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REVISION HISTORY

7/2021—Revision 0: Initial Version

OPERATING THE ADPA7008-EVALZ

The ADPA7008 operates by externally biasing the gate voltage. Adjust VGG1 within the -1.5 V to 0 V range through J5 or VGG2 within the -1.5 V to 0 V range through the J6 header to set the target drain current.

See the ADPA7008 data sheet for the bias sequencing information.

Ground and gate control voltages are accessed through two 10-pin headers (see Table 1 for the header pinout).

Table 1. J5 and J6 Header Connections to the ADPA7008

Header Pin No.	ADPA7008 Pin
J5	
1	VGG1
5, 7, 9	VDD1, VDD3, VDD5, respectively
10	VREF
2, 3, 4, 6, 8 ¹	GND ¹
J6	
2	VGG2
6, 8, 10	VDD2, VDD4, VDD6, respectively
9	VDET
1, 3, 4, 5, 7 ¹	GND ¹

¹ These header pins are connected to all GND pins, and the exposed pad of the ADPA7008 on the evaluation board.

THROUGH CALIBRATION PATH

To calibrate out board trace losses, a through (thru) calibration path is provided between J1 and J2. J1 and J2 must be populated with RF connectors to use the through calibration path.

Figure 3 shows the plot of the data in Table 2 of the through calibration path (J1 to J2). See Figure 4 for the evaluation board schematic.

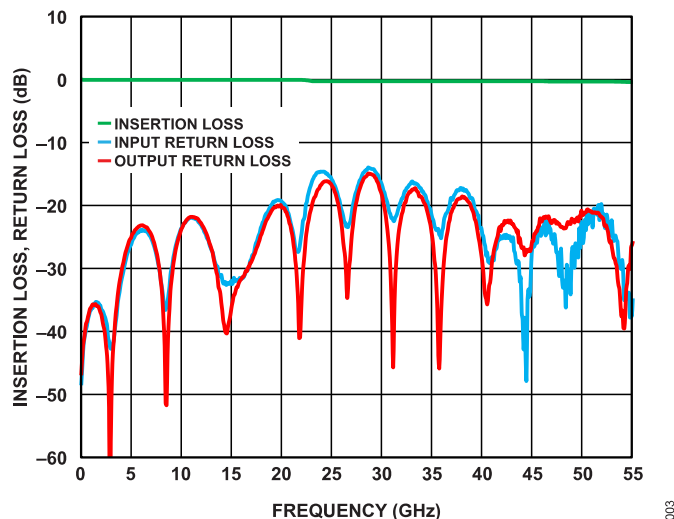


Figure 3. Insertion Loss and Return Loss of Through Calibration Path

Table 2. Insertion Loss and Return Loss of Through Calibration Path

Frequency (GHz)	Insertion Loss (dB)
0.01	-0.01
1	-0.18
5	-0.54
10	-0.92
15	-1.20
20	-1.51
25	-1.87
30	-2.02
35	-2.20
40	-2.45
45	-2.73
50	-3.08
55	-3.52

EVALUATION BOARD SCHEMATIC AND ARTWORK

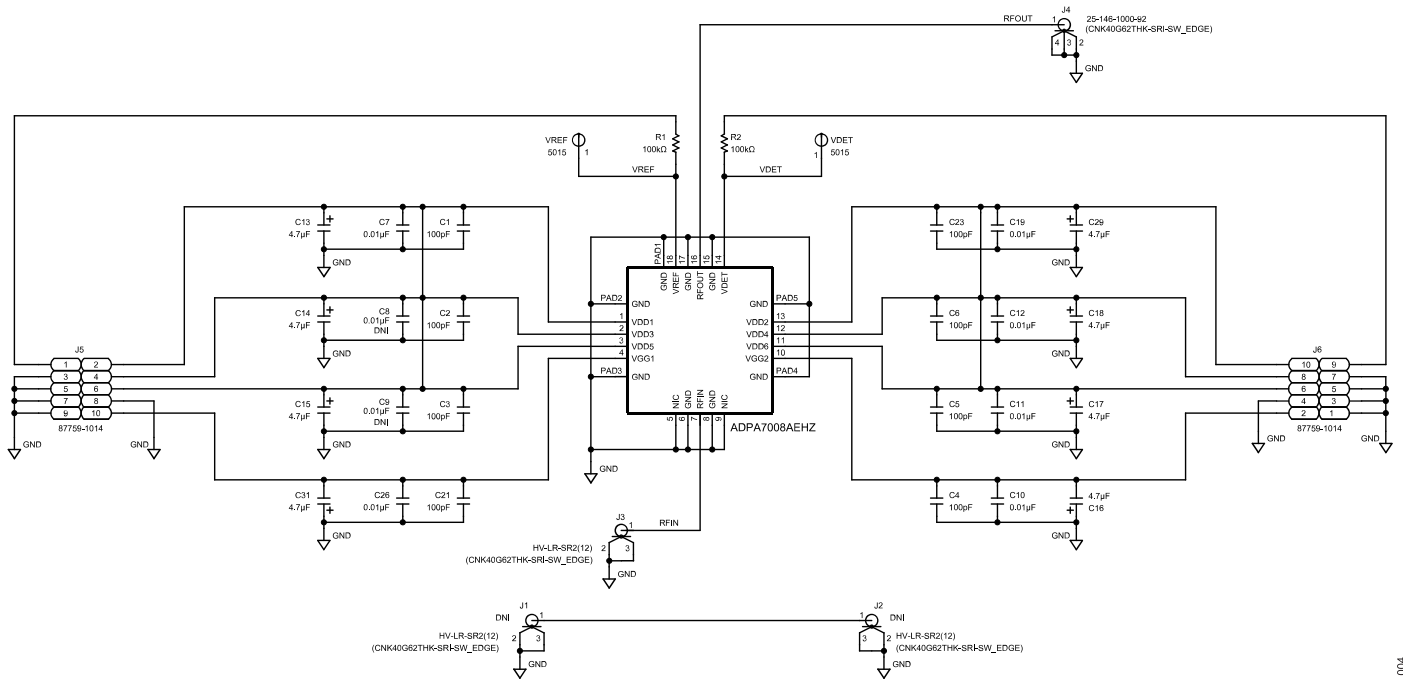


Figure 4. ADPA7008-EVALZ Evaluation Board Schematic

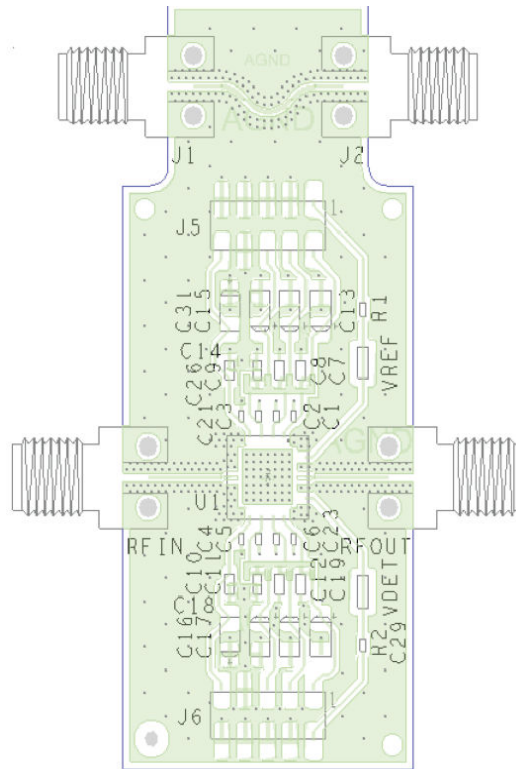


Figure 5. ADPA7008-EVALZ Assembly Drawing (Note That J1 and J2 Are Not Installed)

ORDERING INFORMATION

BILL OF MATERIALS

Table 3.

Reference Designator	Description	Manufacturer	Part Number
C1, C2, C3, C4, C5, C6, C21, C23	Ceramic capacitors, C0G, 100 pF	Kemet	C0402C101J5GACTU
C7, C8, C9, C10, C11, C12, C19, C26	Ceramic capacitors, X7R, 0.01 μ F	Yageo	CC0603KRX7R9BB103
C13, C14, C15, C16, C17, C18, C29, C31	Tantalum capacitors, 4.7 μ F	AVX	TAJA475K020RNJ
J1, J2	CONN-PCB, 1.85 MM, Coax, 50 Ω , 67 GHZ	HIROSE ELECTRIC CO.	HV-LR-SR2(12)
RFIN, RFOUT	CONN-PCB, 1.85 MM Coax, 50 Ω , 67 GHZ	HIROSE ELECTRIC CO.	HV-LR-SR2(12)
J5, J6	Connectors, PCB header, vertical, dual row, 10-position, 2 mm pitch	Molex	87759-1014
R1, R2	Resistors, precision, thick film chip, 100 k Ω	Panasonic	ERJ-2RKF1003X
U1	Gallium arsenide (GaAs), pseudomorphic high electron mobility transfer (pHEMT), monolithic microwave integrated circuit (MMIC), 1 W, 20 GHz to 54 GHz power amplifier	Analog Devices, Inc.	ADPA7008AEHZ
Not applicable	Aluminum heat spreader, 02.51 in. \times 1.9 in.	Not applicable	Not applicable

**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.

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