

DESCRIPTION

This circuit is designed specifically for $\alpha 3$ IC evaluation. After several modifications, the inner circuit design can reach high completion of security design and transmission 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

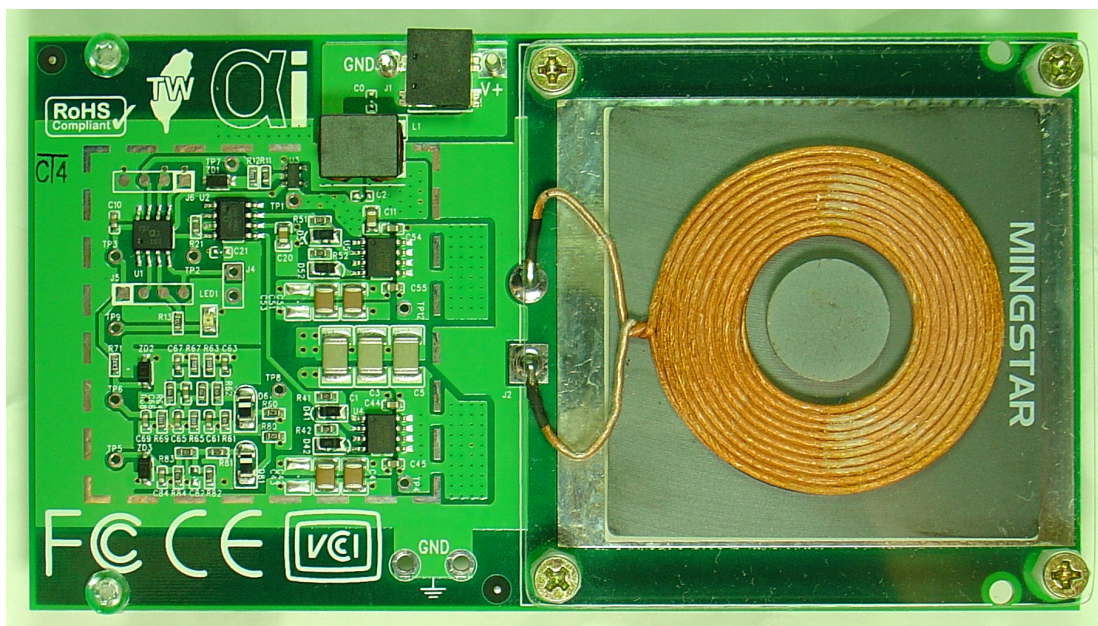
- 5V to 16V wide operating input range; standby current consumption 1mA.
- System operation frequency from 50KHz to 500KHz.
- Once the object is identified, the IC will output power by automatic adjustment.
- Provide the protection of power overload and metal sensing.
- LED light indicates the charging activity.
- Function along with $\beta 3$ Rx Evaluation Board.

APPLICATIONS

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

20W Tx Evaluation Board

Board Number	FDT IC Number
Ai Tx V2.1	$\alpha 3$ SOIC8



ELECTRICAL CHARACTERISTICS

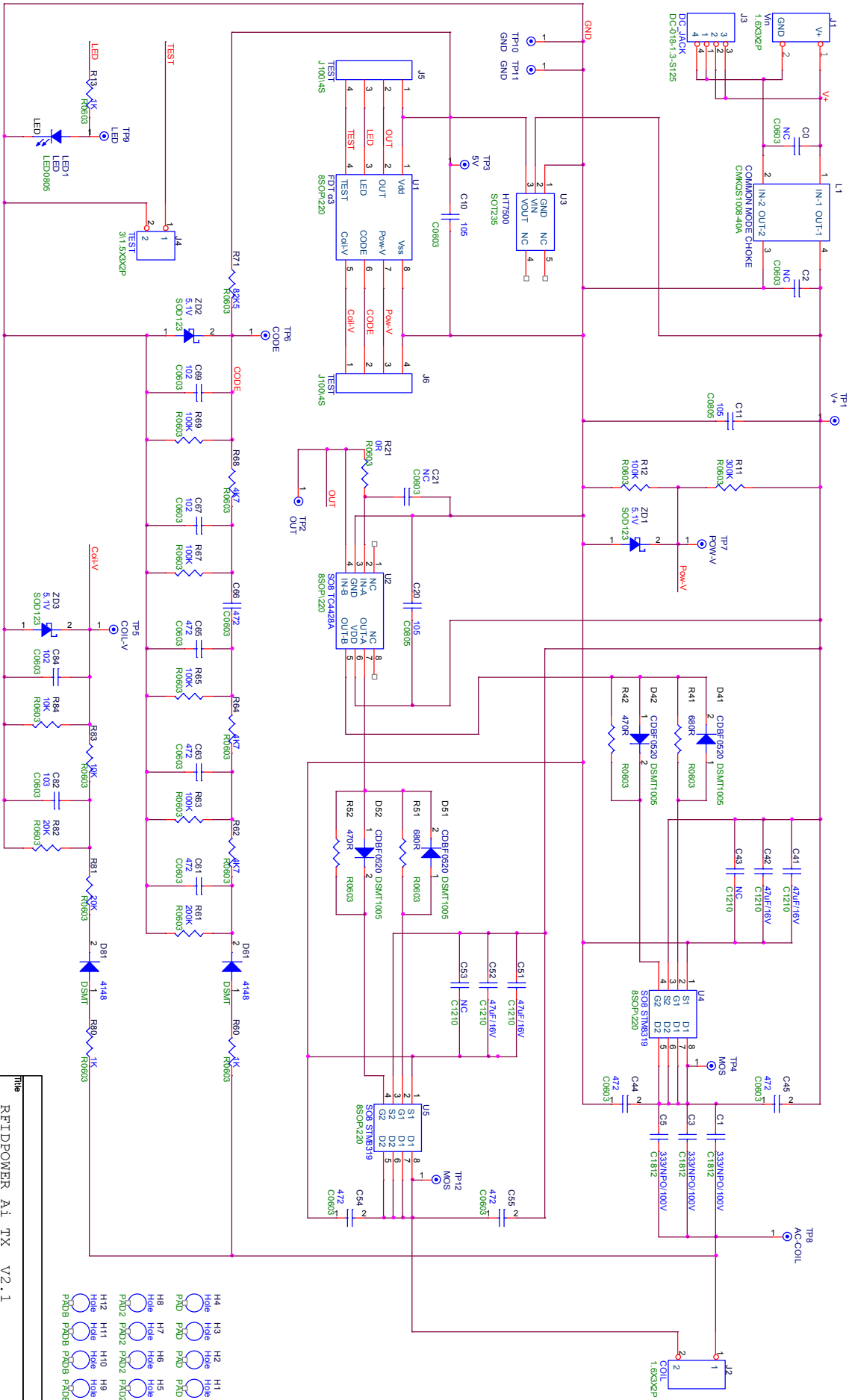
Parameters	Symbol	Condition	Min	Typ	Max	Units
Operating Voltage	Pow-in	Standard	4.5	-	16	V
Supply Current (Standby)	I	Standard	0.3	1	1.5	mA
Supply Current (In operation)	I	Standard	10	-	2000	mA
Maximum Power Output	Pow-Tx	Pow-in=5V			2.5	W
Maximum Power Output	Pow-Tx	Pow-in=6V			5	W
Maximum Power Output	Pow-Tx	Pow-in=9V			10	W
Maximum Power Output	Pow-Tx	Pow-in=12V			20	W

QUICK START GUIDE

Warning! After the circuit is electrified, there will be high-voltage alternating current at both ends of J2 transmission 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 (C8, C9) needs to be modified along with coil inductance. The cross-reference table can be referred to $\alpha 3$ IC datasheet. 0.1 μ F capacitor of this evaluation board works best with 15~28 μ H coil inductance. Correct capacitor and inductance will meet the expected transmission efficiency.
2. Connecting the Pow_in and GND on circuit to the direct current power supply. Voltage should be between 5V and 16V. As soon as turning the power on, the circuit will also be turned on and be in standby mode.
3. In standby mode, the LED light is off, and the working current of Pow_in should be less than 2mA.
4. When the receiving coil with $\beta 3$ Rx gets close to the circuit transmission coil, it will initiate the power supply automatically. The LED light will shine which means the circuit is in charging mode.
5. 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 SCHEMATIC



Title	RPIDPOWER A1 TX V2.1
Size	Document Number
Doc#	<Doc#>
Date	Tuesday, October 04, 2011
Sheet	1 of 1
Rev	

- H4 Hole PAD
- H3 Hole PAD
- H2 Hole PAD
- H1 Hole PAD
- H8 Hole PAD
- H7 Hole PAD
- H6 Hole PAD
- H5 Hole PAD
- H12 Hole PAD2
- H11 Hole PAD2
- H10 Hole PAD2
- H9 Hole PAD2
- PAD3 Hole PAD3
- PAD2 Hole PAD3
- PAD1 Hole PAD3

EVALUATION BOARD BILL OF MATERIALS

Position	Parts	Description	Package	Q'ty	Manufacturer	Part Number
C1,C3,C5	Ceramic Cap	33nF/100V	1812	3	Any	NPO/C0G
C44,C45,C54,C55 C61,C63,C65,C66	Ceramic Cap	472/50V	0603	8	Any	
C67,C69,C84	Ceramic Cap	102 /50V	0603	3	Any	
C82	Ceramic Cap	103 /50V	0603	1	Any	
C10	Ceramic Cap	1uF/16V	0603	1	Any	
C11,C20	Ceramic Cap	1uF/25V	0805	2	Any	
C41,C42,C51,C52	Ceramic Cap	47uF/16V	1210	4	Any	
D41,D42,D51,D52	Schottky Diodes	20V/0.5A	0603	4	COMCHIP	CDBF0520L
D61,D81	Diodes	100V/0.1A	1206	2	COMCHIP	CDSNC4148
ZD1,ZD2,ZD3	Zener Diodes	5.1V/500mW	SOD123	3	Any	
LED1	LED	Red	0805	1	Any	
R21	Film Res	0R	0603	1	Any	
R42,R52	Film Res	470 Ω	0603	2	Any	
R41,R51	Film Res	680 Ω	0603	2	Any	
R13,R60,R80	Film Res	1K Ω	0603	3	Any	
R83,R84	Film Res	10K Ω	0603	2	Any	
R81,R82	Film Res	20K Ω	0603	2	Any	
R62,R64,R68	Film Res	4.7K Ω	0603	3	Any	
R71	Film Res	82K5 Ω	0603	1	Any	
R12,R63,R65,R67 R69	Film Res	100K Ω	0603	5	Any	
R61	Film Res	200K Ω	0603	1	Any	
R11	Film Res	300K Ω	0603	1	Any	
U1	IC	α3 V1.1	SOP8	1	FDT	α3 1101
U2	IC	DRIVER	SOP8	1	Microchip	TC4428
U3	IC	LDO 5V	SOT23-6	1	Hotek	HT7550
U4,U5	MOSFET	N AND P MOS	SOP8	2	SAMHOP	STM8319
L1	Choke	4A 10*8	SMT	1	Wendell	CMKQS1008-40A
J3	DC Jack	φ1.3mm	SMT	1	Any	
J2	Coil	qi TX	DIP	1	Mingstar	MST00296

PRINTED CIRCUIT BOARD LAYOUT

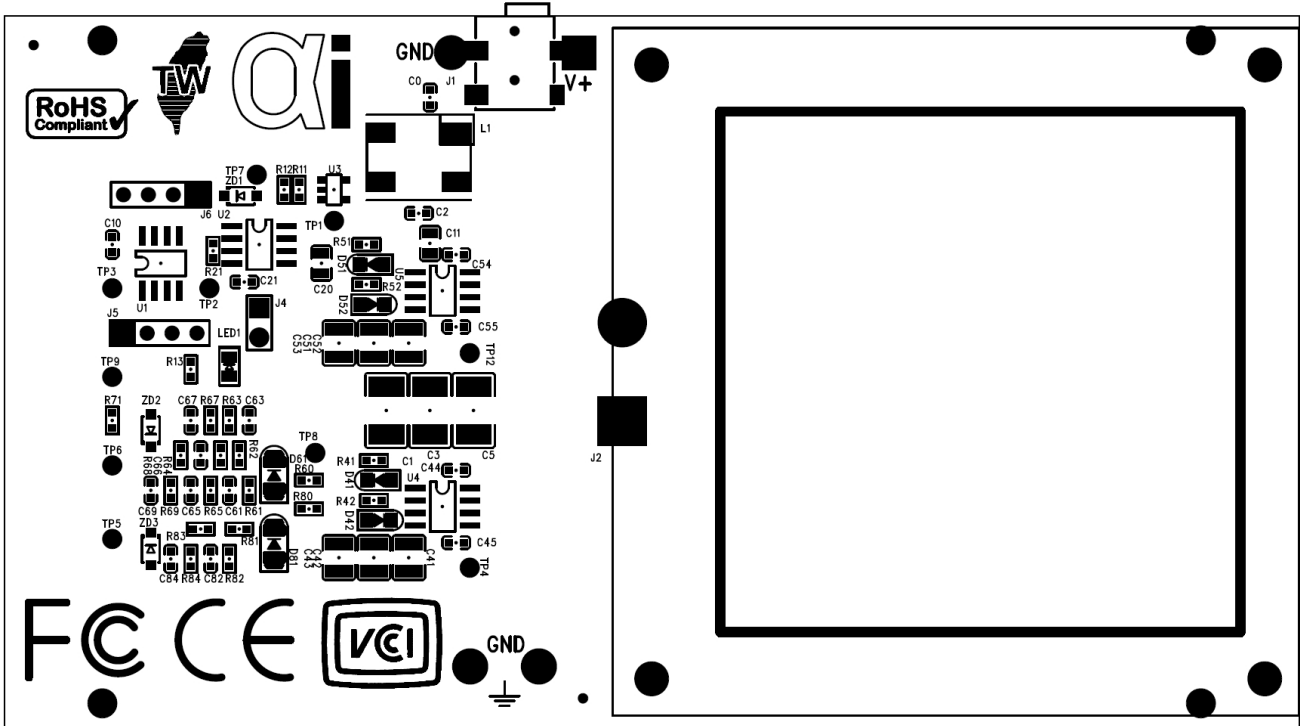


Figure 1 — Top Silk Layer

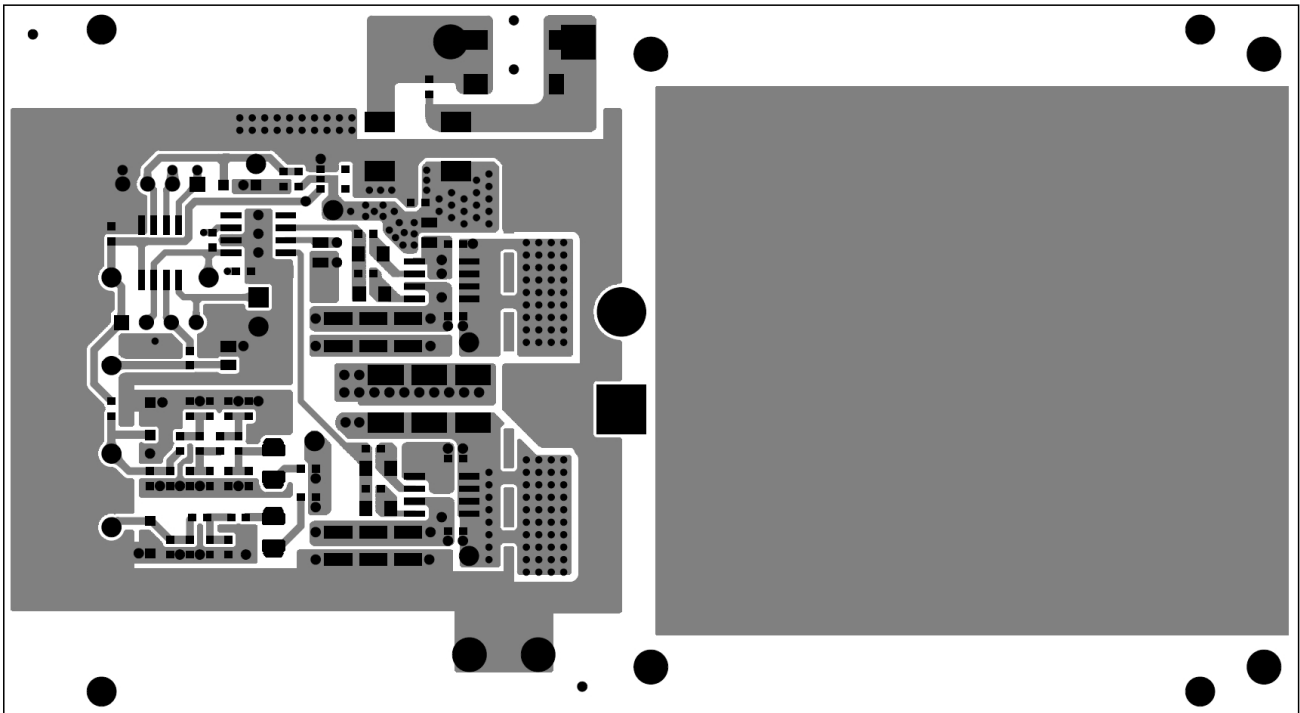


Figure 2 — Top Layer

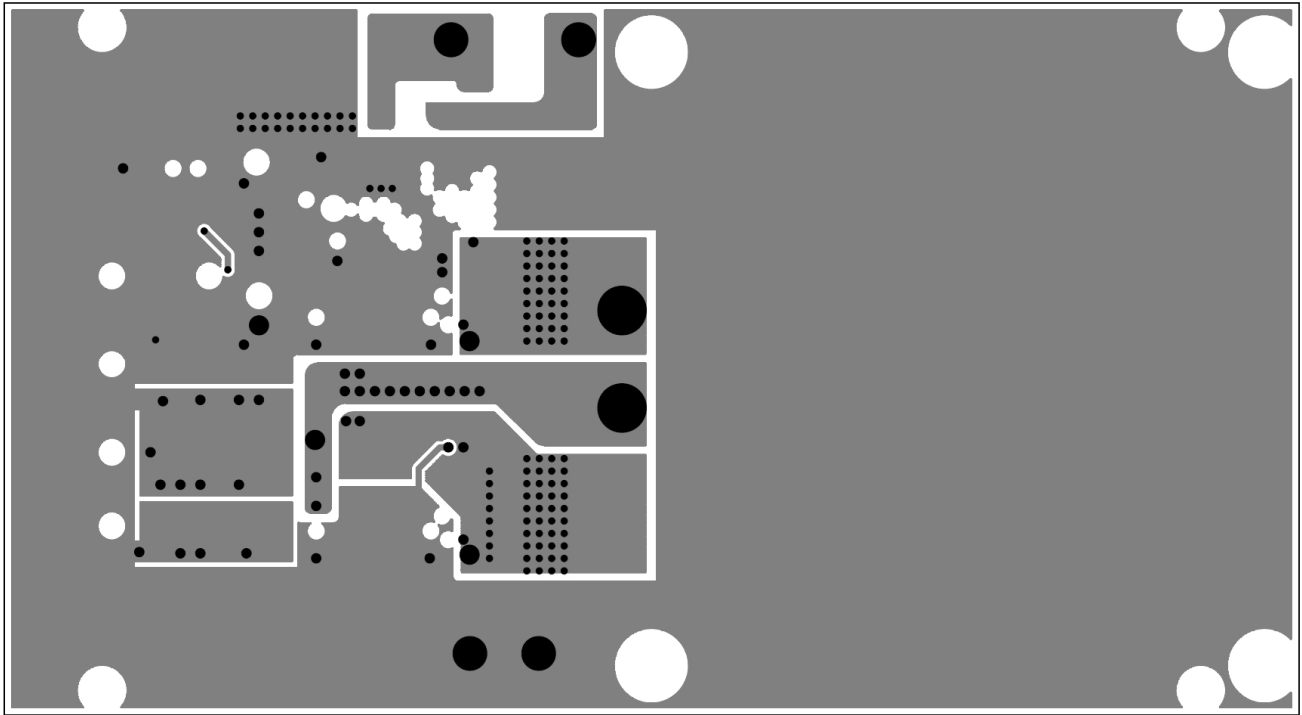


Figure 3 — Inner Layer 1

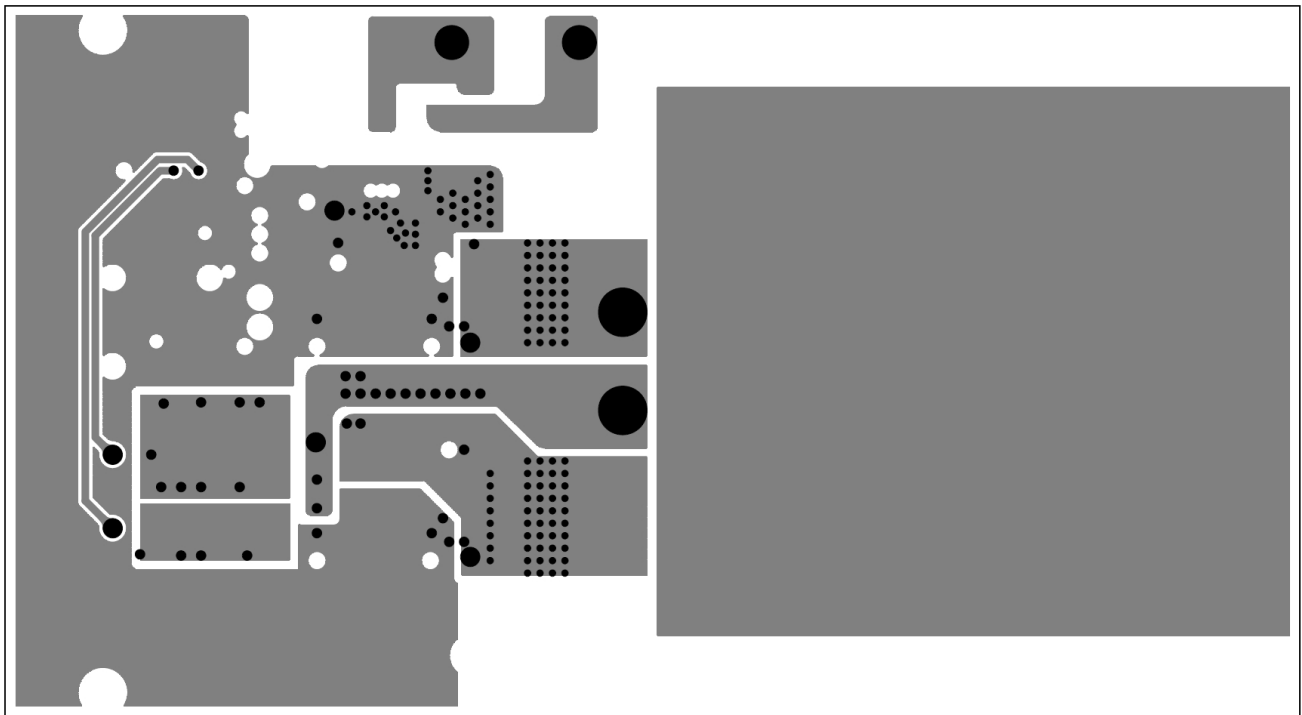


Figure 4 — Inner Layer 2

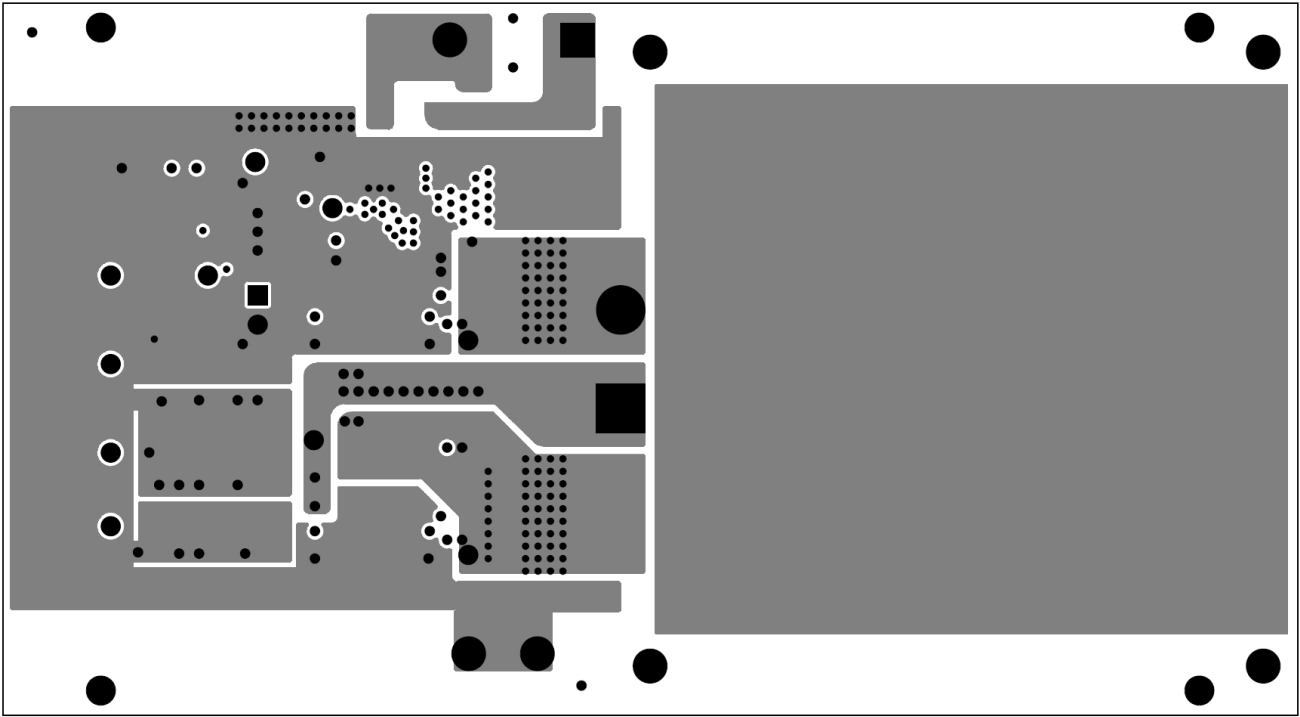


Figure 5 — Bottom Layer

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