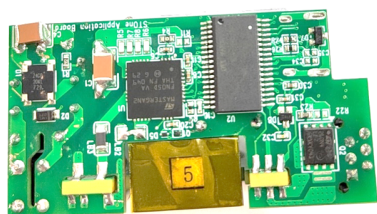
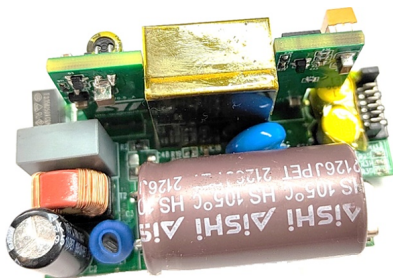


65 W ACF USB PD adapter reference design with ST-ONE digital controller and MasterGaN2



Fully assembled board developed for performance evaluation only,
not available for sale

Features

- Universal input mains range: 90 to 264 Vac - frequency 47 to 63 Hz
- Output voltage range: 5-20 Vdc
- PD output:
 - Five fixed PDOs: 5 V@3 A, 9 V@3 A, 12 V@3 A, 15 V@3 A, 20 V@3.25 A
- Maximum output power: 65 W
- Meet CoC Tier 2 and DoE Level 6 efficiency requirements
- Peak efficiency 93.7%
- EMC compliant: CISPR32B / EN55032B

Description

STDES-65ACFADP is a 65W USB PD adaptor reference design showing high efficiency performance over the entire operation load range and across the universal mains input voltage range.

This reference design opens the path to a compact solution with planar transformer technology and offers a high peak efficiency (93.7%). It also meets CoC tier 2 and DoE Level 6 efficiency requirements for average efficiency.

The soft switching topology helps on the low switching losses. The low-quiescent current consumption makes it best in class no-load consumption.

ST-ONE digital controller implements a proprietary ZVS active clamp flyback with low RMS current that makes it achieves high performance. The secondary losses are minimized using the synchronous rectification digital control embedded in ST-ONE.

A higher efficiency is ensured thanks to the reduction of switching and conduction losses and to the elimination of reverse recovery loss thanks to the performance of MasterGaN2. You do not have to take care anymore of GaN driving complexity to enjoy the benefits of GaN technology thanks to the highly integrated MasterGaN IC, enhancing the application robustness and layout simplifications.

Product summary	
65W ACF USB PD adaptor design with digital controller ST-One and MasterGaN2 reference	STDES-65ACFADP
Fully integrated digital controller for smart chargers	ST-ONE
High power density 600V Half bridge driver with two enhancement mode GaN HEMTs	MasterGaN2
N-channel 100 V, 0.007 Ohm typ., 70 A STripFET F7 Power MOSFET in a PowerFLAT 5x6 package	STL90N10F7
Applications	USB Type-C PD Adapters and Quick Chargers

1

Figure 1. STDES-65ACFADP circuit schematic - power board

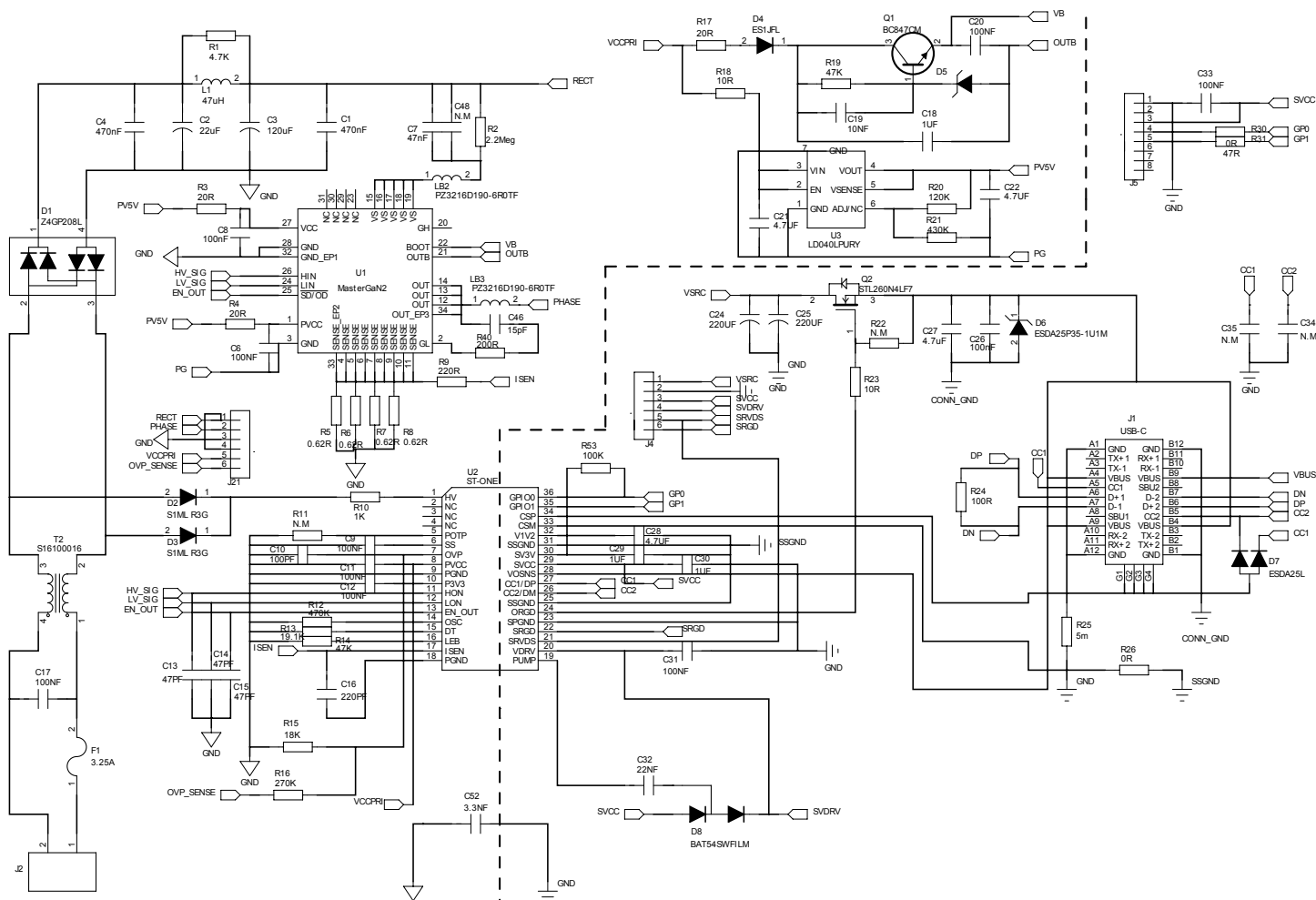
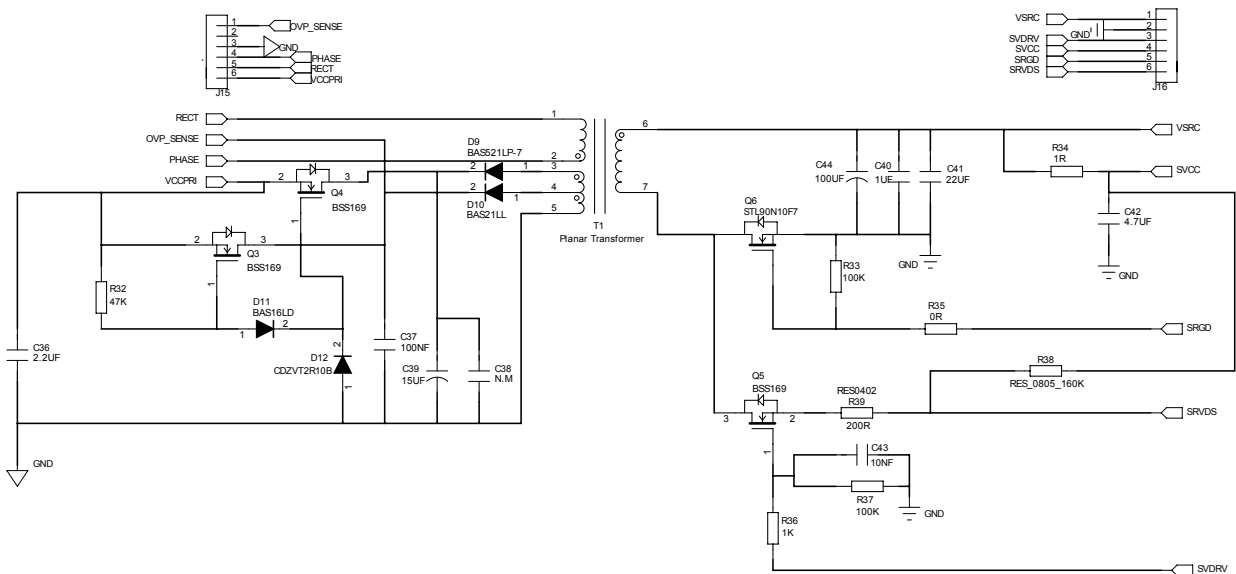


Figure 2. STDES-65ACFADP circuit schematic - control board



Revision history

Table 1. Document revision history

Date	Revision	Changes
09-Jun-2022	1	Initial release.
20-Jun-2022	2	Updated cover page features.

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