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## 45 W Power over Ethernet PD to USB-C/PD Demo

NCP12700 & FUSB3307 Based Solution

Public Information



# PoE to USB-C/PD NCP12700 with FUSB3307 Demo - 45 W

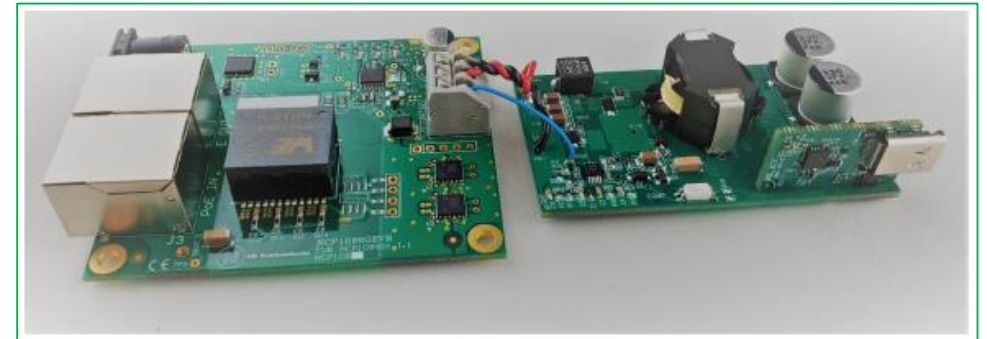
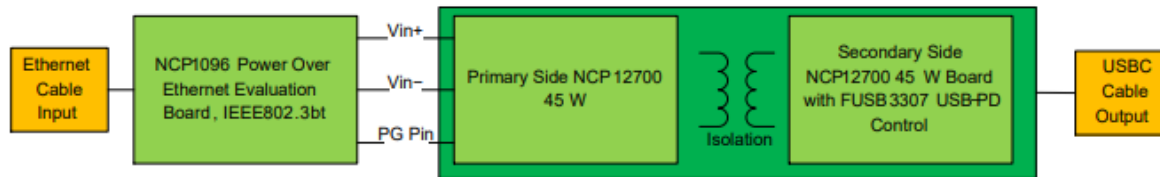
## Specifications and Features

- Power Over Ethernet Compatible Input Range: 37 V to 57 V
- USB-PD 5V-20V Operation
- High Full Load and Average Efficiency
- Very Low Ripple and Noise
- Smooth Startup Operation
- Low Parts Count
- Inherent SCP And OCP Protection
- Thermal and OVP Protection
- Multiple Probe Points for Evaluation
- Compatible with the NCP1096GEVB

### SPECIFICATIONS

	PD Output Specification
Output Voltage	5 V, 9 V, 12 V, 15 V, 20 V
Nominal Current	5V/3A, 9V/3A, 12V/3A, 15V/3A, 20V/2.25A
Max Current	5V/3A, 9V/3A, 12V/3A, 15V/3A, 20V/2.25A
Min Current	Zero

## Demo Board Photo



## Market & Applications

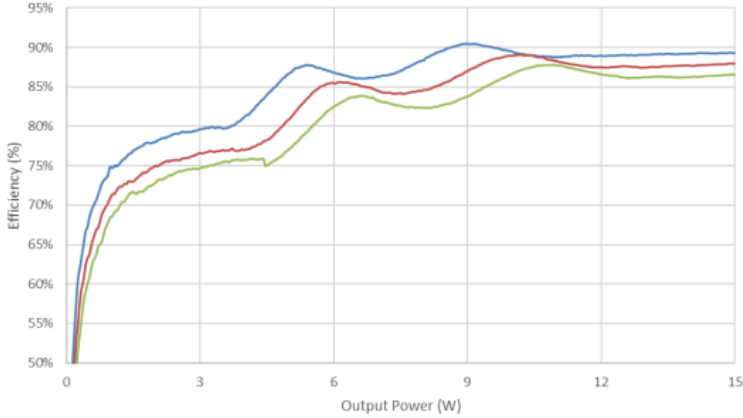
- Power Over Ethernet to USB PD
- Smart Buildings & Homes

[Design Note](#)

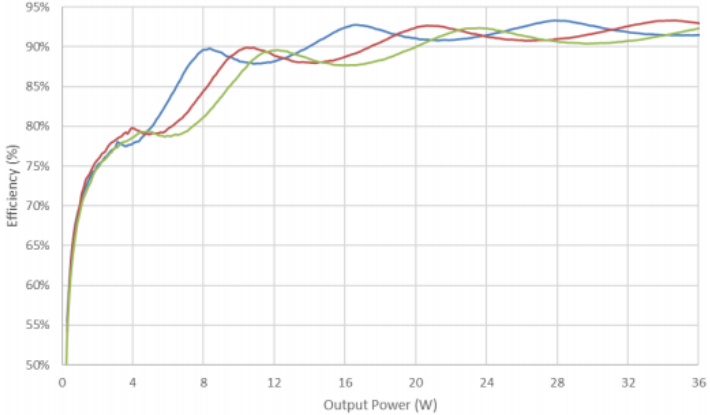
Connected to the NCP1096GEVB POE PD Demo

# PoE to USB-C/PD 45W – Efficiency charts

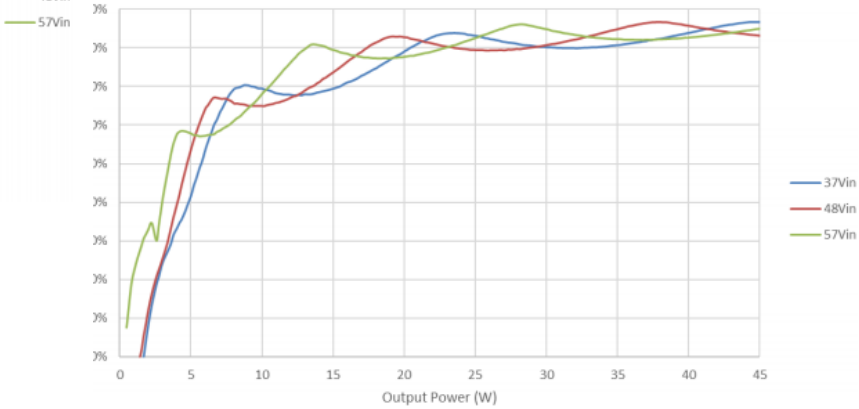
5V Out Efficiency vs. Output Power



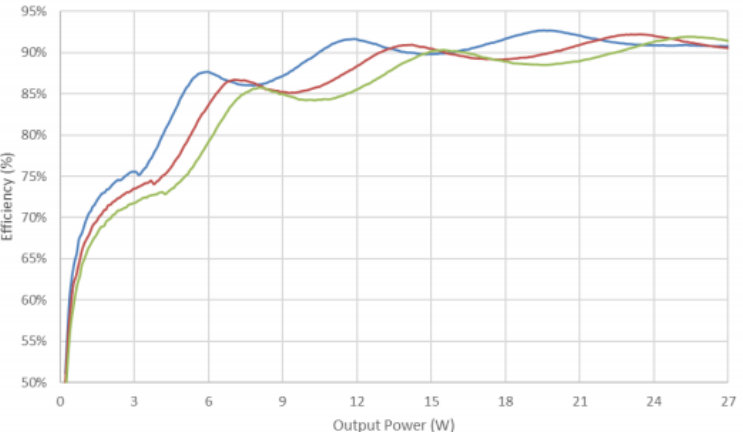
12V Out Efficiency vs. Output Power



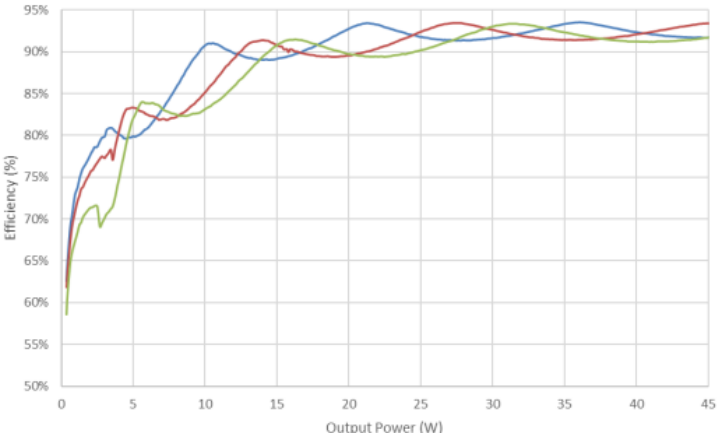
20V Out Efficiency vs. Output Power



9V Out Efficiency vs. Output Power



15V Out Efficiency vs. Output Power



# NCP12700 – 9 V to 160 V Flyback Controller

## Value Proposition

The NCP12700 is a wide-input range, fixed frequency, peak current mode PWM controller with a highly integrated feature set suitable for implementing single-ended power converter topologies.

## Unique Features

- Ultra Wide Range HV (9 – 200 V) startup regulator
- User Adjustable Over-Power Protection
- Fault pin for thermal and output over-voltage protection

## Unique Features

- Eliminate external startup components
- Easier design across input voltage range
- Interface for thermal and output OVP eliminates external protection

## Other Features

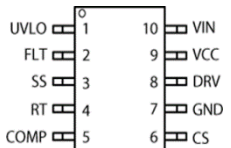
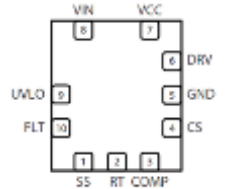
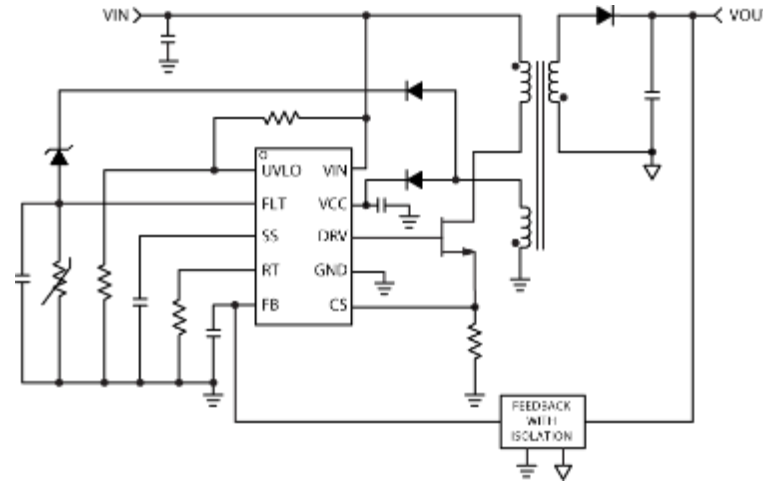
- Programmable oscillator: 100 kHz – 1 MHz
- Internal slope compensation
- Adjustable Soft-Start Ramp
- Input Voltage UVLO with hysteresis
- Shutdown Threshold for External Disable
- Overload Protection with 30 ms Overload Timer
- 1 A / 2.5 A Source / Sink Gate Driver

## Market & Applications

- Industrial
- Telecom
- Transportation
- Suitable for 2:1, 4:1, 8:1 input range designs



## Typical Application Schematic & Pin Out



## Ordering & Package information

- NCP12700xDMR2G in Micro10 3\*3 (9-100 V)
- NCP12700xMNTWG in WQFN10 3\*4 (9-200 V)



# FUSB3307 – USB-C Power Delivery (PD) 3.0 Adaptive Source Charging Controller

## Value Proposition

FUSB3307 is a highly integrated USB Type-C 1.4 and Power Delivery (PD) 3.0 fully autonomous source (DFP) controller that can control a DCDC port power regulator or the opto-coupler in the secondary side of an ACDC adapter. It features Programmable Power Supplies (PPS) thus supporting a min 3.3V and max 21V output voltage control. It includes Constant Voltage (CV) & Constant Current Limit (CL) control blocks.

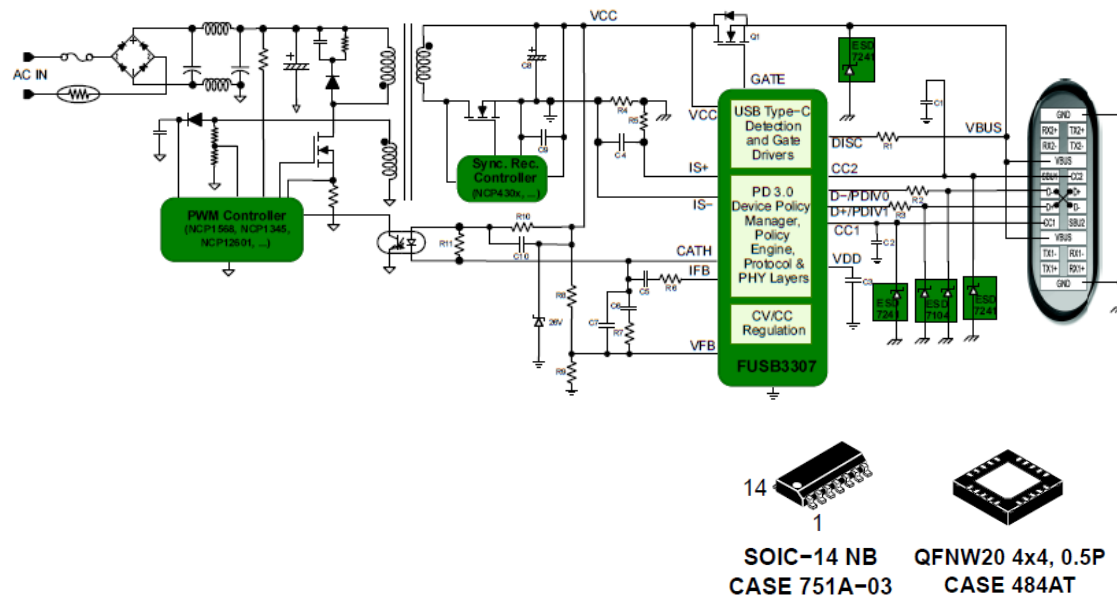
## Features

- PD 3.0 v1.2 & Type-C r1.4 Compliant
- Very Low Active Power
- VBUS 3V to 21V (20mV Steps);
- Current control up to 5A (50mA Steps)
- Up to 7 Fixed & Programmable PDOs
- Internal VDD and VCONN Supplies
- Constant Voltage (CV) & Constant Current Limit (CL) Regulation
- CC1/CC2 Pin Protection up to 26 V
- Built-in Cable-Drop Compensation
- Selectable Resistor Divider or Battery Charging (BC1.2) Modes
- Built-in Output Capacitor Bleeding Function for Fast Discharge
- Programmable PD power 16W to 100W

## Benefits

- D/A converters for internal references
- Various protections and diagnostics such as Adaptive UVP, Adaptive OVP, OTP and VBUS Fault Detection
- 10bit A/D converter to monitor output voltage, output current, IC internal temperature and external temperature (via an NTC resistor).
- VCONN Over Current Protection (VCONN\_OCP and internal and external Over Temperature protection
- Capable of controlling a single or back-to-back N-MOSFETs as a load switch, for a low cost and easier design.
- Small Current Sensing Resistor (5mΩ) for High Efficiency

## Typical Application Diagram



## Market & Applications

- Battery Wall Chargers for Tablet PCs and Laptops
- AC-DC Type-C/PD Compliant Adapters
- DC-DC Car Chargers for individual Port Control

## Ordering information and packaging

Part Number	Operating Temp	Package
FUSB3307D6MX	(-40 ; 85) [ °C ]	14-Lead Small Outline Integrated circuit (SOIC)
Other trip or package	(-40 ; 105) [ °C ]	Contact Sales office

