

NCP 370

Over Voltage Protection Controller with reverse charge control

Demo board



ON Semiconductor

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Abstract

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

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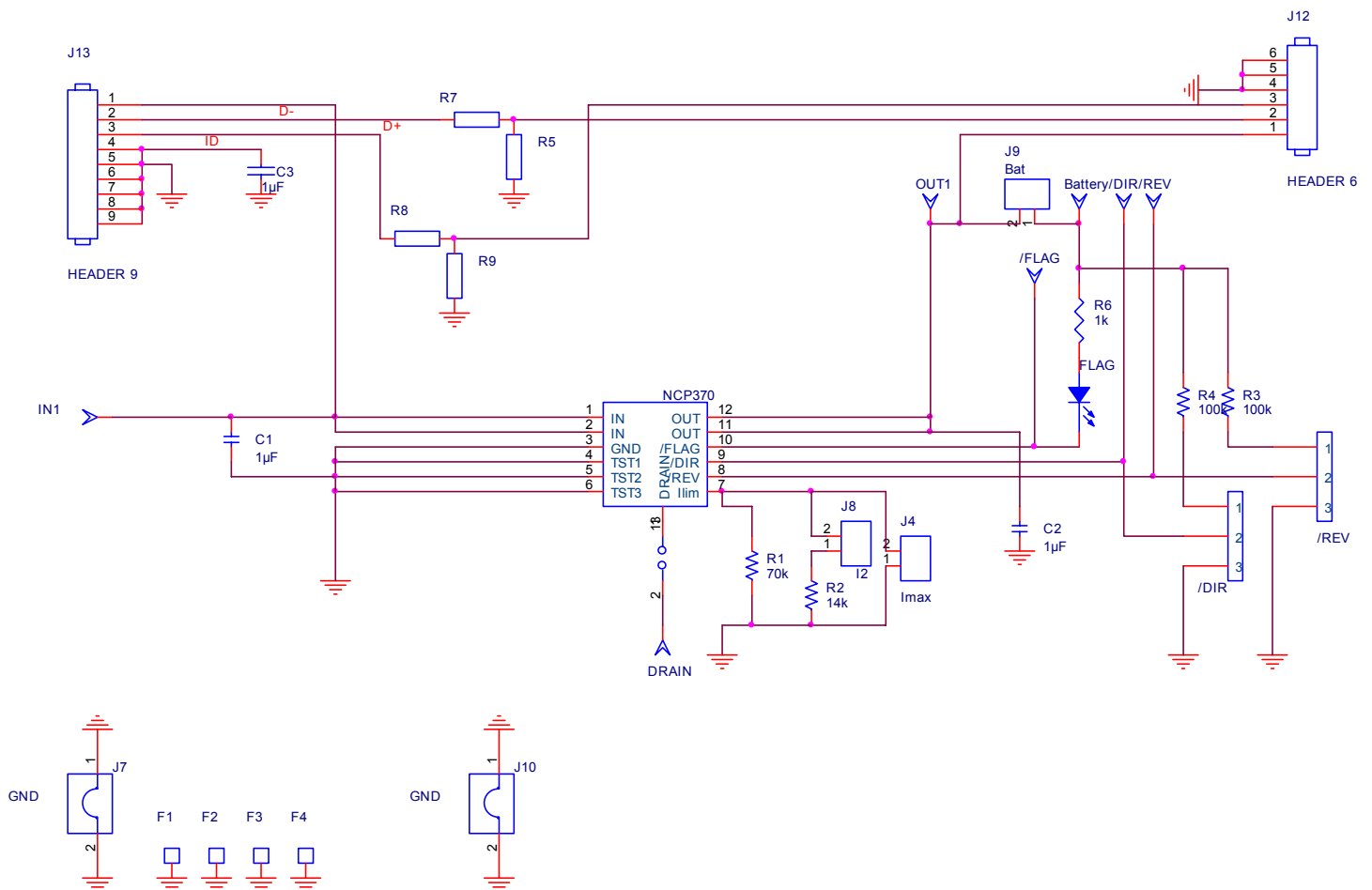
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**ON Semiconductor Engineering Application – Confidential Proprietary
Demo board NCP370**

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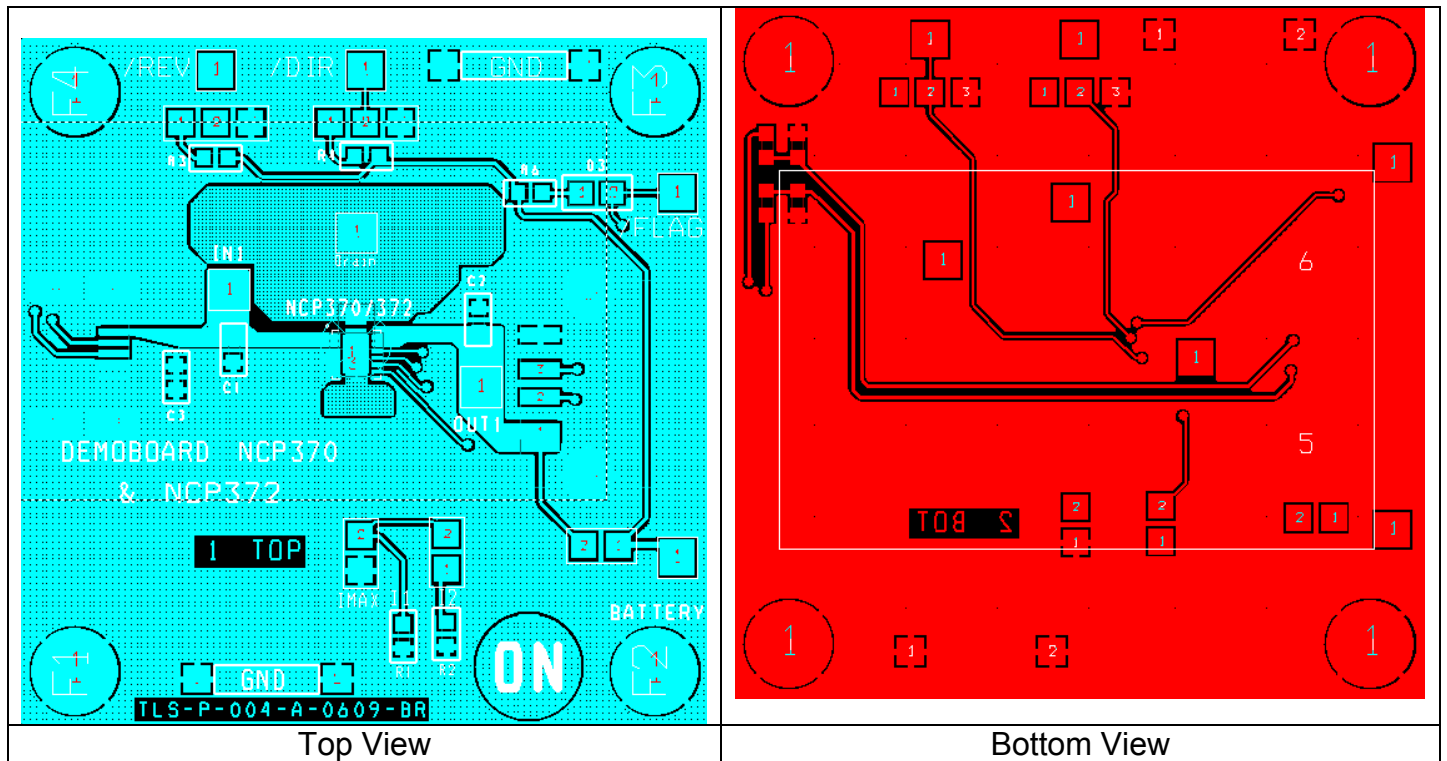
1 – Schematic:



2 - BOM:

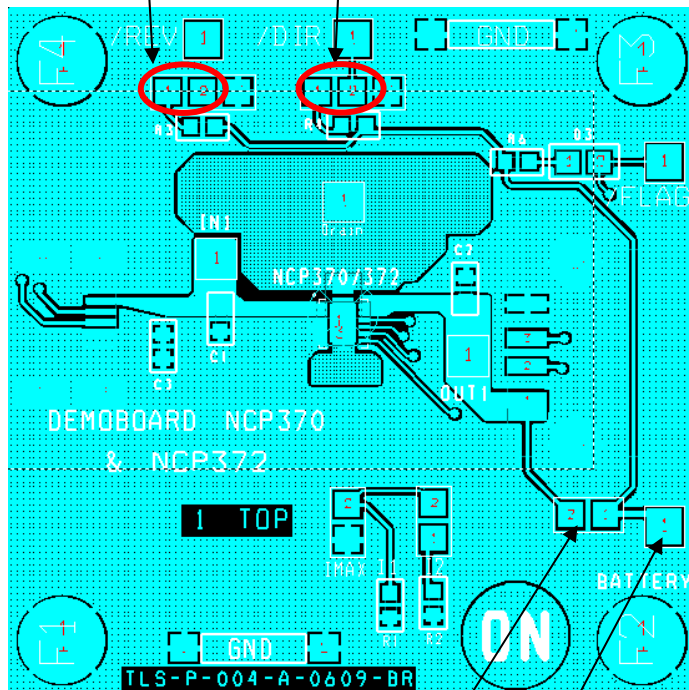
Quantity	Designation	Manufacturer	Digi key	Specifications
1	NCP370 LLGA3x3	ON Semiconductor		Over voltage protection
2	C1 (Cin), C2 (Cout)	Murata – GRM188R61E105KA12D	490-3897-1-ND	1µF 25V X5R CMS0805
1	C3 (ID): not mounted			
13	Test points:IN1, OUT1,BATTERY,FLAG, DRAIN, REV, DIR		5001K-ND	Hole diameter: 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	1kΩ. CMS0603 0.5%
2	R3, R4	susumu	Rr08p(value)dct-nd	100 kΩ. CMS0603 0.5%
Not mounted	R5,R7,R8,R9 (USB data)			
1	R1	susumu	Rr08p(value)bct-nd	69.8k Ω. CMS0603 0.5%
1	R2	susumu	Rr08p(value)bct-nd	16.9k Ω. 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	Imax		WM8083-ND	SMB R 114 665 PCB Plated Gold
1x2	I2		WM8083-ND	SMB R 114 665 PCB Plated Gold
1x2	Battery		WM8083-ND	SMB R 114 665 PCB Plated Gold

3 - PCB:



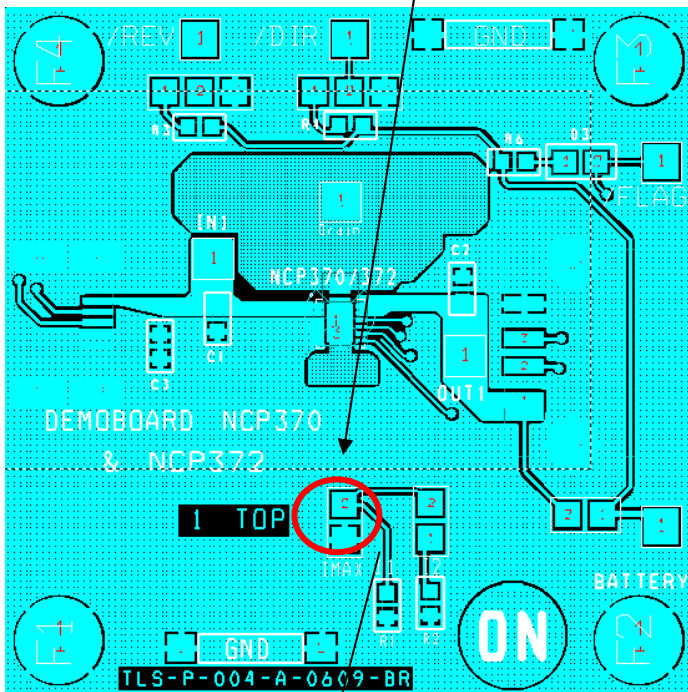
4 – Connecting Process

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

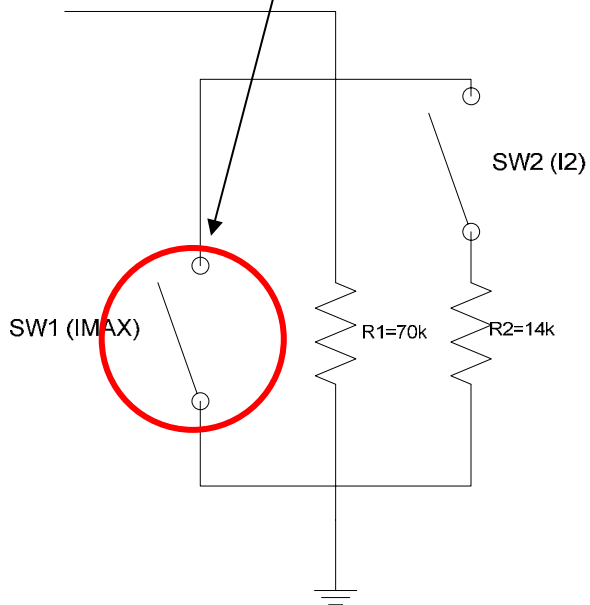


2. Let Battery strap opened.
3. Connect a Battery or power supply (4.2V) on Battery test point. (min 2A capability)

4. Connect strap on Ilim.



ILIM PIN (7)



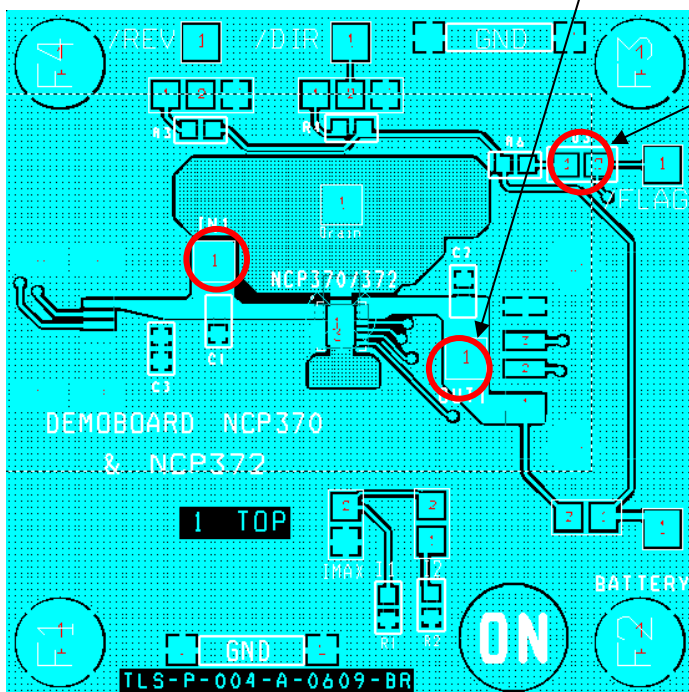
5. Select I limit threshold with pull down resistors connected on pin 7:

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

R1= 70K
R2= 14K

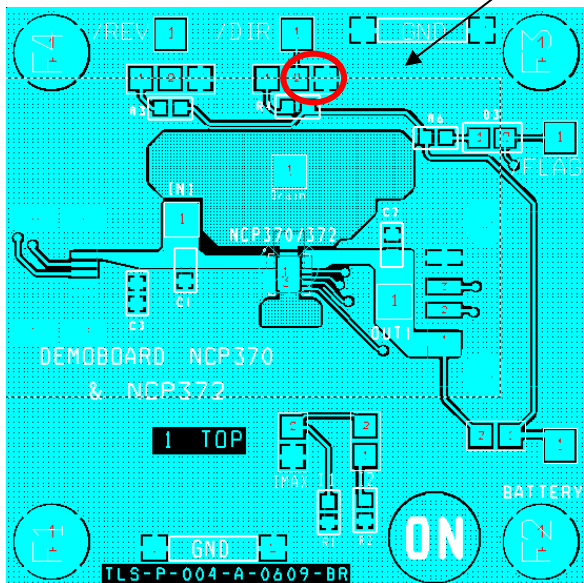
Disable Mode:

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

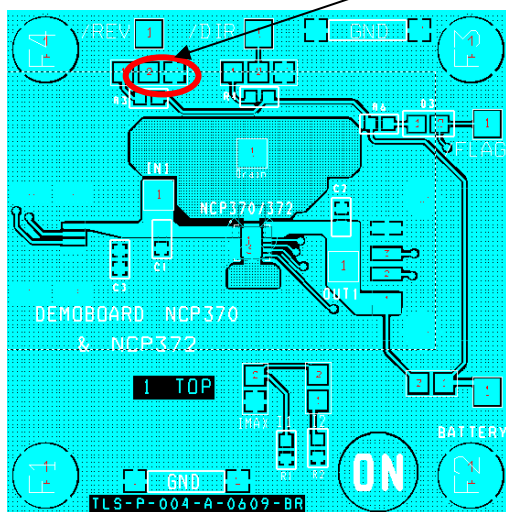


Direct Mode:

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



8. Check Vout=5V and Flag LED is still off
9. Set Vin=7V
10. Check Flag LED = on, and Vout is 0V.
11. Switch /REV from left to right, 1 logic level to 0 logic level



12. Check Flag LED = off, and Vout = Vin = 7V.

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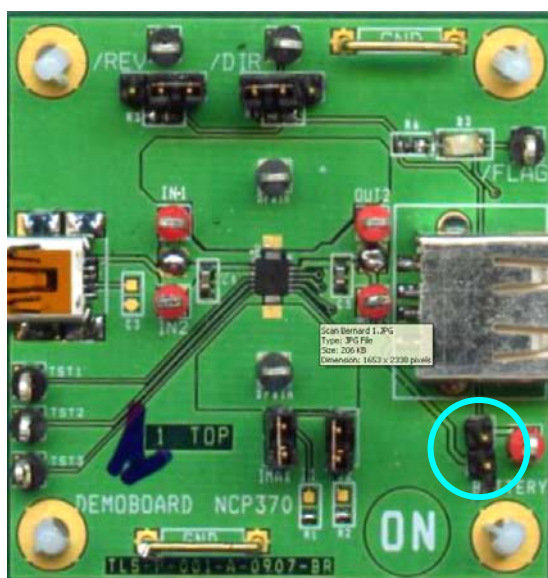
Disconnect Vin supply

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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