

TPSM33625RDNR
Output voltage drop during load fluctuation

Summary

<Phenomenon>

- In a circuit from 24V to 5V, the output voltage dropped when the load current changed(0.75A→1.5A).
 - At this time, switching is stopped.
- Refer to the waveform on page 5 and 6.
- No voltage drop occurs in a circuit 12V→8V(assumed load=6W) and 5V→3.3V(assumed load=3W).

<Question>

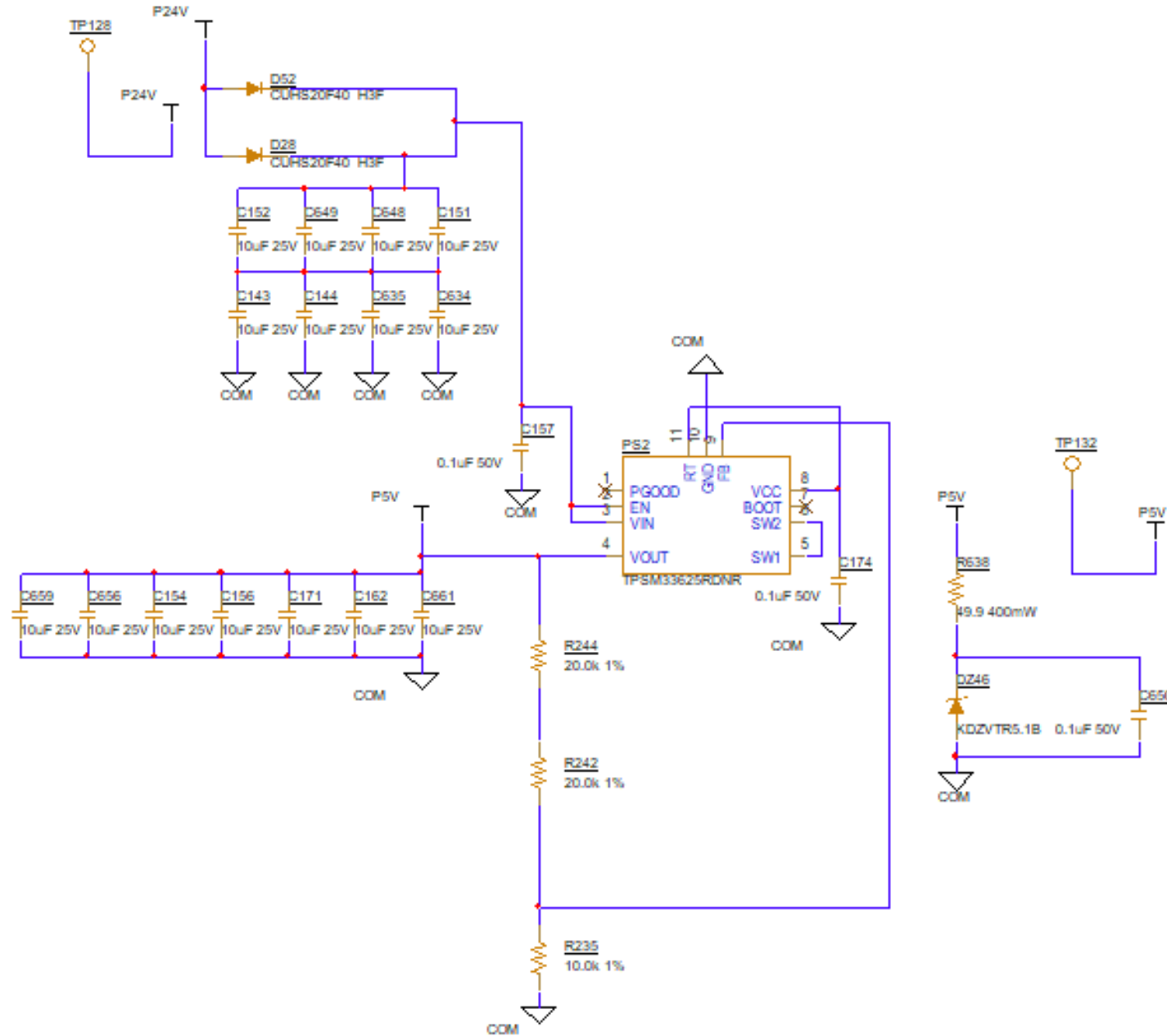
Could you tell me the reason why switching stops and output voltage drops during load fluctuation?
Customer has taken some measures, but could you tell us if there are any other measures?

Summary

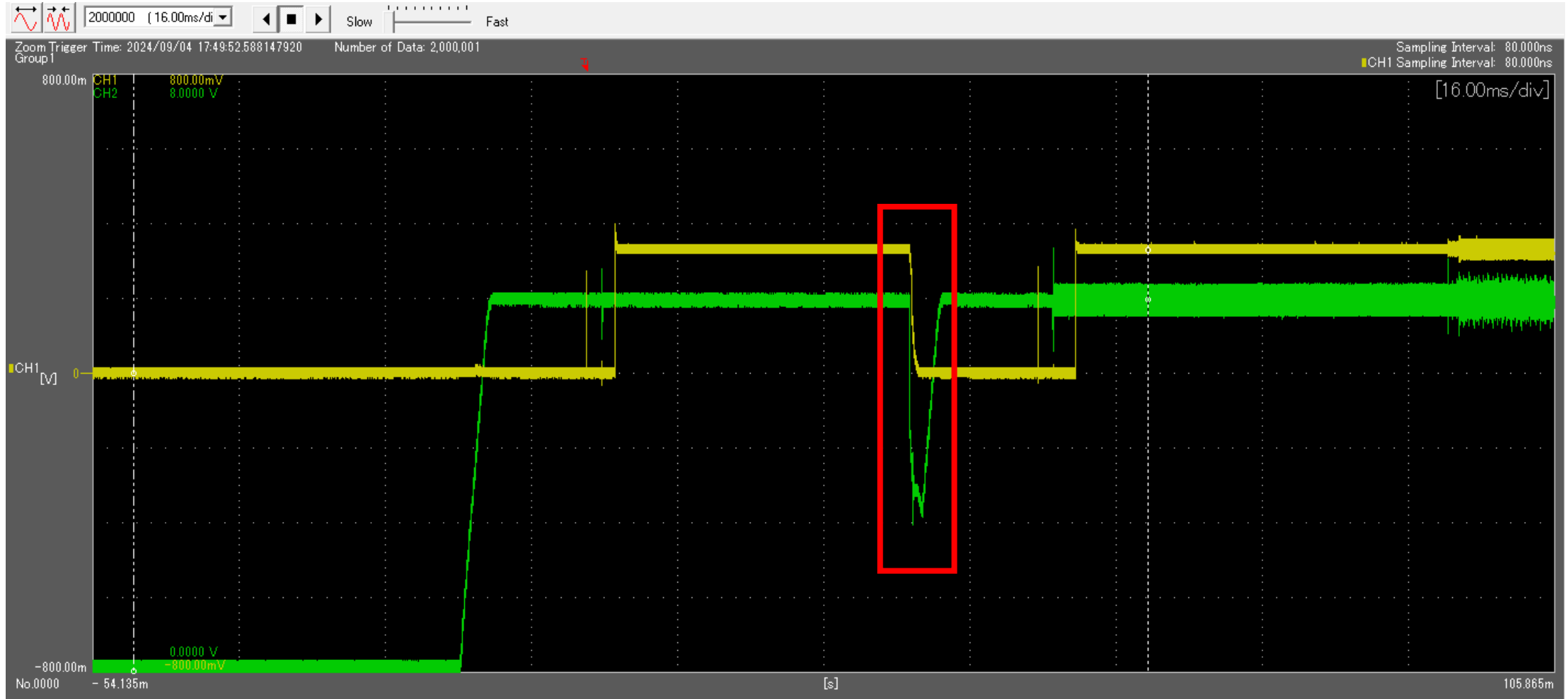
<Measures implemented>

- Customer increased the values of CIN and COUT.
→The voltage drops.
- There is a case that it was improved by applying a voltage probe to the SW pin.
→Could you tell me the reason?
- Set the input voltage to 20V or less..
→It was improved, but the customer's input voltage cannot be set to anything other than 24V, so it cannot be used as a countermeasure.
- Switching frequency was changed from 1MHz to 2.2MHz.
→The symptom of voltage drop became worse.

24V → 5V Circuit



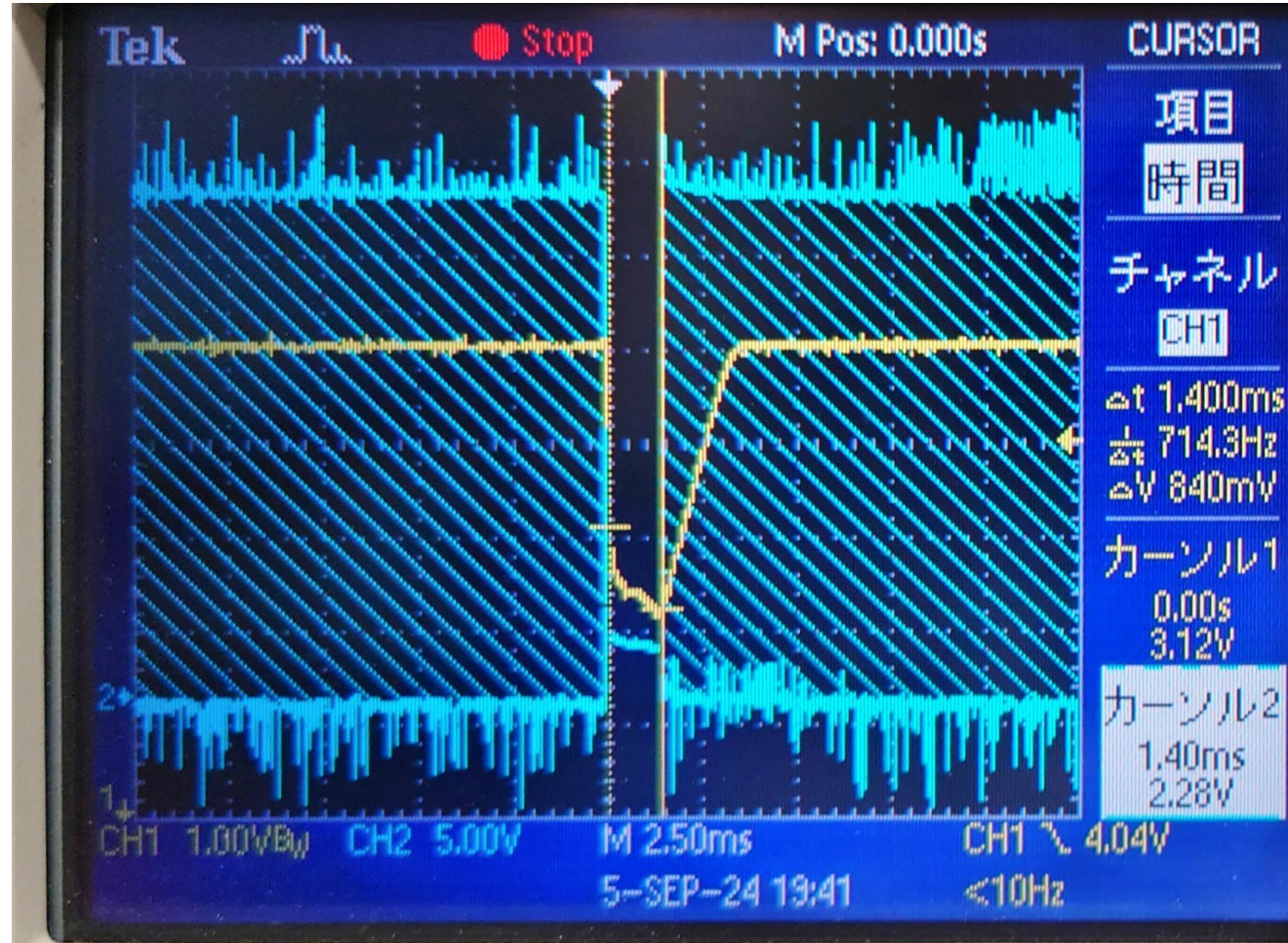
Waveform



1ch: Output of the external reset IC, 2ch: VOUT(5V)

The output voltage dropped when the load current changed from 0.75A to 1.5A.

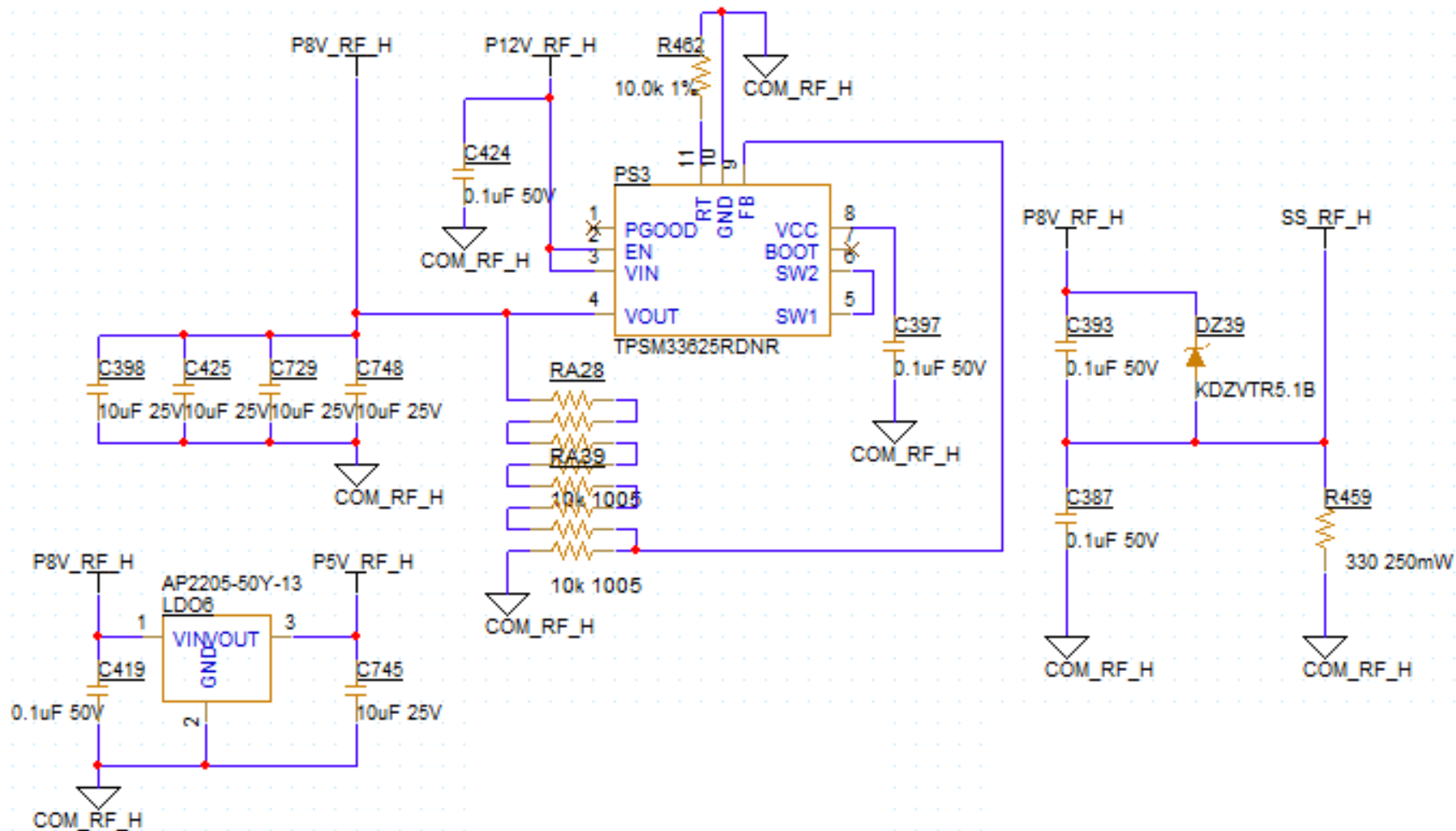
Waveform



1ch: VOUT(5V), 2ch: SW node

When the load current changed from 0.75A to 1.5A, switching stopped.

12V \rightarrow 8V (assumed load=6W) Circuit



5V → 3.3V (assumed load=3W) Circuit

