

## **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 ( $V_{S\pm}$ )		$\pm 1.25V$		$\pm 2.75V$
Supply current, $I_S$	OPA835DBV		250μA/amp	
	OPA836DBV		1mA/amp	
Input voltage, $V_I$				$V_{S\pm}$
Output drive, $I_O$ with $\pm 2.5V$ or 5V Supply	OPA835DBV		$\pm 40mA$	
	OPA836DBV		$\pm 50mA$	

#### **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.

### 3.1 EVM Schematic

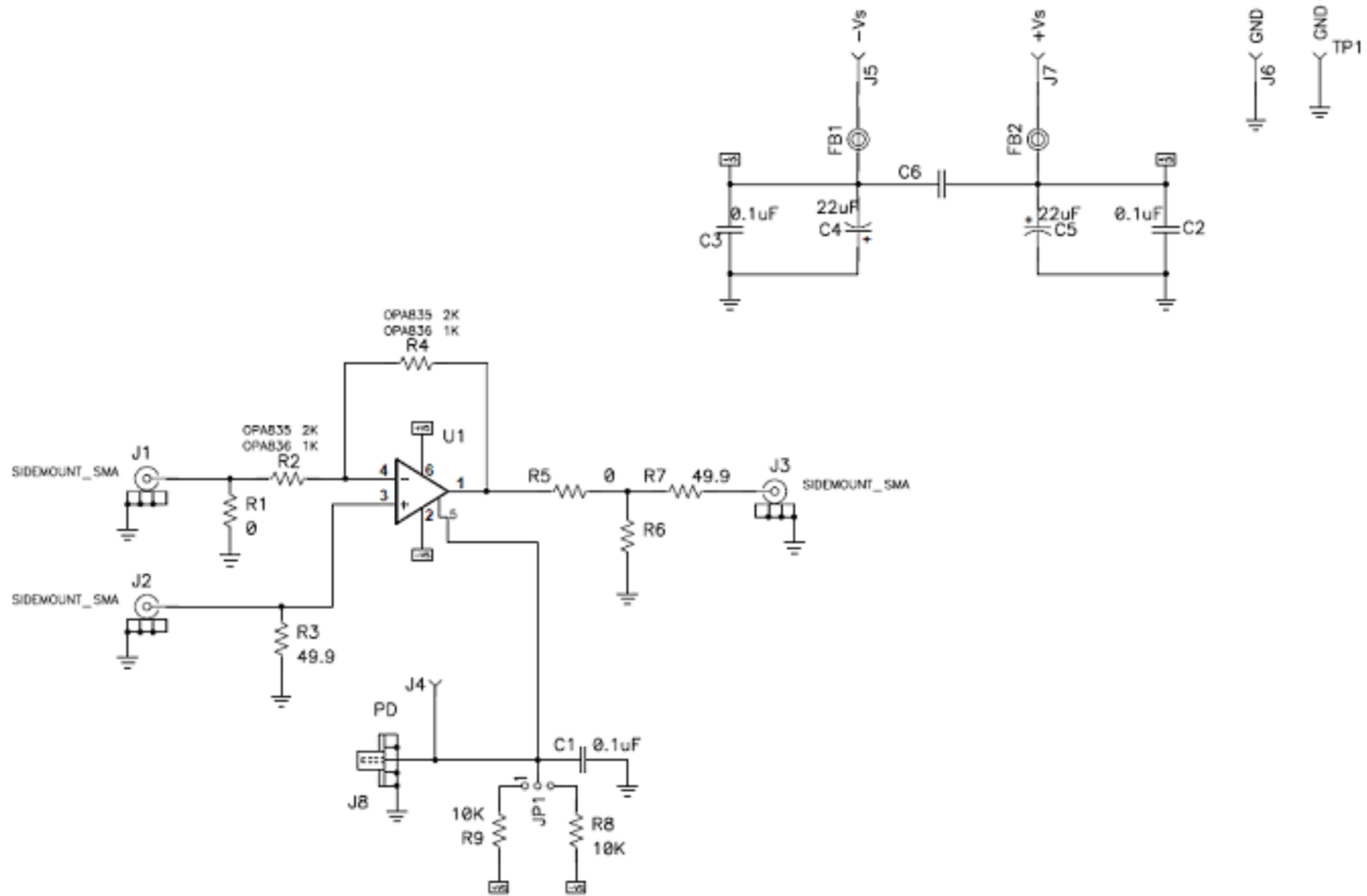


Figure 1. OPA835DBV and OPA836DBV EVM Schematic

### 3.2 EVM Layers

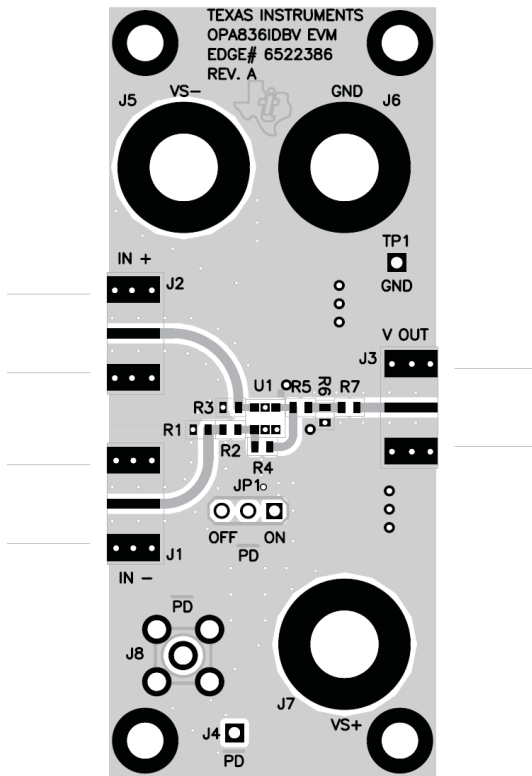


Figure 2. Top Layer

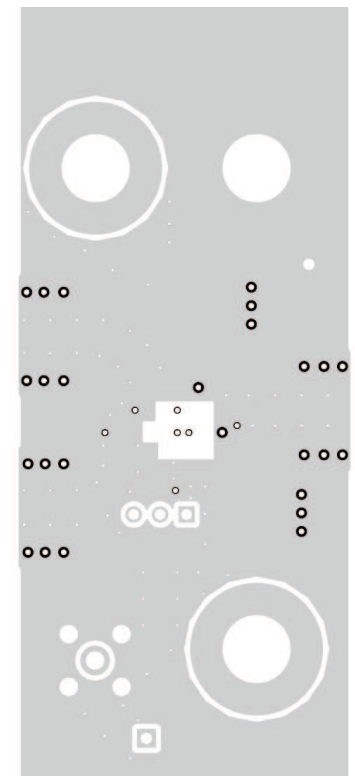


Figure 3. Ground Layer 2

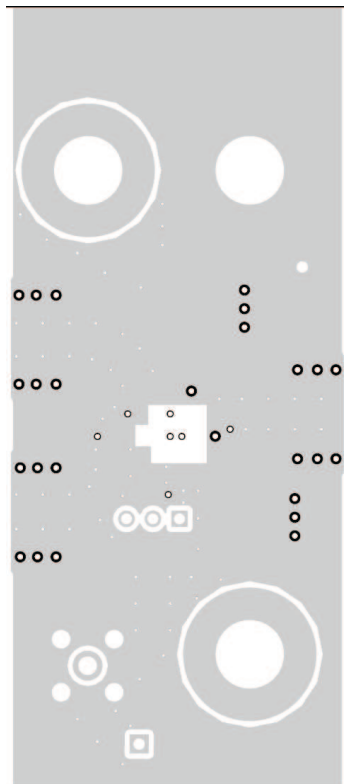


Figure 4. Ground Layer 3

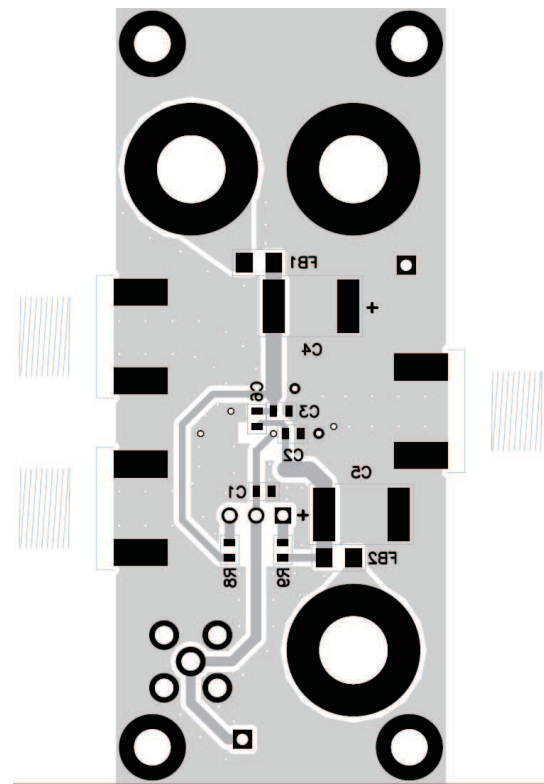


Figure 5. Bottom Layer

### 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	(STEWARD) 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	(STEWARD) 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

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## 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.

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