

## XL2005 DEMO Board manual

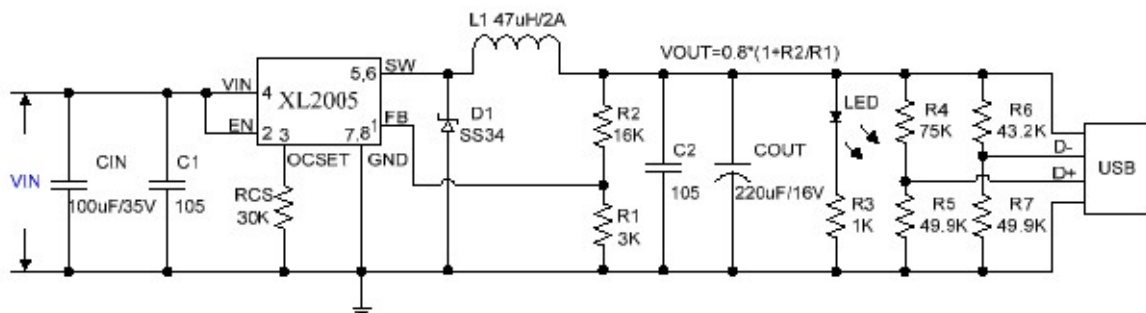
### Introduction

Demonstration circuit XL2005 in a 160KHz BUCK converter circuit ,designed for 5V/1.5A output from a 8V to 32V input .

The XL2005 operates over an input range of 8V to 32V, suitable for car charger ,battery charger .Output current up to 2A,efficiency up to 92%,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



XL2005 VIN=8V~32V, 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. XL2005 operates from a 8V to 32V 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

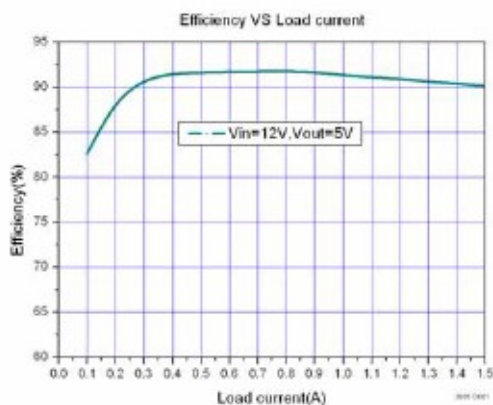
Qty	Ref Des	Description	Mfg Part Number	Mfg
1	C1	1uF,50V,Ceamic,X7R,0805	C2012X7R1H105K	TDK
1	C2	1uF,50V,Ceamic,X7R,0805	C2012X7R1H105K	TDK
1	CIN	100uF,35V, Electrolytic,(6.3x11)	ZS1A107K6L007	Samwha
1	COUT	220uF,16V, Electrolytic,(6.3x11)	ZS1A227K6L007	Samwha
1	D1	40V,3A,SMA,Schottky Barrier Rectifier	SS34	Fairchild
1	D3	LED,Blue,0805		
1	L1	47uH,2A,(10*4)		
1	R1	3KΩ,1%,1/10W,Thick Film,0603	RC0603XR-073001	Yageo
1	R2	16KΩ,1%,1/10W,Thick Film,0603	RC0603XR-071602	Yageo
1	R3	1KΩ,1%,1/10W,Thick Film,0603	RC0603XR-071001	Yageo
1	R4	75KΩ,1%,1/10W,Thick Film,0603	RC0603XR-077502	Yageo
1	R5	49.9KΩ,1%,1/10W,Thick Film,0603	RC0603XR-074992	Yageo
1	R6	43.2KΩ,1%,1/10W,Thick Film,0603	RC0603XR-074322	Yageo
1	R7	49.9KΩ,1%,1/10W,Thick Film,0603	RC0603XR-074992	Yageo
1	RCS	30KΩ,1%,1/10W,Thick Film,0603	RC0603XR-073002	Yageo
1	U1	Xlsemi,XL2005,SOP8	XL2005	东森微
1	USB	DIP		

## Component Selection Table

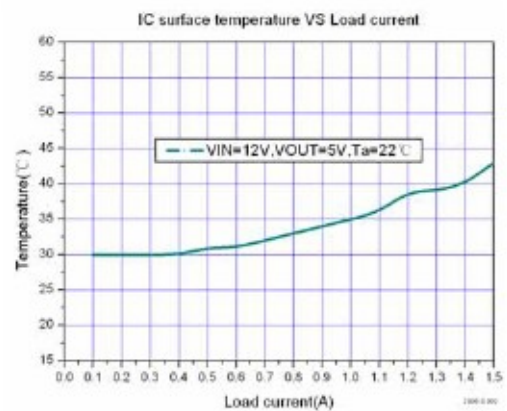
Application	CIN	L1	D1	R1	R2	COUT	RCS
5V/1A	100μF/35V	47μH/2A	SS34	3K	16K	220μF/16V	16K
5V1.5A	100μF/35V	47μH/2A	SS34	3K	16K	220μF/16V	30K

## Performance Data

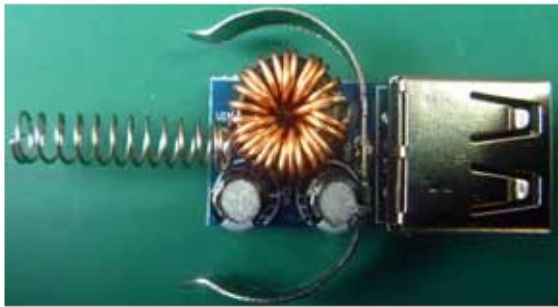
Efficiency VS Load current



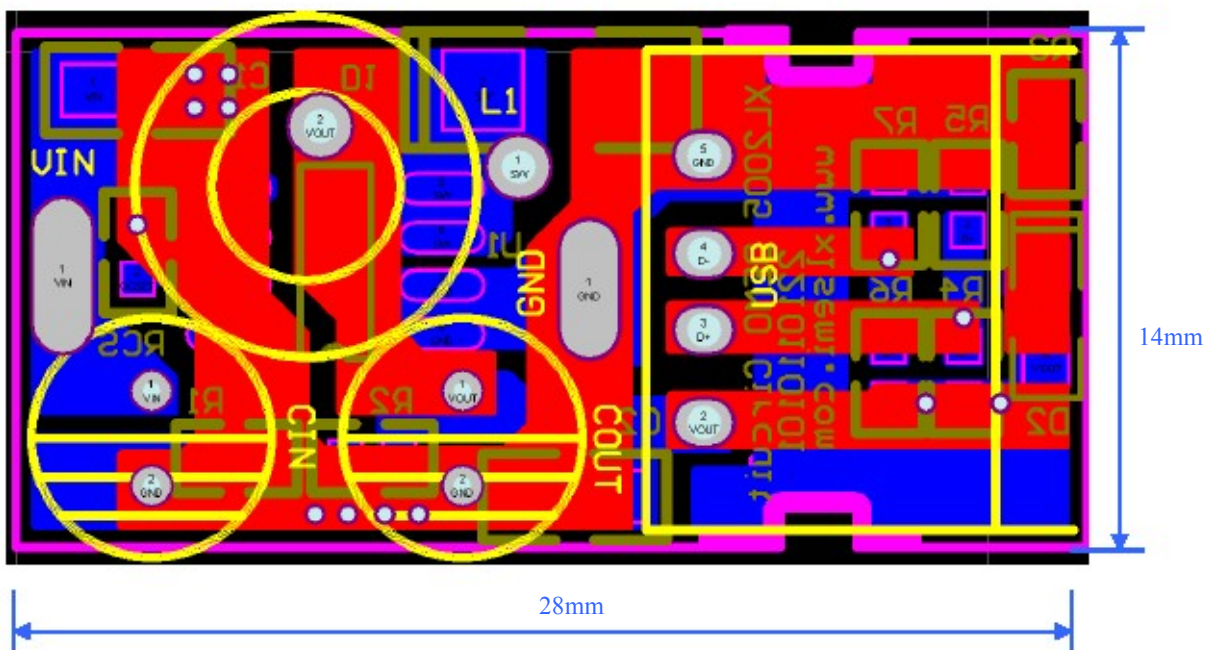
IC surface temperature VS Load current



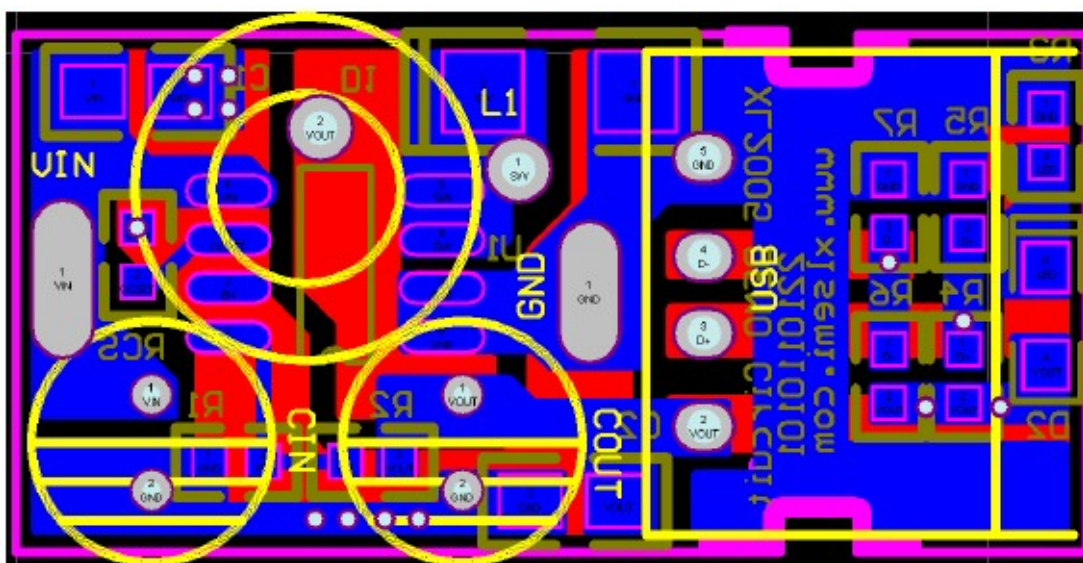
Populated Circuit Board Photograph



PCBLayout



Top side



Bottom side

## Note

1. Keep feedback wiring away from inductor and schottky.
2. VIN,SW lines must be short and ground plane construction for best results.
3. Input capacitor as close as possible with the XL2005.

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