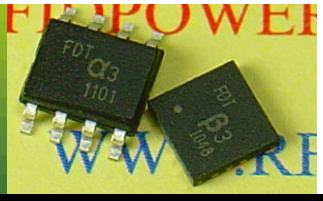


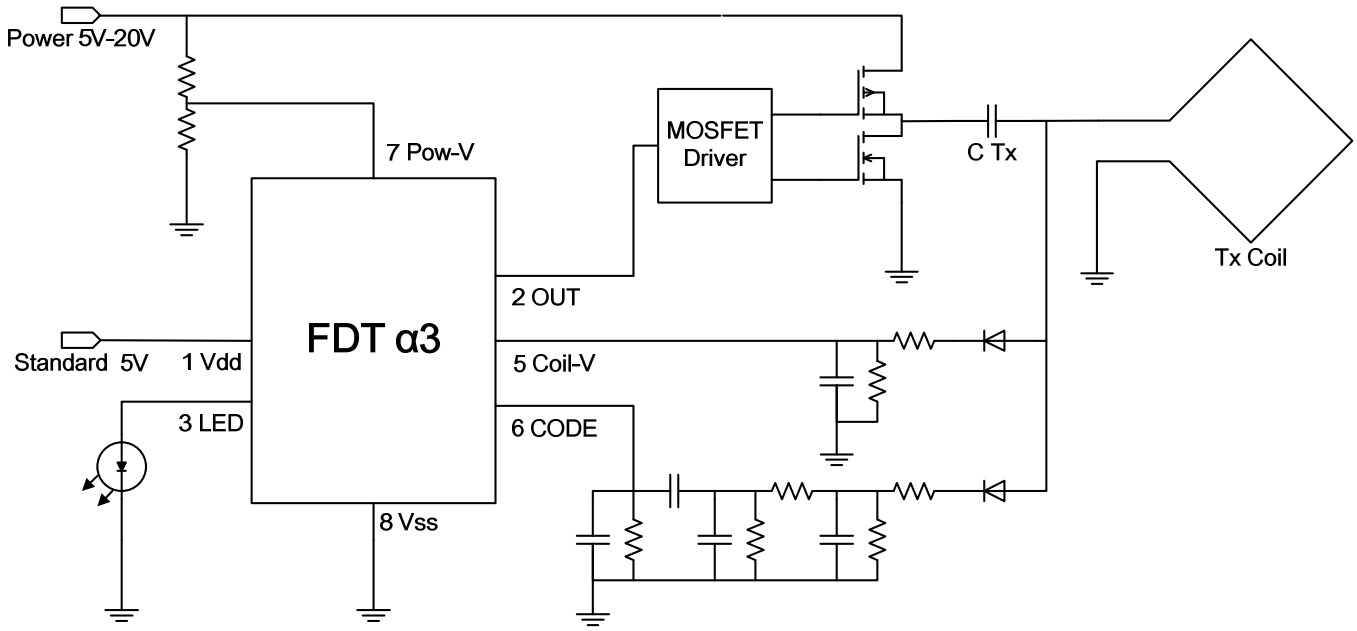
FEATURES

- This IC can output frequency for being used in the wireless power supply system.
- System Operation frequency is from 50KHz to 200KHz.
- Standby current dissipation 0.5mA when operation voltage under 5V.
- Resonant control is by coil.
- Once the object is identified then this IC will output power by automatic adjustment.
- LED light indicating the charging activity.
- Provided with the code mechanism by advanced technology and several patent protections.
- Chip package SOIC-8.
- Part Number is **FDT-A3TX-SO8**.

APPLICATIONS

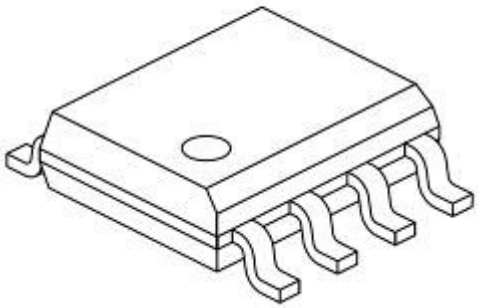
- Wireless power supply system for under 20W.
- Industrial Mobile device
- Cable connector for non-metal interface
- Waterproof Device

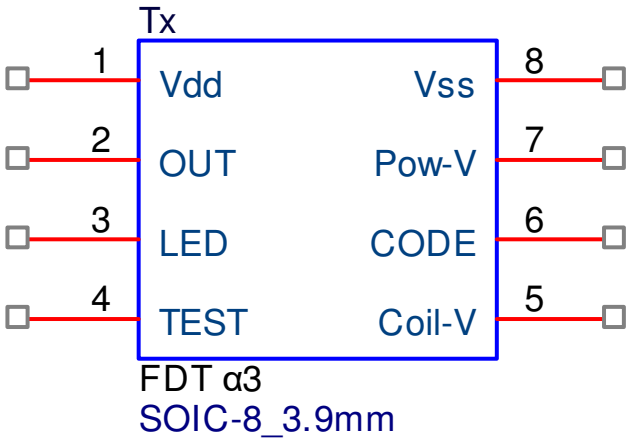
TYPICAL APPLICATION CIRCUIT



IC PACKAGE and PIN FUNCTION

SOIC-8 Narrow,3.90mm





PIN FUNCTIONS

Pin #	Name	Description
1	Vdd	Operating power supply of IC. Standard voltage is 5V.
2	OUT	Output wireless charging operation frequency. The signal is square wave between 50KHz and 500KHz.
3	LED	Motivating LED to show system conditions. When it is standby, LED does not shine. In summary: Standby- No light; Charging- Twinkling; Shut-down mode (from Rx's feedback)- Keep bright
4	TEST	System testing pin. In normal usage, this pin can be floating or connected to Vdd. If it is going to be in test, the pin should be GND to be the debugging mode.
5	Coil-V	Used for inspecting coil resonant voltage to analyze and adjust automatically the status of coil resonance.
6	CODE	Analyze information code from Rx for distinguishing objects to adjust automatically.
7	Pow-V	Inspecting operating voltage to adjust primary sensing voltage of Rx.
8	Vss	System Ground.

ABSOLUTE MAXIMUM RATINGS

Parameter	Value		Units
	Min	Max	
Working environment temperature	-40	+125	℃
Storage temperature	-65	+150	℃
Relative voltage of Vdd pin to Vss pin	-0.3	+6.5	V
Relative voltage of other pins to Vss pin	-0.3	Vdd+0.3	V
Largest input current of Vdd		800	mA

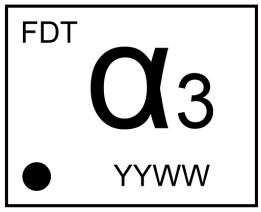
Largest output current of Vss		80	mA
Largest output current of other pins		25	mA

ELECTRICAL CHARACTERISTICS

Parameters	Symbol	Condition	Min	Typ	Max	Units
Operating Voltage	Vdd	Standard (1)	4.5	5	5.5	V
Supply Current (Standby)	I	Standard (1)		0.3	1	mA
Supply Current (In operation)	I	Standard (1)		3	6	mA
Pull High Current Pin4 TEST	Iph4	Vdd=5V		100	200	μA
Power-Up Timer	Powtmr			100	180	mS

(1) Design for typical use of circuit

Marking Details



● ： **Pin 1 indicator**

FDT ：**Fa Da Tong Technology**

α3 ：**TX Chip Marking**

YYWW：**Date code**

ORDERING INFORMATION

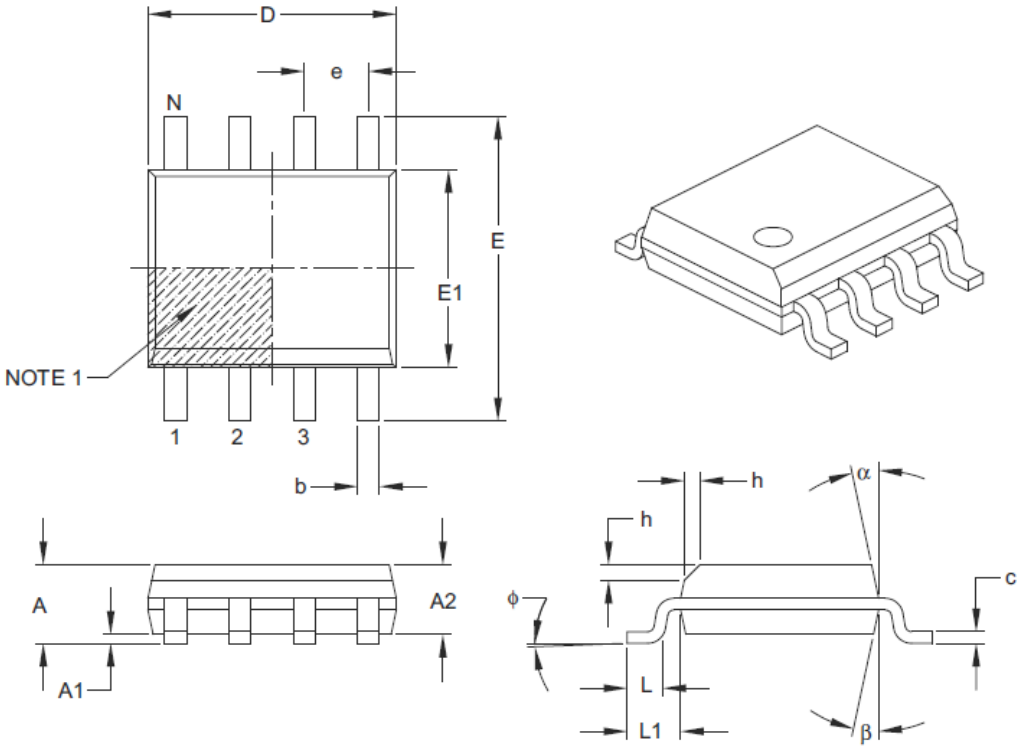
Part Number	Package	Top Marking	Ambiance Temp.
FDT-A3TX-SO8	SOIC8	FDT α3	- 40℃ TO + 125 ℃

PACKING INFORMATION

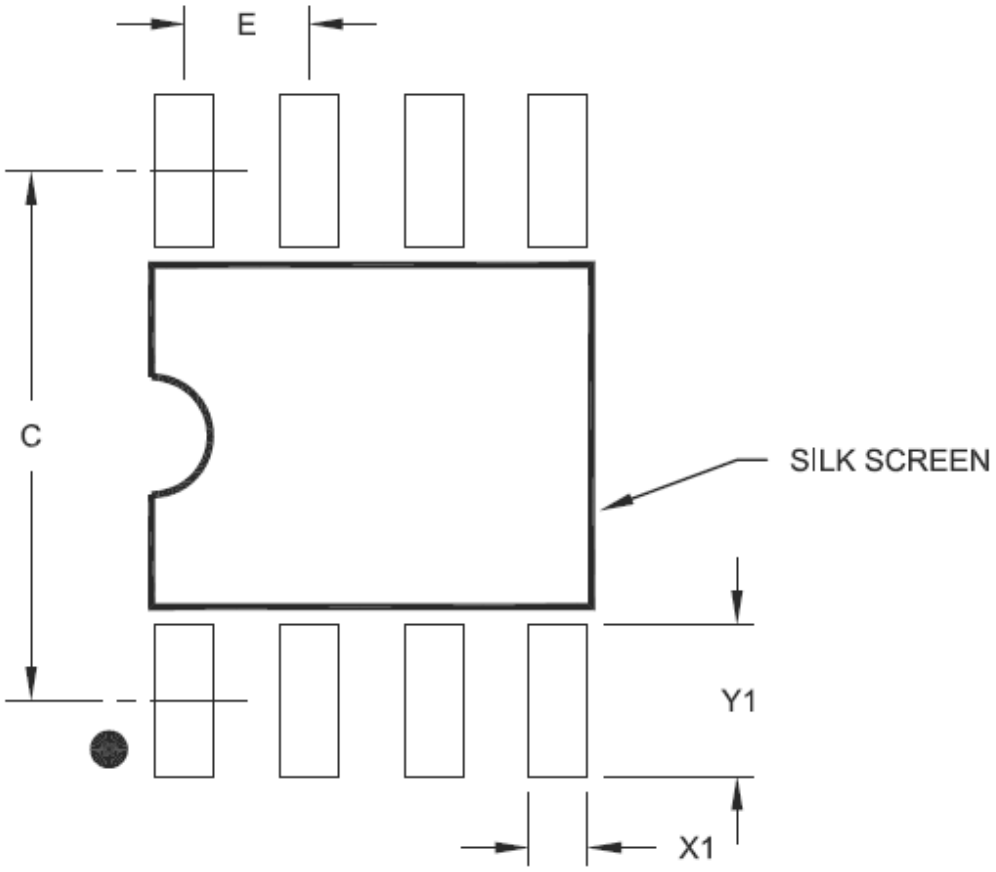
Part Number	Package	Packing	Single Purchase Quantity
FDT-A3TX-SO8	SOIC8	TAPE & REEL	3000 PCS

PACKAGE INFORMATION

Narrow, 3.90 mm Body SOIC-8



Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Number of Pins	N		8	
Pitch	e		1.27 BSC	
Overall Height	A	–	–	1.75
Molded Package Thickness	A2	1.25	–	–
Standoff §	A1	0.10	–	0.25
Overall Width	E		6.00 BSC	
Molded Package Width	E1		3.90 BSC	
Overall Length	D		4.90 BSC	
Chamfer (optional)	h	0.25	–	0.50
Foot Length	L	0.40	–	1.27
Footprint	L1		1.04 REF	
Foot Angle	ϕ	0°	–	8°
Lead Thickness	c	0.17	–	0.25
Lead Width	b	0.31	–	0.51
Mold Draft Angle Top	α	5°	–	15°
Mold Draft Angle Bottom	β	5°	–	15°



RECOMMENDED LAND PATTERN

Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Contact Pitch	E	1.27 BSC		
Contact Pad Spacing	C		5.40	
Contact Pad Width (X8)	X1			0.60
Contact Pad Length (X8)	Y1			1.55

Recommended coil design and capacitance

The theory of wireless charging system transmitting and receiving wireless charging power is based on the coil inductance and capacitance resonance. The resonant frequency is decided by both coil and capacitance, which are the key to the system operation. IC α 3 has been designed by advanced technology of adjusting resonant frequency automatically. However, when designing products, developers still need to set resonant frequency in reasonable range to let the system work.

At the start of designing wireless charging system, coil design is the first step. Next, with the setting of capacitance, the operating frequency should be in appropriate range.

Capacitor is common product, and its capacity increases or decreases fractionally. Hence, the suggested selection of capacitance is shown in the table below. The specification is common in the market. As shown in the table, the recommended resonant frequency is between 90KHz and 110KHz since the system will be most stable.

There may be different inductances between Tx coil and Rx coils, but the resonant frequencies of Tx and Rx can be set the same by fitting various capacitances. With this design, the system will work at best efficiency.

The technique of automatic adjusting of IC α 3 will allow system working under the condition of 20% differences of resonant frequencies between Tx and Rx. Nonetheless, the optimal design is still the same resonant frequencies of these two coils.

The table below is coil and capacitance cross-reference. After the completion and inductance measurement of coil, please refer to the table finding suitable capacitance. The best value of coil inductance will be between 10μH and 30μH.

Coil Inductance μH	Capacitor μF	Resonant Frequency	Design Suggestion
1	2.200	107.3 KHz	Inappropriate section: the sensibility of coil below 5μ is poor.
2	1.000	112.5 KHz	
3	0.680	111.4 KHz	
4	0.680	96.5 KHz	
5	0.470	103.8 KHz	
6	0.470	94.8 KHz	Feasible section: however, it is not the best system design.
7	0.330	104.7 KHz	
8	0.330	98.0 KHz	
9	0.330	92.4 KHz	
10	0.220	107.3 KHz	
11	0.220	102.3 KHz	Best section: system will operate most

12	0.220	98.0 KHz	efficiently.
13	0.220	94.1 KHz	
14	0.150	109.8 KHz	
15	0.150	106.1 KHz	
16	0.150	102.7 KHz	
17	0.150	99.7 KHz	
18	0.150	96.9 KHz	
19	0.100	115.5 KHz	
20	0.100	112.5 KHz	
21	0.100	109.8 KHz	
22	0.100	107.3 KHz	
23	0.100	104.9 KHz	
24	0.100	102.7 KHz	
25	0.100	100.7 KHz	
26	0.100	98.7 KHz	
27	0.100	96.9 KHz	
28	0.100	95.1 KHz	
29	0.082	103.2 KHz	
30	0.082	101.5 KHz	
31	0.082	99.8 KHz	
32	0.082	98.3 KHz	
33	0.082	96.8 KHz	
34	0.082	95.3 KHz	
35	0.068	103.2 KHz	Feasible section: however, it is not the
36	0.068	101.7 KHz	best system design.
37	0.068	100.3 KHz	
38	0.068	99.0 KHz	
39	0.068	97.7 KHz	
40	0.068	96.5 KHz	

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