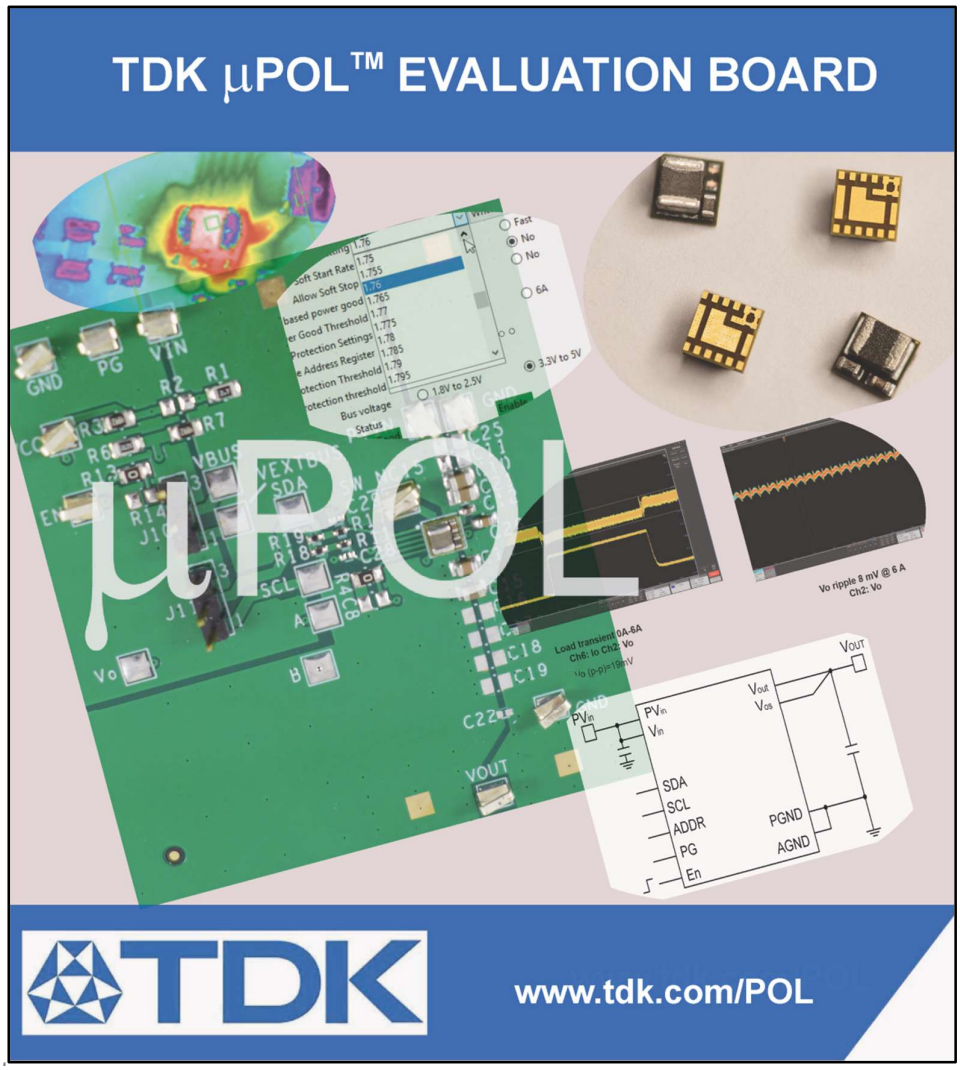


EV3305-0400-A
EVALUATION BOARD
USER GUIDE

Rev 1.0, Nov 28, 2025

Introduction

This user guide describes the evaluation board provided for the FS3305 µPOL™ product.

The board generates an output voltage (V_{OUT}) of 1.2V* for loads of 0–5A from an input voltage (V_{IN}) of 3.3V.

Specifications

- Input voltage (V_{IN}) = +3.3V
- Output voltage (V_{OUT}) = +1.2V
- Output load (I_{OUT}) = 0–5A
- Switching frequency (F_{SW}) = 1.44MHz
- Output capacitance (C_O) = 3x22µF (MLCC)
- Input capacitance (C_{IN}) = 2x22µF (MLCC)
- Power Solution Size (width x length x height) = 6 x 6 x 1.2mm

Operation

The board is configured for a single input supply. The Enable (EN) input is connected to V_{IN} through a resistor divider , so that no Enable signal is needed. If an independent Enable Control is required, use Enable header. Pgood status can be checked at PG header.

To use the evaluation board:

1. Connect a well-regulated +3.3V input supply to V_{IN} (Red Connector) and Gnd (Black Connector).
2. Connect a load of 0–5A to V_{OUT} (Green Connector) and Gnd (Black Connector).

NOTE – Output Voltages from 0.4V to 3.3V can be obtained by changing the values of Resistor Divider Components. Refer Page 7.

Description

The evaluation board consists of a 4-layer PCB made from FR4 glass-reinforced epoxy laminate material. All layers use 1oz copper. The EV3305-0400-A is a single sided board, with all components, including the FS3305, mounted on the top side of the board.

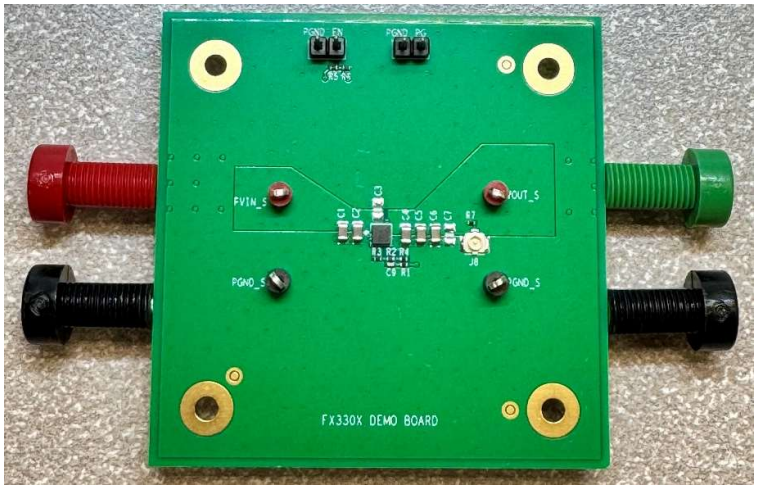


Figure 1 Board Picture

Figure 2 to Figure 5 show the pictures of the board layers and Figure 6 shows a schematic of the electric circuit.

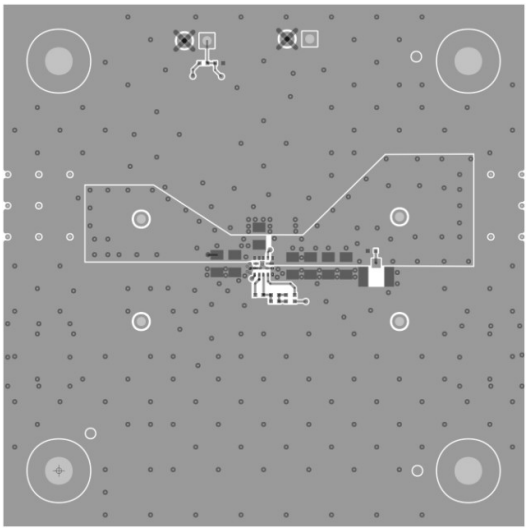


Figure 2 Board Layout – layer 1

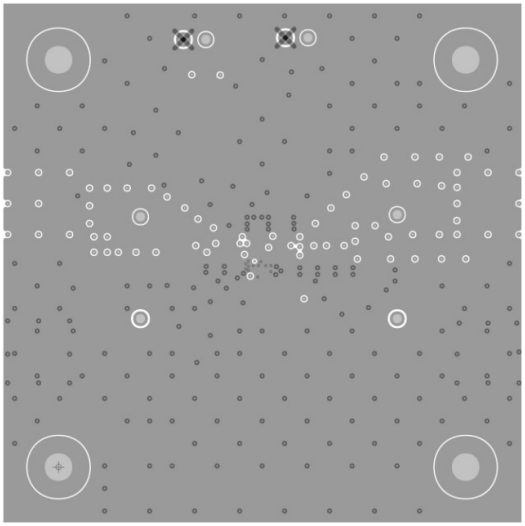


Figure 3 Board Layout – layer 2

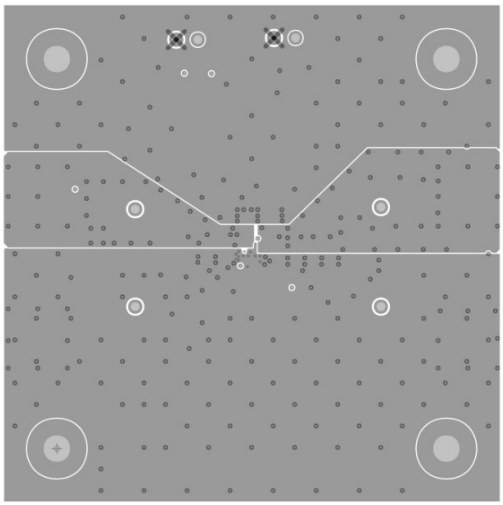


Figure 4 ***Board Layout – layer 3***

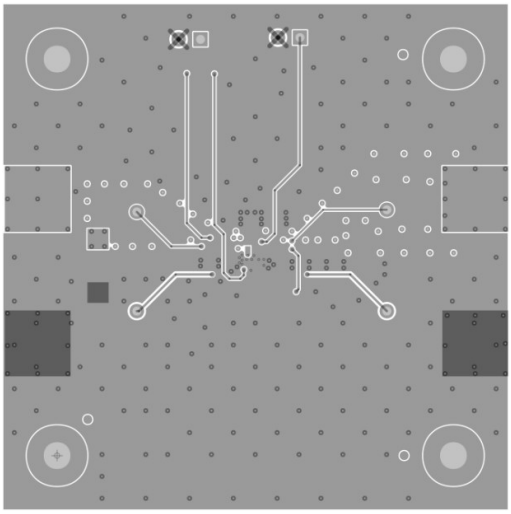
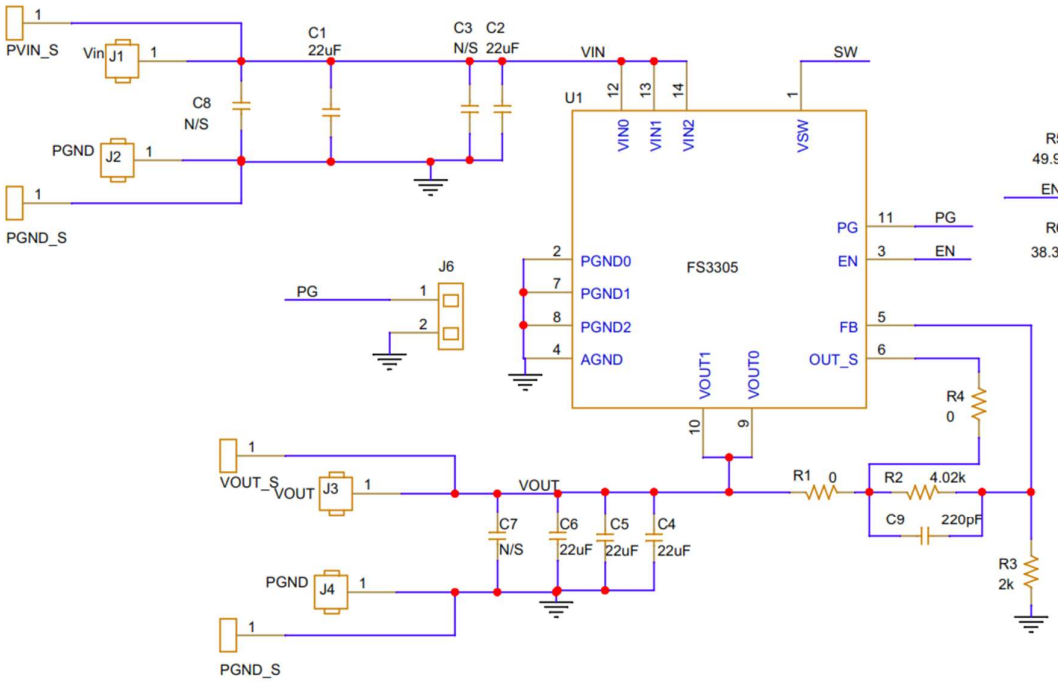
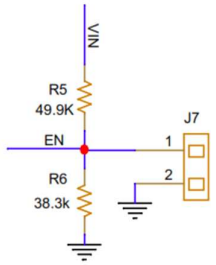
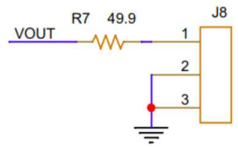


Figure 5 ***Board Layout – layer 4***

Part reference	Quantity	Type	Description
FS3305 µPOL	1	–	FS3305 Module
C1,C2,C4,C5,C6	5	22µF	0805, 10V, X5R
R1, R4	2	0Ω	0402 case size
R2	1	4.02kΩ	0402 case size
R3	1	2kΩ	0402 case size
R5	1	49.9kΩ	0402 case size
R6	1	38.3kΩ	0402 case size
R7	1	49.9	0402 case size
C9	1	220pF	0402, COG,10V
J8	1	–	Coaxial Connector







V_{OUT} (V)	R_{TOP}/R_{BOTTOM}	V_{OUT} (V)	R_{TOP}/R_{BOTTOM}
0.625	0.5622	1.05	1.6145
0.65	0.6194	1.1	1.7328
0.7	0.7500	1.2	2.0100
0.8	1.0000	1.5	2.7347
0.85	1.1261	1.7	3.2419
0.9	1.2407	1.8	3.4957
0.95	1.3673	2.5	5.2344
1	1.5056	3.3	7.3224

Figure 6 Schematic*

NOTE – Modify R3 (R_{BOTTOM}) for different V_{OUT} as per the included table. R2 (R_{TOP}) = 4.02 kΩ is recommended. For V_{OUT} =0.4V; R2 = 0Ω.

Typical performance

Figure 7 to Figure 23 show typical operating waveforms for the evaluation board, while Figure 24 shows thermal image of the board in operation. In all cases, the board is operating at room temperature with no airflow; V_{IN} is 3.3V, V_{OUT} is 1.2V and I_O is 0–5A.

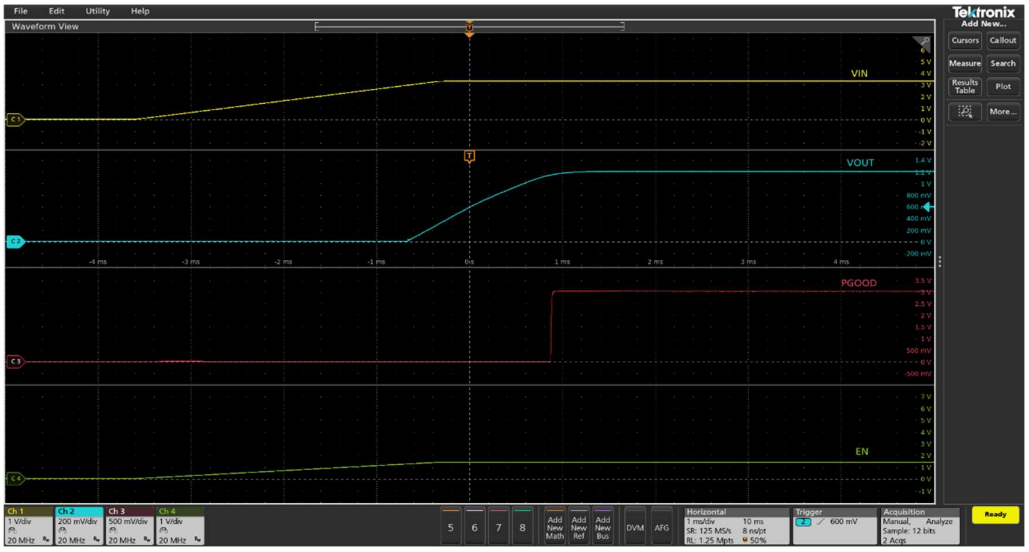


Figure 7 ***Startup with no load (Ch1 :V_{IN}, Ch2: V_{OUT}, Ch3: PGOOD, Ch4: EN)***

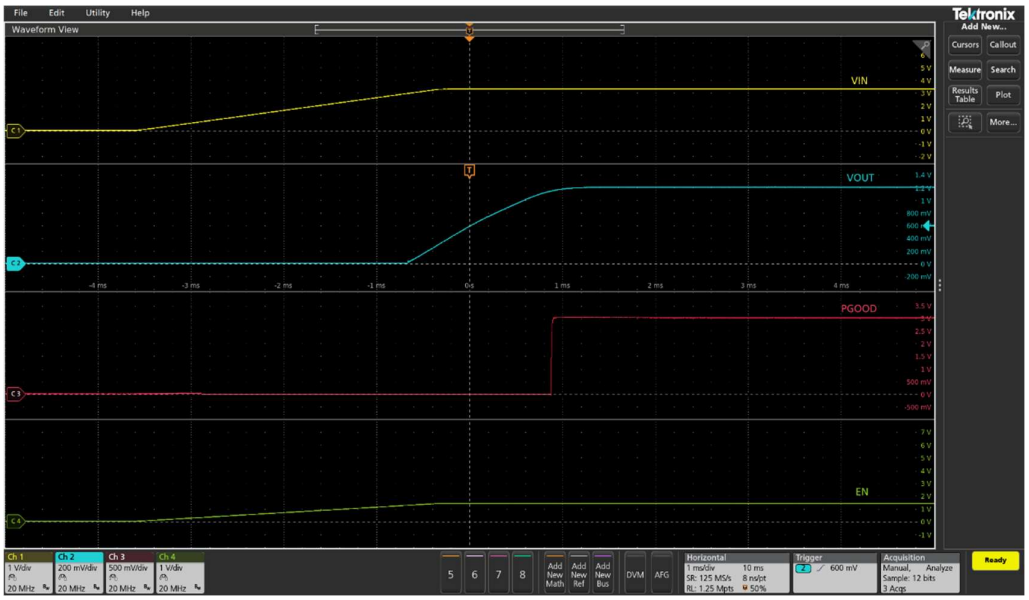


Figure 8 ***Startup with 5A load (Ch1:V_{IN}, Ch2: V_{OUT}, Ch3: PGOOD, Ch4: EN)***

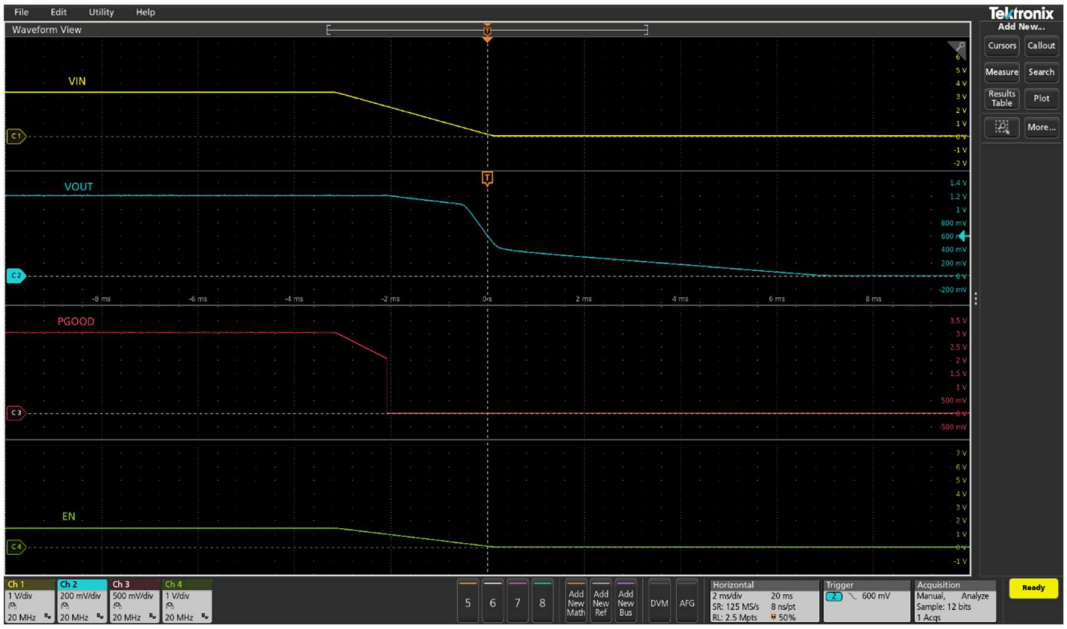


Figure 9 ***Vin Shutdown at 0A load (Ch1:V_{IN}, Ch2: V_{OUT}, Ch3: PGOOD, Ch4: EN)***

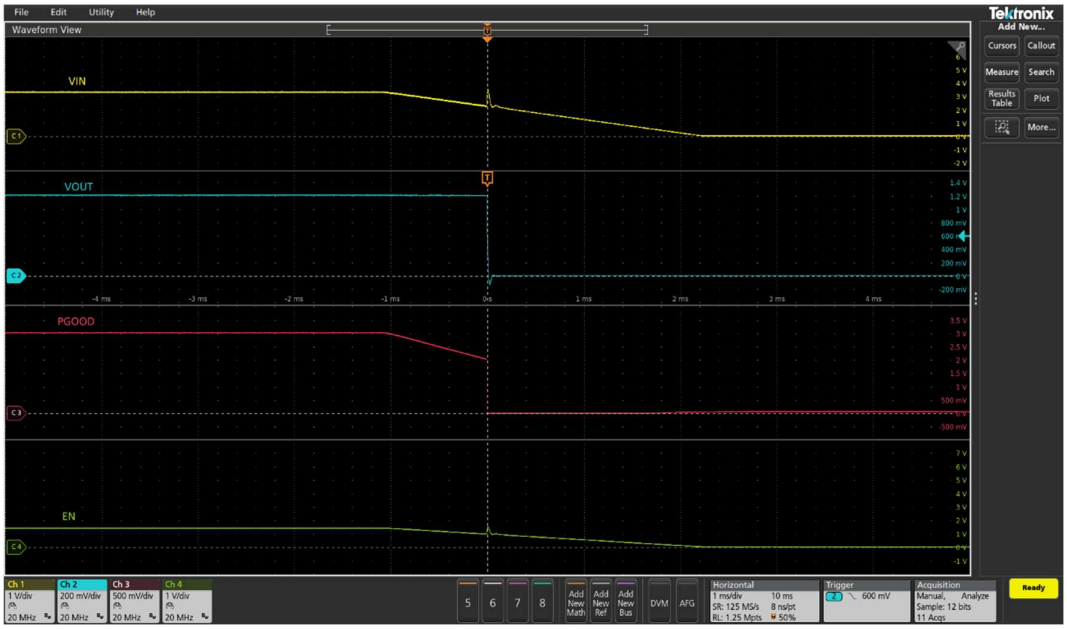


Figure 10 ***Vin Shutdown at 5A load (Ch1:V_{IN}, Ch2: V_{OUT}, Ch3: PGOOD, Ch4: EN)***

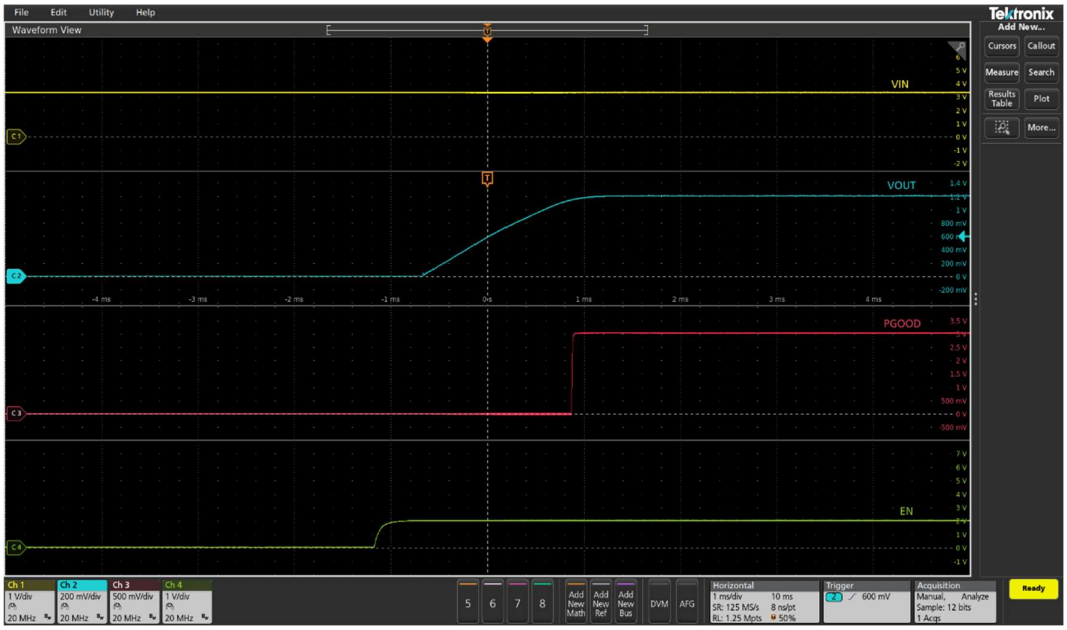


Figure 11 ***Turn on with Enable at 5A load (Ch1:V_{IN}, Ch2: V_{OUT}, Ch3: PGOOD, Ch4: EN)***

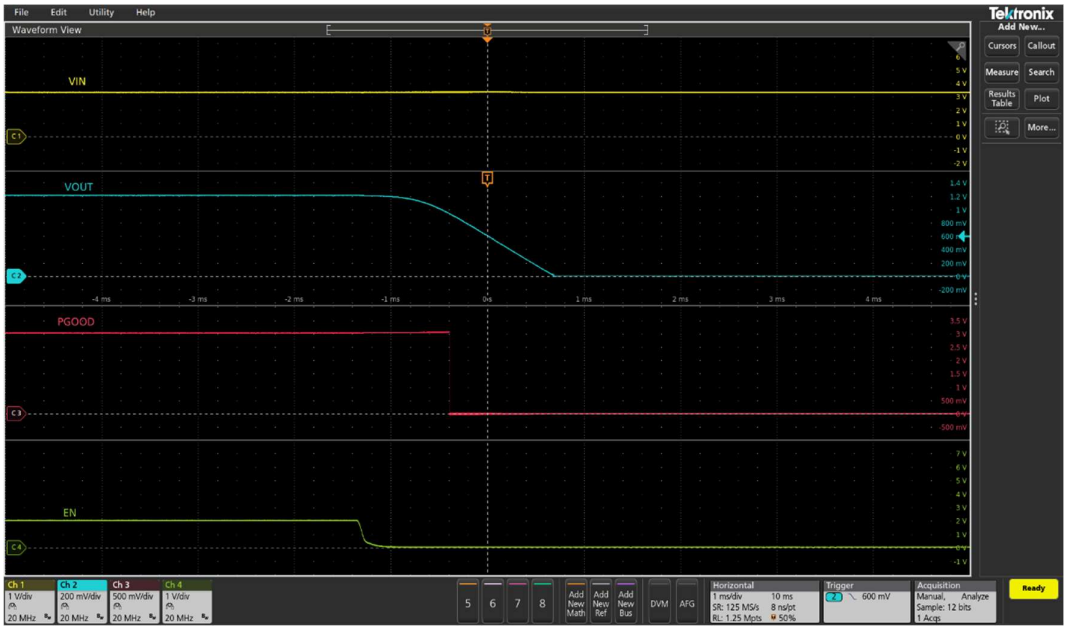


Figure 12 ***Enable Shutdown at 5A load (Ch1:V_{IN}, Ch2: V_{OUT}, Ch3: PGOOD, Ch4: EN)***

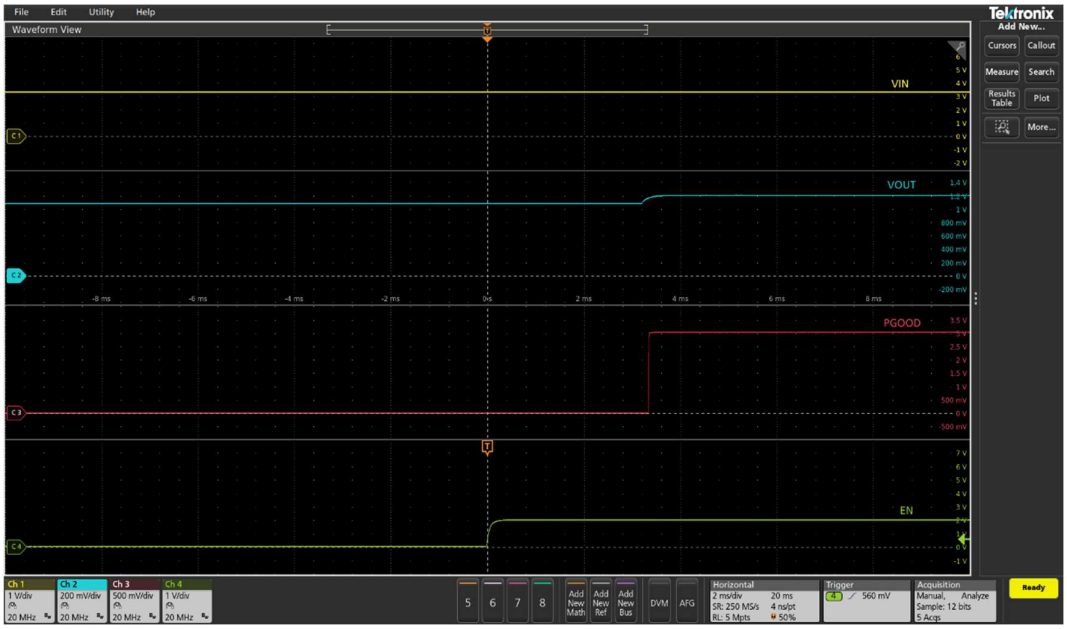


Figure 13 ***Startup into pre-bias (Ch1:V_{IN}, Ch2: V_{OUT}, Ch3: PGOOD, Ch4: EN)***

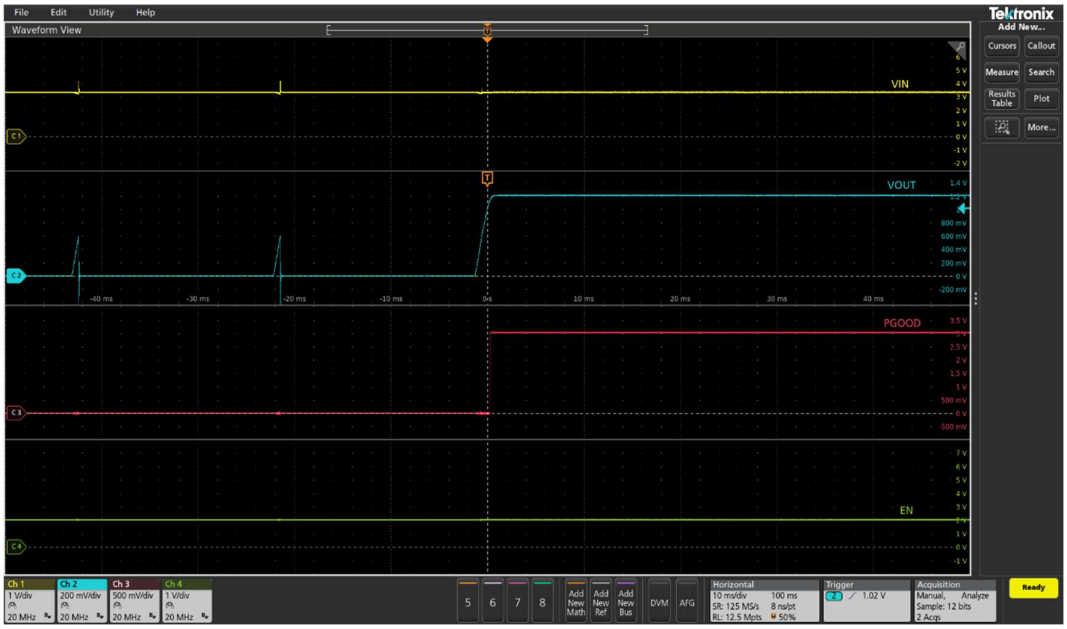


Figure 14 ***Recovery from OCP (Ch1:V_{IN}, Ch2: V_{OUT}, Ch3: PGOOD, Ch4: EN)***

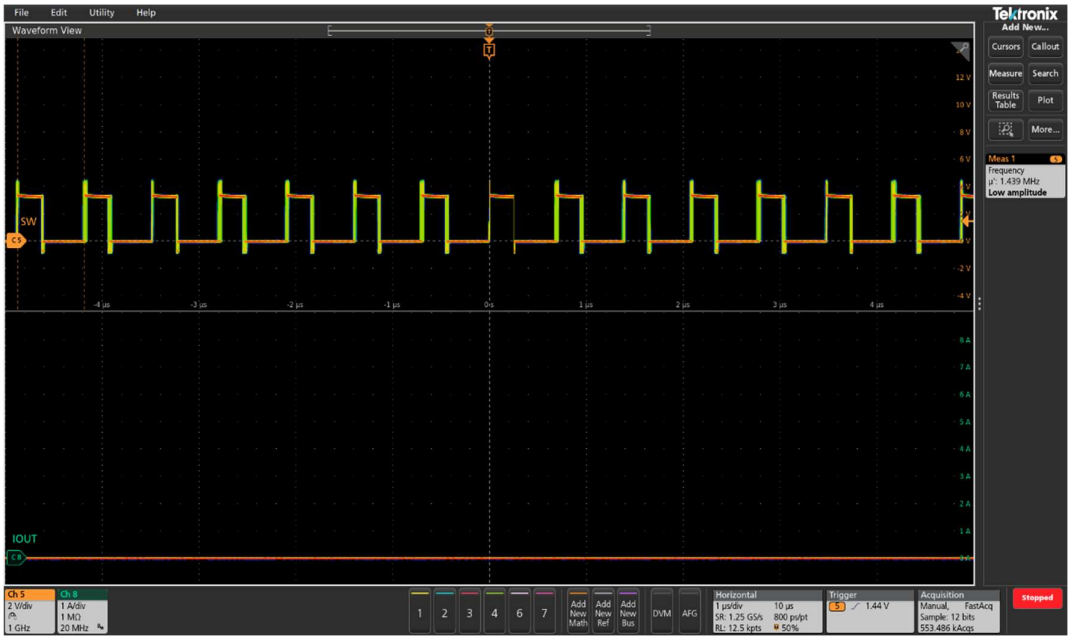


Figure 15 ***Sw at 0A (Ch5: Sw, Ch8: I_{OUT}) , F_{SW} = 1.44MHz***

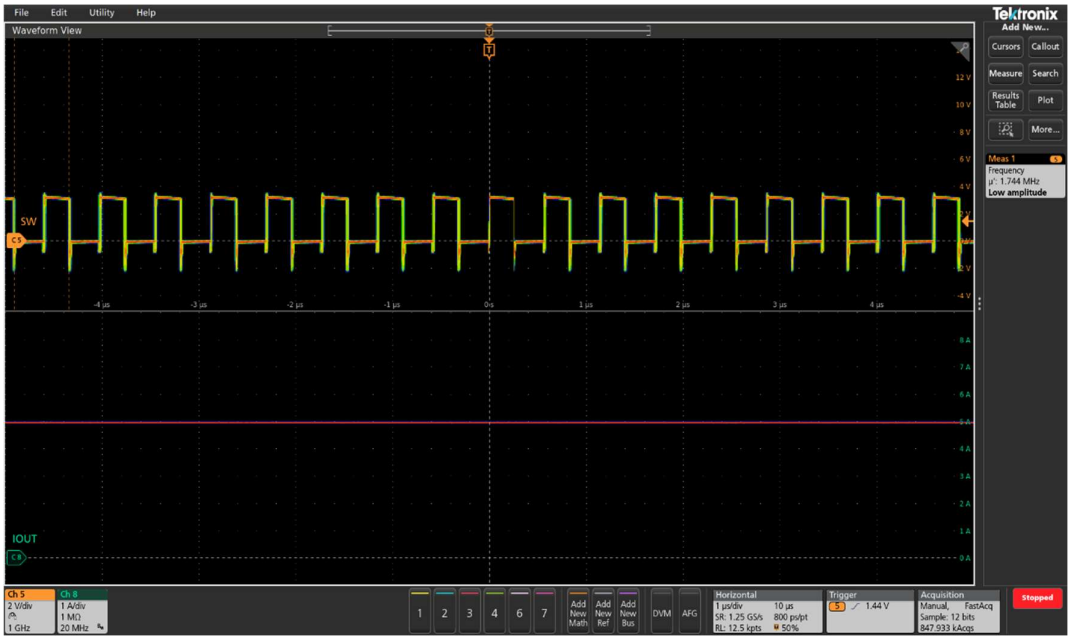


Figure 16 ***Sw at 5A (Ch5: Sw, Ch8: I_{OUT}) , F_{SW} = 1.74MHz***

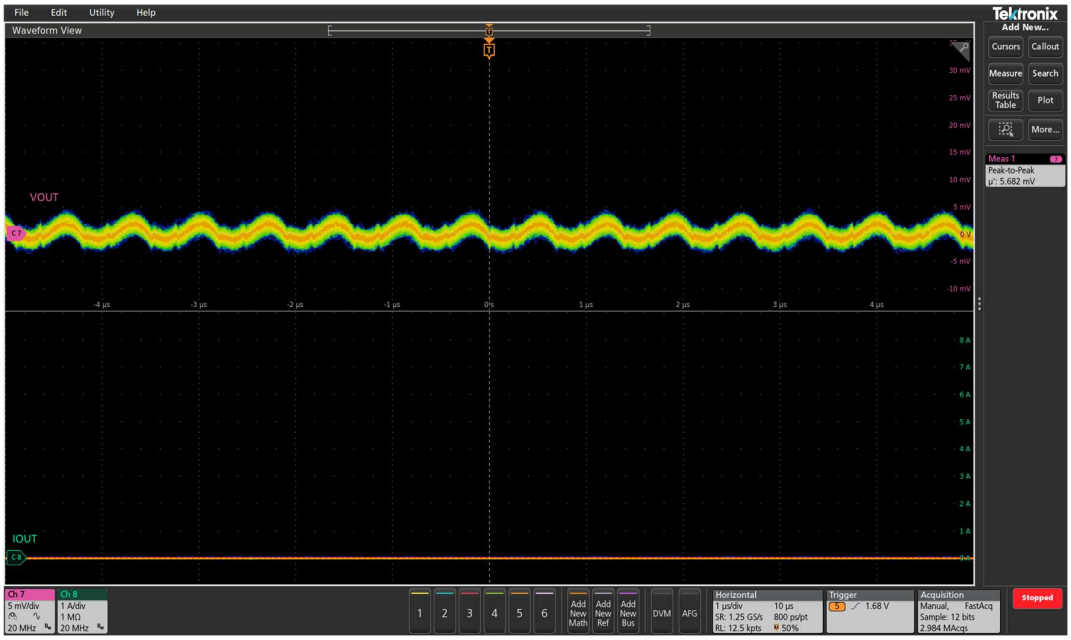


Figure 17 *V_{OUT} ripple at 0A (Ch7:V_{OUT}, Ch8: I_{OUTT}), Peak-Peak V_{OUT} ripple = 5.68mV*

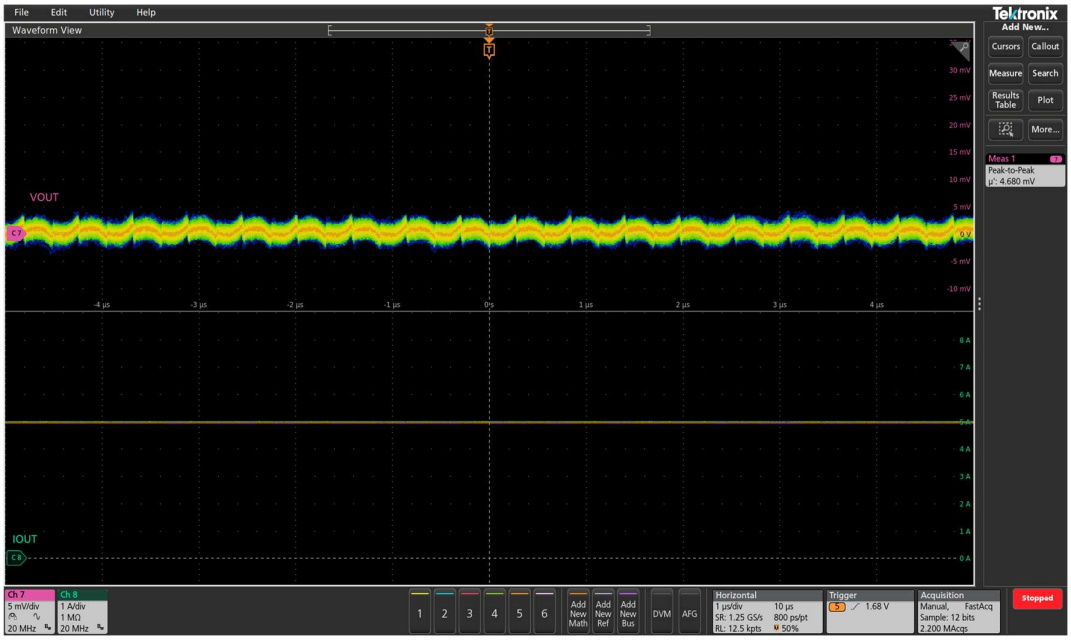


Figure 18 *V_{OUT} ripple at 5A (Ch7:V_{OUT}, Ch8: I_{OUT}), Peak-Peak V_{OUT} ripple = 4.68mV*

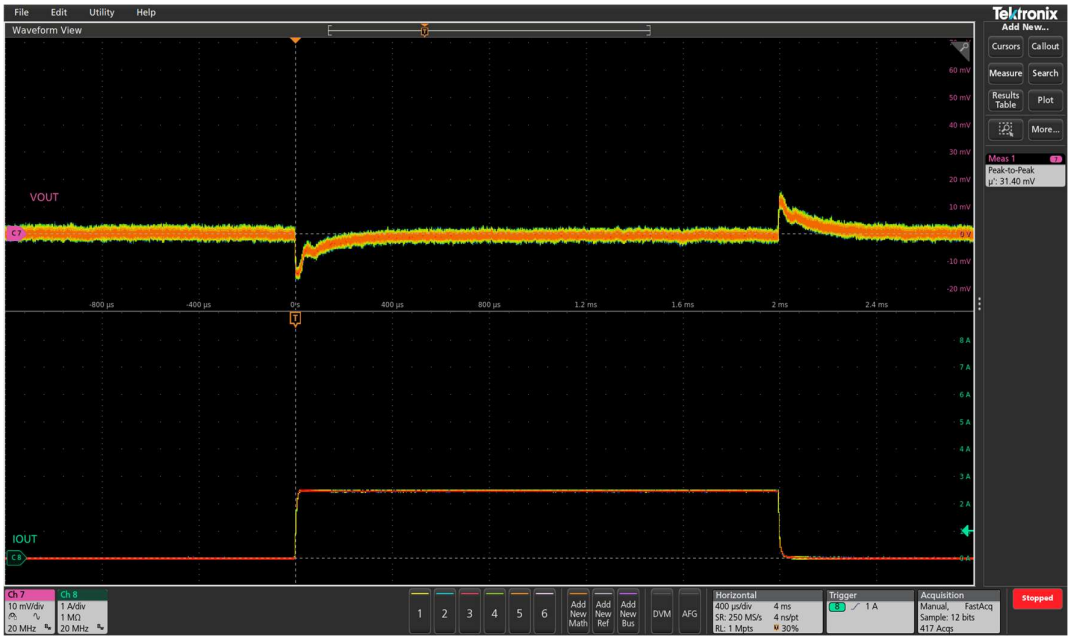


Figure 19 ***Transient response 0A to 2.5A @ 2.5A/us from Chroma Load (Ch7:V_{OUT}, Ch8: I_{OUT}), peak-peak deviation = 31.4 mV***

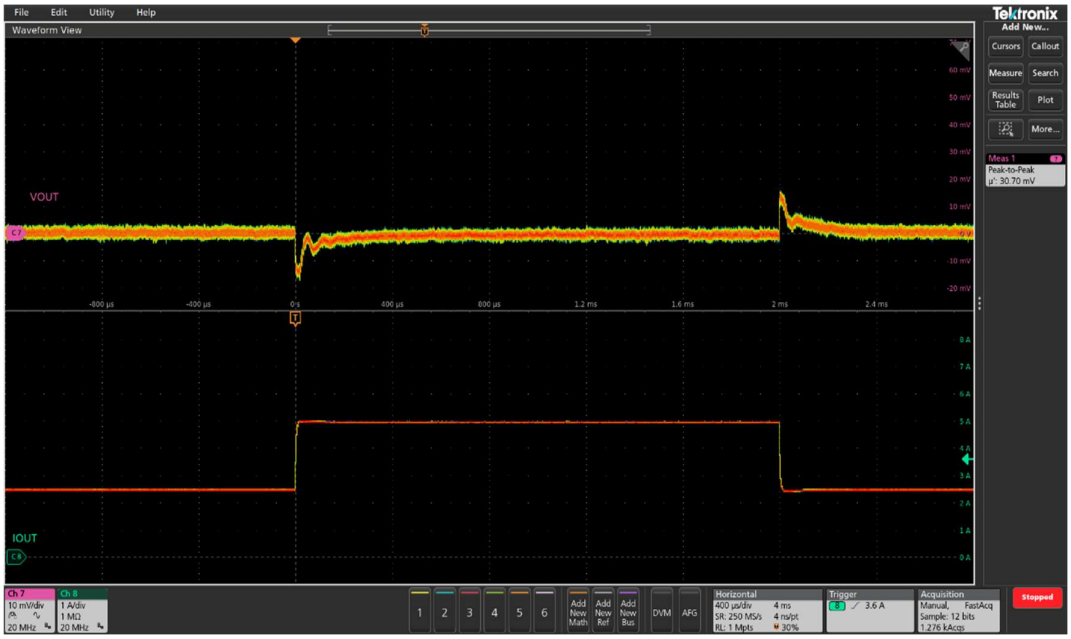


Figure 20 ***Transient response 2.5A to 5A @ 2.5A/us from Chroma Load (Ch7:V_{OUT}, Ch8: I_{OUT}), peak-peak deviation = 30.7 mV***

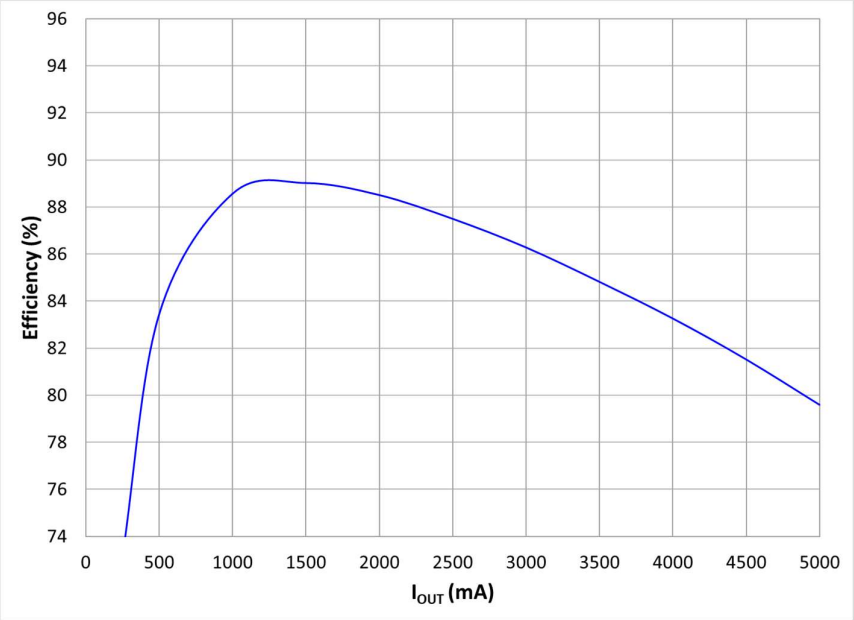


Figure 21 ***Efficiency***

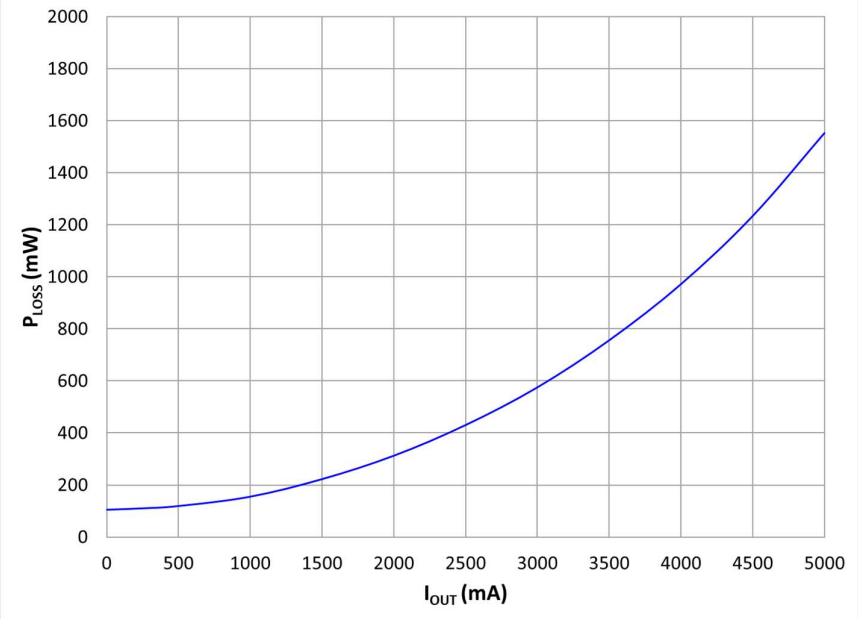


Figure 22 ***Power loss***

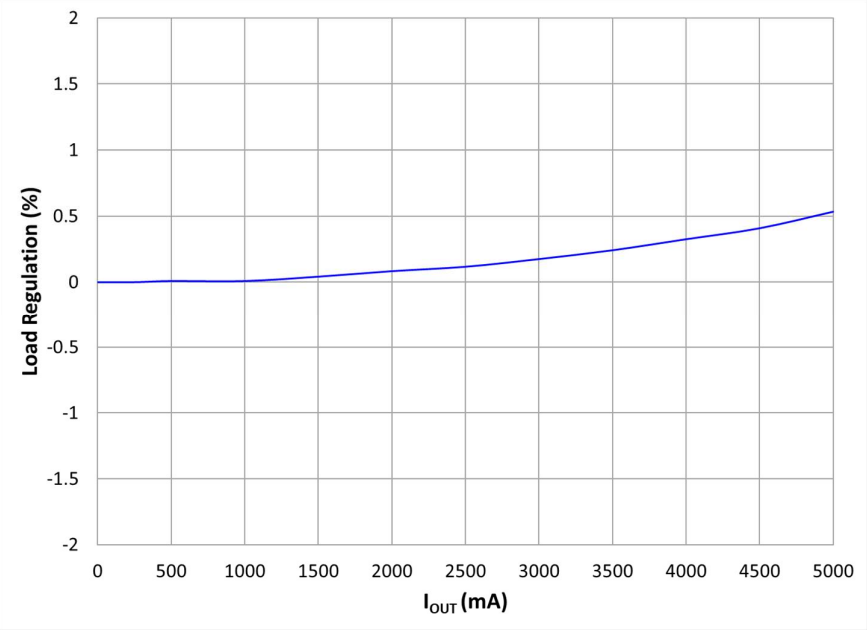


Figure 23 ***Load regulation***

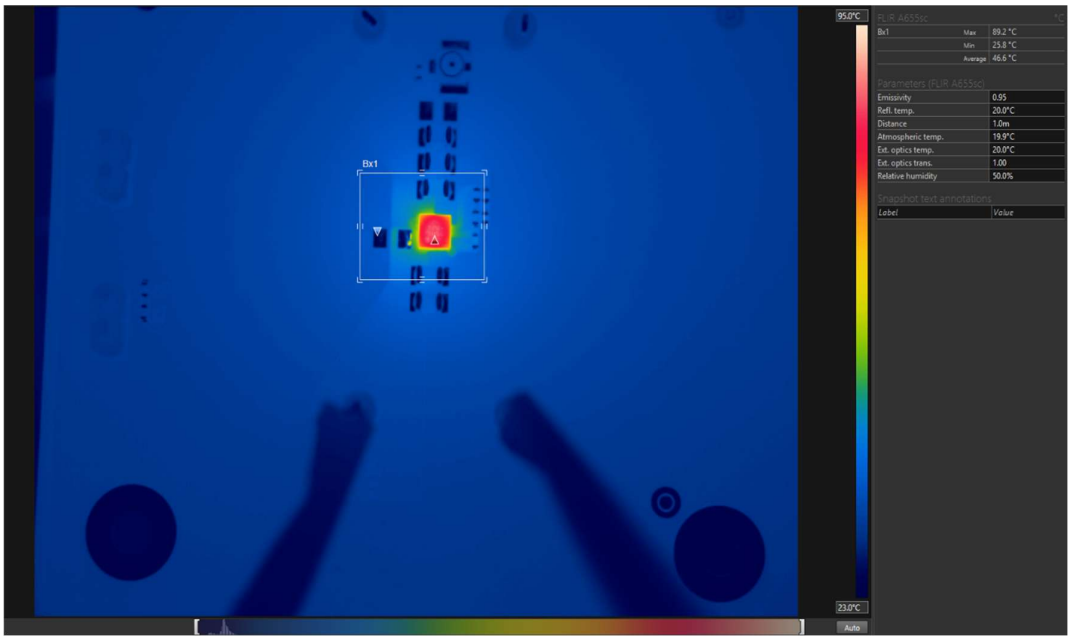


Figure 24 ***Thermal image (VIN=3.3V, I_{OUT}=5A) – maximum temperature rise = 65°C***

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REMINDER

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3. Medical equipment
4. Power-generation control equipment
5. Atomic energy related equipment
6. Seabed equipment
7. Transportation control equipment
8. Public Information-processing equipment
9. Military equipment
10. Electric heating apparatus, burning equipment
11. Disaster prevention/crime prevention equipment
12. Safety equipment
13. Other applications that are not considered general-purpose applications

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