

XC9711A7586R-G Evaluation Board User Manual

60V, 1A Synchronous Step-Down DC/DC Converter

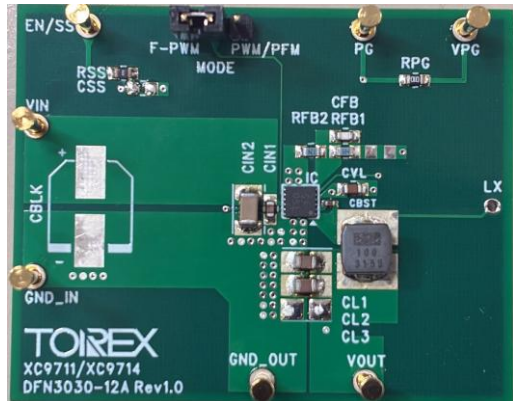
CAUTION

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 production and in case of any doubt, please contact your Torex representative.

XC9711A7586R-G Evaluation Board*60V, 1A Synchronous Step-Down DC/DC Converter***Evaluation Board Picture****Evaluation Board SPEC**

						Ta=25°C
		CONDITON	MIN.	TYP.	MAX.	UNIT
Vin	Input Voltage Range	-	4.5	-	60.0	V
Vout	Setting Output Voltage	-	-	5.0	-	V
Iout	Output Current	-	0.0	-	1000	mA
fosc	Switching frequency	-	-	800.0	-	kHz

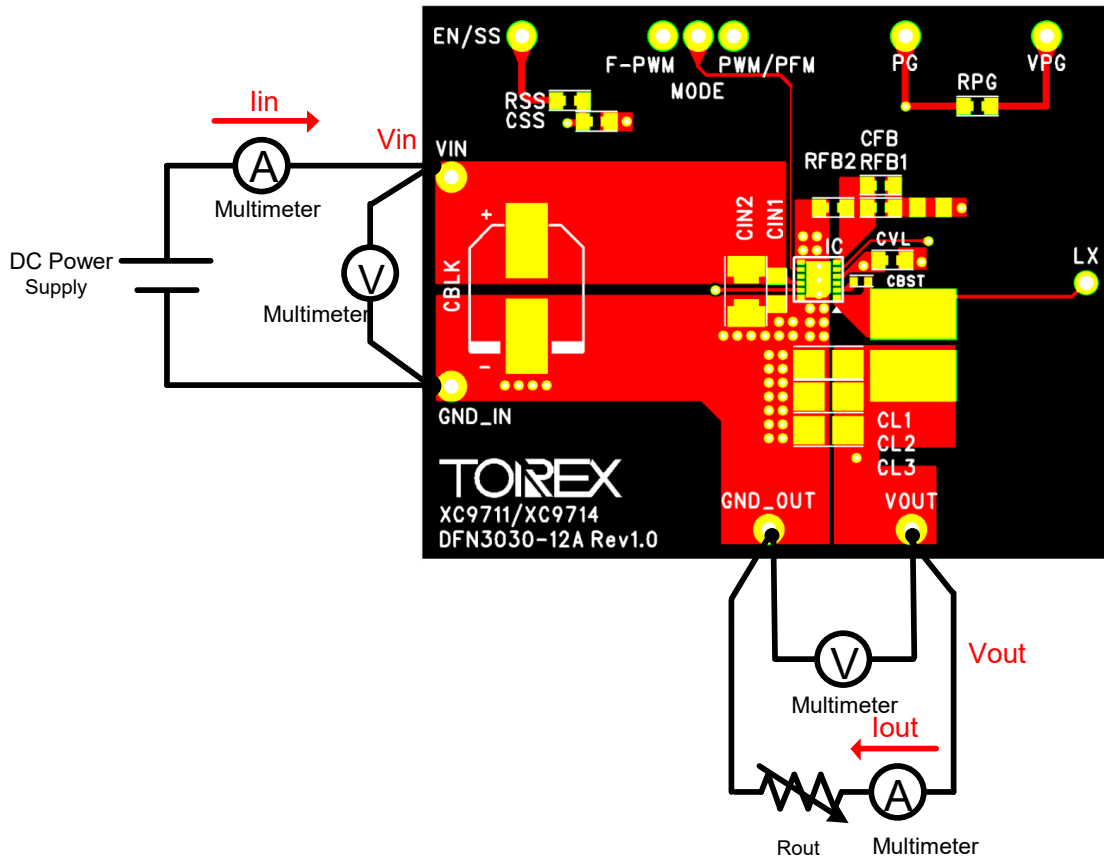
XC9711 Series Features

- Input Voltage Range 4.5V ~ 60.0V
- Output Voltage Range 2.5V ~ 18.0V
- Max Output Current 1000mA max.
- Switching frequency 800kHz
- Small Solution Size
- Low EMI Noise
- Sequence Control is possible. (Power Good and Soft Start functions)
- Selectable PWM/PFM control via the MODE pin

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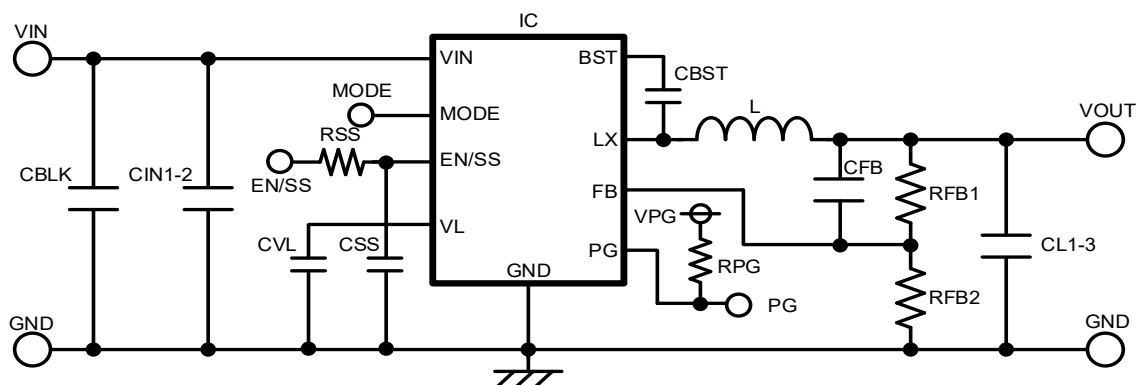
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Quick Start Procedure



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Schematic**BOM****Required Circuit Component**

Item	Value	Description	Size [mm]	Part Number	Manufacturer
IC	-	Step-Down DC/DC Converters	DFN3030-12A	XC9711A7586R-G	TOREX
L	10μH	Inductor	5.3 x 5.0	VLS5030EX-100M-D(10uH)	TDK
CIN1	0.1μF	Ceramic cap., 100V	1608	C1608X7S2A104K080AB(100V/0.1uF)	TDK
CIN2	4.7μF	Ceramic cap., 100V	3216	GRM31CC72A475KE11L(100V/4.7uF)	Murata
CL1	22μF	Ceramic cap., 10V	2012	GRM21BD71A226ME44L(10V/22uF)	Murata
CL2	22μF	Ceramic cap., 10V	2012	GRM21BD71A226ME44L(10V/22uF)	Murata
CL3	-	-	-	-	-
RFB1	680kΩ	Resistor	1608	680kΩ	-
RFB2	120kΩ	Resistor	1608	120kΩ	-
CFB	15pF	Ceramic cap., 50V, CH	1608	15pF	-
CBST	0.1μF	Ceramic cap., 50V	1005	CGA2B3X7R1H104K(50V/0.1uF)	TDK
CVL	2.2μF	Ceramic cap., 25V	1608	C1608X7S1E225K080AB(25V/2.2uF)	TDK
RSS	Jumper	-	-	-	-
CSS	-	-	-	-	-
RPG	100kΩ	Resistor	-	-	-

Additional Demo Board Circuit Components

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

Vout Setting Table

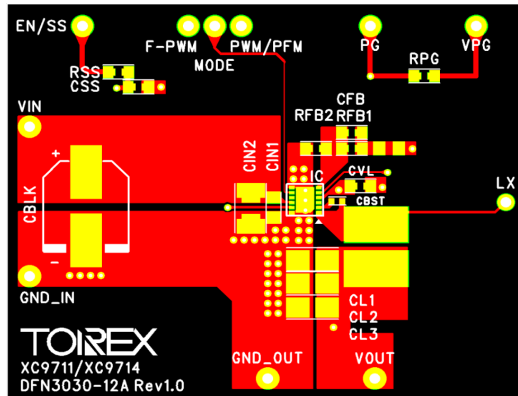
Vout Setting	L	CL	RFB1	RFB2	CFB
3.3V	10μH	22μF x 2	680kΩ	200kΩ	15pF
5.0V	10μH	22μF x 2	680kΩ	120kΩ	15pF
12.0V	22μH	10μF x 3	750kΩ	51kΩ	12pF
15.0V	33μH	10μF x 2	820kΩ	43kΩ	12pF
18.0V	33μH	10μF x 2	620kΩ	27kΩ	15pF

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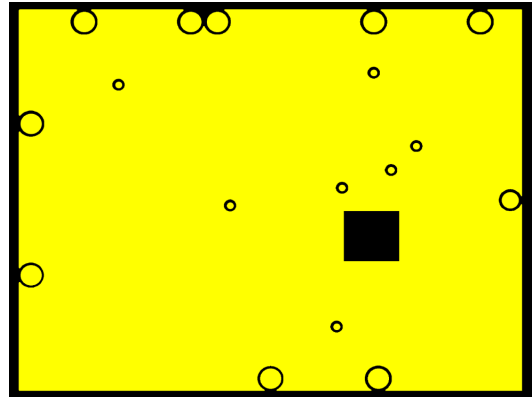
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PCB Layout

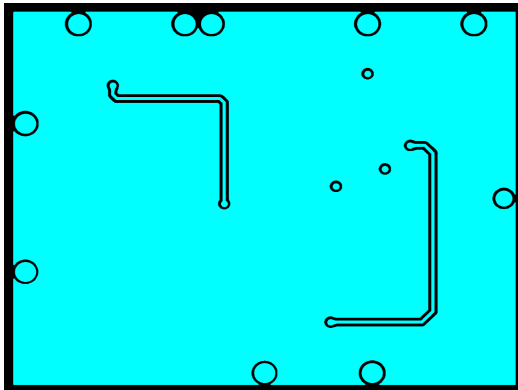
Layer 1



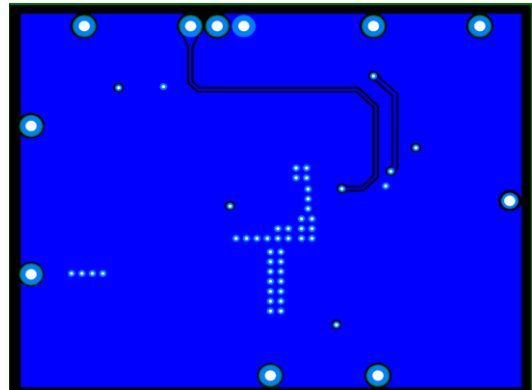
Layer 2

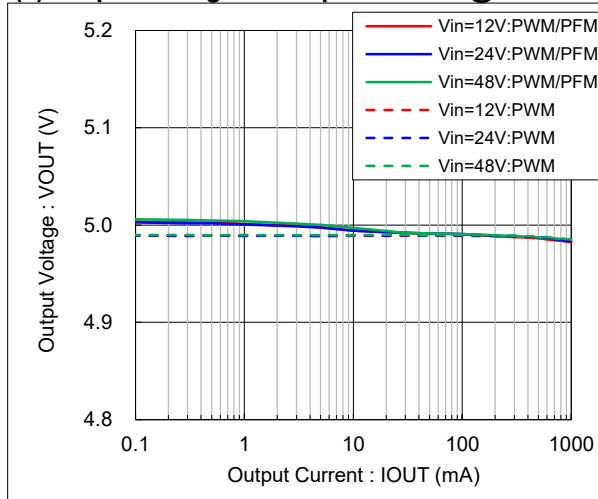
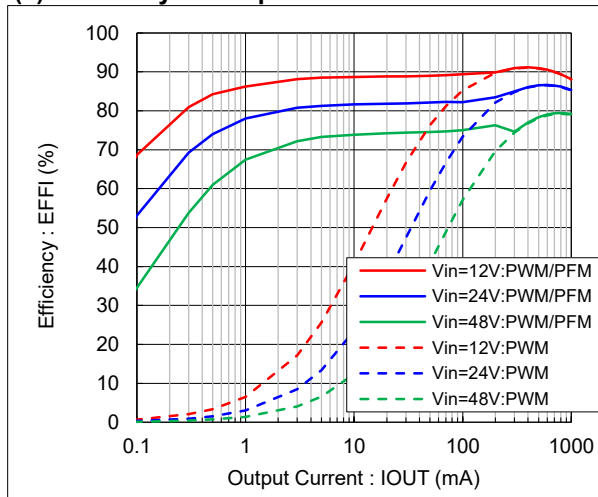
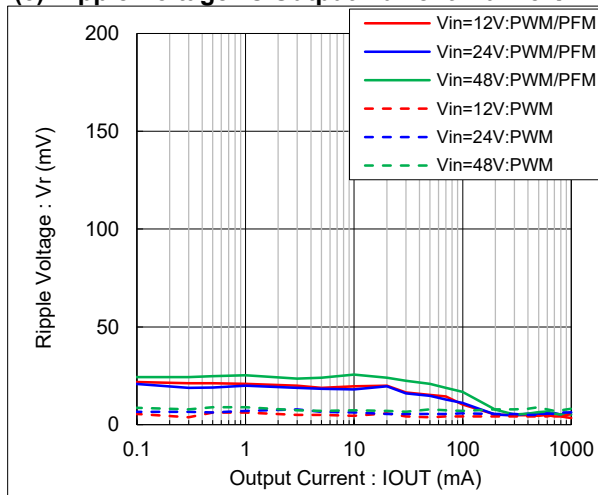


Layer 3



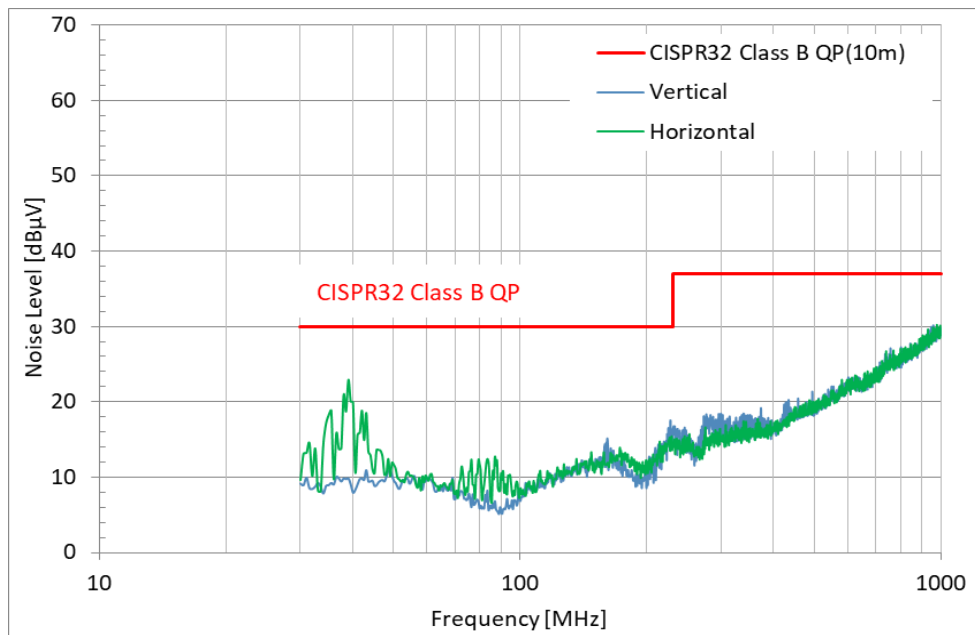
Layer 4



XC9711A7586R-G Evaluation Board**60V, 1A Synchronous Step-Down DC/DC Converter****Test Result****(1) Output Voltage vs Output Current @Ta=25°C****(2) Efficiency vs Output Current Ta=25°C****(3) Ripple Voltage vs Output Current Ta=25°C**

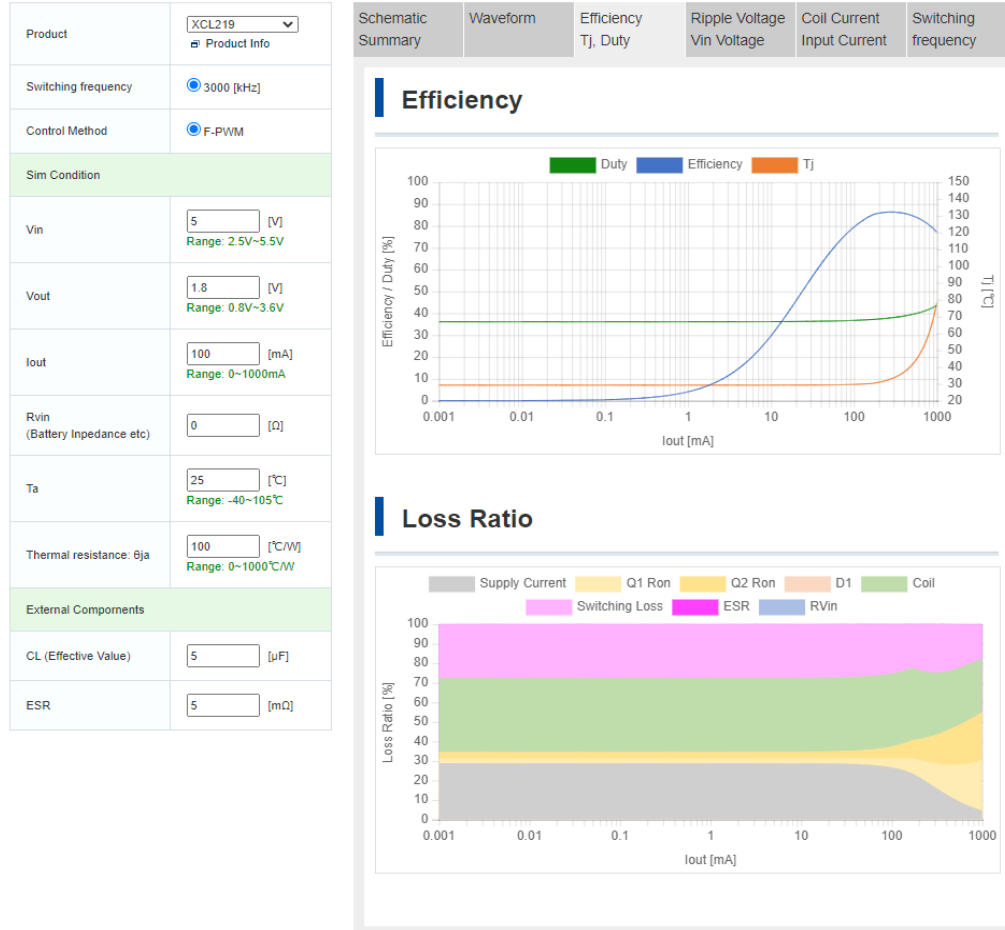
XC9711A7586R-G Evaluation Board*60V, 1A Synchronous Step-Down DC/DC Converter***Test Result****(4) Radiation EMI : CISPR-32/VCCI 10m Peak****Condition**

IC : XC9711A7586R-G (MODE="H" : F-PWM)
Vin : 24V
Vout : 5V
Iout : 500mA



XC9711A7586R-G Evaluation Board**60V, 1A Synchronous Step-Down DC/DC Converter****【Appendix】 How to calculate DC/DC Converter or DC/DC Controller.**

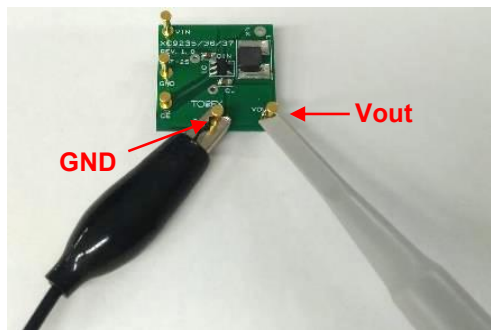
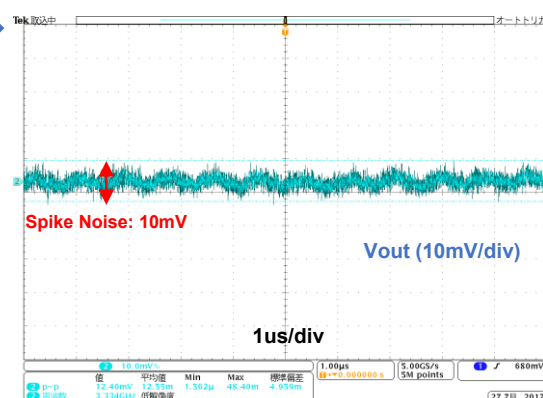
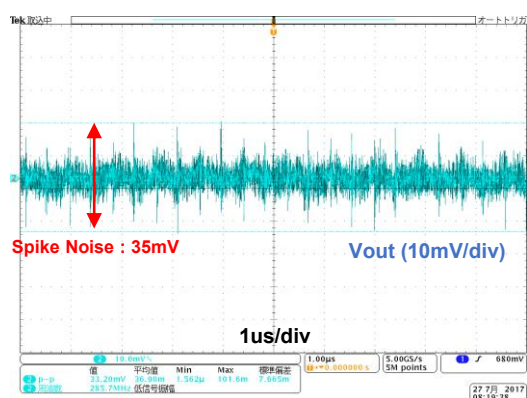
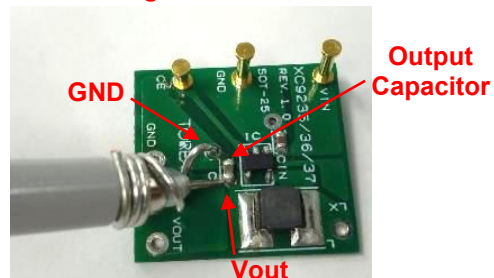
It can be calculated by the following "WEB DC/DC Simulation".



日本語 : <https://www.torex.co.jp/technical-support/dcdc-simulation/>
English : <https://www.torexsemi.com/technical-support/dcdc-simulation/>
简体中文 : <https://www.torex.com.cn/technical-support/dcdc-simulation/>

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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/>