Evaluation Board DB_SY7066QMC

1.8V Minimum Input and 5.5V Maximum Output 6A Peak Current Synchronous Boost with Output Disconnect

Introduction

SY7066 is a high efficiency synchronous boost regulator. It can disconnect the output during the shutdown operation.

Design Specifications

Input Voltage	Output Current	Output Voltage	Test conditions
1.8-5.0V	3A	5.0V	

Schematic

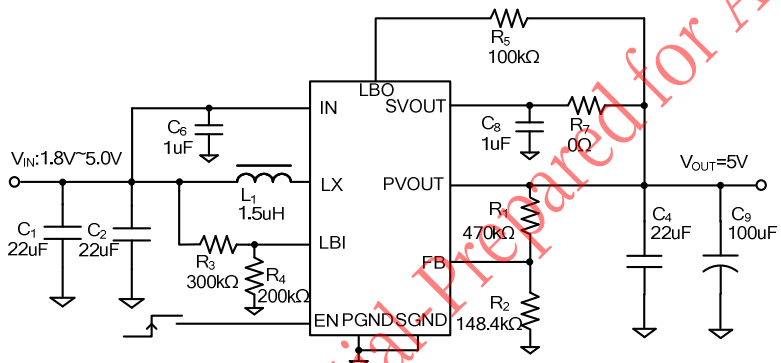
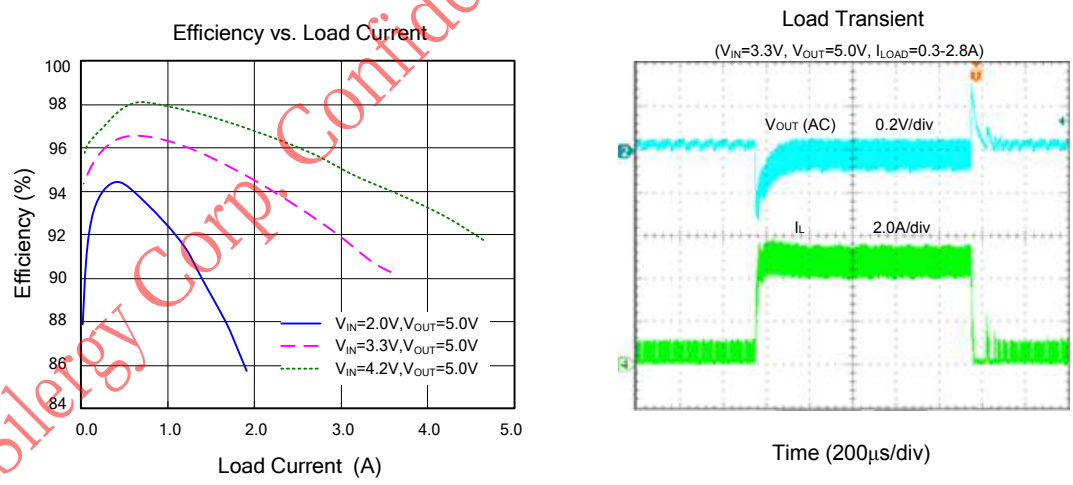


Figure 1. Schematic Diagram



(a) **(b)**

Figure2. Test Results (Preliminary)

(a) Efficiency vs Load Current

(b) Load Transient: V_{OUT}(200mV/div), I_L(2A/div). Load current changes between 0.3A and 2.8A.

Quick Start Guide (Refer to Figure 3)

1. Preset the input supply to a voltage between 1.8V and 5. 0V. Turn the supply off. Connect the input supply to VIN and GND input connectors.
2. Turn on the input supply and measure the output voltage.

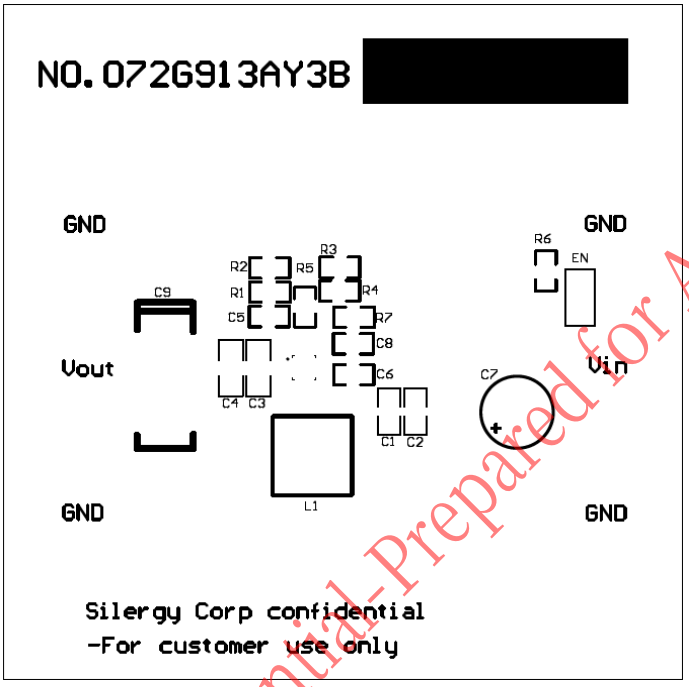
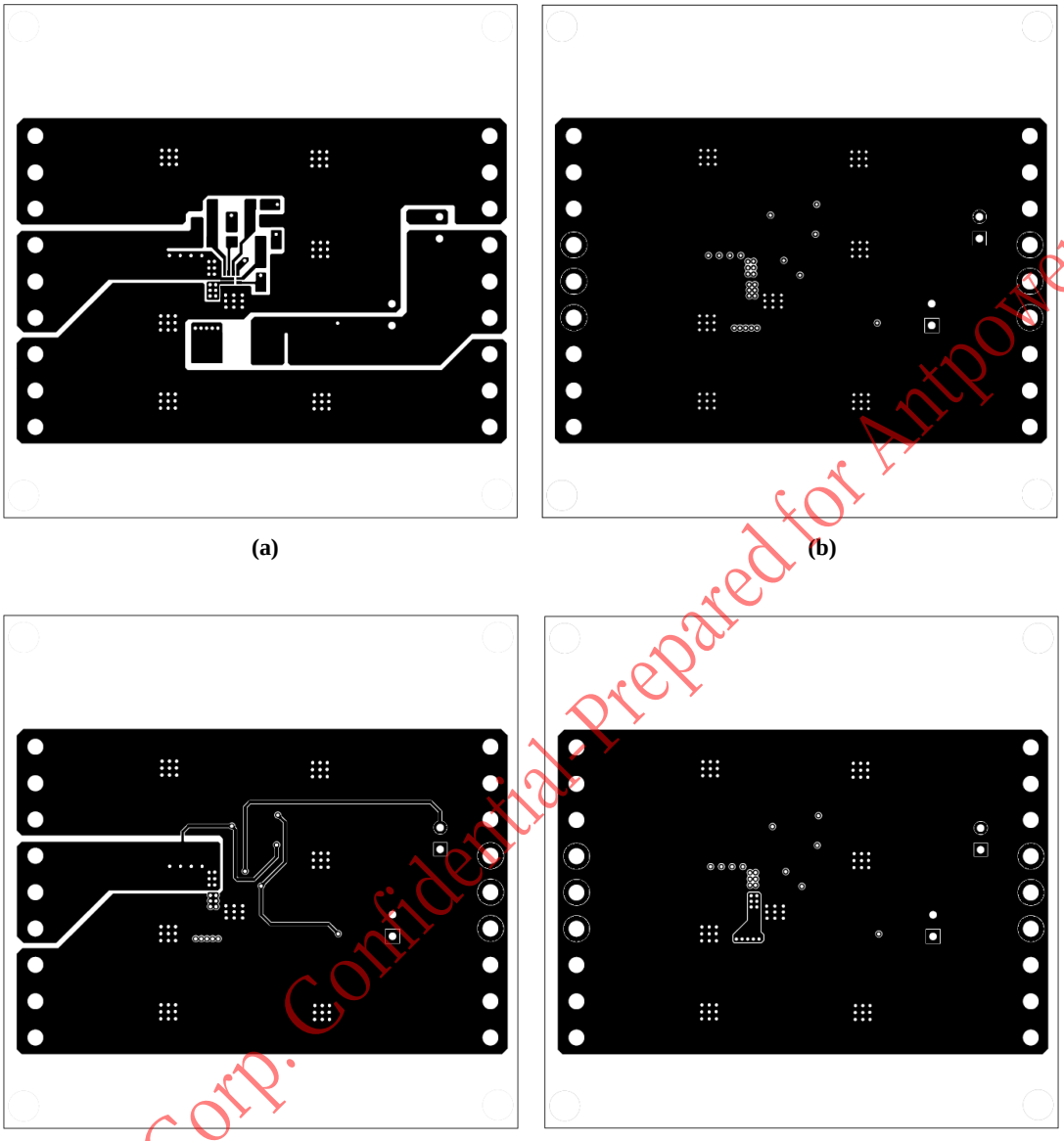


Figure 3. Top Silkscreen

PCB Layout



(a) (b)

(c) (d)

Figure 4. PCB Layout Plots: (a) top layer, (b) middle layer 1, (c) middle layer 2, (d) bottom layer

BOM List

Reference Designator	Description	Part Number	Manufacturer
L_1	1.5uH/10A	SPM6530T-1R5M	TDK
C_1, C_2	22uF/6.3V, 0805, X5R	C2012X5R1A226M	TDK
C_4	22uF/10V, 1206, X5R	C3216X5R1A226M	TDK
C_6	1uF/25V, 0603, X5R	C1608X5R1E105K	TDK
C_8	1uF/25V, 0603, X5R	C1608X5R1E105K	TDK
C_9	100uF/35V Electrolytic Capacitor		
R_1	470kΩ, 0603, 1%		
R_2	150kΩ, 0603, 1%		
R_3	300kΩ, 0603, 1%		
R_4	200kΩ, 0603, 1%		
R_5	100kΩ, 0603, 1%		
R_6	1MΩ, 0603, 1%		
R_7	0Ω, 0603		

Output voltage ripple test

A proper output ripple measurement should be done according to Figure 5 setup. Output voltage ripple should be measured across the output ceramic cap near the IC.

1. Remove the ground clip and head of the probe. Wind thin wires around the ground ring of the probe. Solder the end of the ground ring wire to the negative node of the COUT. Touch the probe tip to the positive node of the COUT. Refer to Figure 5.
2. Minimize the loop formed by COUT terminals, probe tip and ground ring.
3. Change the probing direction to decouple the electromagnetic noise generated from the nearby buck inductor (Refer to Figure 5).

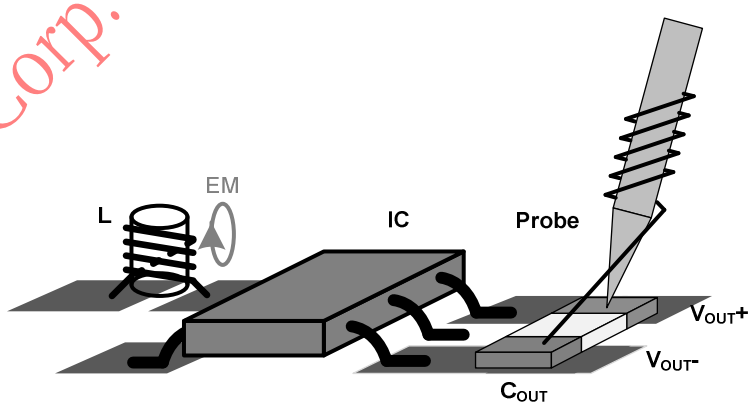


Figure.5 Recommended way to measure the output voltage ripple