# PMP10101 Rev. A – Test Report

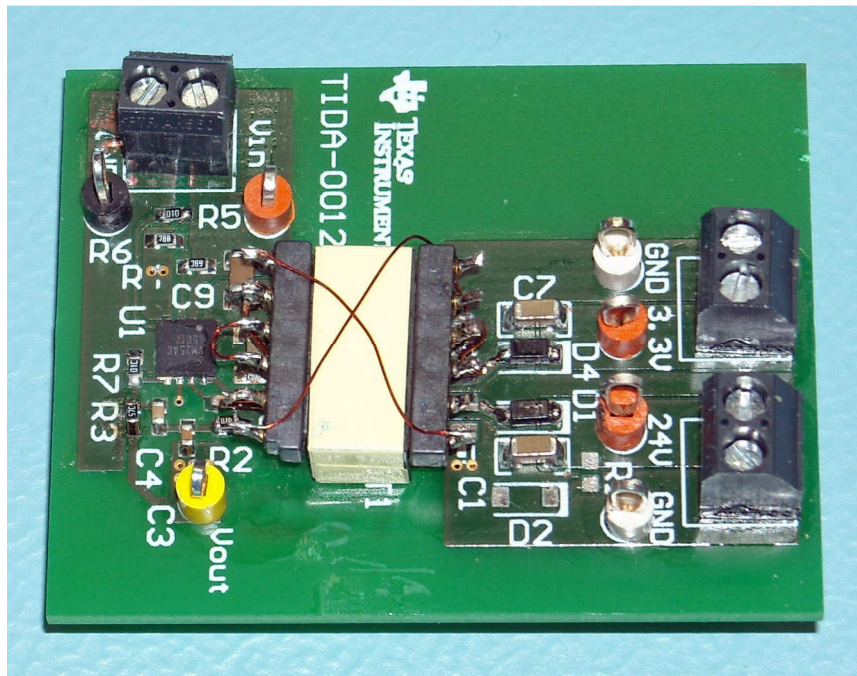**TEXAS INSTRUMENTS**

## Dual-Output Fly-Buck for Industrial Applications

- Input            12 .. 36V DC

- Outputs

    - Primary:          +6.0V (not used)

    - Secondary        +17.0V @ 45mA, -17.0V @ 30mA

- Converter       LM5017

- Working in continuous conduction mode

- Modified TIDA-00129 Board

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**TEXAS INSTRUMENTS**

## 1 Startup

The startup waveform is shown in Figure 1. The input voltage is set at 12V, with no load on the outputs.

Channel C1:    **Input voltage**
              5V/div, 10ms/div

Channel C2:    **Primary output voltage, +6.0V**
              2V/div, 10ms/div

Channel C3:    **Secondary output voltage, +17.0V**
              10V/div, 10ms/div

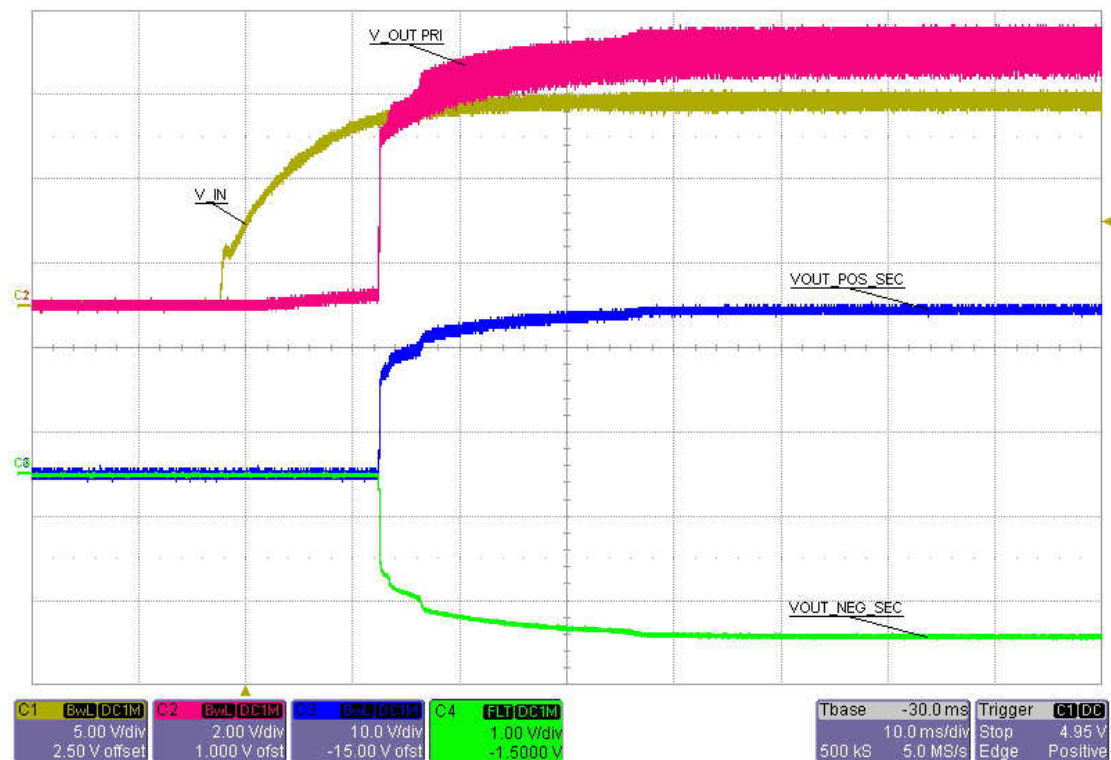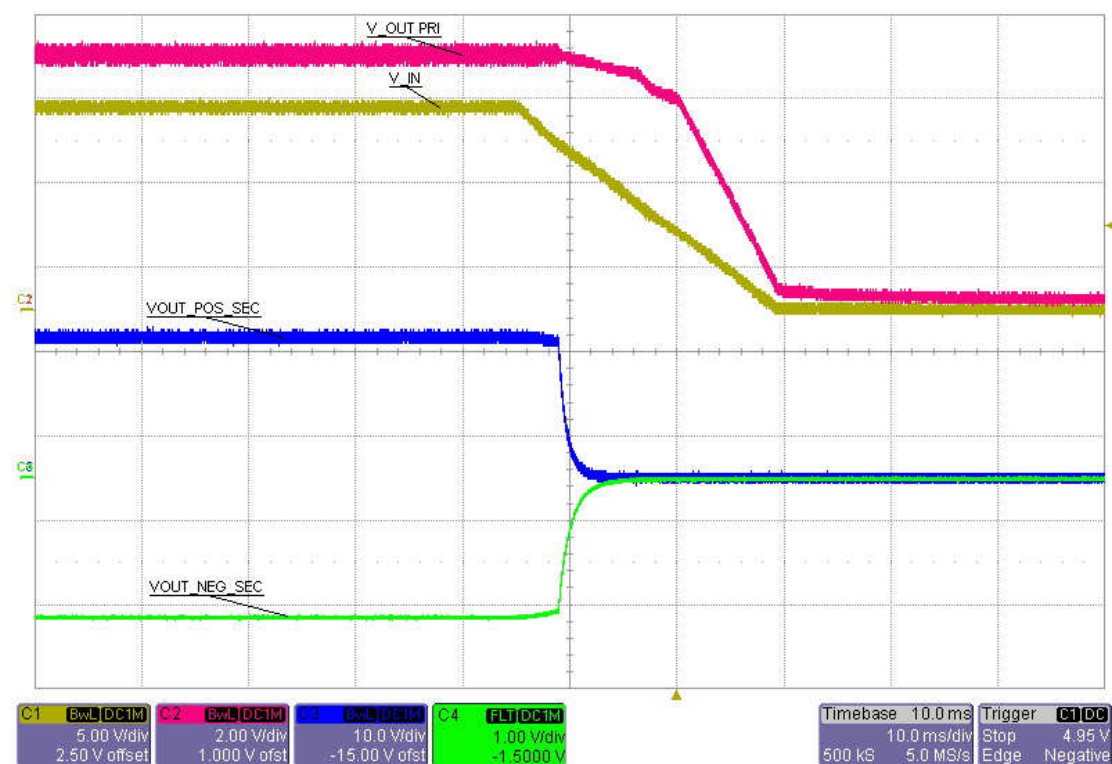Channel C4:    **Secondary output voltage, -17.0V**
              10V/div, 10ms/div

**Figure 1**

**TEXAS INSTRUMENTS**

## 2 Shutdown

The shutdown waveform is shown in Figure 2. The input voltage is set at 12V with full load on the secondary outputs (+17.0V @ 45mA, -17.0V @ 30mA).

Channel C1:     **Input voltage**
                5V/div, 10ms/div

Channel C1:     **Primary output voltage, +6.0V**
                2V/div, 10ms/div

Channel C3:     **Secondary output voltage, +17.0V**
                10V/div, 10ms/div

Channel C4:     **Secondary output voltage, -17.0V**
                10V/div, 10ms/div



**Figure 2**

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**TEXAS INSTRUMENTS**

## 3 Efficiency

The efficiency and load regulation at various input voltages and full load on both secondary outputs are shown in Figure 3 and Figure 4.
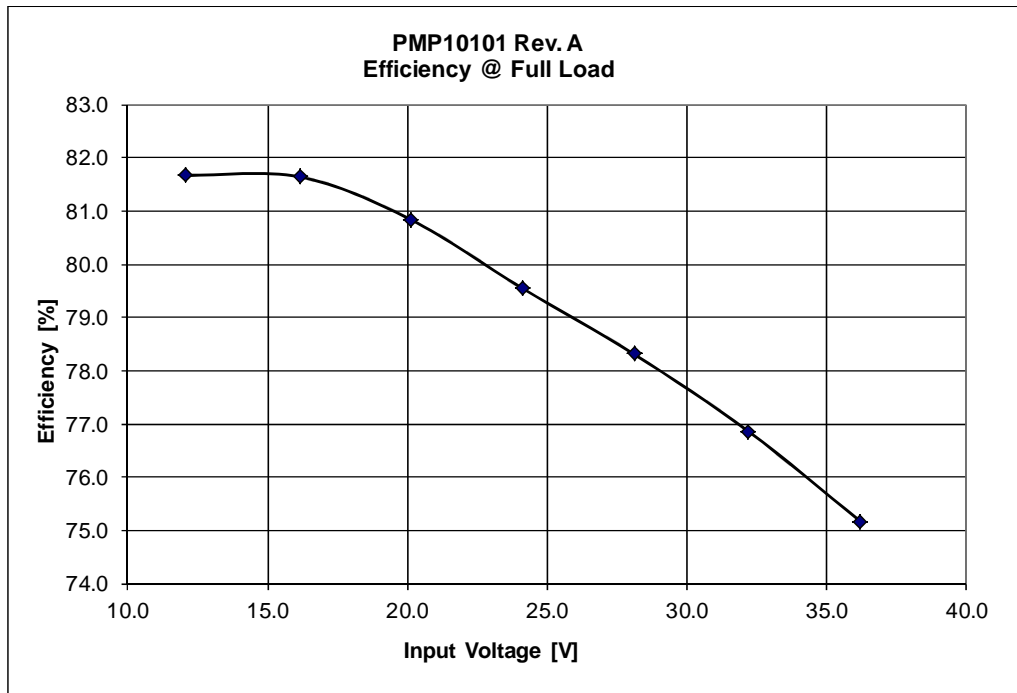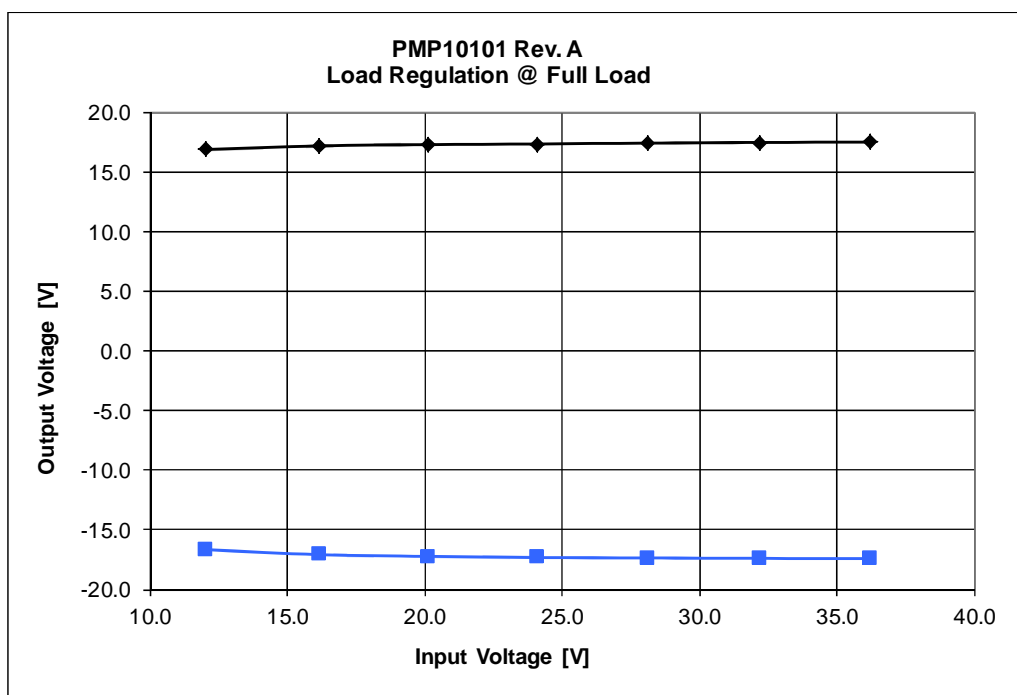


**Figure 3**



**Figure 4**

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**TEXAS INSTRUMENTS**

## 4 Output ripple voltage

The output ripple voltage at 24.0V input voltage and full load on both secondary outputs is shown in Figure 5.

Channel M1:     **Primary output voltage +6.0V**, AC coupled
112mV peak-peak @ 24V input voltage
100mV/div, 1us/div

Channel M2:     **Secondary output voltage +17.0V**, AC coupled
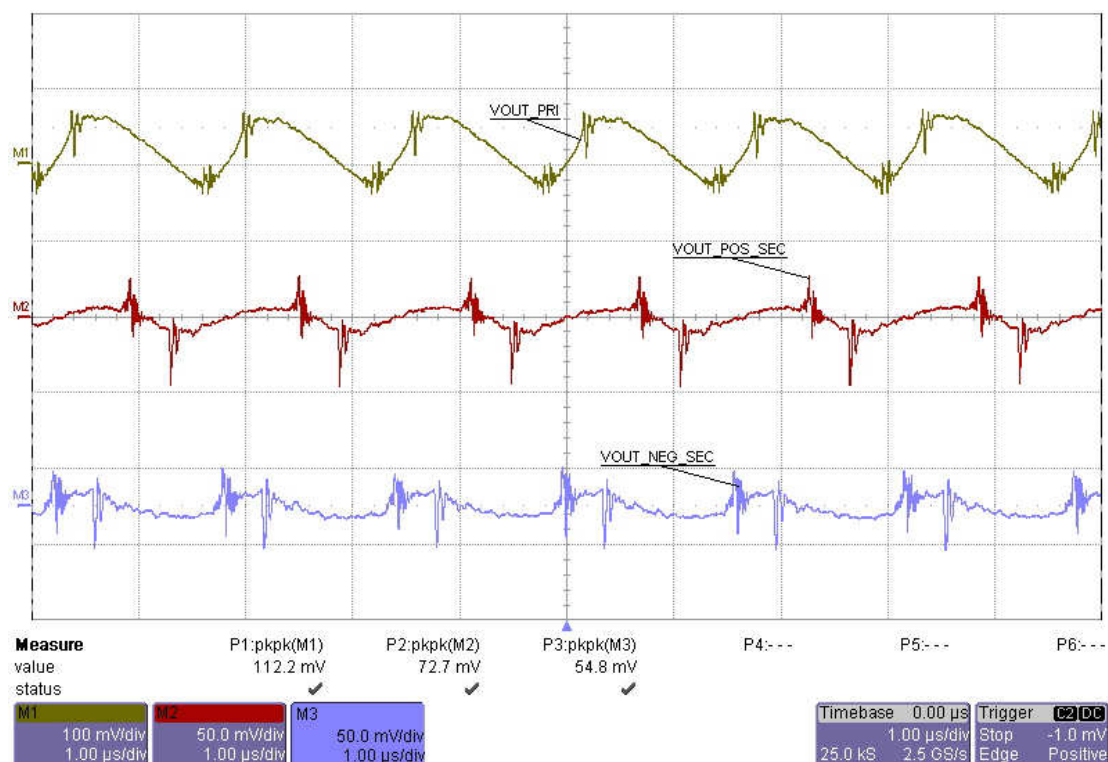73mV peak-peak @ 24V input voltage
50mV/div, 1us/div

Channel M3:     **Secondary output voltage -17.0V**, AC coupled
55mV peak-peak @ 24V input voltage
50mV/div, 1us/div



**Figure 5**

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**TEXAS INSTRUMENTS**

## 5   Switching Node

The drain-source voltage on the switching node is shown in Figure 6. The image was captured with 36V input and full load on both secondary outputs.

Channel C2:     **Drain-source voltage**, -1.7V minimum voltage, 37.4V maximum voltage
10V/div, 1us/div



**Figure 6**

## 6    Thermal measurement

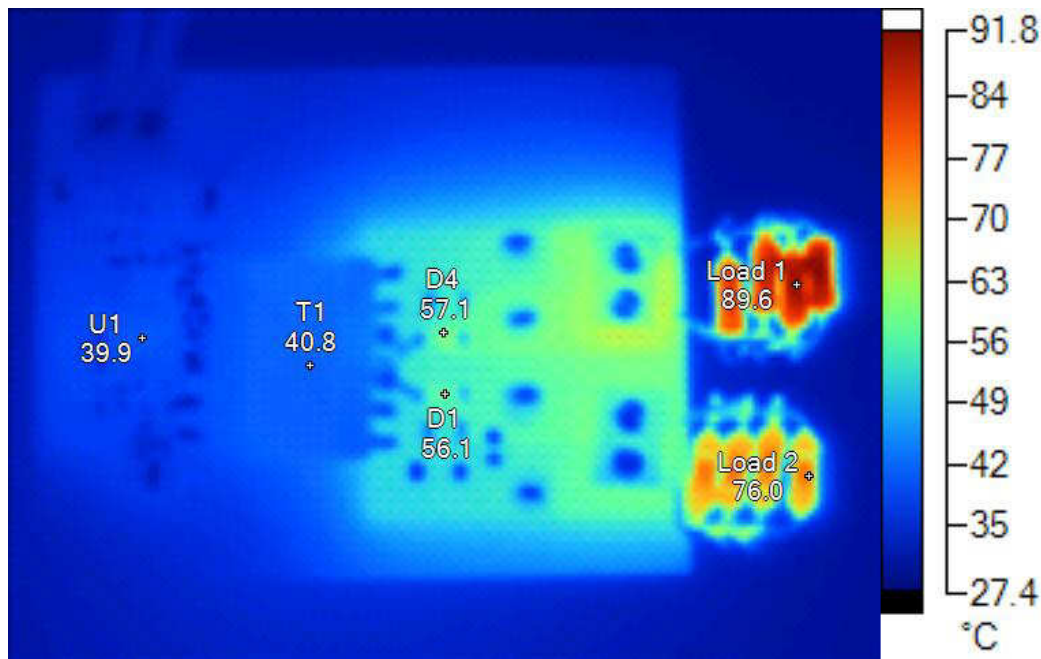The thermal image (Figure 7) shows the circuit at an ambient temperature of 21 °C with an input voltage of 24V.



**Figure 7**

**Markers**

| Label | Temperature | Emissivity | Background |
|-------|-------------|------------|------------|
| U1 | 39.9 °C | 0.95 | 21.0 °C |
| T1 | 40.8 °C | 0.95 | 21.0 °C |
| D4 | 57.1 °C | 0.95 | 21.0 °C |
| D1 | 56.1 °C | 0.95 | 21.0 °C |

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