



General Description

This module is single stage, with high power factor correction (PFC), and designed for 8-12W isolation bulb lamp and spot light. It is suitable for kinds of residential LED fixtures in universal voltage. This primary side reaction is without TL4313, opto coupler and other components. Therefore, the system cost and size can be minimized.

Feature

1. high PFC, high efficiency
2. current precision <3%
3. ultra-fast start
4. single stage APFC, few component, small size
5. multi-protection function, high reliability

Parameter

Input voltage AC85V-265V

Output voltage DC27-40V $\pm 10\%$

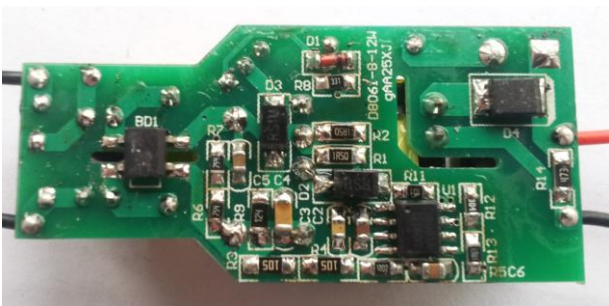
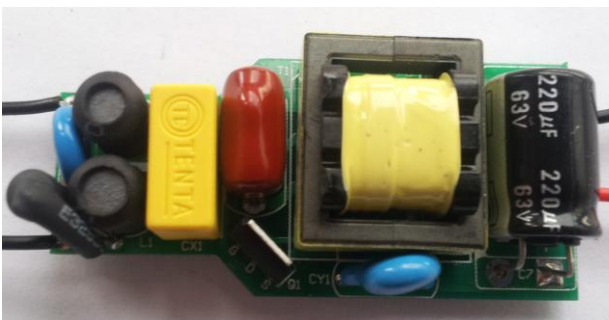
Output current 300mA $< \pm 3\%$

PF > 0.9

THD $< 20\%$

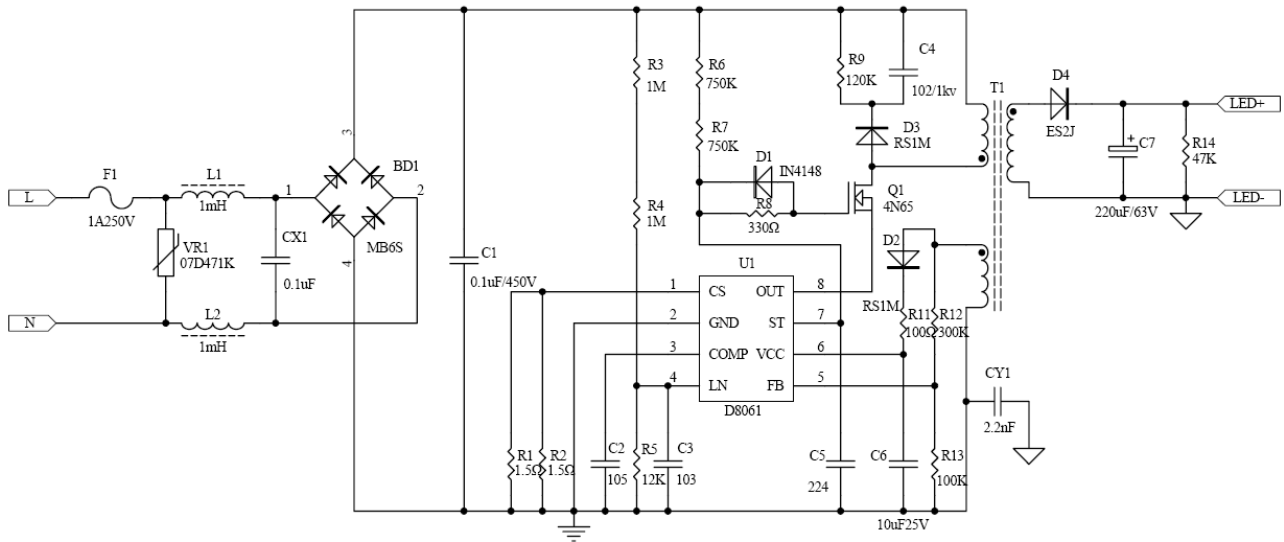
Size : 52mm*24mm*18mm

Module picture





Application schematic diagram



BOM list

NO.	Item	Description	QTY	Unit	Place
1	SMD resistor	RES-SMD-1206-1.5Ω±1%-0.25W	2	Pcs	R1.R2
2	SMD resistor	RES-SMD-1206-47K±5%-0.25W	1	Pcs	R14
3	SMD resistor	RES-SMD-1206-120K±5%-0.25W	1	Pcs	R9
4	SMD resistor	RES-SMD-1206-1MΩ±5%-0.25W	2	Pcs	R3.R4
5	SMD resistor	RES-SMD-0805-100Ω-5±%-0.125W	1	Pcs	R11
6	SMD resistor	RES-SMD-0805-330Ω-5±%-0.125W	1	Pcs	R8
7	SMD resistor	RES-SMD-0805-12K±1%-0.125W	1	Pcs	R5
8	SMD resistor	RES-SMD-0805-100K±1%-0.125W	1	Pcs	R13
9	SMD resistor	RES-SMD-0805-300K±1%-0.125W	1	Pcs	R12
10	SMD resistor	RES-SMD-0805-750K±5%-0.125W	2	Pcs	R6.R7
11	SMD capacitor	CAP-SMD-1206-X7R- 1nF-10%-1KV	1	Pcs	C4
12	SMD capacitor	CAP-SMD-0805-X7R- 1uF-10%-25V	1	Pcs	C2
13	SMD capacitor	CAP-SMD-0805-X7R- 10uF-10%-25V	1	Pcs	C6



14	SMD capacitor	CAP-SMD-0805-X7R- 10nF-10%-25V	1	Pcs	C3
15	SMD capacitor	CAP-SMD-0805-X7R-220nF-10%-25V	1	Pcs	C5
16	SMD IC	D8061 SOP8	1	Pcs	U1
17	SMD rectifier bridge	DIO-REC-SMA-0.6A-600V MB6S	1	Pcs	BD1
18	SMD diode	DIO-FAS-SMA-1A-1000V-RS1M	2	Pcs	D2.D3
19	SMD diode	ES2J [2A600V]	1	Pcs	D4
20	SMD diode	FAS-SMA-0.2A-75V-1N4148 LL-34	1	Pcs	D1
21	DIP MOSFET	4N65 package TO-251 [4A650V]	1	Pcs	Q1
22	CBB capacitor	0.1uF 450V pitch 10mm	1	Pcs	C1
23	Electrolytic capacitor	CAP_ELE-220uF-63V 10X17mm	1	Pcs	C7
24	Fuse	FUS-AXI-SB-1A-250V-3.6mm*10mm	1	Pcs	F1
25	MOV	VAR-Φ7-470V-7D471K	1	Pcs	VR1
26	DR core	1mH 6mm*9mm	2	Pcs	L1.L2
27	Y capacitor	CAP-X2-2200PF±20%-3KV	1	Pcs	CY1
28	Safety capacitor	CAP-X2-0.1UF±20%-275VAC	1	Pcs	CX1
29	Plug-in transformer	EE19 -5+5 [check the drawing]	1	Pcs	T1
30	Double side PCB	Length 52mm width 24mm	1	Pcs	



Test report

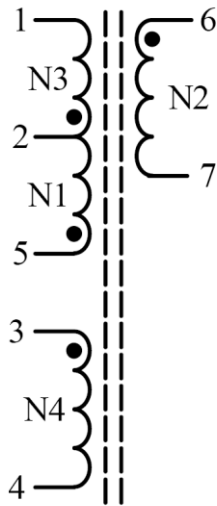
NO.	Input voltage (V)	Output voltage (V)	Output current (mA)	PF	Output power (W)	Input power (W)	Efficiency (%)	Average Eff. (%)	range (V)
1#	90	40.00	295	0.997	11.80	13.92	84.77%	87.11%	27-40V
	110	40.00	295	0.992	11.80	13.75	85.82%		
	150	40.00	295	0.984	11.80	13.38	88.19%		
	180	40.00	294	0.975	11.76	13.32	88.29%		
	220	40.00	293	0.958	11.72	13.30	88.12%		
	265	40.00	292	0.933	11.68	13.35	87.49%		
	90	27.00	284	0.992	7.67	9.09	84.36%	86.23%	27-40V
	110	27.00	284	0.987	7.67	8.90	86.16%		
	150	27.00	283	0.973	7.64	8.80	86.83%		
	180	27.00	283	0.958	7.64	8.79	86.93%		
	220	27.00	284	0.928	7.67	8.83	86.84%		
	265	27.00	284	0.883	7.67	8.89	86.25%		
2#	90	40.00	301	0.995	12.04	14.20	84.79%	87.56%	27-40V
	110	40.00	304	0.989	12.16	13.97	87.04%		
	150	40.00	304	0.982	12.16	13.82	87.99%		
	180	40.00	303	0.973	12.12	13.73	88.27%		
	220	40.00	303	0.956	12.12	13.71	88.40%		
	265	40.00	305	0.931	12.20	13.73	88.86%		
	90	27.00	295	0.989	7.97	9.33	85.37%	87.18%	27-40V
	110	27.00	296	0.985	7.99	9.19	86.96%		
	150	27.00	296	0.971	7.99	9.10	87.82%		
	180	27.00	296	0.956	7.99	9.08	88.02%		
	220	27.00	296	0.925	7.99	9.11	87.73%		
	265	27.00	296	0.881	7.99	9.17	87.15%		



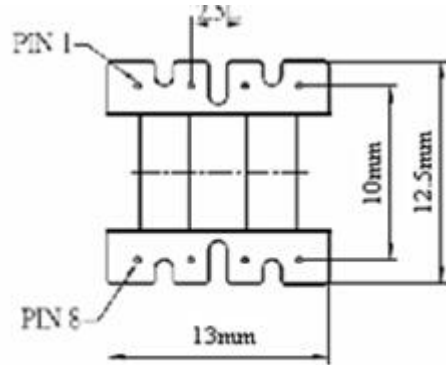
Transformer description

Frame: EE19 horizontal 5+5P

magnetic core : PC40



Schematic



Winding method (from frame to outside)

Layer	PIN	Wire diameter	Turns	Inductance
N1	5 PIN—2 PIN	φ0.23mm, close winding	65T	Primary side PIN5-PIN1 Inductance 1mH (1KHz test) Accuracy is ±5%。
Insulated tape	---	Tape	2T	
N2	6 PIN—7 PIN	φ0.35mm, close winding	82T	
Insulated tape	---	Tape	2T	
N3	2 PIN—1 PIN	φ0.23mm, close winding	65T	
Insulated tape	---	Tape	2T	
N4	3 PIN—4 PIN	φ0.2mm, close winding	27T	
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