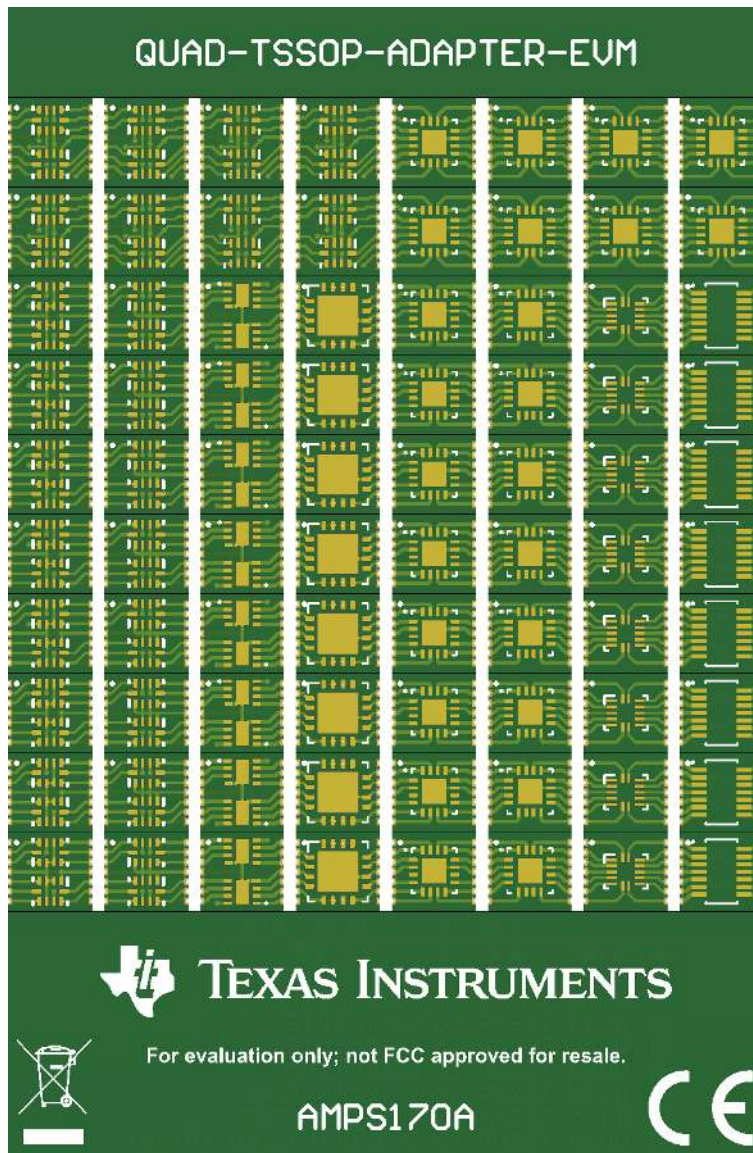


# QUAD-TSSOP-ADAPTER-EVM



## Abstract

This user's guide contains support documentation for the QUAD-TSSOP-ADAPTER evaluation module (EVM). Included in this document is a description of how to use the EVM, the printed circuit board (PCB) layout, and the bill of materials (BOM) for the QUAD-TSSOP-ADAPTER-EVM.



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## Trademarks

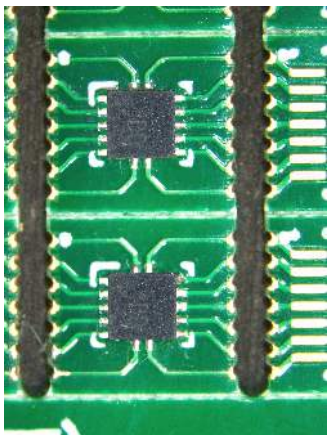
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## 1 Introduction

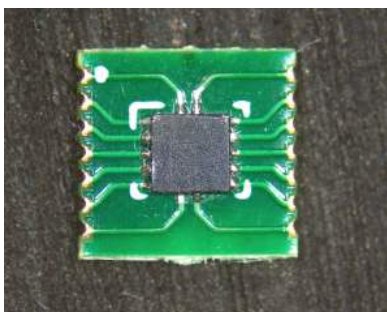
The QUAD-TSSOP-ADAPTER-EVM allows for evaluation of 10 different packages onto quad-channel TSSOP 14 and 16-pin footprints of operational amplifiers on existing PCBs. This permits the user to test op amps in different packages without making changes to the existing PCB.

## 2 How to Use

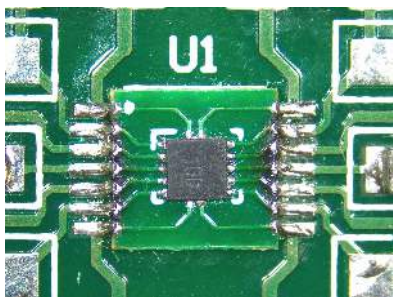
The QUAD-TSSOP-ADAPTER-EVM comes depopulated. Devices must be ordered separately. To find a specific device in a specific package, use the [Find Product by Package](#) search tool.



Solder the IC(s) to the adapter PCB. Parts may be hand soldered or attached with hot air reflow techniques.



Gently flex panel at score lines to separate adapter boards.



Position the adapter board carefully over the footprint and solder it on. Done!

### 3 Adapter Options

The QUAD-TSSOP-ADAPTER-EVM allows for numerous packages to be adapted to a TSSOP 14 and 16-pin footprint. Each adapter option has a corresponding letter on the back of the PCB to help better identify them.

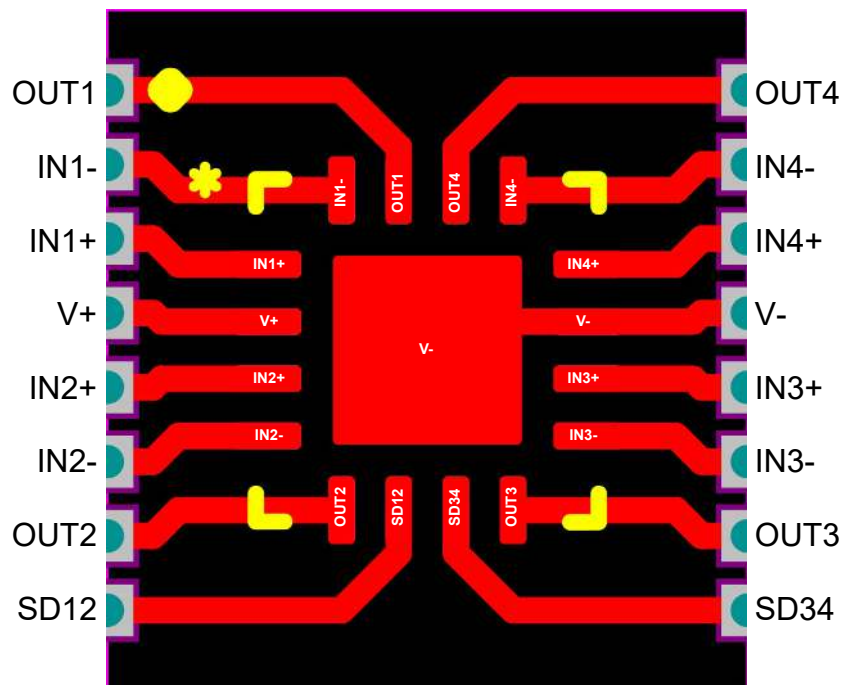
Table 3-1 shows each corresponding board label, package designator, TI package designator, and pin count.

**Table 3-1. Device Recommendations**

Board Labeled on the Back	Package Designator	TI Package Designator	Pin Count
A	WQFN	RTE	16
B	X2QFN	RUG	10
C	SOT-23	DYY	14
D	X2QFN	RUC	14
E	WQFN	RTE	16
F	WQFN	RTE	16
G	WQFN	RUM	16
H	WSON	DSG	8
I	X2QFN	RUG	10
J	X2QFN	RUG	10

#### 3.1 A: WQFN (RTE) Shutdown

As shown in Figure 3-1, a WQFN (RTE) device with shutdown can be adapted to a quad-channel TSSOP footprint.



**Figure 3-1. Quad TSSOP to WQFN (RTE) Shutdown**

### 3.2 B: 2 × X2QFN (RUG) Shutdown

As shown in [Figure 3-2](#), two X2QFN (RUG) devices with shutdown can be adapted to a quad-channel TSSOP footprint.

To protect the integrity of the signals OUT1 and OUT3, vias are used to limit the traces being too close to the score line (breaking point).

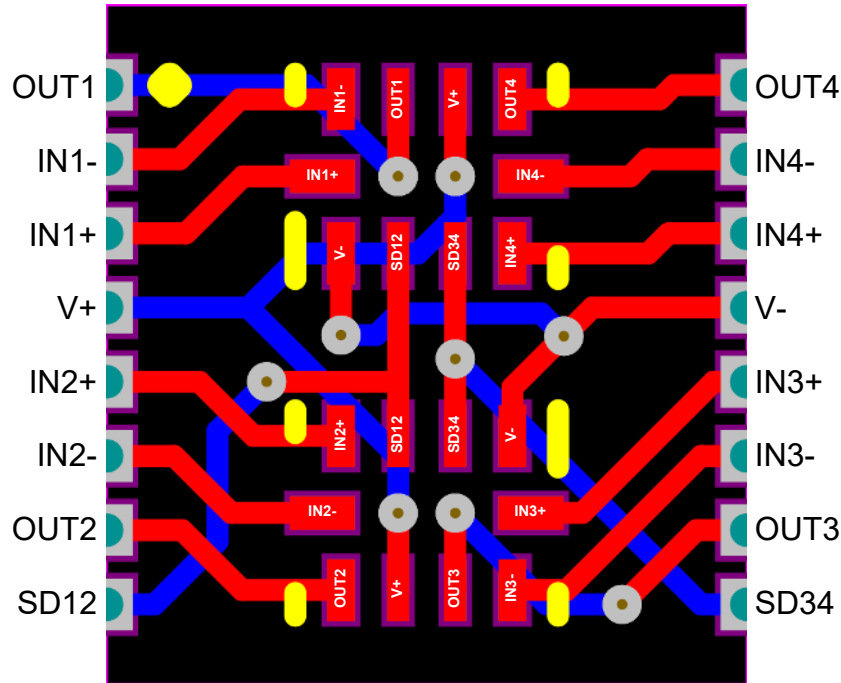


Figure 3-2. Quad TSSOP to 2 × X2QFN (RUG) Shutdown

### 3.3 C: SOT-23-THN (DYY)

As shown in [Figure 3-3](#), a SOT-23-THN (DYY) device can be adapted to a quad-channel TSSOP footprint.

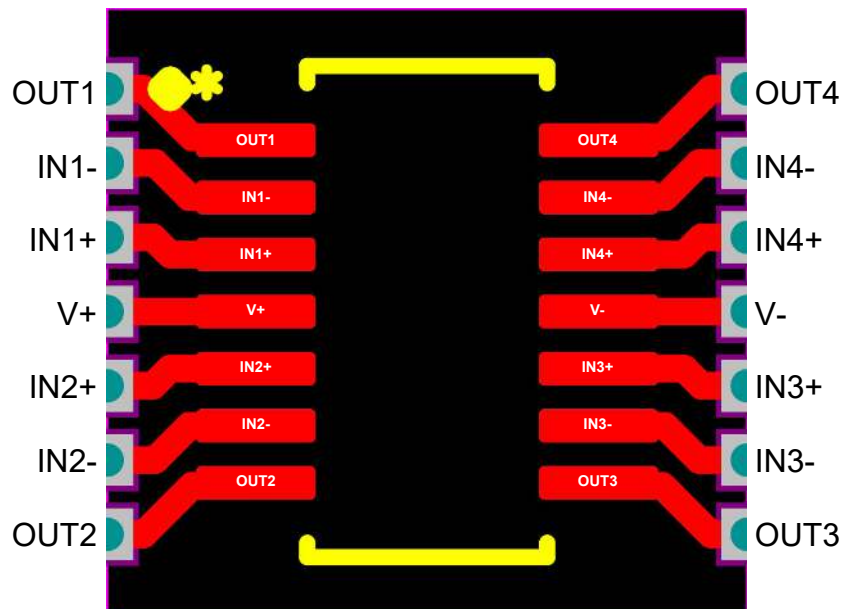


Figure 3-3. Quad TSSOP to SOT-23-THN (DYY)

### 3.4 D: X2QFN (RUC)

As shown in [Figure 3-4](#), a X2QFN (RUC) device can be adapted to a quad-channel TSSOP footprint.

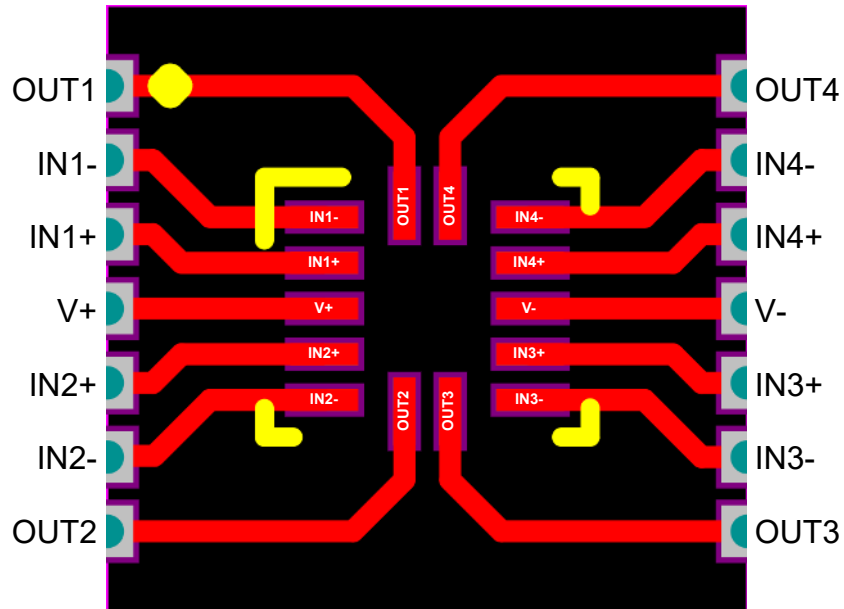


Figure 3-4. Quad TSSOP to X2QFN (RUC)

### 3.5 E: WQFN (RTE)

As shown in [Figure 3-5](#), a WQFN (RTE) device can be adapted to a quad-channel TSSOP footprint.

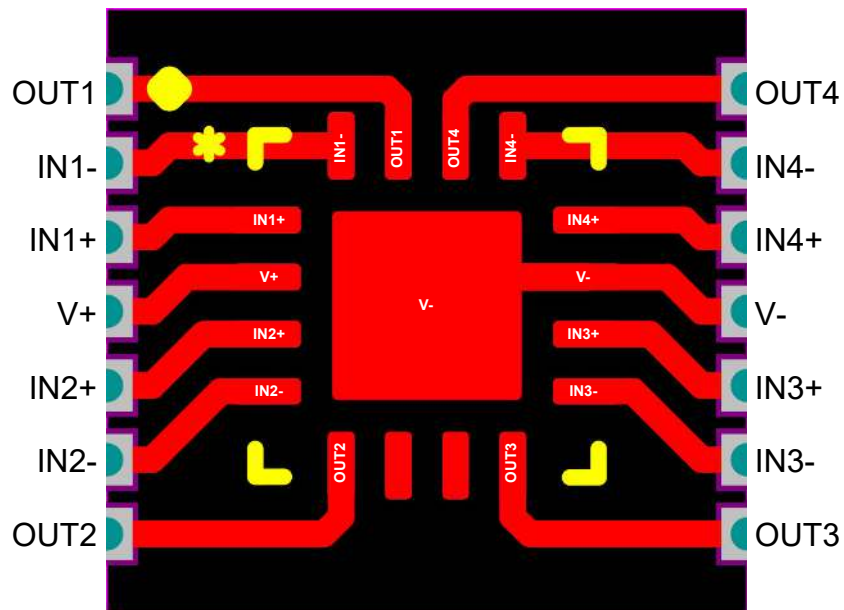


Figure 3-5. Quad TSSOP to WQFN (RTE)



### 3.6 F: WQFN (RTE) Comparator

As shown in [Figure 3-6](#), a WQFN (RTE) comparator device can be adapted to a quad-channel TSSOP footprint. The pin out, compared to the WQFN (RTE) in [Section 3.5](#), is more commonly seen in comparator devices.

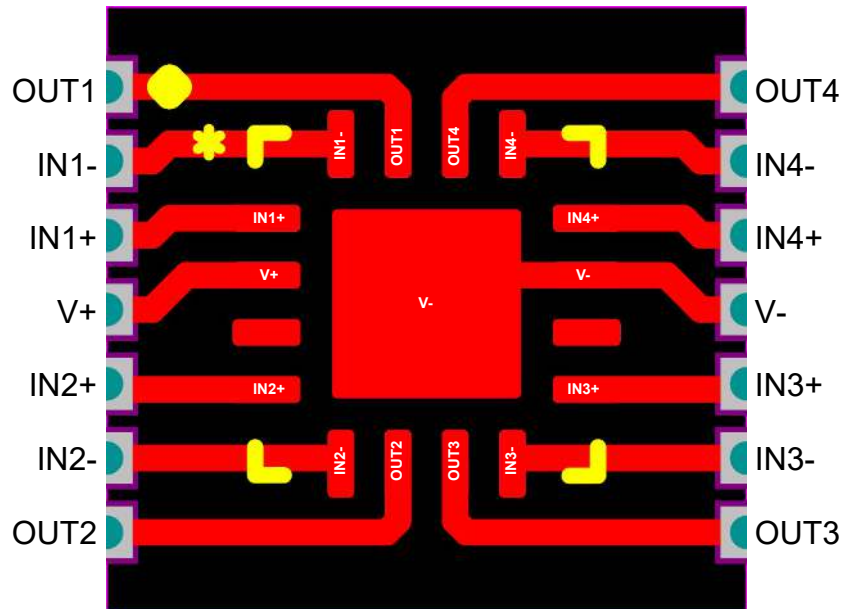


Figure 3-6. Quad TSSOP to WQFN (RTE) Comparator

### 3.7 G: WQFN (RUM)

As shown in [Figure 3-7](#), a WQFN (RUM) device can be adapted to a quad-channel TSSOP footprint.

To protect the integrity of the signals OUT1, OUT2, OUT3, and OUT4, vias are used to limit the traces being too close to the score line (breaking point).

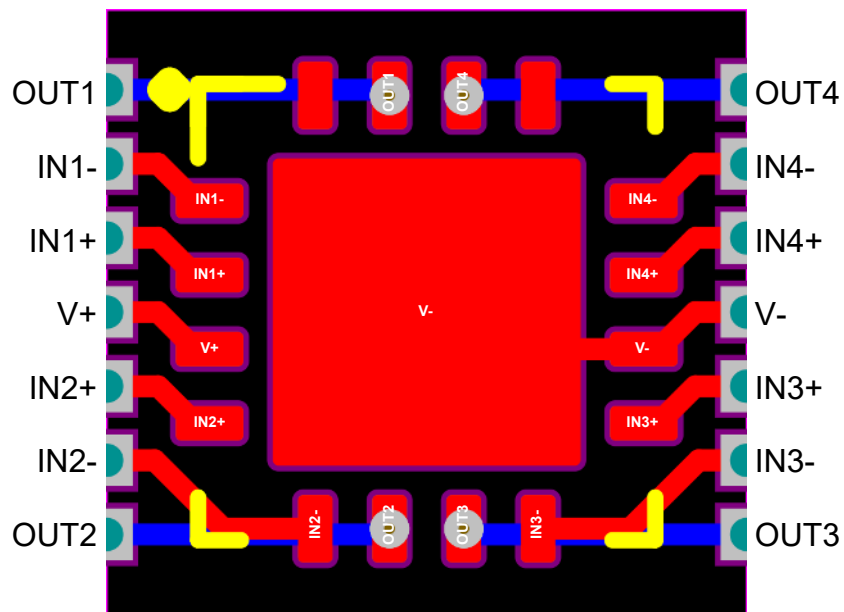


Figure 3-7. Quad TSSOP to WQFN (RUM)

### 3.8 H: 2 × WSON (DSG)

As shown in Figure 3-8, two dual-channel WSON (DSG) devices can be adapted to a quad-channel TSSOP footprint.

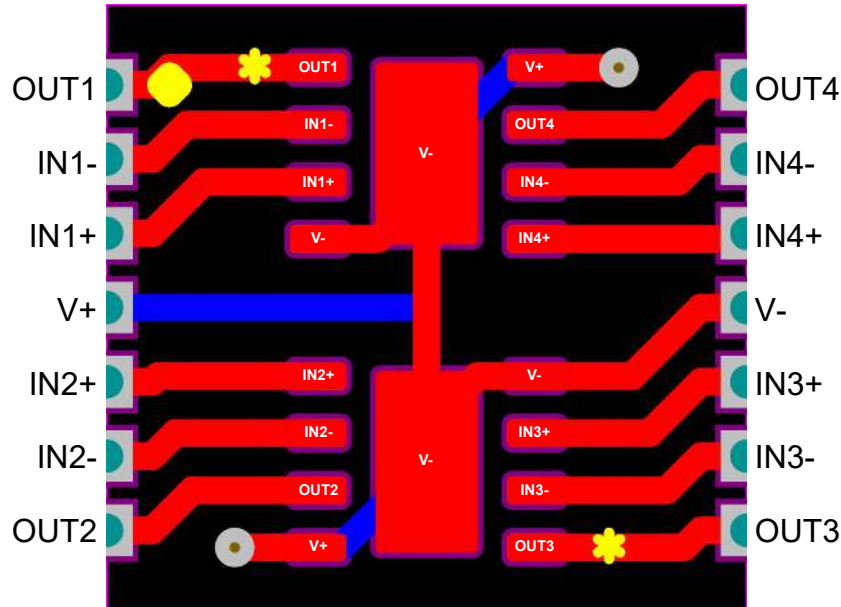


Figure 3-8. Quad TSSOP to 2 × WSON (DSG)

### 3.9 I: 2 × X2QFN (RUG) Low

As shown in Figure 3-9, two dual-channel X2QFN (RUG) devices can be adapted to a quad-channel TSSOP footprint. The shutdown pins found on the X2QFN packages are all pulled low to V-.

To protect the integrity of the signals OUT1 and OUT3, vias are used to limit the traces being too close to the score line (breaking point).

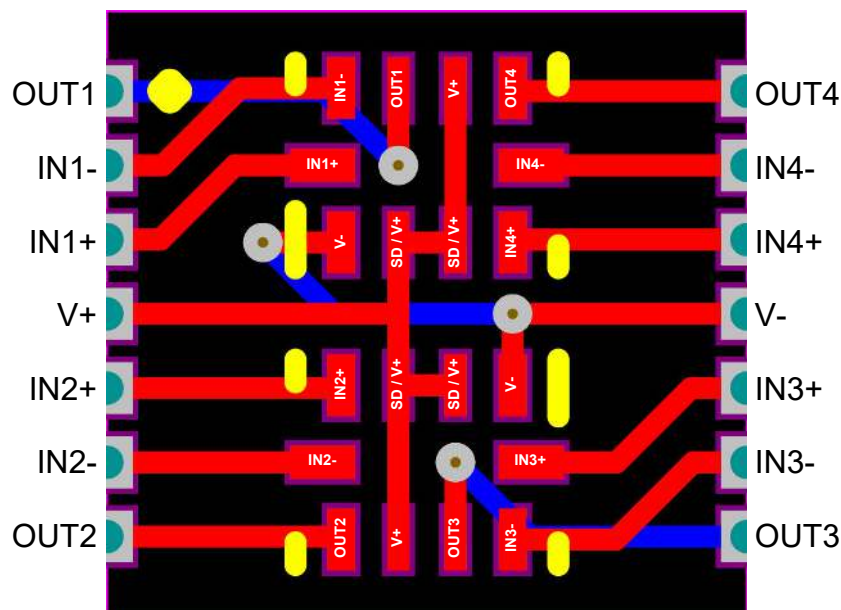


Figure 3-9. Quad TSSOP to 2 × X2QFN (RUG) Low



### 3.10 J: 2 × X2QFN (RUG) High

As shown in [Figure 3-10](#), two dual-channel X2QFN (RUG) devices can be adapted to a quad-channel TSSOP footprint. The shutdown pins found on the X2QFN packages are all pulled high to V+.

To protect the integrity of the signals OUT1 and OUT3, vias are used to limit the traces being too close to the score line (breaking point).

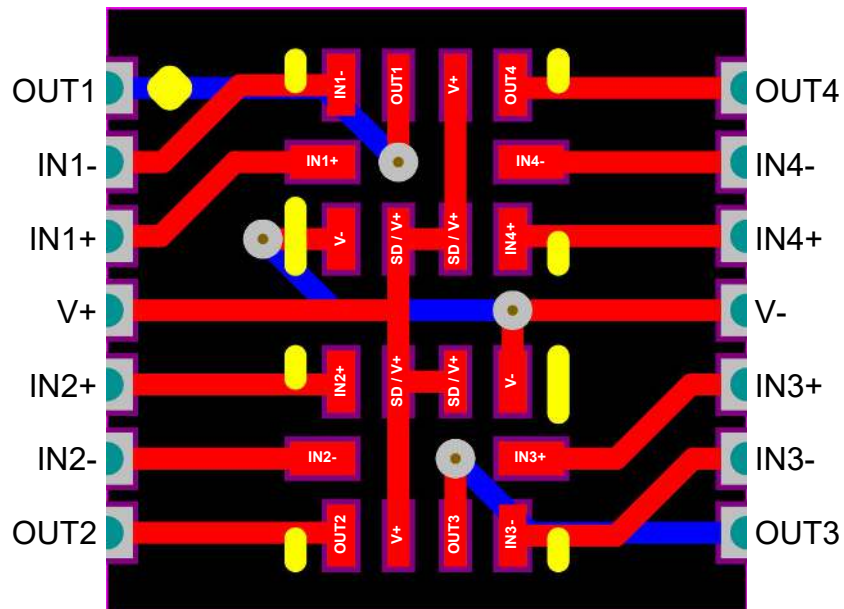


Figure 3-10. Quad TSSOP to 2 × X2QFN (RUG) High

### 4 Layout

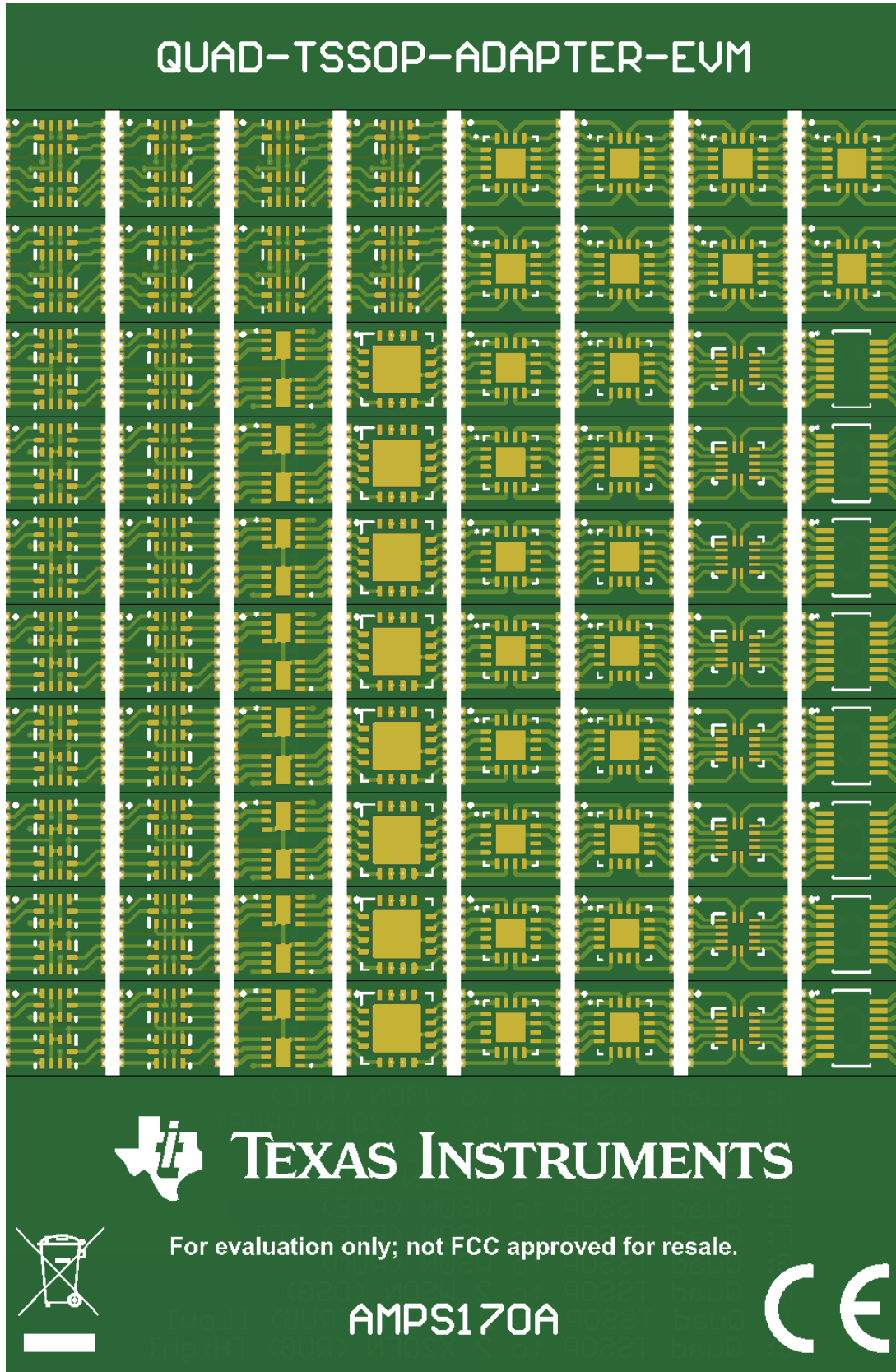


Figure 4-1. PCB Top Layer



Figure 4-2. PCB Bottom Layer

## 5 Bill of Materials

**Table 5-1. Bill of Materials**

Designator	Quantity	Description	Part Number
PCB	1	Printed-Circuit Board	QUAD-TSSOP-ADAPTER-EVM

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