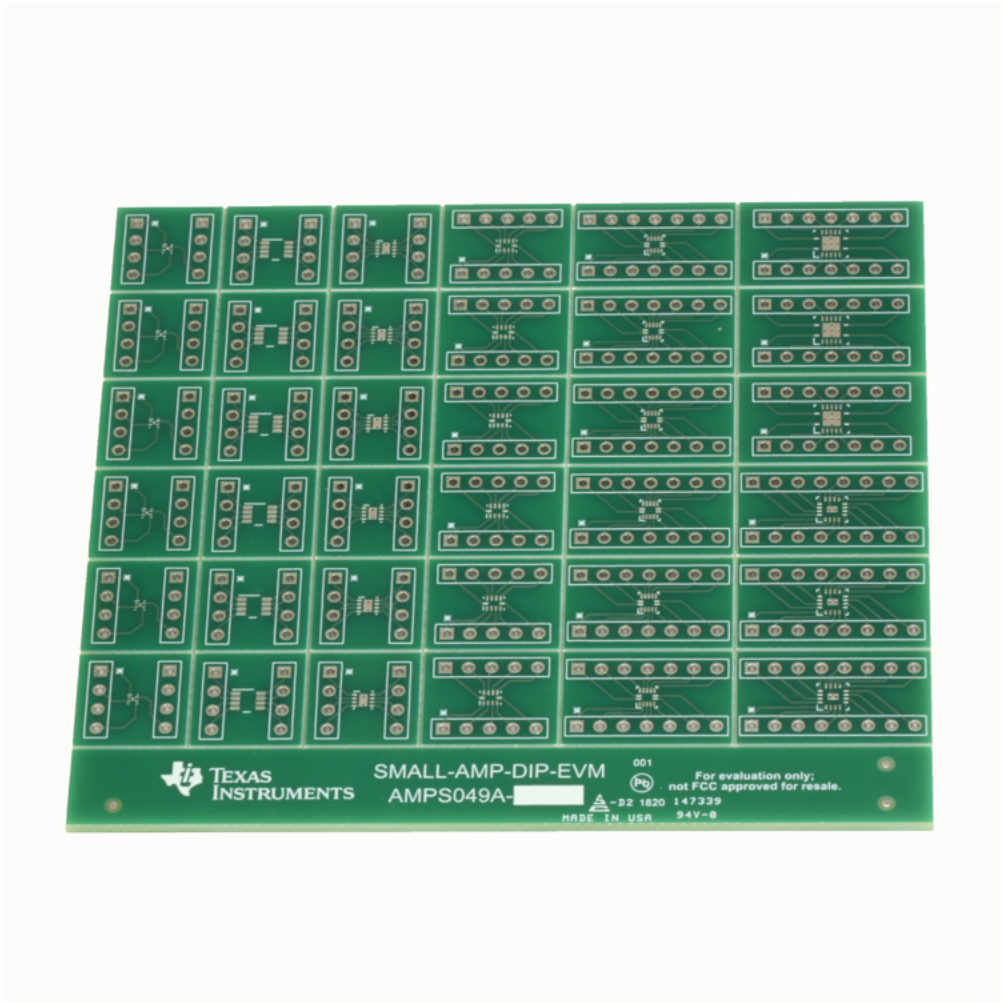
SMALL-AMP-DIP Evaluation Module (EVM)



This user's guide contains support documentation for the SMALL-AMP-DIP evaluation module (EVM). Included is a step-by-step guide on setting up and configuring the EVM, bill of materials (BOM), and printed circuit board (PCB) layout.

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1 Introduction

The SMALL-AMP-DIP-EVM is designed to facilitate evaluation of op amps offered in small packages. This EVM gives users an easy tool to test the following op amp packages: DPW, DCN, DDF, DSG, RUG, RUC, RGY, and RTE. This EVM routes each pin of the device to a header pin and can be used as a basic building block for circuit design and device testing purposes.

1.1 List of Packages

The SMALL-AMP-DIP-EVM contains the following packages:

- DPW-5
- DCN-8
- DDF-8
- DSG-8
- RUG-10
- RUC-14
- RGY-14
- RTE-16

2 Hardware Setup

The SMALL-AMP-DIP-EVM setup requires identifying and breaking out the desired PCB from the EVM and then soldering the IC and terminal strips onto the EVM. This section presents the details of these procedures.

2.1 EVM Package Locations

Figure 1 and Table 1 map the location of each package on the EVM. Figure 1 labels each package drawing with a letter ranging from A to G. Table 1 matches the package drawing to a letter in Figure 1.

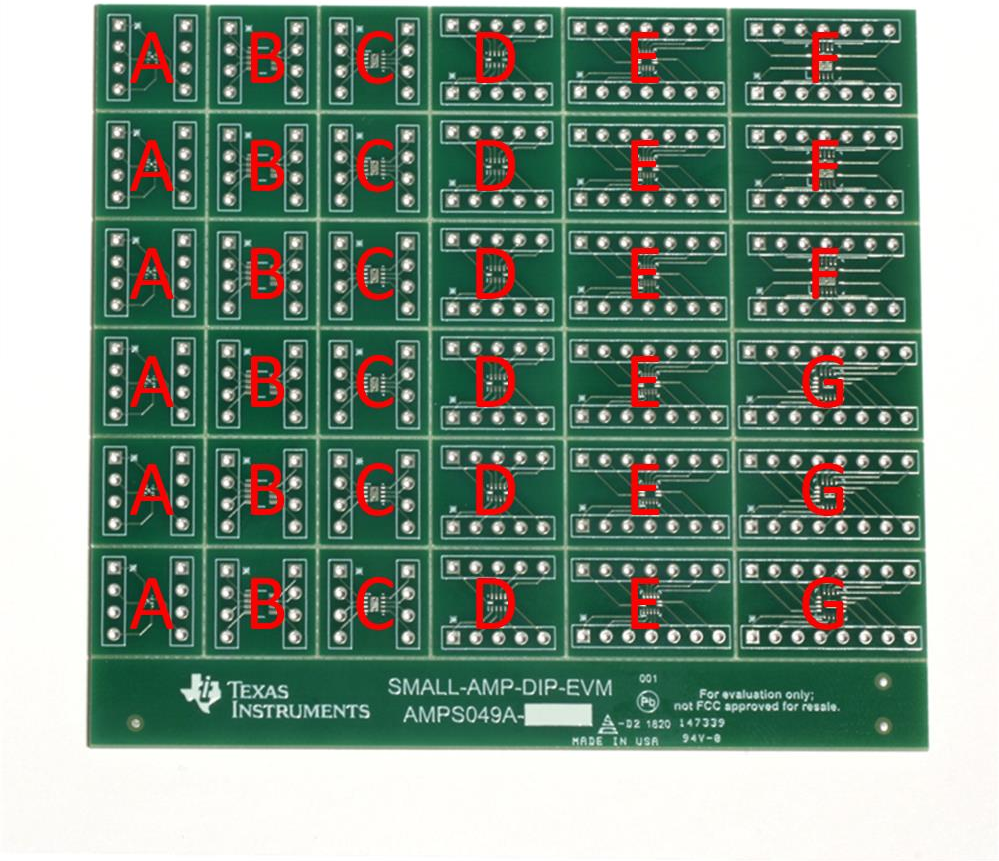

Figure 1. Location of packages on EVM

Table 1. Package type mapped to EVM

Package Name	Letter in Figure 1
DPW-5	A
DCN-8	B
DDF-8	B
DSG-8	C
RUG-10	D
RUC-14	E
RGY-14	F
RTE-16	G

2.2 EVM Assembly Instructions

This section provides step-by-step instructions on how to assemble the EVM.

1. Choose the desired package. See Section 2.1 for the location of each package type.
2. Gently flex the PCB panel at the score lines to separate the desired package from the EVM.

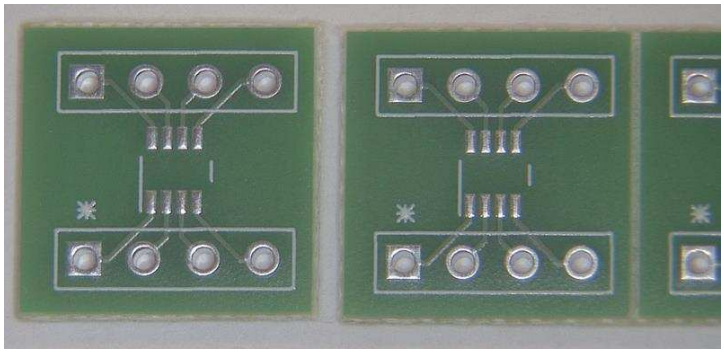

Figure 2. Detach desired PCB

3. Solder the device onto the separated PCB.

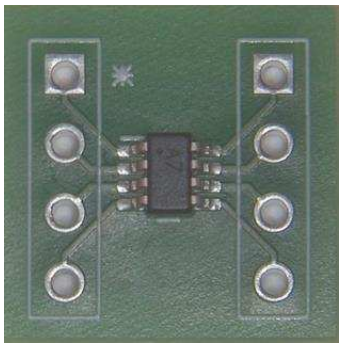

Figure 3. Detached PCB with soldered IC

4. Use long-nose pliers to snap terminal header strips into the desired position lengths.
   - For the DPW, DCN, DDF and DSG packages, the terminal strips need to be snapped into 4 position lengths, as shown in Figure 4.
   - For the RUG package, use 5 position lengths.
   - For the RUC and RGY packages, use 7 position lengths.
   - And for the RTE package, use 8 position lengths.

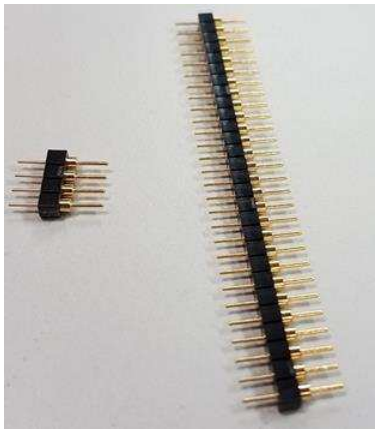

Figure 4. Terminal strip (TS-132-G-AA) broken into 4 position length

5. Insert the header strips into a spare DIP socket or breadboard as shown in Figure 5.

Figure 5. Terminal strip (TS-132-G-AA) inserted into spare DIP socket

6. Position the separated PCB with the soldered IC over the terminal strips and solder each pin in place. Carefully remove the PCB from the DIP socket. Figure 6 displays a fully assembled PCB.

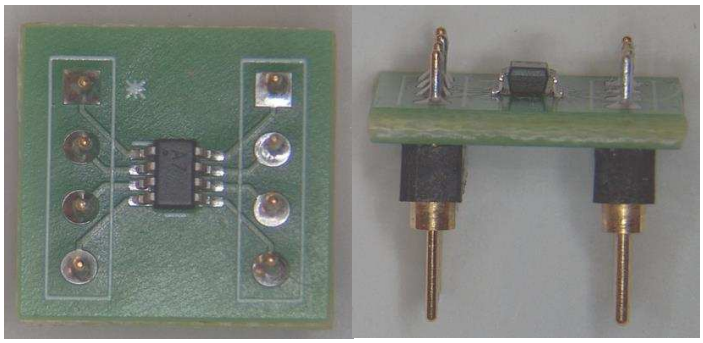

Figure 6. Fully assembled PCB

3 EVM Description and PCB Layout

This section shows the PCB layout of each circuit configuration provided on the EVM.

3.1 DPW Package

Figure 7 displays the PCB layout of the top (left) and bottom layers (right) for the DPW package.

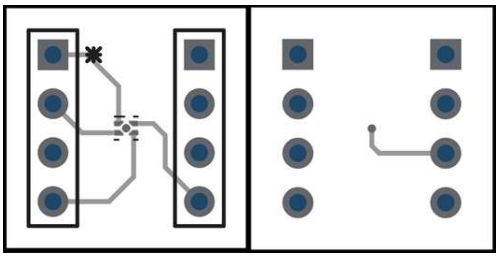

Figure 7. DPW package top layer (left) and bottom layer (right) PCB layout

The X2SON (DPW) package has the following dimensions: 0.48-mm pitch, 0.37-mm maximum height, 0.8-mm length, and 0.8-mm width.

3.2 DSG Package

Figure 8 displays the PCB layout of the top (left) and bottom layers (right) for the DSG package.

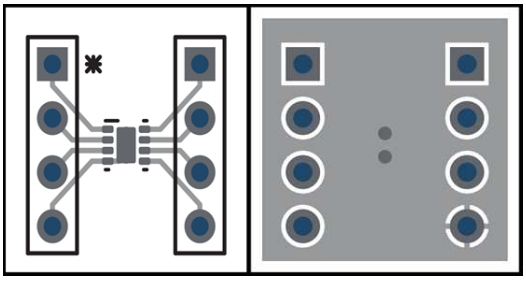

Figure 8. DSG package top layer (left) and bottom layer (right) PCB layout

The WSON (DSG) package has the following dimensions: 0.5-mm pin pitch, 0.75-mm maximum height, 2.0-mm length, and 2.0-mm width.

3.3 DCN and DDF Packages

Figure 9 displays the PCB layout of the top (left) and bottom layers (right) for the DCN and DDF packages.

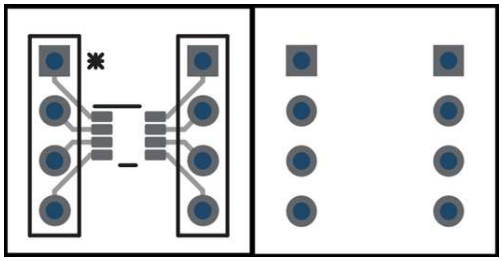

Figure 9. DCN and DDF packages top layer (left) and bottom layer (right) PCB layout

The SOT-23 (DCN and DDF) package has the following dimensions: 0.65-mm pin pitch, 1.1-mm maximum height, 2.9-mm length, and 1.63-mm width.

3.4 RUG Package

Figure 10 displays the PCB layout of the top (left) and bottom layers (right) for the RUG package.

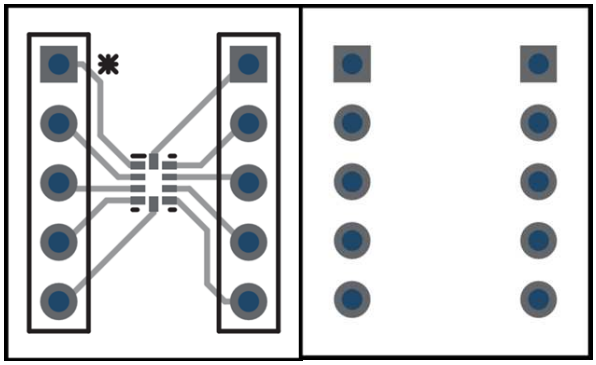

Figure 10. RUG package top layer (left) and bottom layer (right) PCB layout

The X2QFN (RUG) package has the following dimensions: 0.5-mm pin pitch, 0.37-mm maximum height, 1.5-mm length, and 2.0-mm width.

3.5 RUC Package

Figure 11 displays the PCB layout of the top (left) and bottom layers (right) for the RUC package.

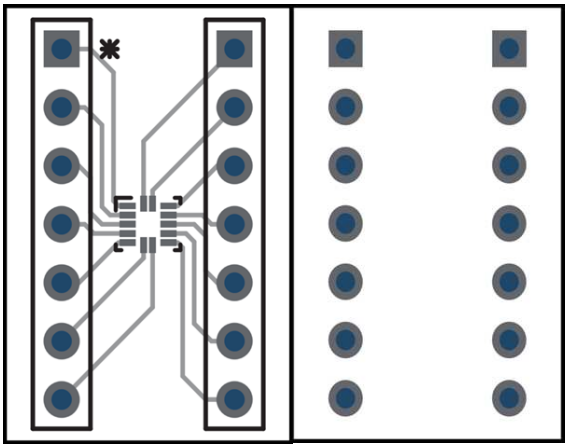

Figure 11. RUC package top layer (left) and bottom layer (right) PCB layout

The X2QFN (RUC) package has the following dimensions: 0.4-mm pin pitch, 0.35-mm maximum height, 2.0-mm length, and 2.0-mm width

3.6 RGY Package

Figure 12 displays the PCB layout of the top (left) and bottom layers (right) for the RGY package.

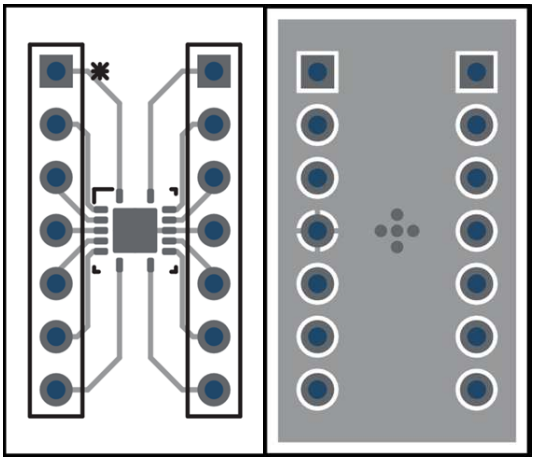

Figure 12. RGY package top layer (left) and bottom layer (right) PCB layout

The VQFN (RGY) package has the following dimensions: 0.5-mm pin pitch, 0.9-mm maximum height, 3.5-mm length, and 3.5-mm width.

3.7 RTE Package

Figure 13 displays the PCB layout of the top (left) and bottom layers (right) for the RTE package.

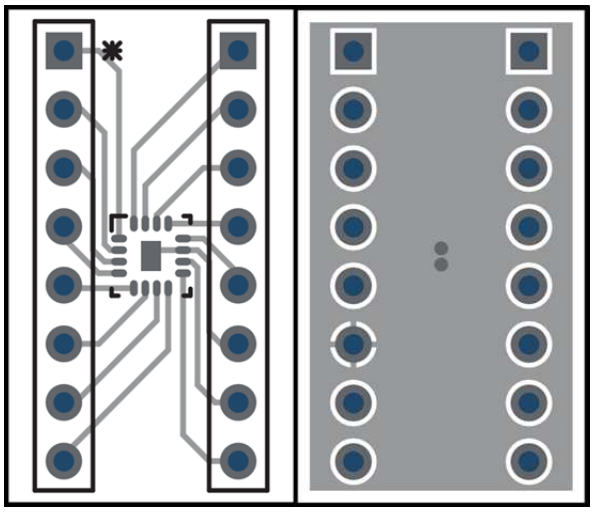

Figure 13. RTE package top layer (left) and bottom layer (right) PCB layout

The WQFN (RTE) package has the following dimensions: 0.5-mm pin pitch, 0.75-mm maximum height, 3.0-mm length, and 3.0-mm width.

4 Bill of Materials and References

4.1 Bill of Materials

Designator	QTY	Description	Part Number
PCB	1	Printed-Circuit-Board	SMALL-AMP-DIP-EVM
Header Strips	2	Header, 2.54 mm, 32 × 1, Gold, TH	TS-132-G-AA

4.2 References

(1) DIYAMP-EVM Tool Folder
(2) DUAL-DIYAMP-EVM Tool Folder
(3) DIP Adapter EVM Tool Folder
(4) TI Precision Labs Training

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