



General description

This module is single stage, with high power factor correction (PFC), and designed for 12-18W isolation bulb lamp and spot light. This device utilizes primary side reaction, reduce reference TL431, opt coupler and other components, which suitable for universal voltage to kinds of LED lighting products.

Feature

1. High PFC, high efficiency
2. Current accuracy 3%
3. Ultra-fast start
4. Single stage APFC, very few components, small size
5. Multi-protection function, high reliability

Parameter

Input voltage: AC85V-265V

Output voltage: DC24-30V $\pm 10\%$

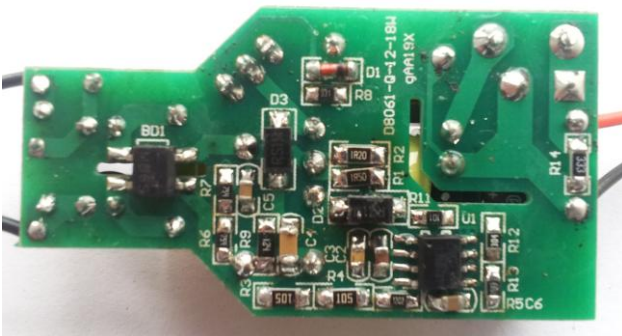
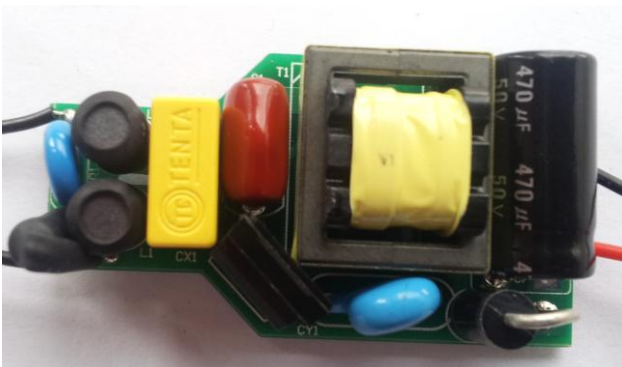
Input current: 477mA $< \pm 3\%$

PF > 0.9

THD $< 20\%$

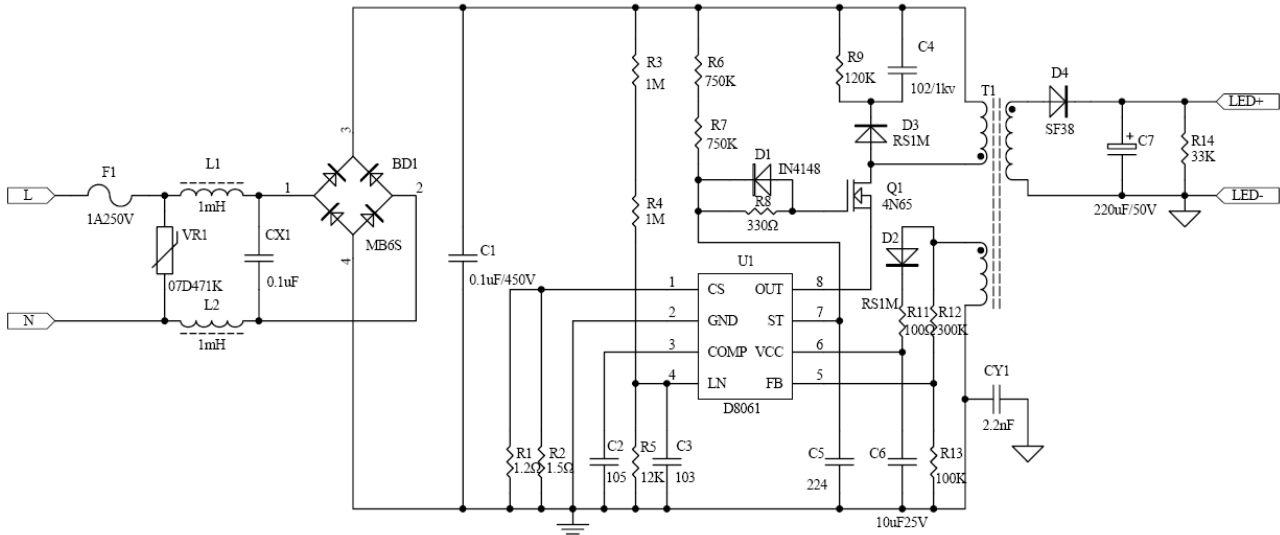
Size : 52mm*28mm*20mm

Module Picture





Application schematic diagram



BOM List

NO.	Item	Description	QTY	Unit	Place
1	SMD resistor	RES-SMD-1206-1.2Ω±1%-0.25W	1	Pcs	R1
2	SMD resistor	RES-SMD-1206-1.5Ω±1%-0.25W	1	Pcs	R2
3	SMD resistor	RES-SMD-0805-100Ω±1%-0.125W	1	Pcs	R11
4	SMD resistor	RES-SMD-1206-33K±5%-0.25W	1	Pcs	R14
5	SMD resistor	RES-SMD-1206-120K±5%-0.25W	1	Pcs	R9
6	SMD resistor	RES-SMD-0805-750K±5%-0.125W	2	Pcs	R6.R7
7	SMD resistor	RES-SMD-1206-1M±5%-0.25W	2	Pcs	R3.R4
8	SMD resistor	RES-SMD-0805-330Ω±5%-0.125W	1	Pcs	R8
9	SMD resistor	RES-SMD-0805-12K±1%-0.125W	1	Pcs	R5
10	SMD resistor	RES-SMD-0805-100K±1%-0.125W	1	Pcs	R13
11	SMD resistor	RES-SMD-0805-300K±1%-0.125W	1	Pcs	R12



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D8061 12-18W

12	SMD capacitor	CAP-SMD-0805-X7R-10uF-±10%-25V	1	Pcs	C6
13	SMD capacitor	CAP-SMD-0805-X7R-1uF-±10%-25V	1	Pcs	C2
14	SMD capacitor	CAP-SMD-0805-X7R-220NF-±10%-25V	1	Pcs	C5
15	SMD capacitor	CAP-SMD-0805-X7R-10NF-±10%-50V	1	Pcs	C3
16	SMD capacitor	CAP-SMD-1206-X7R-1NF-±10%-1kV	1	Pcs	C4
17	SMD IC	D8061 SOP-8	1	Pcs	U1
18	SMD diode	0.2A-75V-1N4148 LL-34	1	Pcs	D1
19	SMD diode	DIO-FAS-SMA-1A-1000V-RS1M	1	Pcs	D2.D3
20	SMD rectifier bridge	DIO-REC-SMA-0.6A-600V MB6S	1	Pcs	BD1
21	DIP diode	SF38 [3A600V]	1	Pcs	D4
22	DIP MOSFET	4N65 package TO-220	1	Pcs	Q1
23	Y capacitor	CAP-Y2-2200PF-±20%-3000V	1	Pcs	CY1
24	CBB capacitor	0.1uF 450V pitch 10mm	1	Pcs	C1
25	Electrolytic capacitor	CAP_ELE-220uF-50V 10X15mm	1	Pcs	C7
26	Fuse	FUS-AXI-SB-1A-250V-3.6mm*10mm	1	Pcs	F1
27	MOV	VAR-Φ7-470V-7D471K	1	Pcs	VR1
28	Safety capacitor	CAP-X2-0.1UF-±10%-275VAC	1	Pcs	CX1
29	DR core	1mH 6mm*9mm	2	Pcs	L1.L2
30	Transformer	EE19 (check the drawing)	1	Pcs	T1
31	Two side PCB	Length 52mm width 28mm	1	Pcs	



Test report

NO.	Input voltage (V)	Output voltage (V)	Output current (mA)	PF	Output power (W)	Input power (W)	Efficiency (%)	Average Eff. (%)	Output voltage range (V)
No.	V _{IN} (VAC)	V _{OUT} (V)	I _{OUT} (mA)	PF	P _{OUT} (W)	P _{IN} (W)	Eff. (%)	Average Eff. (%)	Range
1#	90	30.00	475	0.992	14.25	16.93	84.17%	86.66%	24-30V
	110	30.00	476	0.989	14.28	16.57	86.18%		
	150	30.00	475	0.983	14.25	16.31	87.37%		
	180	30.00	473	0.978	14.19	16.23	87.43%		
	220	30.00	473	0.968	14.19	16.19	87.65%		
	265	30.00	472	0.955	14.16	16.25	87.14%		
	90	24.00	466	0.990	11.18	13.22	84.60%	86.17%	24-30V
	110	24.00	466	0.986	11.18	13.04	85.77%		
	150	24.00	465	0.979	11.16	12.87	86.71%		
	180	24.00	464	0.972	11.14	12.83	86.80%		
	220	24.00	465	0.960	11.16	12.85	86.85%		
	265	24.00	465	0.942	11.16	12.93	86.31%		
2#	90	30.00	477	0.993	14.31	17.02	84.08%	86.44%	24-30V
	110	30.00	478	0.992	14.34	16.85	85.10%		
	150	30.00	477	0.986	14.31	16.42	87.15%		
	180	30.00	475	0.979	14.25	16.27	87.58%		
	220	30.00	472	0.972	14.16	16.17	87.57%		
	265	30.00	470	0.960	14.10	16.18	87.14%		
	90	24.00	468	0.992	11.23	13.45	83.51%	85.88%	24-30V
	110	24.00	468	0.989	11.23	13.12	85.61%		
	150	24.00	465	0.983	11.16	12.91	86.44%		



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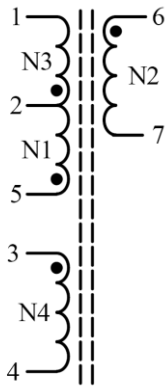
	180	24.00	464	0.976	11.14	12.82	86.86%		
	220	24.00	462	0.964	11.09	12.81	86.56%		
	265	24.00	461	0.948	11.06	12.82	86.30%		
3#	90	30.00	464	0.997	13.92	16.55	84.11%	86.67%	24-30V
	110	30.00	467	0.988	14.01	16.25	86.22%		
	150	30.00	467	0.983	14.01	16.05	87.29%		
	180	30.00	467	0.978	14.01	16.00	87.56%		
	220	30.00	467	0.969	14.01	15.99	87.62%		
	265	30.00	467	0.956	14.01	16.06	87.24%		
	90	24.00	457	0.989	10.97	12.99	84.43%	86.13%	24-30V
	110	24.00	458	0.986	10.99	12.84	85.61%		
	150	24.00	458	0.979	10.99	12.69	86.62%		
	180	24.00	459	0.972	11.02	12.67	86.95%		
	220	24.00	459	0.960	11.02	12.70	86.74%		
	265	24.00	460	0.943	11.04	12.77	86.45%		
4#	90	30.00	483	0.993	14.49	17.33	83.61%	86.26%	24-30V
	110	30.00	488	0.990	14.64	17.19	85.17%		
	150	30.00	488	0.986	14.64	16.82	87.04%		
	180	30.00	487	0.980	14.61	16.74	87.28%		
	220	30.00	487	0.972	14.61	16.71	87.43%		
	265	30.00	487	0.961	14.61	16.79	87.02%		
	90	24.00	476	0.991	11.42	13.72	83.27%	85.62%	24-30V
	110	24.00	477	0.988	11.45	13.43	85.24%		
	150	24.00	476	0.981	11.42	13.25	86.22%		
	180	24.00	476	0.975	11.42	13.23	86.35%		
	220	24.00	477	0.964	11.45	13.25	86.40%		
	265	24.00	479	0.949	11.50	13.33	86.24%		



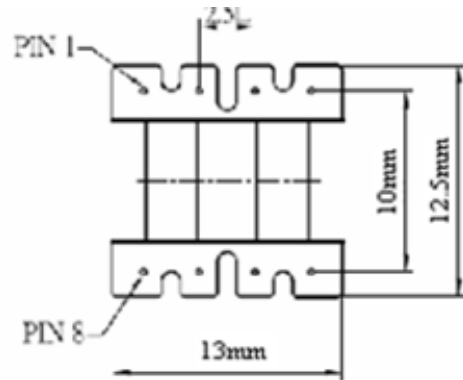
Transformer specification

Frame: EE19 horizontal 5+5P

magnetic core : PC40



Schematic



inferior view

Winding method (from frame to outside)

Layer	PIN	Wire diameter	Turns	Inductance
N1	5 PIN—2 PIN	φ0.3mm, close winding	50T	Primary side PIN5-PIN1 Inductance 700uH (1KHz test) Accuracy is ±5%
Insulated tape	---	Tape	2T	
N2	6 PIN—7 PIN	φ0.35mm, close winding	44T	
Insulated tape	---	Tape	2T	
N3	2 PIN—1 PIN	φ0.3mm, close winding	50T	
Insulated tape	---	Tape	2T	
N4	3 PIN—4 PIN	φ0.2mm, close winding	18T	
Insulated tape	---	Tape	2T	

Please cut the extra PIN after winding

Note: To wrap along the winding, please pay attention on star PIN and wingding direction