

# ON Semiconductor

## Is Now

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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 – $I_{max}$	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 100k $\Omega$ 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.