

NIS5420 Evaluation Board User's Manual

EVBUM2760/D

Instructions

- Remove all jumpers from the headers if there are any in place
- Connect an ohmmeter across the Rlim measurement test points and set it to 20 Ω with a small screwdriver
- Connect a DC supply from Vin to GND and apply 12 V
- Check that Vout = 12 V, Ven ~ 4.5 V and the green LEDs are on
- Connect oscilloscope voltage probes to Vin (Ch1), Vout (Ch2), and EN (Ch4). For Ch3 connect a current probe from the power supply to Vin

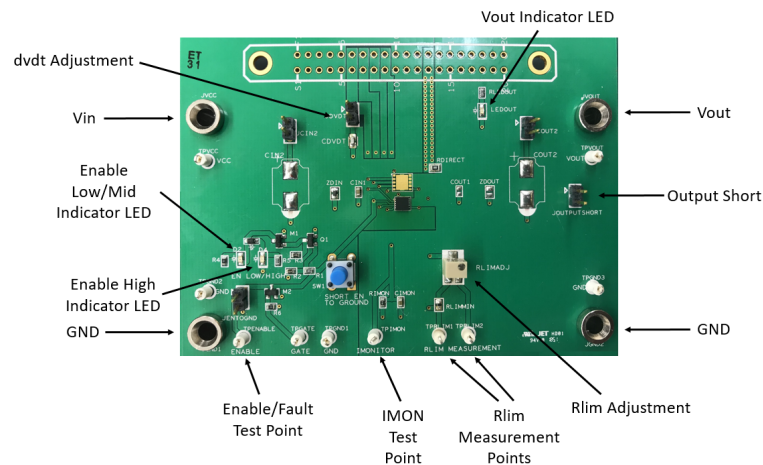


Figure 2. Features of the Evaluation Board



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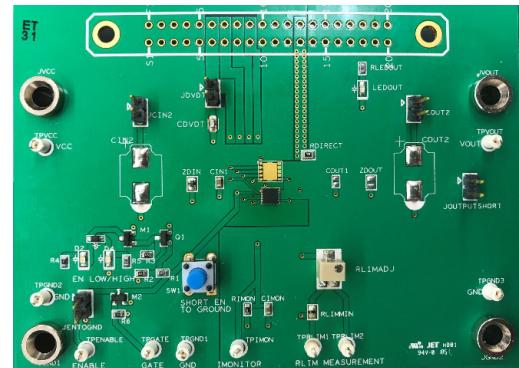


Figure 1. The Evaluation Board

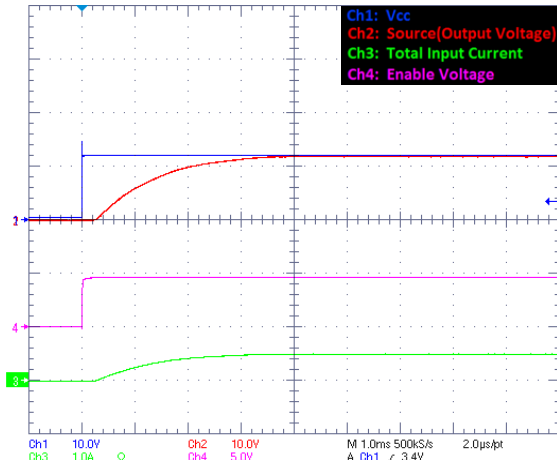


Figure 3. Hot Plug with dvdt Open into 24 Ω Load (1 ms/Division Timescale)

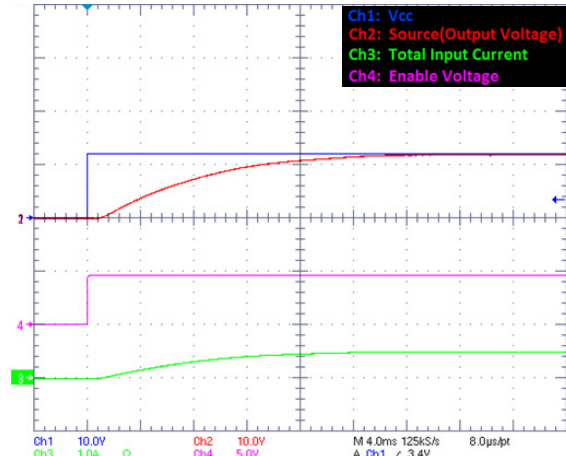


Figure 4. Hot Plug with 180 pF dvdt Capacitor Selected into 24 Ω Load (4 ms/Division Timescale)

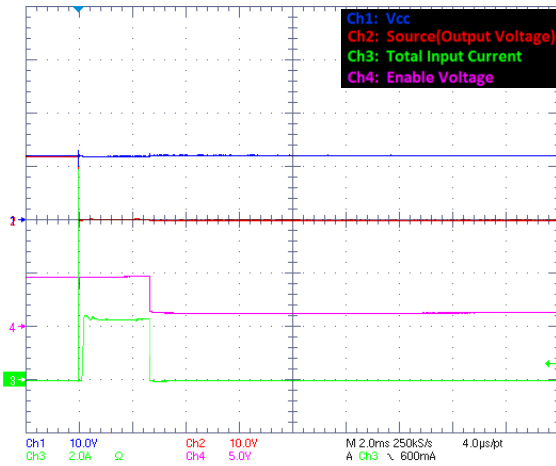


Figure 5. Sudden Short Circuit from Output to GND Showing ILIM_SC and Thermal Shutdown (NIS5420MT1, Latching)

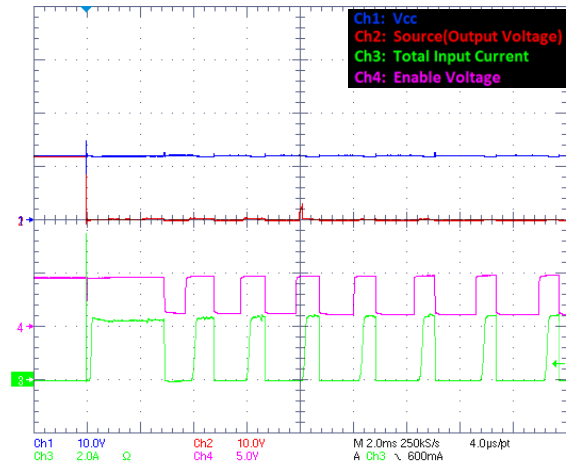


Figure 6. Sudden Short Circuit from Output to GND Showing ILIM_SC and Thermal Shutdown (NIS5420MT6, Auto-Retry)

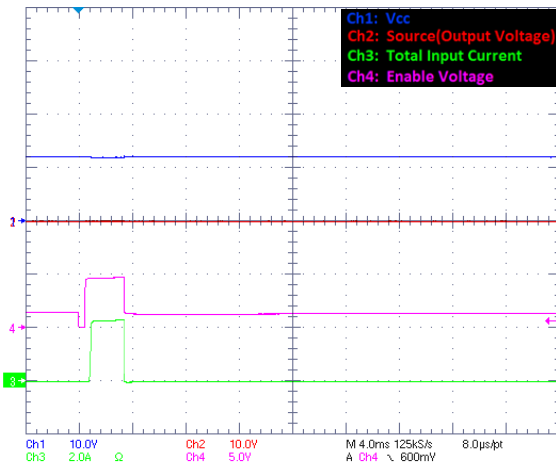


Figure 7. Toggling the EN/Fault Pin with a Pulse Generator to Reset from Thermal Shutdown with Vout Still Shorted to GND

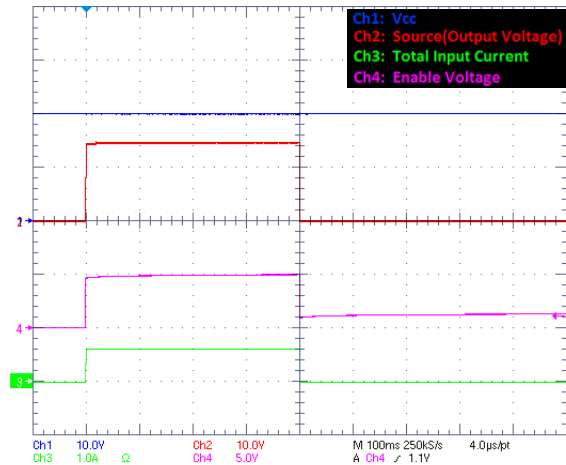


Figure 8. Turning on by Releasing EN from GND into a Situation with Excessive Input Voltage. The Vclamp Feature Limits the Output Voltage. There is a 24 Ω Load. The Load Current and the Voltage Drop across the eFuse from Input to Output Cause the eFuse to Enter Thermal Shutdown

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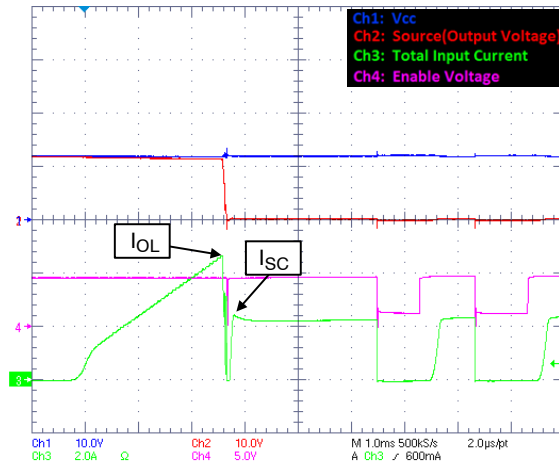


Figure 9. Drawing Current with an Electronic Load, Showing the Overload (I_{OL}) and Short Circuit (I_{SC}) Current Limits

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EVALUATION BOARD SCHEMATIC

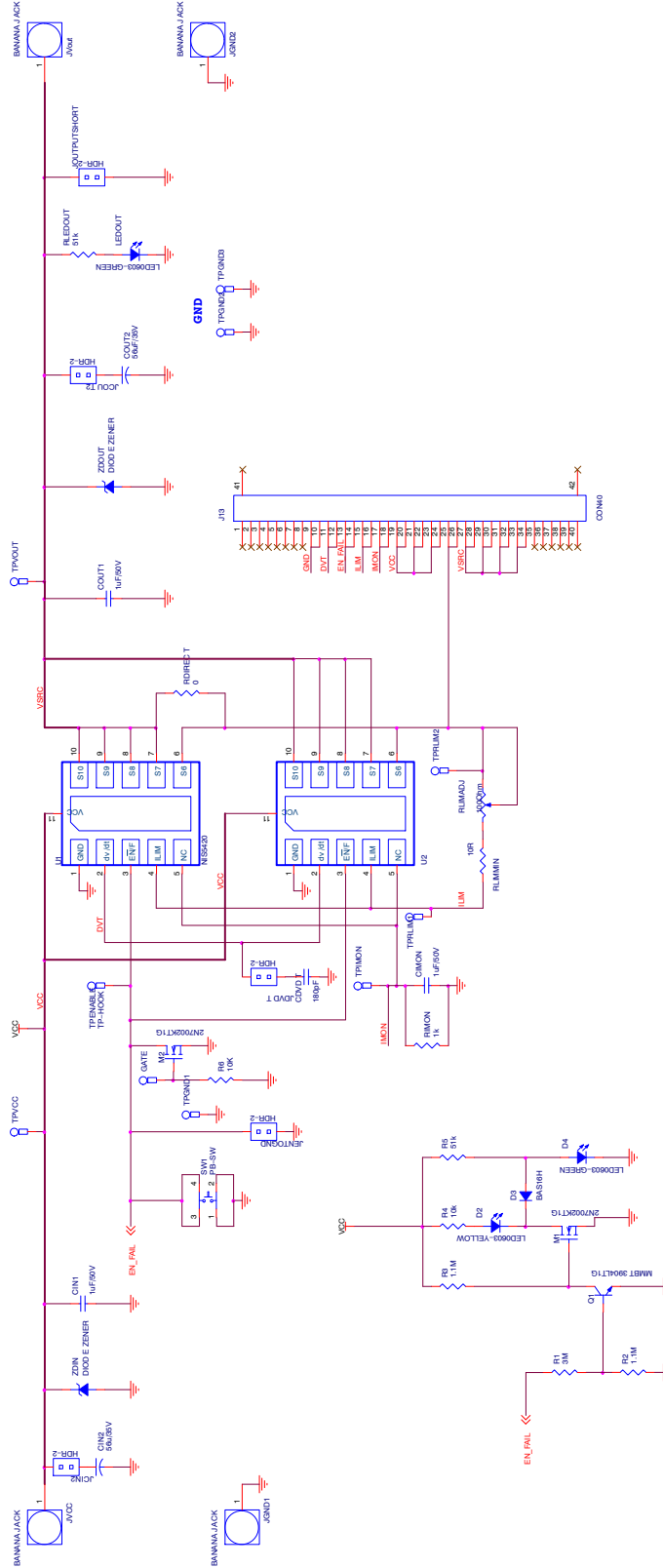


Figure 10. The NIS5420 Evaluation Board Schematic

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BILL OF MATERIALS

Table 1. BILL OF MATERIALS

Item	Qty	Reference	Part	Digikey Part Number	Manufacturer	Manufacturer Part Number	DNP
1	1	CDVDT	180 pF	311-3890-1-ND	Yageo	CC0603FRNPO9BN181	
2	3	C1MON, COUT1, CIN	1 μ F/50 V	587-2400-1-ND	Taiyo Yuden	UMK107BJ105KA-T	
3	0	COUT2, CIN2	56 μ F/35 V	493-4385-1-ND	Nichicon	PCV1V560MCL1GS	DNP
4	1	D2	LED0603-YELLOW	160-1448-1-ND	Lite-On Inc	LTST-C191KSKT	
5	1	D3	BAS16H	BAS16HT1GOSCT-ND	ON Semiconductor	BAS16HT1G	
6	2	D4, LEDOUT	LED0603-GREEN	160-1888-1-ND	Lite-On Inc	LTST-C191TGKT	
7	0	J13	CON40	S3314-ND	Sullins Connector Solutions	EBC20DRTH	DNP
8	5	JCOUT2, JCIN2, JOUTPUTSHORT, JENTOGND, JDVDT	HDR-2	3M9447-ND	3M	961102-6404-AR	
9	4	JGND1, JGND2, JVout, JVCC	BANANA JACK	36-575-8-ND	Keystone Electronics	575-8	
10	2	M1, M2	2N7002KT1G	2N7002KT1GOSCT-ND	ON Semiconductor	2N7002KT1G	
11	1	Q1	MMBT3904LT1G	MMBT3904LT1GOSCT-ND	ON Semiconductor	MMBT3904LT1G	
12	1	R1	3 M Ω	P3.0MGCT-ND	Panasonic Electronic Components	ERJ-3GEYJ305V	
13	2	R2, R3	1.1 M Ω	P1.1MGCT-ND	Panasonic Electronic Components	ERJ-3GEYJ115V	
14	2	R4, R6	10 k Ω	P10KGCT-ND	Panasonic Electronic Components	ERJ-3GEYJ103V	
15	2	R5, RLEDOUT	51 k Ω	P51KGCT-ND	Panasonic Electronic Components	ERJ-3GEYJ513V	
16	1	RDIRECT	0 Ω	P0.0ACT-ND	Panasonic Electronic Components	ERJ-6GEY0R00V	
17	1	RIMON	1 k Ω	P1.0KDBTR-ND	Panasonic Electronic Components	ERA-3AEB102V	
18	1	RLIMADJ	100 Ω	3214X-1-101ECT-ND	Bourns Inc.	3214X-1-101E	
19	1	RLIMMIN	10 Ω	311-10.0HRCT-ND	Yageo	RC0603FR-0710RL	
20	1	SW1	PB-SW	EG4369-ND	E-Switch	TL1105FF160Q	
21	10	TPRLIM1, TPGND1, TPRLIM2, TPGND2, TPGND3, TPVOUT, TPVCC, TPIMON, TPENABLE, GATE	TP-HOOK	36-5002-ND	Keystone Electronics	5002	
22	1	U1	NIS5420MTx		ON Semiconductor		
23	0	U2					DNP
24	1	ZDIN	33 Vz	MM5Z33VT1GOSTR-ND	ON Semiconductor	MM5Z33VT1G	
25	0	ZDOUT	33 Vz	MM5Z33VT1GOSTR-ND	ON Semiconductor	MM5Z33VT1G	DNP

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