

# How to do Co-Layout Between Two Types of SOT563 Packages



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## TPS56X242/7 Pin Out

The TPS56x242/7 is a cost effective, high-frequency, synchronous buck converter with integrated FETs. The TPS56x242/7 operates with supply input voltage ranging from 3 V to 16 V. The TPS56x242/7 uses DCAP3™ control mode to provide a fast transient response, good line, load regulation, no requirement for external compensation, and supports low equivalent series resistance (ESR) output capacitors such as specialty polymer and ultra-low ESR ceramic capacitors.

TPS56x242/7 uses SOT563 package which can do the co-layout with last SOT563 generation part. This article introduces how to do co-lay and uses TPS564242 and TPS563202 to do an example.

Figure 1 is TPS564242 pin out with SOT563 package. This pin out has a little difference with last generation part TPS563202 3-A part as Figure 2. Most of the pin are same. The only difference is definition of pin 4. Please see Table 1. The Pin 4 of TPS563202 is BST pin.

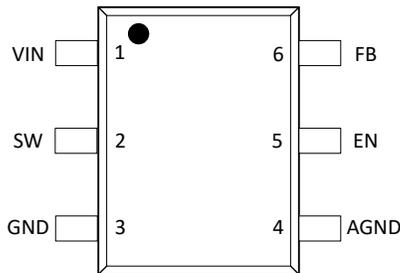


Figure 1. TPS564242 Pin Out

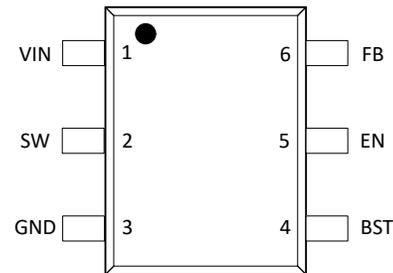


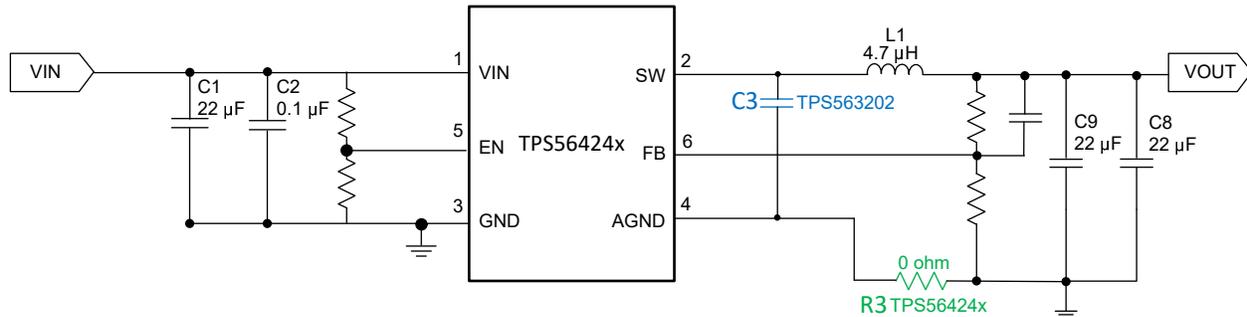
Figure 2. TPS563202 Pin Out

Table 1. Pin Comparison

Part Number	Pin Number	Pin Name	Description
TPS564242	4	AGND	Ground of internal analog circuitry. Connect AGND to the GND plane.
TPS563202	4	BST	Supply input for the high-side NFET gate drive circuit. Connect 0.1 $\mu$ F capacitor between BST and SW pin.

## Schematic Design

TPS564242 can do co-lay with TPS563202 by adding some compatible circuit at Pin 4. [Figure 3](#) shows the co-lay schematic.

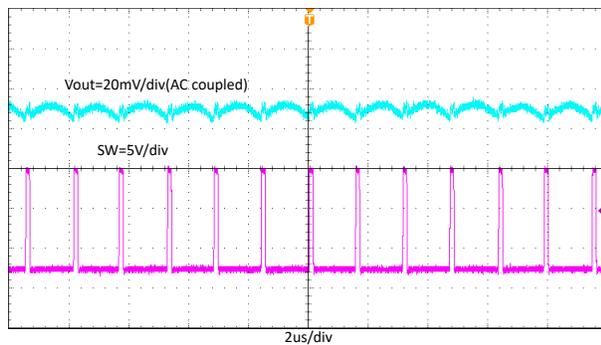


**Figure 3. Co-layout Solution**

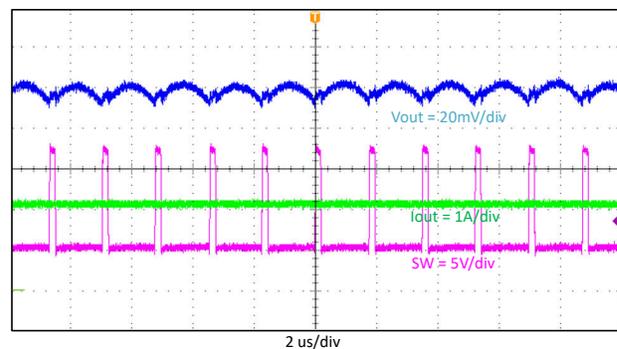
## Soldering Information for Different Part Support

- **TPS564242:** R3 (0 ohm) need to be soldered. C3 needs to float.
- **TPS563202:** C3 (0.1 uF) needs to be soldered. R3 needs to float.

[Figure 4](#) and [Figure 5](#) are tested at 12-V input voltage, 5-V output voltage at full loading. TPS564242 and TPS563202 works very well.



**Figure 4. TPS564242 12-V Input to 5-V Output at 4 A**



**Figure 5. TPS563202 12-V Input to 5-V Output at 3 A**

## Summary

If co-lay TPS564242 with TPS563202, both schematic and layout are needed to be considered, because of different pin definition. In BOM there is also small differences that need to pay attention.

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