XM981AB40312-G Evaluation Board User Manual

60V 6A buck Charge pump-based DCDC Converter Module

CAUTION

ENGINEERING EVALUATION PURPOSES ONLY

This evaluation board is made for the purpose of the product evaluation.
It is strictly prohibited to use this evaluation board for any other purpose.

Torex Semiconductor does not guarantee that all samples will perform in exactly the same way and we recommend that you always consult our product data sheets for the minimum and maximum specifications.

It is also important that you evaluate all our products carefully before mass

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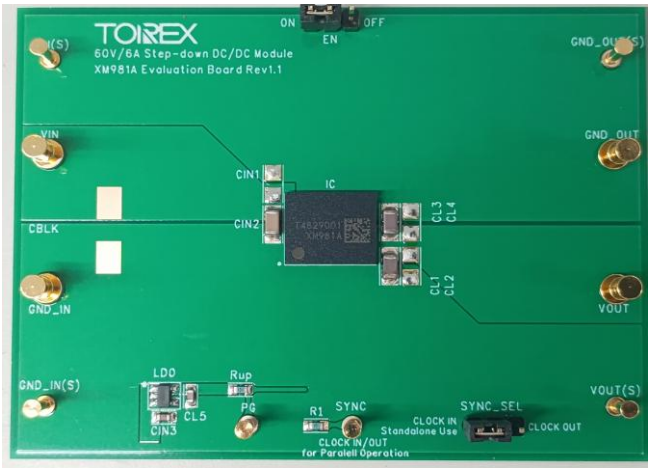
Evaluation Board Picture



Evaluation Board SPEC

Ta=25℃

		CONDITON.	MIN.	TYP.	MAX.	UNIT
Vin	Input Voltage Range	-	20	-	60	V
Vout	Setting Output Voltage	-	-	V_{IN} / 4	-	V
Iout	Output Current	-	6000	-	-	mA
fosc	Switching frequency	-	-	270	-	kHz

XM981A Series Features

- Input Voltage Range ..... 20V ~ 60V
- Output Voltage Range ..... V_{IN} / 4
- Switching frequency 270kHz

- Minimizing Power Loss and Heat Generation
- High Efficiency 95% @ 48V→12V / 6A

- Compact and Low-Profile : Mount Area 12.0x 17.0mm, Height 2.1mm

- Available Parallel Connection (Up to 4 modules in parallel for 24A maximum)

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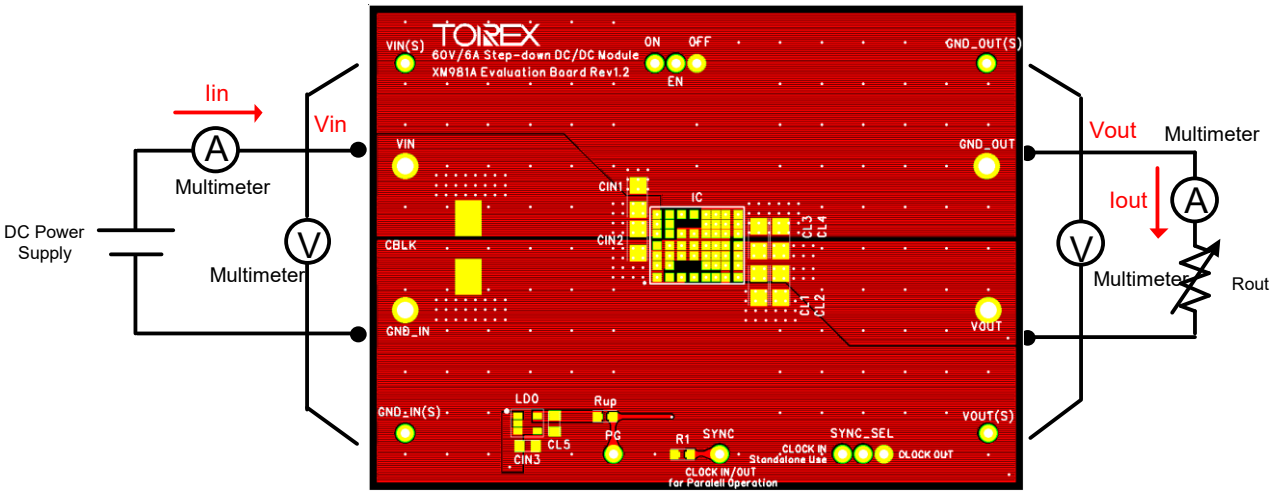
Quick Start Procedure



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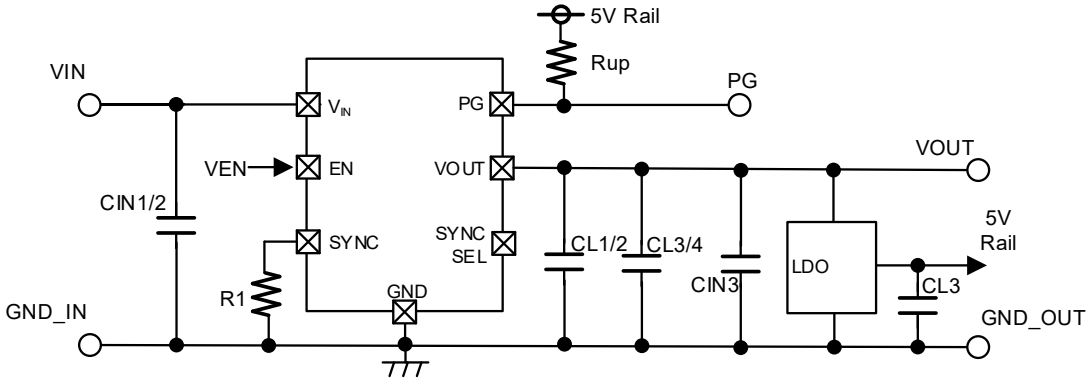
Schematic



BOM

Required Circuit Component

Item	Value	Description	Size [mm]	Part Number	Manufacturer
IC	-	60V 6A buck Charge pump-based DCDC Module	LGA52-C01	XM981AB40312-G	TOREX
CIN1	-	-	-	-	-
CIN2	4.7uF	Ceramic cap., 100V/4.7uF	3216	GRM31CC72A475KE11	Murata
CL1	22uF	Ceramic cap., 25V/22uF	3216	GRM31CC71E226ME15	Murata
CL2	-	-	-	-	-
CL3	22uF	Ceramic cap., 25V/22uF	3216	GRM31CC71E226ME15	Murata
CL4	-	-	-	-	-
Rup	10kΩ	Resistor	1608	-	-
R1	10kΩ	Resistor	1608	-	-

LDO for Pull-up Voltage

Item	Value	Description	Size [mm]	Part Number	Manufacturer
LDO	-	36V, 150mA LDO	SOT-25	XC6216B501MR-G	TOREX
CIN3	1uF	Ceramic cap., 50V/1uF	1608	CGA3E3X5R1H105K	TDK
CL5	1uF	Ceramic cap., 50V/1uF	1608	CGA3E3X5R1H105K	TDK

Additional Demo Board Circuit Components

Item	Value	Description	Size [mm]	Part Number	Manufacture
CBLK	-	-	-	-	-

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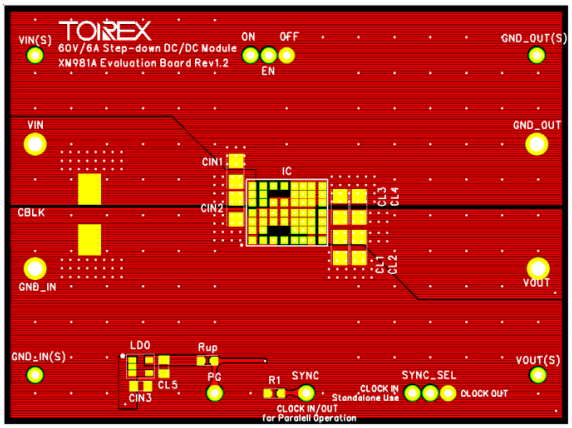
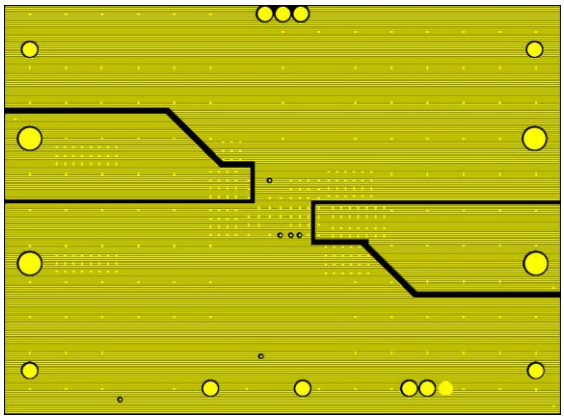
PCB Layout

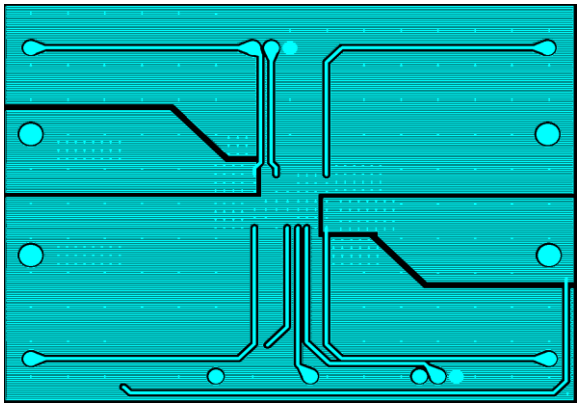
Layer 1



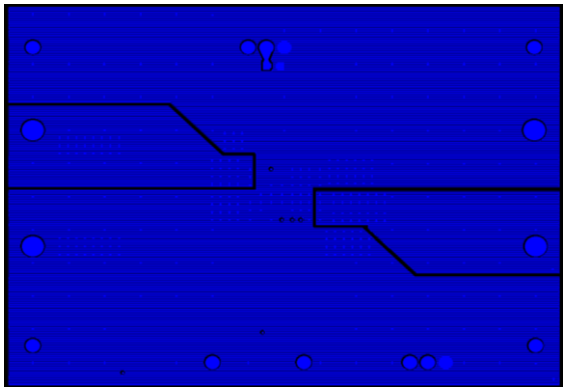
Layer 2



Layer 3



Layer 4



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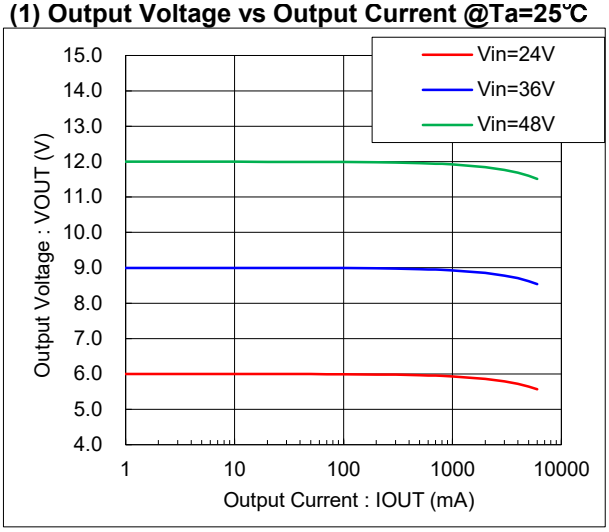
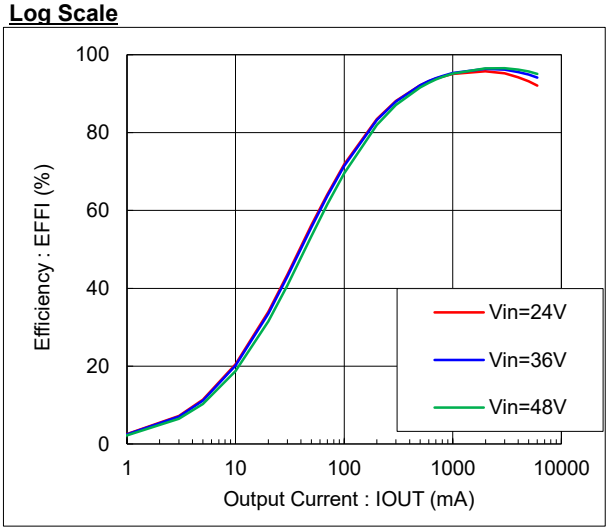
Test Result

(1) Output Voltage vs Output Current @Ta=25℃

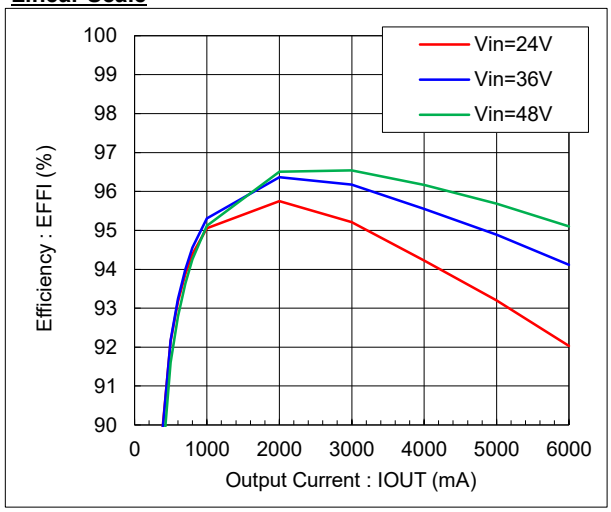


(2) Efficiency vs Output Current Ta=25℃

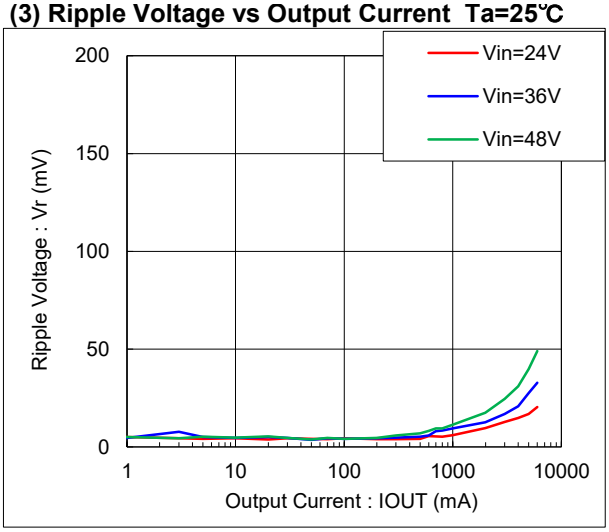
Log Scale



Linear Scale



(3) Ripple Voltage vs Output Current Ta=25℃



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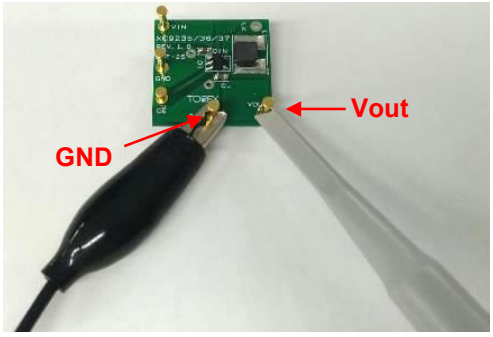
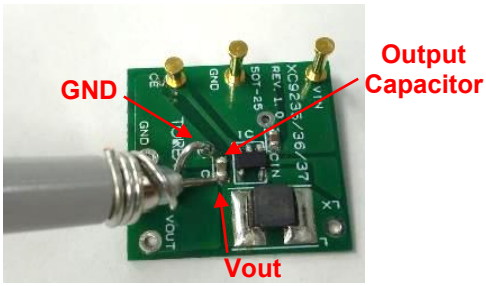
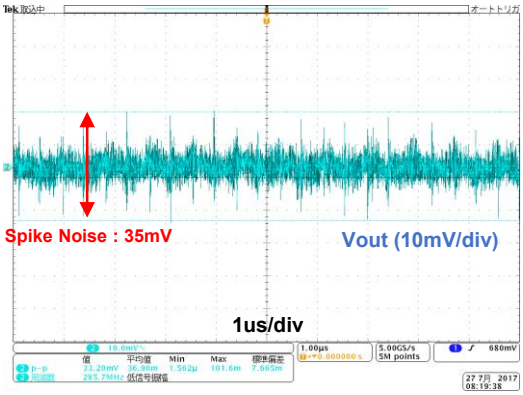
【Appendix】How to reduce the spike noise caused by measurement (Probing method with oscilloscope)

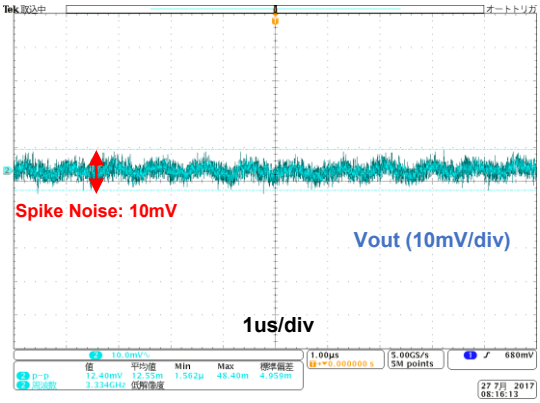
Probing method : Before improvement



Probing method : After







*** Condition : XC9236, Vin=3.6V/Vout=1.8V/100mA**

English : https://www.torexsemi.com/technical-support/tips/reduction-spike-noise/
日本語 : https://www.torex.co.jp/technical-support/tips/reduction-spike-noise/