

XC9704B75CPR-G Evaluation Board User Manual

36V, 600mA 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

XC9704B75CPR-G Evaluation Board*36V, 600mA Synchronous Step-Down DC/DC Converter***Evaluation Board Picture****Evaluation Board SPEC**

						Ta=25°C
		CONDITON.	MIN.	TYP.	MAX.	UNIT
Vin	Input Voltage Range	-	3.0	-	36.0	V
Vout	Setting Output Voltage	-	-	5.0	-	V
Iout	Output Current	-	0.0	-	600.0	mA
fosc	Switching frequency	-	-	1.2	-	MHz

XC9704/XC9705 Series Features

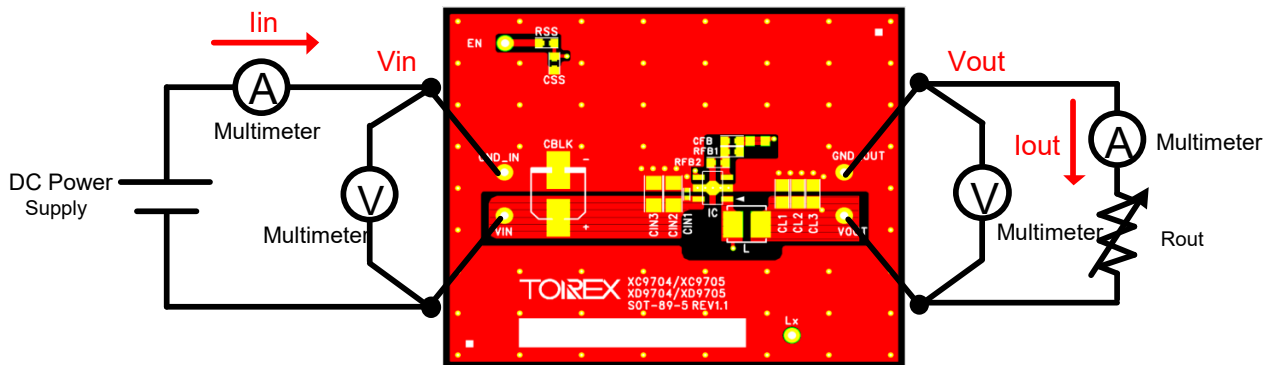
- Input Voltage Range 3.0V ~ 36.0V
- Output Voltage Range 1.0V ~ 6.0V
- Max Output Current 600mA max.
- Switching frequency 1.2MHz, 2.2MHz
- Max Duty Cycle 100%
- Small Solution Size

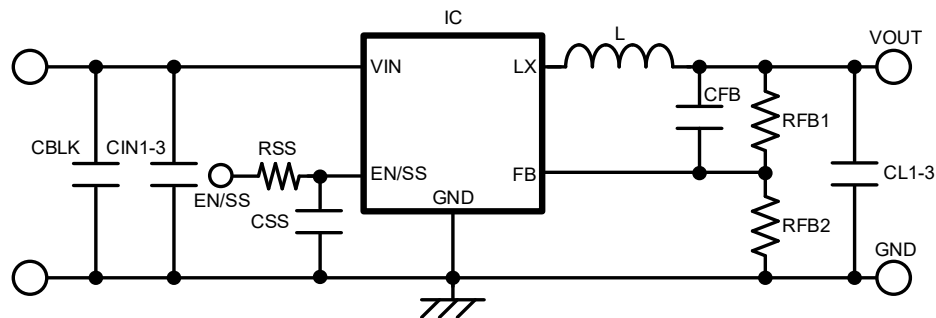
- Low EMI Noise
- Built-in Inductor
- Sequence Control is possible. (Power Good and Soft Start functions)
- * Power Good function : USP-6C only

XC9704B75CPR-G Evaluation Board

36V, 600mA Synchronous Step-Down DC/DC Converter

Quick Start Procedure



XC9704B75CPR-G Evaluation Board*36V, 600mA Synchronous Step-Down DC/DC Converter***Schematic****BOM****Required Circuit Component**

Item	Value	Description	Size [mm]	Part Number	Manufacturer
IC	-	Step-Down DC/DC Converters	SOT-89-5	XC9704B75CPR-G	TOREX
L	6.8μH	Inductor	3.5 x 3.5	XGL3530-682ME	Coilcraft
CIN1	0.1μF	Ceramic cap., 50V	1608	CGA2B3X7R1H104K	TDK
CIN2	2.2μF	Ceramic cap., 50V	2012	C2012X7R1H225K125AC	TDK
CIN3	-	-	-	-	-
CL1	22μF	Ceramic cap., 16V	2012	GRM21BC81C226ME44	Murata
CL2	22μF	Ceramic cap., 16V	2012	GRM21BC81C226ME44	Murata
CL3	22μF	Ceramic cap., 16V	2012	GRM21BC81C226ME44	Murata
RFB1	680kΩ	Resistor	1608	-	-
RFB2	120kΩ	Resistor	1608	-	-
CFB	24pF	Ceramic cap., 50V, CH	1608	-	-
RSS	Jumper	Resistor	-	-	-
CSS	-	-	-	-	-

Additional Demo Board Circuit Components

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

Vout / L Setting Table

Vout Setting	RFB1	RFB2	CFB	L
3.3V	510kΩ	150kΩ	27pF	4.7μH
5.0V	680kΩ	120kΩ	24pF	6.8μH
12.0V	360kΩ	24kΩ	56pF	10μH

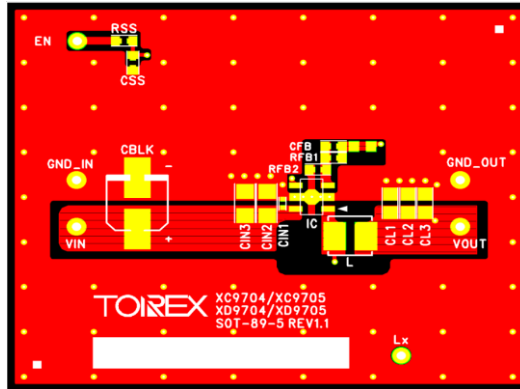
* Please refer to the datasheet for component selection and recommended components

XC9704B75CPR-G Evaluation Board

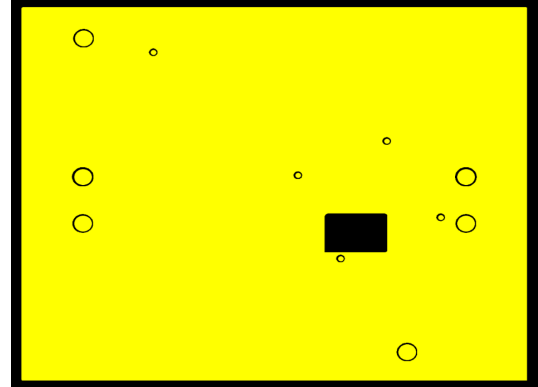
36V, 600mA Synchronous Step-Down DC/DC Converter

PCB Layout

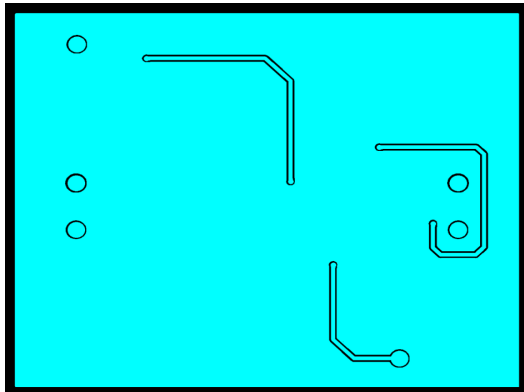
Layer 1



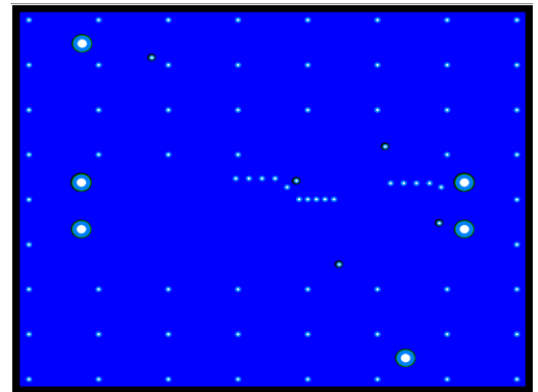
Layer 2

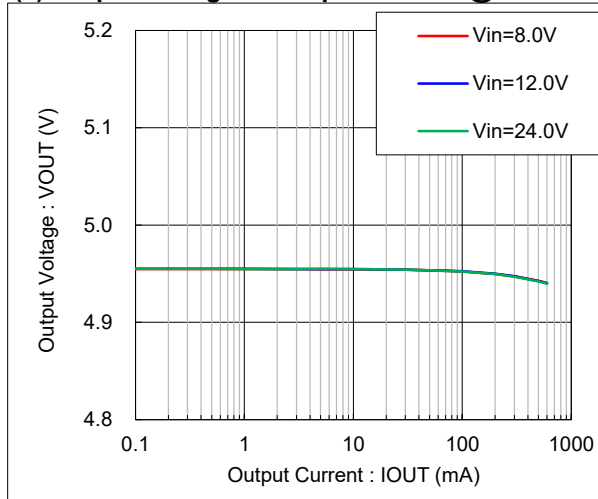
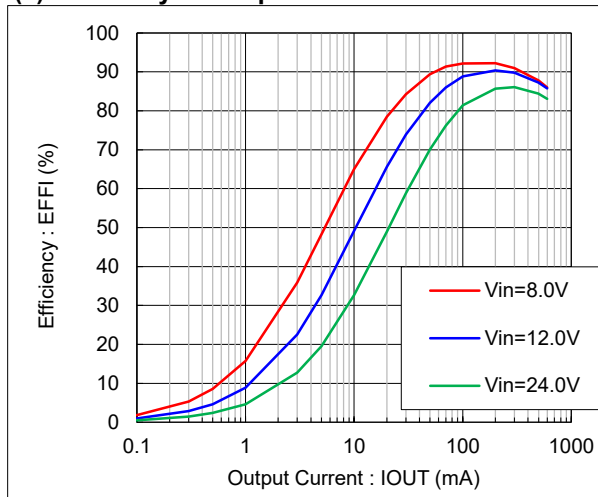
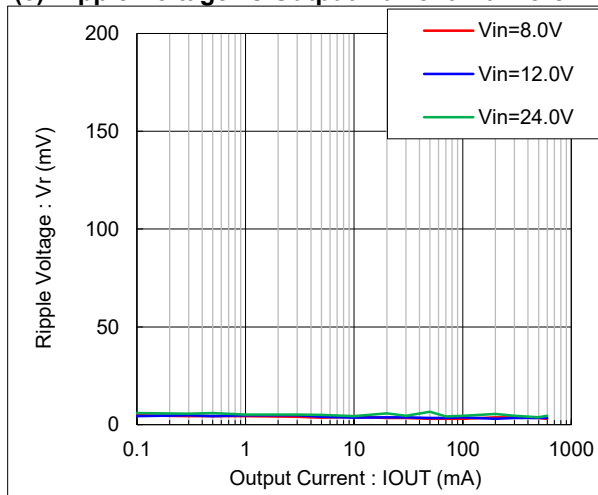


Layer 3



Layer 4



XC9704B75CPR-G Evaluation Board***36V, 600mA 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**

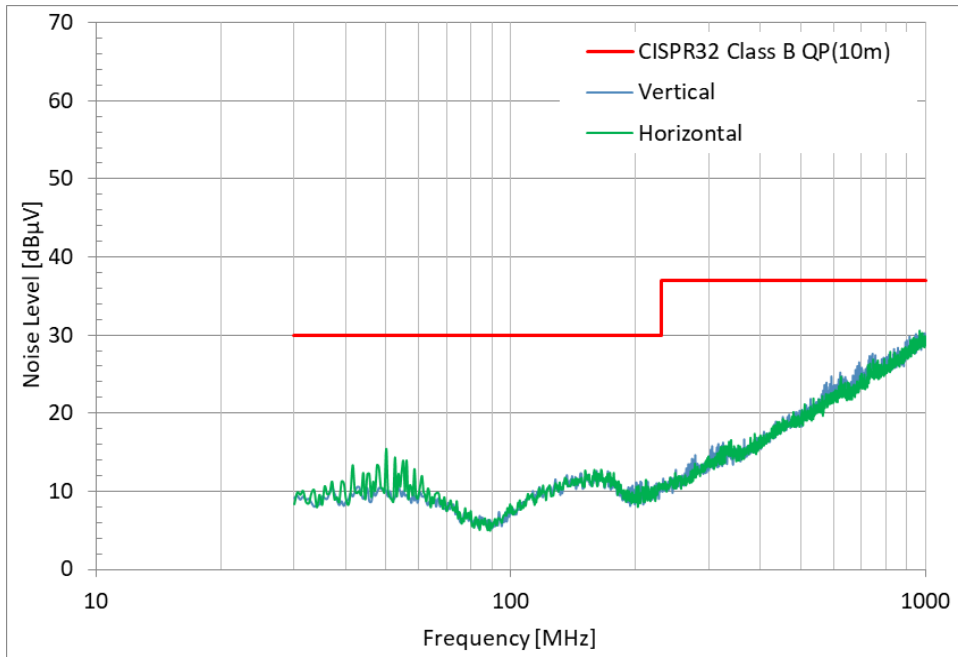
XC9704B75CPR-G Evaluation Board*36V, 600mA Synchronous Step-Down DC/DC Converter***Test Result****(4) Radiation EMI : CISPR-32/VCCI 10m Peak****Condition**

IC : XC9705B75CER-G

Vin : 12V

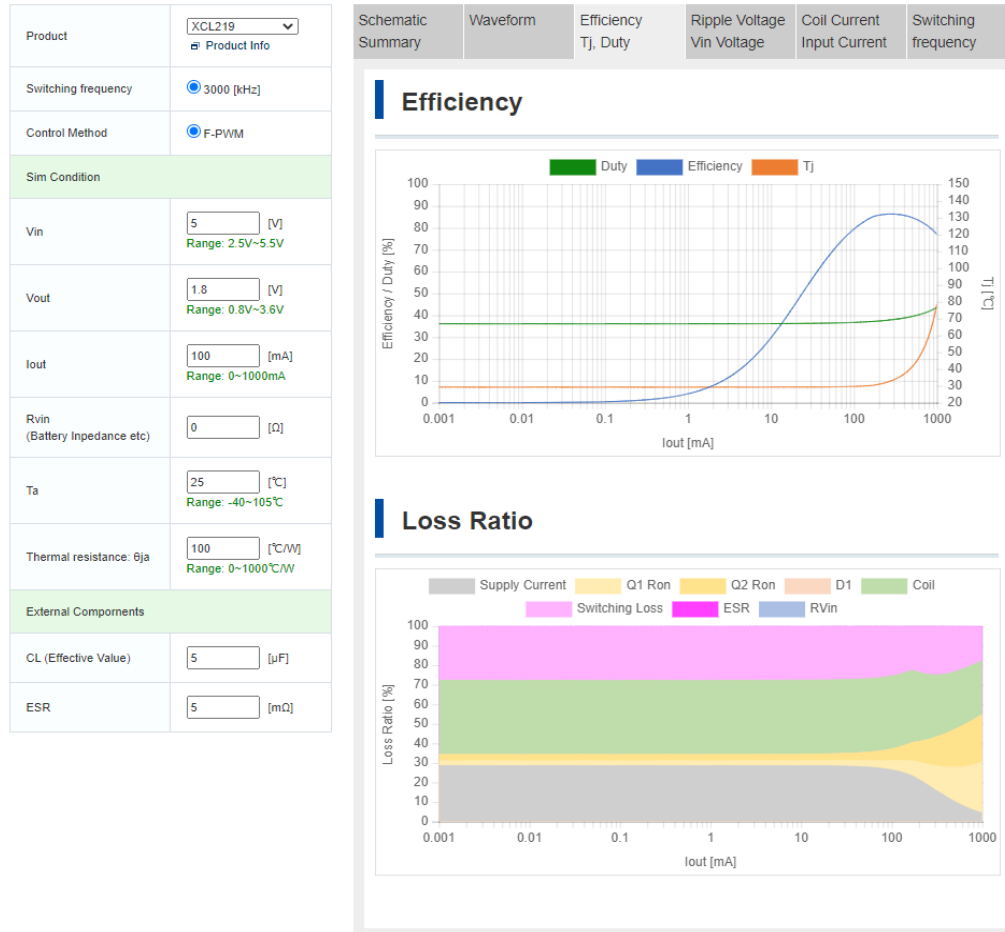
Vout : 5V

Iout : 300mA



XC9704B75CPR-G Evaluation Board**36V, 600mA Synchronous Step-Down DC/DC Converter****【Appendix】How to calculate DC/DC Converter or DC/DC Controller.**

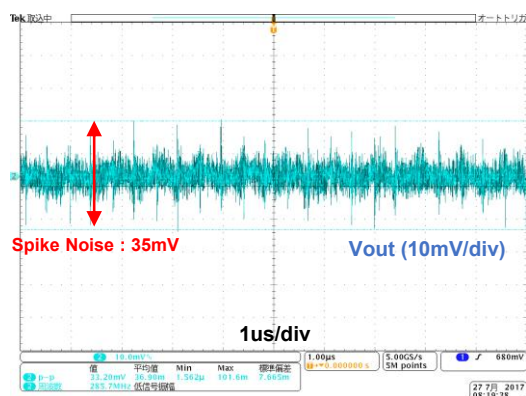
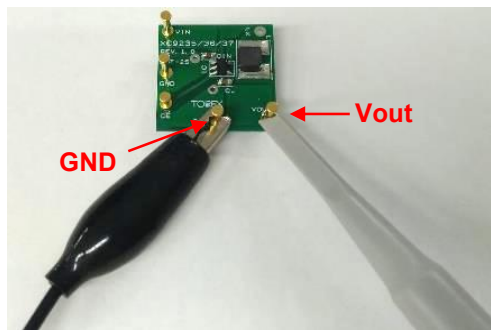
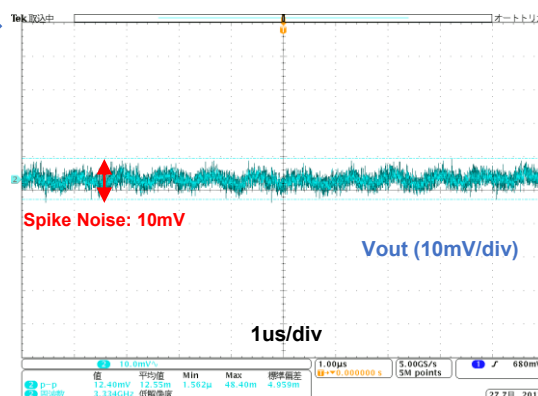
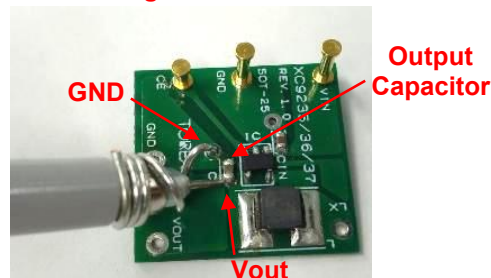
It can be calculated by the following "WEB DC/DC Simulation".



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/>

XC9704B75CPR-G Evaluation Board

36V, 600mA Synchronous Step-Down DC/DC Converter

【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/>