TDA7100

Single-Sided PCB

Application Note

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Wireless Sense & Control

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Previous Revision: none

Page	Subjects (major changes since last revision)
29	Explanation regarding the Absolute Maximum Ratings

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1 Introduction

In a RF circuit design, no matter whether it is a receiver, transmitter or transceiver, the layout always has a significant influence on the performance of the application. Performance parameter affected by the layout can include EMI, EMC, spurious radiation, reliability of the over production spread, temperature, supply voltage and sensitivity of the design to its environment (e.g. FOB handheld-effect ...). Therefore a proper compact layout is essential for the reliable device functionality. That's why Infineon always recommends a compact layout with short lines and as much electrical/physical separation of RF circuit from other circuit blocks as possible. In particular it is important to get good separation between the crystal oscillator circuit and RF circuits. It is also very important to separate the clock and the crystal oscillator to minimize coupling of noise and especially of harmonics, showing same frequency, as the crystal of clock output into the crystal input.

In some applications, single sided PCB may be desired to reduce cost. While a single sided design reduces cost, it also creates additional design limitations that may affect performance as described above. However, in many applications with less stringent requirements (e.g. non-automotive) performance may still be acceptable. The PCB shown in this App.-Note (circuit diagram, layout and BOM) shows one example of how a single sided design could be implemented. This example given in this App.-Note is a proposal, but the final customer design has to be verified by the designer to make sure their application complies with the respective government regulations.

2 Circuit Diagram

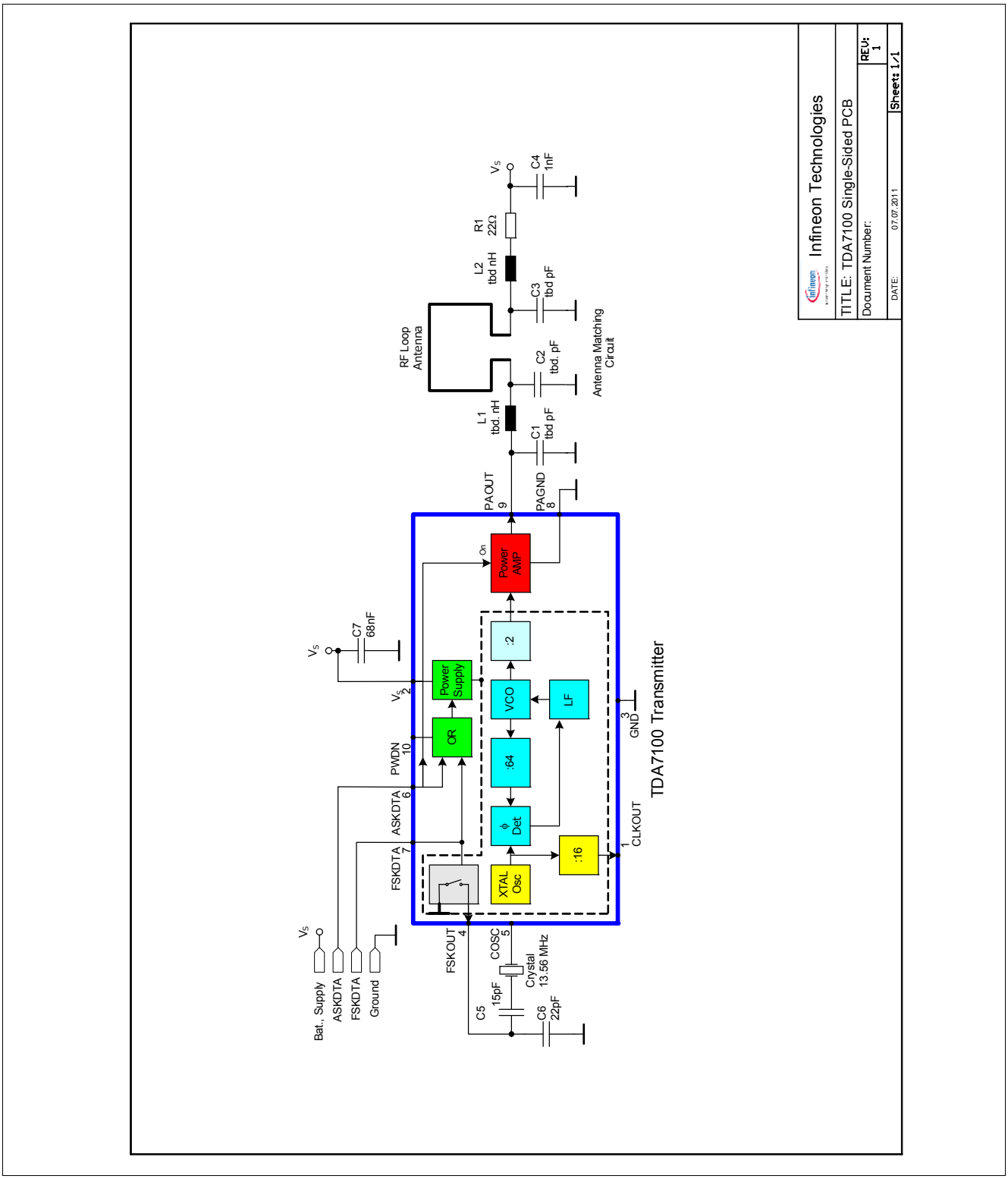


Figure 1 Circuit Diagram Single-Sided-PCB with TDA7100

Also, in addition to the specific layout shown, please note that due to their higher harmonic larger amplitude contend, steep ASKDTA and FSKDTA data signal edges produce the undesirable effect of a wider spectrum or

Occupied Bandwidth (OBW). To avoid these unnecessary steep edges, it is recommended to insert a low pass filter in the ASKDTA and FSKDTA line somewhere before the TDA7100 ASKDTA and FSKDTA inputs.

3 PCB-Layout

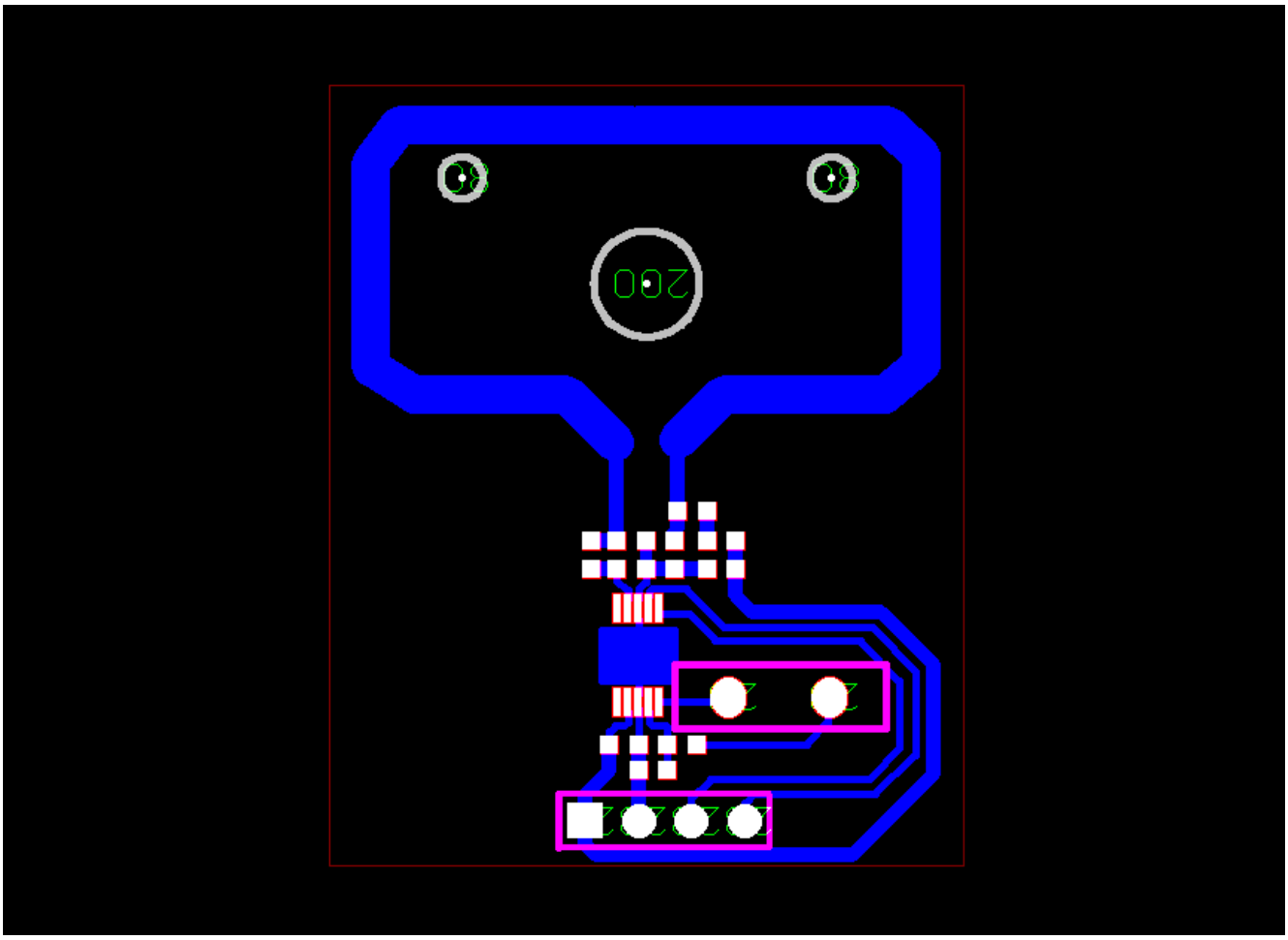


Figure 2 Top Layer of Single-Sided-PCB of TDA7100

4 Bill of Materials of Single-Sided PCB

Table 1 Bill of Materials

Ref	Value	Specification
R1	22 Ω	0603, ± 5%
L1	tbd. nH	Coilcraft SIMID 0603CS 82NXJL, ± 2%
L2	tbd. nH	Coilcraft SIMID 0603CS 82NXJL, ± 2%
C1	tbd. pF	0603, COG, ± 0.1 pF
C2	tbd. pF	0603, COG, ± 0.1 pF
C3	tbd. pF	0603, COG, ± 0.1pF
C4	1 nF	0603, COG, ± 5%
C5	15 pF	0603, COG, ± 5%
C6	22 pF	0603, COG, ± 5%
C7	68 nF	0603, XR7, ± 5%
Q1	$f_{RF}/32$	AEL HC49S 13.56875 MHz, CL=12 pF, X13M568750L002
X1	4-pole pin connector	4-pole pin connector, 2,54mm
IC1	TDA7100	Infineon

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