

## DESCRIPTION

This circuit is designed specifically for  $\beta 3$  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

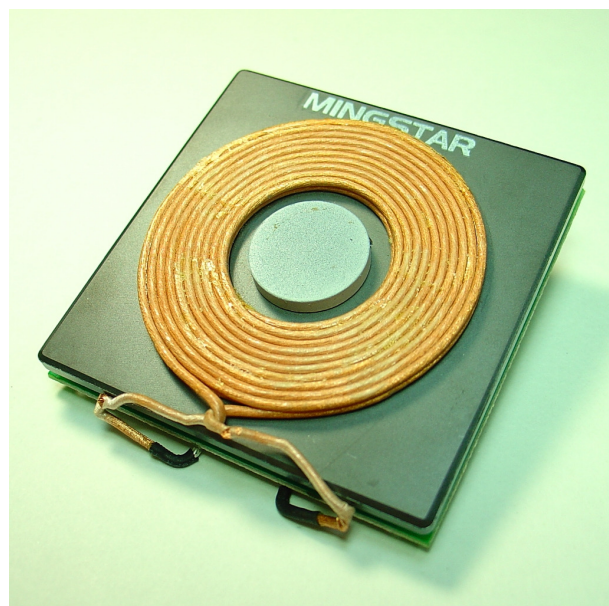
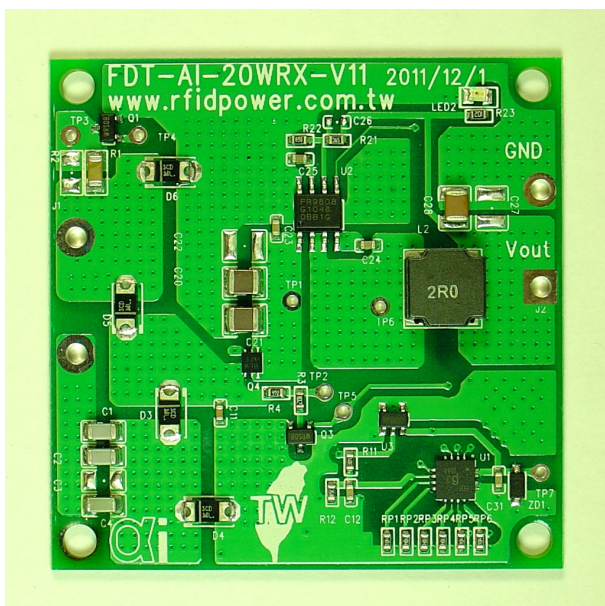
- Signal receiving IC of wireless power supply system.
- Operation power subject to the transmission signal from  $\alpha 3$  Tx.
- Signal feedback when system is activated.
- Power overload prevention by multi-detective points.
- Provided the code mechanism by advanced technology and several patent protections.
- Function along with  $\alpha 3$  Tx Evaluation Board.

## APPLICATIONS

- For electronics product that power is under 20W.
- Effective sensing distances less than 10 mm.

## 20W Rx Evaluation Board

Board Number	FDT IC Number
20W Rx	$\beta 3$ V1.1



## ELECTRICAL CHARACTERISTICS

Parameters	Symbol	Condition	Min	Typ	Max	Units
Voltage Output	Vout	Setup	1	5	12	V
Maximum Current Output-1	Iout	Vout = 5V			3.5	A
Maximum Current Output-2	Iout	Vout = 12V			2	A
Maximum Power Output	Pow-Rx	Max			20	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) 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 FR9808.
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.



## EVALUATION BOARD BILL OF MATERIALS

Position	Parts	Description	Package	Q'ty	Manufacturer	Part Number
C1,C2,	Ceramic Cap	0.1uF/25V/NPO	1206	2	muRata	GRM31C5C1E104JA01
C4	Ceramic Cap	33nF/50V/NPO	1206	1	Any	
C11	Ceramic Cap	1nF/50V	0603	1	Any	
C12,C23,C24, C25,C31	Ceramic Cap	0.1uF/50V	0603	2	Any	
C20,C21	Ceramic Cap	10uF/25V	1210	3	Any	
C28	Ceramic Cap	47uF/16V	1210	1	TDK	1210Y5V476Z16V
R1	Ceramic Cap	2.2uF/25V	1206	1	Any	
R3,R23	Film Res	1K $\pm$ 5%	0603	1	Any	
R4	Film Res	4.7K $\pm$ 5%	0603	1	Any	
R11	Film Res	300K $\pm$ 1%	0603	1	Any	
R12	Film Res	75K $\pm$ 1%	0603	1	Any	
R21	Film Res	40.2K $\pm$ 1%	0603	1	Any	
R22	Film Res	7K68 $\pm$ 1%	0603	1	Any	
RP1,RP2,RP3, RP4,RP5,RP6	Film Res	100K $\pm$ 5%	0603	2	Any	
ZD1	Zener Diodes	5.1V 500mW	SOD123	1	Any	
D3,D4,D5,D6	Schottky Diodes	40V-3A	1210	1	ZOWIE	SCD34LH
LED2	LED	Green	0805	1	Any	
L2	Inductance	2uH	SMD	1	EMTEK	
Q1,Q3	MOSFET	N-MOS-40V	SOT-23	1	Matsuki Electric	ME2318S-F
Q4	MOSFET	P-MOS	SC-70-6L	6	Vishay	SiA433EDJ
U1	$\beta$ 3	V1.1	QFN16	1	FDT	$\beta$ 3 1101
U2	IC	DC/DC STEP-DOWN	SOP8E	1	Fiti Power	FR9808
U3	IC	LDO	SOT23-6	1	Hotek	HT7550
J1	Coil	20W	DIP	1	Mingstar	MST00296- Reversed

# PRINTED CIRCUIT BOARD LAYOUT

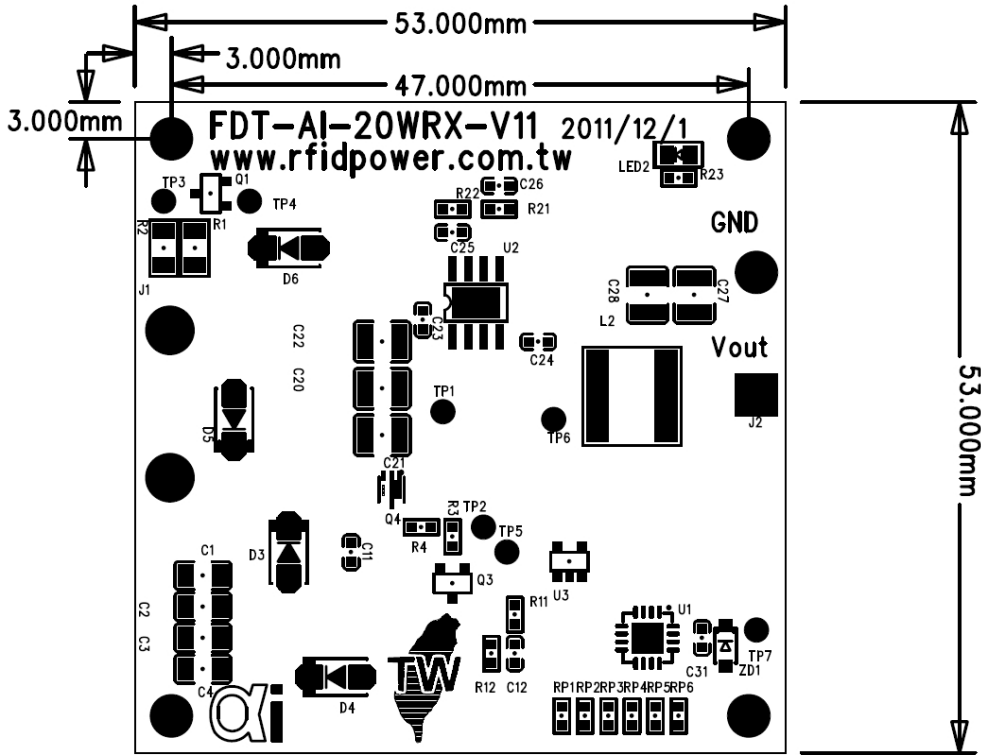


Figure 1 — Top Silk Layer

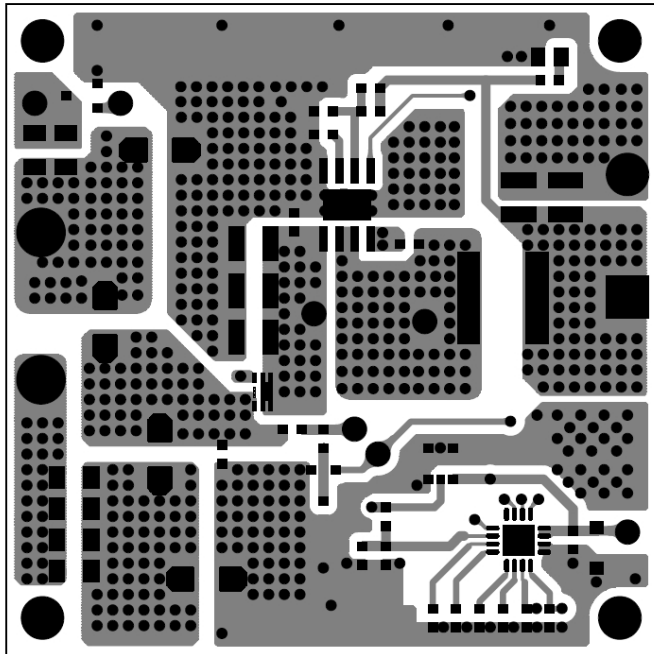


Figure 2 — Top Layer

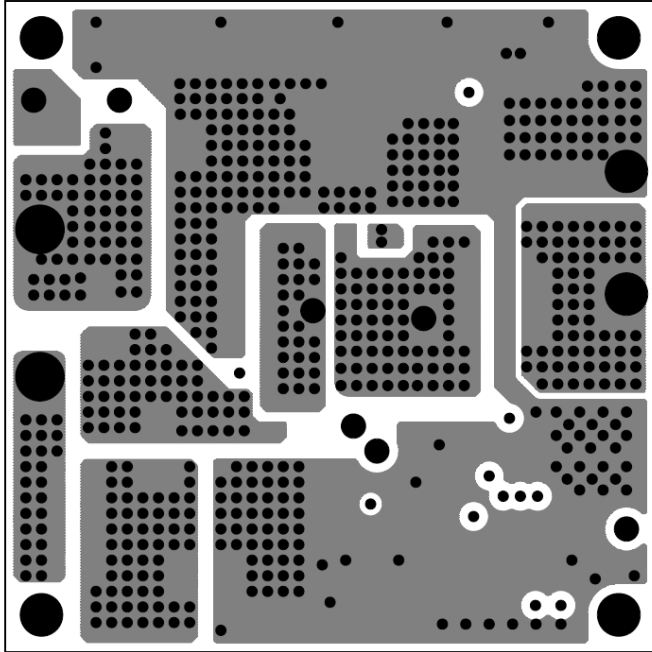


Figure 3 — Inner Layer 1

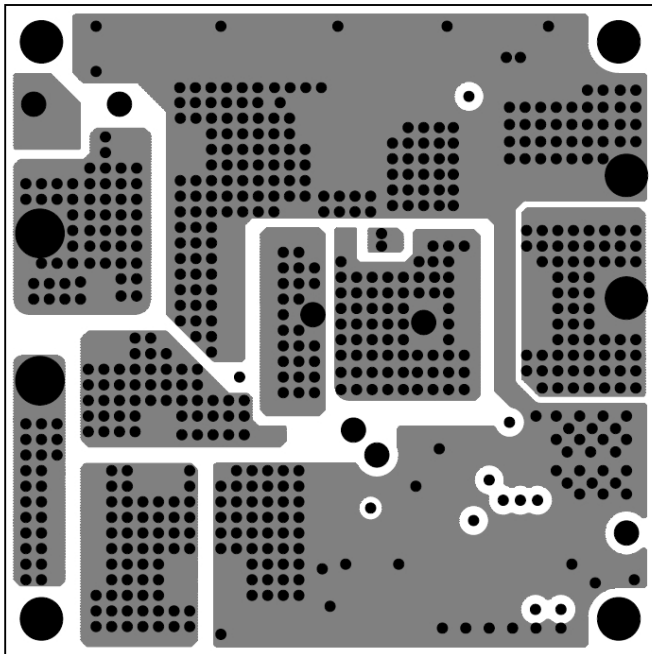


Figure 4 — Inner Layer 2

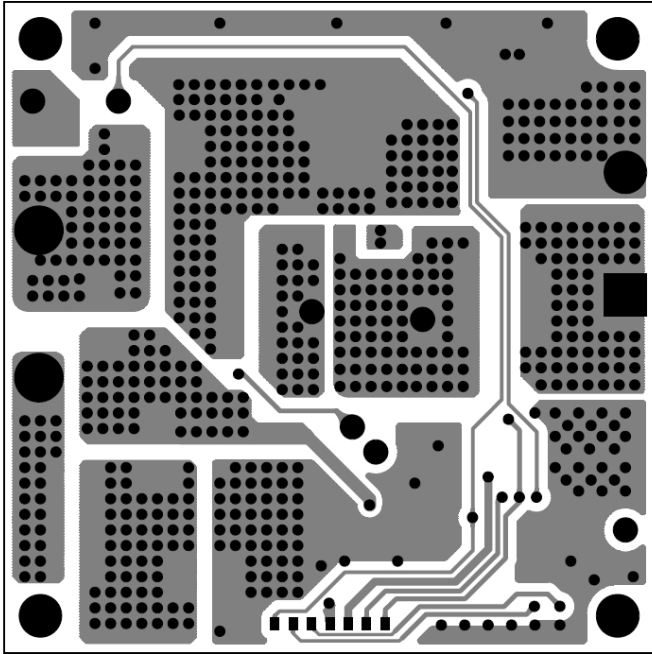


Figure 5 — Bottom Layer

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