



Texas Instruments

PMP4412 Test Procedure

China Power Reference Design

REV A

12/2/2014

1 GENERAL

1.1 PURPOSE

To provide detailed data for evaluating and verifying the EVM.

1.2 REFERENCE DOCUMENTATION

Schematic: PMP4412_SCH_RevA

Assembly: PMP4412_PCB_RevA

BOM

1.3 TEST EQUIPMENTS

Multi-meter(voltage): Fluke 287

Multi-meter(current): Fluke 287

DC Source: TDK-Lambda GEN100-33

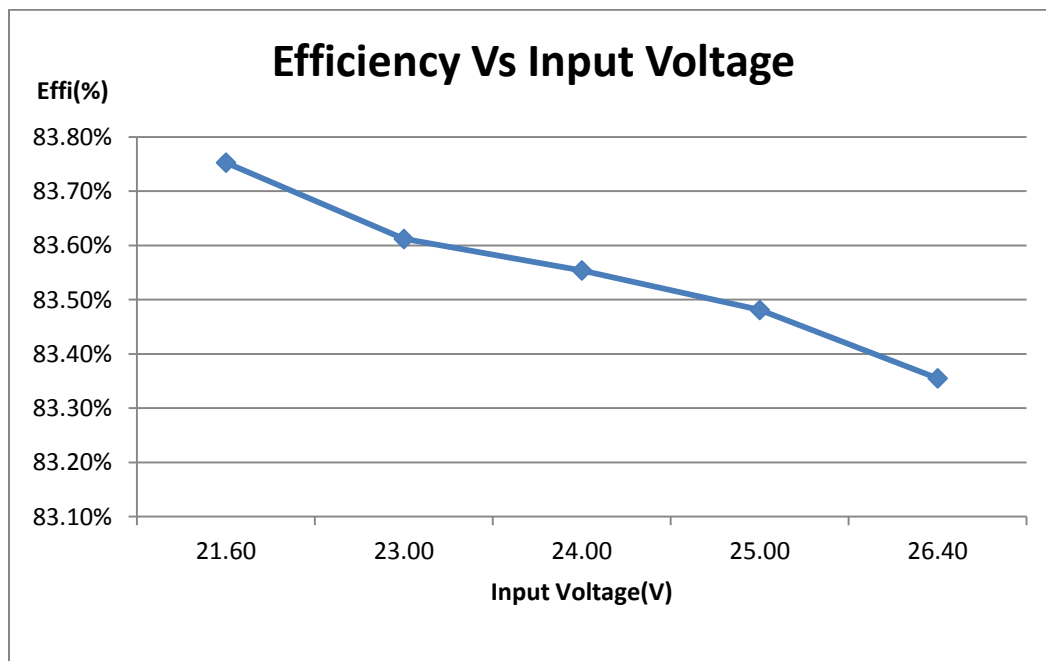
Load: Chroma 63110A module

Oscilloscope: Tek DPO3054

2 INPUT CHARACTERISTICS

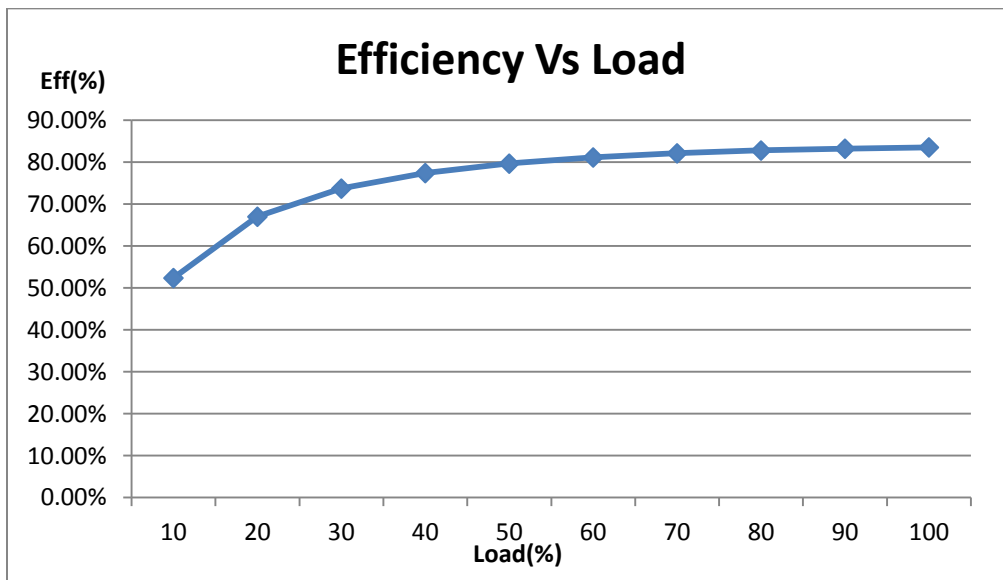
2.1 Full load Efficiency

Vin (V)	Iin(mA)	Vo(V)	Io(mA)	Effi.(%)
21.60	53.84	4.87	200.00	83.75%
23.00	50.96	4.90	200.00	83.61%
24.00	49.07	4.92	200.00	83.55%
25.00	47.34	4.94	200.00	83.48%
26.40	45.17	4.97	200.00	83.36%



2.2 Efficiency versus output current($I_o:100\% = 200\text{mA}$)

Load(%)	$I_o(\text{mA})$	$V_{in}(\text{V})$	$I_{in}(\text{mA})$	$V_o(\text{V})$	Effi.(%)
10	20	24.00	8.00	5.03	52.40%
20	40	24.01	12.43	5.00	67.01%
30	60	24.00	16.92	4.99	73.73%
40	80	24.01	21.43	4.98	77.43%
50	100	24.00	25.99	4.97	79.68%
60	120	23.99	30.57	4.96	81.16%
70	140	24.01	35.14	4.95	82.14%
80	160	24.00	39.77	4.94	82.81%
90	180	24.00	44.42	4.93	83.24%
100	200	24.00	49.07	4.92	83.55%



3 OUTPUT CHARACTERISTICS

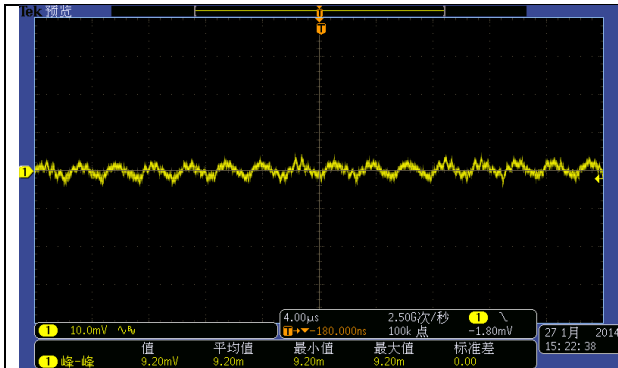
3.1 Line and load Regulation ($I_o:100\% = 200\text{mA}$)

V_{in} (V)	$I_{o1}=10\%$	$I_{o1}=30\%$	$I_{o1}=50\%$	$I_{o1}=70\%$	$I_{o1}=100\%$
	$V_{o1}(\text{V})$	$V_{o1}(\text{V})$	$V_{o1}(\text{V})$	$V_{o1}(\text{V})$	$V_{o1}(\text{V})$
21.6	4.98	4.94	4.90	4.89	4.87
24.0	5.03	4.99	4.97	4.95	4.92
26.4	5.07	5.02	5.00	4.98	4.97

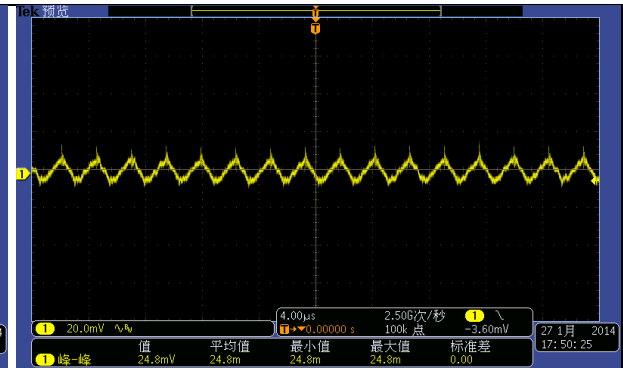
Line Regulation Ratio: $\pm 1.02\%$; and Load Regulation Ratio: $\pm 1.11\%$

3.2 Ripple and noise($I_o:100\%=200\text{mA}$)

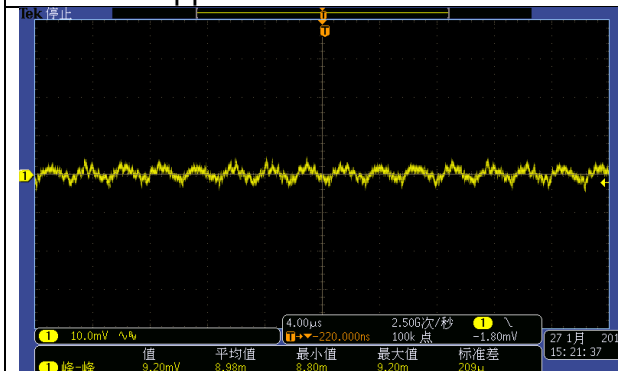
Vin (V)	Io=20mA	Io=200mA
	Vo (mV)	Vo (mV)
21.6	9.2	24.8
24	9.2	24.8
26.4	10.8	24.0



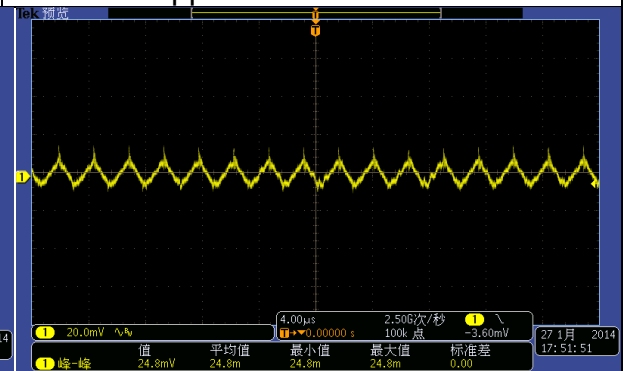
Vin=21.6V Io=10%Load
Ch1: Vo Ripple



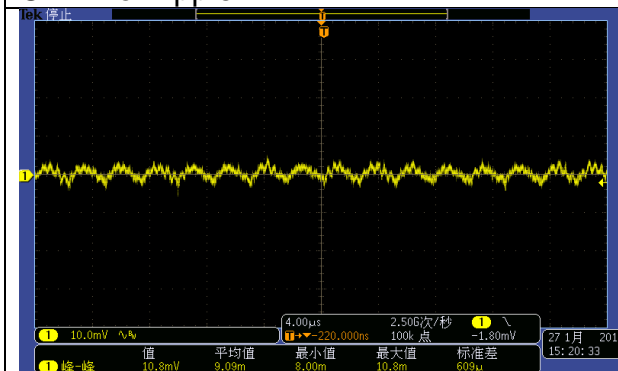
Vin=21.6V Io=100%Load
Ch1: Vo Ripple



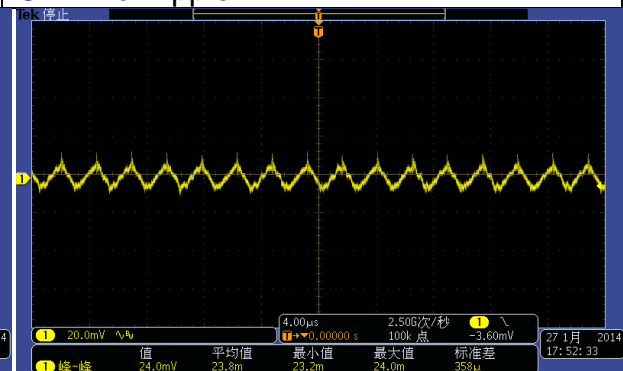
Vin=24V Io=10%Load
Ch1: Vo Ripple



Vin=24V Io=100%Load
Ch1: Vo Ripple

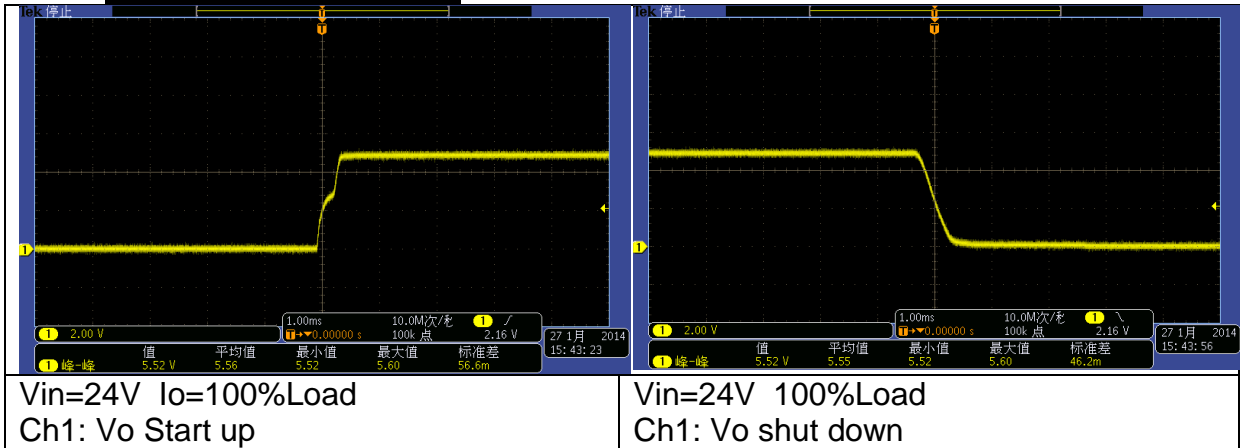


Vin=26.4V Io=10%Load
Ch1: Vo Ripple

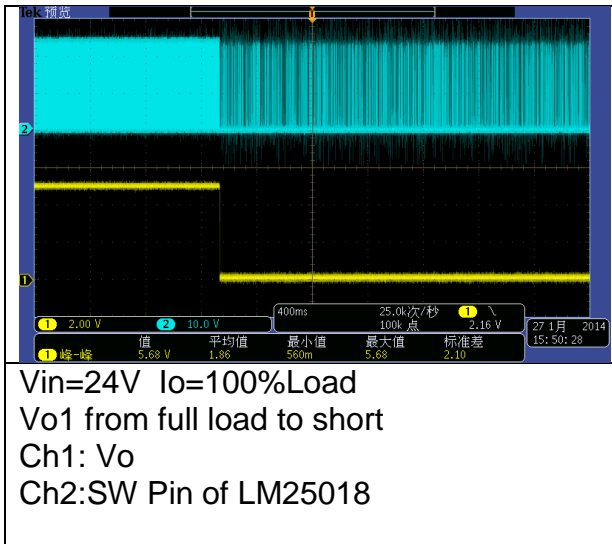


Vin=26.4V Io=100%Load
Ch1: Vo Ripple

3.3 Start up and shut down



3.4 Output short protection (Io:100%=200mA)



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