

A background image featuring a clear glass sphere resting on a bed of vibrant green grass. The sphere reflects the surrounding foliage and the sky, creating a serene and natural aesthetic. The text is overlaid on a dark blue rectangular area in the upper left portion of the image.

ISL81806 4-PHASE INTERLEAVE PARALLEL WITH COUPLED INDUCTOR 48VIN/12VOUT/1000W

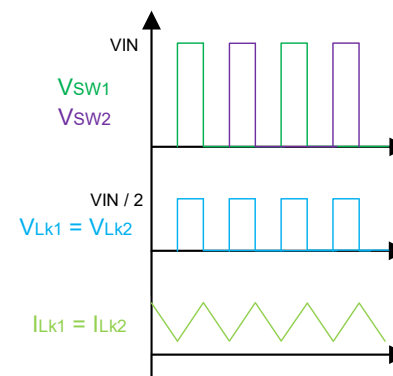
Teny Xu
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3/6/2024

ISL81806 4-PHASE INTERLEAVE PARALLEL WITH COUPLED INDUCTOR

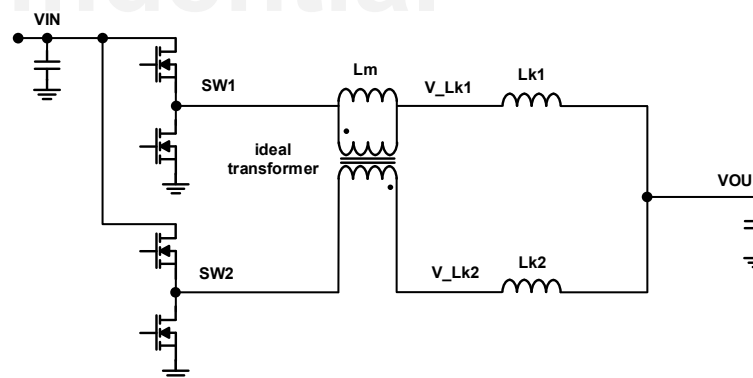
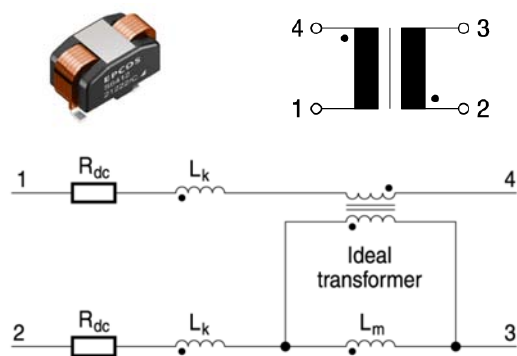
48VIN/12VOUT/1000W

Design SPEC:

- 4-Phase(2*ISL81806) 90° interleaving Buck with GaN
- Each phase 1U1L with GaN: EPC2088
- Inductor: TDK-B82559S6412M023
- Fs: 160kHz
- Shunt: 2mΩ
- Board size: 23*54*17mm

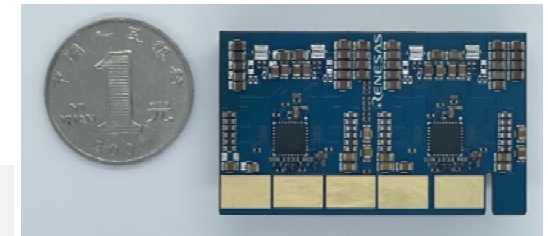
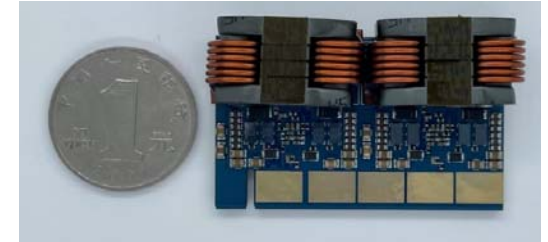
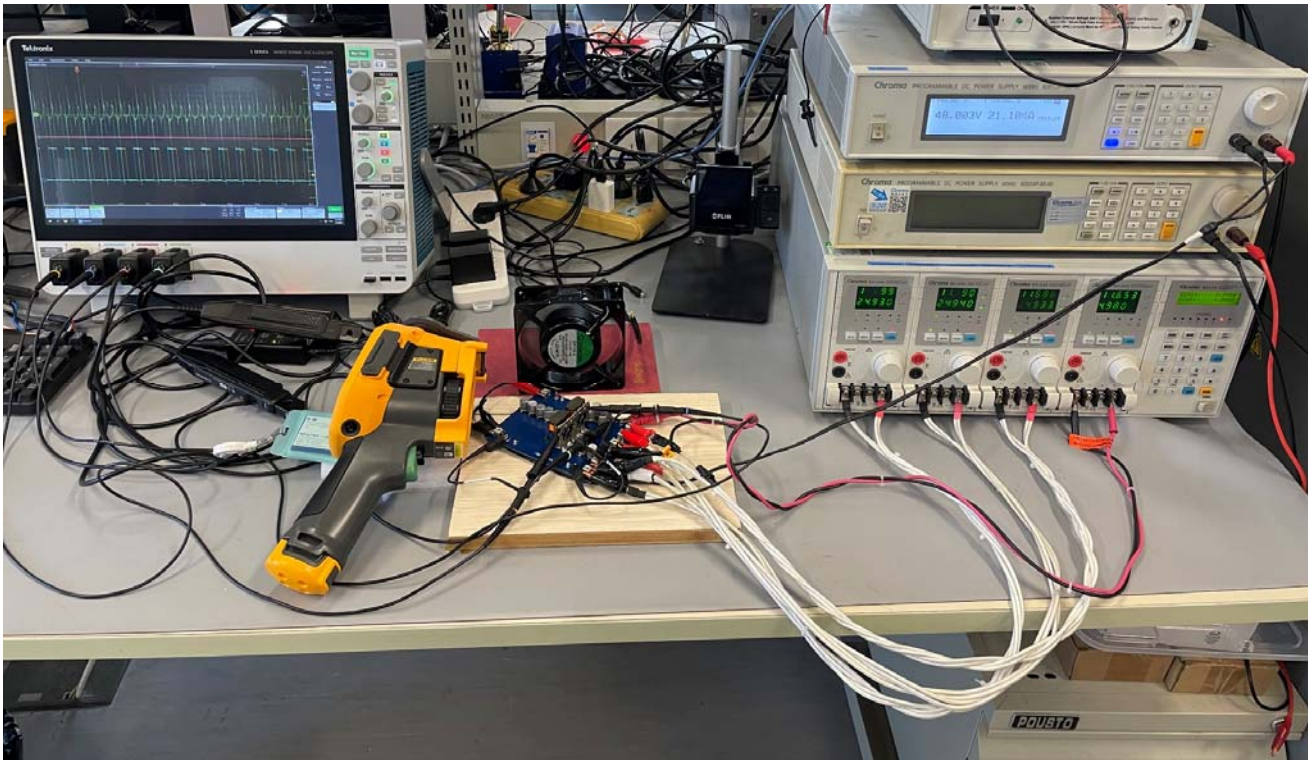


Couple inductor equivalent circuit:



ISL81806 4-PHASE INTERLEAVE PARALLEL TEST SETUP:

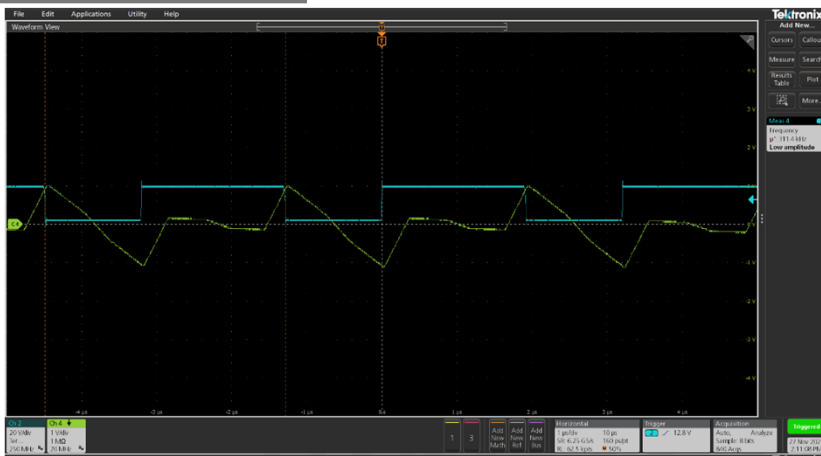
❑ 48Vin/12Vout/80Aout test setup



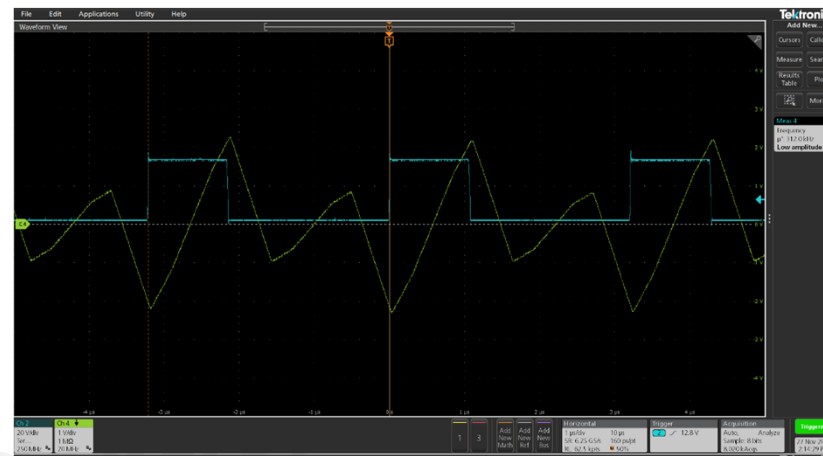
ISL81806 4-PHASE INTERLEAVE PARALLEL WAVEFORM VOUT=12V

C2: V_PH1
C4: I_PH1

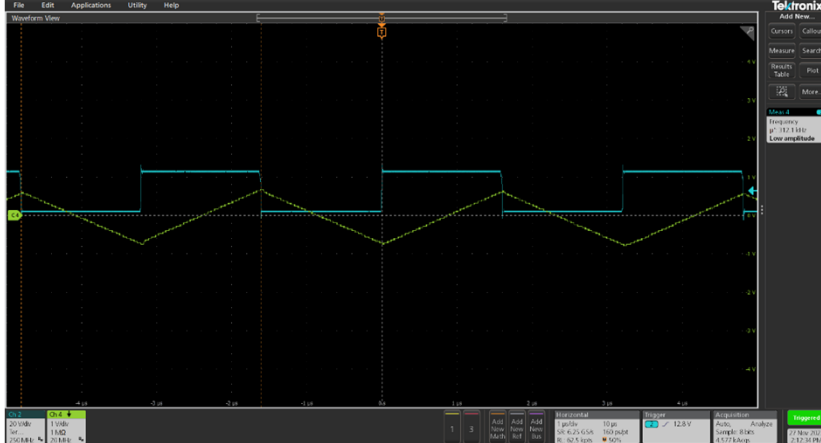
20VIN



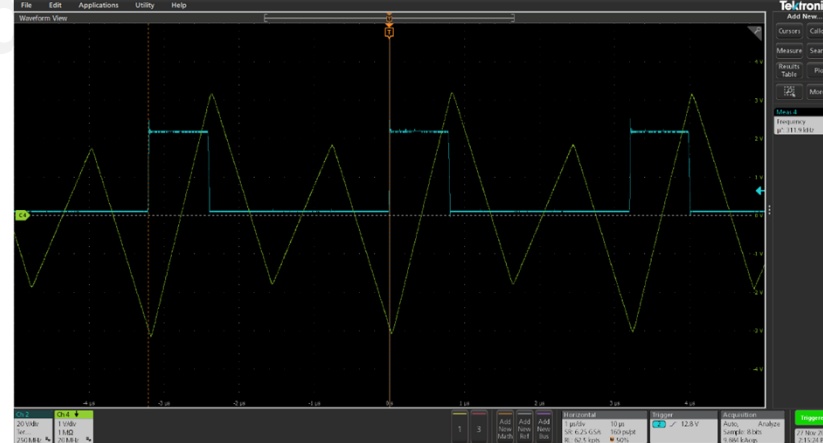
36VIN



24VIN



48VIN

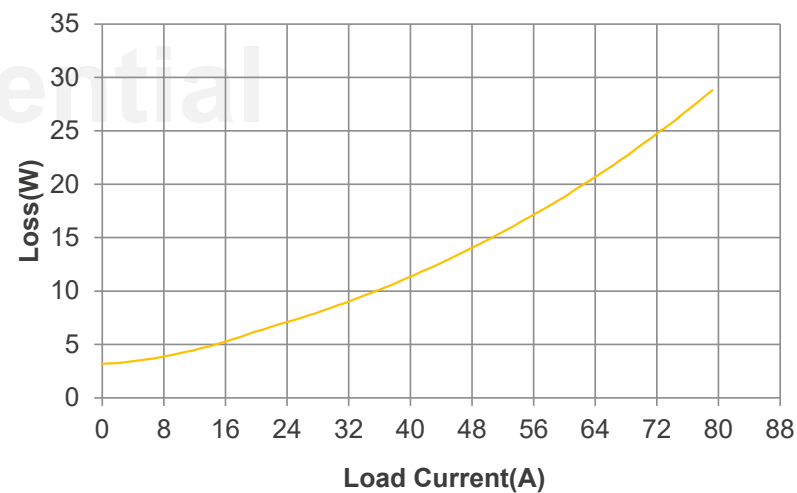
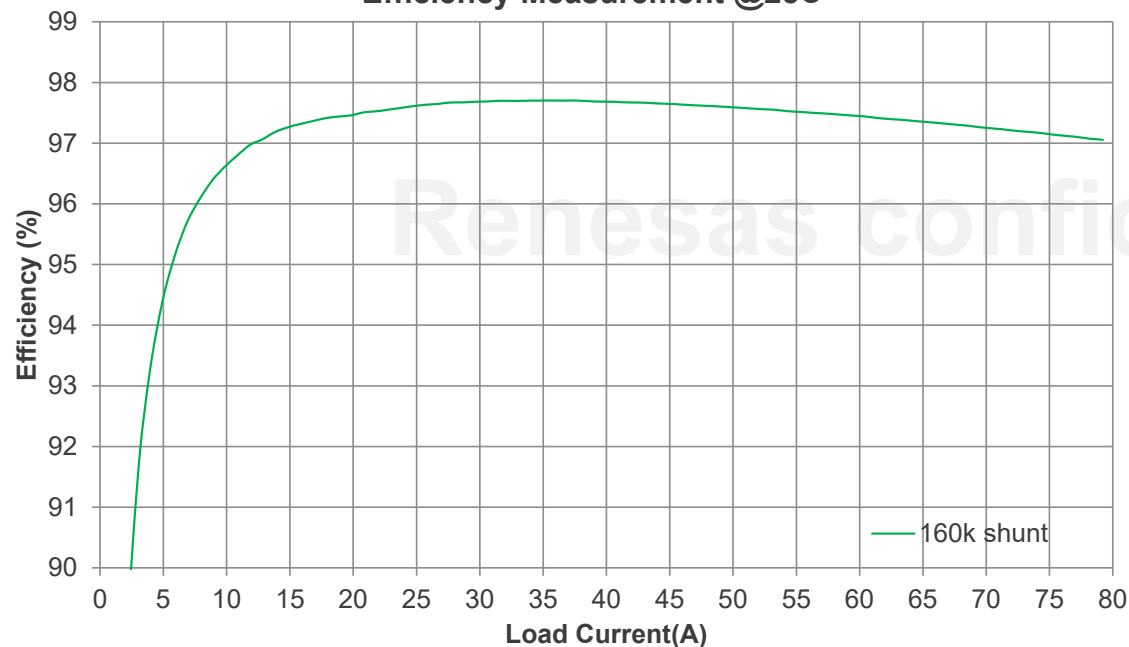


EFFICIENCY, POWER LOSS AND TEMPERATURE

❑ 48Vin/12Vout/80A Test with air flow

- Peak efficiency: 97.7%
- Full load efficiency: 97%
- Highest temperature : 97.5°C with air flow

Efficiency Measurement @25C



[Renesas.com](https://www.renesas.com)

Q & A