TPSM828214SILR
Issue Report

Revision History

V1.0	05.10.2023	BWA	Initial revision

1 Content

3 EUT

EUT-Information

Type	<removed>	<removed>
Serial		739234000004
Hardwareversion		Version V2.0 (03.23)

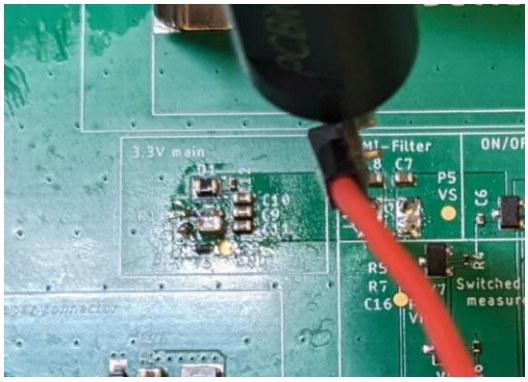


Figure 1 EUT

4 Quiescent current

4.1 Equipment

Parts		
Power supply	Agilent	E3648A
Multimeter	Agilent	34465A

4.2 Test setup

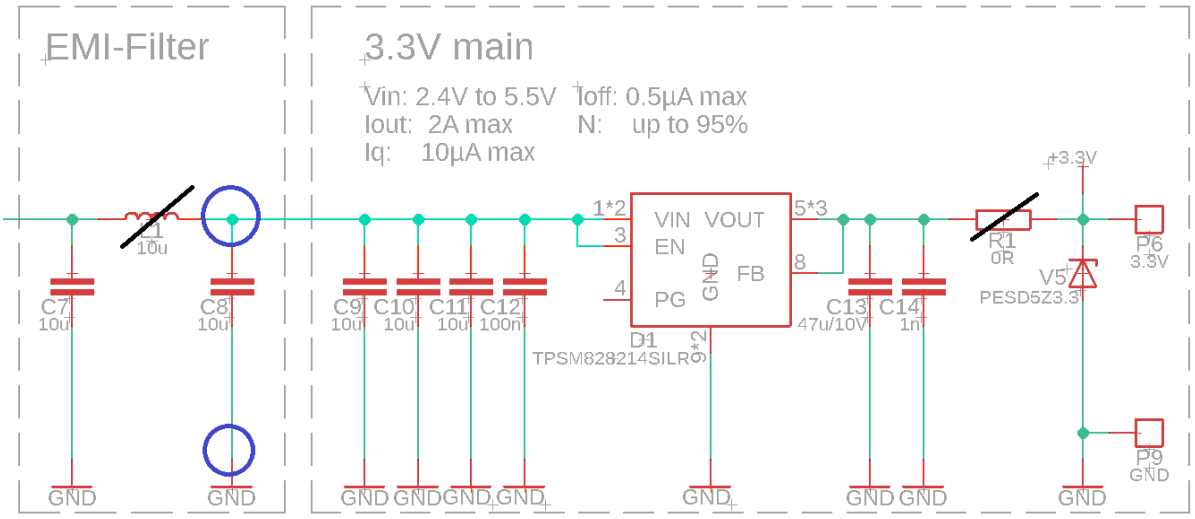
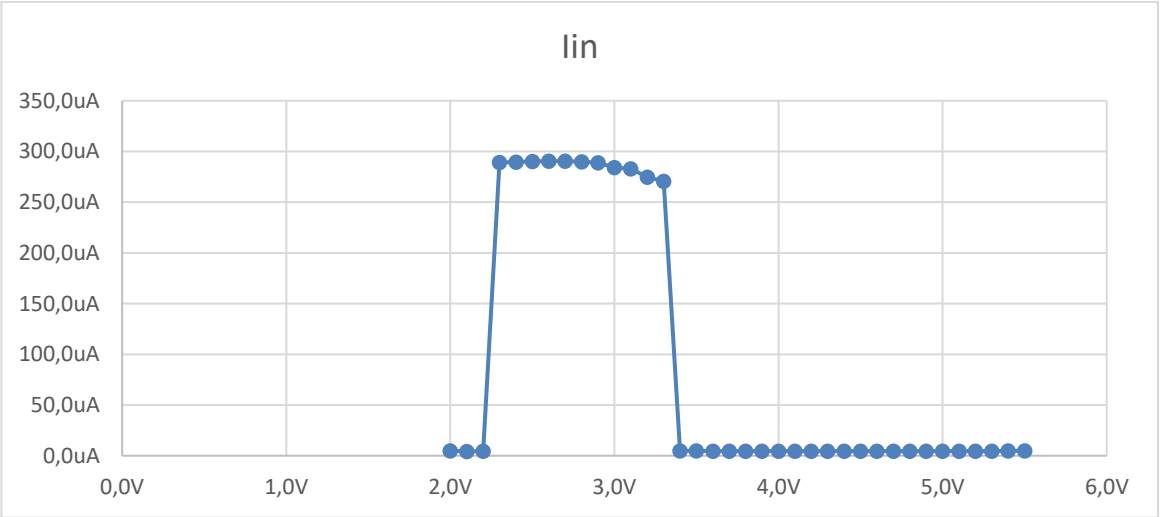


Figure 2 Circuit Diagram for quiescent current measurement

4.3 Measurement result

Vin	Iin
5,5V	4,9uA
5,4V	4,8uA
5,3V	4,7uA
5,2V	4,7uA
5,1V	4,7uA
5,0V	4,7uA
4,9V	4,6uA
4,8V	4,6uA
4,7V	4,6uA
4,6V	4,6uA
4,5V	4,6uA
4,4V	4,6uA
4,3V	4,6uA
4,2V	4,6uA
4,1V	4,6uA
4,0V	4,6uA
3,9V	4,6uA
3,8V	4,6uA
3,7V	4,6uA
3,6V	4,6uA

Vin	Iin
3,5V	4,9uA
3,4V	5,0uA
3,3V	270,5uA
3,2V	274,6uA
3,1V	283,0uA
3,0V	284,1uA
2,9V	288,8uA
2,8V	289,9uA
2,7V	290,5uA
2,6V	290,5uA
2,5V	290,2uA
2,4V	289,7uA
2,3V	289,1uA
2,2V	4,4uA
2,1V	4,3uA
2,0V	5,0uA



4.4 Conclusion

When the devices enter low-dropout mode, the current consumption significantly increases to ~280µA. This behavior is assumed to be erroneous, as it isn't document in the datasheet of the device. While the devices quiescent current meets the datasheet specification during normal "switching" operation, the quiescent current in low-dropout operation makes it unusable for battery powered operation.

5 Regulator stability

5.1 Equipment

	Parts	
Power supply	Agilent	E3648A
Multimeter	Agilent	34465A
Power debugger	Joulescope	JS110

5.2 Test setup

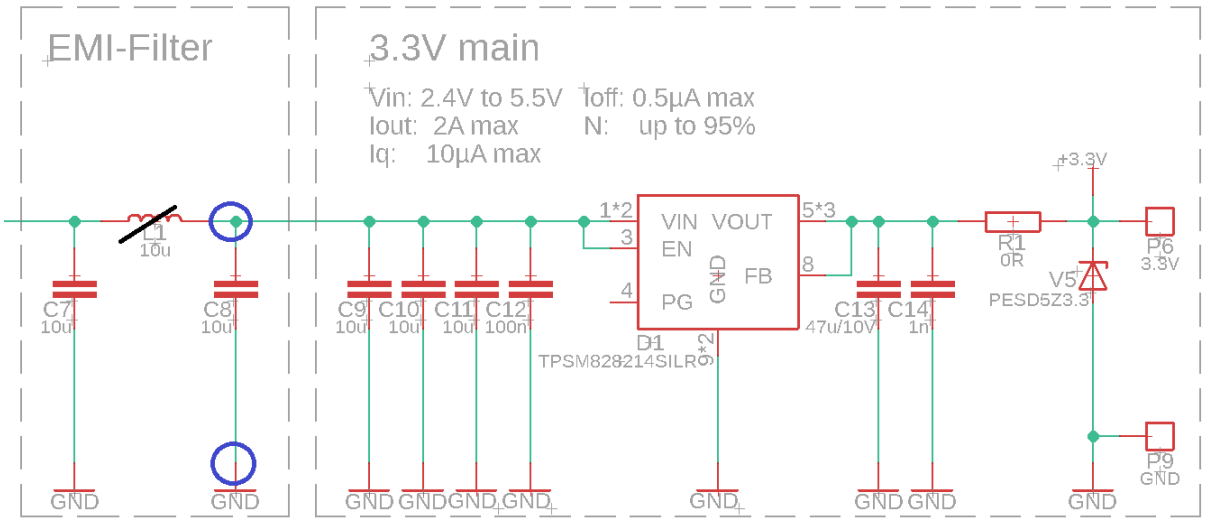


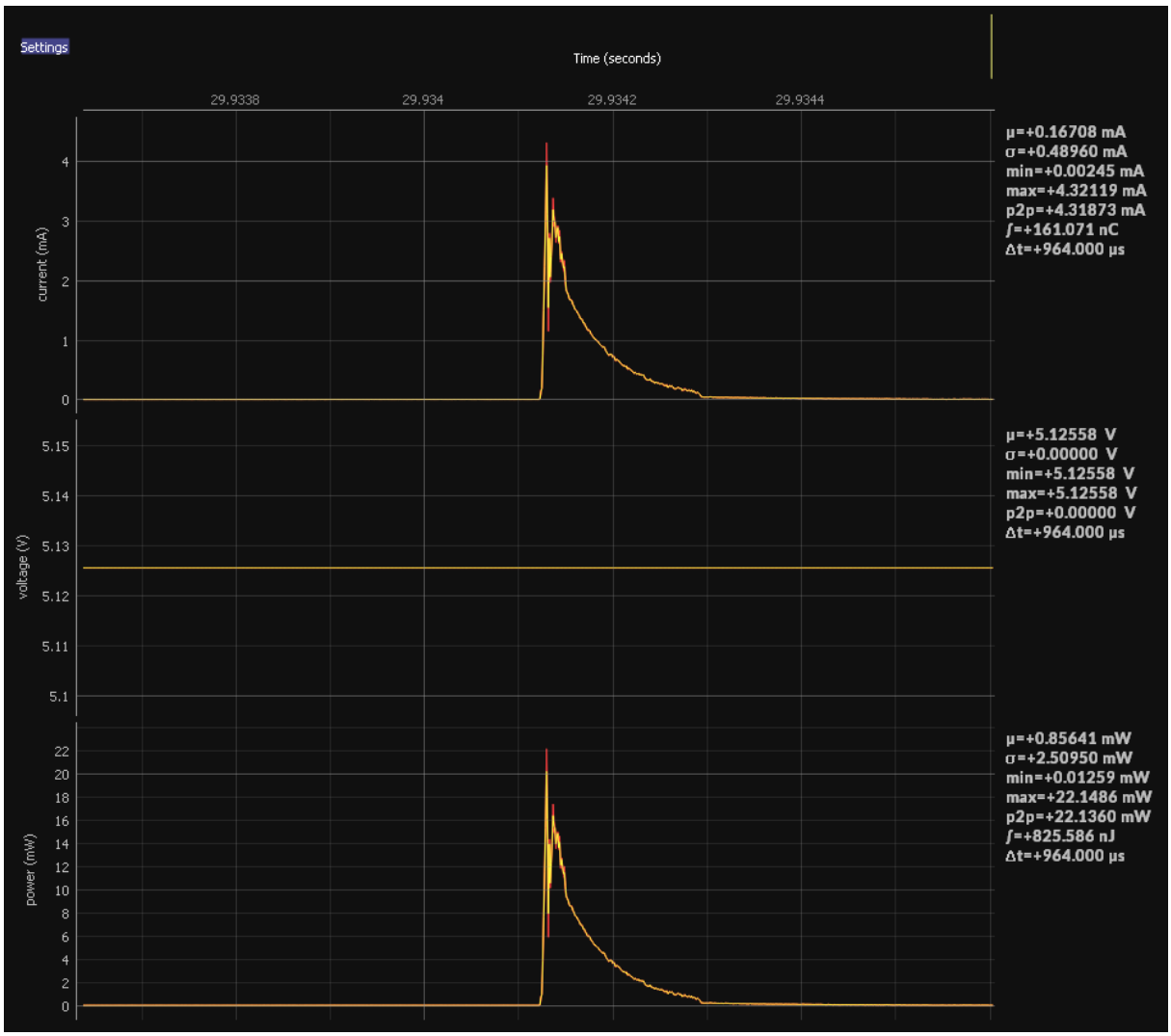
Figure 3 Circuit Diagram for quiescent current measurement (~60-80µA load attached)

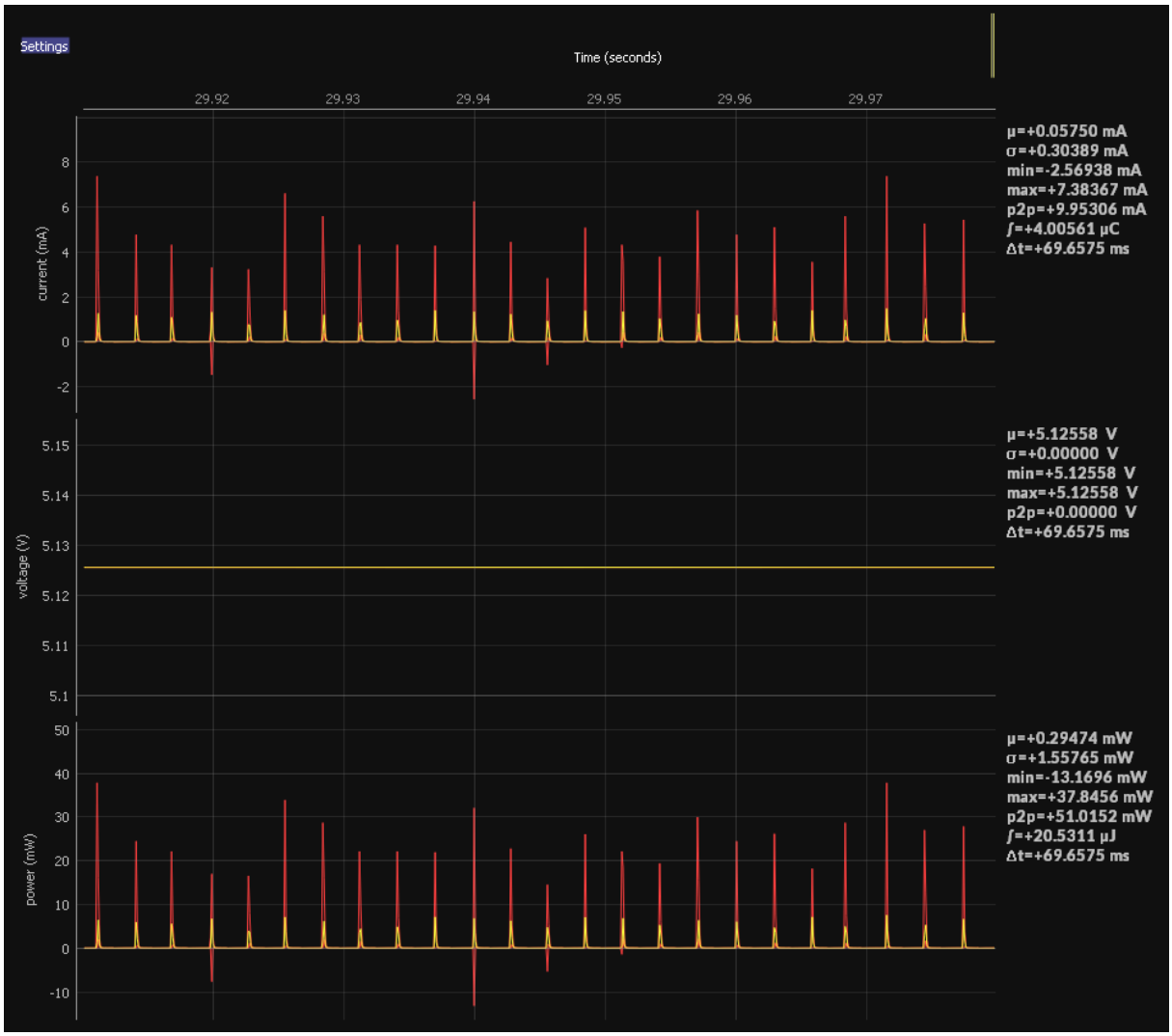
The rest of the system was connected to the regulator but in deep sleep. The average current consumption of the device was 60-80µA and the total derated capacitance way between 40-45µF.

Count	Type	Derating	Derated value
1	47u/6.3	-52%	22.56µF
2	10u	-32%	13.6µF
1	4.7u	no derating	4.7uF
1	1u	no derating	1uF
8	100n	no derating	0.8uF
			42.66µF

Capacitors <100nF have been ignored in this evaluaton.

5.3 Measurement result





5.4 Conclusion

While the output regulation seems perfectly stable, the regulator will output periodic high current pulses, leading to increased current draw at nominal operating conditions. This is potentially caused by an instability by to much capacitive loading (although within the datasheet limits) and is more likely to occur at high input voltages