1206	FB1, FB2	2	(STEWART) HI1206N800R-10
2	CAP, 22.0uF, TANTALUM, 10%, 16V	D	C4, C5	2	(AVX) TAJD226KO16RNJ
3	CAP, 0.1uF, CERAMIC, X7R, 16V	0603	C1, C2, C3	3	(AVX) 0603YC104KAT2A
4	OPEN	0603	C6	1	
5	OPEN	0603	R6	1	
6	RESISTOR, 0 OHM,	0603	R1, R5	2	(ROHM) MCR03EZPJ000
7	RESISTOR, 49.9 OHM, 1/10W, 1%	0603	R3, R7	2	(ROHM) MCR03EZPFX49R9
8	RESISTOR, 2.00K OHM, 1/10, 1%	0603	R2, R4	2	(ROHM) MCR03EZPFX2001
9	RESISTOR, 10K OHM,	0603	R8, R9	2	(ROHM) MCR03EZPFX1002
10	CONN, JACK, BANANA, UNINS		J5, J6, J7	3	(EMERSION) 108-0740-001
11	CONNECTOR, EDGE, SMA PCB JACK		J1, J2, J3	3	(JOHNSON) 142-0701-801
12	CONNECTOR, STRAIGHT, SMA		J8	DNI	(AMPHENOL) 901-144-8RFX
13	TEST POINT, BLACK		TP1	1	(KEYSTONE) 5001
14	TEST POINT, RED		J4	1	(KEYSTONE) 5000
15	HEADER, 0.1" CTRS, 0.025" SQ. PINS	3 POS.	JP1	1	(SULLINS) PBC36SAAN
16	SHUNTS		JP1	1	(SULLINS) SSC02SYAN
17	IC, OPA835IDBV		U1	1	(TI) OPA835IDBV
18	STANDOFF, 4-40 HEX, 0.625" LENGTH			4	(KEYSTONE) 1808
19	SCREW, PHILLIPS, 4-40, .250"			4	(BF) PMS4400031PH
20	BOARD, PRINTED CIRCUIT			1	(TI) EDGE# 6522385

**Table 2. OPA836DBV EVM Bill of Materials**

ITEM	DESCRIPTION	SMD	REFERENCE	PCB	MANUFACTURER'S
		SIZE	DESIGNATOR	QUANTITY	PART NUMBER
1	BEAD, FERRITE, 3A, 80 OHM	1206	FB1, FB2	2	(STEWART) HI1206N800R-10
2	CAP, 22.0uF, TANTALUM, 10%, 16V	D	C4, C5	2	(AVX) TAJD226KO16RNJ
3	CAP, 0.1uF, CERAMIC, X7R, 16V	0603	C1, C2, C3	3	(AVX) 0603YC104KAT2A
4	OPEN	0603	C6	1	
5	OPEN	0603	R6	1	
6	RESISTOR, 0 OHM,	0603	R1, R5	2	(ROHM) MCR03EZPJ000
7	RESISTOR, 49.9 OHM, 1/10W, 1%	0603	R3, R7	2	(ROHM) MCR03EZPFX49R9
8	RESISTOR, 1.00K OHM, 1/10, 1%	0603	R2, R4	2	(ROHM) MCR03EZPFX1001
9	RESISTOR, 10K OHM,	0603	R8, R9	2	(ROHM) MCR03EZPFX1002
10	CONN, JACK, BANANA, UNINS		J5, J6, J7	3	(EMERSION) 108-0740-001
11	CONNECTOR, EDGE, SMA PCB JACK		J1, J2, J3	3	(JOHNSON) 142-0701-801
12	CONNECTOR, STRAIGHT, SMA		J8	DNI	(AMPHENOL) 901-144-8RFX
13	TEST POINT, BLACK		TP1	1	(KEYSTONE) 5001
14	TEST POINT, RED		J4	1	(KEYSTONE) 5000
15	HEADER, 0.1" CTRS, 0.025" SQ. PINS	3 POS.	JP1	1	(SULLINS) PBC36SAAN
16	SHUNTS		JP1	1	(SULLINS) SSC02SYAN
17	IC, OPA836IDBV		U1	1	(TI) OPA836IDBV
18	STANDOFF, 4-40 HEX, 0.625" LENGTH			4	(KEYSTONE) 1808
19	SCREW, PHILLIPS, 4-40, .250"			4	(BF) PMS4400031PH
20	BOARD, PRINTED CIRCUIT			1	(TI) EDGE# 6522386

## Evaluation Board/Kit Important Notice

Texas Instruments (TI) provides the enclosed product(s) under the following conditions:

This evaluation board/kit is intended for use for **ENGINEERING DEVELOPMENT, DEMONSTRATION, OR EVALUATION PURPOSES ONLY** and is not considered by TI to be a finished end-product fit for general consumer use. Persons handling the product(s) must have electronics training and observe good engineering practice standards. As such, the goods being provided are not intended to be complete in terms of required design-, marketing-, and/or manufacturing-related protective considerations, including product safety and environmental measures typically found in end products that incorporate such semiconductor components or circuit boards. This evaluation board/kit does not fall within the scope of the European Union directives regarding electromagnetic compatibility, restricted substances (RoHS), recycling (WEEE), FCC, CE or UL, and therefore may not meet the technical requirements of these directives or other related directives.

Should this evaluation board/kit not meet the specifications indicated in the User's Guide, the board/kit may be returned within 30 days from the date of delivery for a full refund. **THE FOREGOING WARRANTY IS THE EXCLUSIVE WARRANTY MADE BY SELLER TO BUYER AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.**

The user assumes all responsibility and liability for proper and safe handling of the goods. Further, the user indemnifies TI from all claims arising from the handling or use of the goods. Due to the open construction of the product, it is the user's responsibility to take any and all appropriate precautions with regard to electrostatic discharge.

**EXCEPT TO THE EXTENT OF THE INDEMNITY SET FORTH ABOVE, NEITHER PARTY SHALL BE LIABLE TO THE OTHER FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.**

TI currently deals with a variety of customers for products, and therefore our arrangement with the user **is not exclusive**.

TI assumes **no liability for applications assistance, customer product design, software performance, or infringement of patents or services described herein.**

Please read the User's Guide and, specifically, the Warnings and Restrictions notice in the User's Guide prior to handling the product. This notice contains important safety information about temperatures and voltages. For additional information on TI's environmental and/or safety programs, please contact the TI application engineer or visit [www.ti.com/esh](http://www.ti.com/esh).

No license is granted under any patent right or other intellectual property right of TI covering or relating to any machine, process, or combination in which such TI products or services might be or are used.

## FCC Warning

This evaluation board/kit is intended for use for **ENGINEERING DEVELOPMENT, DEMONSTRATION, OR EVALUATION PURPOSES ONLY** and is not considered by TI to be a finished end-product fit for general consumer use. It generates, uses, and can radiate radio frequency energy and has not been tested for compliance with the limits of computing devices pursuant to part 15 of FCC rules, which are designed to provide reasonable protection against radio frequency interference. Operation of this equipment in other environments may cause interference with radio communications, in which case the user at his own expense will be required to take whatever measures may be required to correct this interference.

## EVM Warnings and Restrictions

It is important to operate this EVM within the input voltage range of 2.5V to 5.5V and the output voltage range of 2.5V to 5.5V.

Exceeding the specified input range may cause unexpected operation and/or irreversible damage to the EVM. If there are questions concerning the input range, please contact a TI field representative prior to connecting the input power.

Applying loads outside of the specified output range may result in unintended operation and/or possible permanent damage to the EVM. Please consult the EVM User's Guide prior to connecting any load to the EVM output. If there is uncertainty as to the load specification, please contact a TI field representative.

During normal operation, some circuit components may have case temperatures greater than 85°C. The EVM is designed to operate properly with certain components above 85°C as long as the input and output ranges are maintained. These components include but are not limited to linear regulators, switching transistors, pass transistors, and current sense resistors. These types of devices can be identified using the EVM schematic located in the EVM User's Guide. When placing measurement probes near these devices during operation, please be aware that these devices may be very warm to the touch.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
Copyright © 2011, Texas Instruments Incorporated

## IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

### Products

Audio	<a href="http://www.ti.com/audio">www.ti.com/audio</a>
Amplifiers	<a href="http://amplifier.ti.com">amplifier.ti.com</a>
Data Converters	<a href="http://dataconverter.ti.com">dataconverter.ti.com</a>
DLP® Products	<a href="http://www.dlp.com">www.dlp.com</a>
DSP	<a href="http://dsp.ti.com">dsp.ti.com</a>
Clocks and Timers	<a href="http://www.ti.com/clocks">www.ti.com/clocks</a>
Interface	<a href="http://interface.ti.com">interface.ti.com</a>
Logic	<a href="http://logic.ti.com">logic.ti.com</a>
Power Mgmt	<a href="http://power.ti.com">power.ti.com</a>
Microcontrollers	<a href="http://microcontroller.ti.com">microcontroller.ti.com</a>
RFID	<a href="http://www.ti-rfid.com">www.ti-rfid.com</a>
RF/IF and ZigBee® Solutions	<a href="http://www.ti.com/lprf">www.ti.com/lprf</a>

### Applications

Communications and Telecom	<a href="http://www.ti.com/communications">www.ti.com/communications</a>
Computers and Peripherals	<a href="http://www.ti.com/computers">www.ti.com/computers</a>
Consumer Electronics	<a href="http://www.ti.com/consumer-apps">www.ti.com/consumer-apps</a>
Energy and Lighting	<a href="http://www.ti.com/energy">www.ti.com/energy</a>
Industrial	<a href="http://www.ti.com/industrial">www.ti.com/industrial</a>
Medical	<a href="http://www.ti.com/medical">www.ti.com/medical</a>
Security	<a href="http://www.ti.com/security">www.ti.com/security</a>
Space, Avionics and Defense	<a href="http://www.ti.com/space-avionics-defense">www.ti.com/space-avionics-defense</a>
Transportation and Automotive	<a href="http://www.ti.com/automotive">www.ti.com/automotive</a>
Video and Imaging	<a href="http://www.ti.com/video">www.ti.com/video</a>
Wireless	<a href="http://www.ti.com/wireless-apps">www.ti.com/wireless-apps</a>

TI E2E Community Home Page

[e2e.ti.com](http://e2e.ti.com)

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
Copyright © 2011, Texas Instruments Incorporated





**Стандарт  
Электрон  
Связь**

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

**Наши контакты:**

**Телефон:** +7 812 627 14 35

**Электронная почта:** [sales@st-electron.ru](mailto:sales@st-electron.ru)

**Адрес:** 198099, Санкт-Петербург,  
Промышленная ул, дом № 19, литера Н,  
помещение 100-Н Офис 331