

NCV8871LVB

NCV8871 Automotive Grade Boost Controller Low Power Boost Evaluation Board User's Manual



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EVAL BOARD USER'S MANUAL

Description

The NCV8871LVB evaluation board provides an opportunity to evaluate the NCV887100 in a 10 W start stop boost application. The board supplies a 10.6 V output with 1 A of output current from as low as a 5 V input. The enable pin can also be used to synchronize the supply to an external clock.

Key Features

- 10.6 V Output Voltage
- 1 A Output Current
- Fixed Frequency Operation at 170 kHz
- Regulates Fully Loaded From as Low as 5 V Input
- Survives 35 V Load Dump
- External Clock Synchronization up to 340 kHz
- Automotive Grade



Figure 1. NCV8871LVB Evaluation Board

NCV8871LVB

Table 1. EVALUATION BOARD TERMINAL DESCRIPTIONS

Terminal	Function
VIN	Positive dc input voltage.
GND	Common dc return.
VOOUT	Dc output voltage.
EN/SYNC	Dc enable voltage and external clock synchronization. A dc logic low disables the device.

Table 2. ABSOLUTE MAXIMUM RATINGS (Voltages are with respect to GND)

Rating	Value	Unit
Dc Supply Voltage (VIN)	-0.3 to 35	V
Dc Supply Voltage (EN/SYNC)	-0.3 to 6	V
Ambient Temperature	-40 to 85	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Table 3. ELECTRICAL CHARACTERISTICS (TA = 25°C, 4.5 ≤ VIN ≤ 18 V, IOOUT ≤ 2 A, unless otherwise specified)

Characteristic	Conditions	Typical Value	Unit
Output Voltage		10.6	V
Voltage Accuracy	-40 ≤ TA ≤ 85	4	%
Switching Frequency		170	kHz

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

SCHEMATIC

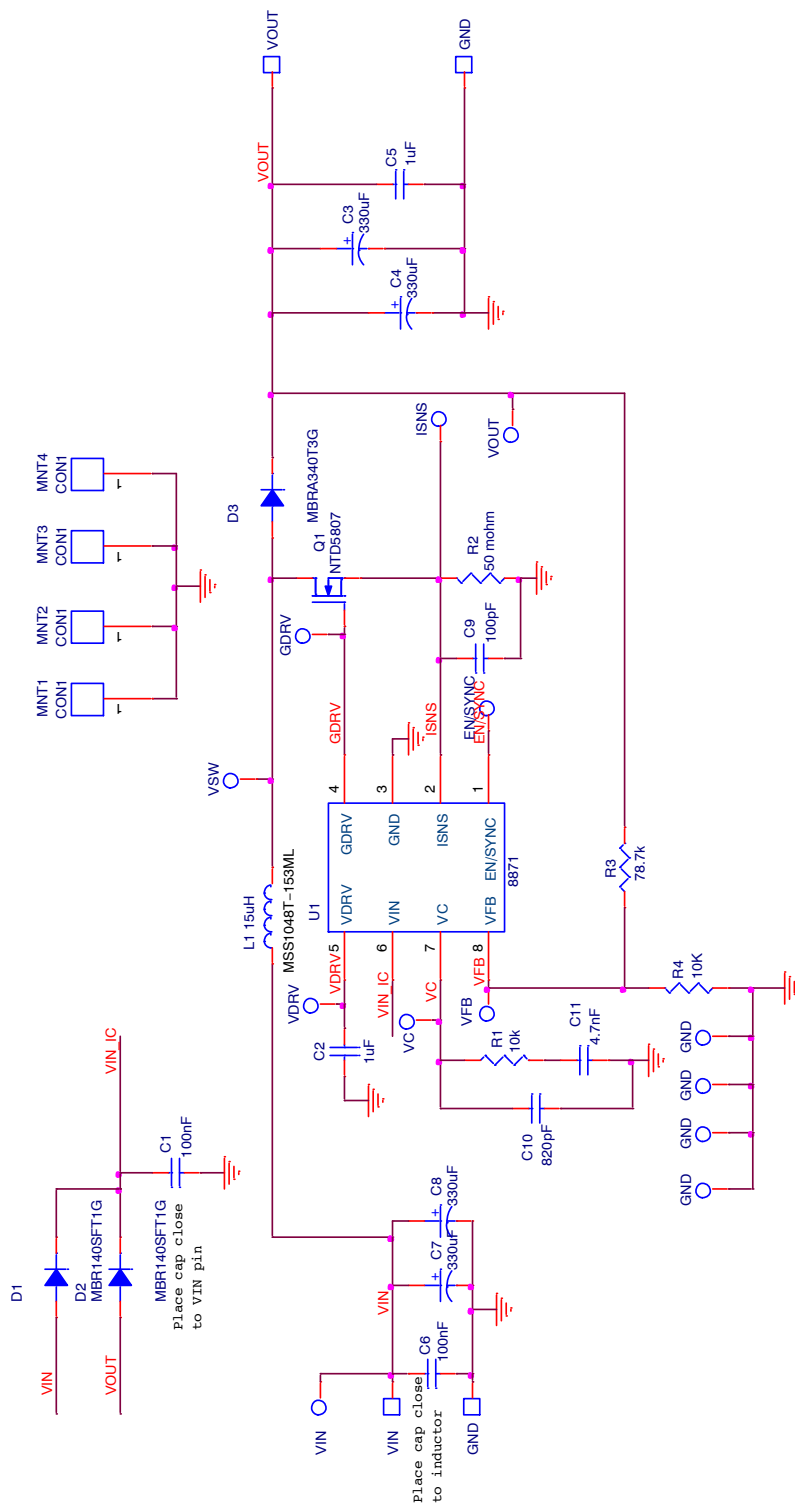


Figure 2. NCV8871 Evaluation Board Schematic

NCV8871LVB

PCB LAYOUT

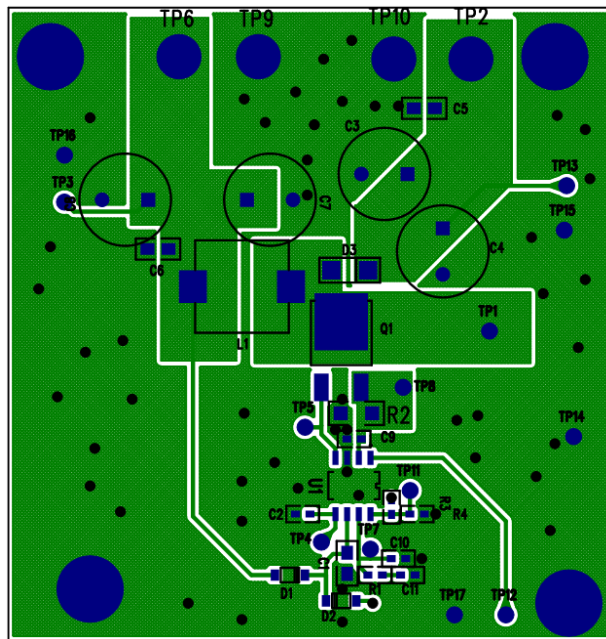


Figure 3. Top Layout

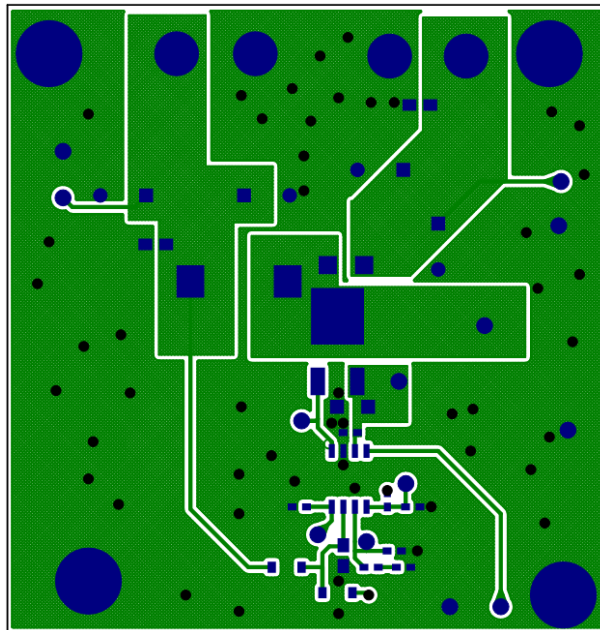


Figure 4. Bottom Layout

NCV8871LVB

BILL OF MATERIALS

Table 4. BILL OF MATERIALS

Item Number	Quantity	Value	Part Number	Part Reference
1	2	100 nF	GCM188R71H104KA57D	C1, C6
2	1	1 μ F	GCM188R71C105KA64D	C2
3	4	330 μ F	35ZLH330M10X12.5	C3, C4, C7, C8
4	1	1 μ F	GCM21BR7YA105KA55L	C5
5	1	100 pF		C9
6	1	820 pF		C10
7	1	1.5 nF		C11
8	2	MBR140SFT1G	MBR140SFT1G	D1, D2
9	1	MBRA340T3G	MBRA340T3G	D3
10	1	15 μ H	MSS1048T-153ML	L1
11	1	CON1		MNT1
12	1	CON1		MNT2
13	1	CON1		MNT3
14	1	CON1		MNT4
15	1	NTD5807	NTD5802NT4G	Q1
16	1	21.5k		R1
17	1	80 m Ω	WSL1206R0800FEA	R2
18	1	78.7k		R3
19	1	10K		R4
20	1	VSW		TP1
21	1	VOUT		TP2
22	1	VIN		TP3
23	1	VDRV		TP4
24	1	GDRV		TP5
25	1	VIN		TP6
26	1	VC		TP7
27	1	ISNS		TP8
28	1	GND		TP9
29	1	GND		TP10
30	1	VFB		TP11
31	1	EN/SYNC		TP12
32	1	VOUT		TP13
33	1	GND		TP14
34	1	GND		TP15
35	1	GND		TP16
36	1	GND		TP17
37	1	NCV8871	NCV887100D1R2G	U1

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