Design Example Report

Title	**1700 V PowiGaN Switcher IC for 800 VDC AI Data Center Aux Power Supply**
Specification	**800 VDC Input; 15 W / 12 V, 1.25 A Output**
Application	Aux Power for 800 V Server Application
Author	Applications Engineering Department
Document Number	DER-1114
Date	June 17, 2026
Revision	2

PROVISIONAL REPORT

Summary and Features

- >82% full-load efficiency at 800 VDC input
  - Zero Voltage switching (ZVS)
  - 1700 V PowiGaN™ primary switch
  - Synchronous Rectification (SR)
- Low component count: 33 parts
- Safety features
  - Output overvoltage protection (OVP)
  - Accurate thermal protection with wide hysteresis
  - UL safety rated integrated FluxLink™ feedback without optocoupler
- Low dissipation for excellent thermal performance with PCB cooling.

PATENT INFORMATION
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Important Note:
Although this board is designed to satisfy safety isolation requirements, the engineering prototype has not been agency approved. Therefore, all testing should be performed using an isolation transformer to provide the AC input to the prototype board.

1 Introduction

This engineering report describes a 15 W and 12 V / 1.25 A power supply for server applications. The design supports an input range of 700 VDC to 900 VDC and uses an InnoMux™2-EP IC with a 1700 V PowiGaN switch in an isolated flyback configuration.

This document contains the power supply specification and schematic.

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Figure 1 – Oblique View.

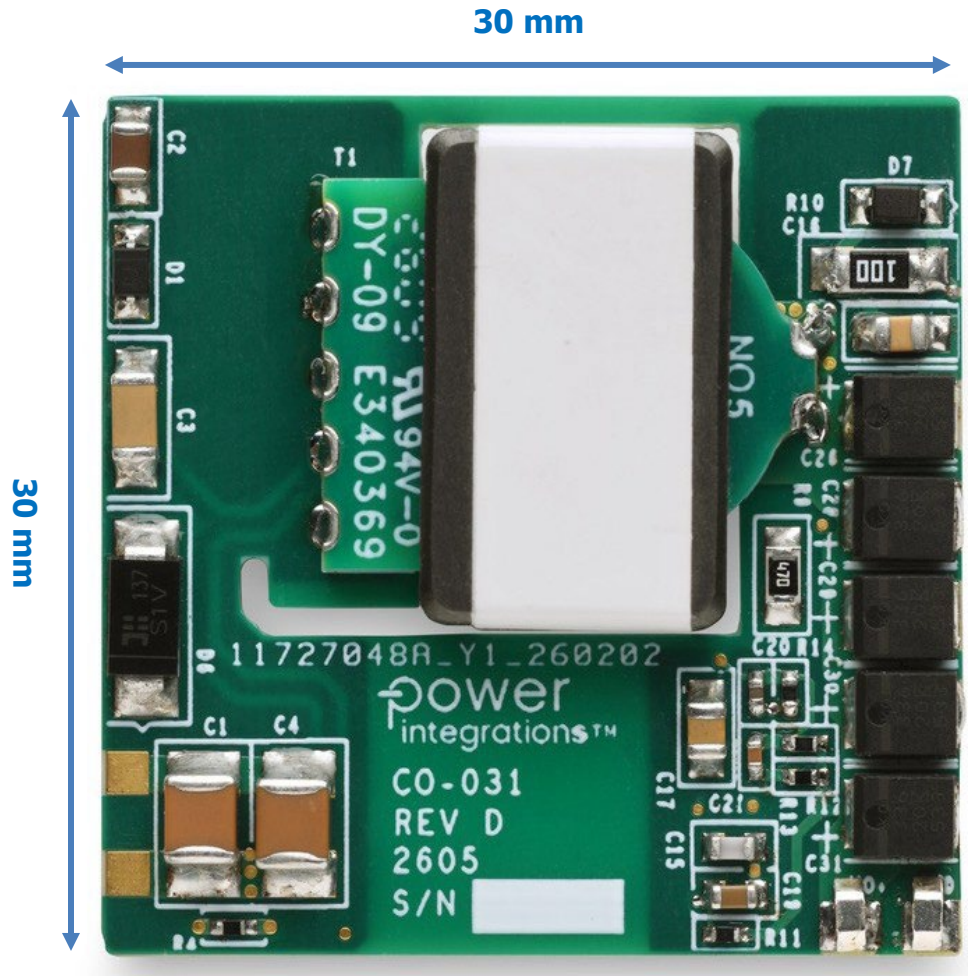

Figure 2 – Top View.

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Figure 3 – Side View.

Figure 4 – Bottom View.

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2 Power Supply Specification

The table below represents the minimum acceptable performance of the design. Actual performance will be in the results section.

Description	Symbol	Min	Typ	Max	Units	Comment
Input						
Voltage	V_{IN}	700	800	900	VDC	2 Wire – no P.E.
Output						
Output Voltage (CV)	V_{OUT}		12		V	± 3%
Output Current Rating	I_{OUT}		1.25		A	
Output Power	P_{OUT}			15	W	
Output Ripple Voltage (CV)	V_{RIPPLE}			400	mVpp	25 °C Ambient, 20 MHz BW
Efficiency						
Full Load	η_{FL}		82.5		%	800 VDC
No Load Input Power	P_{NL}			300	mW	700 – 800 VDC
Operating Ambient Temperature	T_{AMB}	0		40	°C	Forced-air cooling provided by an external fan.

Table 1 – Power Supply Specification.

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3 Schematic

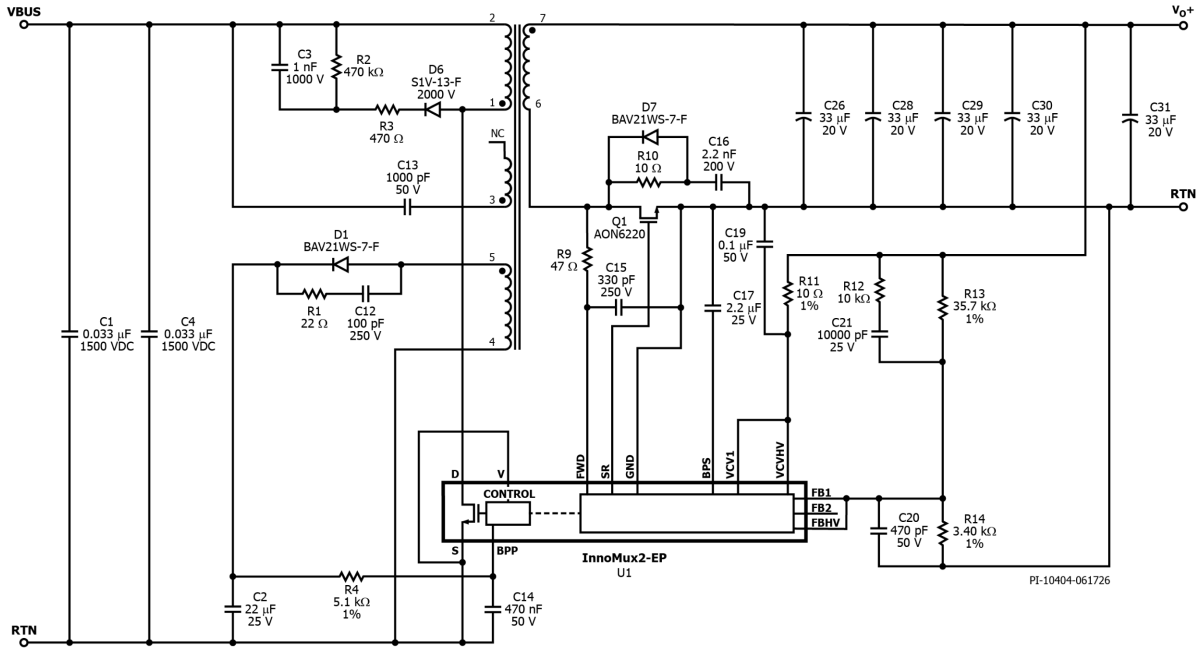

Figure 5 – Schematic.

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4 Revision History

Date	Author	Revision	Description & Changes	Reviewed
28-May-26	MM / TL	1	First release (Provisional)	Apps & Mktg
17-June-26	TL	2	Part number update	Apps & Mktg

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