

DESCRIPTION

This circuit is designed specifically for β_3 IC evaluation. After several modifications, the inner circuit design can reach high completion of security design and receiving efficiency. It can help developers to evaluate and develop products of wireless power supply system in a short time. Components allocation on PCB is designed precisely, and the circuit layout fits the excellent heat dissipation and low noise performance. Designers can take it for references.

FEATURES

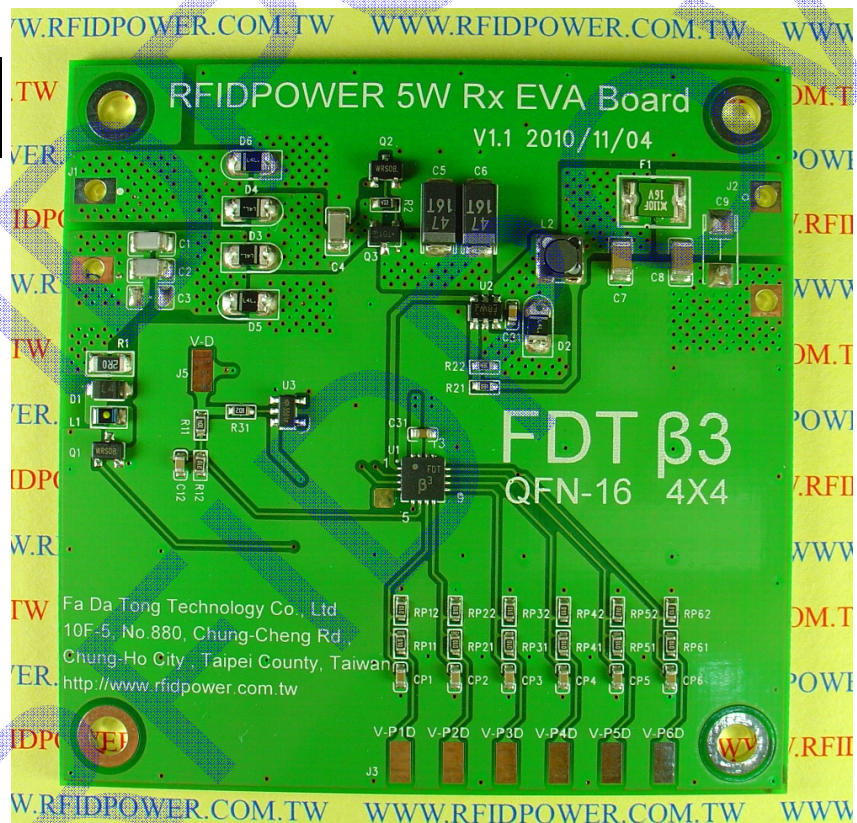
- Signal receiving IC of wireless power supply system.
- Operation power subject to the transmission signal from α_3 Tx.
- Signal feedback when system is activated.
- Power overload prevention by multi-detective points.
- Provided the code mechanism by advanced technology and several patent protections.
- Function along with α_3 Tx Evaluation Board.

APPLICATIONS

- For electronics product that power is under 5W.
- Effective sensing distances less than 20mm.

5W Tx Evaluation Board

| Board Number | FDT IC Number |
|--------------|---------------|
| 5W Rx | β_3 |



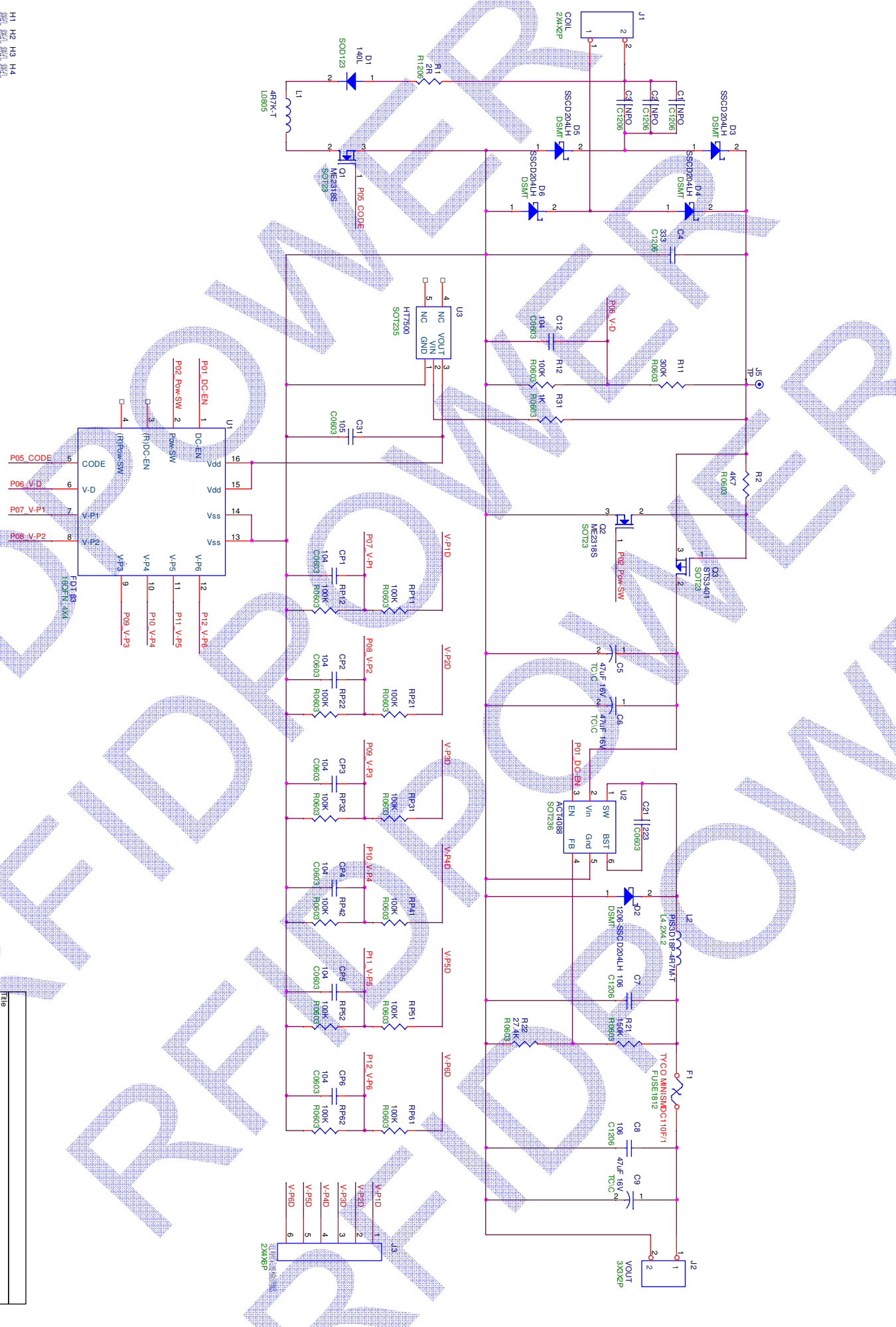
ELECTRICAL CHARACTERISTICS

| Parameters | Symbol | Condition | Min | Typ | Max | Units |
|------------------------|--------|-----------|-----|-----|-----|-------|
| Maximum Voltage Output | Vout | Max | | 5 | 16 | V |
| Maximum Current Output | Iout | Max | | | 1 | A |
| Maximum Power Output | Pow-Rx | Max | | | 5 | W |

QUICK START GUIDE

Warning! After the circuit starts to sense and operate, there will be high-voltage alternating current at both ends of J1 receiving coil. Please do not touch the contacts in case of an electric shock.

1. First of all, connecting the coil to circuit. The resonant capacitor on circuit (C1, C2, and C3) needs to be modified along with coil inductance. The cross-reference table can be referred to $\beta 3$ IC datasheet. $0.1\mu\text{F} \times 2$ capacitor of this evaluation board works best with $10\sim 25\mu\text{H}$ coil inductance. Correct capacitor and inductance will meet the expected transmission efficiency.
2. Connecting the Vout and GND on circuit to the current receiver. Output voltage can be changed by modifying the voltage proportion of R21 and R22. For detailed modification, please refer to the original datasheet of U2 ACT 4088.
3. When sensing the transmission coil with $\alpha 3$ Rx getting close to the circuit receiving coil, it will initiate the power supply automatically. The LED light will shine which means the circuit is in charging mode.
4. There is a sophisticated inspection mechanism built in this circuit. Any disturbances or dangers will lead the circuit to stop working. Before delivery, every circuit must pass security check and work properly. If the circuit can not work during your test, please contact Fu Da Tong Technology for further information.



| | |
|-----------------|---|
| Title | REIDPOWER_FDT-β3 SW EVA BOARD V1.1 1117 |
| Size | B |
| Document Number | |
| Date | |
| Sheet | 1 of 1 |
| Rev | |

EVALUATION BOARD SCHEMATIC

EVALUATION BOARD BILL OF MATERIALS

| Position | Parts | Description | Package | Q'ty | Manufacturer | Part Number |
|-----------------------------------|------------------|-------------|-------------|------|---------------------|-------------------|
| CP1,CP2,CP3, CP4,CP5,CP6 | Ceramic Cap | 0.1uF/50V | 0603 | 6 | Any | |
| C12 | Ceramic Cap | 0.1uF/50V | 0603 | 1 | Any | |
| C1,C2 | Ceramic Cap | 0.1uF/25V | 1206 | 2 | Murata | GRM31C5C1E104JA01 |
| C4 | Ceramic Cap | 33nF/50V | 1206 | 1 | Any | |
| C5,C6 | Tantalum Cap | 47uF/16V | C-SIZE | 2 | Any | |
| C7,C8 | Ceramic Cap | 10uF/10V | 1206 | 2 | Any | |
| C21 | Ceramic Cap | 22nF/50V | 0603 | 1 | Any | |
| C31 | Ceramic Cap | 1uF/16V | 0603 | 1 | Any | |
| D1 | Schottky Diodes | 1A/40V | Mini SMA | 1 | COMCHIP | CDBM140L-F |
| D2 | Schottky Diodes | 2A/40V | 1206 | 1 | ZOWIE | SSCD204LH-F |
| D3,D4,D5,D6 | Schottky Diodes | 2A/40V | 1206 | 4 | ZOWIE | SSCD204LH-F |
| F1 | Resettable Fuses | 1.00A | 1812 | 1 | TYCO | RCPMINISMDC110F |
| L1 | Inductance | 4.7UH | SMD | 1 | EMTEK | LCD0805-4R7 |
| L2 | Inductance | 4.7UH | SMD | 1 | EMTEK | PIS3D18P-4R7 |
| Q1,Q2 | MOSFET | N-MOS-40V | SOT-23 | 2 | Matsuki Electric | ME2318S-F |
| Q3 | MOSFET | P-MOS-30V | SOT-23 | 1 | Samhop | STS3401-F |
| RP11,RP21,RP31, RP41,RP51,RP61 | Film Res | 100K | 0603 | 6 | Any | |
| RP12,RP22,RP32, RP42,RP52,RP62 | Film Res | 100K | 0603 | 6 | Any | |
| R1 | Film Res | 2R | 1206 | 1 | Any | |
| R2 | Film Res | 4.7K | 0603 | 1 | Any | |
| R11 | Film Res | 300K | 0603 | 1 | Any | |
| R12 | Film Res | 100k | 0603 | 1 | Any | |
| R21 | Film Res | 150K | 0603 | 1 | Any | |
| R22 | Film Res | 27.4K | 0603 | 1 | Any | |
| R31 | Film Res | 1K | 0603 | 1 | Any | |
| U1 | IC | $\beta 3$ | QFN16 | 1 | FDT | $\beta 3$ |
| U2 | ACT4088 | DC/DC | SOT23-6 | 1 | Active-Semi | ACT4088-F |
| U3 | IC | LDO | SOT23-5 | 1 | Hotek | HT7550 |

PRINTED CIRCUIT BOARD LAYOUT

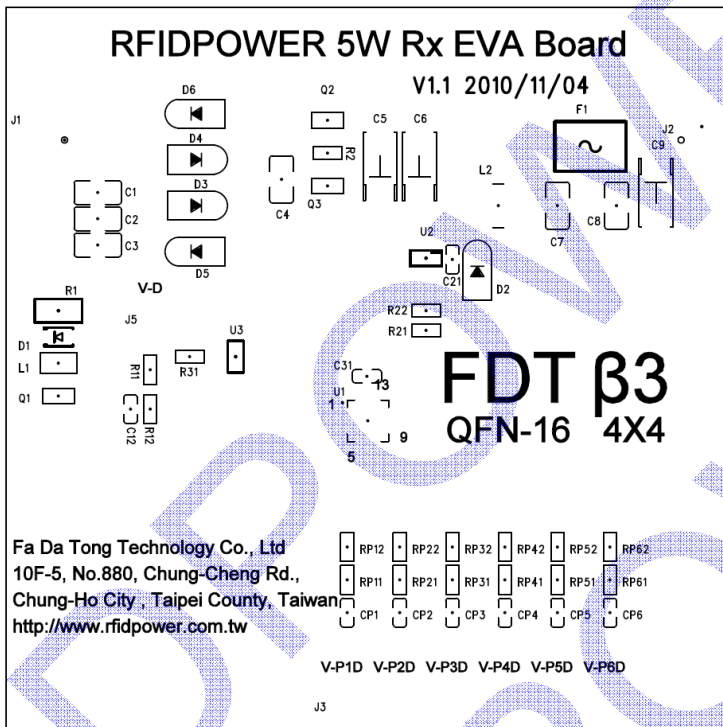


Figure 1—Top Silk Layer

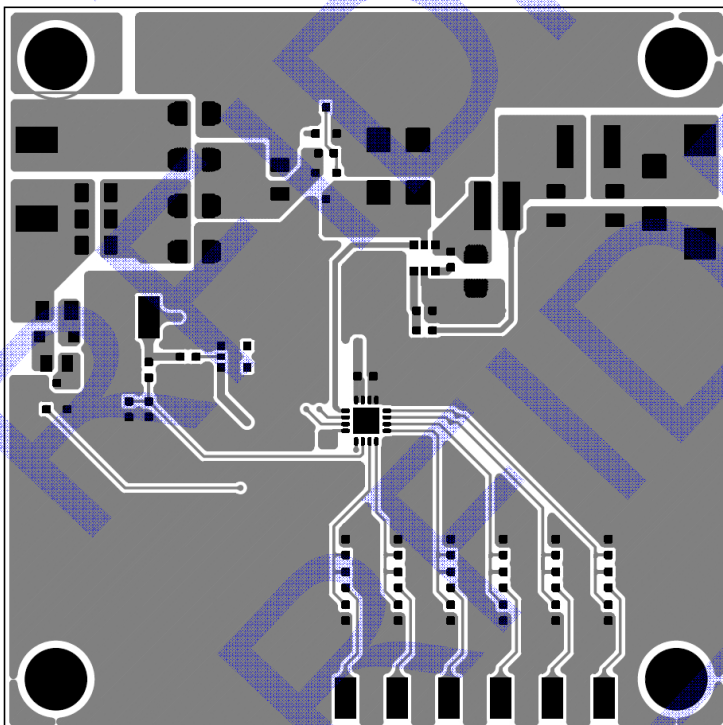


Figure 2—Top Layer

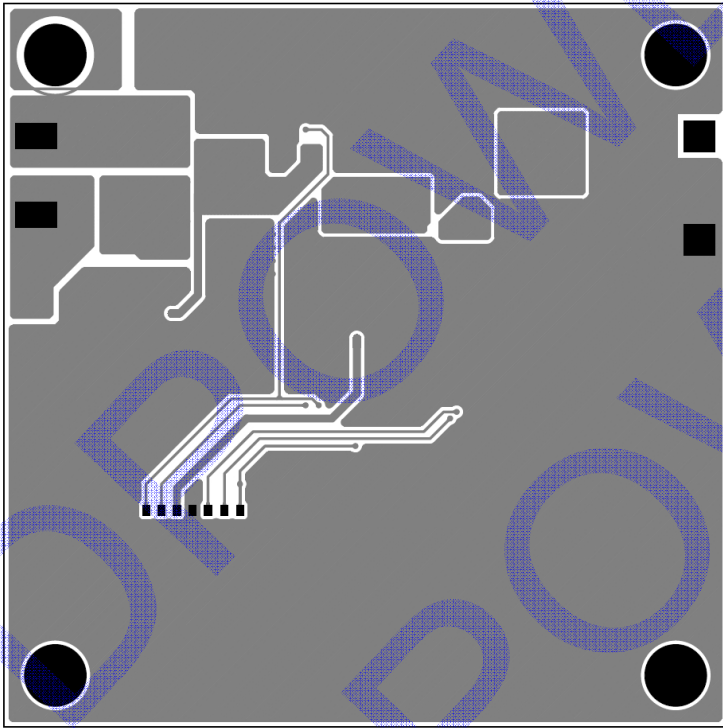


Figure 3—Bottom Layer

Fu DA Tong (FDT) Technology
WWW.RFIDPOWER.COM.TW
10F-5, No.880, Chung-Cheng Rd.,
Chung-Ho City (235), Taipei County, Taiwan
Mail: rd-01@rfidpower.com.tw