ANA-UM-500002-E-10

MB39C601 LED DRIVER BOARD
BULB 9W
NO TRAIC DIMMING

USER MANUAL

Revision History

Version	Date	Updated by	Approved by	Modifications
1.0.0	2012-8-17	Denny Deng		First Draft

This manual contains 9 pages.

Contents

1 Introduction

1.1 Purpose

This user manual describes flash operation about LED Driver solution. This can light the LED, when the LED load is connected with the output and the AC source is impressed to the input. LED load: 350mA / 6-10 pieces in series.

1.2 Reference Documents

MB39C601-EVB-04_E1.0;

MB39C601_PO_E0.1.pdf.

2 Overview and Features

Overview and Features of System

2.1 Overview

The LED Driver use MB39C601 as controller IC. And MB39C601 is a flyback type switching regulator controller IC. The LED current is regulated by controlling the switching on-time or controlling the switching frequency, depending on the LED load. It is most suitable for the general lighting applications, for example residencial LED lighting.

3 System Installation

Block and Connection of System

3.1 System Block

LED driver board is shown in figure 3-1.

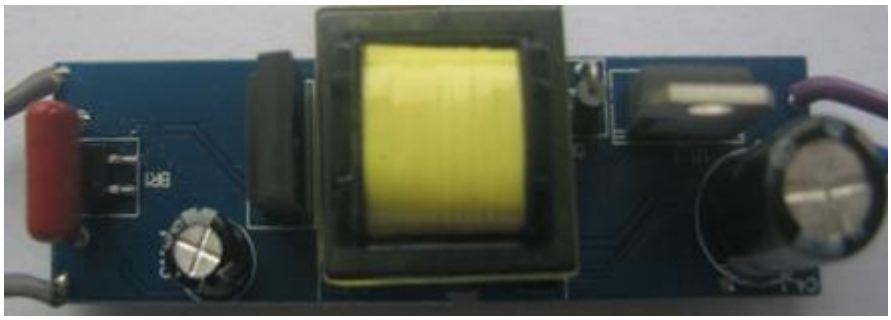


Figure 3-1 (a): Top view

Figure 3-1 (b): Bottom view

3.2 System Connection

This system connection draft is shown in figure 3-2.

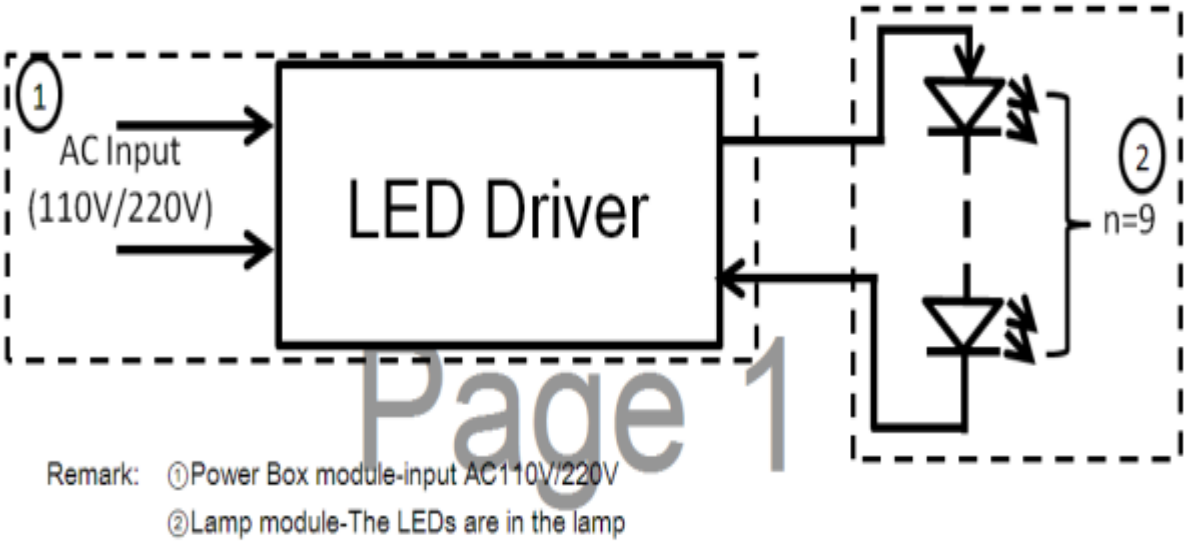


Figure 3-2: System Connection

3.2.1 Step 1

Connect the output of the board to LEDs, shown in figure 3-3.

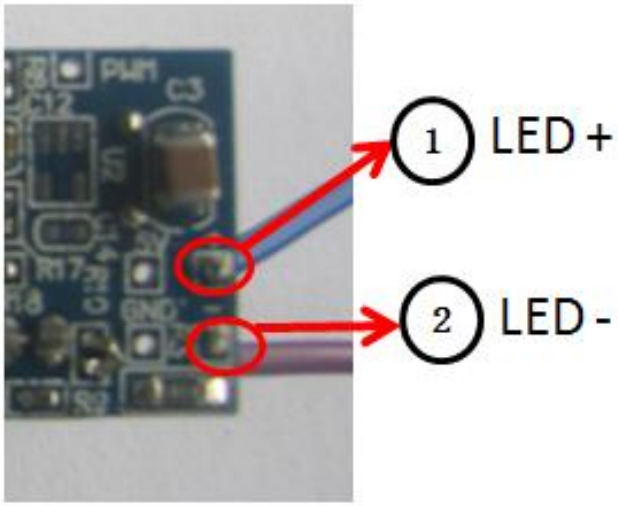


Figure 3-3: step 1- Connect LEDs

3.2.2 Step 2

Give 220V/AC at the input of the board, the connection is shown in figure 3-4.

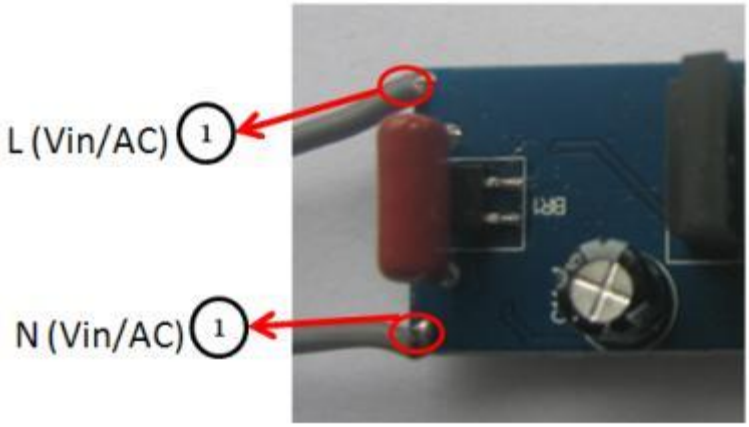


Figure 3-4: step 2-Connect 220V/AC

3.2.3 Step 3

Power on the switch, the bulb is lighting. See it in figure 3-5.

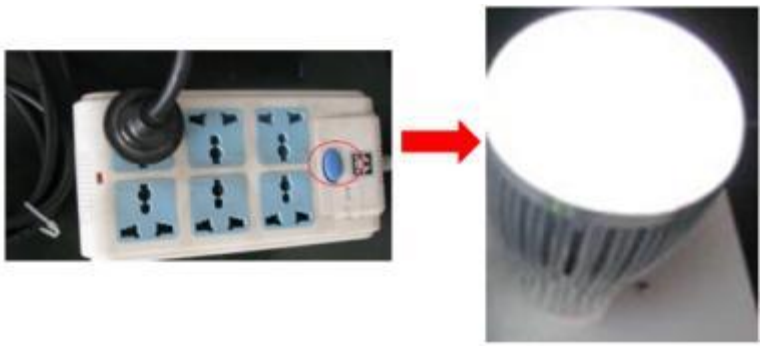


Figure 3-5: step 3-Power on

4 Operation Description

Operation Introduce

4.1 Board Caution

The board is made up two parts, high voltage part and low voltage part. See it in figure 3-6.

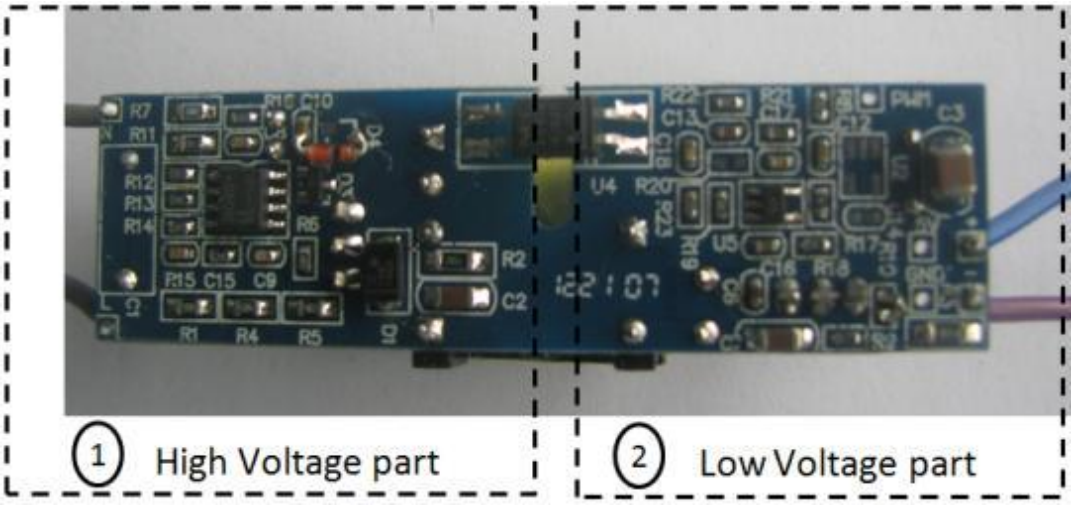


Figure 3-6

Before assembly/disassembly any components for the board, please make sure that the power is off because for its high input voltage.

4.2 Input Voltage

Terminal A and terminal B is the input of the board, it can be measured AC input voltage between the two terminals. See it in figure 3-7.

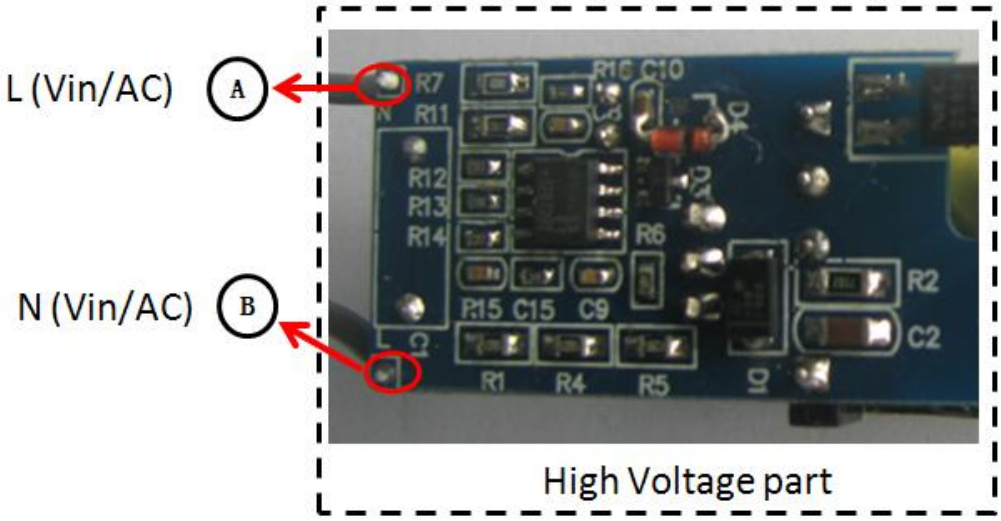


Figure 3-7: input voltage

4.3 Input Current

And also, it can be measured input current between terminal A and terminal B.

4.4 Output Current

After have connected the Load to the output of the board (it means, the output terminal C and D have connected to LEDs), it can be measured the output current between terminal A and terminal B. See it in figure 3-9.

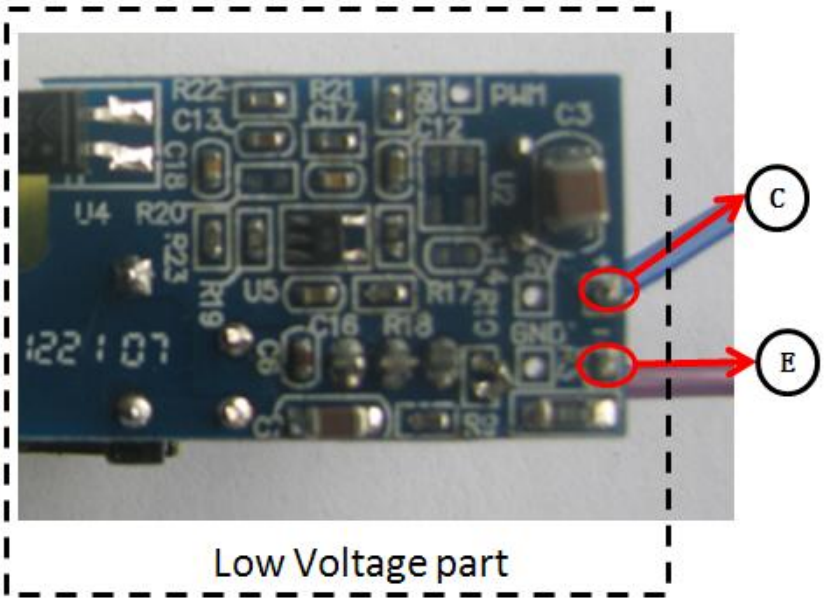


Figure 3-9: Output current measure

And also, you can the measure the voltage of loads (LEDs) between terminal A and terminal B.

4.5 Output Voltage

Terminal C is the output of the board, and the terminal D is the GND of low voltage part. See it in figure 3-8. It can be measured output voltage between the two terminals.

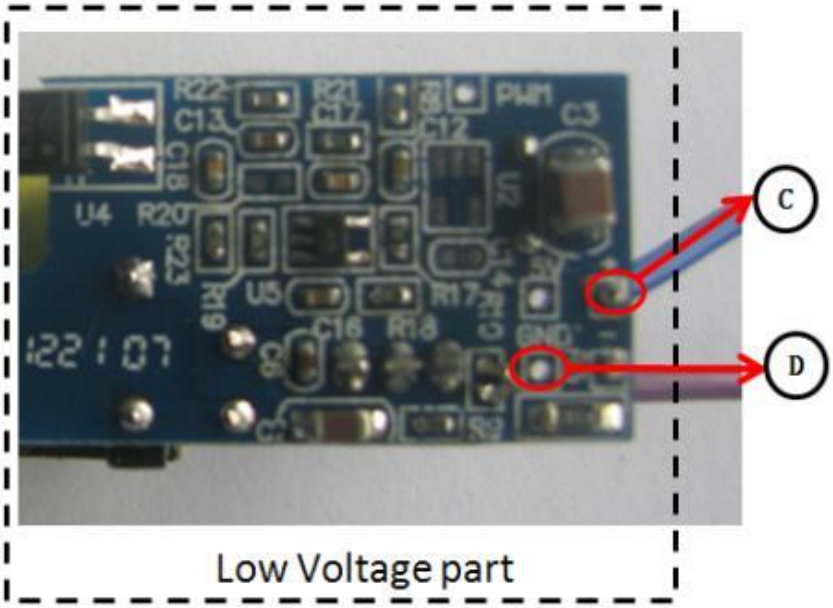
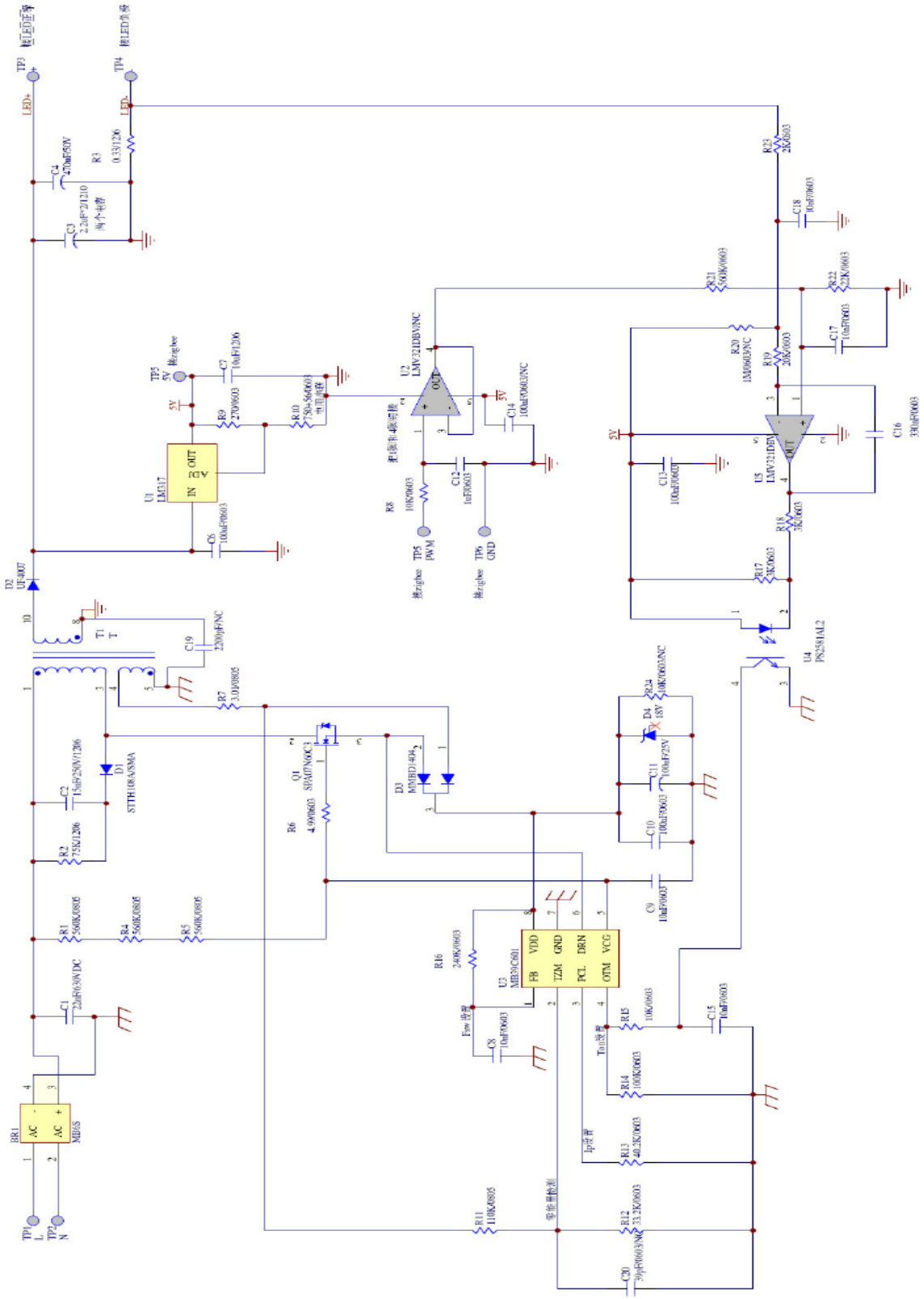


Figure 3-8: Output voltage

5 Reference Data

Schematic, bomlist and layout

5.1 Schematic



5.2 Bomlist

Here is the bomlist for LED Driver board.

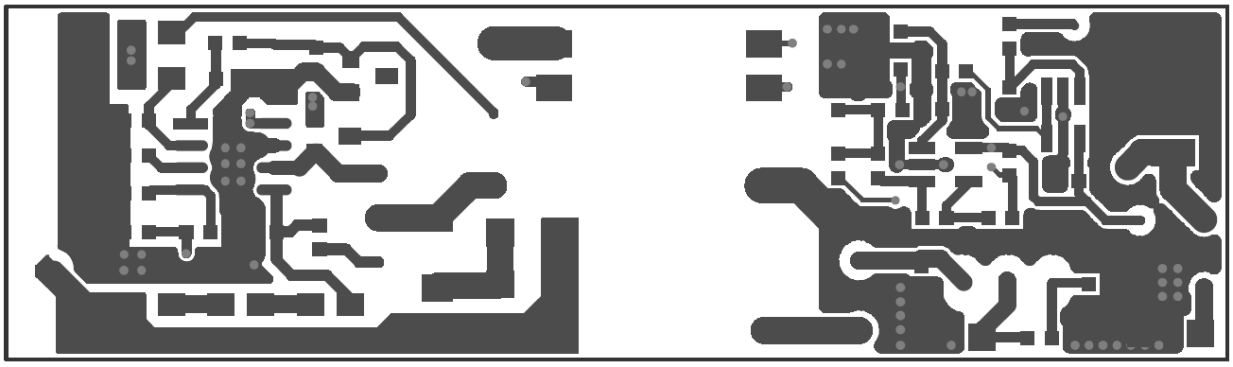
数量	器件	规格书	器件值	封装	器件编号	类型说明
1	U1	LDO	LM317	TO-220F	LM317	线性稳压调制器
1	U3	电源管理芯片	MB39C601	SOP-8	MB39C601	电源芯片
1	U4	光耦	PS2581L2	PS2581L2	PS2581L2	光耦
1	U5	运算放大器	LMV321DBV	SOT-235	LMV321DBV	运算放大器
1	BR1	整流桥	—	—	MB6S	整流桥
1	C1	22nF, 630V DC	22nF			电容
1	C2	15nF, 250V, 1206	15nF	1206		电容
2	C3 (两个并联)	2.2uF, 50V, 1210	2.2uF	1210		电容
1	C4	470uF, 50V, 1210	2.2uF	RB.2/.4		电解电容
3	C6, C10, C13	100nF, 50V, 0603	100nF	0603		电容
1	C7	10uF, 25V, 1206	10uF	1206		电容
5	C8, C9, C15, C17, C18	10nF, 50V, 0603	10nF	0603		电容
1	C11	100uF, 25V	100uF	DIP		电解电容
1	C12	1uF, 50V, 0603	1uF	0603		电容
1	C16	330nF, 50V, 0603	330nF	0603		电容
1	D1	二极管	-	SMA	STTH108A	二极管
1	D2	二极管	-	DO-41	UF4007	二极管
1	D3	二极管	-	SOT-23	MMBD1404	二极管
1	D4	稳压管		SOT-23		稳压管
1	T1	变压器	-	20x20	-	变压器
1	Q1	开关管	-	TO-220F	SPA07N60C3	开关管
3	R1, R4, R5	电阻, 1%	560K	0805		电阻
1	R2	电阻, 1%	75K	1206		电阻
1	R3	电阻, 1%	0.33R	1206		电阻
1	R6	电阻, 1%	4.99R	0603		电阻
1	R7	电阻, 1%	3.01R	0805		电阻
2	R8, R15	电阻, 1%	10K	0603		
1	R9	电阻, 1%	270R	0805		电阻
1	R10 (串联)	电阻, 1%	750R	0805		电阻
1		电阻, 1%	56R	0805		电阻
1	R11	电阻, 1%	110K	0805		电阻
1	R12	电阻, 1%	33.2K	0603		电阻
1	R13	电阻, 1%	40.2K	0603		
1	R14	电阻, 1%	100K	0603		
1	R16	电阻, 1%	240K	0603		电阻
2	R17, R18	电阻, 1%	3K	0603		电阻
1	R19	电阻, 1%	20K	0603		电阻
1	R21	电阻, 1%	560K	0603		电阻
1	R22	电阻, 1%	22K	0603		电阻
1	R23	电阻, 1%	2K	0603		电阻

(Continued)

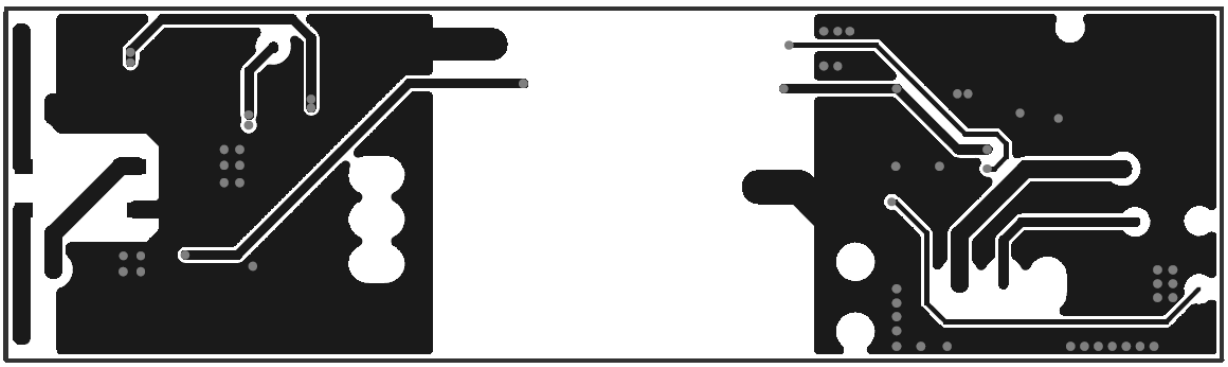
数量	器件	规格书	器件值	封装	器件编号	类型说明
6	TP1, TP2, TP3, TP4, TP5, TP6	测试端子	-	-	-	测试端子
不焊接	U2	运算放大器	LMV321DBV	SOT-235	LMV321DBV	运算放大器
	C20	39pF, 50V, 0603	39pF	0603		电容
	C19	2200pF, NC	2200pF			
	C14	100nF, 50V, 0603	100nF	0603		电容
	R20	电阻, 1%	1M	0603		电阻
	R24	电阻, 1%	10K	0603		电阻

5.3 PCB layout

Top view



Bottom view



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