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NCP457xx Evaluation Board User's Manual

Introduction

This user's manual provides detailed information regarding the configuration and use of the NCP457xx evaluation boards. Each NCP457xx product has a different pin out, however, the external connections to the evaluation boards are the same. This manual focuses on the evaluations boards' common external connections and use.

Evaluation Board Features

- 1 NCP457xx part
- High Current Connection for Load Switch V_{IN}.
- High Current Connection for Load Switch V_{OUT}.
- Jumpers for connecting Power Good pull up resistor.
- Jumper for connecting a capacitor to externally program the slew rate.
- Jumper for connecting a resistor to ground for OCP programming.

Quick Start

Recommended Equipment

Before beginning, the following equipment is needed:

- 2 DC power supplies (1 capable of at least 24V, and 1 capable of at least 5V).
- 1 DC load (can be active or passive)
- Function generator or DC supply to drive the EN signal
- Oscilloscope (for observation of signals)
- Digital Multi-meter (for observation of signals)
- Banana cables for V_{IN} / V_{OUT} / V_{CC} / GND connections

Board Setup

The table below describes the voltages or currents intended for each connection on the evaluation board.

Connection	Voltage / Current	Notes
V_{IN}	0V – 24V	
V_{OUT}	0A – Imax	OCP setting affects possible load currents.
V_{CC}	3V – 5.5V	Controller supply
GND	0V	
J1	Install for max OCP setting.	OCP programming connection.
J2	Remove to for fastest slew rate setting.	SR programming connection.
J3	Connect if using the PG signal	Connects a 100kΩ pull-up resistor to VCC PG pin

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Testing Procedure

The NCP457xx EVK comes fully assembled and tested. Follow the steps below to verify board operation. Refer to the schematic and layout diagrams found on the ON Semiconductor website for specific device connections.

1) Ensure Jumper connection are correct for desired SR, OCP, and PG settings.
2) Apply DC power to the V_{IN} input (2V - 24V).
3) Apply DC power to V_{CC} (3V – 5.5V).
4) Apply 0.5A load current connected to V_{OUT}.

(Steps 2, 3, and 4 can occur in any order).

5) Enable load switch by asserting the EN signal.
6) Measure V_{OUT} using test loop. V_{OUT} should be within 20mV of V_{IN}. This difference depends on the specific R_{ON} of the part under test plus board resistance from the measurement point to the device.
7) Disable the device by asserting EN low. Measure V_{OUT}. It should measure 0V.

   The PG signal should go high and low with the enabling and disabling of the device if J3 is connected. Attaching an oscilloscope to V_{OUT} will allow for observation of the soft start change as J2 is connected or disconnected. This board can be used to evaluate all fault conditions as defined in the specific datasheets.