Hardware Migration to CC2340R5



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ABSTRACT

This application report describes the required hardware changes when moving from a CC26x2 or CC2640R2 device to the CC2340R5 SimpleLink™ wireless MCU.

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1 Migrating From CC26x2 to CC2340R5

1.1 Decoupling Capacitors

The bulk decoupling capacitor required for the CC2340R5 has changed from one 22 μ F capacitor to one 10 μ F capacitor. The remaining decoupling capacitors are the same, four 100 nF capacitors distributed equally among the four VDDS pins.

1.2 Peripheral Pin Mapping

The CC2340R5 limits which peripherals can be mapped to the device pins. To identify which pins are capable of supporting the peripherals required for your design, see the CC2340R5 SimpleLink™ Bluetooth® 5.3 Low Energy Wireless MCU Data Sheet.

1.3 DC/DC Regulator Components

The output network for the DC/DC regulator for the CC2340R5 has been changed to use one 10 µF capacitor and one 10 µH inductor. For additional specifications for the inductor, see the LP-EM-CC2340R5 Design Files.

1.4 RF Path and Balun

The CC2340R5 has an integrated balun that reduces the BOM cost and simplifies the design. An output filter is still required and an antenna matching network may be needed in order to meet your design requirements. For the recommended output filter components, see the LP-EM-CC2340R5 Design Files.

2 Migrating From CC2640R2 to CC2340R5

2.1 Decoupling Capacitors

The CC2340R5 and CC2640R2 designs use the same values for decoupling capacitors. Both designs use one $10 \mu F$ bulk decoupling capacitor. The remaining four 100 nF capacitors are distributed equally among the four VDDS pins.

2.2 Peripheral Pin Mapping

The CC2340R5 limits which peripherals can be mapped to the device pins. To identify which pins are capable of supporting the peripherals required for your design, see the CC2340R5 SimpleLink™ Bluetooth® 5.3 Low Energy Wireless MCU Data Sheet.

2.3 DC/DC Regulator Components

The CC2340R5 and CC2640R2 use the same output network. Both designs use one 10 μF capacitor and one 10 μH inductor. For additional specifications for the inductor, see the LP-EM-CC2340R5 Design Files.

2.4 RF Path and Balun

The CC2340R5 has an integrated balun that reduces the BOM cost and simplifies the design. An output filter is still required and an antenna matching network may be needed in order to meet your design requirements. For the recommended output filter components, see the LP-EM-CC2340R5 Design Files.

3 Summary

While the CC2340R5 has many of the same features as the CC26x2 and CC2640R2, the CC2340R5 is not footprint or design compatible with these other SimpleLink wireless devices. By integrating the balun, the design is simplified and the total bill of materials cost is lowered, but this also results in design changes if coming from other SimpleLink devices. The mapping of peripherals to pins is more limited in the CC2340R5 so extra care needs to be taken to verify that the correct pins are chosen for the target peripherals.

4 References

- Texas Instruments: CC2340R5 SimpleLink™Bluetooth® 5.3 Low Energy Wireless MCU Data Sheet
- LP-EM-CC2340R5 Design Files

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