Test Report For PMP9454

Overview.........................................................1
Efficiency.........................................................2
Variation in Output Voltage...............................3
Thermal Images...................................................4
Transient Response...........................................7
Overview

The PMP9454 is an easy to use synchronous regulator with LM43603 SIMPLE SWITCHER step-down DC-DC converter. PMP9454 is capable of driving up to 3A load current from a wide input voltage ranging from 7 to 36V. It provides exceptional efficiency, output voltage accuracy and dropout voltage in a small package. The adjustable frequency of PMP9454 module ranges from 200 kHz to 2.2MHz. However the board has 500 kHz default frequency. PMP9454 is footprint compatible to the POLA module PTN78060W.

Power Specification

$V_{IN}: 7V – 36V$

Nominal $V_{IN} = 12V, 24V$

$F_{SW} = 500$ kHz

Output Voltage Settings

The 3 output voltages for this report were achieved by varying the feedback resistor $R_2$ and are as follows:

- $R_2 = 25.5\Omega$ for $5V \ V_{out}$
- $R_2 = 43.2\Omega$ for $3.3V \ V_{out}$
- $R_2 = 69.1\Omega$ for $2.5V \ V_{out}$
Efficiency

The efficiency is calculated for all three outputs with 15V & 24V input voltages and output load current incrementing from 200mA to 3A.
Variation in Output Voltage

5V, 3.3V, 2.5V Output Voltages

Test Conditions: $V_{in} = 24V$ and 15V

Output Load increments from 200mA to 3A

$F_{SW} = 500kHz$
Thermal Images

5V output

Test Conditions: $V_{in} = 24V$, 5V output with 3A load. $F_{SW} = 500kHz$
Thermal Images

3.3V output

Test Conditions: $V_{in} = 24V$, 3.3V output with 3A load. $f_{SW} = 500kHz$
Thermal Images

2.5V output

Test Conditions: $V_{in} = 24V$, 2.5V output with 3A load, $F_{SW} = 500kHz$
Transient Response

5V output Load Step

Test Conditions: $V_{in} = 24V$, 5V output with load from 0 to 3A. $F_{sw} = 500kHz$

Undershoot $\sim 40mV$

Overshoot $\sim 95mV$
Transient Response

3.3V output Load Step

Test Conditions: $V_{in} = 24V$, 5V output with load from 0 to 3A. $F_{SW} = 500kHz$

Undershoot $\sim 60mV$

Overshoot $\sim 95mV$
Transient Response

2.5V output Load Step

Test Conditions: $V_{in} = 24\,V$, 5V output with load from 0 to 3A. $F_{SW} = 500kHz$

Undershoot $\sim 65$mV

Overshoot $\sim 70$mV
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