
# EV1525-0800-100A
# EVALUATION BOARD
# USER GUIDE



Rev 1, Jan 05, 2026

# Introduction

This user guide describes the evaluation board provided for the FS1525 µPOL™ product.

The board generates an output voltage ($V_{OUT}$) of 0.8V* for loads of 0–100A from an input voltage ($PV_{IN}$) of 12V.

# Specifications

- Input voltage ($PV_{IN}$) = +12V
- Output voltage ($V_{OUT}$) = +0.8V
- Output load ($I_O$) = 0–100A
- Switching frequency ($F_{SW}$) = 625 kHz
- Output capacitance ($C_O$) = 54x47µF (MLCC), 2x470µF SP Cap, 1x0.1µF (MLCC)
- Input capacitance ($C_{IN}$) = 2x 68uF, 16x22µF (MLCC), 4x1uF (MLCC)
- Dimensions (width x length x thickness) = 55mm x 14.5mm x 3.8mm

# Connections

| Name | Identifier | Description |
|---|---|---|
| $PV_{IN}$ | J1 | Input voltage (+12V) |
| PGnd | J2 | Ground for input voltage |
| $V_{OUT}$ | J3,J4 | Output voltage (+0.8V) |
| PGnd | J5,J6 | Ground for output voltage |
| $V_{IN}$ | $V_{IN}$ | Test Point for LDO Input |
| $V_{CC}$ | $V_{CC}$ | Test Point for LDO Output |
| PGnd | PGnd | Power ground |
| En | En | Enable |
| PGood | PGood | Power Good |
| SCL | SCL | PIN1 I2C/PMBUS clock line |
| SDA | SDA | PIN2 I2C/PMBUS data line |
| ALERT | ALERT | SMBALERT# |
| FAULT | FAULT | FAULT |
| Load | J7, J8 | Used to connect load: 20-pin Intel Mini Slammer connector |
| Output transient ripple voltage | J10 | Used for measurement: 50Ω ultra-miniature coaxial connector |

The board is configured for a single input supply. The Enable (En) input is connected to $PV_{IN}$ through a resistor divider, so that no external Enable signal is needed.

# Operation

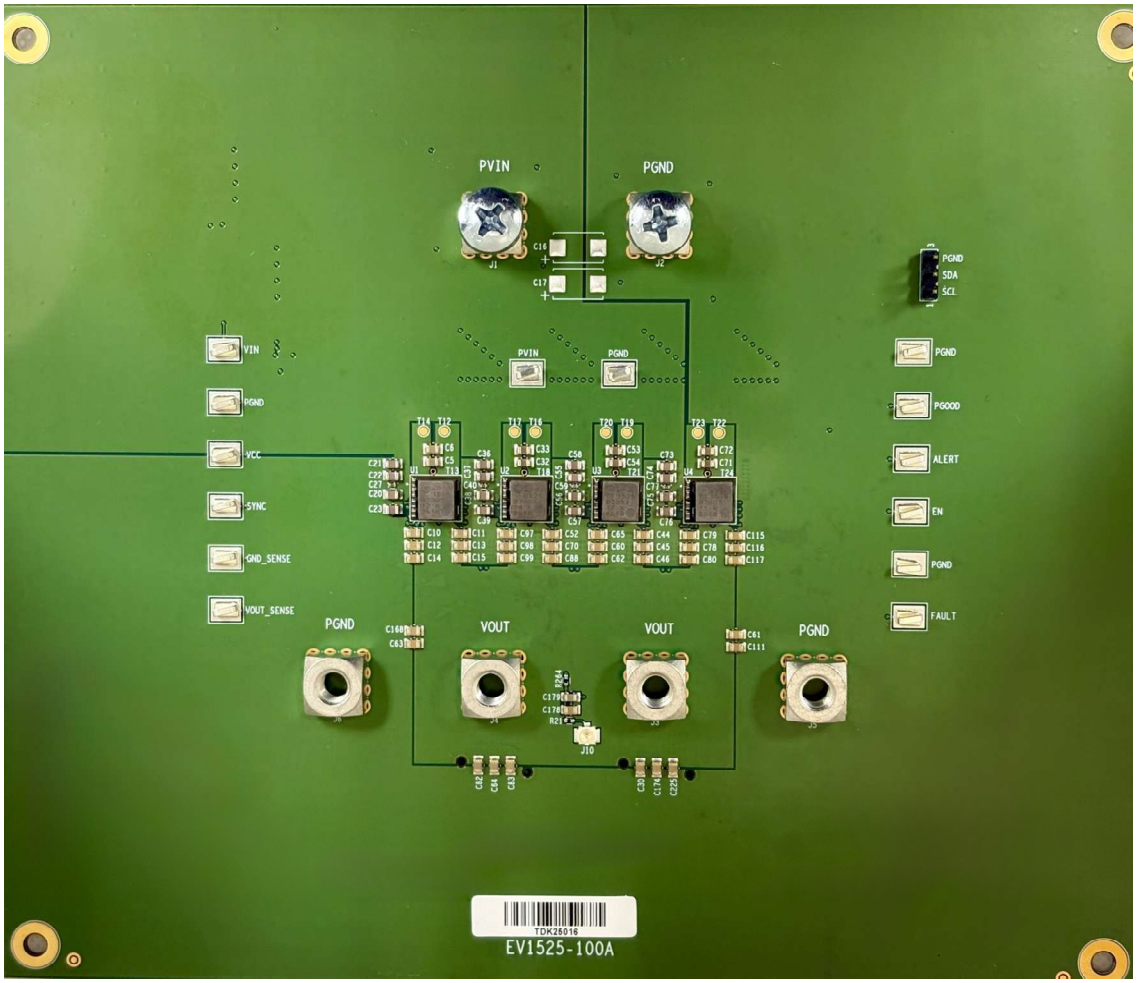
To use the evaluation board:

1. Connect a well-regulated +12V input supply to $PV_{IN}$ (J1) and Gnd (J2).
2. Connect a load of 0–100A to $V_{OUT}$ (J3,J4) and Gnd (J5,J6).

***NOTE – Output Voltages from 0.6V to 1.8V can be obtained by changing the values of Resistor Divider Components. Refer Page 7.***

## Description

The evaluation board consists of a 8-layer PCB made from FR4 glass-reinforced epoxy laminate material. All layers use 2oz copper. (The major power components, including the FS1525, are mounted on the top side of the board.)




***View of board (top)***

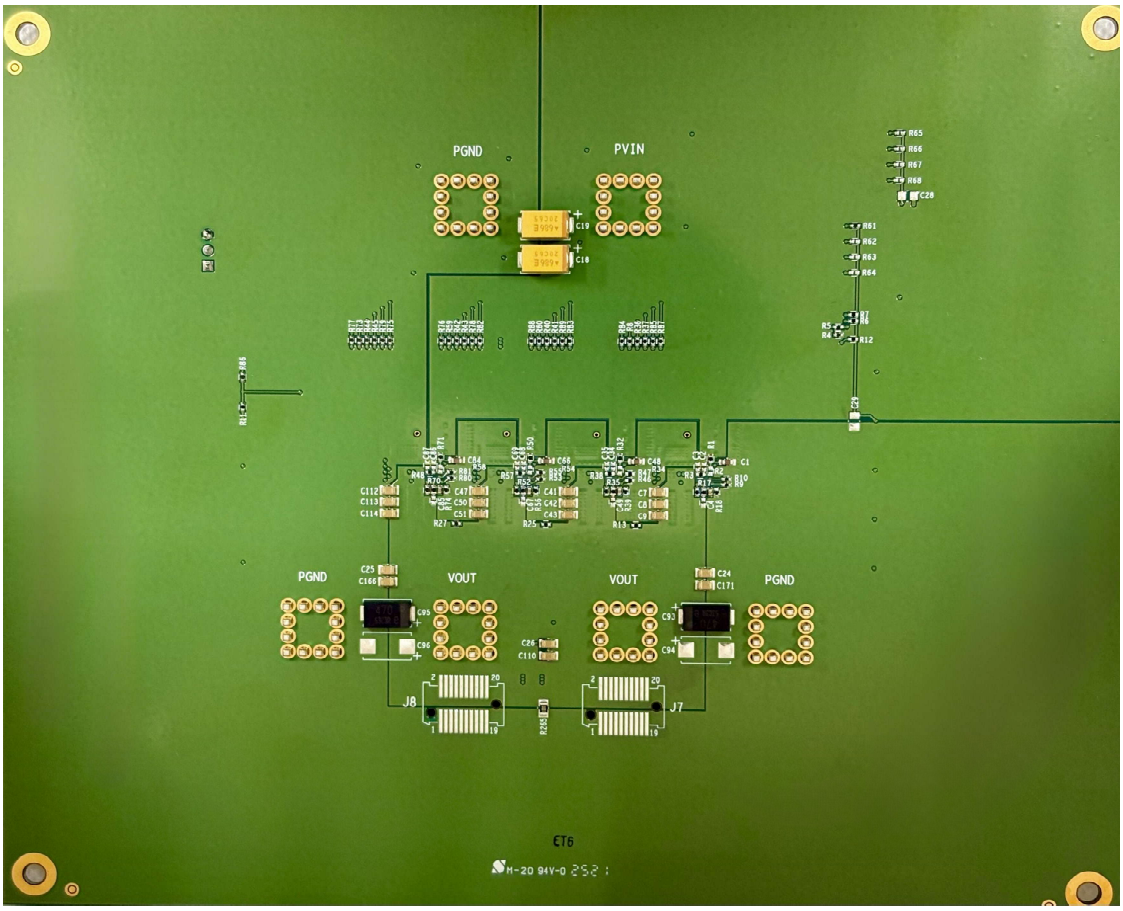



***Figure 1 View of board (bottom)***

Figure 2 to Figure 11 show the layout of the board layers and Figure 12 shows a schematic of the electric circuit.

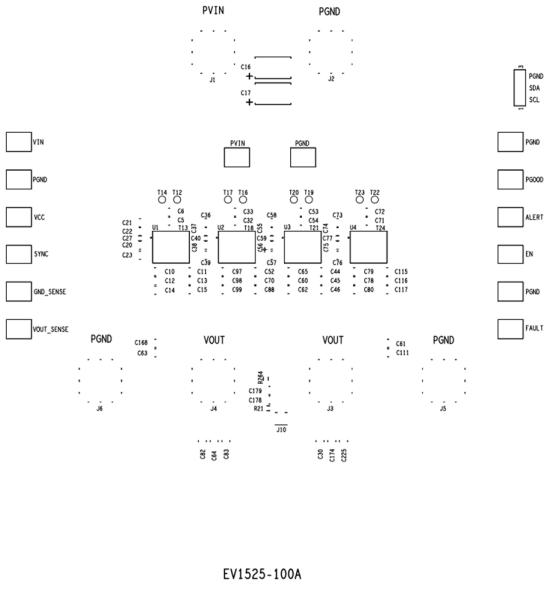



***Figure 2 Board layout – SilkScreen Top***

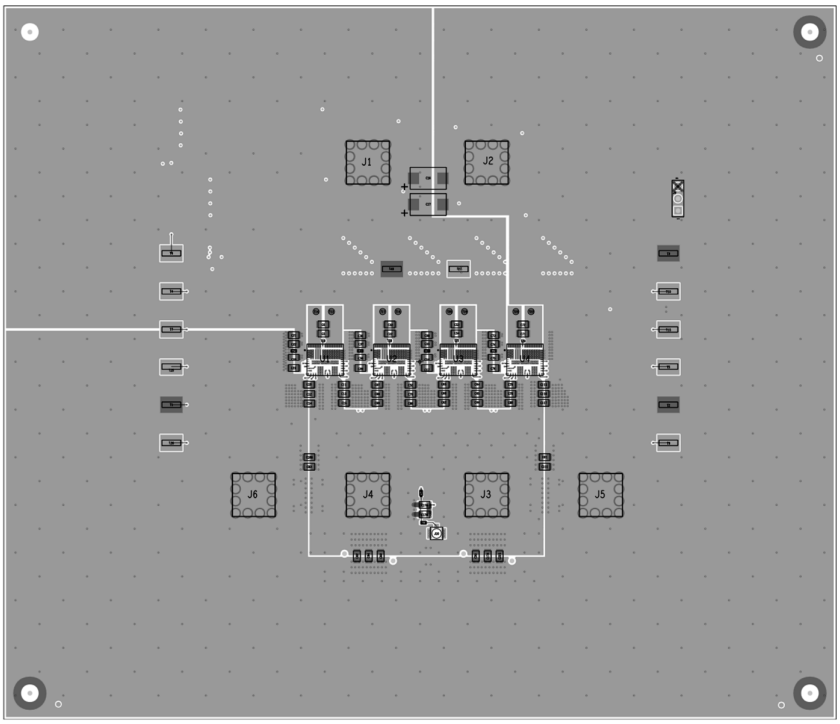



*Figure 3* ***Board layout – layer 1***

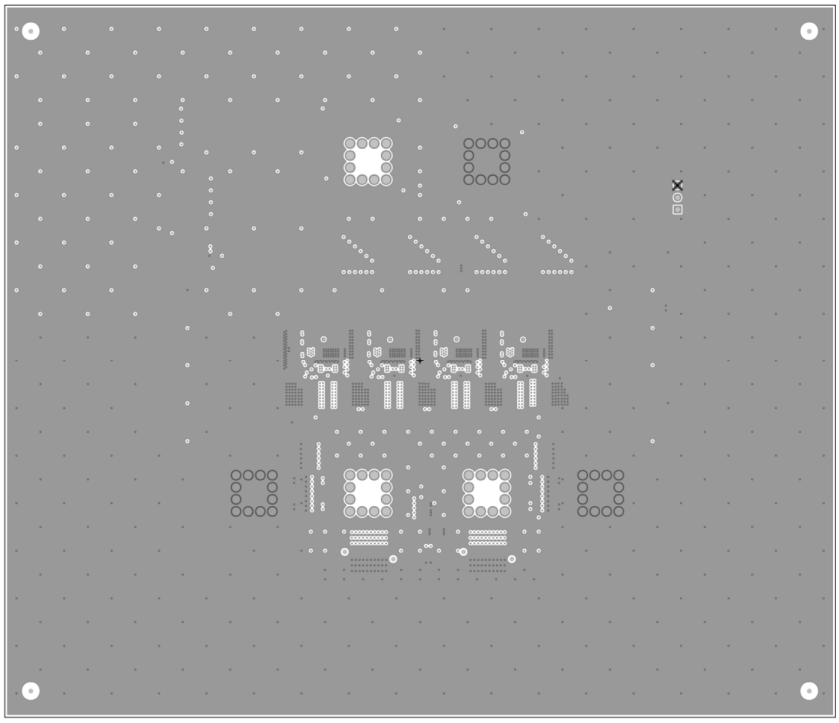


*Figure 4* ***Board layout – layer 2***

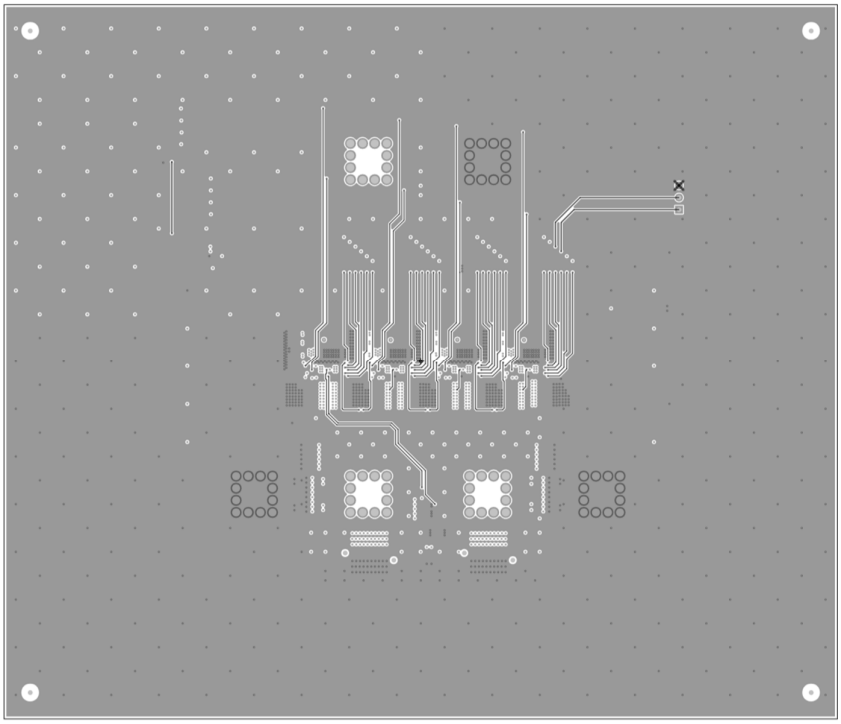


*Figure 5* ***Board layout – layer 3***

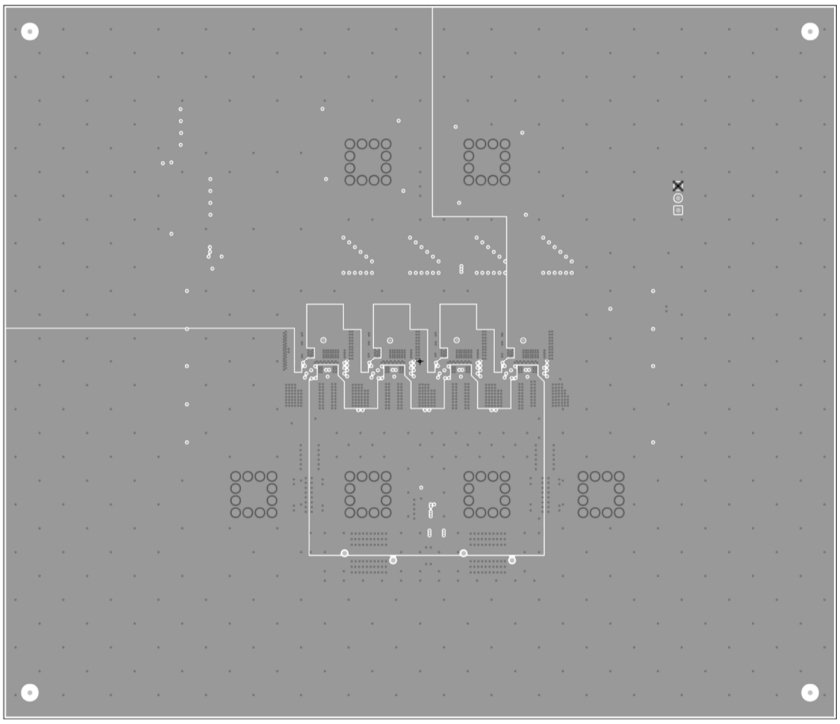


*Figure 6* ***Board layout – layer 4***

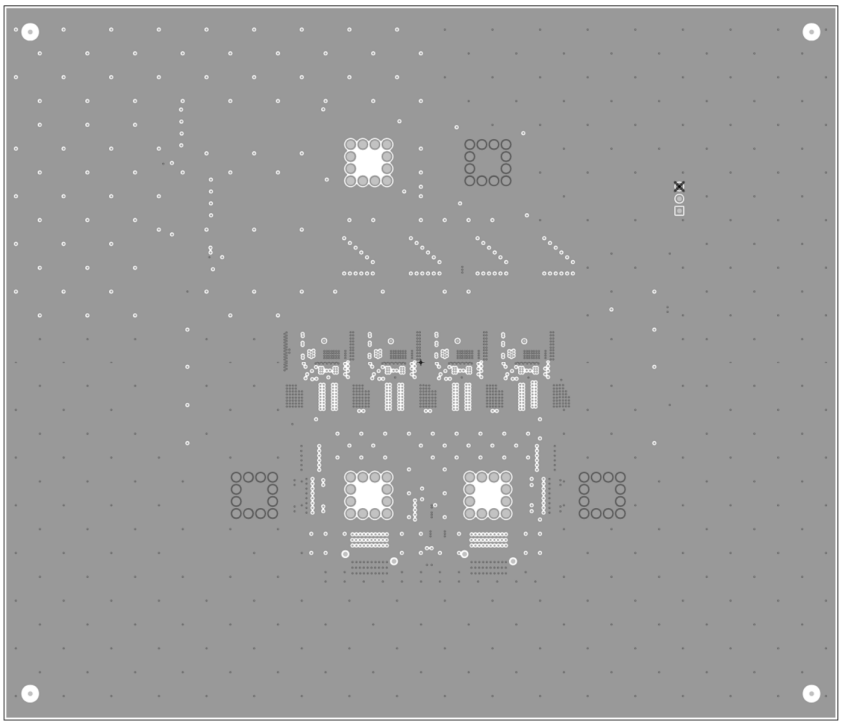


*Figure 7* ***Board layout – layer 5***

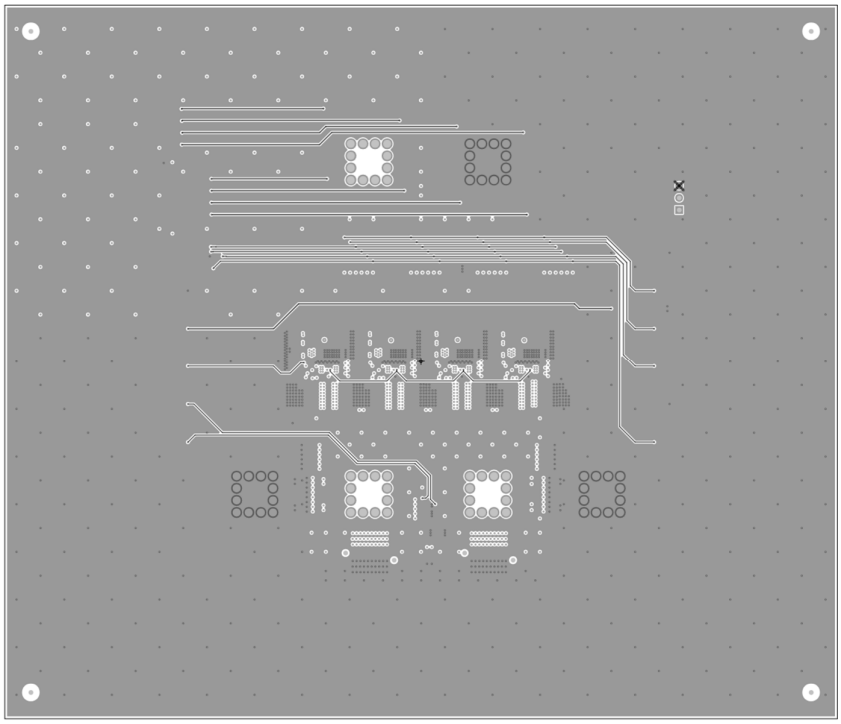


*Figure 8* ***Board layout – layer 6***

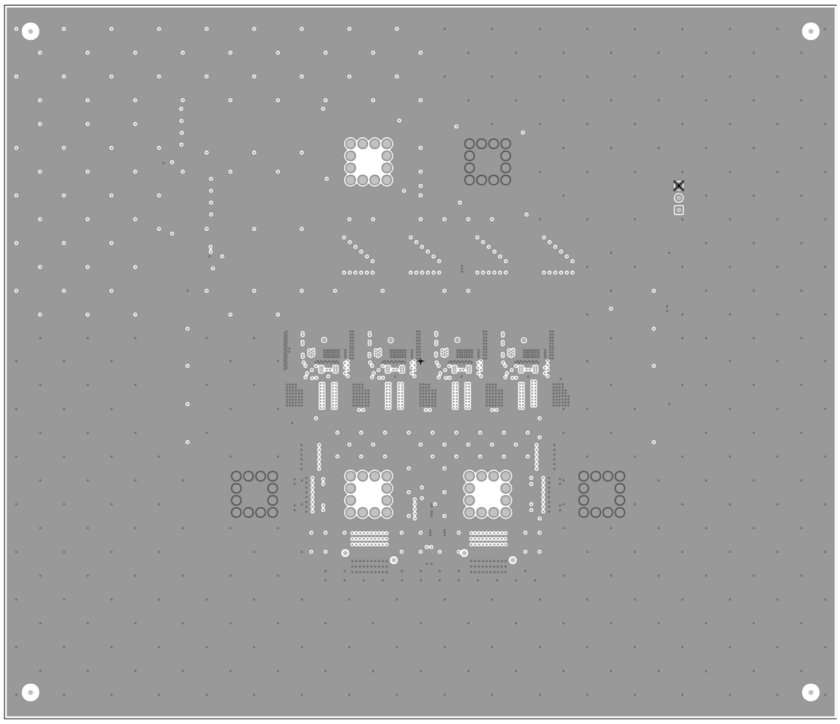


*Figure 9* ***Board layout – layer 7***

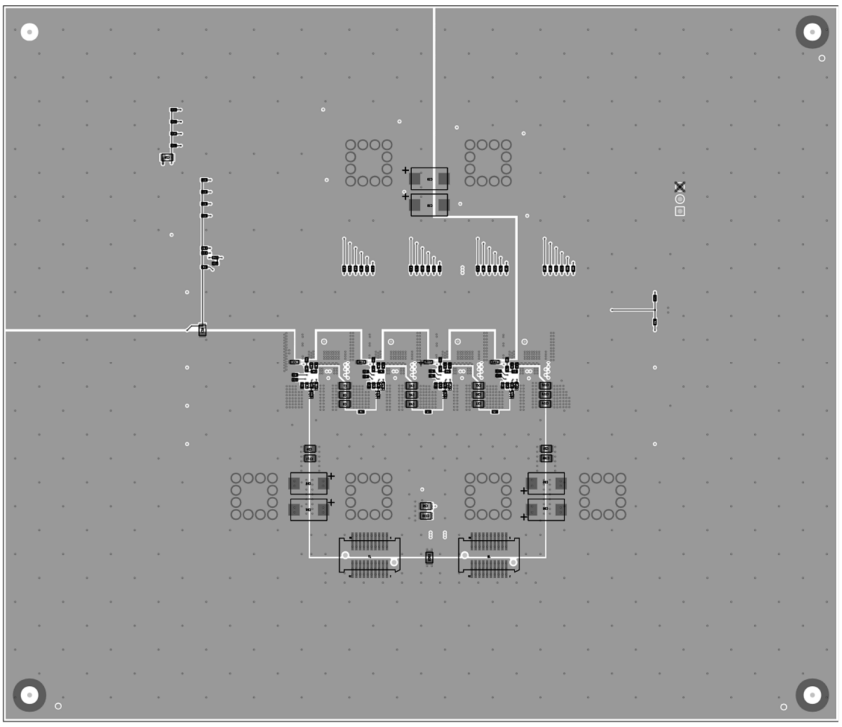


*Figure 10* ***Board layout – layer 8***

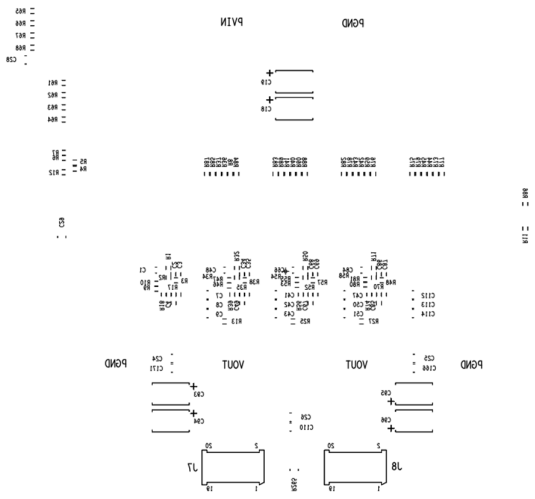



*Figure 11* ***Board layout – silkscreen Bottom***

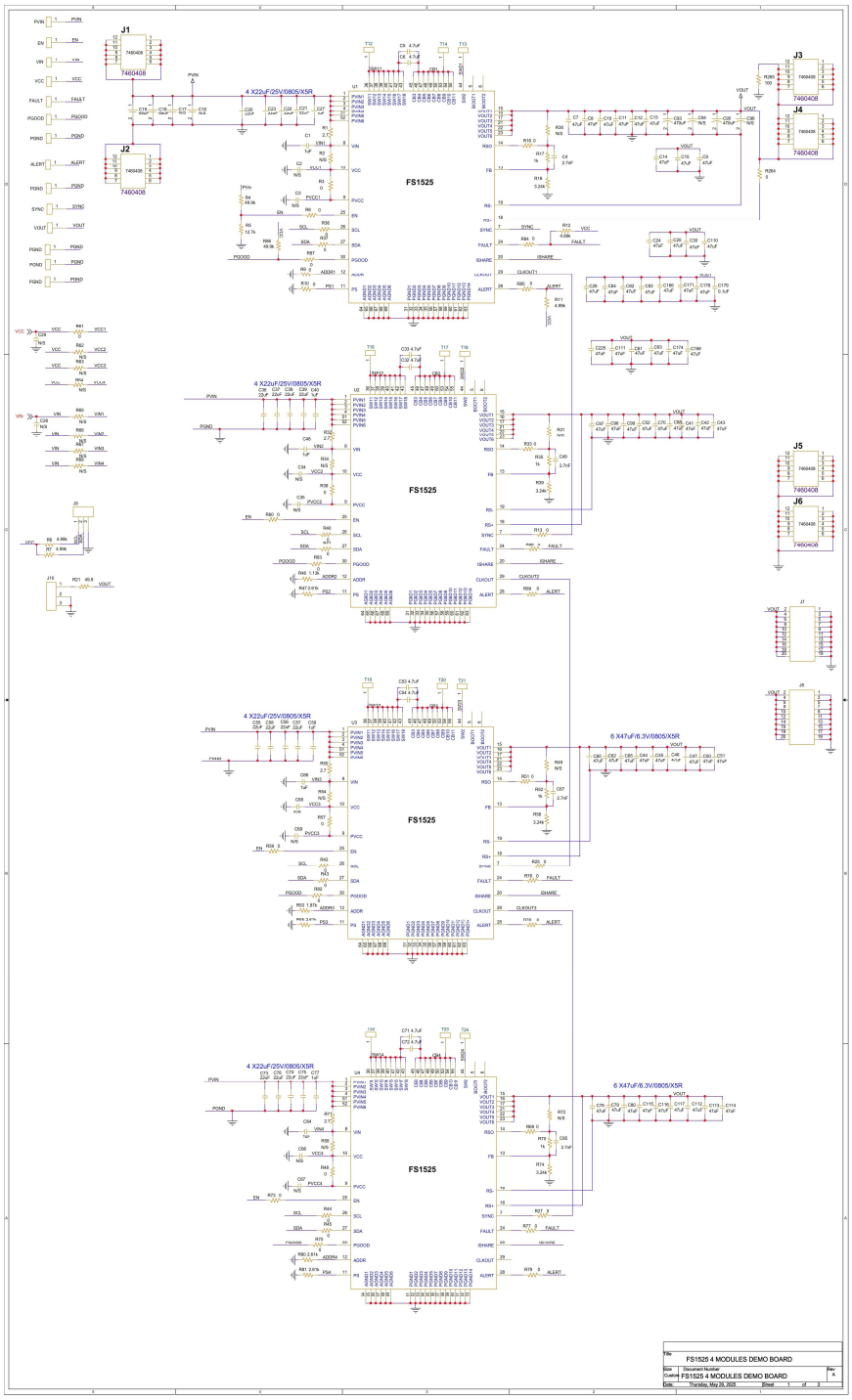



***Figure 12 Schematic***

| $V_{OUT}$ (V) | $R_{TOP}/R_{BOTTOM}$ | $V_{OUT}$ (V) | $R_{TOP}/R_{BOTTOM}$ |
|---|---|---|---|
| 0.65 | 0.0617 | 1 | 0.6494 |
| 0.7 | 0.1468 | 1.05 | 0.7299 |
| 0.72 | 0.1779 | 1.1 | 0.8065 |
| 0.8 | 0.3086 | 1.2 | 0.9804 |
| 0.85 | 0.3922 | 1.25 | 1.0741 |
| 0.9 | 0.4762 | 1.5 | 1.4684 |
| 0.95 | 0.5618 | 1.8 | 1.9569 |

***Table 1 Resistor Divider Ratio for Different Output Voltages.***

****NOTE – Modify R18, R39, R56 & R74 (RBOTTOM) for different VOUT as per the included table. R17, R35, R52 & R70 = 1 kΩ (RTOP) & C9, C49, C67 & C85 = 2700pF is recommended. For VOUT =0.6V; R17, R35, R52 & R70 = 0Ω, C9, C49, C67 & C85 = DNP.***

***PS Resistor: R10 = 0Ω for 0.6V = VOUT ≤ 0.9V; for 0.9V < VOUT < 1.2V, R10 = 8.66k; and R10 = 7.87k for VOUT ≥ 1.2V***

| Item | Quantity | Reference | Description |
|---|---|---|---|
| 1 | 4 | C1,C48,C66,C84 | 1uF/0603/25V/X7R |
| 2 | 4 | C27,C40,C59,C77 | 1uF/0402/25V/X7R |
| 4 | 8 | C5,C6,C32,C33,C53,C54,C71,C72 | 4.7uF/0805/16V/X7R |
| 6 | 53 | C7,C8,C9,C10,C11,C12,C13,C14,C15,C24,C25,C26,C30,C41,C42,C43,C44,C45,C46,C47,C50,C51,C52,C60,C61,C62,C63,C64,C65,C70,C78,C79,C80,C82,C83,C88,C97,C98,C99,C110,C111,C112,C113,C114,C115,C116,C117,C166,C168,C171,C174,C178,C225 | 47uF/0805/6.3V/X5R |
| 7 | 16 | C20,C21,C22,C23,C36,C37,C38,C39,C55,C56,C57,C58,C73,C74,C75,C76 | 22uF/0805/25V/X5R |
| 9 | 2 | C18,C19 | 68uF, 25V,poscap |
| 10 | 2 | C93,C95 | 470uF,ESR 3mohm |
| 11 | 4 | C4,C49,C67,C85 | 2.7nF/0402 |
| | | C179 | 0.1uF/0805/25V/X7R |
| 12 | 14 | T1,T2,T3,T4,T5,T6,T7,T9,T10,T15,T25,T26,T27,T49 | PC TEST POINT COMPACT |
| 13 | 6 | J1,J2,J3,J4,J5,J6 | Terminals |
| 14 | 1 | J10 | CONN U.FL RCPT STR 50 OHM SMD |
| | | J9 | CON3 |
| 16 | 39 | R3,R8,R9,R13,R16,R25,R27,R33,R36,R37,R38,R40,R41,R42,R43,R44,R45,R48,R51,R57,R59,R60,R61,R69,R73,R75,R76,R77,R78,R79,R82,R83,R84,R85,R87,R88,R89,R264,R10 | 0/0402 |
| 17 | 2 | R4,R86 | 49.9k/0402 |
| 18 | 1 | R5 | 12.7k/0402 |
| 19 | 4 | R6,R7,R11,R12 | 4.99k/0402 |
| 20 | 4 | R17,R35,R52,R70 | 1k/0402 |
| 21 | 1 | R21 | 49.9/0402 |
| 22 | 1 | R46 | 1.13k/0402 |
| 23 | 1 | R53 | 1.87k/0402 |
| 24 | 4 | R47,R55,R80,R81 | 2.61k/0402 |
| 29 | 4 | R18,R39,R56,R74 | 3.24k/0402 |
| | | R265 | 100 |
| 30 | 4 | U1,U2,U3,U4 | FS1525 |

***Table 2 4-Module Board Bill of Material***

## Typical performance

Figure 13 to Figure 22 show typical operating waveforms for the evaluation board, while Figure 26 shows a thermal image of the board in operation. In all cases, the board is operating at room temperature with no airflow; $PV_{IN}$ is 12V, $V_{OUT}$ is 0.8V and $I_O$ is 0–100A.

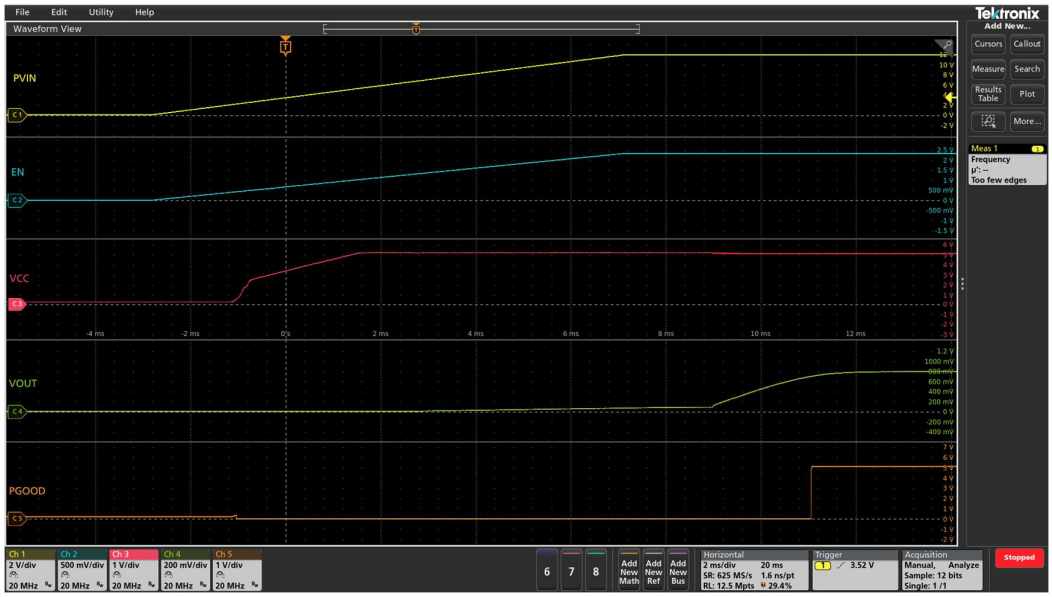



***Figure 13 Startup with no load (Ch1:$PV_{IN}$, Ch2: Enable, Ch3: $V_{CC}$, Ch4: $V_{OUT}$, Ch5: PGood)***

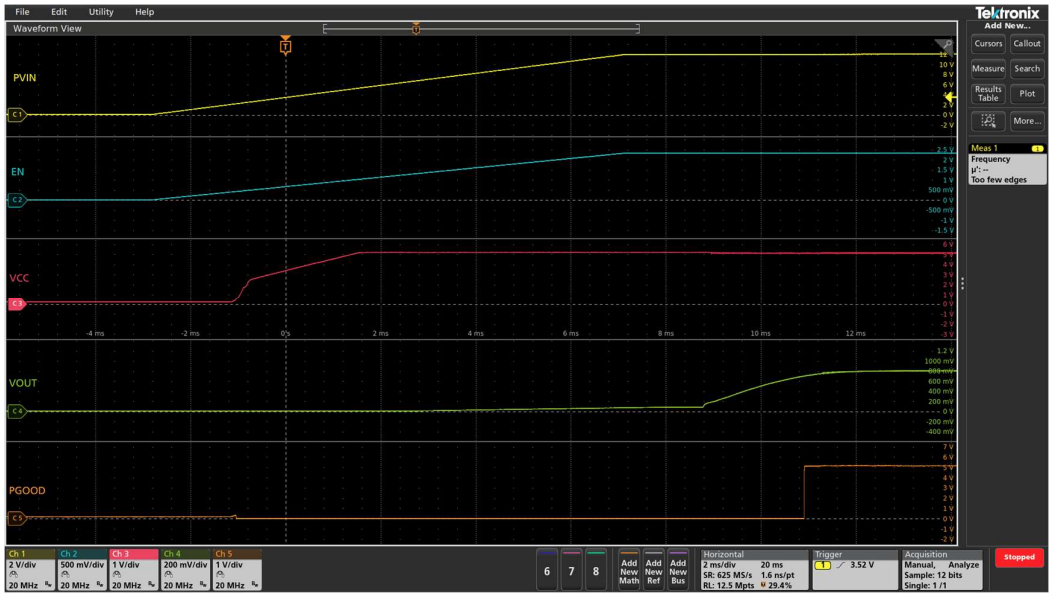



***Figure 14 Startup with 100A load (Ch1:$PV_{IN}$, Ch2: Enable, Ch3: $V_{CC}$, Ch4: $V_{OUT}$, Ch5: PGood)***

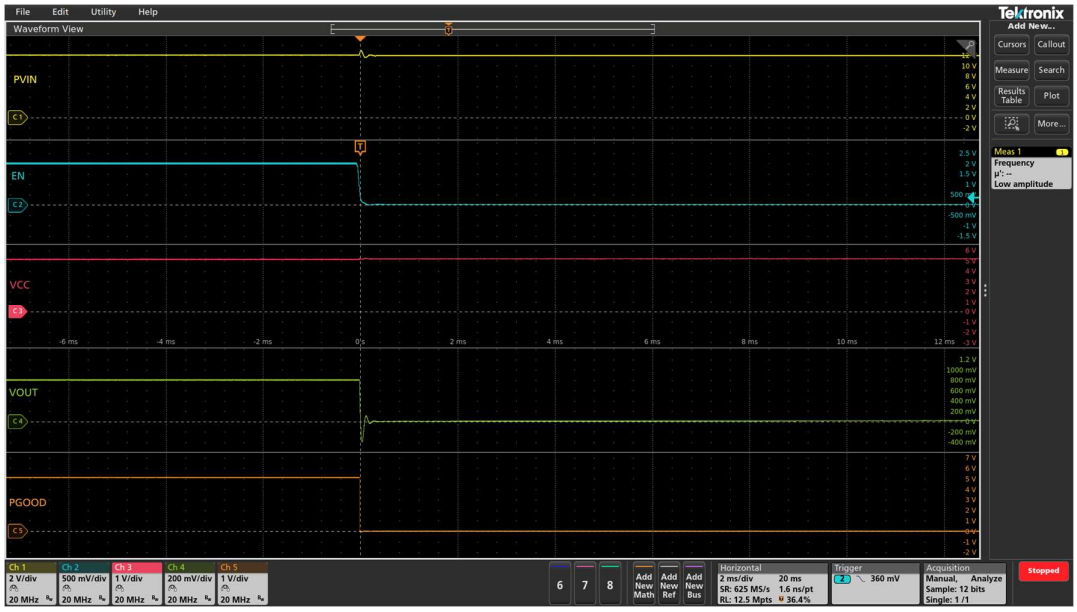



*Figure 15 Shutdown with Enable de-assertion at 100A load (Ch1:$PV_{IN}$, Ch2: Enable, Ch3: $V_{CC}$, Ch4: $V_{OUT}$, Ch5: PGood)*

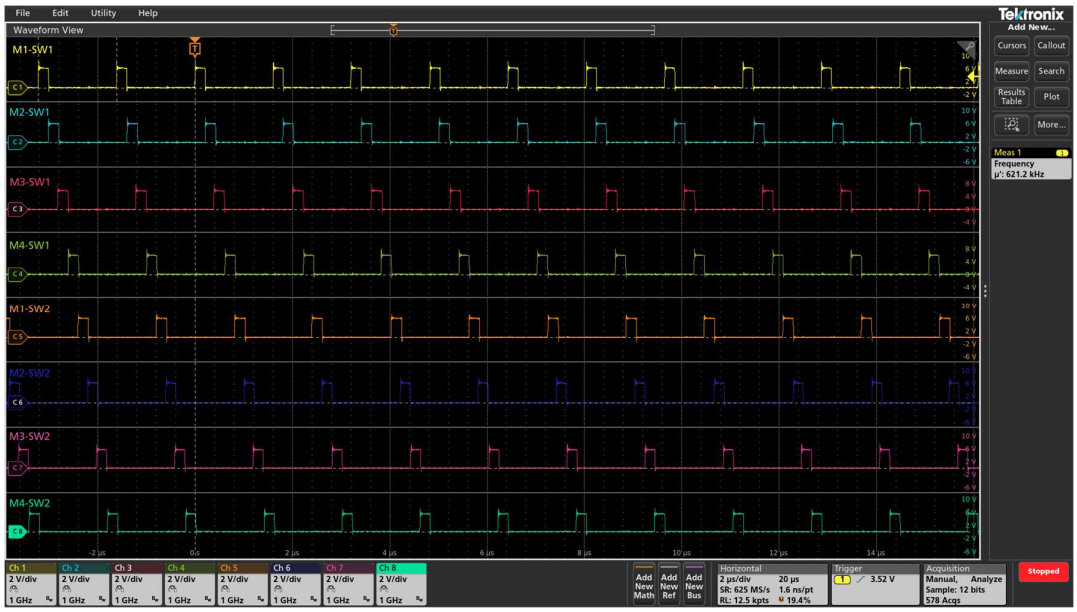



*Figure 16 Switch node waveforms at no load*


*Figure 17 Switch node waveforms at 100A*

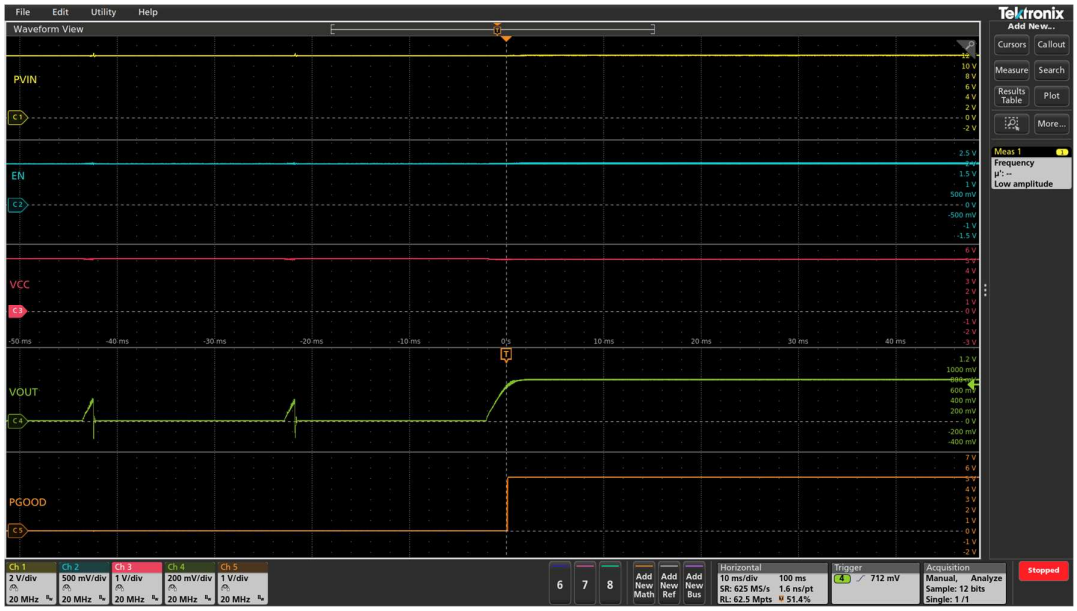



*Figure 18 OCP Recovery to 100A (Ch1:$PV_{IN}$, Ch2: Enable, Ch3: $V_{CC}$, Ch4: $V_{OUT}$, Ch5: PGood)*

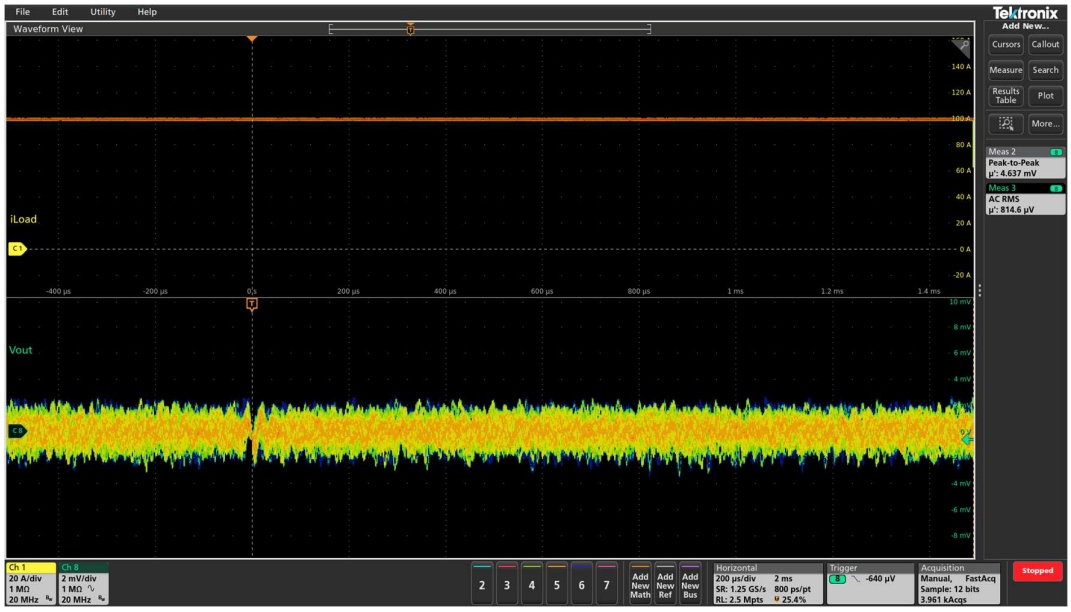



***Figure 19 Vout Ripple(100A)***

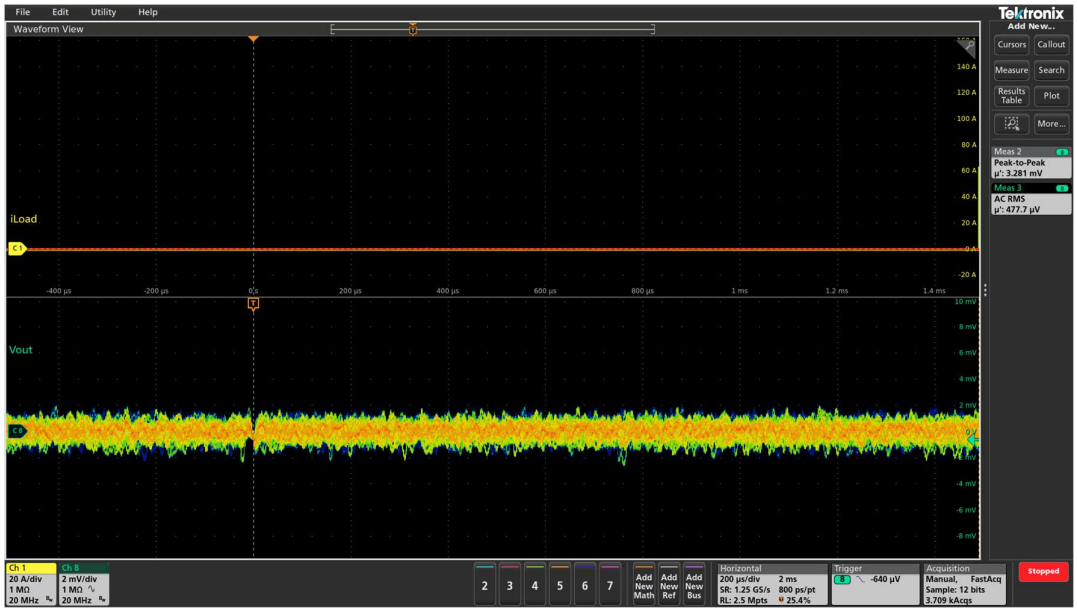



***Figure 20 Vout Ripple(0A)***

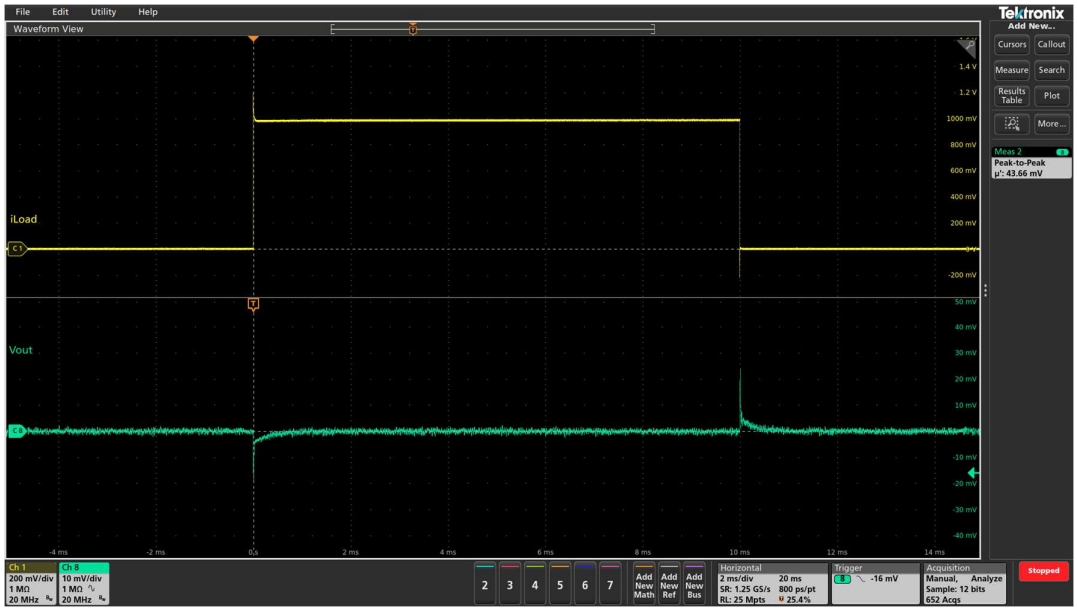



*Figure 21 Transient response 0A to 20A (Ch1: $I_{OUT}$, Ch8: $V_{OUT}$), peak-peak deviation = 43.66mV, load slew rate = 100A/µs*

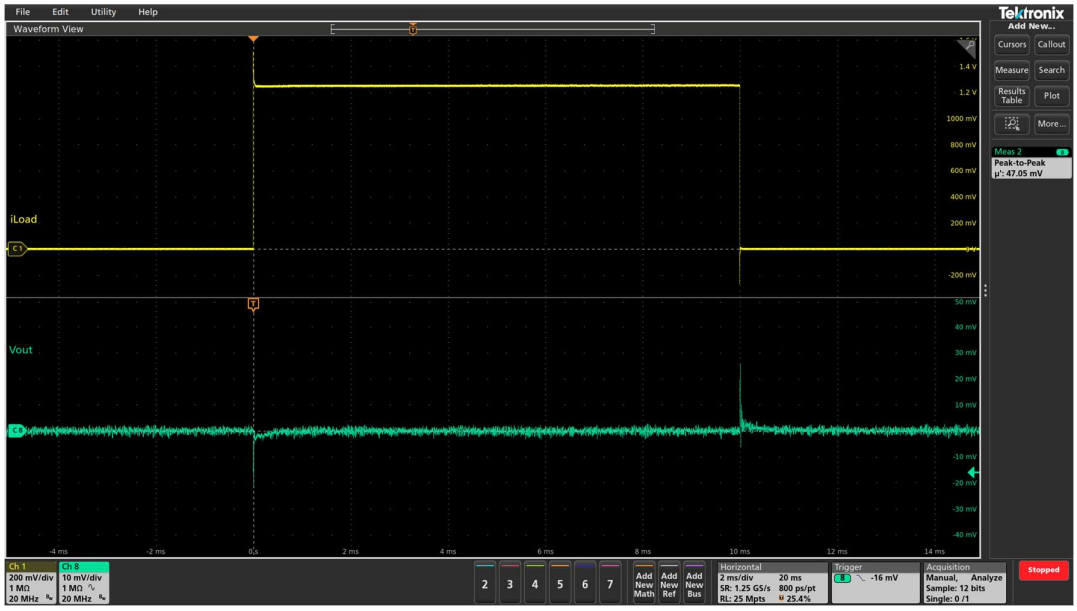



*Figure 22 Transient response 50A to 75A (Ch1: $I_{OUT}$, Ch8: $V_{OUT}$), peak-peak deviation = 47.05mV, load slew rate = 100A/µs*

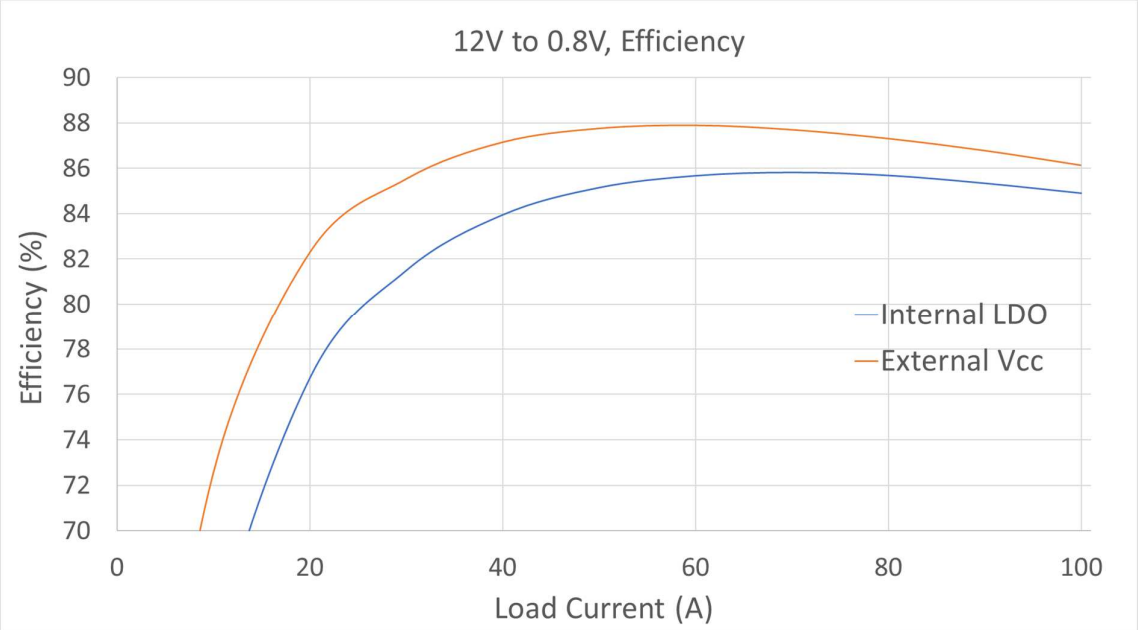



***Figure 23 Efficiency***

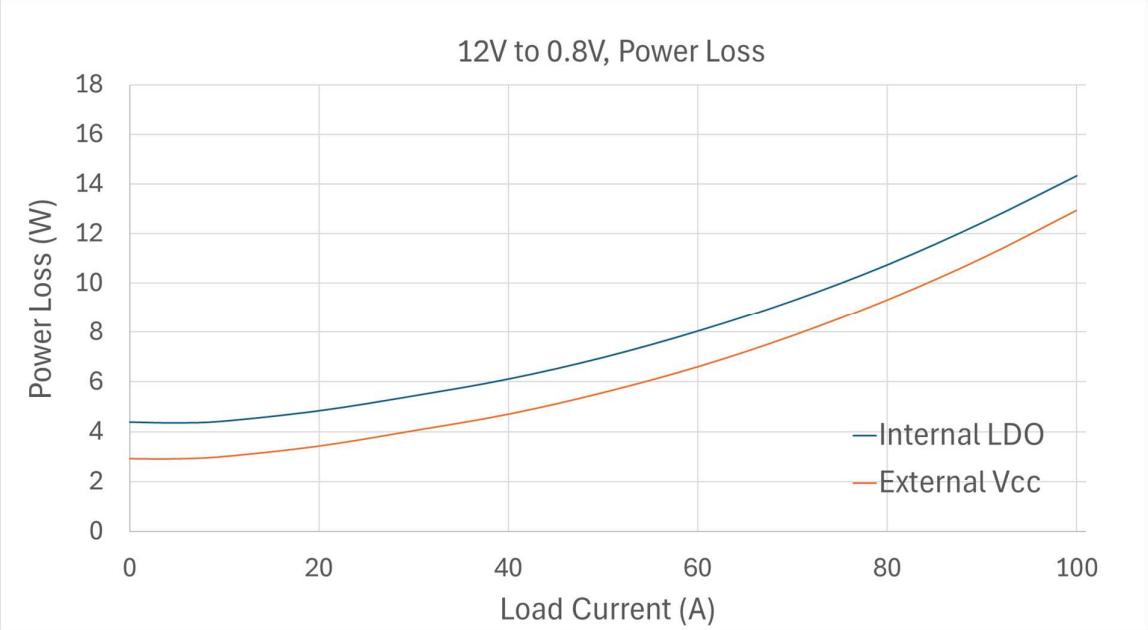



***Figure 24 Power loss***

***NOTE – For External Vcc Connection, Remove R1,R32, Install R2, R34 = 0 ohm & C2, C3, C50, C51 = 2.2µF (10V 0402)***

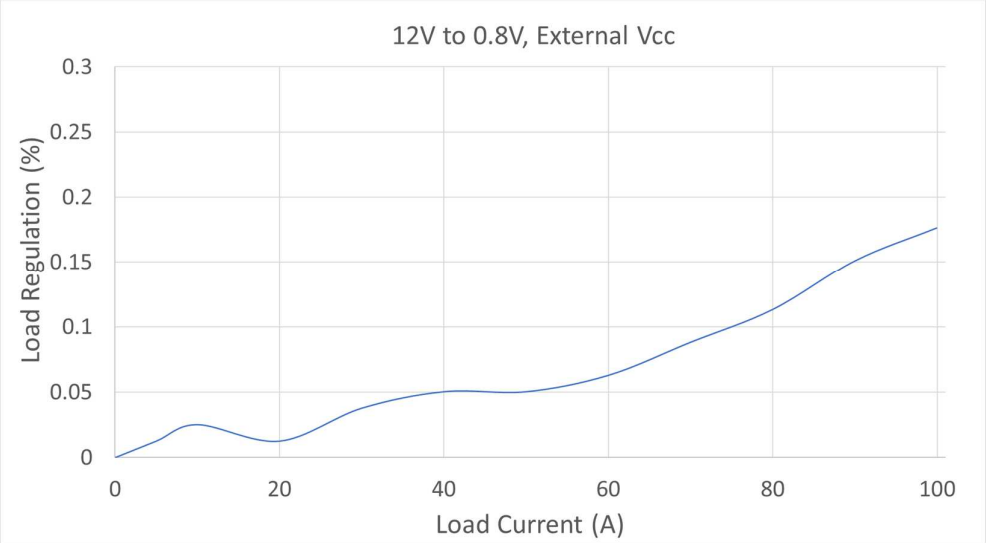



*Figure 25 Load regulation ($I_{O}$ = 0–100A)*

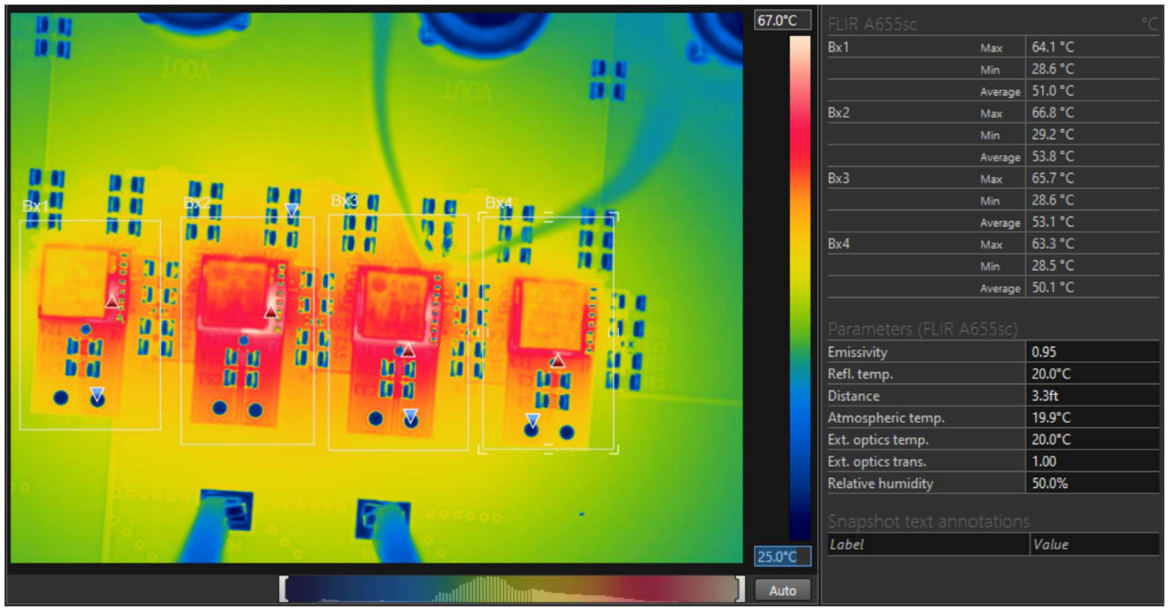



*Figure 26 Thermal image at $PV_{IN}$ = 12V, $V_{OUT}$ = 0.8V, $I_{O}$ = 100A, room temperature, no airflow, External Vcc (5V), FS1525 maximum temperature rise = 41.8°C*

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The products listed on this specification sheet are intended for use in general electric equipment (AV equipment, telecommunication equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal condition and use condition.

The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to sociality, person or property. Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this specification sheet.

1. Aerospace/Aviation equipment
2. Transportation equipment (cars, electric trains, ships, etc.)
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

When using this product in general-purpose application, you are kindly requested to take into consideration securing protection circuit/ equipment or providing backup circuits, etc., to ensure higher safety.