AD8343 Evaluation Board

EVAL-AD8343EB

BOARD DESCRIPTION

The AD8343 Evaluation Board has two independent areas, denoted A and B. The circuit schematics are shown in Figures 1 and 2. An assembly drawing is included in Figure 3 to ease identification of components, and representations of the board layout are included in Figures 4 through 7.

The A region is configured for ease in making device impedance measurements as part of the process of developing suitable matching networks for a final application. The B region is designed for operating the AD8343 in a single-ended application environment, and therefore includes pads for attaching baluns or transformers at both the input and output.

Tables I through III delineate the components used for the characterization procedure used to generate TPC 1 through 42 and most other data contained in the AD8343 data sheet. Table I lists the support components that are delivered with the AD8343 evaluation board. Note that the board is shipped without any frequency specific components installed. Table II lists the components used to obtain the frequency selection necessary for the product receiver evaluation, and Table III lists the transmitter evaluation components.

ORDERING GUIDE

Model	Package Description
AD8343-EVAL	Evaluation Board

CAUTION

ESD (electrostatic discharge) sensitive device. Electrostatic charges as high as 4000 V readily accumulate on the human body and test equipment and can discharge without detection. Although the EVAL-AD8343EB features proprietary ESD protection circuitry, permanent damage may occur on devices subjected to high energy electrostatic discharges. Therefore, proper ESD precautions are recommended to avoid performance degradation or loss of functionality.

REV. 0

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Table I. Values of Support Components Shipped with Evaluation Board and Used for Device Characterization

Component Designator	Value	Quantity	Part Number
C1A, C1B, C3A, C3B, C11A, C11B	0.1 µF	6	Murata GRM40Z5U104M50V
C2A, C2B, C4A, C4B, C5A, C5B, C6A, C6B, C9A, C9B, C10A, C10B, C12A, C12B, C13A, C13B	0.01 µF	16	Murata GRM40X7R103K50V
R3A, R3B, R4A, R4B	68.1 Ω ± 1%	4	Panasonic ERJ6ENF68R1V (T and R Packaging)
R1A, R1B, R2A, R2B	3.9 Ω ± 5%	4	Panasonic ERJ6GEYJ3R9V (T and R Packaging)
R5A, R5B	0 Ω	2	Panasonic ERJ6GEYJR00V (T and R Packaging)
J1A, J1B	Ferrite Bead	2	Murata BLM21P300S (2.0 mm SMT)
T1A, T1B, T2B (Various)	1:1	3	M/A-Com ETC1-1-13 Wideband Balun*
T3B (Various)	4:1	1	Mini-Circuits TC4-1W Transformer
R6A, R6B, R7A, R7B	10 Ω ± 1%	4	Panasonic ERJ6GEYJ100V (T and R Packaging)
L1A, L1B, L2A, L2B	56 nH	4	Panasonic ELJ-RE56NJF3

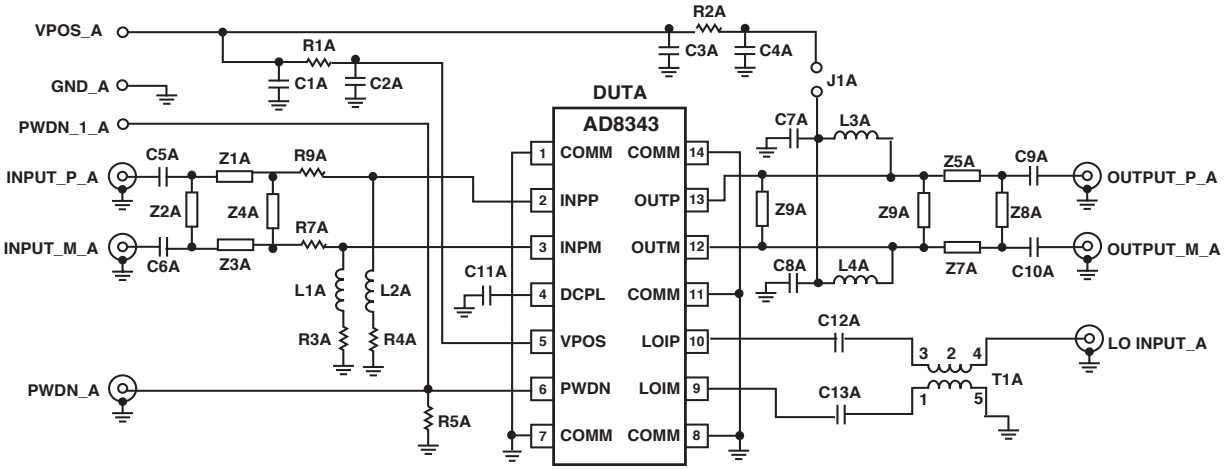
Table II. Values of Matching Components Used for Receiver Characterization

Component Designator	Value	Quantity	Part Number
f_{IN} = 400 MHz, f_{OUT} = 70 MHz			
T1B, T2B	1:1	2	M/A-Com ETC1-1-13 Wideband Balun*
T3B	4:1	1	Mini-Circuits TC4-1W Transformer
R6B, R7B	10 Ω	2	Panasonic ERJ6GEYJ100V (T and R Packaging)
Z1B, Z3B	Jumper	2	#30 AWG Wire across Pads
Z2B	8.2 pF	1	Murata MA188R2J
Z5B, Z7B	150 nH	2	Murata LQW1608AR15G00
Z6B	3.4 pF	1	Murata MA182R4B || MA181R0B
L1B, L2B	56 nH	2	Panasonic ELJ-RE56NJF3
Z4B, Z8B, L3B, L4B, Z9B—Not Populated			
f_{IN} = 900 MHz, f_{OUT} = 170 MHz			
T1B, T2B	1:1	2	M/A-Com ETC1-1-13 Wideband Balun*
T3B	4:1	1	Mini-Circuits TC4-1W Transformer
R6B, R7B	10 Ω	2	Panasonic ERJ6GEYJ100V (T and R packaging)
Z1B, Z3B	Jumper	2	#30 AWG Wire across Pads
Z4B	3.0 pF	1	Murata GRM39C0G3R0B50V
Z5B, Z7B	120 nH	2	Murata LQW1608AR12G00
Z6B	0.4 pF	1	Murata MA180R4B
L1B, L2B	56 nH	2	Panasonic ELJ-RE56NJF3
Z2B, Z8B, L3B, L4B, Z9B—Not Populated			
f_{IN} = 1900 MHz, f_{OUT} = 425 MHz			
T1B, T2B	1:1	3	M/A-Com ETC1-1-13 Wideband Balun*
T3B	4:1	1	Mini-Circuits TC4-1W Transformer
R6B, R7B	10 Ω	2	Panasonic ERJ6GEYJ100V (T and R packaging)
Z1B, Z3B	6.8 nH	2	Murata LQW1608A6N8C00
Z2B	0.6 pF	1	Murata MA180R6B
Z5B, Z7B	39 nH	2	Murata LQW1608A39NG00
Z8B	2.0 pF	1	Murata MA182R0B
L1B, L2B	56 nH	2	Panasonic ELJ-RE56NJF3
Z6B, Z4B, L3B, L4B, Z9B—Not Populated			
f_{IN} = 1900 MHz, f_{OUT} = 170 MHz			
T1B, T2B	1:1	2	M/A-Com ETC1-1-13 Wideband Balun*
T3B	4:1	1	Mini-Circuits TC4-1W Transformer
R6B, R7B	10 Ω	2	Panasonic ERJ6GEYJ100V (T and R Packaging)
Z1B, Z3B	6.8 nH	2	Murata LQW1608A6N8C00
Z4B	0.5 pF	1	Murata MA180R5B
Z5B, Z7B	100 nH	2	Murata LQW1608AR10G00
Z6B	2.4 pF	1	Murata MA182R4B
L1B, L2B	56 nH	2	Panasonic ELJ-RE56NJF3
Z2B, Z8B, L3B, L4B, Z9B—Not Populated			

Table III. Values of Matching Components Used for Transmitter Characterization

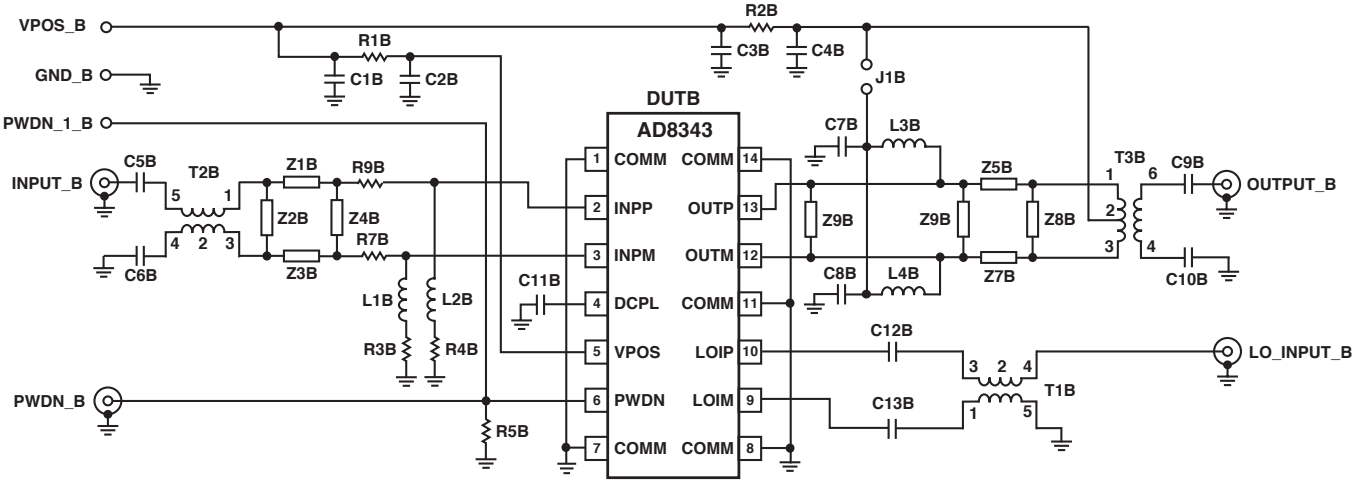
Component Designator	Value	Quantity	Part Number
f_{IN} = 150 MHz, f_{OUT} = 900 MHz			
T1B, T3B	1:1	2	M/A-Com ETC1-1-13 Wideband Balun*
T2B	1:1	1	Mini-Circuits ADTL1-18-75
R6B, R7B	5.1 Ω	2	Panasonic ERJ6GEYJ510V (T and R Packaging)
Z1B, Z3B	8.2 nH	2	Murata LQW1608A8N2C00
Z2B	33 pF	1	Murata GRM39C0G330J100V
Z5B, Z7B	8.2 nH	2	Murata LQG11A8N2J00
Z8B	6.2 pF	1	Murata MA186R2C
L1B, L2B	56 nH	2	Panasonic ELJ-RE56NJF3
L3B, L4B	150 nH	2	Murata LQW1608AR15G00
Z4B, Z6B, Z9B—Not Populated			
f_{IN} = 150 MHz, f_{OUT} = 1900 MHz			
T1B, T3B	1:1	2	M/A-Com ETC1-1-13 Wideband Balun*
T2B	1:1	1	Mini-Circuits ADTL1-18-75
R6B, R7B	5.1 Ω	2	Panasonic ERJ6GEYJ510V (T and R Packaging)
Z1B, Z3B	8.2 nH	2	Murata LQG11A8N2J00
Z2B	33 pF	1	Murata GRM39C0G330J100V
Z5B, Z7B	1.8 nH	2	Murata LQG11A1N8S00
Z8B	1.8 pF	1	Murata MA181R8B
L1B, L2B	56 nH	2	Panasonic ELJ-RE56NJF3
L3B, L4B	68 nH	2	Murata LQW1608A68NG00
Z4B, Z6B, Z9B—Not Populated			

*The ECT1-1-13 wideband balun was chosen for ease in customer's independent evaluation. These baluns are quite acceptable for use as T1 on the LO port, but may not be acceptable for use as T2 on the high performance RF input. It has been found that board-to-board performance variations become unacceptable when this balun is used at higher (> 500 MHz) frequencies. A narrow-band balun is suggested for this critical interface. Refer to the Device Interfaces and A Step-by-Step Approach to Impedance Matching section of the AD8345 data sheet for more information.



REFERENCE TABLE I OF THE AD8343 DATA SHEET FOR COMPONENT VALUES AS SHIPPED.
REFERENCE TABLE I, II, AND III OF THE AD8343 DATA SHEET FOR CHARACTERIZATION VALUES.

Figure 1. Characterization and Evaluation Board Circuit A



REFERENCE TABLE I OF THE AD8343 DATA SHEET FOR COMPONENT VALUES AS SHIPPED.
REFERENCE TABLE I, II, AND III OF THE AD8343 DATA SHEET FOR CHARACTERIZATION VALUES.

Figure 2. Characterization and Evaluation Board Circuit B

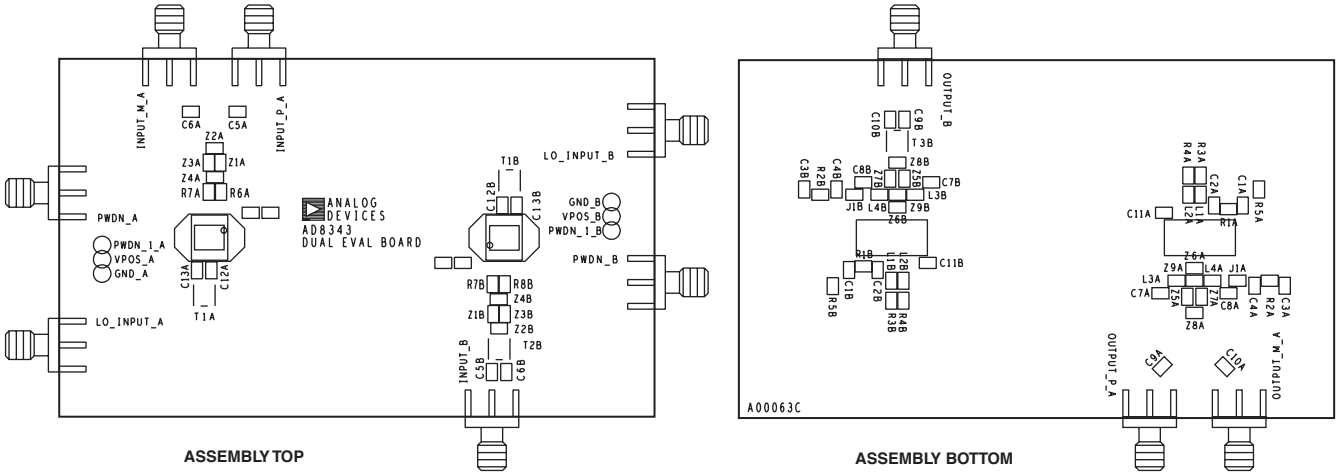


Figure 3. Evaluation Board Assembly Drawing

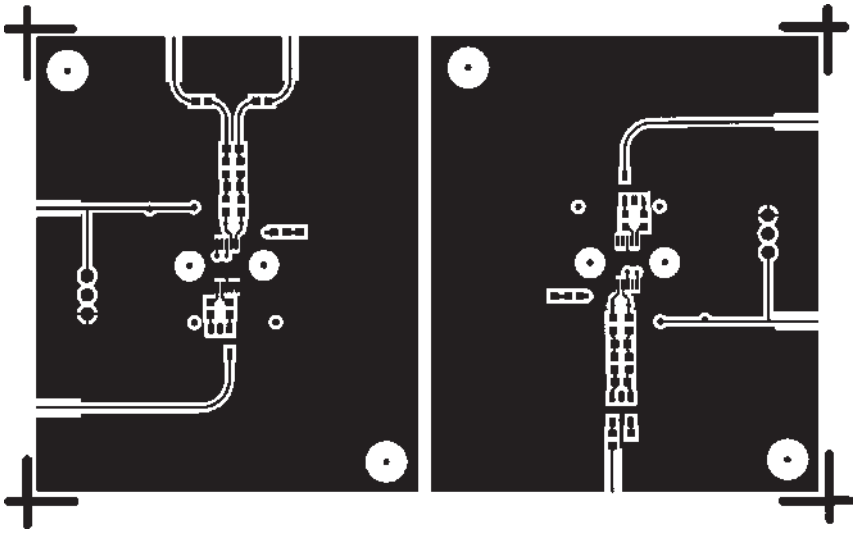


Figure 4. Evaluation Board Artwork Top

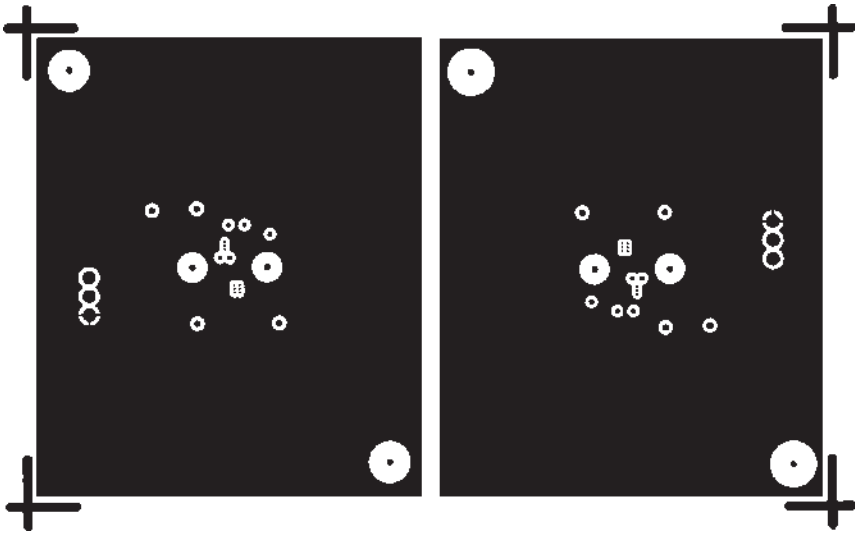


Figure 5. Evaluation Board Artwork Internal 1

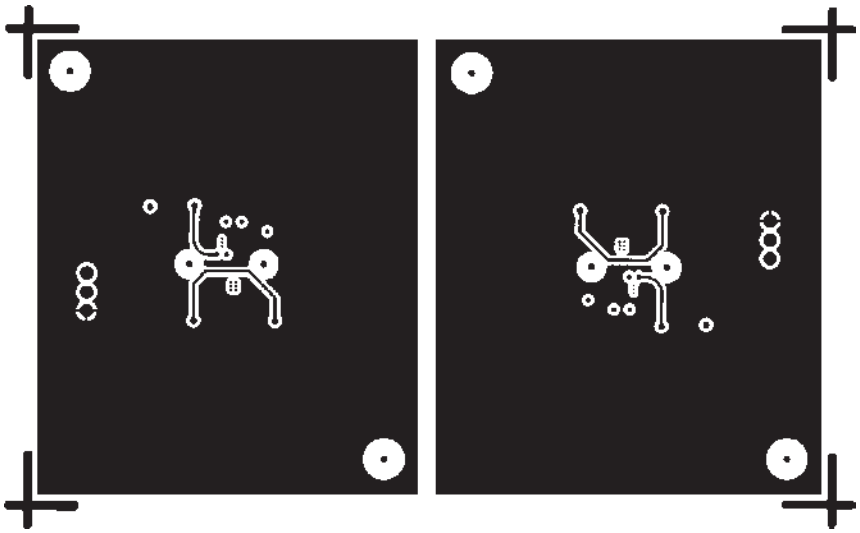


Figure 6. Evaluation Board Artwork Internal 2

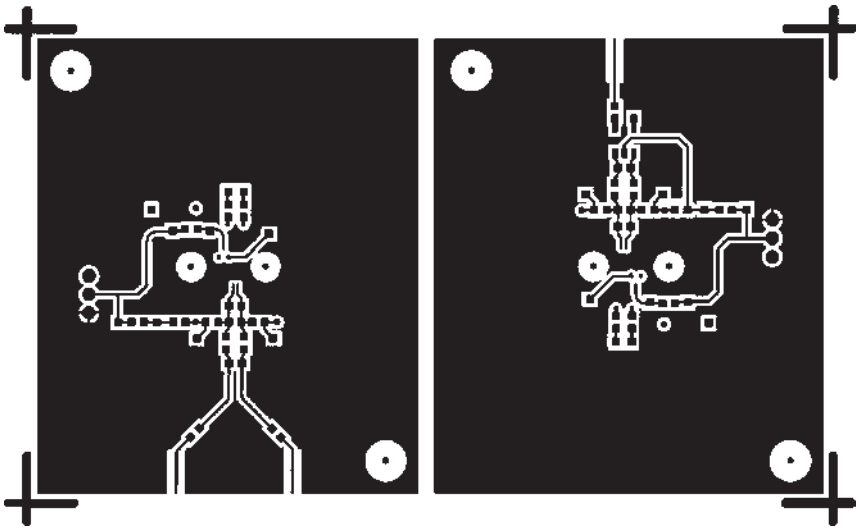


Figure 7. Evaluation Board Artwork Bottom

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