Application Note

NOVOSENSE

NSD2621X Demo Board User Guide

AN-15-0007

Author:Long Huojun

NSD2621X
Demo Board User Guide

FEATURES

The NSD2621 demo board is designed to test NSD2621X electronic characteristic. The related pins have been drawn out to the connector CON1 and CON2. User can test the performance according to the request.

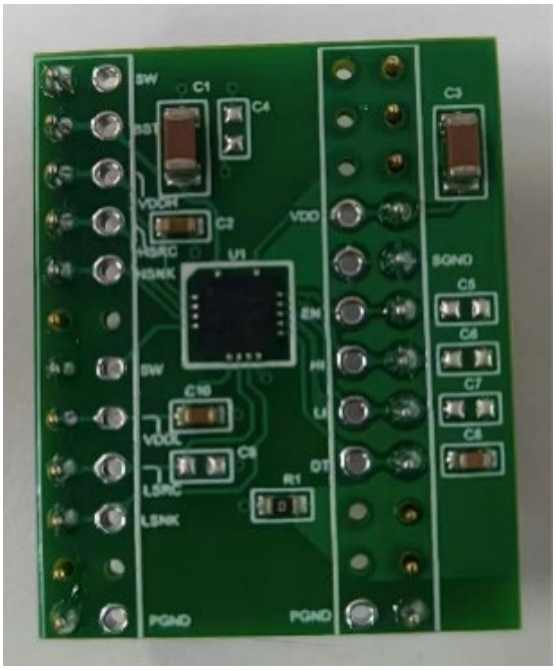

Figure 1. NSD2621 Demo Board

AN-15-0007

NSD2621X
Demo Board User Guide

NOVOSENSE

INDEX

1.Demo Board Overview

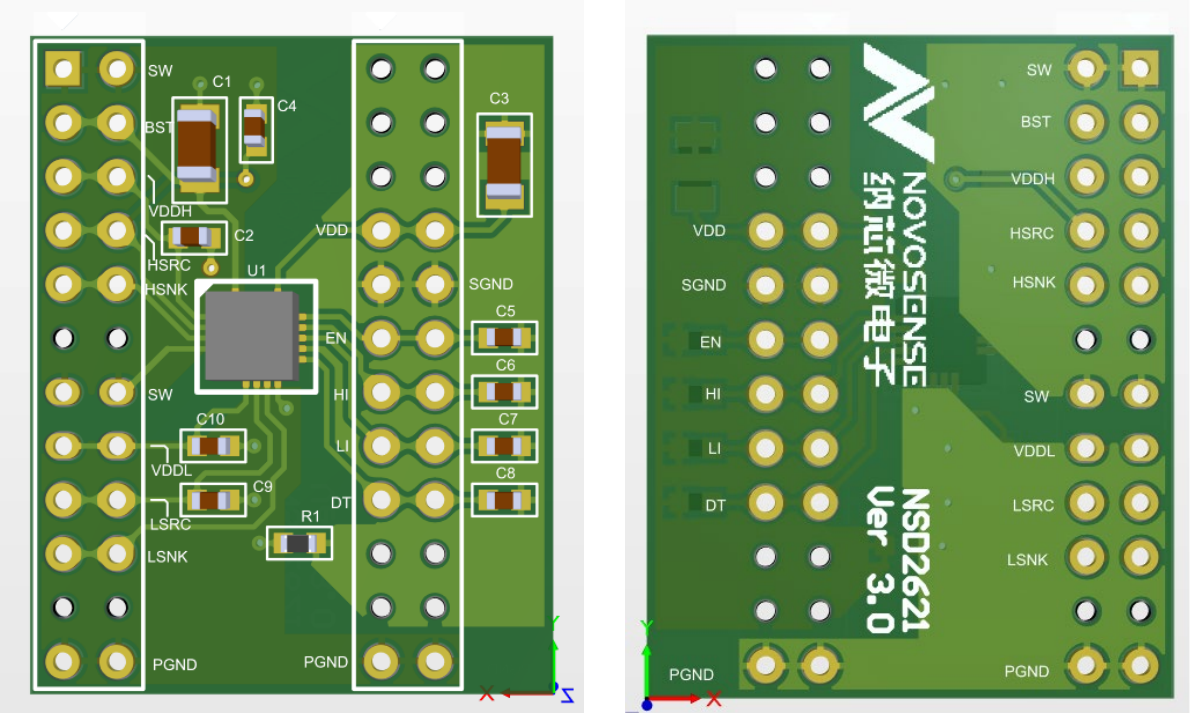

Figure 2. NSD2621 Demo Board 3D

Board size: 31mm x 24.6mm x 1.6mm
Connector pitch: 2.54mm
Distance between connector P1 and P2: 17.54mm
Pin diameter: 0.5mm
Board Layers: 2 Layers

Table 1. Pin Configuration and Description

Connector	Pin	SYMBOL	FUNCTION
CON1	1,2,3,4,5,6, 19,20,21,22	NC	Not Connected
	7,8	VDD	Half-bridge driver power supply
	9,10	SGND	Logic ground
	11,12	EN	Enable logic input of Half-bridge driver
	13,14	HI	High-side driver logic input
	15,16	LI	Low-side driver logic input
	17,18	DT	Dead-time controller
	23,24	PGND	High-side gate driver reference.
CON2	1,2,13,14	SW	High-side driver reference (Switching node)
	3,4	BST	Power supply for high-side regulator (Bootstrap voltage)
	5,6	VDDH	High-side voltage regulator output. A 100nF ceramic capacitor has been welded between VDDH and SW.
	7,8	HSRC	High-side driver sourcing output
	9,10	HSNK	High-side driver sinking output
	11,12,21,22	NC	Not Connected
	15,16	VDDL	Low-side voltage regulator output. A 100nF ceramic capacitor has been welded between VDDL and SGND.
		LSRC	Low-side driver sourcing output
	19,20	LSNK	Low-side driver sinking output
	23,24	PGND	Low-side driver reference (Power ground)

Table 2. BOM list

Designator	Description	Value	Manufacturer	Part Number
C1,C3	Capacitors, ceramic, X8G, general purpose	1uF	Murata	GCM31CL81H105KA55#
C2,C10	Capacitors, ceramic, X8G, general purpose	0.1uF	Murata	GCM188L81H104KA57#
C8	Capacitors, ceramic, X8G, general purpose	1nF	Murata	CGA3E2X8R2A102KT0Y0
R1	0603 Resistor	0Ω	Uniroyal	0603WAF0000T5E
U1	NSD2621	NSD2621	Novosense	/
CON1,CON2	PCB test Connector	127-1-4010-8002-310	Nextron	127-1-4010-8002-310

2.Demo Board Introduction

NSD2621X is the half bridge driver. Two 1uF ceramic capacitors has been separately welded at C1 and C3 on the board. Two 0.1uF ceramic capacitors have been separately welded at C2 and C10 which make VDDL and VDDH stable output. A 1nF ceramic capacitor has been welded at C8. In order to make the demo board normal operation, SGND and PGND has been shorted with 0Ω resistor(R1) on the board. In addition, the demo board can normally operate when 9~18V DC power supply was added between VDD and SGND, BST and SW pin.

To test the gate waveform of the NSD2621X, LSNK, LSRC, HSNK and HSRC have been drawn out to the connector CON2; HI, LI, EN and other signals have been drawn out to the connector CON1.

The locations of capacitor C4, C5, C6, C7 and C9 have been reserved to debug.

3.Application Notes

SW is the High-side driver reference of NSD2621X. The minimum distance between SW and VDDL is only 1.2mm on the demo board. These should be noted when 400V DC or above bus voltage was used.

The demo board is 2 layers PCB with 1oz copper. The thermal sink pad is limited. It should be noted when the demo board was used to drive the high load.

4.Schematic and PCB Layout of Demo Board

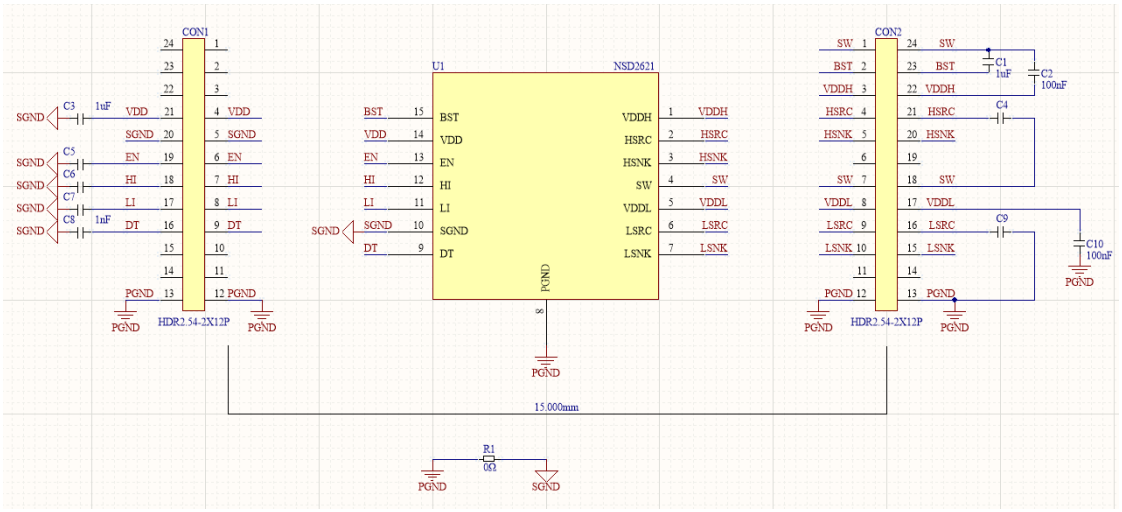

Figure 3. Schematic

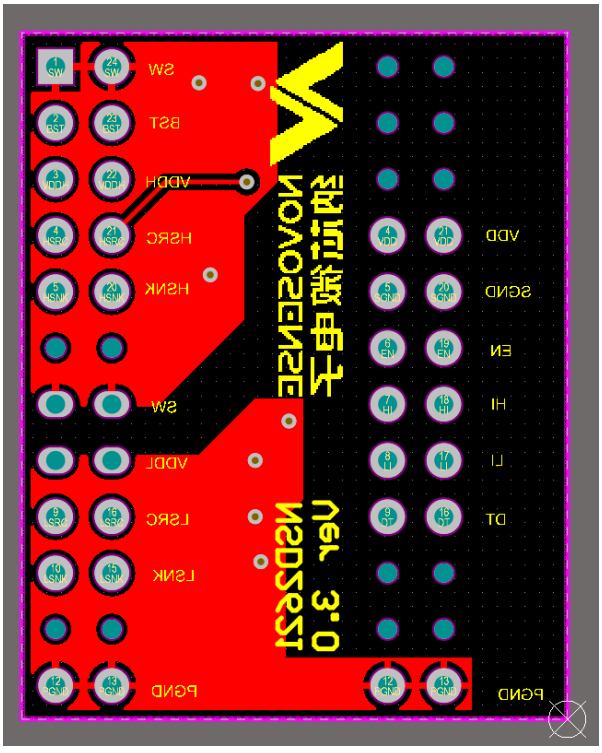

Figure 4. Top Layer

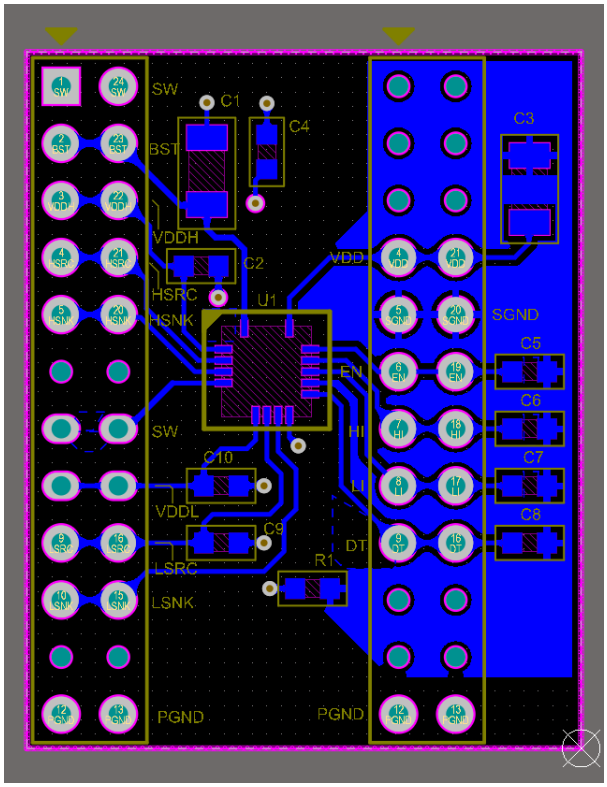

Figure 5. Bottom Layer

5.Revision History

Revision	Description	Author	Date
1.0	Initial version	Long Huojun	27/3/2023

Sales Contact: sales@novosns.com;Further Information: www.novosns.com