

XL5003 DEMO Borad Manual

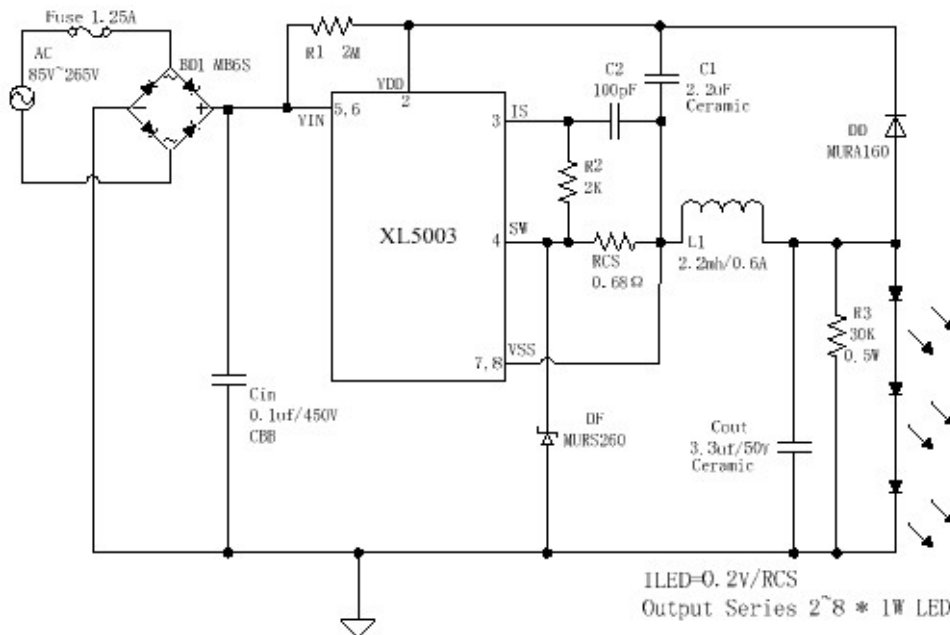
500301:without electrolytic capacitor

Introduction

The document describes a non-isolated, without electrolytic capacitor, high efficiency LED driver designed to drive an LED string at a current of 300 mA from an input voltage range of 85 VAC to 265 VAC. The XL5003 also provides a sophisticated range of protection features including auto-restart for control loop open/short faults and output short-circuit conditions.

High-efficiency, without electrolytic capacitor LED driver design with very low parts count. This document contains the LED driver specification, schematic, PCB diagram, bill of materials.

Schematic



XL5003 Typical Application without electrolytic capacitor(Mains supply 2~8*1W LED saving energy Lamp)

Pin Description

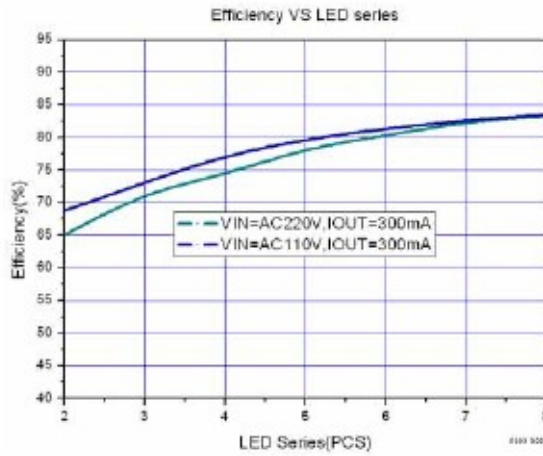
Pin Number	Pin name	Description
1	NC	No Connected
2	VDD	The chip supply voltage
3	IS	Current Sense Pin.(The current sense voltage is 0.2V)
4	SW	Output Switching Pin
5,6	VIN	Input high voltage Pin(Operation voltage 100V~400V)
7,8	VSS	The chip reference ground

Bill of Materials

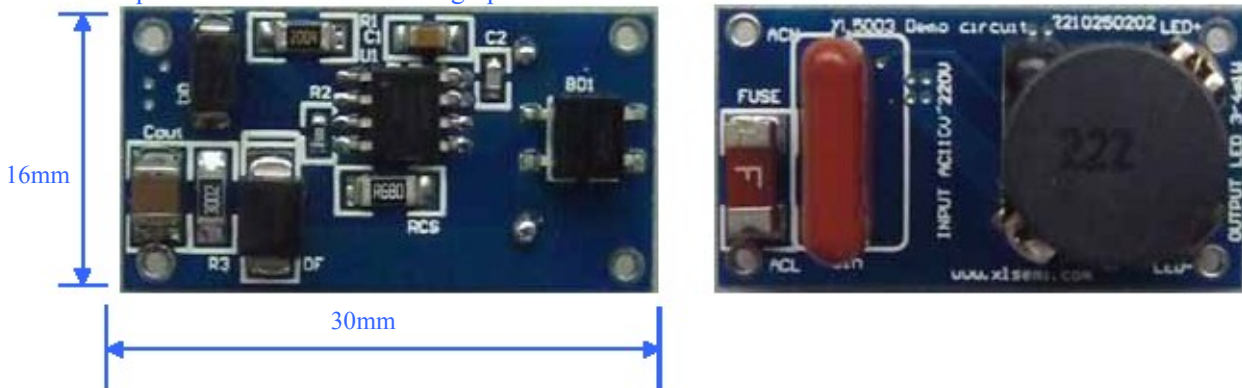
Item	Qty	Ref Des	Description	Mfg Part Number	Mfg
1	1	BD1	600V,1A,Bridge Rectifier,SMD	MB6S	东森微
2	1	C1	2.2uF,50V,Ceramic,X7R,0805	C2012X7R1H225K	TDK
3	1	C2	100pF,50V,Ceramic,X7R,0603	C1608X7R1H104K	TDK
4	1	Cin	0.1uF,450V,Film	ECWF2W104KAB	Panasonic
5	1	Cout	3.3uF,50V,Ceramic,X7R,1210	C3225X7R1E335K	TDK
6	1	DD	600V,1A,Ultrafast Recovery,75ns,SMA	MURA160T3G	东森微
7	1	DF	600V,2A,Ultrafast Recovery,50ns,SMB	MRUS260T3G	东森微
8	1	FUSE	1.25A,250V,SMD	AF2-1.25V125TM	AEM
9	1	L1	2.2mH,0.5A	C12-K7.5L GE-222	Mitsumi
10	1	R1	2MΩ,1%,1/4 W,Thick Film,1206	RC1206xR-072004L	Yageo
11	1	R2	2KΩ,1%,1/16W,Thick Film,0603	RC0603xR-072001L	Yageo
12	1	R3	30KΩ,1%,1/2W,Thick Film,1206	RC1206xR-073002L	Yageo
13	1	RCS	0.68Ω,1%,1/4 W,Thick Film,1206	RL1206xR-07R680L	Yageo
14	1	U1	XL5003,SOP8	XL5003	XLSEMI

Performance Data

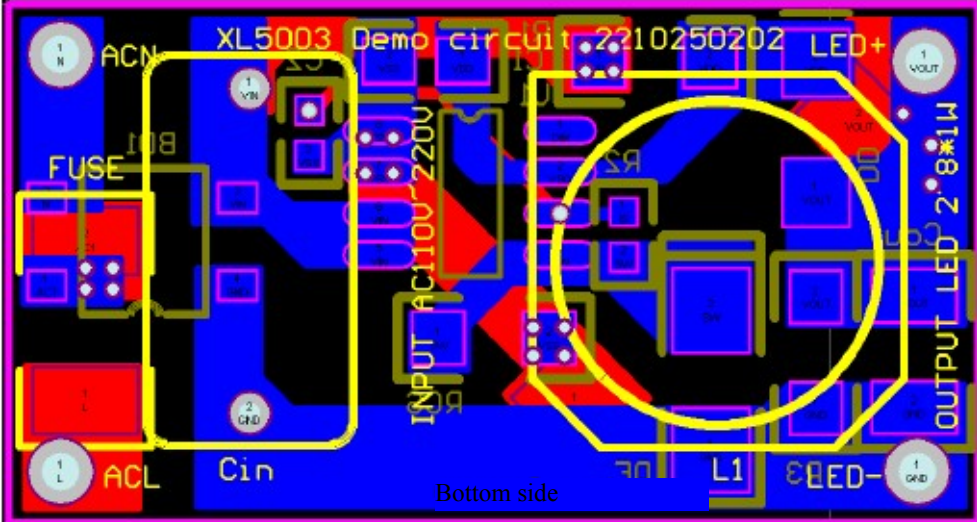
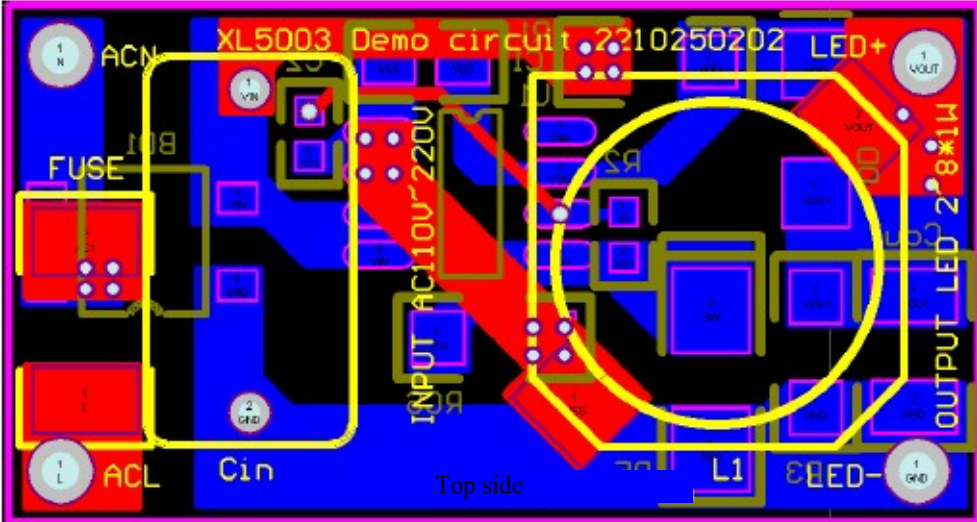
Efficiency



Populated Circuit Board Photograph.



PCB Layout

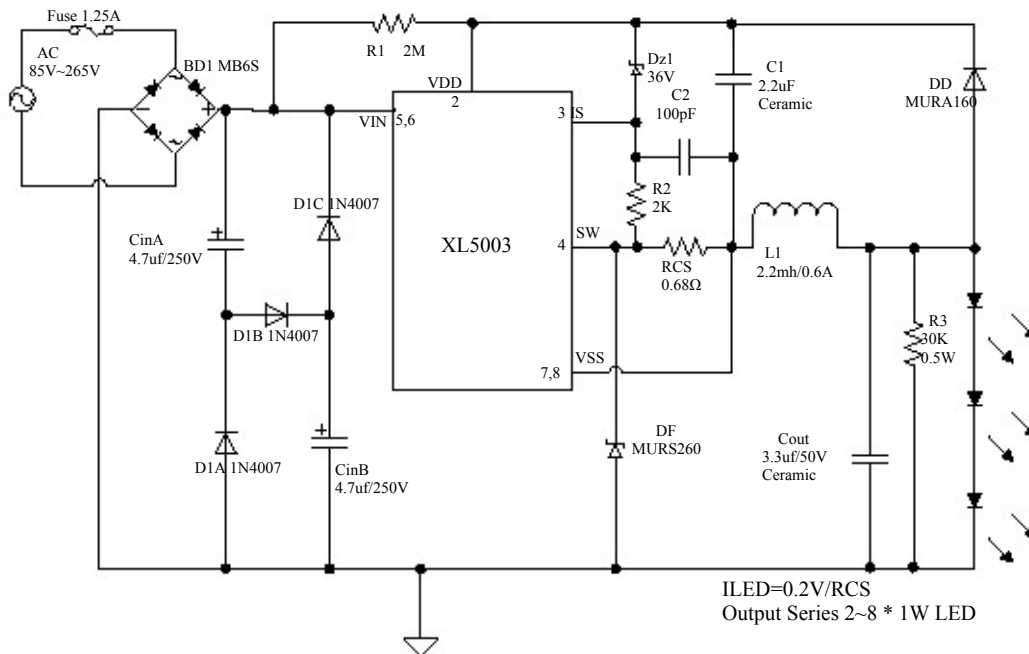


500302:with PFC

Introduction

The document describes a non-isolated, power-factor corrected, high efficiency LED driver designed to drive an LED string at a current of 300 mA from an input voltage range of 85 VAC to 265 VAC. The XL5003 also provides a sophisticated range of protection features including auto-restart for control loop open/short faults and output short-circuit conditions. High-efficiency, power factor corrected LED driver design with very low parts count. This document contains the LED driver specification, schematic, PCB diagram, bill of materials.

Schematic



XL5003 Typical Application with PFC electrolytic capacitor(Mains supply 2~8W LED saving energy Lamp)

Pin Description

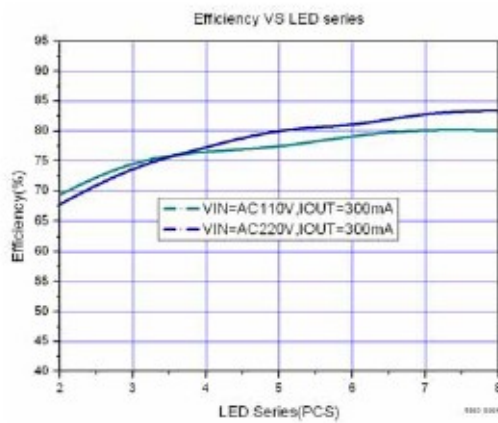
Pin Number	Pin name	Description
1	NC	No Connected
2	VDD	The chip supply voltage
3	IS	Current Sense Pin.(The current sense voltage is 0.2V)
4	SW	Output Switching Pin
5,6	VIN	Input high voltage Pin(Operation voltage 100V~400V)
7,8	VSS	The chip reference ground

Bill of Materials

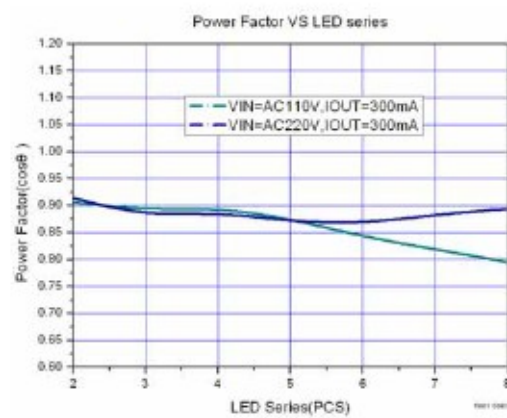
Item	Qty	Ref Des	Description	Mfg Part Number	Mfg
1	1	BD1	600V,1A,Bridge Rectifier,SMD	MB6S	东森微
2	1	C1	2.2uF,50V,Ceramic,X7R,0805	C2012X7R1H225K	TDK
3	1	C2	100pF,50V,Ceramic,X7R,0603	C1608X7R1H104K	TDK
4	1	CinA	4.7uF,250V,Electrolytic,(8x11.5)	YXA-250V-4.7uF	Rubycon
5	1	CinB	4.7uF,250V,Electrolytic,(8x11.5)	YXA-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	东森微
8	1	DF	600V,2A,Ultrafast Recovery,50ns,SMB	MURS260T3G	东森微
9	1	DD	600V,1A,Ultrafast Recovery,75ns,SMA	MURA160T3G	东森微
10	1	DZ1	36V,500mW,Zener,SOD-123	MMSZ5257BT1G	东森微
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	R1	2MΩ,1%,1/4 W,Thick Film,1206	RC1206xR-072004L	Yageo
14	1	R2	2KΩ,1%,1/16W,Thick Film,0603	RC0603xR-072001L	Yageo
15	1	R3	30KΩ,1%,1/2W,Thick Film,1206	RC1206xR-073002L	Yageo
16	1	RCS	0.68Ω,1%,1/4 W,Thick Film,1206	RL1206xR-07R680L	Yageo
17	1	U1	XL5003,SOP8	XL5003	东森微

Performance Data

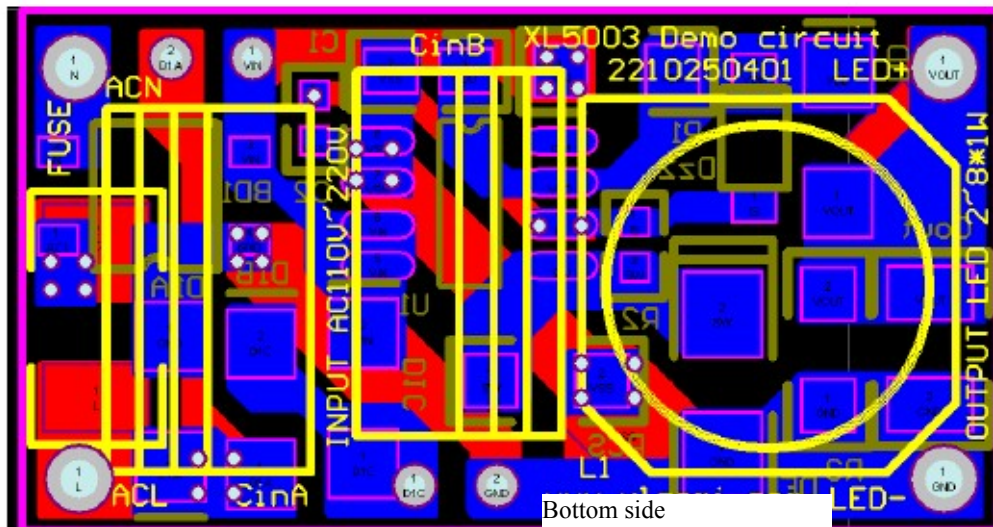
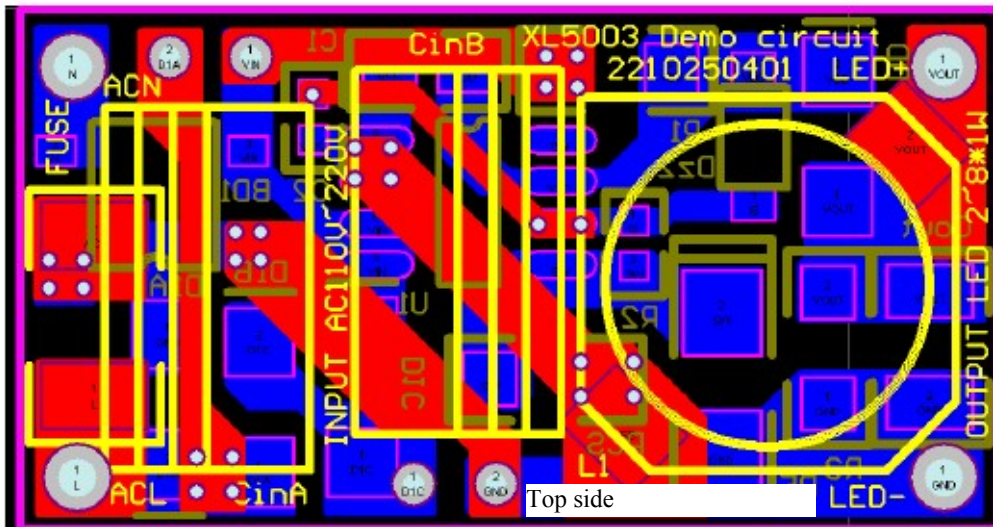
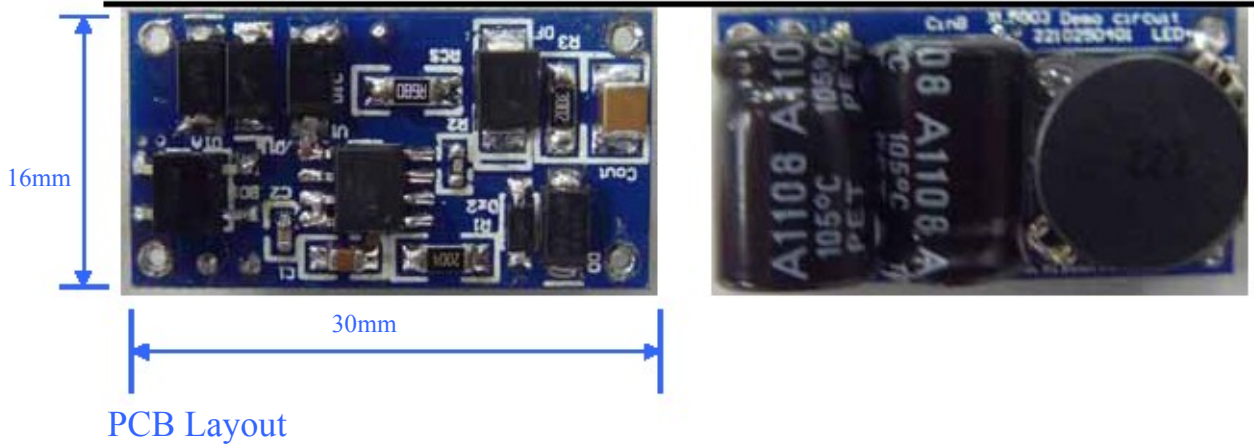
Efficiency



Power Factor



Populated Circuit Board Photograph.



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