OPA855IDSGEVM

User's Guide
SBOU210–July 2018

The OPA855EVM is an evaluation module for the single OPA855 in the DSG (8-pin WSON) package.

The OPA855EVM is designed to quickly demonstrate the functionality and versatility of the amplifier. The EVM is ready to connect to power, signal source, and test instruments by using on-board connectors. The default amplifier configuration is a noninverting gain of 7 configuration and split-supply operation. The EVM can be easily configured for other gains and single-supply operation.

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Trademarks

1 Features

- Configured for split-supply operation and modified for single-supply operation
- Default noninverting gain of 7 configuration is reconfigurable for other gains
- Designed for connection to standard 50-Ω impedance test equipment
- Inputs and outputs include SMA connectors

2 EVM Specifications

This section provides a general description of the OPA855EVM. Table 1 lists limits for the EVM input and output.

Table 1. EVM Input and Output Limits

PARAMETER	MIN	TYP	MAX	UNIT
Single–supply voltage range (VEE = ground)	3.2		5.2	V
Split–supply voltage range (VCC – VEE)	±1.6		±2.6	V
Supply current, I_S		19		mA
Input voltage, V_I	VEE + 0.2		VCC – 1.25	V
Output drive, I_O with ±2.5–V or 5–V supply		±30		mA

2.1 Power Connections

The OPA855EVM is equipped with banana jacks for easy connection of power. The positive supply input is labeled VCC, the negative supply input is labeled VEE, and ground is labeled GND.

2.1.1 Split-Supply Operation

To operate in split-supply operation, apply the positive supply voltage to VCC, the negative supply voltage to VEE, and the ground reference from supply to GND.

2.1.2 Single-Supply Operation

To operate in single-supply operation, apply a jumper from VEE to GND and from the positive supply voltage to VCC. Inputs and outputs must be biased per data sheet specifications for proper operation.

2.2 Input and Output Connections

The OPA855EVM is equipped with SMA connectors to connect to signal generators and analysis equipment. As shipped, the EVM is configured for a noninverting gain of 7 configuration and split-supply operation with termination for connection to 50-Ω test equipment. For best results, signals must be routed to and from the EVM with cables with a characteristic impedance of 50 Ω. See the OPA855 data sheet, schematics, and layouts for details on how to reconfigure for other gain configurations.

3 EVM Schematic, Layout, and Bill of Materials (BOM)

This section provides a complete schematic diagram, board layouts, and bill of materials for the OPA855EVM.

3.1 EVM Schematic

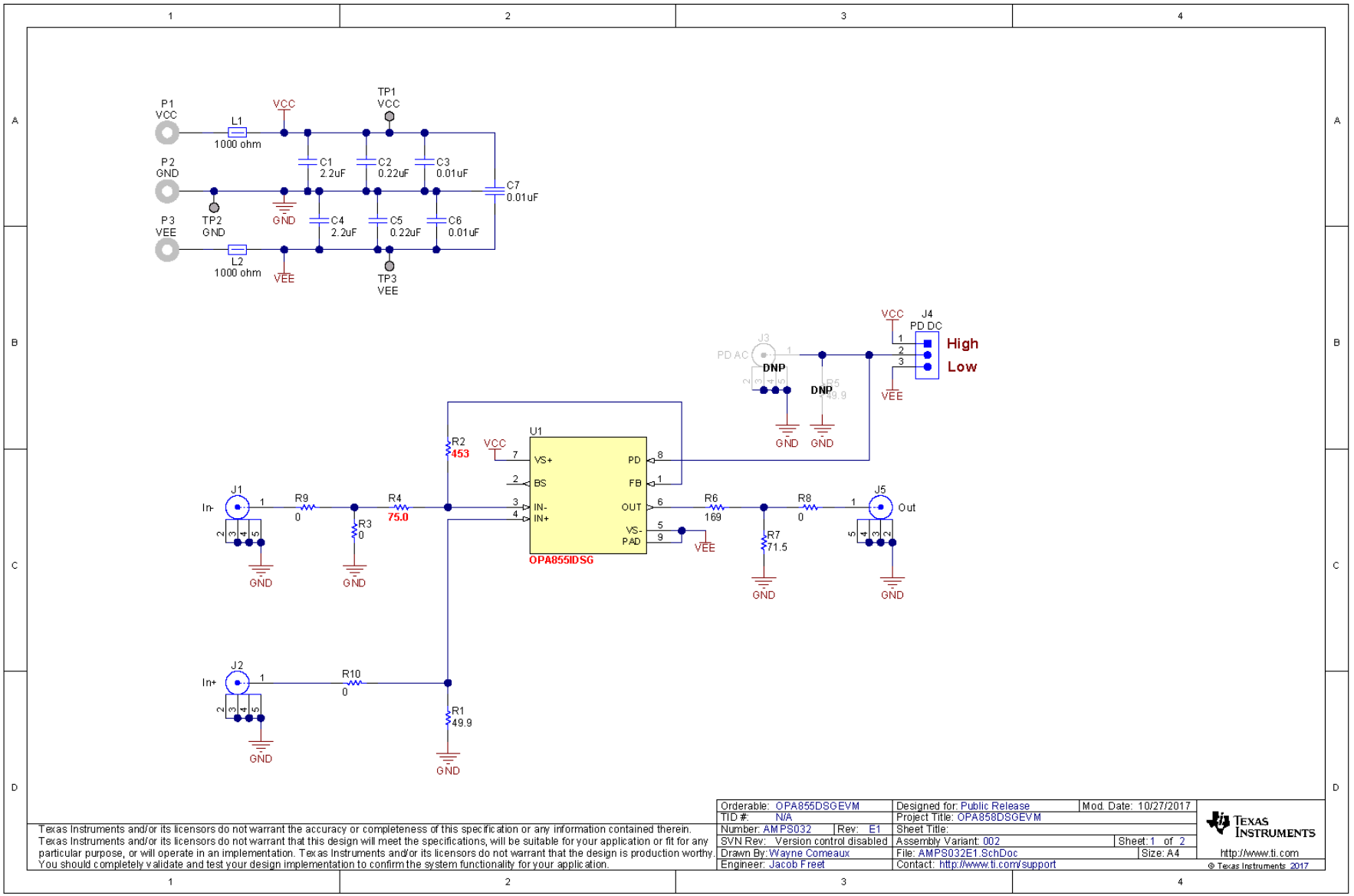

Figure 1. OPA855 and OPA855EVM Schematic

3.2 EVM Layers

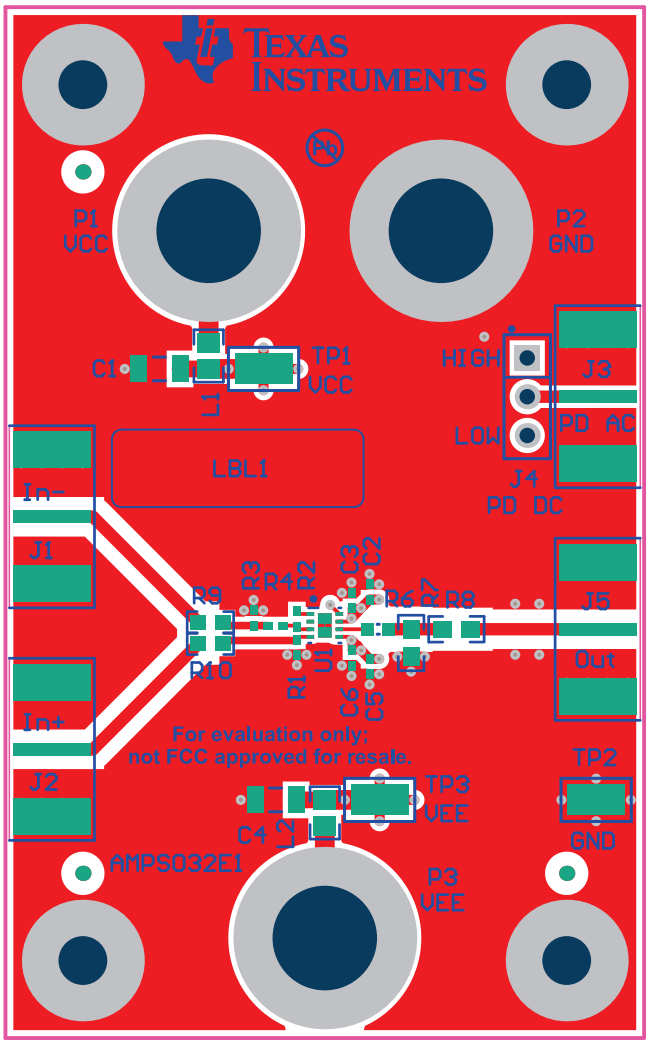

Figure 2. Top Layer

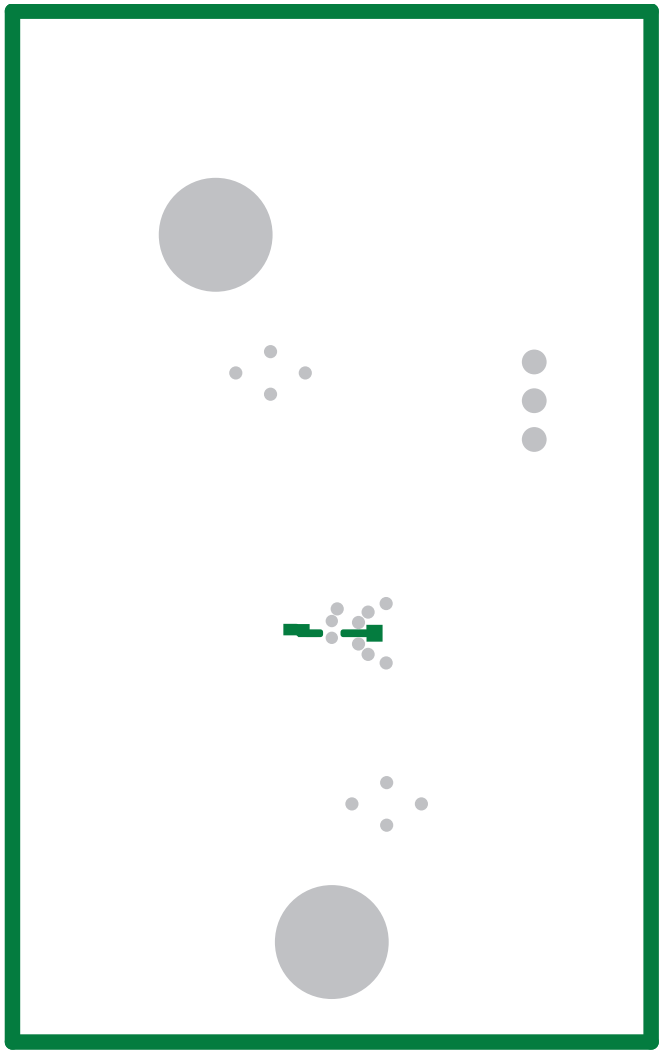

Figure 3. Ground Layer 2

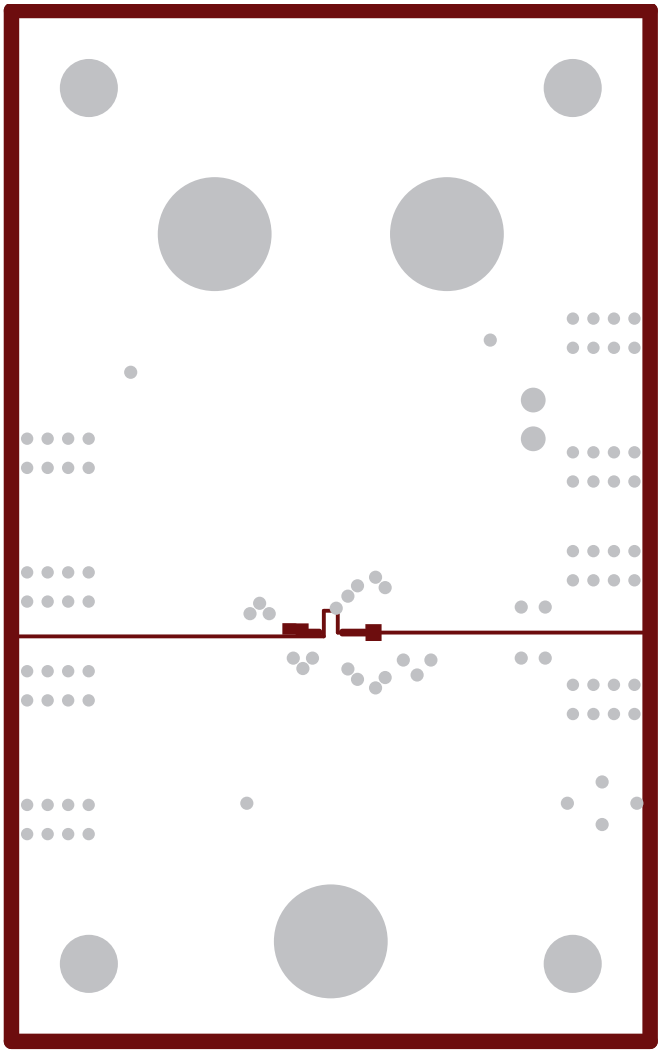

Figure 4. VCC and VEE Layer 3

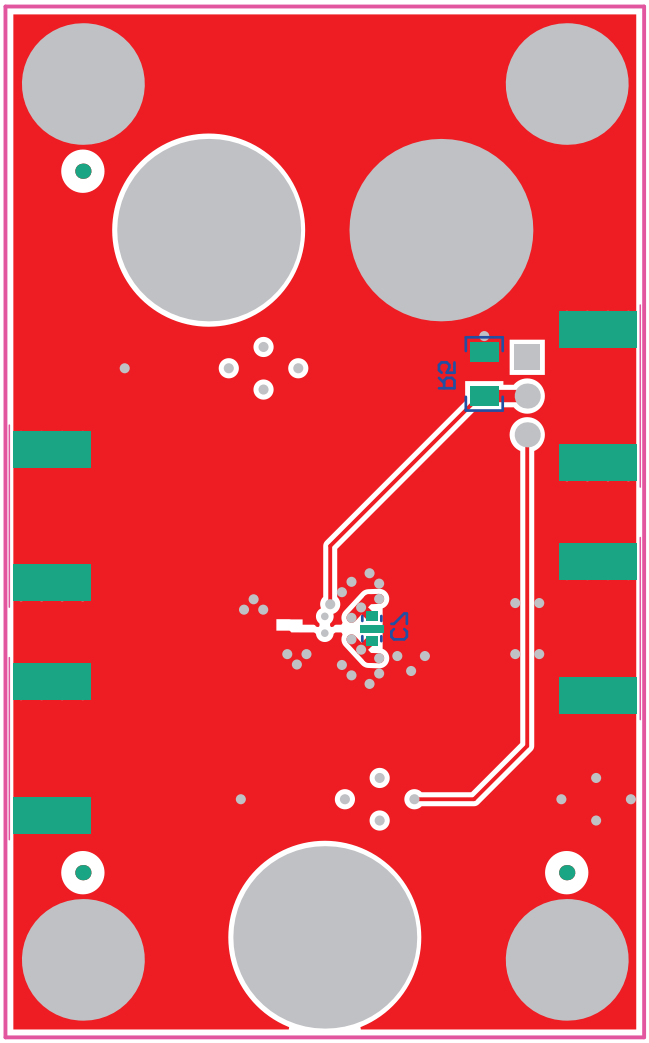

Figure 5. Bottom Layer

3.3 Bill of Materials

Table 2. OPA855EVM Bill of Materials

ITEM	DESCRIPTION	SMD SIZE	REFERENCE DESIGNATOR	PCB QUANTITY	PART NUMBER OF MANUFACTURER
1	CAP, CERM, 2.2 uF, 25 V, +/- 10%, X7R	1206	C1, C4	2	(MuRata) GRM31MR71E225KA93L
2	CAP, CERM, 0.22 uF, 25 V, +/- 20%, X5R	0402	C2, C5	2	(TDK) C1005X5R1E224M050BC
3	CAP, CERM, 0.01 uF, 25 V, +/- 10%, X7R	0402	C3, C6	2	(MuRata) GRM155R71E103KA01D
4	CAP, CERM, 0.01 uF, 50 V, +/- 20%, X7R	0603	C7	1	(Johanson Technology) 500X14W103MV4T
5	Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	Screw	H1, H2, H3, H4	4	(B&F Fastener Supply) NY PMS 440 0025 PH
6	Standoff, Hex, 0.5"L #4-40 Nylon	Standoff	H5, H6, H7, H8	4	(Keystone) 1902C
7	Connector, End launch SMA, 50 ohm	SMA End Launch	J1, J2, J5	3	(Cinch Connectivity) 142-0701-851
8	Header, 100mil, 3x1, Gold, TH	3x1 Header	J4	1	(Samtec) TSW-103-07-G-S
9	Ferrite Bead, 1000 ohm @ 100 MHz, 0.5 A	0805	L1, L2	2	(MuRata) BLM21AG102SN1D
10	Thermal Transfer Printable Labels, 0.650" W x 0.200" H	PCB Label 0.650"H x 0.200"W	LBL1	1	(Brady) THT-14-423-10
11	Standard Banana Jack, Uninsulated	Keystone_6095	P1, P2, P3	3	(Keystone) 6095
12	RES, 49.9, 1%, 0.063 W	0402	R1	1	(Vishay-Dale) CRCW040249R9FKED
13	RES, 453, 1%, 0.063 W	0402	R2	1	(Vishay-Dale) CRCW0402453RFKED
14	RES, 0, 5%, 0.063 W	0402	R3	1	(Vishay-Dale) CRCW04020000Z0ED
15	RES, 75.0, 1%, 0.063 W	0402	R4	1	(Vishay-Dale) CRCW040275R0FKED
16	RES, 169, 1%, 0.1 W	0603	R6	1	(Vishay-Dale) CRCW0603169RFKEA
17	RES, 71.5, 1%, 0.1 W	0603	R7	1	(Vishay-Dale) CRCW060371R5FKEA
18	RES, 0, 5%, 0.1 W	0603	R8, R9, R10	3	(Vishay-Dale) CRCW06030000Z0EA
19	Shunt, 100mil, Gold plated, Black		SH-J1	1	(AMP) 382811-6
20	Test Point, Miniature	Test Point, Miniature, SMT	TP1, TP2, TP3	3	(Keystone) 5019
21	IC, OPA855IDSG (WSON-8)		U1	1	(Texas Instruments) OPA855IDSGT
22	Connector, End launch SMA, 50 ohm	SMA End Launch	J3	0	(Cinch Connectivity) 142-0701-851
23	RES, 49.9, 1%, 0.25 W	1206	R5	0	(Vishay-Dale) CRCW120649R9FKEA