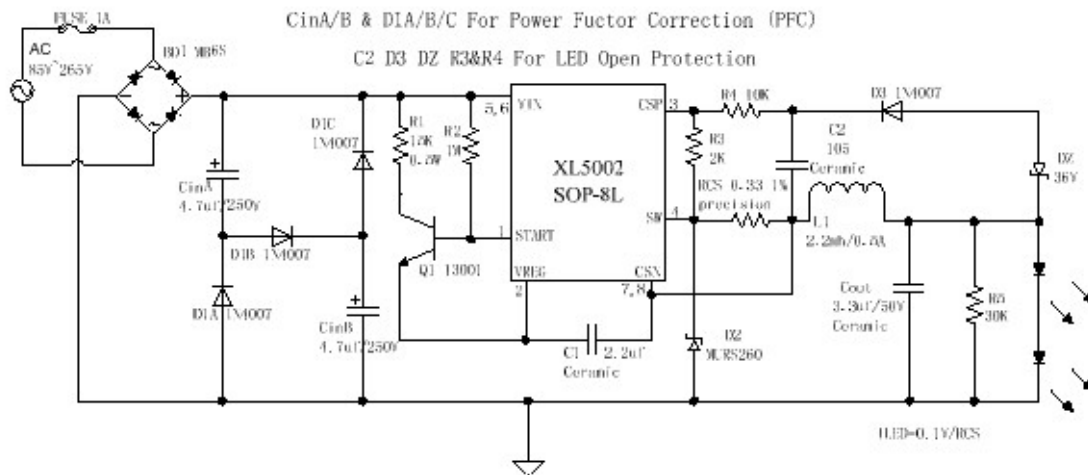


XL5002-DEMO1-PFC: XL5002 DEMO board manual with PFC

Introduction

The XL5002 is a monolithic high voltage switching regulator with PFM that is specifically designed to operate from a rectified 85V~265V AC mains supply. The XL5002 is a high efficiency LED driver switching regulator. The LED string is driven at DC constant current rather than constant voltage, thus providing constant light output and enhanced reliability. Provides the necessary feature to implement LED driver with a minimal external component needed. Internally implemented function include, a low start up current and operating current reducing the power dissipation on start-up resistor, Built-in UVLO function detected the LED output and short circuit occur.Support Output LED open. Output constant current drive series 1~5*1 W LED.

Application Circuit



XL5002 Typical Application with PFC electrolytic capacitor(Mains supply 1~5W LED saving energy Lamp)

Pin Description

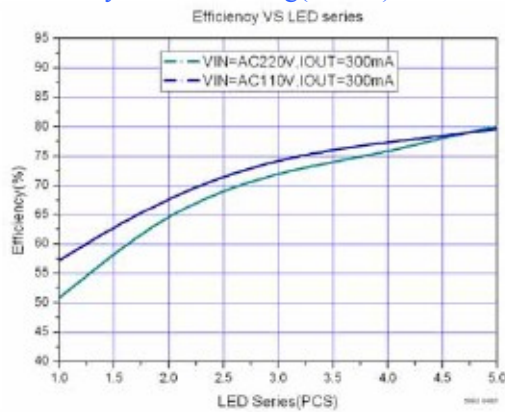
Number	Pin Name	Description
1	START	Internal start up Pin.
2	VREG	Internal Voltage Regulation Pin. (The VREG is about 8V)
3	CSP	Current Sense Positive Pin. (The current sense voltage is 0.1V)
4	SW	Output Switching Pin
5、6	VIN	Input high voltage Pin. (Operation voltage 100V~400V)
7、8	CSN	Current Sense Negative Pin.

Bill of Materials

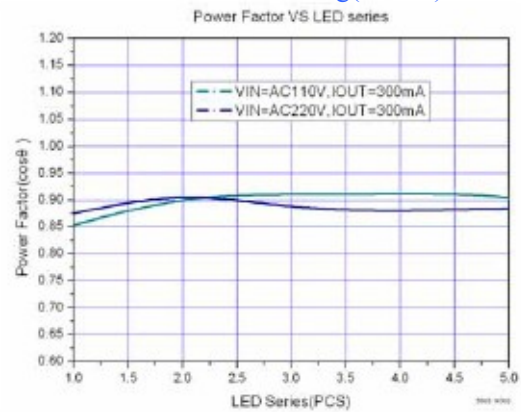
Item	Qty	Refdes	Description	Mfg Part Number	Mfg
1	1	BD1	600V,1A,Bridge Rectifier,SMD	MB6S	东森微
2	1	C1	2.2uF,16V,Ceramic,X7R,0805	C2012X7R1C225K	TDK
3	1	C2	1uF,25V,Ceramic,X7R,0805	C2012X7R1E105K	TDK
4	1	CinA	4.7uF,250V,Electrolytic,(8x11.5)	BXC-250V-4.7uF	Rubycon
5	1	CinB	4.7uF,250V,Electrolytic,(8x11.5)	BXC-250V-4.7uF	Rubycon
6	1	Cout	3.3uF,50V,Ceramic,X7R,1210	C3225X7R1E335K	TDK
7	3	D1A,D1B,D1C	1000V,1A,Rectifier,SMA	MRA4007T3G	Onsemi
8	1	D2	600V,2A,Ultrafast Recovery,50ns,SMB	MURS260T3G	Onsemi
9	1	D3	1000V,1A,Rectifier,SMA	MRA4007T3G	Onsemi
10	1	DZ	36V,500mW,Zener,SOD-123	MMSZ5257BT1G	Onsemi
11	1	FUSE	1.25A,250V,SMD	AF2-1.25V125TM	AEM
12	1	L1	2.2mH,0.5A	C12-K7.5L GE-222	Mitsumi
13	1	Q1	NPN,400V,200mA,TO92	3DD13001	东森微
14	1	R1	15K Ω ,1%,1/2W,Resistors,		
15	1	R2	1M Ω ,1%,1/4W,Thick Film,1206	RC1206xR-071004L	Yageo
16	1	R3	2K Ω ,1%,1/16W,Thick Film,0603	RC0603xR-072001L	Yageo
17	1	R4	10K Ω ,1%,1/8W,Thick Film,0805	RC0603xR-071002L	Yageo
18	1	R5	30K Ω ,1%,1/4 W,Thick Film,1206	RC0603xR-073002L	Yageo
19	1	RCS	0.33 Ω ,1%,1/4 W,Thick Film,1206	RL1206xR-07R330L	Yageo
20	1	U1	XL5002,SOP8	XL5002	东森微

Performance

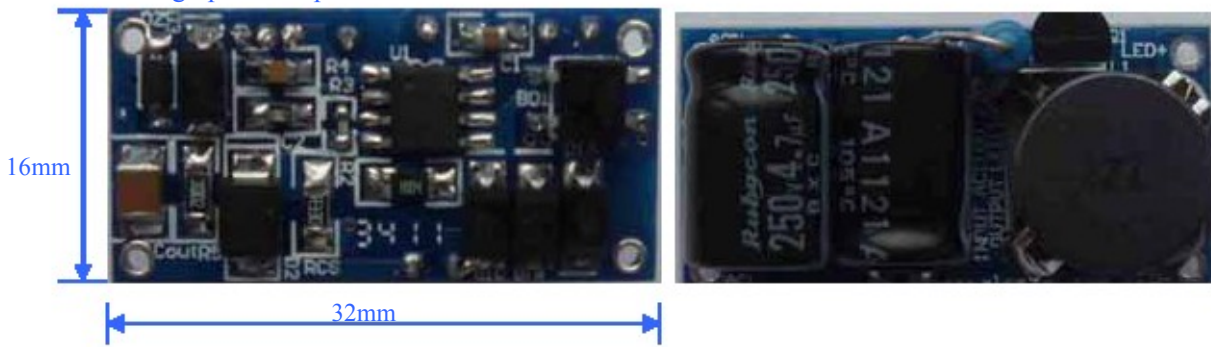
Efficiency VS LED String(N*1W)



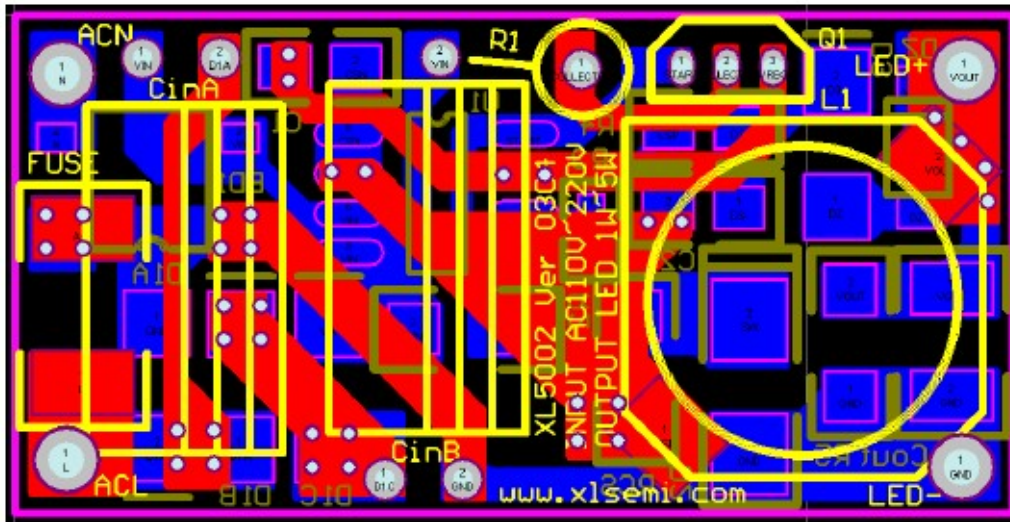
Power Factor VS LED String(N*1W)



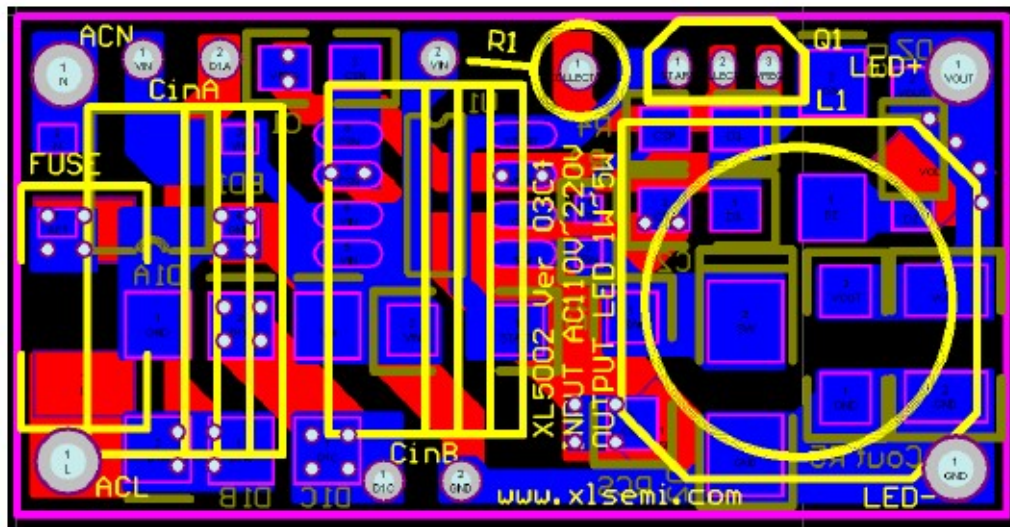
Photographs of Populated Circuit Board



PCB Layout



Top Side



Bottom Side

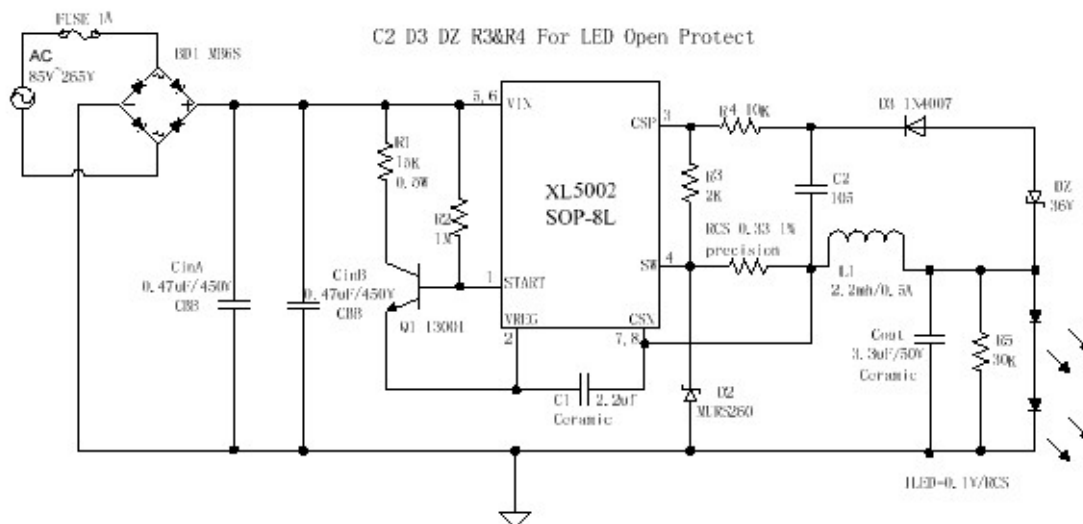
XL5002-DEMO2-CBB:

XL5002 DEMO board manual without electrolytic capacitor

Introduction

The XL5002 is a monolithic high voltage switching regulator with PFM that is specifically designed to operate from a rectified 85V~265V AC mains supply. The XL5002 is a high efficiency LED driver switching regulator. The LED string is driven at DC constant current rather than constant voltage, thus providing constant light output and enhanced reliability. Provides the necessary feature to implement LED driver with a minimal external component needed. Internally implemented function include, a low start up current and operating current reducing the power dissipation on start-up resistor, Built-in UVLO function detected the LED output and short circuit occur. Support Output LED open, Without electrolytic capacitor. Output constant current drive series 1~5*1 W LED.

Application Circuit



XL5002 Typical Application without electrolytic capacitor(Mains supply 1~5W LED saving energy Lamp)

Pin Description

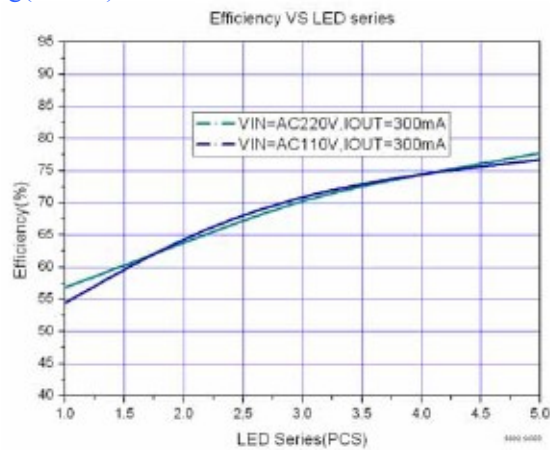
Number	Pin Name	Description
1	START	Internal start up Pin.
2	VREG	Internal Voltage Regulation Pin. (The VREG is about 8V)
3	CSP	Current Sense Positive Pin. (The current sense voltage is 0.1V)
4	SW	Output Switching Pin
5、6	VIN	Input high voltage Pin. (Operation voltage 100V~400V)
7、8	CSN	Current Sense Negative Pin.

Bill of Materials

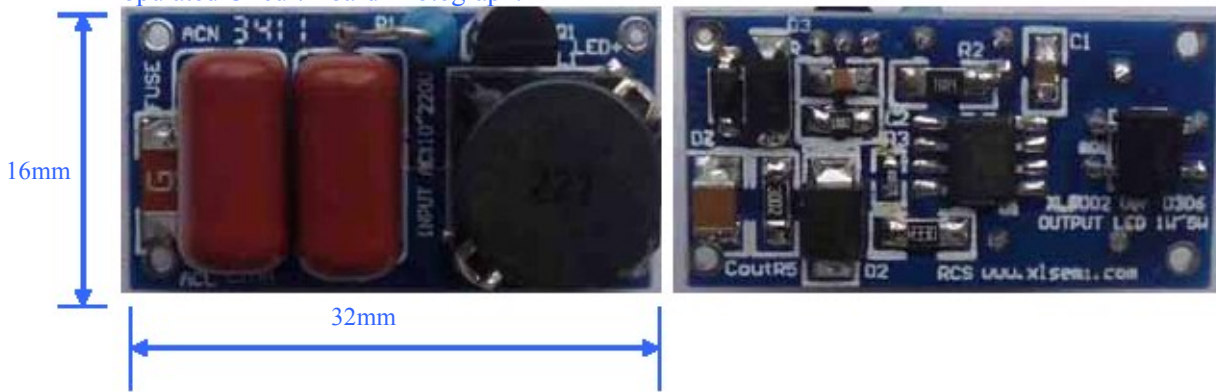
Item	Qty	Ref Des	Description	Mfg Part Number	Mfg
1	1	BD1	600V,1A,Bridge Rectifier,SMD	MB6S	东森微
2	1	C1	2.2uF,16V,Ceramic,X7R,0805	C2012X7R1C225K	TDK
3	1	C2	1uF,25V,Ceramic,X7R,0805	C2012X7R1E105K	TDK
4	1	CinA	0.47uF,450V,Film	ECWF2W474KAB	Panasonic
5	1	CinB	0.47uF,450V,Film	ECWF2W474KAB	Panasonic
6	1	Cout	3.3uF,50V,Ceramic,X7R,1210	C3225X7R1E335K	TDK
7	1	D2	600V,2A,Ultrafast Recovery,50ns,SMB	MURS260T3G	Onsemi
8	1	D3	1000V,1A,Rectifier,SMA	MRA4007T3G	Onsemi
9	1	DZ	36V,500mW,Zener,SOD-123	MMSZ5257BT1G	Onsemi
10	1	FUSE	1A,250V,SMD	AF2-1.25V125TM	AEM
11	1	L1	2.2mH,0.5A	C12-K7.5L GE-222	Mitsumi
12	1	Q1	NPN,400V,200mA,TO92	3DD13001	cj-elec
13	1	R1	15KΩ,1%,1/2W,Resistors,		
14	1	R2	1MΩ,1%,1/4 W,Thick Film,1206	RC1206xR-071004L	Yageo
15	1	R3	2KΩ,1%,1/16W,Thick Film,0603	RC0603xR-072001L	Yageo
16	1	R4	10KΩ,1%,1/8W,Thick Film,0805	RC0805xR-071002L	Yageo
17	1	R5	30KΩ,1%,1/4 W,Thick Film,1206	RC1206xR-073002L	Yageo
18	1	RCS	0.33Ω,1%,1/4 W,Thick Film,1206	RL1206xR-07R330L	Yageo
19	1	U1	XL5002,SOP8	XL5002	东森微

Performance

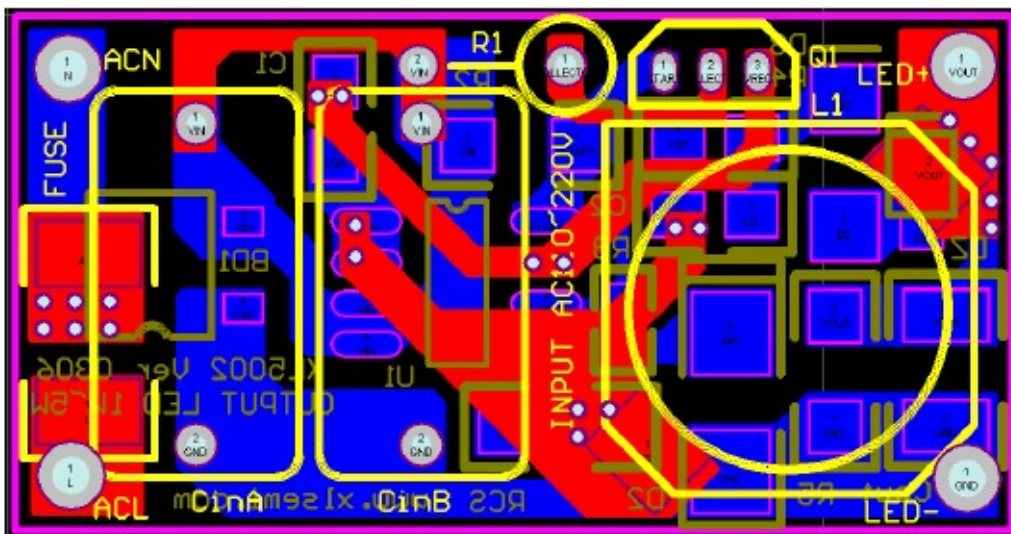
Efficiency VS LED String(N*1W)



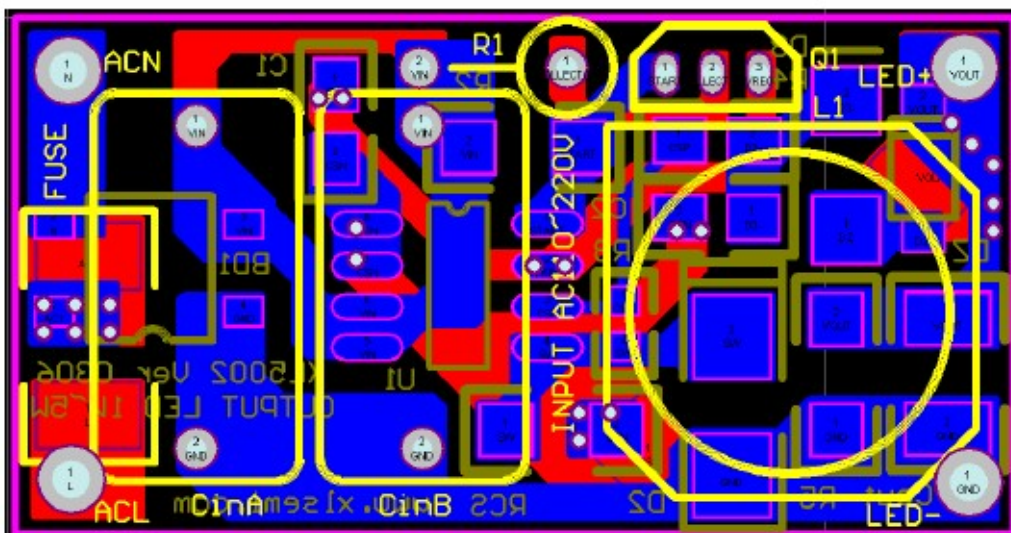
Populated Circuit Board Photograph.



PCB Layout



Top Side



Bottom Side

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传真：0512-50111209

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代理：集成电路、光耦、MOS管、可控硅、各类二三极管、桥堆