

# **NCP 370**

## **Over Voltage Protection Controller with reverse charge control**

### **Demo board**



**ON Semiconductor**

June 2009

#### **Abstract**

This document contains the technical specifications. It supply information with define internal specification for development team.

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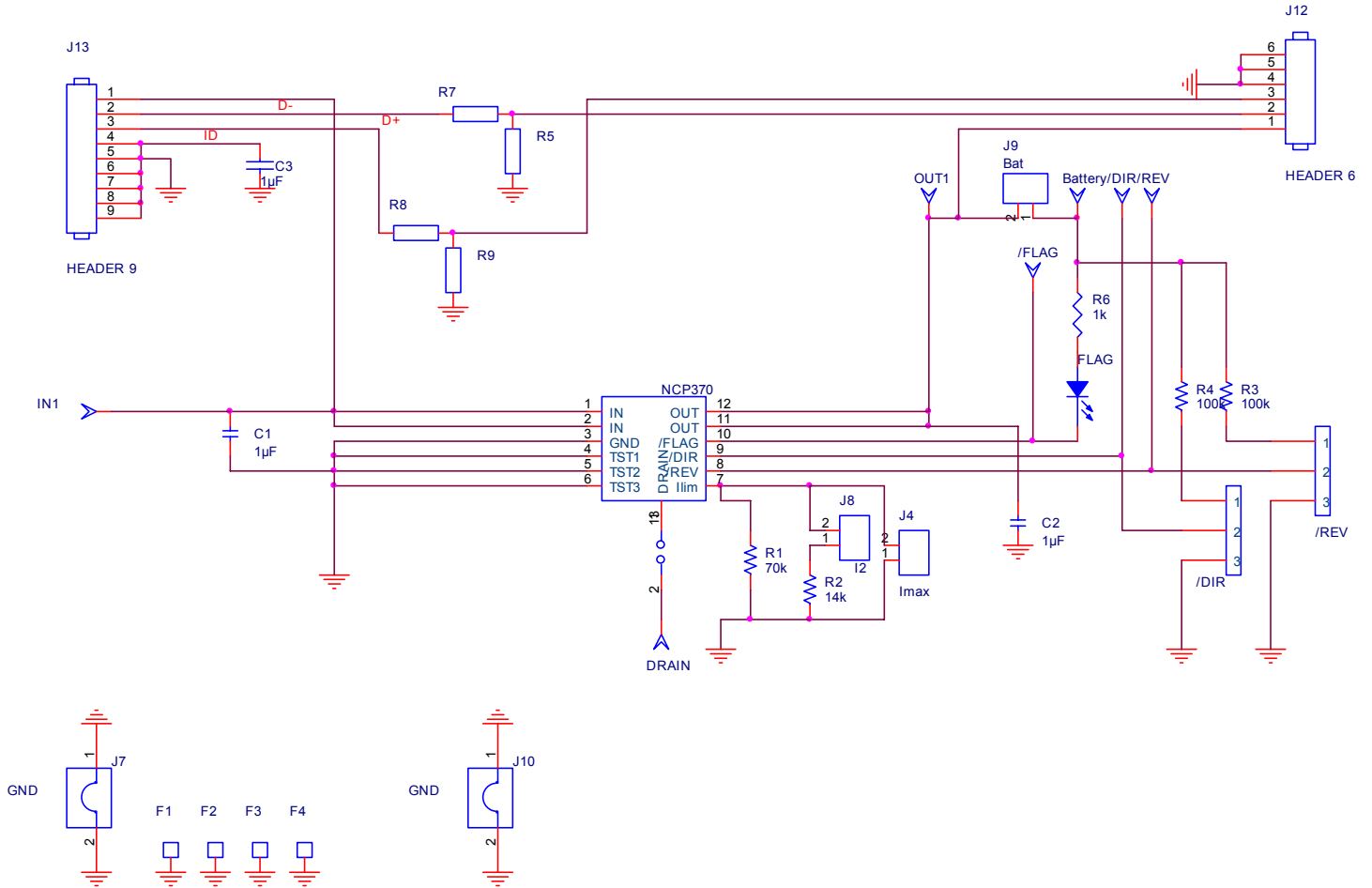
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**ON Semiconductor Engineering Application – Confidential Proprietary  
Demo board NCP370**

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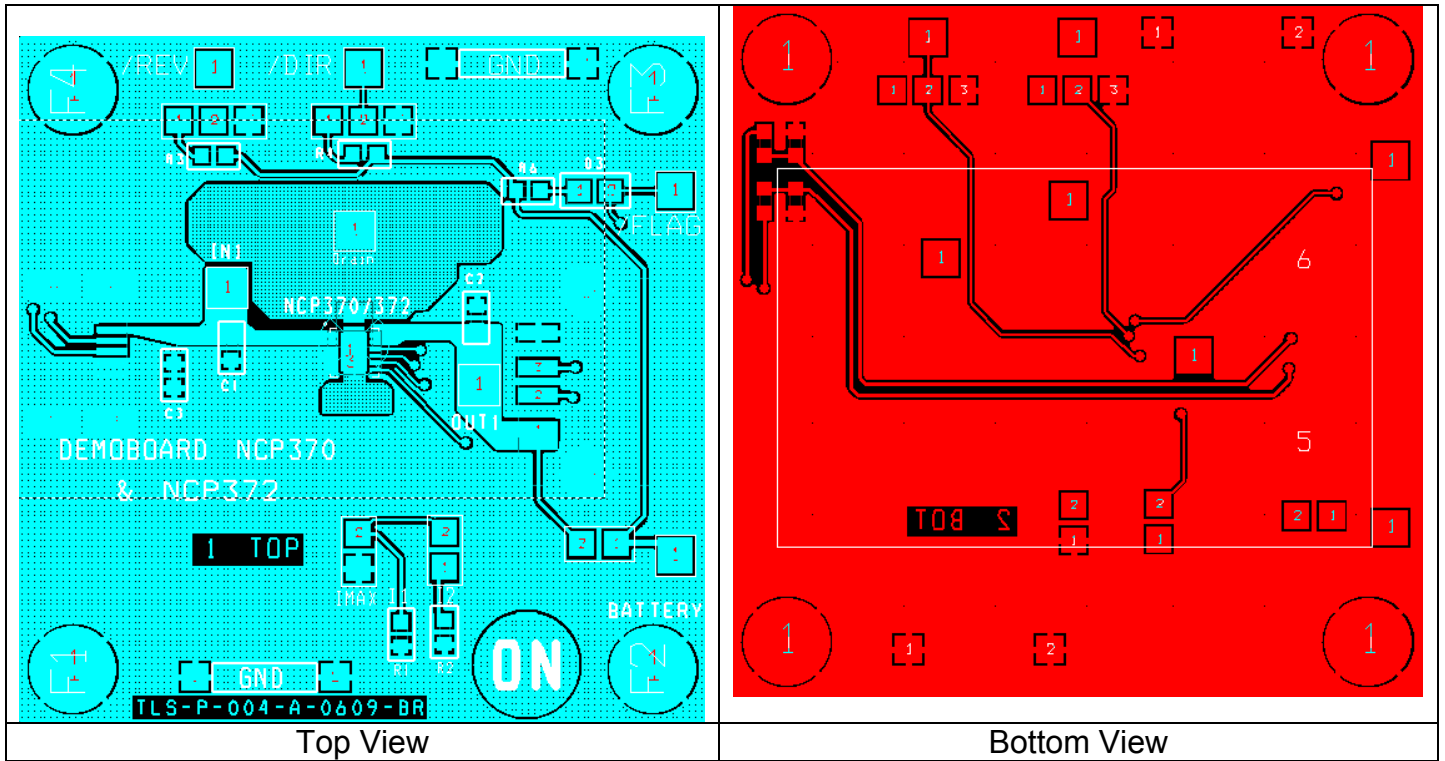
# 1 – Schematic:



## 2 - BOM:

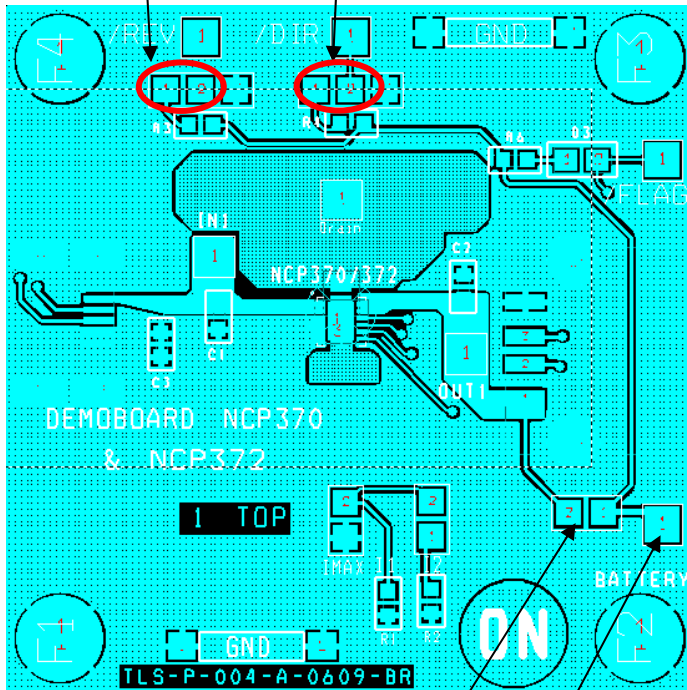
Quantity	Designation	Manufacturer	Digi key	Specifications
1	NCP370 LLGA3x3	ON Semiconductor		Over voltage protection
2	C1 (Cin), C2 (Cout)	Murata – GRM188R61E105KA12D	490-3897-1-ND	1 $\mu$ F 25V X5R CMS0805
1	C3 (ID): not mounted			
13	Test points:IN1, OUT1,BATTERY,FLAG, DRAIN, REV, DIR		5001K-ND	Hole diameter: 1.3mm
1	J13 (USB IN)	Molex	WM17116CT-ND	5 pins USB miniB
1	J12. (USB OUT)	Molex	WM17118-ND	4 pins USB A
1	FLAG	rohm	511-1287-ND	Green LED 0805
1	R6	susumu	Rr08p(value)dct-nd	1k $\Omega$ . CMS0603 0.5%
2	R3, R4	susumu	Rr08p(value)dct-nd	100 k $\Omega$ . CMS0603 0.5%
Not mounted	R5,R7,R8,R9 (USB data)			
1	R1	susumu	Rr08p(value)bct-nd	69.8k $\Omega$ . CMS0603 0.5%
1	R2	susumu	Rr08p(value)bct-nd	16.9k $\Omega$ . CMS0603 0.5%
4	GND jumper:J7,J10		WM8083-ND	Jumper Ground 1mm pitch 10.16 mm
1x3	REV		WM8083-ND	SMB R 114 665 PCB Plated Gold
1x3	DIR		WM8083-ND	SMB R 114 665 PCB Plated Gold
1x2	lmax		WM8083-ND	SMB R 114 665 PCB Plated Gold
1x2	l2		WM8083-ND	SMB R 114 665 PCB Plated Gold
1x2	Battery		WM8083-ND	SMB R 114 665 PCB Plated Gold

### 3 - PCB:



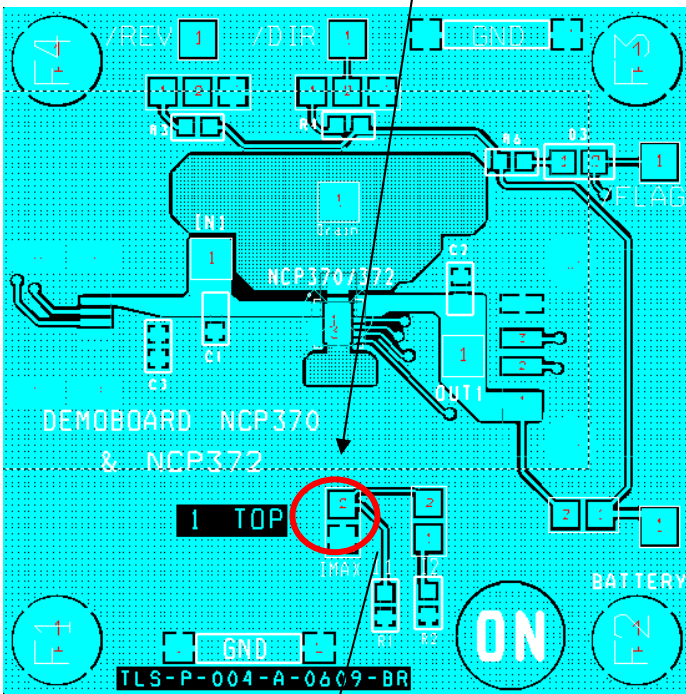
## 4 – Connecting Process

1. Place /REV strap and /DIR strap on left side (“1” logic) (connected to Vbat, through pull up resistor)

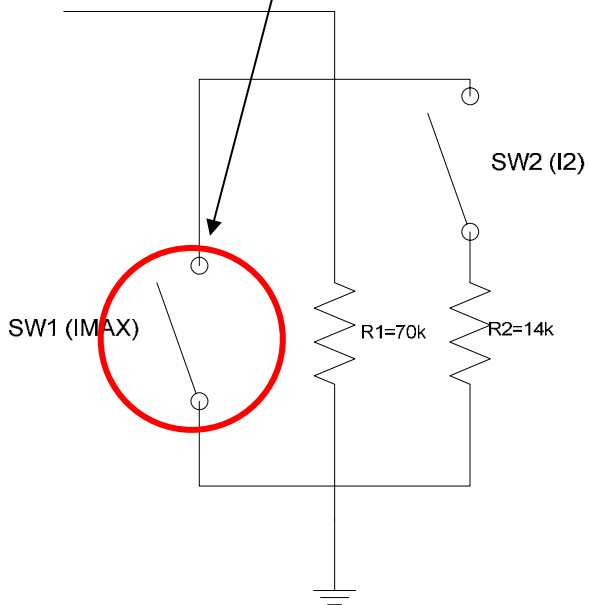


2. Let Battery strap opened.
3. Connect a Battery or power supply (4.2V) on Battery test point. (min 2A capability)

4. Connect strap on Ilim.



ILIM PIN (7)



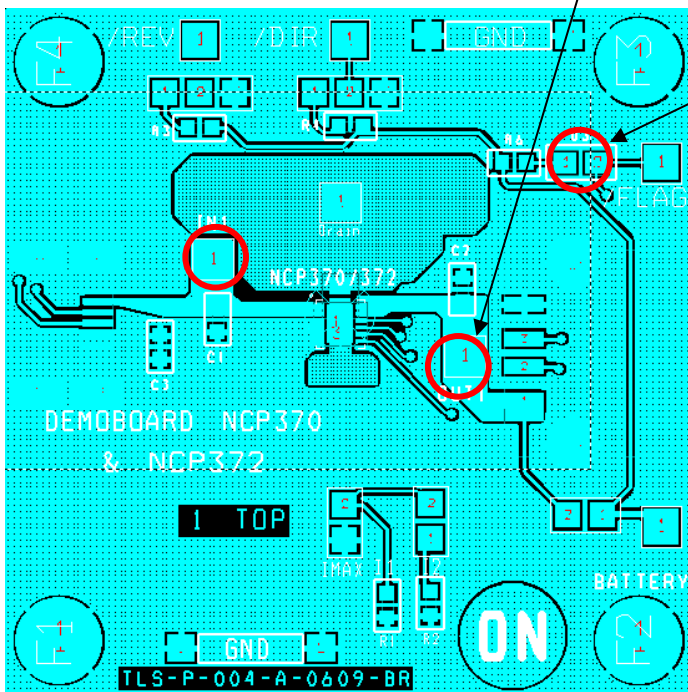
5. Select I limit threshold with pull down resistors connected on pin 7:

SW1	SW2	I OCP
0	0	500mA
0	1	1A
1	0	1.5A
1	1	1.5A

R1= 70K  
R2= 14K

Disable Mode:

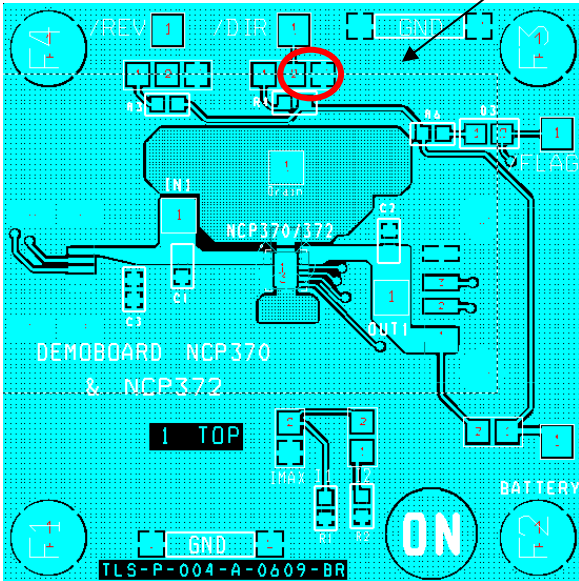
6. Connect 10 V capability Vin Supply on IN1 test point.
  - a. Set power supply to 5V ⇒ Check Vout = 0V and LED = off



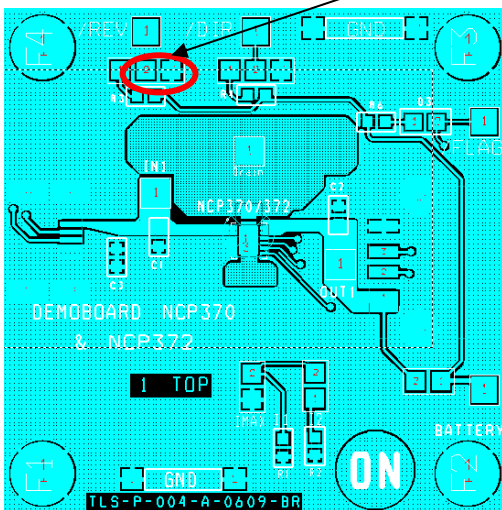


Direct Mode:

7. Switch /DIR from left to right, 1 logic level to 0 logic level



8. Check  $V_{out}=5V$  and Flag LED is still off
9. Set  $V_{in}=7V$
10. Check Flag LED = on, and  $V_{out}$  is 0V.
11. Switch /REV from left to right, 1 logic level to 0 logic level



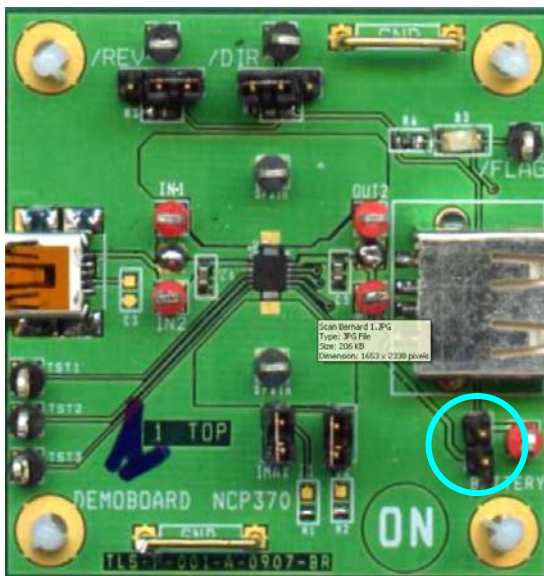
12. Check Flag LED = off, and  $V_{out} = V_{in} = 7V$ .

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Disconnect Vin supply

Reverse Mode:

- 13. Connect Set /DIR=1, /REV=1  
Disconnect Vin Power Supply from IN test points.  
Connect accessory on IN1 or IN2 test points.



← Put strap to connect Battery to Vout

- 14. Set /DIR=1, /REV=0:  $V_{out} = V_{in}$

If  $I_{accessory} < I_{limit}$  then  $V_{in} = V_{out} - R_{dson} \times I$

If  $I_{accessory} > I_{limit}$  then  $V_{in} = 0$  (Current regulation)

Power off.

- 15. Set /DIR=1, /REV=1
- 16. Disconnect accessory
- 17. Disconnect Battery

Please contact Application Engineer for further information.  
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