

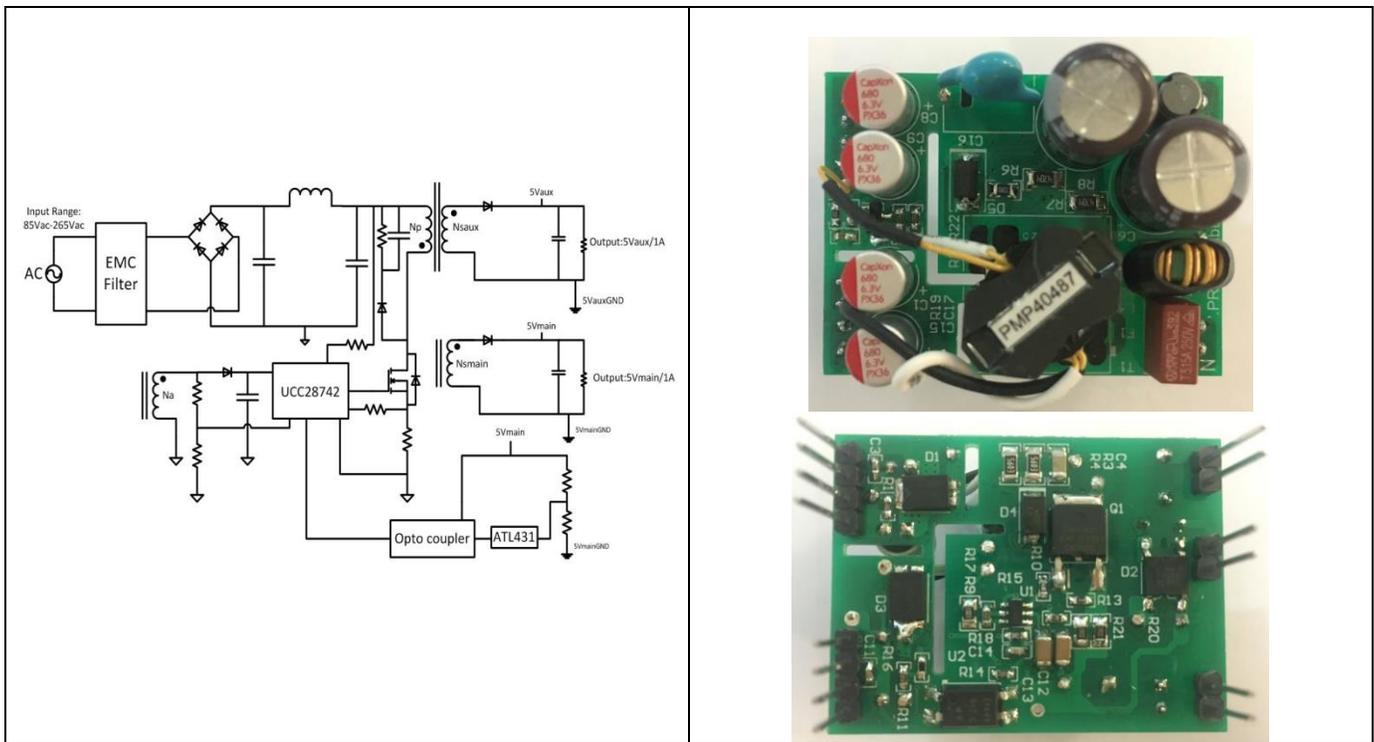
Test Report: PMP40487

AC Input, 5-V/1-A and 5-V/1-A dual-output flyback reference design



Description

The PMP40487 is a 5-V/1-A and 5-V/1-A dual-output flyback auxiliary power supply with secondary-side regulation UCC28742. The design features high efficiency and various fault protections (input UVLO, output over-voltage, over-current, short-circuit). When standby, the converter can consume less power.



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1 Test Prerequisites

1.1 Voltage and Current Requirements

Table 1. Voltage and Current Requirements

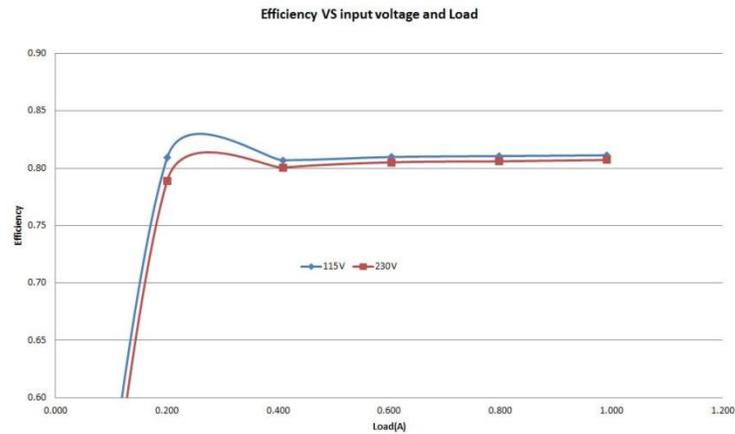
PARAMETER	SPECIFICATIONS
Input	AC Source: 85V AC _{RMS} to 265V AC _{RMS} AC line frequency range: 47Hz to 63Hz
Output	5V/1A; 5V/1A

1.2 Required Equipment

- AC Source: Chroma 61503
- E-Load: Chroma 63101 module
- Multi-meter (voltage): Fluke 287C
- Multi-meter (current): Fluke 287C
- DPO 3054 Digital Phosphor Oscilloscope
- Fluke Thermal Imager
- P5205A 100MHz, High Voltage Differential Probe

2 Testing and Results

2.1 Efficiency Graphs



2.2 Efficiency Data

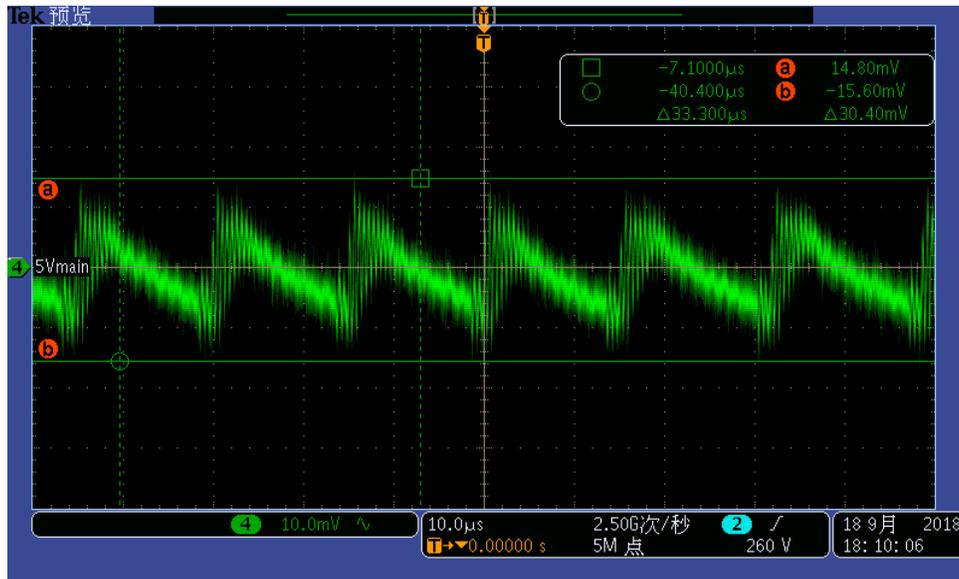
Vin(V)	Pin(W)	5Vmain(V)	I _{main} (A)	5Vaux(V)	I _{aux} (A)	Efficiency
115	0.028	5.019	0.000	4.9992	0.001	0.18
	2.490	5.018	0.201	5.0426	0.200	0.81
	5.040	5.017	0.409	5.0429	0.400	0.81
	7.470	5.015	0.604	5.0362	0.600	0.81
	9.900	5.014	0.798	5.0320	0.800	0.81
	12.320	5.012	0.991	5.0294	1.000	0.81

Vin(V)	Pin(W)	5Vmain(V)	I _{main} (A)	5Vaux(V)	I _{aux} (A)	Efficiency
230	0.040	5.020	0.000	5.0120	0.001	0.13
	2.550	5.018	0.201	5.0312	0.200	0.79
	5.080	5.017	0.409	5.0431	0.400	0.80
	7.520	5.015	0.604	5.0456	0.600	0.81
	9.970	5.014	0.798	5.0460	0.800	0.81
	12.400	5.012	0.991	5.0434	1.000	0.81

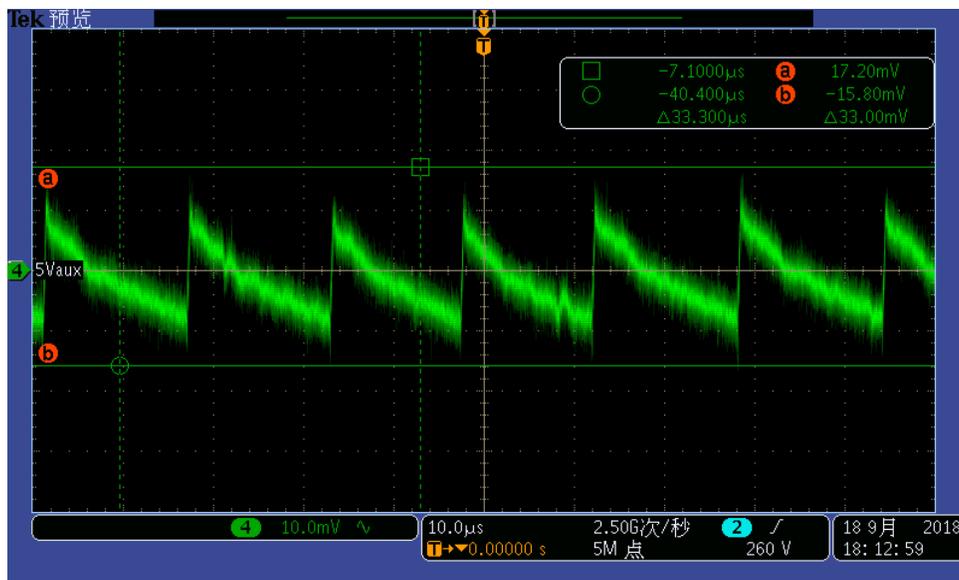
3 Waveforms

3.1 Output Voltage Ripple*

115Vin 5Vmain 1A and 5Vaux 1A



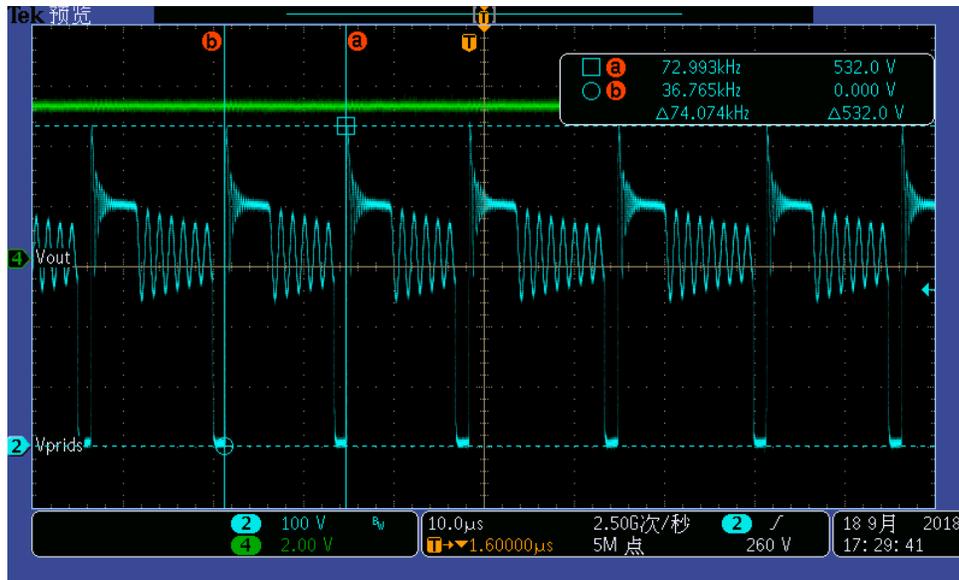
CH4=5Vmain



CH4=5Vaux

3.2 MOSFET Voltage Stress

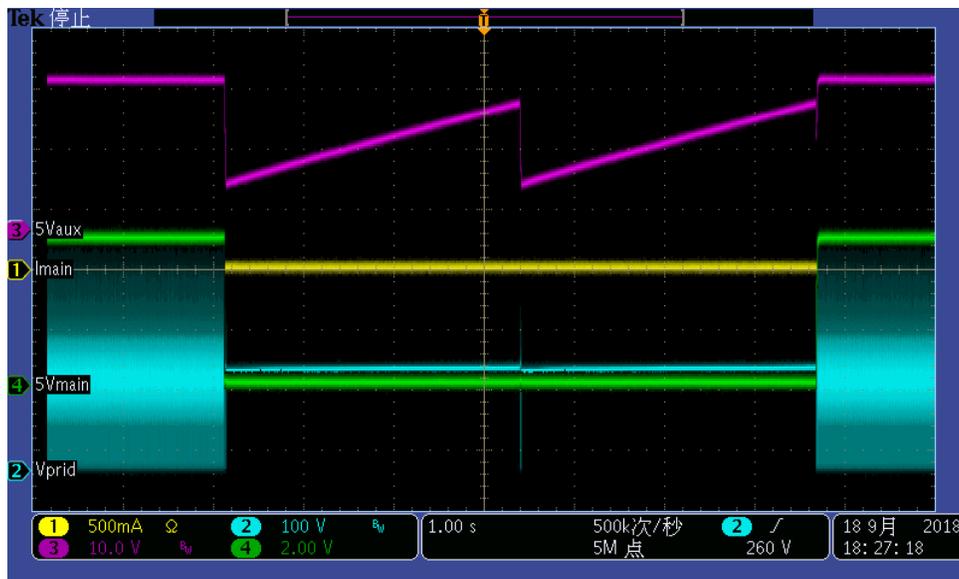
Vin=230Vin 5Vmain 1A and 5Vaux 1A



CH2= Vprids; CH4=Vout with 20MHz bandwidth

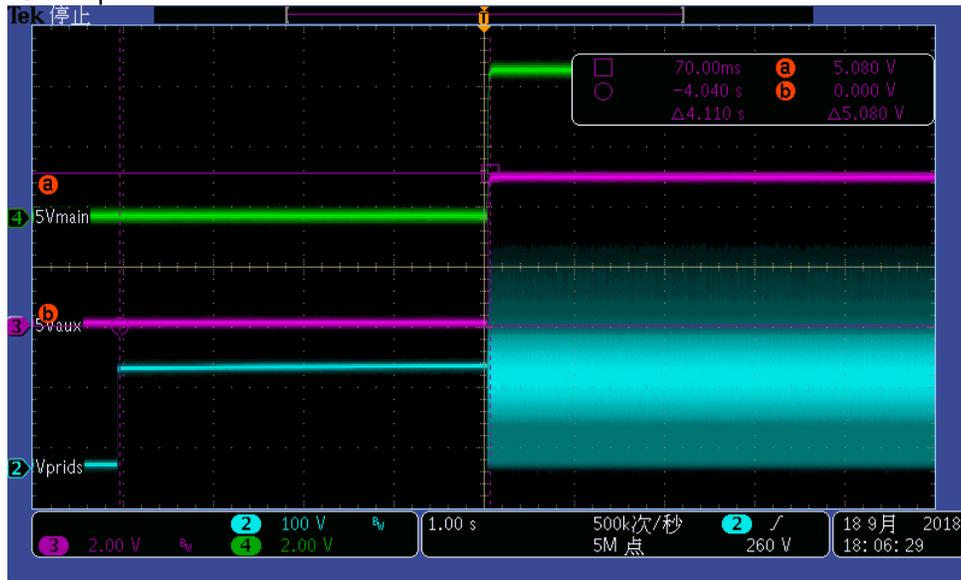
3.3 Short Circuit Recovery

180V 12Vout Short Circuit Protection



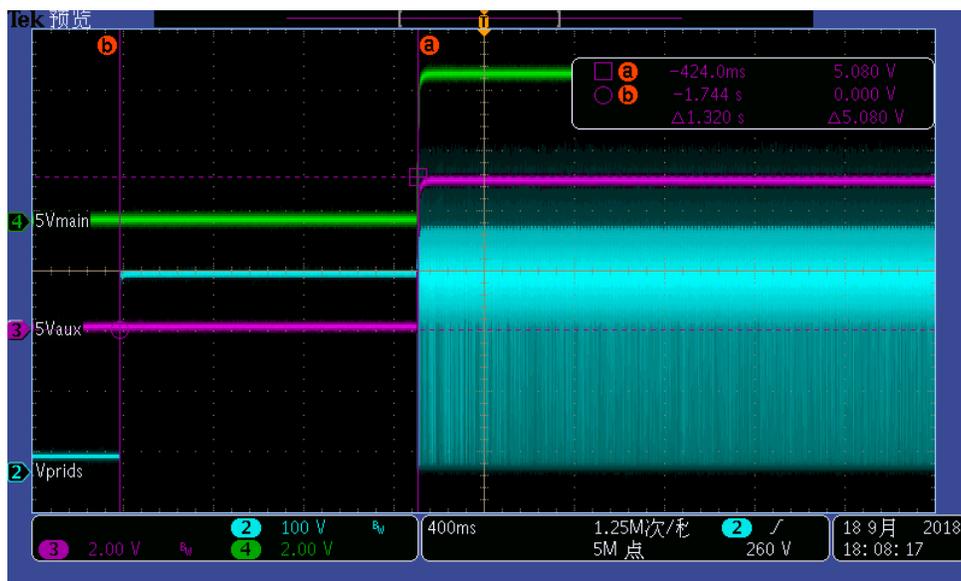
3.4 Start-up Sequence*

115Vin No Load Start-up



CH2= Vprids; CH3=5Vaux; CH4=5Vmain

230Vin No Load Start-up

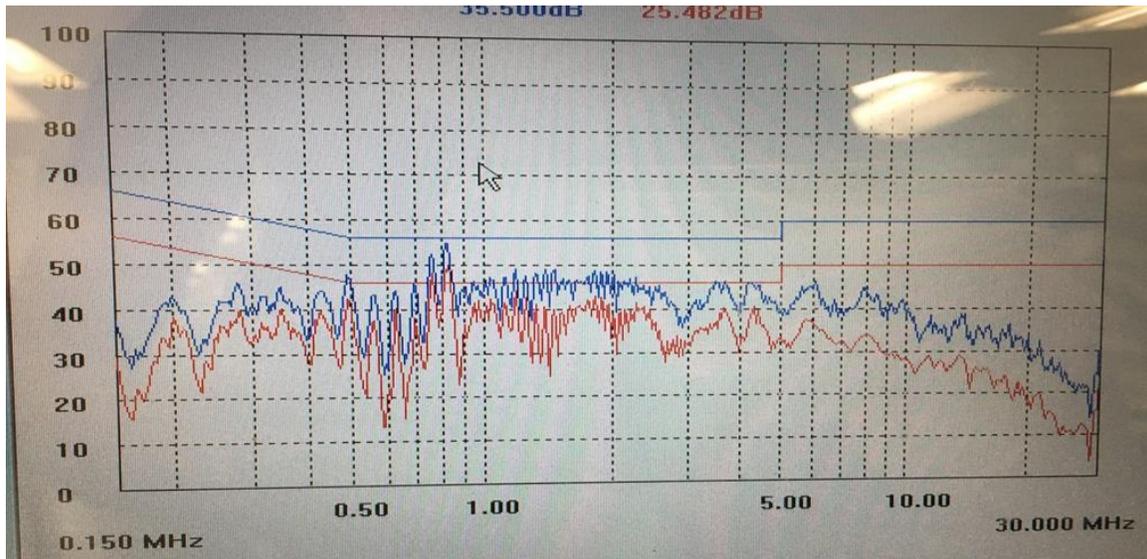


CH2= Vprids; CH3=5Vaux; CH4=5Vmain

3.5 EMI CM Performance

Vin=230Vin 5Vout 1A and 5Vout 1A

The converter runs 30mins at ambient temperature 25°C



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