



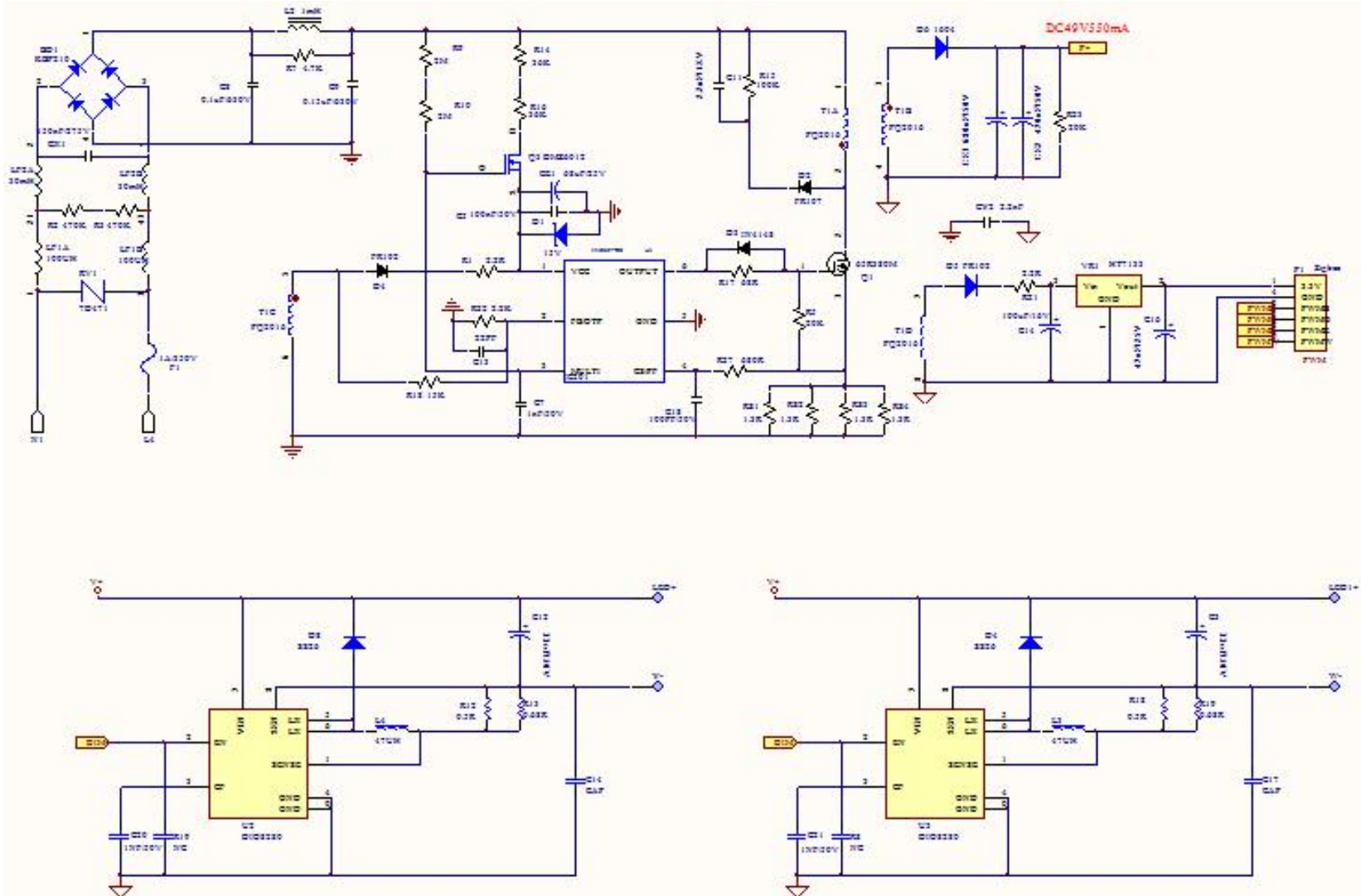
宇昊智能调光照明产品 30W 吸顶灯电源设计

**LED driver 26-42V0.7A_180V-264Vac_iW3627-
00+DIO8280-PQ2016**

1.Specification

Description		Symbol	Min	Typ	Max	Units	Comment	
Input								
Voltage		V_{IN}	180	230	264	V _{AC}	2 Wire	
Frequency		f_{LINE}		50		Hz		
Open-load Input Power (264V _{AC})						W		
Output								
Const Voltage	Output Voltage	V_{OUT_CV}				V	Measured at the PCB connector	
	Output Current	I_{OUT_CV}				A		
Const Current	Output Voltage	V_{OUT_CV}		42		V	Min Vout is depend on Vcc	
	Output Current	I_{OUT_CV}		700		mA		
Total Output Power								
Continuous Output Power		P_{OUT}		30		W		
Over Current Protection		I_{OUT_MAX}				A	Auto-restart	
Efficiency		η	86			%	Measured at end of PCB@230V	
Power Fact		PF	0.9				Harmonic meet IEC61000-3-2	
Turn on Delay Time						Sec		
Conducted EMI			Meets EN55015B					
Hi-pot test						KV		
Operation temperature		T_{opr}		40		° C	Free convection, sea level	

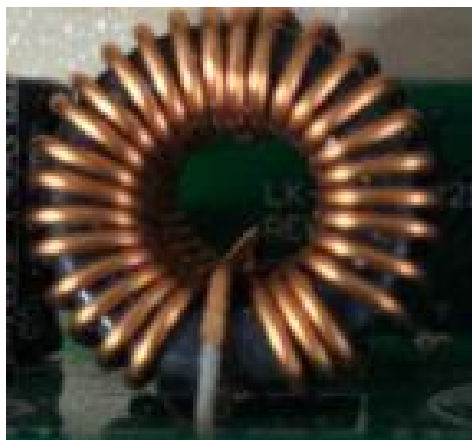
2.Schematics--with Compensation



3.Circuit Board Photograph



4. Inductor L3,L4



Ferrite core : Fe-Zn T16*6*6

Wire gauge: 0.5mm, 30Turns

Inductance @10kHz, 1V: 47uH +/-10%

DCR: 0.12 OHM +/-20%

5.Constant Voltage and Efficiency

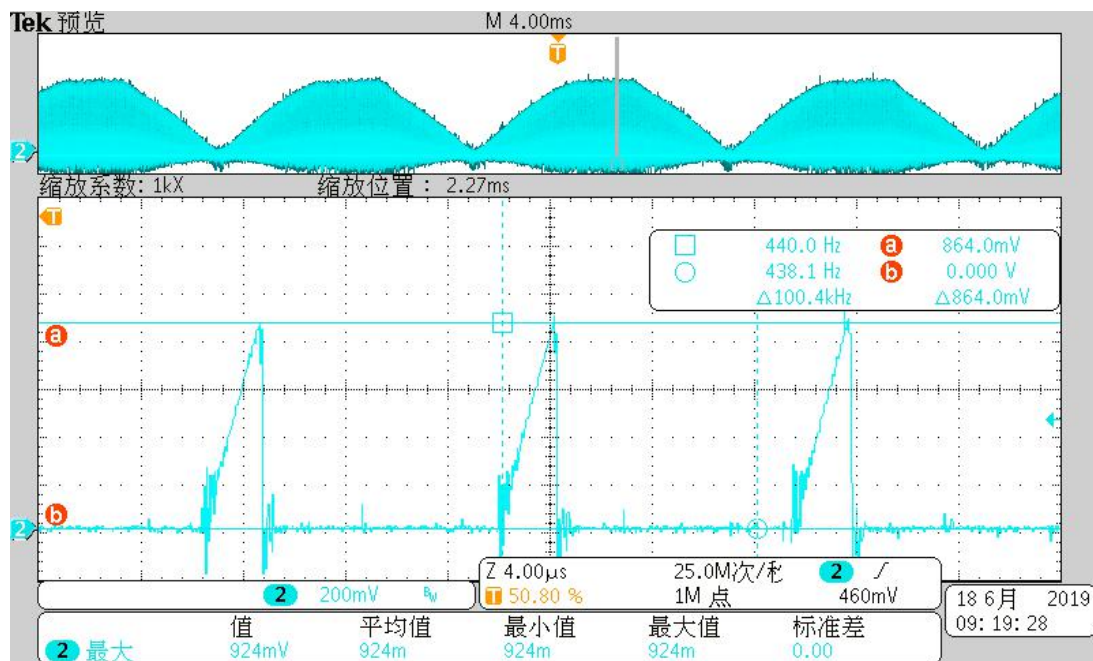
VIN	PIN	VOUT	IOUT (max)	PF	EFF (%)
VAC (V)	W	V	mA		
180	35.65	42	732	0.98	86.23
200	35.5	42	732	0.98	86.6
220	35.52	42	728	0.98	86.08
240	35.5	42	729	0.96	86.24
264	35.6	42	730	0.96	86.12

6. Transformer Flux Density

($N_p=42T_s$, $L_m=0.2mH$, $A_e=62mm$ PQ2016)

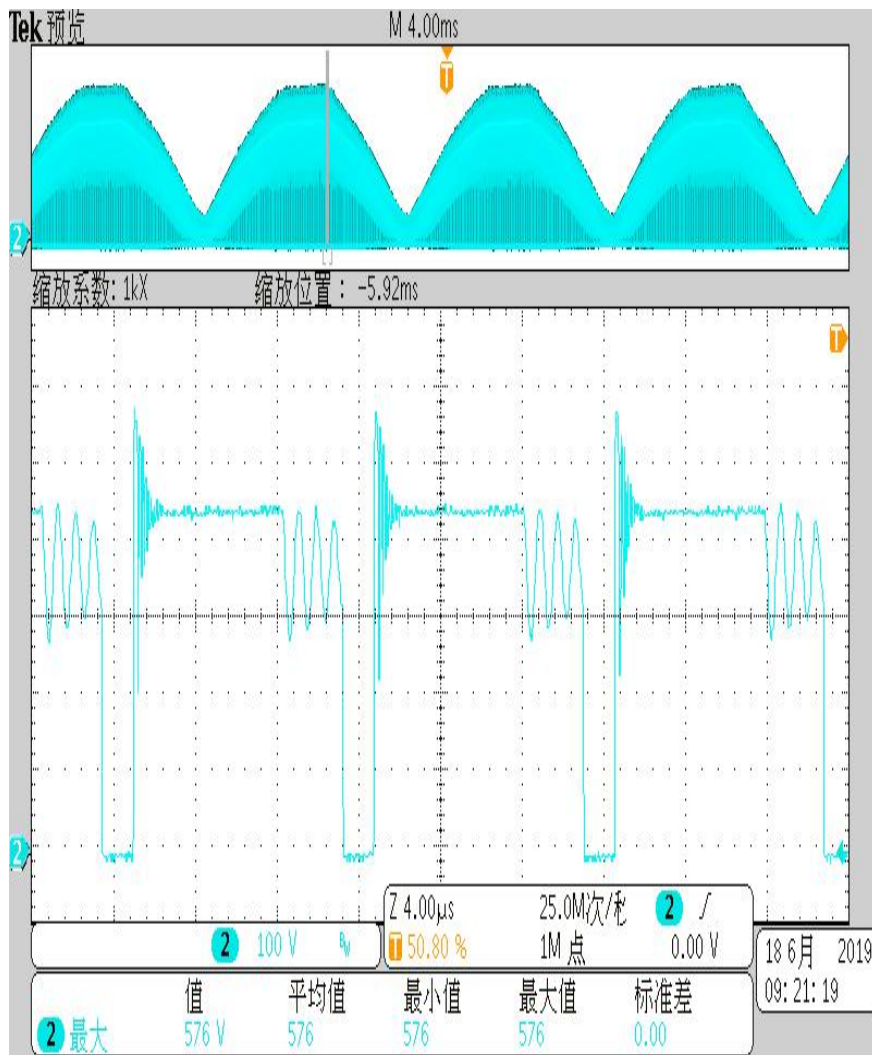
I_p is monitored at
180Vac and 42V0.73A
load

$I_p=2.68A$



$$B_{MAX} = I_p * L_m / (N_p * A_e)$$
$$= (2680 * 0.2) / (42 * 62)$$
$$= \underline{0.205} \text{ Tesla}$$

7.Vds Waveform



Test Condition:

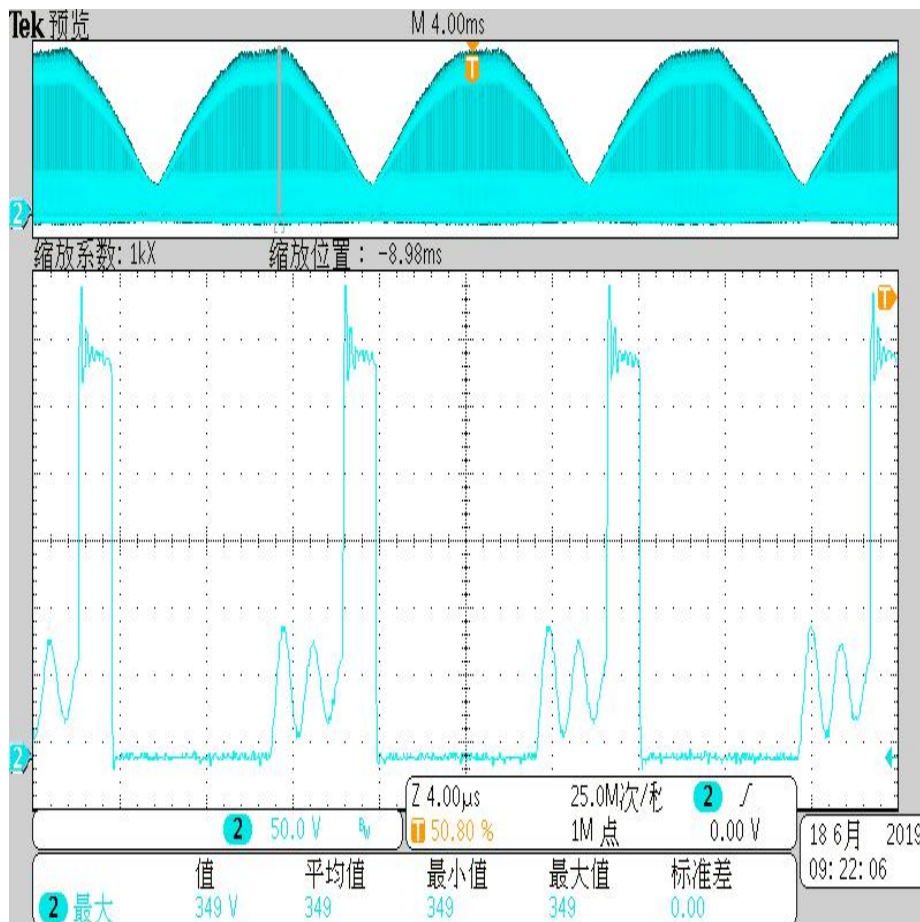
$V_{IN}=264V_{AC}$, Output: 42V0.73A

Result:

$V_{DS_MAX}=576V$

MOSFET:65R360M

8.Output rectifier waveform



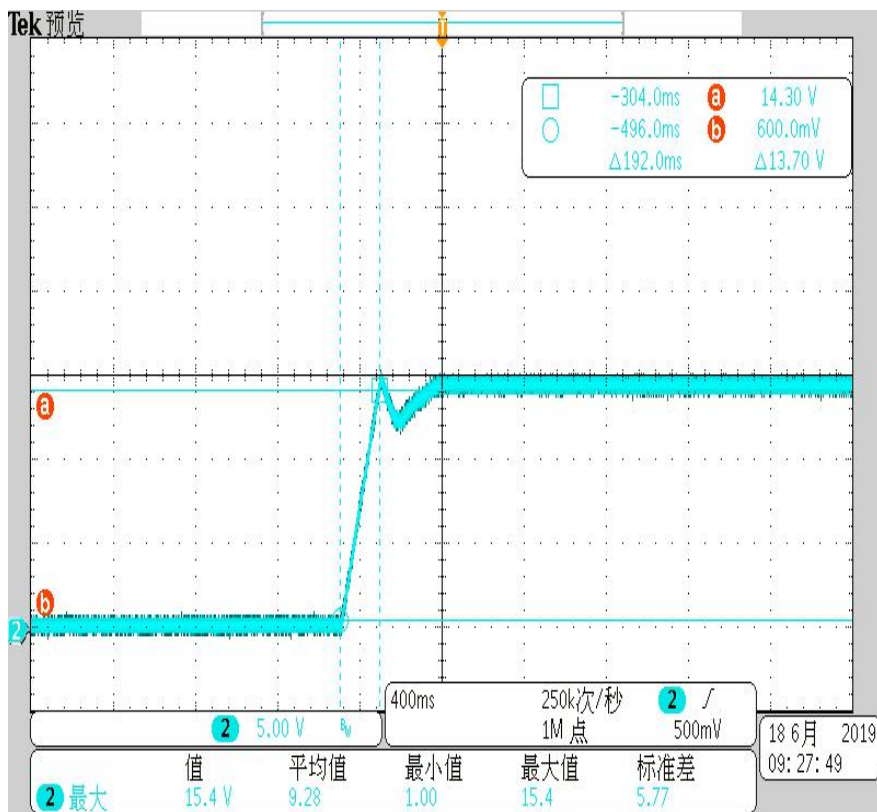
Test Condition:
 $V_{IN}=264VAC$,
Output:42V/0.73A

Result:

$V_{R\ MAX}=349V$

Output rectifier
diode:MUR1640FCT

9.VCC



Test Condition:

$V_{IN}=230VAC$,
Output:42V/0.73A

VCCmax=15.4V

此电源初级采用DIALOG IW3627-00设计，PF值高达0.98以上，低THD谐波，次级采用双路DIO8280 DC-DC设计，有良好的PWM调光兼容性调光平顺无阶越。并且可支持MCU、蓝牙、2.4G等智能芯片的PWM调光控制。