

EVM User's Guide: LOG305DRVEVM

LOG305DRV Evaluation Module



Description

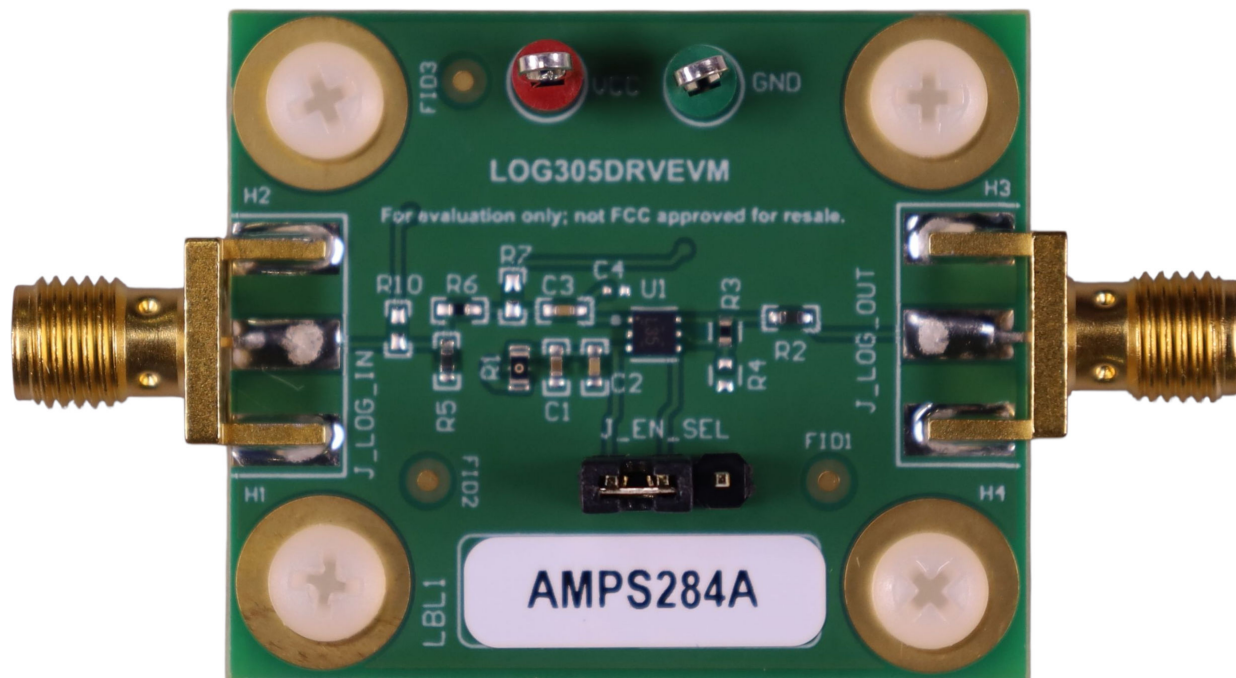
The LOG305DRVEVM is the evaluation module for the LOG305 Log detector / RSSI Detector in the 6-pin WSON (DRV) package. This evaluation module is designed to quickly and easily demonstrate the functionality and versatility of the device. The EVM is ready to connect to power (2.7V to 5.25V), signal sources, and test instruments through the use of onboard connectors. The EVM comes configured for easy connection with common laboratory equipment using SMA connectors on both input and output. The board also includes jumpers to easily disable or enable the device.

1 Features

- Single supply operating range 2.7V to 5.25V
- Easy-to-use SMA connectors for input and output signal
- Provide flexibility to use either onboard or external bandpass filter (BPF)
- Jumper to Enable or Disable device

2 Applications

- Ultrasonic distance and material sensing
- Flow cytometry
- ESD and high energy EMI signal detection
- ARC fault detection



LOG305DRVEVM Board (Top View)

3 Evaluation Module Overview

3.1 Introduction

The LOG305DRVEVM evaluation module is designed to evaluate the performance of the logarithmic detector / RSSI (Received signal strength indication) Detector. The EVM can operate over the single supply range of 2.7V to 5.25V and the LOG input can take input from $16\mu\text{V}_{\text{RMS}}$ to 1V_{RMS} . A provision for putting a passive Bandpass filter is also provided, which can be connected before the LOG input to filter out the signals which are not of user interest. The EVM include SMA connectors for both input and output pins and test-point connectors for the supply and ground. This user's guide provides device and connector descriptions, schematic, bill of materials, and board layout of the EVM.

3.2 Kit Contents

- LOG305DRVEVM
- EVM Disclaimer Read Me

3.3 Specification

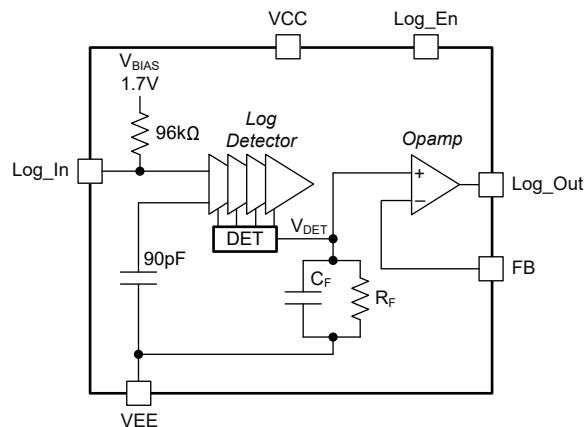


Figure 3-1. LOG305 Simplified Block Diagram

3.4 Device Information

The LOG305 is a Log Detector / RSSI Detector with very low power consumption. This device supports an input frequency from 200kHz to 100MHz and a typical dynamic range of 95dB. The LOG305 can support frequencies beyond this range at reduced sensitivity. The LOG305 is intended for use in applications that require a wide dynamic range of voltage and signal measurement. This device supports single ended inputs and unipolar or bipolar supplies.

The LOG305 is available in a 6-pin DRV package. The LOG305 is operational from a 2.7V to 5.25V supply and over the full ambient temperature range of -40°C to $+125^{\circ}\text{C}$.

4 Hardware

4.1 Pin Specifications

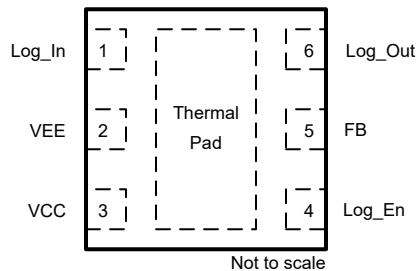


Figure 4-1. DRV Package, 6pin WSON

4.2 Power Requirements

The EVMs are equipped with a DC test point connector (VCC) for easy connection of power using a clip connector. The positive supply input is labeled VCC, the ground supply input is labeled GND. The EVM can safely operate from 2.7V to 5.25V supply, but please note the EVM does not support split-supply operation.

4.3 Input and Output Connector

Input – J_LOG_IN: Connects to the LOG305 input pin by default. If the onboard BPF has to be connected between the signal input and the LOG input, remove R5 and R6, and populate R7 and R10.

Output – J_LOG_OUT: The output of the LOG305 comes to this connector.

4.4 Bandpass filter

To filter out the input noise outside the frequency of interest, a bandpass filter (BPF) needs to be added before the Log input. This can either be done by connecting an external bandpass filter between the input signal and the Log input (J_LOG_IN) or using the onboard bandpass filter provided on the EVM. Note that the RLC components of the BPF need to be populated by the user as per the filter centre frequency and quality factor requirement. To use the onboard BPF, short R7 and R10 and open R5 and R6.

4.5 Device Enable/Disable Jumper

J_EN_SEL: Short Pin 1 and Pin 2 of the Jumper to disable the device. To keep the device enabled, either short Pin 2 and Pin 3, or remove the jumper and leave the pin floating

5 Hardware Design File

5.1 Schematic

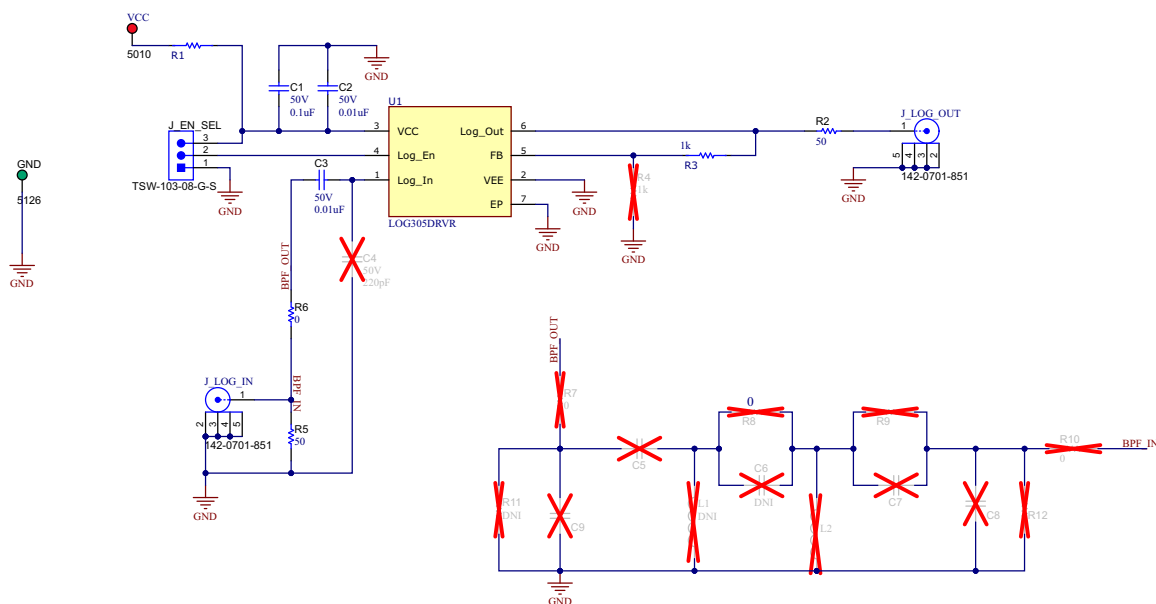


Figure 5-1. Schematic for LOG305DRVEVM

5.2 PCB Layouts

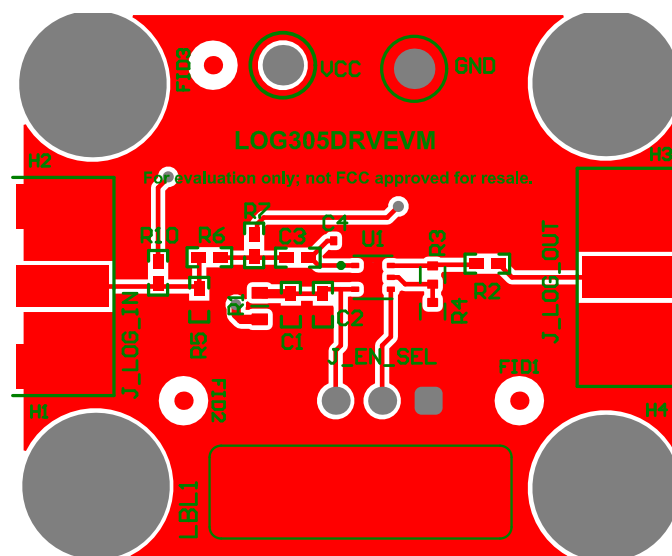


Figure 5-2. LOG305DRVEVM Top Layer

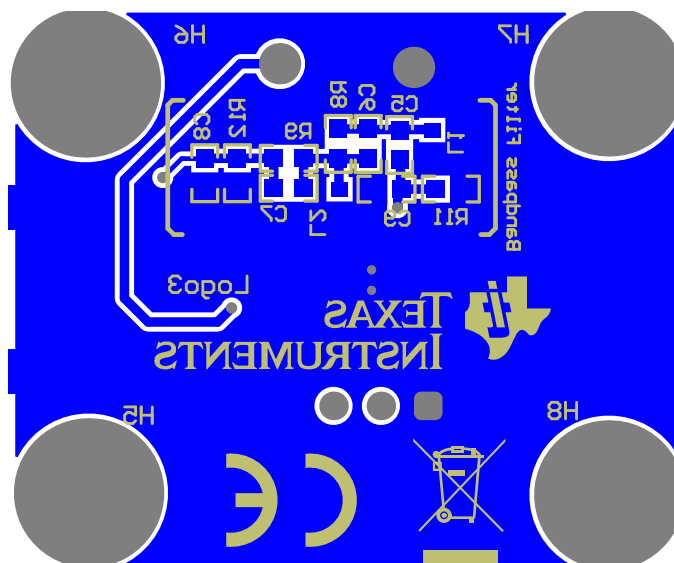


Figure 5-3. LOG305DRVEVM Bottom Layer

5.3 Bill of Materials (BOM)

Item	Designator	PartNumber	Description	Manufacturer	Quantity
1	!PCB	LOG305DRVEVM	Printed Circuit Board	Any	1
2	C1	C1005X5R1H104K050BB	CAP, CERM, 0.1 uF, 50 V, +/- 10%, X5R, 0402	TDK	1
3	C2	GRM155R71H103KA88D	CAP, CERM, 0.01 uF, 50 V, +/- 10%, X7R, 0402	MuRata	1
4	C3	GRM155R71H103KA88D	CAP, CERM, 0.01 uF, 50 V, +/- 10%, X7R, 0402	MuRata	1
5	GND	5126	Test Point, Multipurpose, Green, TH	Keystone	1
6	H1	NY PMS 440 0025 PH	Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	B&F Fastener Supply	1
7	H2	NY PMS 440 0025 PH	Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	B&F Fastener Supply	1
8	H3	NY PMS 440 0025 PH	Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	B&F Fastener Supply	1
9	H4	NY PMS 440 0025 PH	Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	B&F Fastener Supply	1

10	H5	1902C	Standoff, Hex, 0.5"L #4-40 Nylon	Keystone	1
11	H6	1902C	Standoff, Hex, 0.5"L #4-40 Nylon	Keystone	1
12	H7	1902C	Standoff, Hex, 0.5"L #4-40 Nylon	Keystone	1
13	H8	1902C	Standoff, Hex, 0.5"L #4-40 Nylon	Keystone	1
14	J_EN_SEL	TSW-103-08-G-S	Header, 2.54mm, 3x1, Gold, TH	Samtec	1
15	J_LOG_IN	142-0701-851	Connector, End launch SMA, 50 ohm, SMT	Cinch Connectivity	1
16	J_LOG_OUT	142-0701-851	Connector, End launch SMA, 50 ohm, SMT	Cinch Connectivity	1
17	LBL1	THT-14-423-10	Thermal Transfer Printable Labels, 0.650" W x 0.200" H - 10,000 per roll	Brady	1
18	R1	RMCF0603ZT0R00	RES 0 OHM JUMPER 1/10W 0603	Stackpole Electronics Inc	1
19	R2	FC0402E50R0BST1	RES, 50, 0.1%, 0.05 W, 0402	Vishay-Dale	1
20	R3	RNCF0402DTE1K00	1 kOhms $\pm 0.5\%$ 0.063W, 0.1W Chip Resistor 0402 (1005 Metric) Automotive AEC-Q200 Thin Film	Stackpole Electronics	1
21	R5	FC0402E50R0BST1	RES, 50, 0.1%, 0.05 W, 0402	Vishay-Dale	1
22	R6	CRCW04020000Z0E D	RES, 0, 5%, 0.063 W, 0402	Vishay-Dale	1
23	U1	LOG305DRVR	LOG305DRVR	Texas Instruments	1
24	VCC	5010	Test Point, Multipurpose, Red, TH	Keystone Electronics	1
25	FID1	N/A	Fiducial mark. There is nothing to buy or mount.	N/A	0
26	FID2	N/A	Fiducial mark. There is nothing to buy or mount.	N/A	0
27	FID3	N/A	Fiducial mark. There is nothing to buy or mount.	N/A	0
28	C4	DNI	N/A	N/A	0
29	C5	DNI	N/A	N/A	0

30	C6	DNI	N/A	N/A	0
31	C7	DNI	N/A	N/A	0
32	C8	DNI	N/A	N/A	0
33	C9	DNI	N/A	N/A	0
34	L1	DNI	N/A	N/A	0
35	L2	DNI	N/A	N/A	0
36	R4	DNI	N/A	N/A	0
37	R7	DNI	N/A	N/A	0
38	R8	DNI	N/A	N/A	0
39	R9	DNI	N/A	N/A	0
40	R10	DNI	N/A	N/A	0
41	R11	DNI	N/A	N/A	0
42	R12	DNI	N/A	N/A	0

6 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

DATE	REVISION	NOTES
November 2025	*	Initial Release

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