

# XL2002 DEMO Board manual

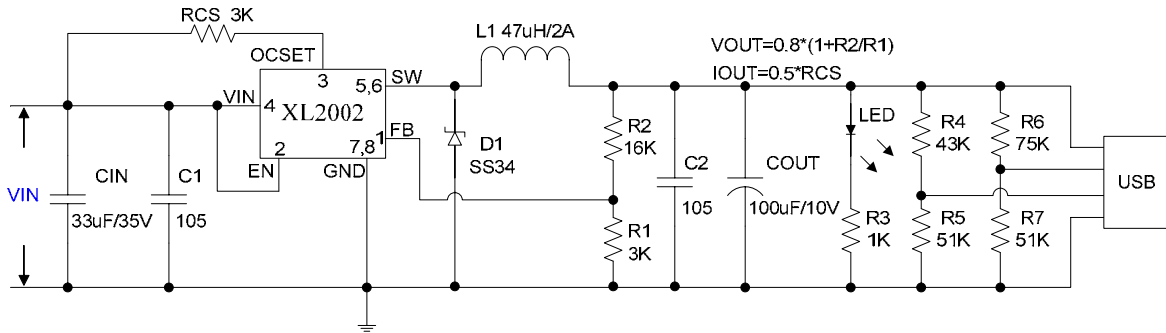
## Introduction

Demonstration circuit XL2002 in a 180KHz BUCK converter circuit , designed for 5V/1.5A output from a 8V to 30V input .

The XL2002 operates over an input range of 8V to 30V, suitable for car charger , battery charger .Output current up to 2A,efficiency up to 90%,with output constant voltage and constant current control loop , design with very low parts count.

This document contains the converter specification, schematic, PCB diagram, bill of materials.

## Schematic



XL2002 VIN=8V~30V,VOUT=5V,IOU=1.5A Typical Application Circuit

## Pin Description

Pin Number	Pin Name	Description
1	FB	Feedback Pin (FB). Through an external resistor divider network, Feedback senses the output voltage and regulates it.The feedback threshold voltage is 0.8V.
2	EN	Enable Pin. Drive EN pin low to turn off the device, drive it high to turn it on.
3	OCSET	Output Constant Current Set Pin.
4	VIN	Supply Voltage Input Pin. XL2002 operates from a 8V to 30V DC voltage. Bypass Vin to GND with a suitably large capacitor to eliminate noise on the input.
5,6	SW	Power Switch Output Pin (SW). Output is the switch node that supplies power to the output.
7,8	GND	Ground Pin.

# Bill of Materials

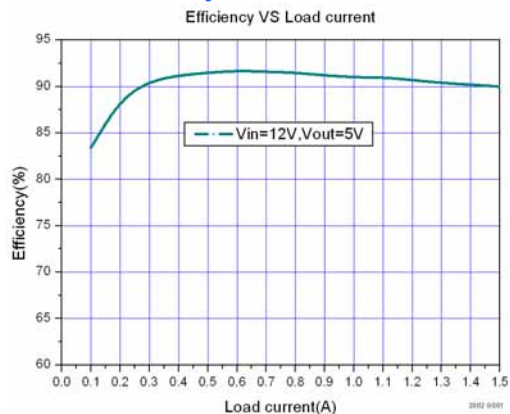
Qty	Ref Des	Description	Mfg Part Number	Mfg
1	C1	1uF,50V,Ceamic,X7R,0805	C2012X7R1H105K	TDK
1	C2	1uF,50V,Ceamic,X7R,0805	C2012X7R1H105K	TDK
1	CIN	33uF,35V, Electrolytic,(6.3x7)	ZS1A334K6L007	Samwha
1	COUT	100uF,10V, Electrolytic,(6.3x7)	ZS1A107K6L007	Samwha
1	D1	40V,3A,SMA,Schottky Barrier Rectifier	SS34	Fairchild
1	D3	LED,Blue,0805		
1	L1	47uH,3A,(10*4)		
1	R1	3K ,1%,1/10W,Thick Film,0603	RC0603XR-073001	Yageo
1	R2	16K ,1%,1/10W,Thick Film,0603	RC0603XR-071602	Yageo
1	R3	1K ,1%,1/10W,Thick Film,0603	RC0603XR-071001	Yageo
1	R4	51K ,1%,1/10W,Thick Film,0603	RC0603XR-075102	Yageo
1	R5	43K ,1%,1/10W,Thick Film,0603	RC0603XR-074302	Yageo
1	R6	51K ,1%,1/10W,Thick Film,0603	RC0603XR-075102	Yageo
1	R7	75K ,1%,1/10W,Thick Film,0603	RC0603XR-077502	Yageo
1	RCS	3K ,1%,1/10W,Thick Film,0603	RC0603XR-073001	Yageo
1	U1	Xlsemi,XL2002,SOP8	XL2002	XLSEMI
1	USB	DIP		

## Component Selection Table

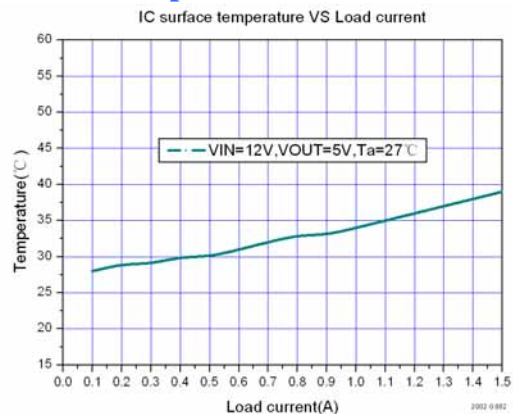
Application	CIN	L1	D1	R1	R2	COUT	RCS
5V/1A	33μF/35V	47μH/3A	SS34	3K	16K	100μF/16V	2K
5V1.5A	33μF/35V	47μH/3A	SS34	3K	16K	100μF/16V	3K

## Perfomance Data

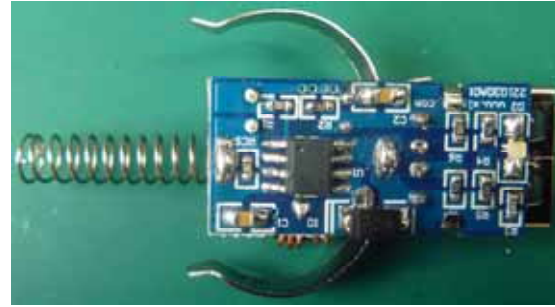
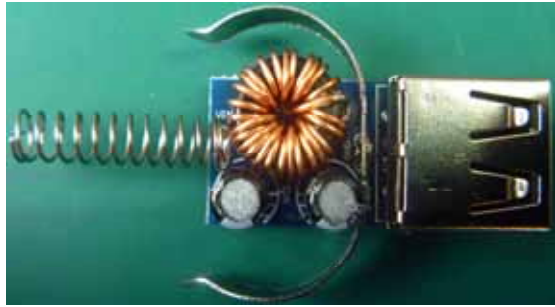
### Efficiency VS Load current



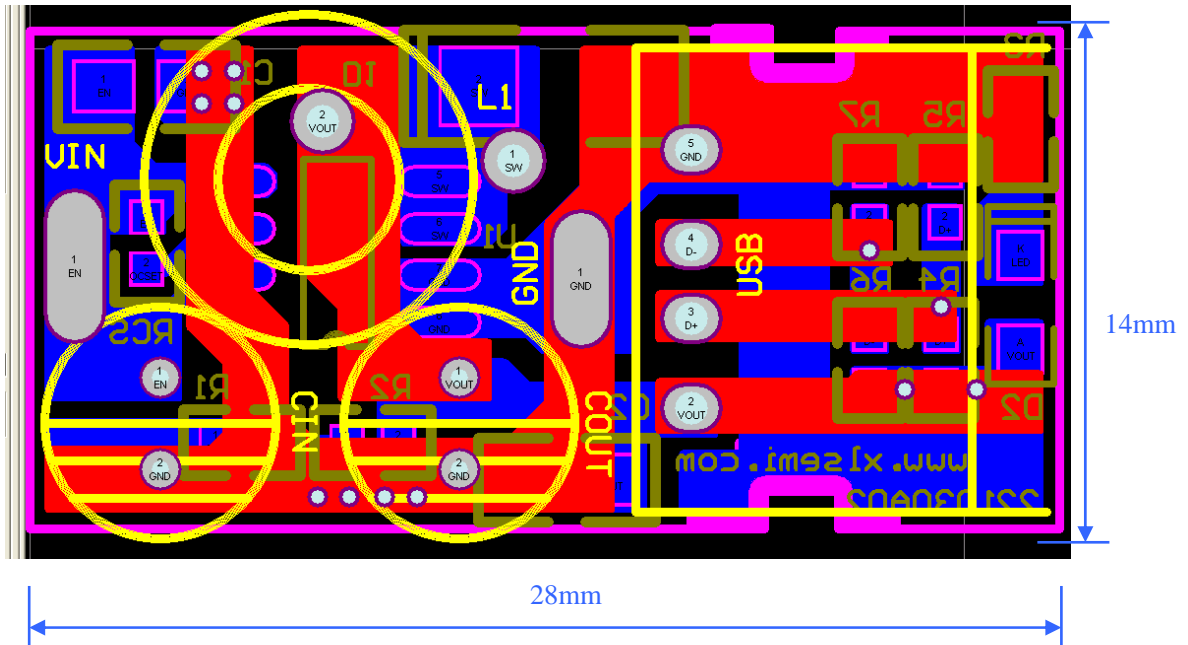
### IC surface temperature VS Load current



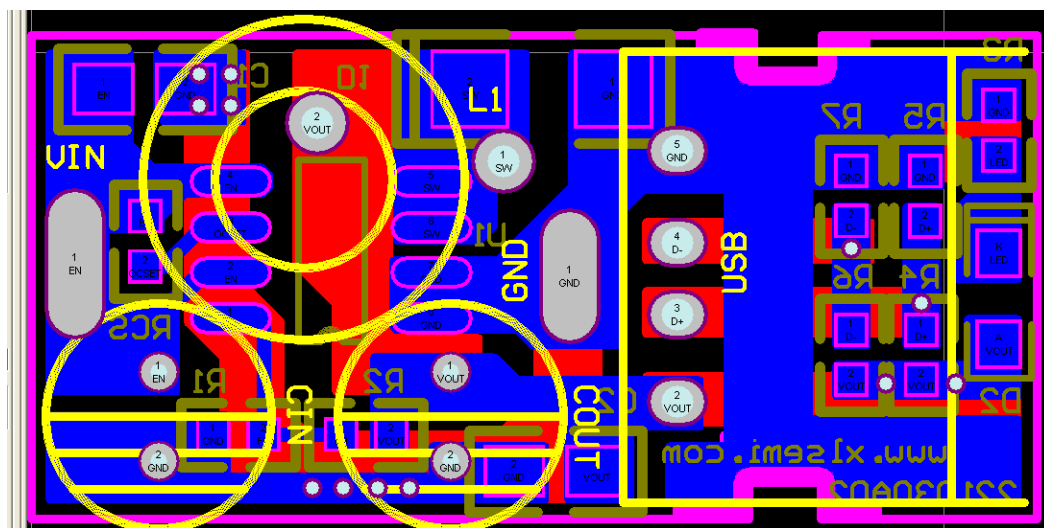
# Populated Circuit Board Phtograph



## PCB Layout



Top side



Bottom side