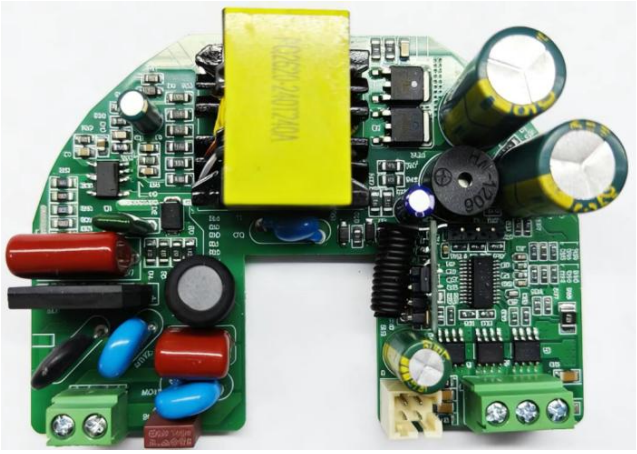
Test Report

BLDC+CCT+RF433 Fan Controller YT91003NH7+YTM32U067S24 FL 60W 24V2.5A



Features

- PSR isolation HPF system constant voltage current limiting output.

-Adaptive Motor FOC algorithm.

-Support single resistor/triple resistor sampling optional.

-Control mode: torque control, limited power, limited speed, positive and negative electronic brake.

-Integrated Fan-Light Function.

-Supports independent operation of the fan and light, as well as simultaneous operation of both.

-Supports a timer function: when the set time is reached, both the fan and light will turn off simultaneously.

-Dimming & CCT Adjustment: Stepless regulation supported.

-Complete protection functions: over voltage, under voltage, over current, blocking, phase deficiency, internal power supply monitoring and protection

- AC Line Under Voltage and Over Voltage Protection

- Driver output open circuit, short circuit, a cycle by a cycle to limit the current protection

- PCB integrated molding, high production efficiency, low cost

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Contents

1 Specification

1.1 Input Spec

- Input Voltage: 130-280 Vac
- Input Frequency: 47-63 Hz
- Input Power:60W(350 RPM)

1.2 Output Spec

- Output Voltage: 24V
- Output Current:2.5A

2 Assessment Result

2.1 Behavior of Electricity @ 230Vac input and full load output

-Constant pressure accuracy:±4%

- Efficiency: ≥0.87%
- Power Factor: >0.95

-THD <10%@full load

-No load power: ≦ 500mW@ 230V

2.2 Defensive Function

-Over power Protection:OK

-Open Circuit Protection:OK

-Short Circuit Protection:OK

-Power overrun protection:OK

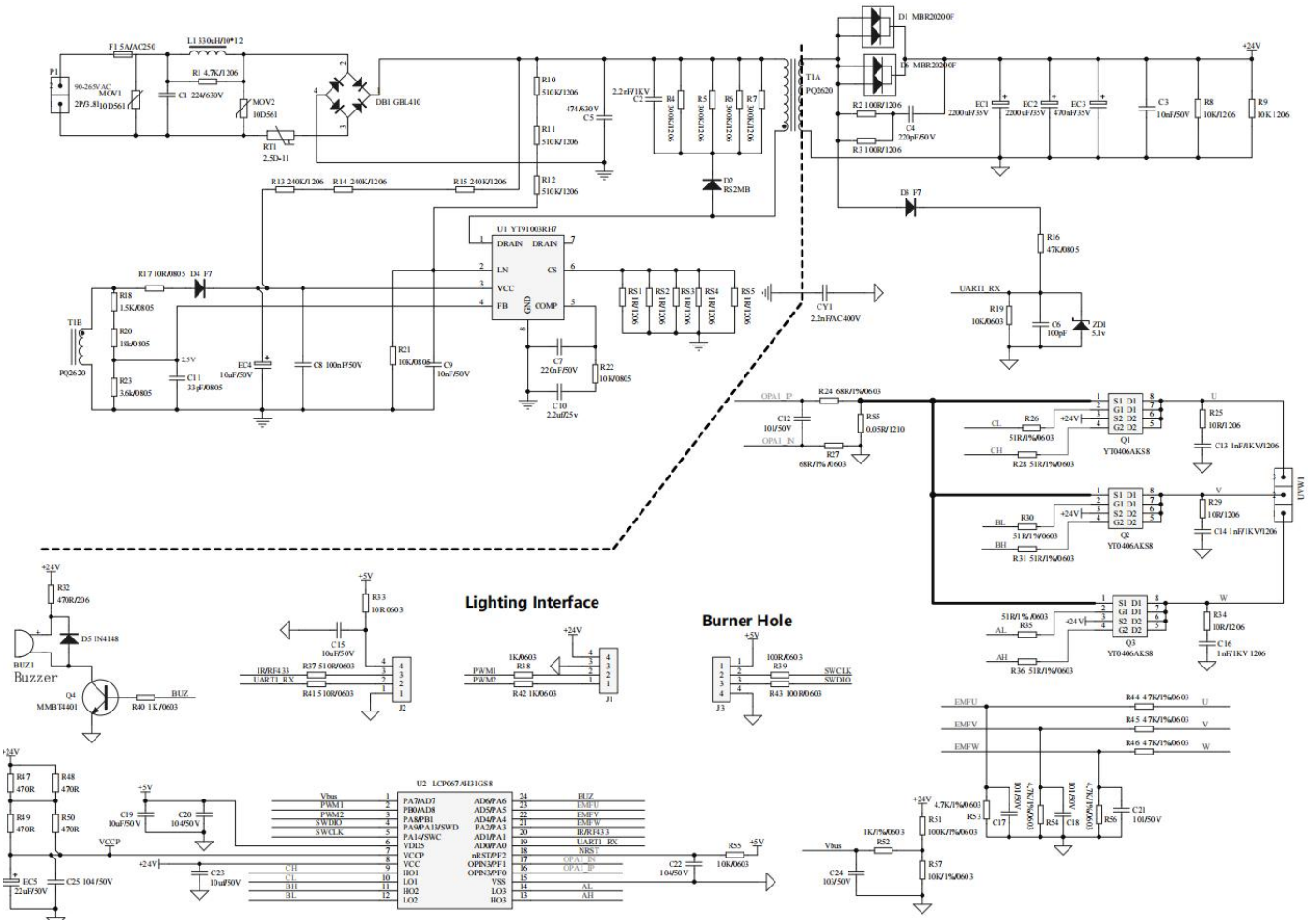
-Speed limit protection:OK

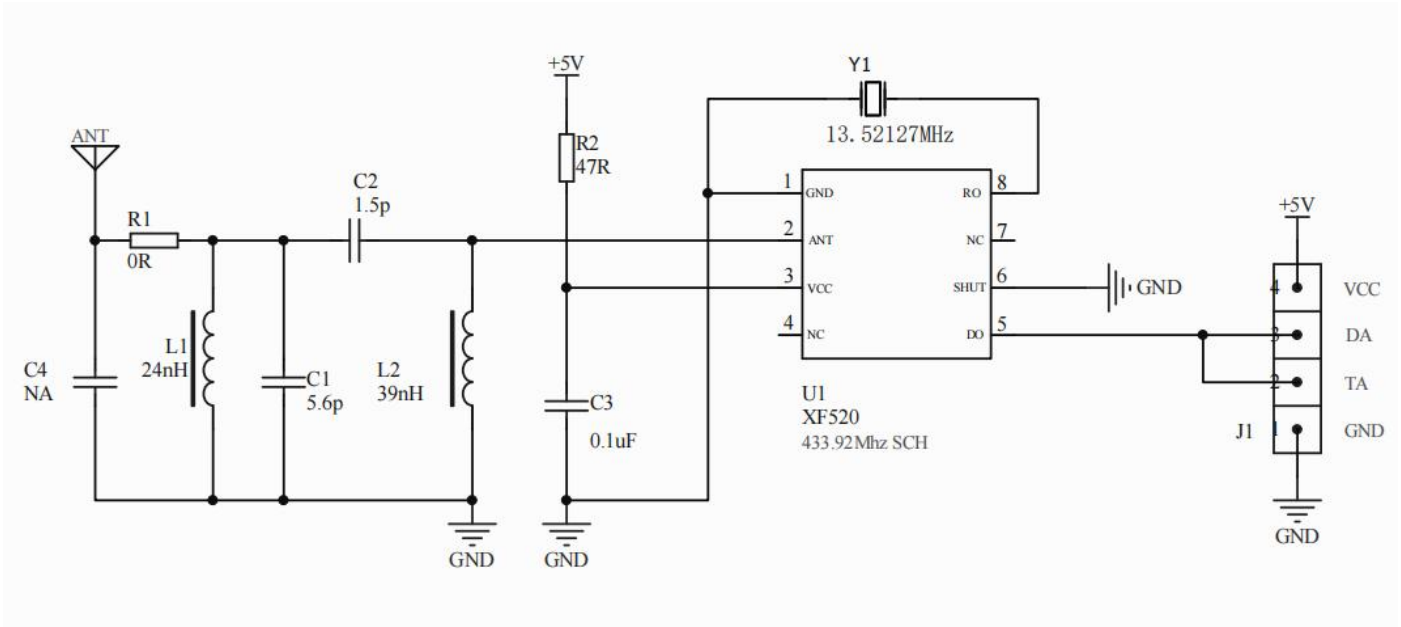
-Motor lock protection:OK

-Surge Level: 4kV

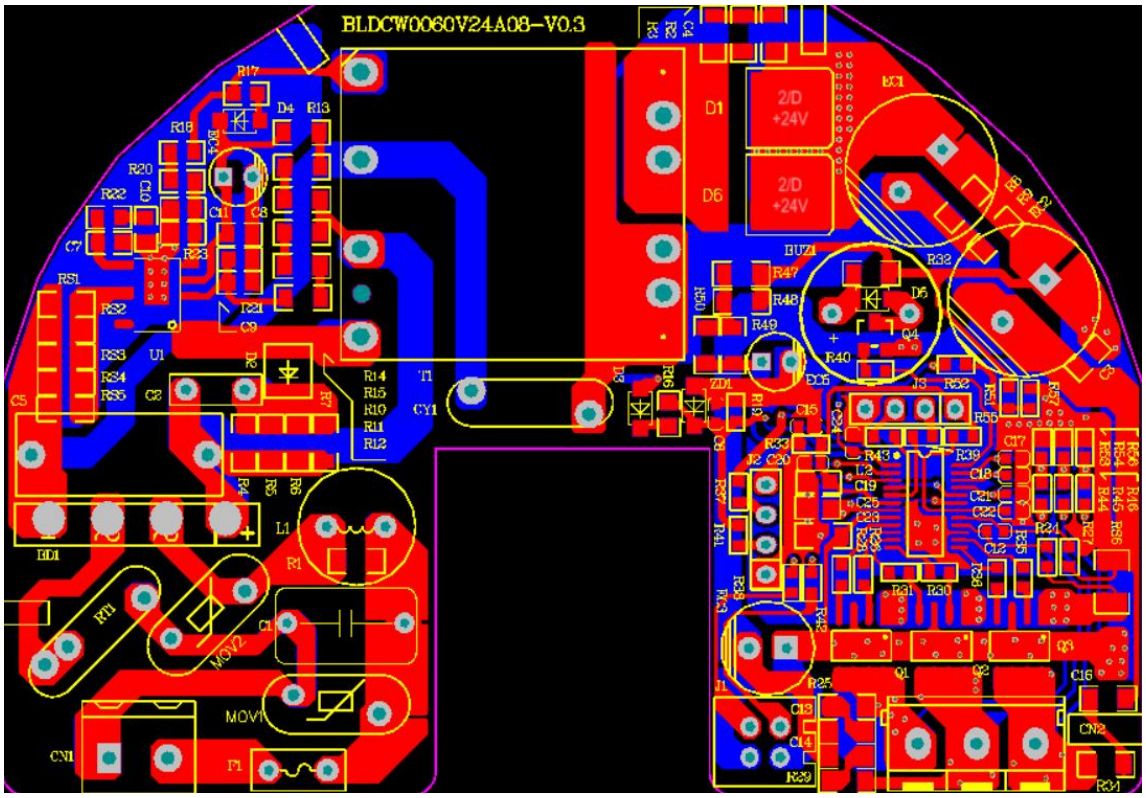
3 LED Driver Data

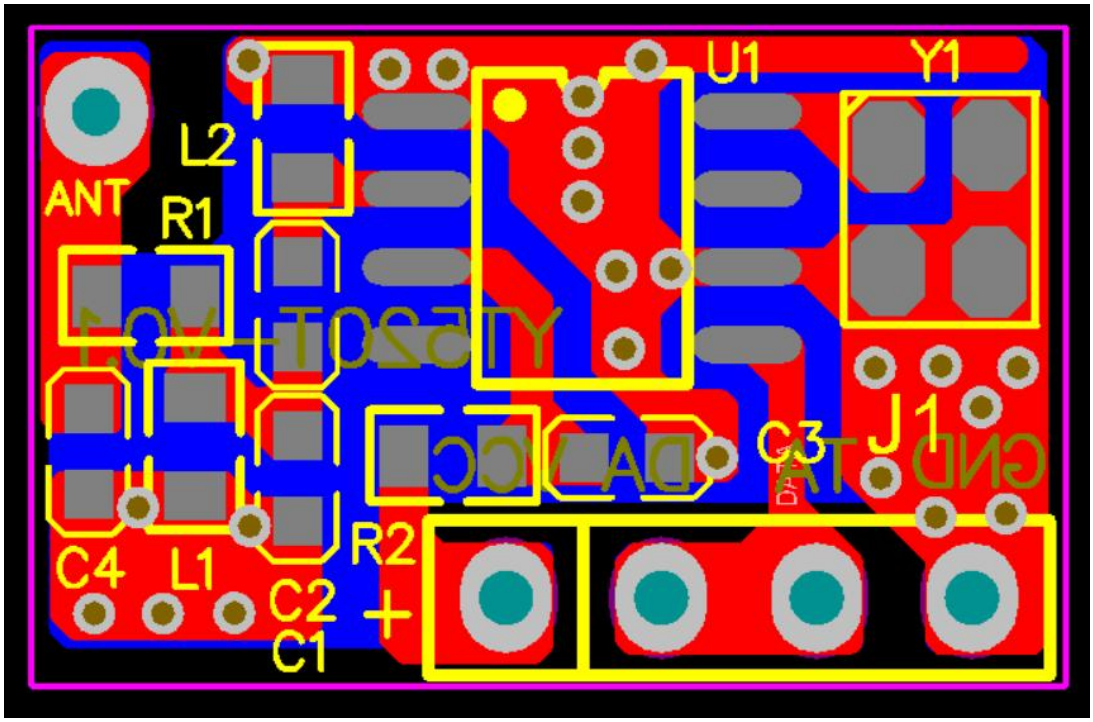
3.1 Schematic Diagram





3.2 PCB Layout





3.3.BOM-List

Type	NO.	Name	Specification Description	Designator	Qty	Unit
SMD Components(Red glue process)	1	Driver PCB	BLDCW0060V24A08-V0.3 Driver PCB_FR-4 Dual panel_2 Pcs_panel size:202*77.5_Board Size:97*67.5_T=1.6mm_OSP silk-screen_Green oil and white characters_CU=35um_Through hole cover oil_94-V0_RoHS		1/2	pcs
	2	SMD Schottky Diodes	SMD Schottky Diodes_MBR20200CS_TO-252_200V_20A_102Mil_T/R_RoHS	D1,D6	2	pcs
	3	SMD Diode	SMD Diode_RS2M_SMB_1000V_2A_60mil_T/R_RoHS	D2	1	pcs
	4	SMD Diode	SMD FRD_F7_SOD-123FL_1000V_1A_46mil_TP_RoHS	D3,D4	2	pcs
	5	SMD Diode	SMD Diode_1N4148_SOD-123_100V_150mA_26mil_T/R_RoHS	D5	1	pcs
	6	SMD Diode	SMD Zener Diode_BZT52C5V1_5.1V_SOD-123_500mW_±5%_33mil_T/R_RoHS	ZD1	1	pcs
	7	SMD Capacitor	SMD Capacitor_X7R_0805_50V_10nF±10%_RoHS	C3,C9	2	pcs
	8	SMD Capacitor	SMD Capacitor_X7R_1206_1kV_220pF±10%_RoHS	C4	1	pcs
	9	SMD Capacitor	SMD Capacitor_X7R_0603_50V_100pF±10%_RoHS	C6,C12,C17,C18,C21	5	pcs
	10	SMD Capacitor	SMD Capacitor_X7R_0805_50V_220nF±10%_RoHS	C7	1	pcs
	11	SMD Capacitor	SMD Capacitor_X7R_0805_50V_100nF±10%_RoHS	C8,C25	2	pcs
	12	SMD Capacitor	SMD Capacitor_X7R_0805_25V_2.2uF±10%_RoHS	C10	1	pcs
	13	SMD Capacitor	SMD Capacitor_C0G_0805_50V_33pF±10%_RoHS	C11	1	pcs
	14	SMD Capacitor	SMD Capacitor_X7R_1206_1kV_1nF±10%_RoHS	C13,C14,C16	3	pcs
	15	SMD Capacitor	SMD Capacitor_X5R_0603_25V_10uF±10%_RoHS	C15	1	pcs
	16	SMD Capacitor	SMD Capacitor_X5R_0805_25V_10uF±10%_RoHS	C19	1	pcs
	17	SMD Capacitor	SMD Capacitor_X7R_0603_50V_100nF±10%_RoHS	C20,C22	2	pcs
	18	SMD Capacitor	SMD Capacitor_X5R_1206_50V_10uF±10%_RoHS	C23	1	pcs
	19	SMD Capacitor	SMD Capacitor_X7R_0603_50V_10nF±10%_RoHS	C24	1	pcs
	20	SMD Resistor	SMD Resistor_TF_1206_1/4W_200V_4.7k±5%_RoHS	R1	1	pcs
	21	SMD Resistor	SMD Resistor_TF_1206_1/4W_200V_100Ω±5%_RoHS	R2,R3	2	pcs
	22	SMD Resistor	SMD Resistor_TF_1206_1/4W_200V_300k±5%_RoHS	R4,R5,R6,R7	4	pcs
	23	SMD Resistor	SMD Resistor_TF_1206_1/4W_200V_10k±5%_RoHS	R8,R9	2	pcs
	24	SMD Resistor	SMD Resistor_TF_1206_1/4W_200V_510k±1%_RoHS	R10,R11,R12	3	pcs
	25	SMD Resistor	SMD Resistor_TF_1206_1/4W_200V_240k±5%_RoHS	R13,R14,R15	3	pcs

	26	SMD Resistor	SMD Resistor_TF_0805_1/8W_150V_47k±5%_RoHS	R16	1	pcs
	27	SMD Resistor	SMD Resistor_TF_0805_1/8W_150V_10Ω±5%_RoHS	R17	1	pcs
	28	SMD Resistor	SMD Resistor_TF_0805_1/8W_150V_1.8kΩ±1%_RoHS	R18	1	pcs
	29	SMD Resistor	SMD Resistor_TF_0603_1/10W_50V_10k±5%_RoHS	R19	1	pcs
	30	SMD Resistor	SMD Resistor_TF_0805_1/8W_150V_18k±1%_RoHS	R20	1	pcs
	31	SMD Resistor	SMD Resistor_TF_0805_1/8W_150V_10k±1%_RoHS	R21	1	pcs
	32	SMD Resistor	SMD Resistor_TF_0805_1/8W_150V_30k±5%_RoHS	R22	1	pcs
	33	SMD Resistor	SMD Resistor_TF_0805_1/8W_150V_3.6k±1%_RoHS	R23	1	pcs
	34	SMD Resistor	SMD Resistor_TF_0603_1/10W_50V_68Ω±5%_RoHS	R24,R27	2	pcs
	35	SMD Resistor	SMD Resistor_TF_1206_1/4W_200V_10Ω±5%_RoHS	R25,R29,R34	3	pcs
	36	SMD Resistor	SMD Resistor_TF_0603_1/10W_50V_51Ω±5%_RoHS	R26,R28,R30, R31,R35,R36	6	pcs
	37	SMD Resistor	SMD Resistor_TF_1206_1/4W_200V_470Ω±5%_RoHS	R32,R47,R48, R49,R50	5	pcs
	38	SMD Resistor	SMD Resistor_TF_0603_1/10W_50V_10Ω±5%_RoHS	R33	1	pcs
	39	SMD Resistor	SMD Resistor_TF_0603_1/10W_50V_510Ω±5%_RoHS	R37,R41	2	pcs
	40	SMD Resistor	SMD Resistor_TF_0603_1/10W_50V_1k±5%_RoHS	R38,R40,R42, R52	4	pcs
	41	SMD Resistor	SMD Resistor_TF_0603_1/10W_50V_100Ω±5%_RoHS	R39,R43	1	pcs
	42	SMD Resistor	SMD Resistor_TF_0603_1/10W_50V_47k±1%_RoHS	R44,R45,R46	3	pcs
	43	SMD Resistor	SMD Resistor_TF_0603_1/10W_50V_100k±1%_RoHS	R51	1	pcs
	44	SMD Resistor	SMD Resistor_TF_0603_1/10W_50V_4.7k±1%_RoHS	R53,R54,R56	3	pcs
	45	SMD Resistor	SMD Resistor_TF_0603_1/10W_50V_10k±5%_RoHS	R55	1	pcs
	46	SMD Resistor	SMD Resistor_TF_0603_1/10W_50V_10k±1%_RoHS	R57	1	pcs
	47	SMD Resistor	SMD Resistor_TF_1206_1/4W_200V_1Ω±1%_RoHS	RS1,RS2,RS3 RS4,RS5	5	pcs
	48	SMD Resistor	SMD Resistor_TF_1210_1/2W_200V_0.05Ω±1%_RoHS	RS6	1	pcs
	49	SMD MOS	SMD MOS_YT0406AKS8_SOP8_T/R_RoHS	Q1,Q2,Q3	3	pcs
	50	SMD BJT	SMD BJT_MMBT4401_NPN_Vceo:40V_600mA_SOT-23_T/R_RoHS	Q4	1	pcs
	51	SMD IC	SMD IC_YT91003RH7_HSOP-7_T/R_RoHS	U1	1	pcs
	52	SMD Microcontroller	SMD Microcontroller_YTM32U067AS24_SSOP24_T/R_RoHS	U2	1	pcs

DIP Components	1	FUSE	FUSE_8.5*7.6*4_Slow Blowing_T5A_250Vac_P5.08_S3.5_4KV Surge_ROHS	F1	1	pcs
	2	Varistor	Varistor_NDF10D621KJ_High Joule_570-630V _125°_P=7.5mm_Pin length: 3.5mm_RoHS(silver and copper electrode)	MOV1,MOV2	2	pcs
	3	NTC Thermistor	NTC Thermistor_2.5D-11_P7.5_S3.5_RoHs	RT1	1	pcs
	4	Film Capacitor	Film Capacitor_CBB22_630V_220nF_S3.5_P10_RoHS	C1	1	pcs
	5	Film Capacitor	Film Capacitor_CBB22_630V_470nF_17.2*13.3*6.5_S3.5_P15_RoHS	C5	1	pcs
	6	Poly.CAP	Poly.CAP_1000V_2.2nF±10%_P5_S3.5_RoHS	C2	1	pcs
	7	Y1-Safety Cap	Y1-Safety Cap_400V_2.2nF±20%_P10_S3.5_RoHS	CY1	1	pcs
	8	E-Cap	ELEC-CAP_Φ13*25_35V_2200μF_105℃_6000h_S3.5_high frequency low resistance_RoHS	EC1,EC2	2	pcs
	9	E-Cap	ELEC-CAP_Φ8*16_35V_470μF_105℃_6000h_S3.5_high frequency low resistance_RoHS	EC3	1	pcs
	10	E-Cap	ELEC-CAP_Φ5*11_50V_10μF_105℃_8000h_S3.5_RoHS	EC4	1	pcs
	11	E-Cap	ELEC-CAP_Φ5*11_50V_22μF_105℃_6000h_S3.5_high frequency low resistance_RoHS	EC5	1	pcs
	12	Bridge Rectifiers	Bridge Rectifiers_GBL410_GBL_1kV_4A_84mil_RoHS	BD1	1	pcs
	13	I-shaped inductor	I-shaped inductor_Φ10*12_330uH±10%_0.25 Bare Copper Wire_87.5T_RoHS	L1	1	pcs
	14	Transformer	Transformer_PQ2620_L_D6+6_F0.3mH_19T(145)D65_8T(250)D910_17T(145)D54_6T(118)D12_PC40_Isolation_RoHS	T1	1	pcs
	15	Buzzer	Passive electromagnetic buzzer_HN-1212-140R_2KHZ_Voltage:24-30V(30VMax)_Internal resistance 140±2Ω_Size:9*11.8_P6.5mm_(string of 240 Ohm resistance)_Foot length:3.5mm	BUZ1	1	pcs
	16	Input terminal	Connector terminal_GH0126-212-2P_300V_10A_Pin Distance 5 mm_Pin 3.7mm_Green with card slot_UL94 V-0_RoHS	CN1	1	pcs
	17	Output terminal	Connector terminal_GH0126-312-3P_300V_10A_Pin Distance 5 mm_Pin 3.7mm_Green with card slot_UL94 V-0_RoHS	CN2	1	pcs
	18	RF433 Receiving module	RF433 Receiving module_YT520T-V0.1	J2	1	pcs
	19	Output terminal	Connector termina_XHD2.5A_2X2P Straight pin_P2.5mm_S3.4_RoHS	J1	1	pcs
	20	Pin Herder	Pin Herder_XHD2.54_1X4P Straight cutting_P2.54mm_Length11.5_S3.4_RoHS	J3	1	pcs
	21	Thermal silicone sheet	Thermal silicone sheet_BLDCW0060V24A08_20*18*3mm_Blue_130℃_UL94 V-0_single-sided adhesive_RoHS	/	1	pcs

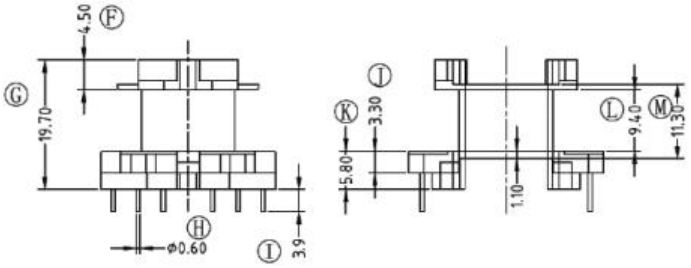
RF433 Receiving module_YT520T-V0.1

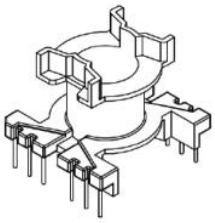
Type	NO.	Name	Specification Description	Designator	Qty.	Unit
SMD Components	1	Driver PCB	YT520T-V0.1 Driver PCB_FR-4-2L_T=1.0mm_94-V0		1	pcs
	2	SMD Resistor	SMD Resistor_0603_0Ω±1%_RoHS	R1	1	pcs
	3	SMD Resistor	SMD Resistor_0603_47Ω±5%_RoHS	R2	1	pcs
	4	SMD Capacitor	SMD Capacitor_X7R_0603_25V_5.6pF±10%_RoHS	C1	1	pcs
	5	SMD Capacitor	SMD Capacitor_X7R_0603_25V_1.5pF±10%_RoHS	C2	1	pcs
	6	SMD Capacitor	SMD Capacitor_X7R_0603_25V_100nF±10%_RoHS	C3	1	pcs
	7	SMD Inductor	SMD Inductor_0603_24nH±5%	L1	1	pcs
	8	SMD Inductor	SMD Inductor_0603_39nH±5%	L2	1	pcs
	9	SMD Crystal XTAL	SMD passive crystal oscillator_FXTAL433.92_13.52127MHz_SMD3225-4P	X1	1	pcs
	10	SMD IC	IC_RF433 Wireless Receiver IC_XF520_SOP8	U1	1	pcs
DIP Components	1	Receiving Wire	Receiving Wire_Spring wire_Black rubber spiral_14 turns_Wire Diameter Outer diameter ¢1.0mm_One end stripped 4mm_the other end not stripped_433MHZ_ Copper	ANT	1	pcs
	2	Pin Header	Pin-row_R1 type_Pitch :2.54mm_1x4p_Bent insert_Policy_ Single row_Plastic height 2.5mm_Lower pin C6.0mm_Upper pin D3.0mm_Black_94-V0	J1	1	pcs

3.4 Transformer

- Iron Core：PQ2620 PC40 AE=119mm²

- Bobbin: Vertical PQ2620 skeleton(6+6P)bakelite





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Windings:

Windings requirements:							
NO.	**Winding**	**Start(PIN)**	**End(PIN)**	**Turns(Ts)**	**Wire Diameter(mm)**	**Winding method**	**Remark**
1)	N1/Np1	6	5	40ts	Φ0.32mm*1P	Flat and tight，Two-layer winding	2EUW copper wire
2)	Myra tape	/	/	2ts	According to bobbin	/	/
3)	N2/NS	10/11	8/9	9ts	Φ0.1*30mm*2P	Flat and tight，Two-layer winding	TEX-E
4)	Myra tape	/	/	2ts	According to bobbin	/	/
5)	N4/Nvcc	1	3	6ts	Φ0.18mm*1P	Flat and tight，One layer winding	2EUW copper wire
6)	Myra tape	/	/	2ts	According to bobbin	/	/
7)	N3/Np2	6	5	40ts	Φ0.3mm*1P	Flat and tight，Two-layer winding	2EUW copper wire
8)	Myra tape			2ts	According to bobbin	/	/
9)	Blank below						

- Key Point:

1. Inductance value-Lp=0.40mH±7% for P6-P4. (Test conditions: 1V,10kHz).

2. Leakage inductance of P6-P4<25uH. (Test conditions: 1V,10kHz).

3. Other Requirements：

1). Reserved Pins of Bobbin: 2#，7#，12#,cut off 2/3 of pin2 after wrapping

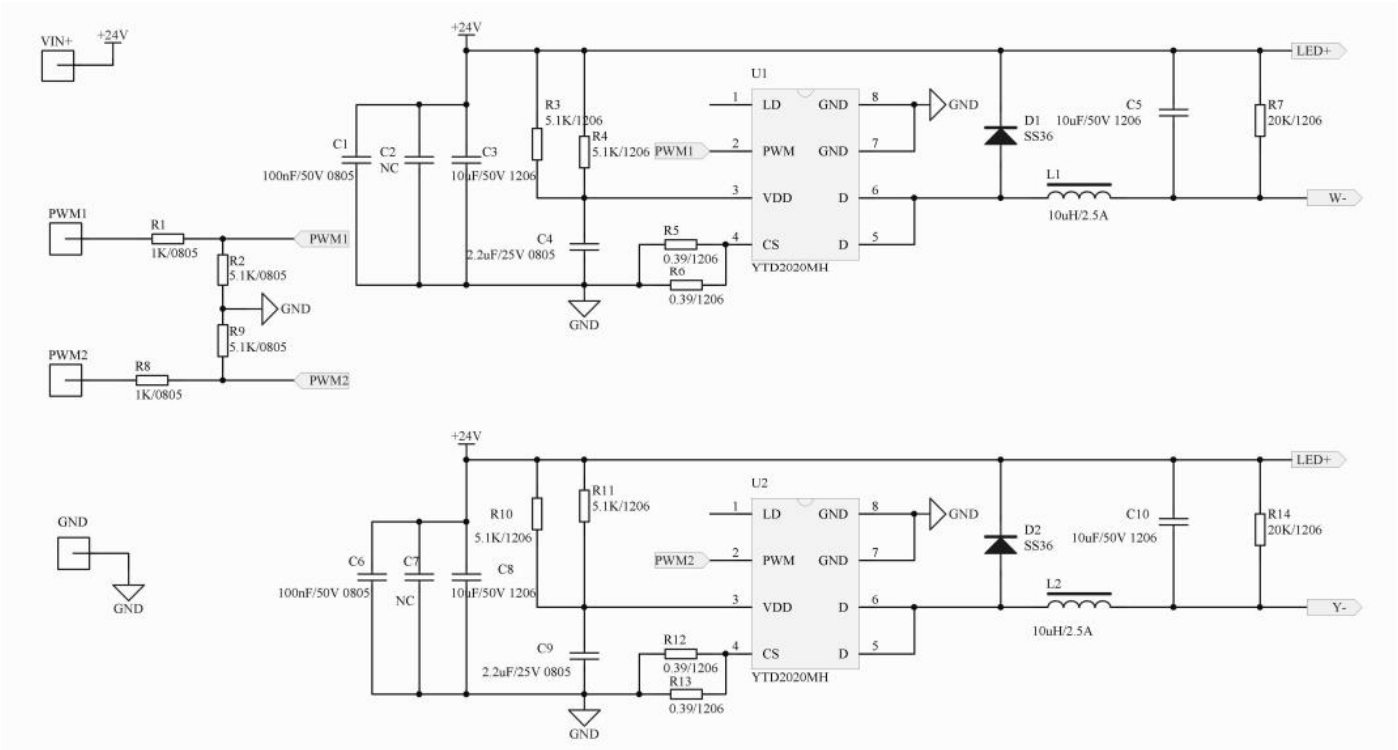
2). Removed Pins of Bobbin：NA

3). The transformer shall be immersed for 2H and baked for 2H to ensure that no magnetic core loosens and falls off.

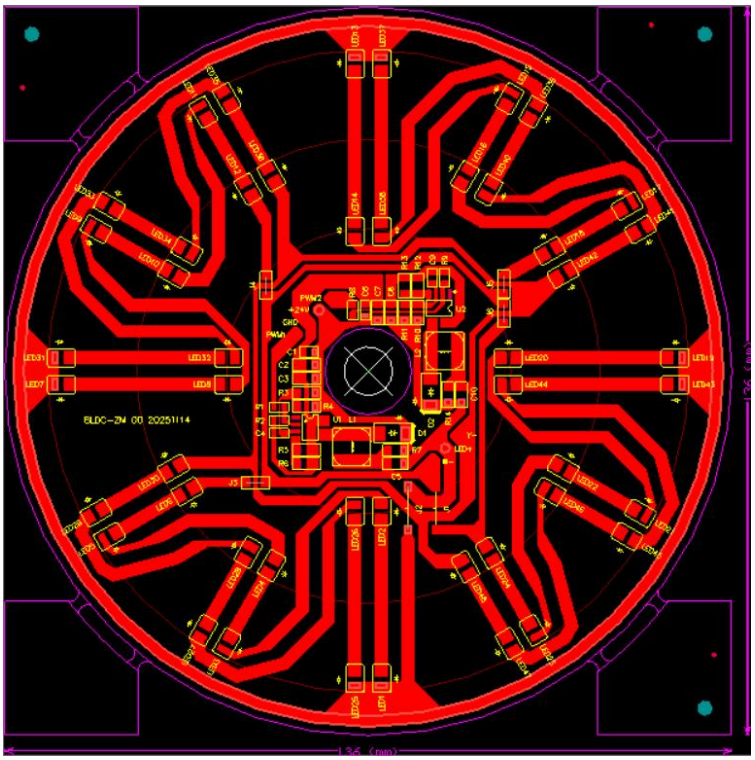
4). Keep the tin surface on the PIN pin to a minimum.

4 BLDC Ceiling Fan with Light

4.1 Schematic Diagram



4.2 PCB Layout

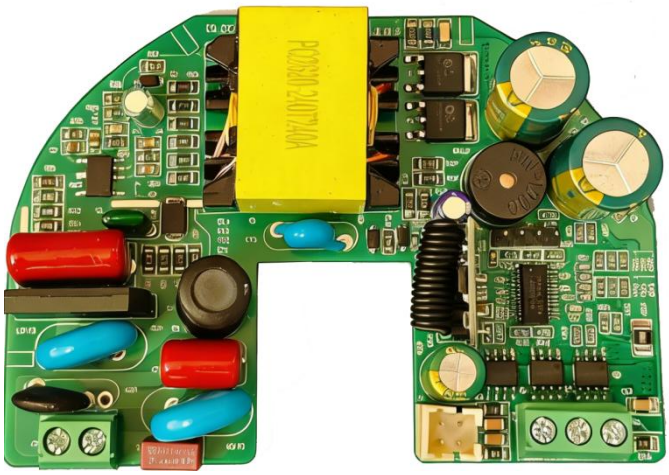


4.3 BOM List

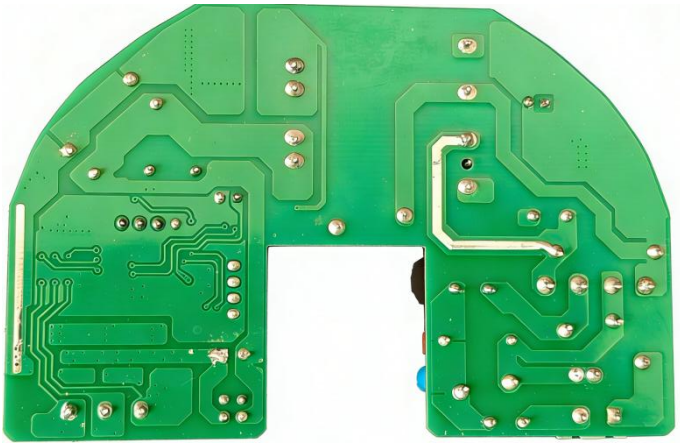
SMD Components(solder paste process)	1	Driver PCB	BLDC-ZM-00 Driver PCB_Aluminum substrate_Single panel_1 Pcs_panel size:136*136_T=1.6mm_OSP silk-screen_White oil and Black characters_CU=35um_Through hole cover oil_94-V0_RoHS		1	pcs
	2	SMD Schottky Diodes	SMD Schottky Diodes_SS36_SMA_60V_3A_50Mil_T/R_RoHS	D1,D2	2	pcs
	3	SMD Bead	SMD Bead_Z-2835-White Light-2B_2835_3V_0.15A_White_T/R_RoHS	LED1--LED24	24	pcs
	4	SMD Bead	SMD Bead_Z-2835-Warm White-2B_2835_3V_0.15A_Warm White_T/R_RoHS	LED25--LED48	24	pcs
	5	SMD Capacitor	SMD Capacitor_X7R_0805_50V_100nF±10%_RoHS	C1,C6	2	pcs
	6	SMD Capacitor	NC	C2,C7	0	pcs
	7	SMD Capacitor	SMD Capacitor_X7R_1206_50V_10uF±10%_RoHS	C3,C5,C8,C10	4	pcs
	8	SMD Capacitor	SMD Capacitor_X7R_0805_25V_2.2uF±10%_RoHS	C4,C9	2	pcs
	9	SMD Resistor	SMD Resistor_TF_0805_1/8W_150V_1k±5%_RoHS	R1,R8	2	pcs
	10	SMD Resistor	SMD Resistor_TF_0805_1/8W_150V_5.1k±5%_RoHS	R2,R9	2	pcs
	11	SMD Resistor	SMD Resistor_TF_1206_1/4W_200V_5.1k±5%_RoHS	R3,R4,R10,R11	4	pcs
	12	SMD Resistor	SMD Resistor_TF_1206_1/4W_200V_0.39Ω±1%_RoHS	R5,R6,R12,R13	4	pcs
	13	SMD Resistor	SMD Resistor_TF_1206_1/4W_200V_20k±5%_RoHS	R7,R14	2	pcs
	14	SMD Resistor	SMD Resistor_TF_1206_1/4W_200V_0Ω±5%_RoHS	J3,J4,J5,J6	4	pcs
	15	SMT Jumper	SMT Jumper_GT10.2_10-12A_0Ω±5%_RoHS	J1,J2	2	pcs
	16	SMD Lnductor	SMD Lnductor_CD75-100M_10uH_2.3A_SMD 7.8*7_T/R_RoHS	L1,L2	2	pcs
	17	SMD IC	SMD IC_YTD2020MH_SOP-8_T/R_RoHS	U1,U2	2	pcs
DIP Components	1	Terminal Line	Terminal Line_XHD2.5-2*02Y_2X2P_P2.5mm_1007-26AWG_200mm_RBYW_RoHS	/	1	pcs

5 LED Driver Picture and Size

- L*W: 97.6×66.6mm

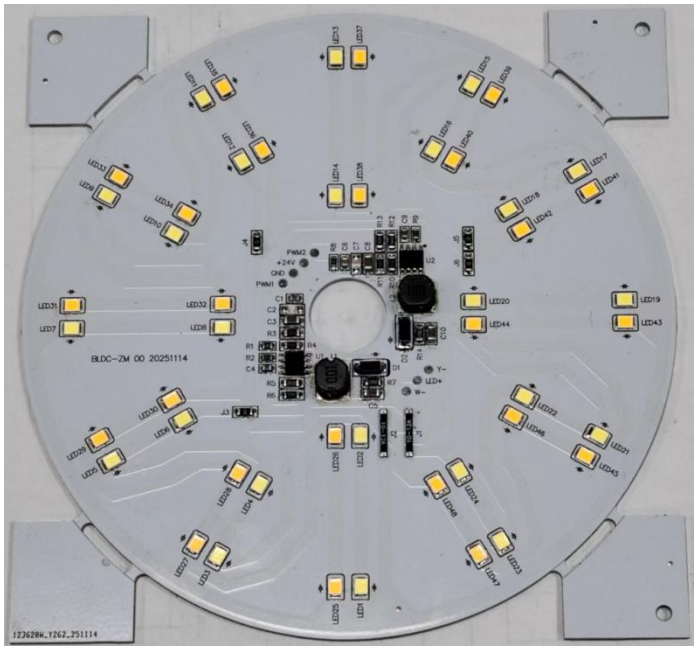


Top view

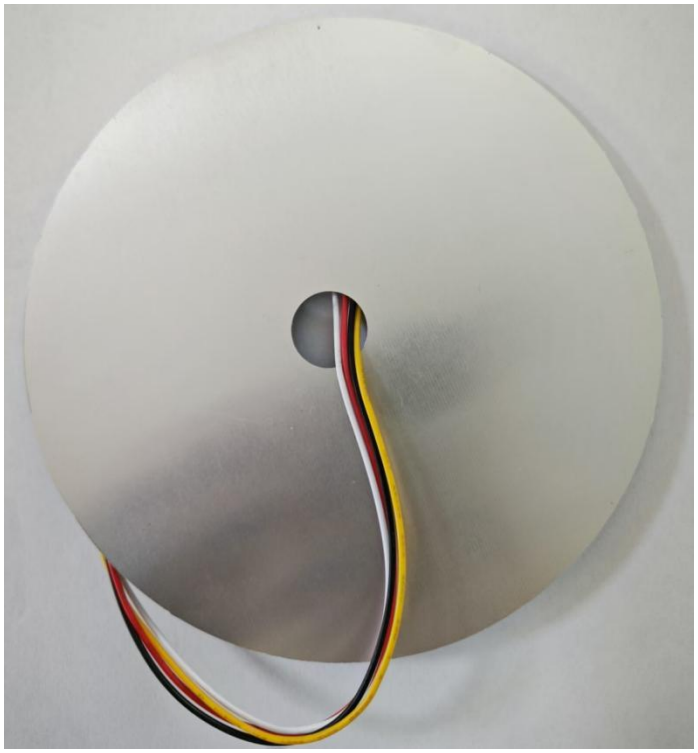


Bottom view

- **L*W**: **136×136mm**



Top view

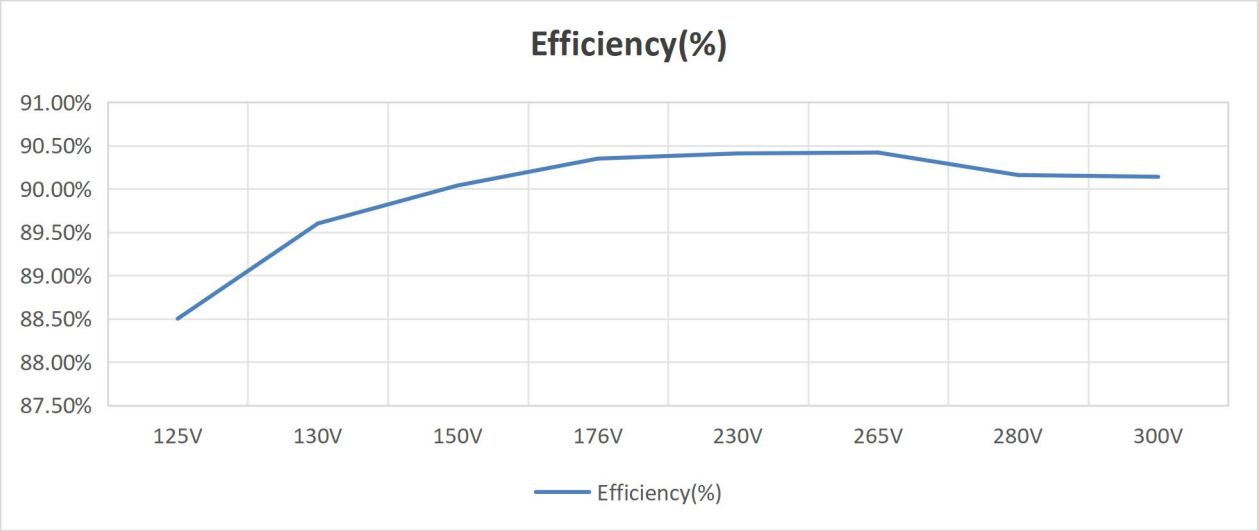


Bottom view

6 Detail Test Data

6.1 Test conditions: CV Mode

Vin（AC）	Hz	Iin（A）	Pin(W)	PF	Vout(V)	Iout(A)	Pout(W)	Efficiency(%)	THD
125V	60	0.535	66.32	0.989	23.68	2.5	59.925	88.50%	1.08%
130V	60	0.513	66.21	0.990	23.69	2.5	58.923	89.60%	1.07%
150V	50	0.440	65.88	0.992	23.72	2.5	59.320	90.04%	0.92%
176V	50	0.374	65.66	0.991	23.73	2.5	59.325	90.35%	1.06%
230V	50	0.290	65.56	0.982	23.78	2.5	59.450	90.41%	1.69%
265V	50	0.254	65.75	0.972	23.78	2.5	59.452	90.42%	2.61%
280V	50	0.242	65.91	0.967	23.77	2.5	59.425	90.16%	3.34%
300V	50	0.228	65.95	0.959	23.78	2.5	59.450	90.14%	4.68%
Note1.:The output voltage test is the driving board terminal voltage									



6.3 Output Voltage at no load

Vin(ac)	125V	130V	150V	176V	230V	265V	280V	300V
Output Voltage	24.48	24.49	24.48	24.44	24.21	23.96	23.91	23.88

Note1.:The output voltage test is the driving board terminal voltage

6.4 OCP Current Test

Vin(ac)	125V	130V	150V	176V	230V	265V	280V	300V
OCP(A)	3.25	3.30	3.37	3.70	3.96	4.08	4.20	4.27

Note1.:OCP passing point:1.59-1.64 times

6.5 Standby power at no load

Vin(ac)	125V	130V	150V	176V	230V	265V	280V	300V
Pin(W)	0.40	0.43	0.44	0.45	0.52	0.59	0.61	0.65

7 Temperature test @ Vout=24V 2.5A （Unit：℃）

Vin (ac)	Rectifier Bridge (DB1)	Drum Inductor (L1)	Output Capacito (EC1)	Transformer Wire (T1)	MBR20200CT (D6)	MBR20200CT （D1）	IC (U1)
110V	92.1	73.8	77.8	101.5	102.6	104.1	102.1
130V	85.8	68.6	77.1	99.6	101.8	103.4	93.8
150V	80.5	64.3	76.1	80.5	100.7	102.2	88.2
176V	75.7	61.1	76.0	97.2	100.8	102.2	84.1
230V	70.7	57.3	75.0	97.4	99.9	101.6	80.8
265V	69.2	56.5	75.6	99.6	100.9	102.5	81.6
280V	69.4	56.8	76.4	101.0	101.8	103.0	82.8
300V	69.3	56.8	76.9	102.9	102.3	104.4	84.1

Note1.The above data are measured when the bare drive is placed at the ambient temperature of 27℃.

8 Reliability Test

8.1 Open Circuit Protection: OK

8.2 Short Circuit Protection: OK

8.3 Surge Capability: 5 counts of **4 kV** for each ± polarity and 0, 90, 180 and 270 phase

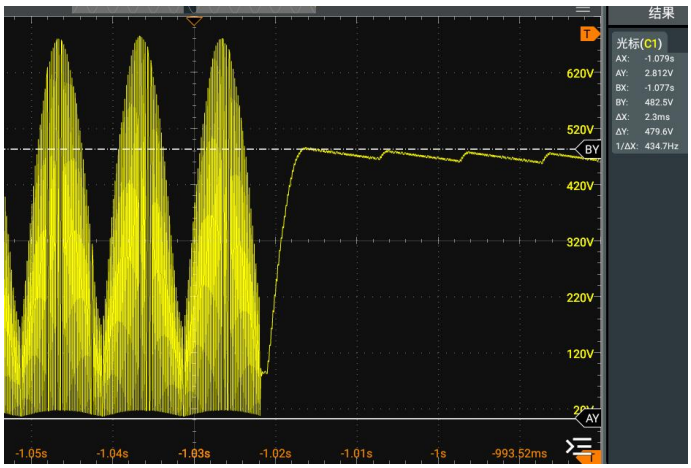
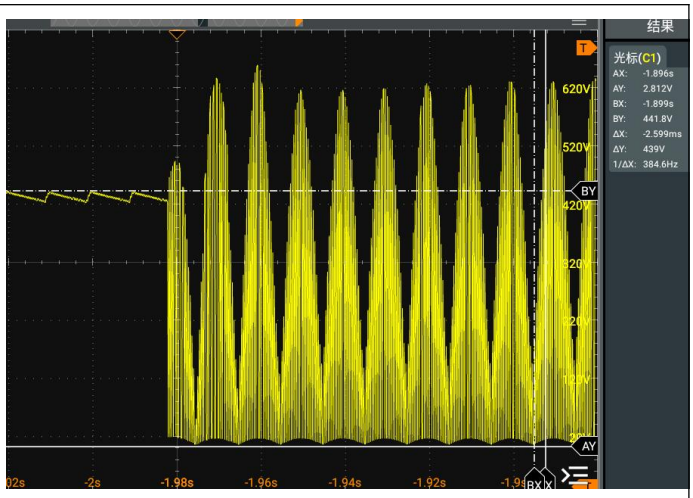
8.4 Component stress Test

CH1:V_{DS} (YT91003RH7), CH3: V_D（MBR20200D）

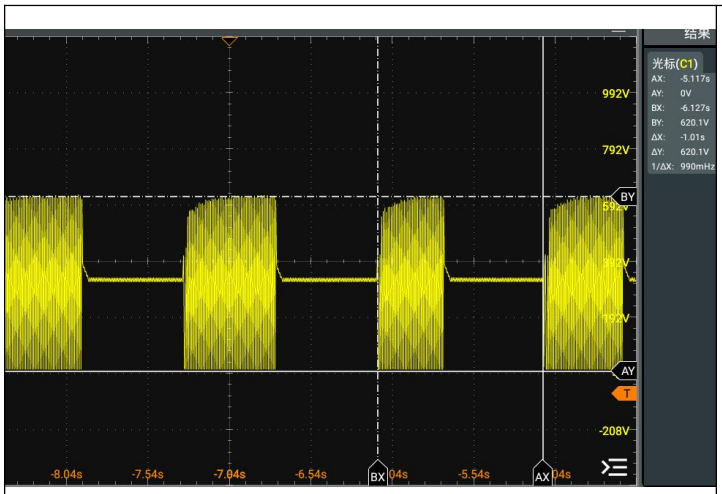
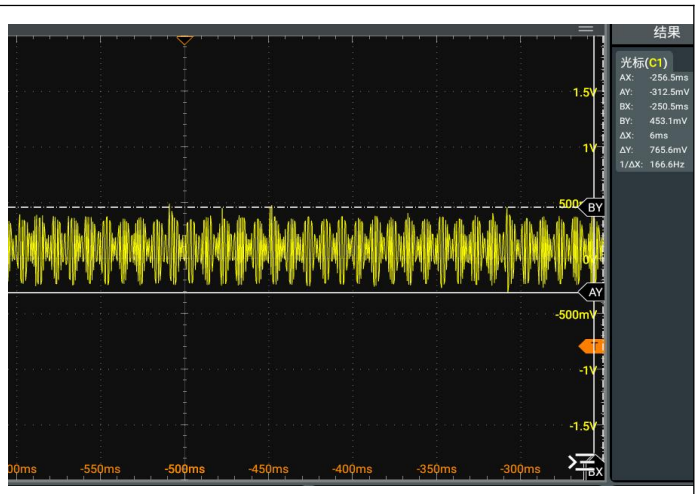
	
1#：Vin=300Vac,DC=24V 2.5A,V_{DS}≈625V	2#：Vin=300Vac,DC=24V 2.5A,V_D≈138.1V

8.5 Overvoltage protection and overload protection waveforms

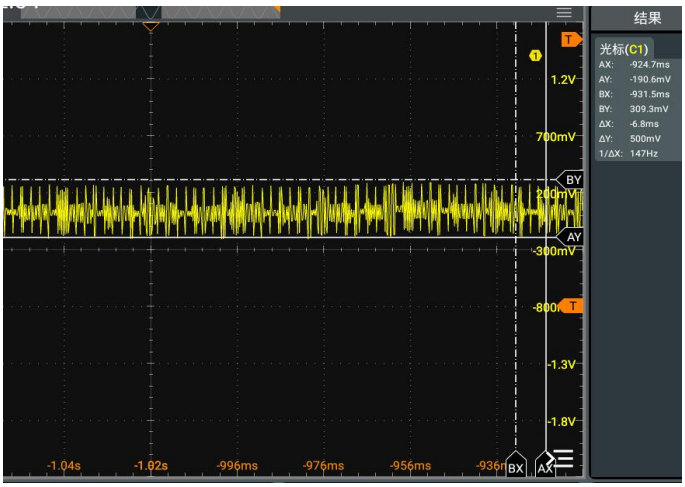
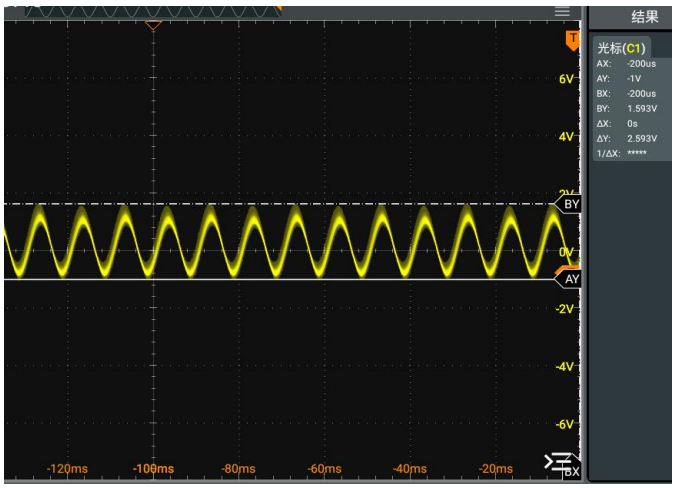
OVP TEST(YT91003RH7)

	
Trigger the OVP ： Vin=331Vac,DC=24V 2.5A	OVP over-voltage recovery operating voltage: Vin=306Vac,DC=24V 2.5A

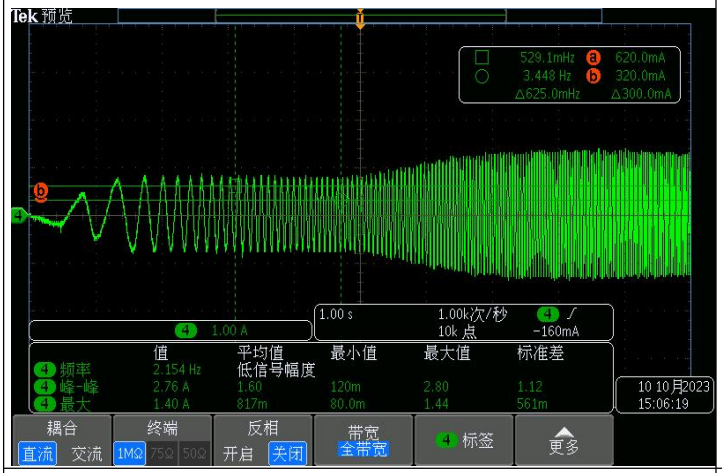
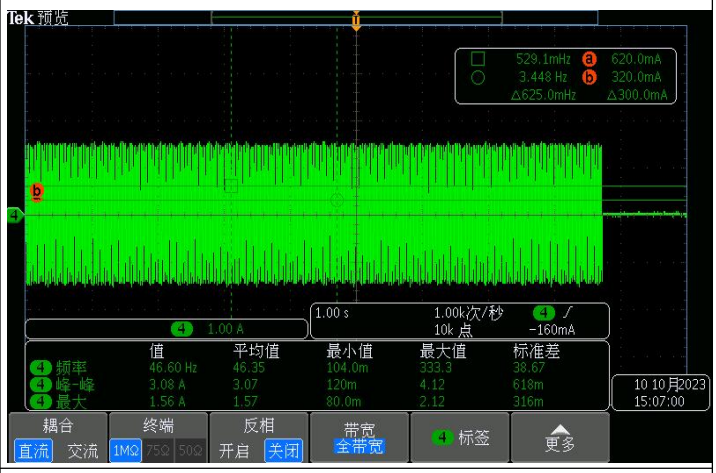
OLP TEST(YTD91003RH7)

	
overload protection ： Vin=230Vac,DC=24V 4.0A	Current detection resistance voltage ： Vin=230Vac,DC=24V 2.5A

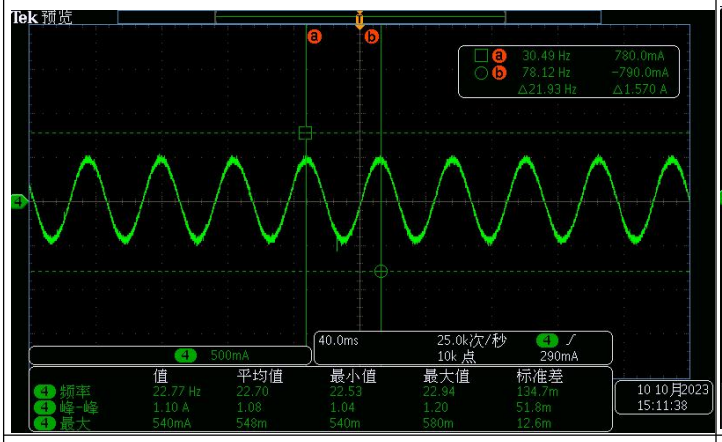
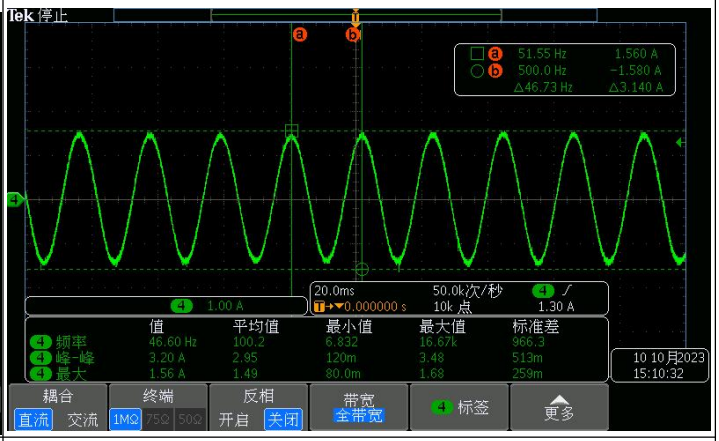
8.6 Output Ripple voltage

	
Typical Ripple Voltage of V_{OUT}=24V, I_{OUT}=0A@230V_{ac} NO load (Power frequency rippie)	Typical Ripple Voltage of V_{OUT}=24V, I_{OUT}=2.5A@230V_{ac} FULL load (Power frequency rippie)

8.7 Starting and braking waveforms

	
Motor starting waveform	Motor brake waveform

8.8 Fan file number waveform

	
First- gear 170RPM current waveform	Five-speed 350RPM current waveform

9 433MHZ remote control function description

Function Key	Description
On/Off	Power On/Off
LED	LED On/Off
L+	Light Brightness Up (Short/Long Press)
L-	Light Brightness Down (Short/Long Press)
Color	Color Temp Adjust (Short: 3 Modes / Long: Stepless)
Speed1 to 6	The BLDC controller has a power control feature that allows you to set the power to 1 to 6 steps, so we can achieve constant power operation.
Boost Mode	The Boost Mode allows the fan to operate beyond the power set by the button, i.e., the rated power.
F/R Mode	The reverse control feature allows you to run the fan in either direction. When Reverse button is pressed, the fan will run in reverse at power step 4. The maximum power in reverse mode will be limited to step 4, and the step 5, 6 & Boost buttons will be inactive, but buttons of steps 1 to 4 will be active.Press again to switch back to Forward Mode.
Timer 2/4/8 Hours	When the corresponding timer button is pressed, the fan enters the timing state, and after the corresponding set time, the fan enters the shutdown state.
Smart Mode	In Smart mode, the fan will reduce its power by a certain amount every hour starting from the current gear, until the power drops to Gear 1.
Toggle Switch Mode	In this mode, the fan power can be controlled by repeatedly toggling the main wall switch at 1-second intervals to achieve the desired power. This function is intended for scenarios where the remote control is not handy but power adjustment is still required. When the fan is turned on for the first time, it will operate at the previously set power. 1. Toggling 3 times, then the step 2 is activated, 2. Toggling 4 times, then the step 4 is activated, 3. Toggling 5 times, then the step Boost is activated).
Startup Time	The startup time of the fan should be ≤ 25 seconds under both no-load and full-load conditions.

10 Remote control alignmen

Code method: Turn ON the power switch, Within 10 seconds, the host beeps, press the "L-", "L+", "BOOST" key, hear the honey "beep" twice, that is the code is successful.

Note: Each host (straight blade fan) can only remember two address codes,Can recognize two remote controls at the same time,If a third address code pair appears, the address code of the first one is automatically excluded. After the two remote controls are successfully matched, if the third remote control is matched, the code value of the first remote control will be automatically excluded, and so on .

11 Affix

11.1 Affix1 Schematics

11.2 Affix2 BOM

11.3 Affix3 PCB

11.4 Affix4 Transformer specification

11.5 Affix5 IC Data shee

Version History

Version	Date	Description
A0	Dec. 2025	Draft
A1	Jan.2026	Release