

OPA818DRGEVM Evaluation Module

The OPA818DRGEVM is an evaluation module (EVM) for the single [OPA818](#) in the DRG (8-pin WSON) package. The OPA818DRGEVM is designed to quickly demonstrate the functionality and versatility of the amplifier.

The EVM is ready to connect to power, signal sources, and test instruments by using onboard connectors. The default amplifier configuration is a noninverting gain of 7 in a split-supply design. The EVM can be easily configured for other gains and single-supply operation. Throughout this document the term *EVM* is synonymous with the *OPA818DRGEVM*.

1 Features

- Configured for split-supply operation and modified for single-supply.
- 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 subminiature version A (SMA) connectors.

2 EVM Specifications

This section provides a general description of the OPA818DRGEVM. [Table 1](#) lists the parameters of this user's guide.

Table 1. EVM Input and Output Limits

PARAMETER	MIN	TYP	MAX	UNIT
Single-supply voltage range (VEE = ground)	6		13	V
Split-supply voltage range (VCC,VEE)	± 3		± 6.5	V
Supply current, I_S		28		mA
Input voltage, V_I	$VEE + 0.25$		$VCC - 3.6$	V
Output drive, I_O (with a ± 6 -V or 12-V supply)		55		mA

2.1 Power Connections

The OPA818DRGEVM is equipped with banana jacks for easy power connection. 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 a split-supply configuration, 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 a single-supply configuration, apply jumper VEE to GND and the positive supply voltage to VCC. The inputs and outputs must be biased per the data sheet specifications for proper operation.

2.2 Input and Output Connections

The OPA818DRGEVM is equipped with SMA connectors to connect the EVM to signal generators and analysis equipment. As shipped, the EVM is configured for a noninverting gain of 7 configuration and split-supply operation with terminals for connecting to 50-Ω test equipment. For best results, route all signals to and from the EVM with cables that have a characteristic impedance of 50 Ω. See the [OPA818 data sheet](#), schematics, and layouts for details on how to reconfigure for other gain configurations.

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

This section provides a complete schematic diagram, board layouts, and a bill of materials for the OPA818DRGEVM.

3.1 EVM Schematic

Figure 1 shows a schematic diagram for the OPA818DRGEVM.

Refer to U1 Datasheet/EVM User's Guide for recommended operating conditions

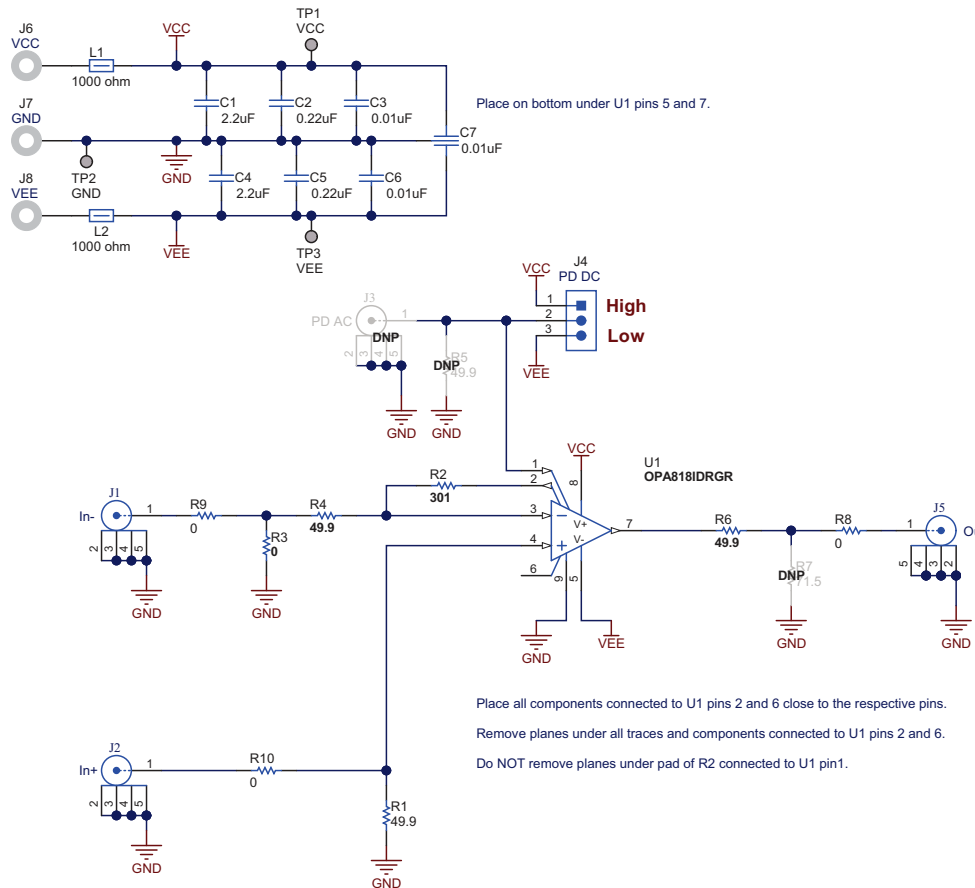


Figure 1. OPA818DRGEVM Schematic

3.2 EVM Layers

Figure 2 to Figure 9 illustrate the various board layers for the OPA818DRGEVM.

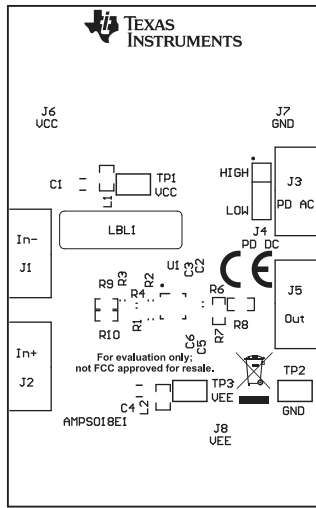


Figure 2. Top Overlay

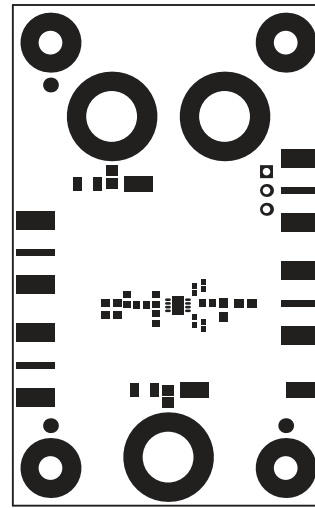


Figure 3. Top Solder

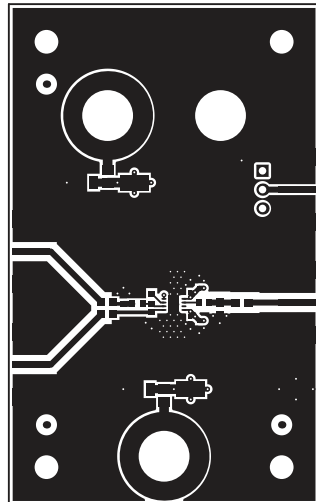


Figure 4. Top Layer

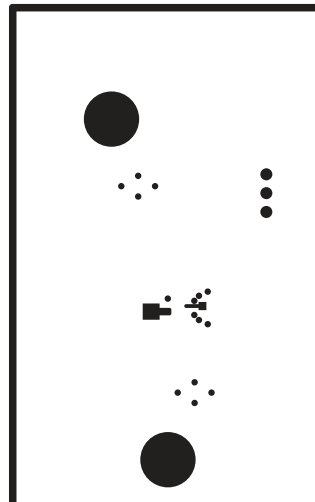


Figure 5. Ground Plane

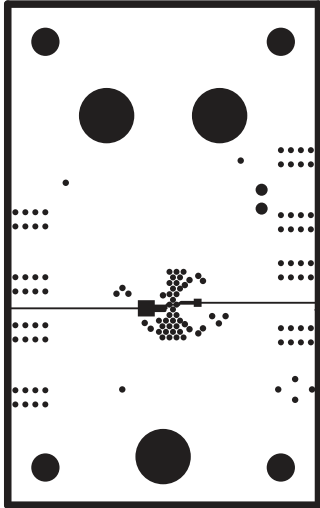


Figure 6. Power Plane

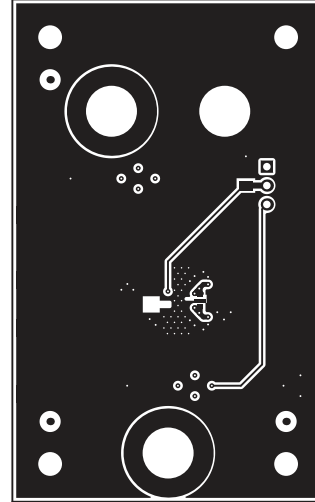


Figure 7. Bottom Layer

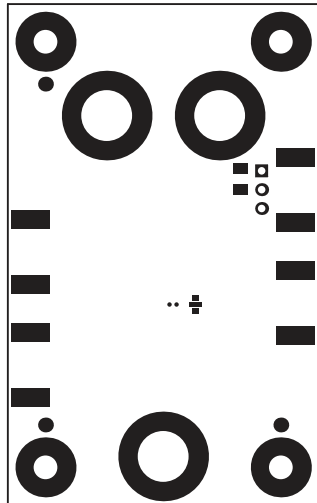


Figure 8. Bottom Solder

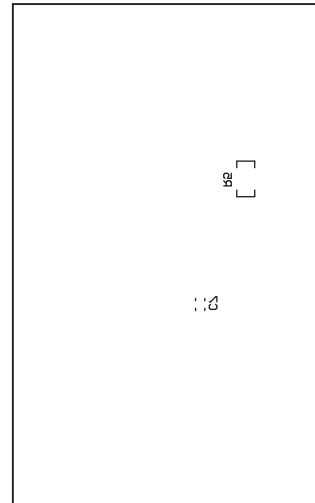


Figure 9. Bottom Overlay

3.3 Bill of Materials

Table 2 lists the bill of materials (BOM) for the OPA818DRGEVM.

Table 2. OPA818DRGEVM BOM

Designator	Qty	Value	Description	Package Reference	Part Number	Manufacturer
C1, C4	2	2.2μF	CAP, CERM, 2.2 μF, 25 V, ± 10%, X7R, 1206	1206	12063D225KAT2A	AVX
C2, C5	2	0.22μF	CAP, CERM, 0.22 μF, 25 V, ± 20%, X5R, 0402	0402	CL05A224KA5NNNC	Samsung
C3, C6	2	0.01μF	CAP, CERM, 0.01 μF, 25 V, ± 10%, X7R, 0402	0402	C0402C103J5RACTU	Kemet
C7	1	0.01μF	CAP, CERM, 0.01 μF, 50 V, ± 20%, X7R, 0603	0603	500X14W103MV4T	Johanson Technology
H1, H2, H3, H4	4		Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	Screw	NY PMS 440 0025 PH	B&F Fastener Supply
H5, H6, H7, H8	4		Standoff, Hex, 0.5"L #4-40 Nylon	Standoff	1902C	Keystone
J1, J2, J5	3		Connector, End launch SMA, 50 Ω, SMT	SMA End Launch	142-0701-851	Cinch Connectivity
J4	1		Header, 100 mil, 3x1, Gold, TH	Header, 100 mil, 3x1, TH	HTSW-103-07-G-S	Samtec
J6, J7, J8	3		Standard Banana Jack, Uninsulated	Keystone_6095	6095	Keystone
L1, L2	2	1000 Ω	Ferrite Bead, 1000 Ω @ 100 MHz, 0.5 A, 0805	0805	BLM21AG102SN1D	MuRata
LBL1	1		Thermal Transfer Printable Labels, 0.650" W x 0.200" H - 10,000 per roll	PCB Label 0.650 x 0.200 inch	THT-14-423-10	Brady
R1	1	49.9	RES, 49.9, 1%, 0.1 W, 0603	0603	RC0603FR-0749R9L	Yageo
R2	1	301	RES, 301, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW0603301RFKEA	Vishay-Dale
R3, R8, R9, R10	4	0	RES, 0, 5%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW06030000Z0EA	Vishay-Dale
R4, R6	2	49.9	RES, 49.9, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW060349R9FKEA	Vishay-Dale
SH-J1	1	1x2	Shunt, 100 mil, Gold plated, Black	Shunt	SNT-100-BK-G	Samtec
TP1, TP2, TP3	3		Test Point, Miniature, SMT	Test Point, Miniature, SMT	5019	Keystone
U1	1		Wideband, FET-Input Operational Amplifier, DRG0008B (WSO-8)	DRG0008B	OPA818DRGR	Texas Instruments
J3	0		Connector, End launch SMA, 50 Ω, SMT	SMA End Launch	142-0701-851	Cinch Connectivity
R5	0	49.9	RES, 49.9, 1%, 0.25 W, AEC-Q200 Grade 0, 1206	1206	CRCW120649R9FKEA	Vishay-Dale
R7	0	71.5	RES, 71.5, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW060371R5FKEA	Vishay-Dale

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