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[XC9144B10CE-12V-EVB-01](#)

EN

This Datasheet is presented by
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DE

Dieses Datenblatt wird vom
Hersteller bereitgestellt

FR

Cette fiche technique est
présentée par le fabricant

XC9144B10CER-G Evaluation Board User Manual

18V, $I_{in}=1A$, 1.2MHz PWM/PFM Synchronous Step-up Converter

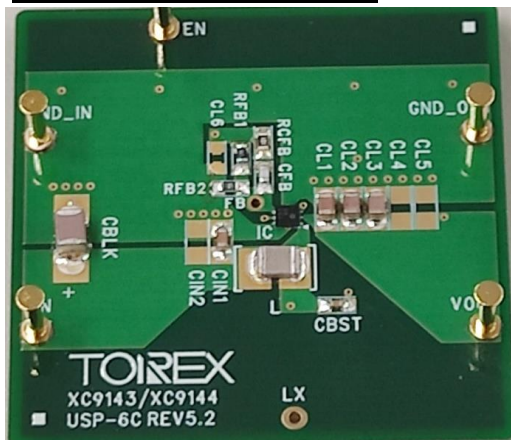
CAUTION

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

XC9144B10CER-G Evaluation Board*18V, $I_{in}=1A$, 1.2MHz PWM/PFM Synchronous Step-up Converter***Evaluation Board Picture****Evaluation Board SPEC**

						Ta=25°C
		CONDITON.	MIN.	TYP.	MAX.	UNIT
Vin	Input Voltage Range	-	1.8	-	10.2	V
Vout	Setting Output Voltage	-	-	12.0	-	V
Iout	Output Current	-	Refer to Graph 7			mA
fosc	Switching frequency	-	-	1.2	-	MHz

XC9143/XC9144 Series Features

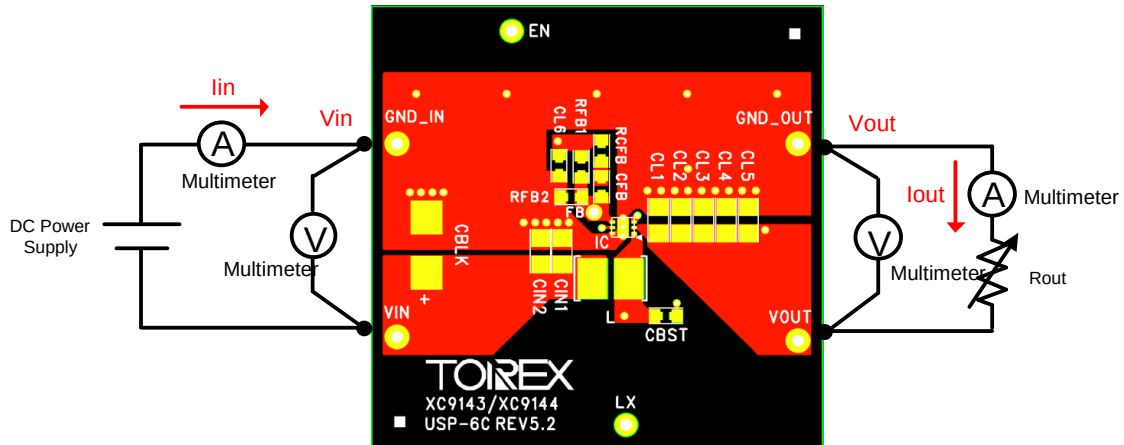
- Input Voltage Range 1.3V ~ 16.0V
- Output Voltage Range 7.0V ~ 18.0V
- Switching frequency 1.2MHz or 3MHz

- Small Solution Size
- High Efficiency
- Low EMI Noise

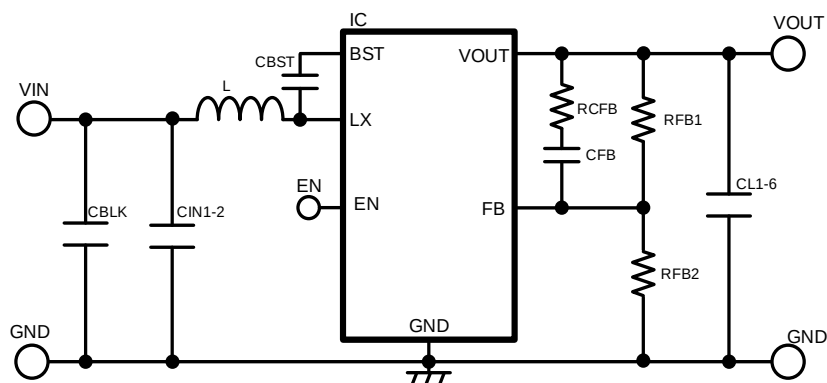
XC9144B10CER-G Evaluation Board

18V, $I_{in}=1A$, 1.2MHz PWM/PFM Synchronous Step-up Converter

Quick Start Procedure



Active : EN="H" (1.6V~16.0V)
 Stand-by : EN="L" (0V~0.3V)

XC9144B10CER-G Evaluation Board18V, $I_{in}=1A$, 1.2MHz PWM/PFM Synchronous Step-up Converter**Schematic****BOM****Required Circuit Component**

Item	Value	Description	Size [mm]	Part Number	Manufacture
IC	-	18V, $I_{in}=1A$, Synchronous Step-up	USP-6C	XC9144B10CER-G	TOREX
L	4.7uH	Inductor, $I_{sat}=2.3A$	3225	DFE322512F-4R7M=P2	Murata
CIN1	4.7uF	Ceramic cap., 25V	1608	GRM188R61E475	Murata
CIN2	-	-	-	-	-
CL1	22uF	Ceramic cap., 25V	2012	GRM21BR61E226ME	Murata
CL2	22uF	Ceramic cap., 25V	2012	GRM21BR61E226ME	Murata
CL3	-	-	-	-	-
CL4	-	-	-	-	-
CL5	-	-	-	-	-
CL6	-	-	-	-	-
CBST	0.1uF	Ceramic cap., 50V	1005	CGA2B3X7R1H104K	TDK
RCFB	100Ω	Resistor	1608	-	-
RFB1	825kΩ	Resistor	1608	1.0MΩ//4.7MΩ	-
RFB2	75kΩ	Resistor	1608	-	-
CFB	100pF	Ceramic cap., 25V or more	1608	-	-

Additional Demo Board Circuit Components

Item	Value	Description	Size [mm]	Part Number	Manufacture
CBLK	10uF	Ceramic cap., 50V/10uF	3225	CGA6P3X7S1H106K	TDK

Vout Setting Table

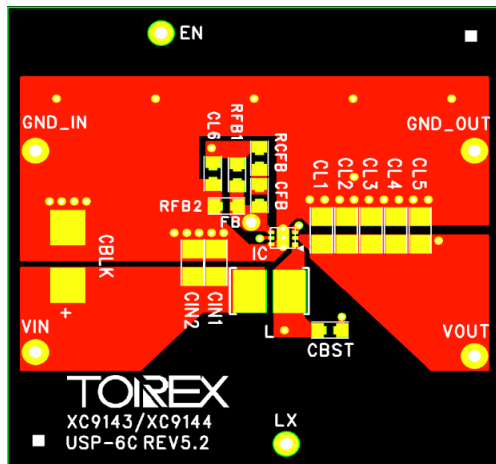
V_{OUTSET}	R_{FB1}	R_{FB2}	R_{CFB}	$f_{OSC} = 1.2MHz$	
				C_{FB}	f_{zfb}
7.0V	900kΩ (1.2MΩ//3.6MΩ)	150kΩ	100Ω	91pF	1.9kHz
12.0V	825kΩ (1.0MΩ//4.7MΩ)	75kΩ	100Ω	100pF	1.9kHz
15.0V	955kΩ (1.3MΩ//3.6MΩ)	68kΩ	100Ω	82pF	2.0kHz
18.0V	955kΩ (1.3MΩ//3.6MΩ)	56kΩ	100Ω	82pF	2.0kHz

XC9144B10CER-G Evaluation Board

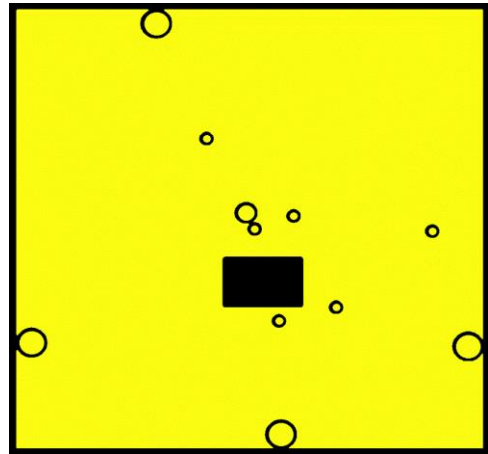
18V, $I_{in}=1A$, 1.2MHz PWM/PFM Synchronous Step-up Converter

PCB Layout

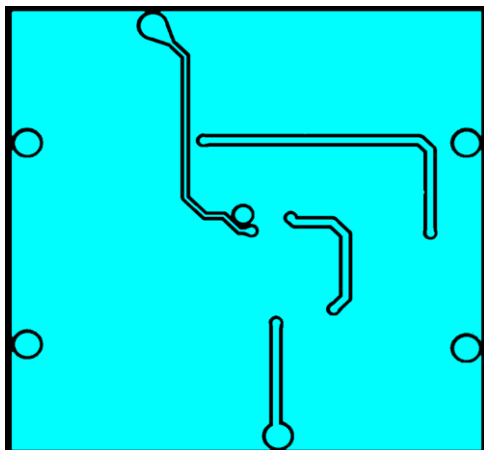
Layer 1



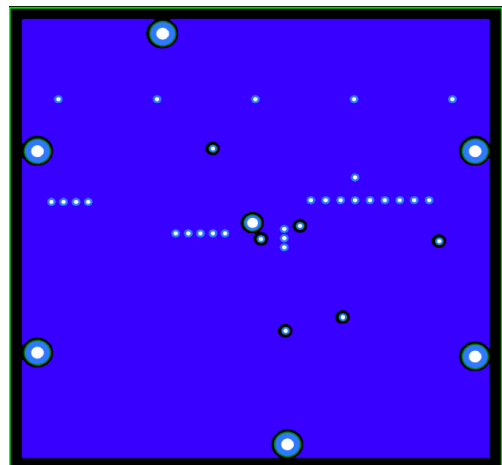
Layer 2

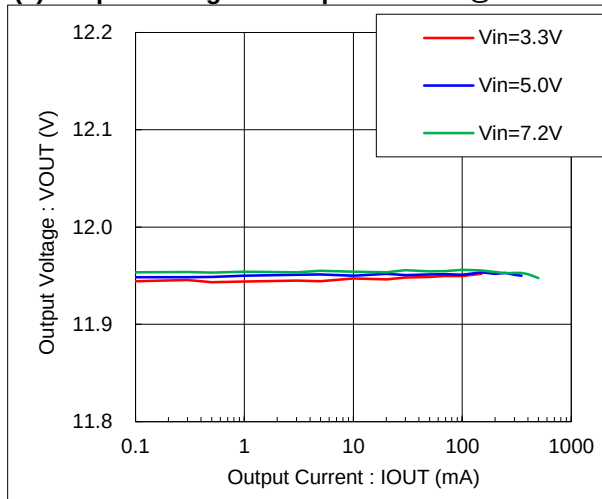
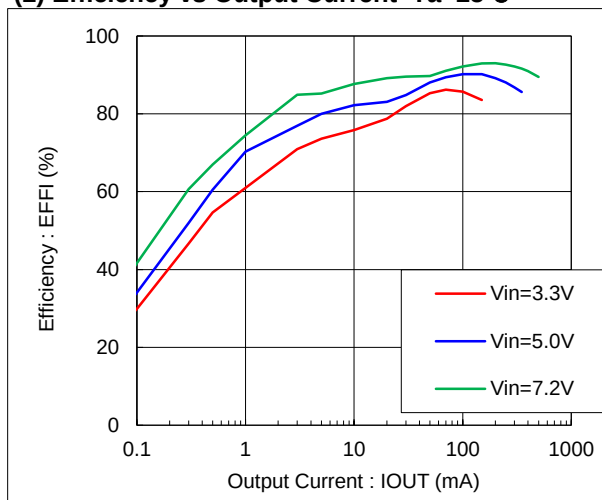
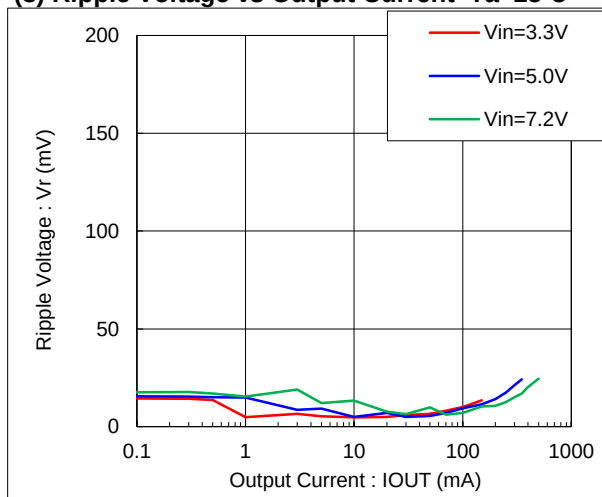


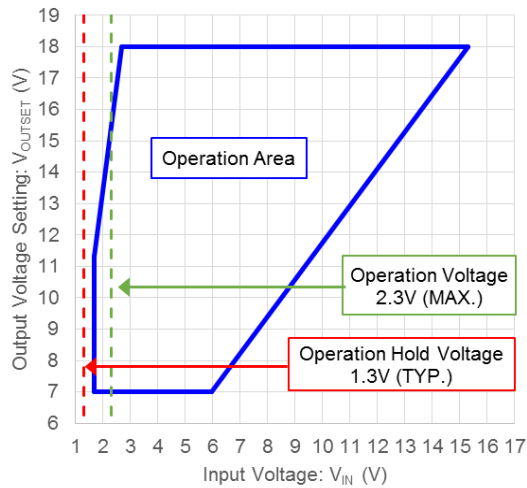
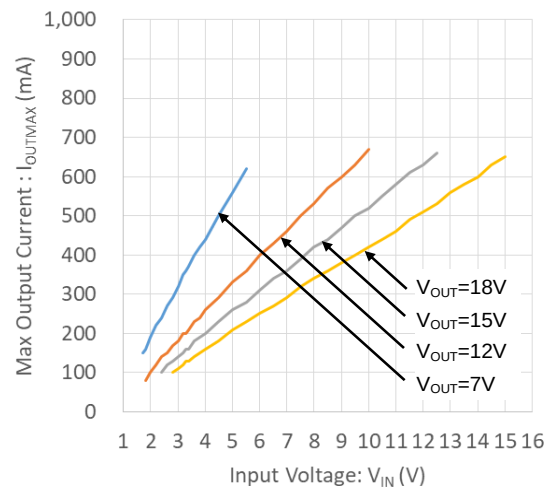
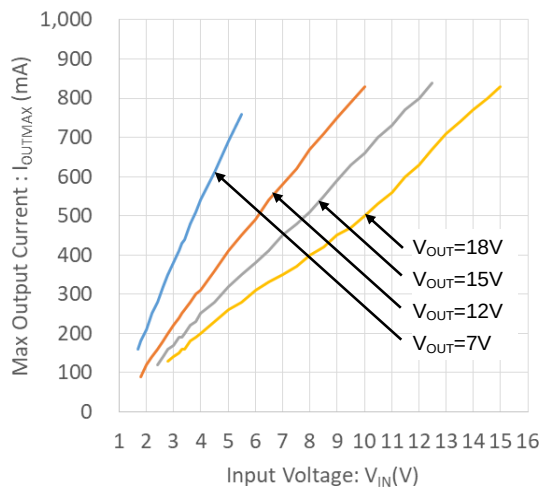
Layer 3



Layer 4



XC9144B10CER-G Evaluation Board*18V, $I_{in}=1A$, 1.2MHz PWM/PFM Synchronous Step-up 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**

XC9144B10CER-G Evaluation Board*18V, $I_{in}=1A$, 1.2MHz PWM/PFM Synchronous Step-up Converter***(4) $V_{OUTSET} - V_{IN}$ Operation Area, Max output current - V_{IN}** $V_{OUTSET} - V_{IN}$ Operation Area $T_a = -40 \sim 105^\circ\text{C}$ Max output current - V_{IN} $T_a = 25^\circ\text{C}$, $\theta_{ja} = 100^\circ\text{C/W}$ $T_a = 60^\circ\text{C}$, $\theta_{ja} = 100^\circ\text{C/W}$ 

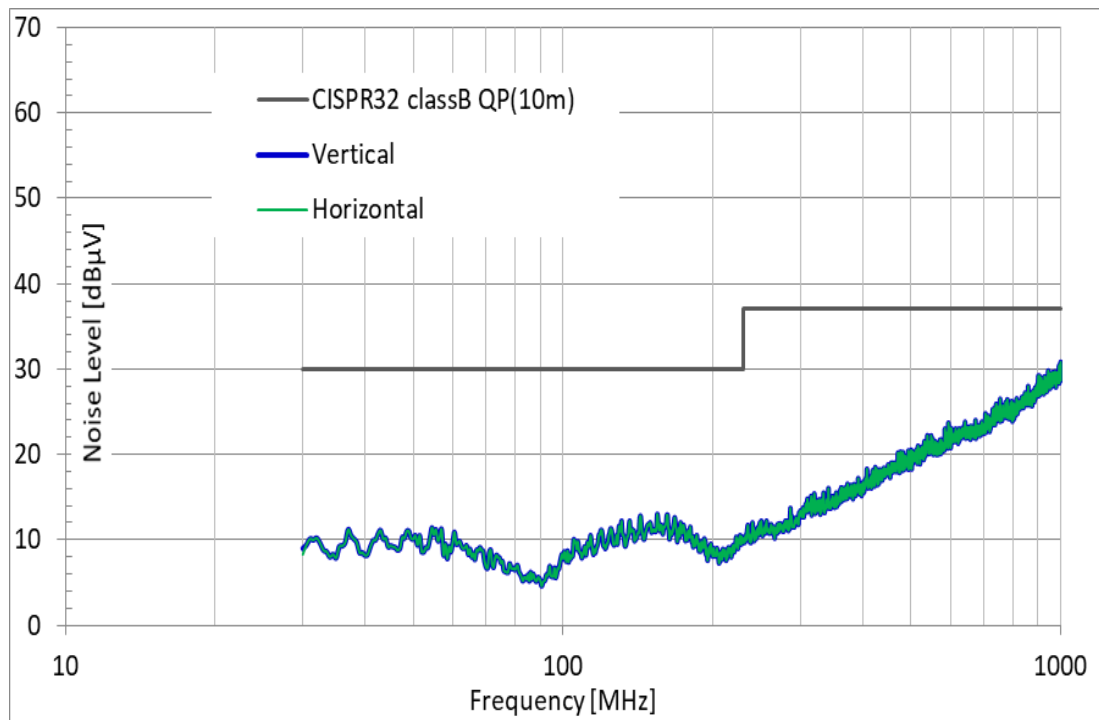
XC9144B10CER-G Evaluation Board*18V, $I_{in}=1A$, 1.2MHz PWM/PFM Synchronous Step-up Converter***Test Result****(5) Radiation EMI : CISPR-32/VCCI 10m Peak****Condition**

IC : XC9144B10CER-G

Vin : 5V

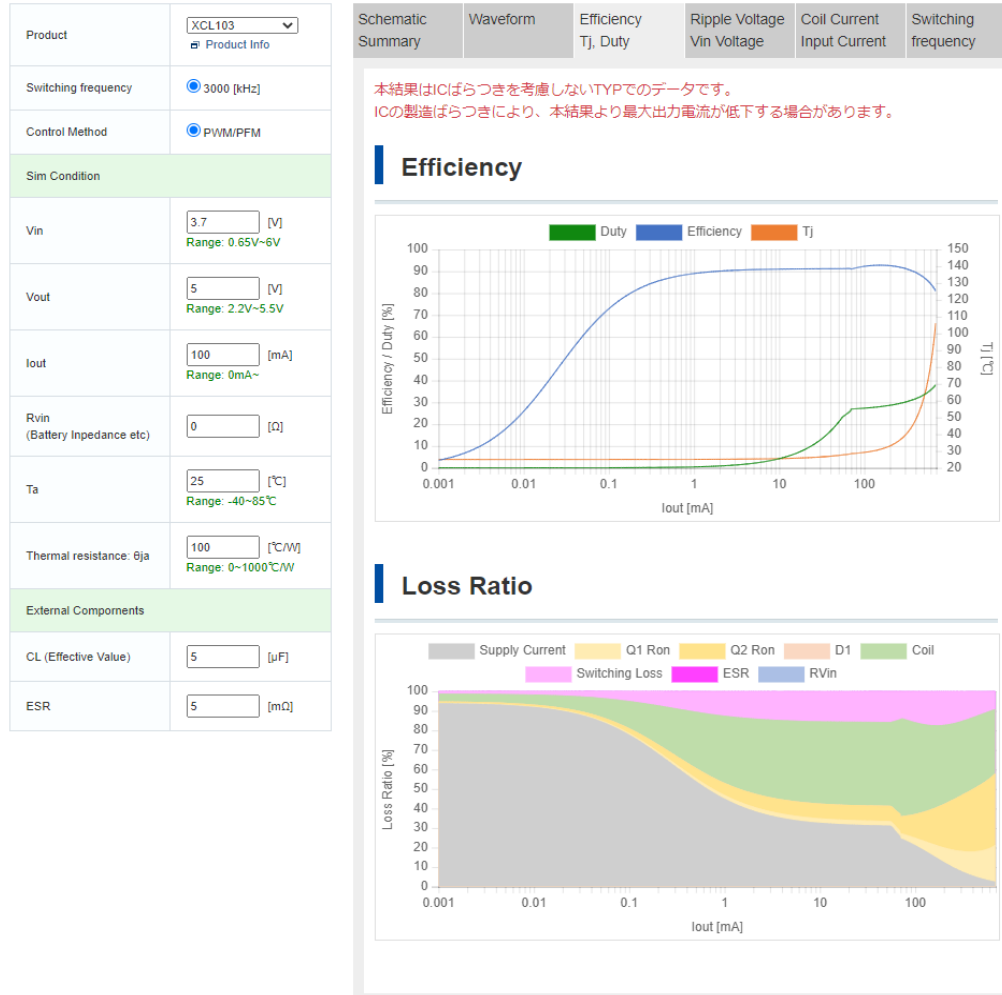
Vout : 12V

Iout : 120mA

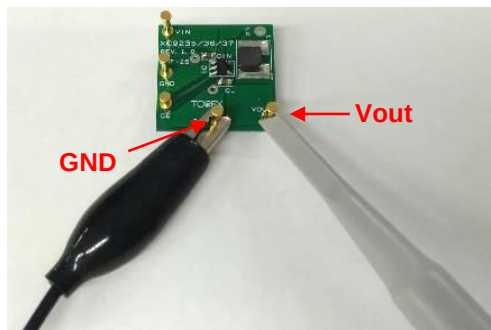
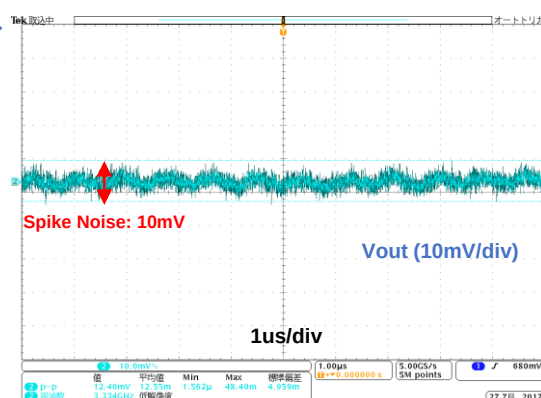
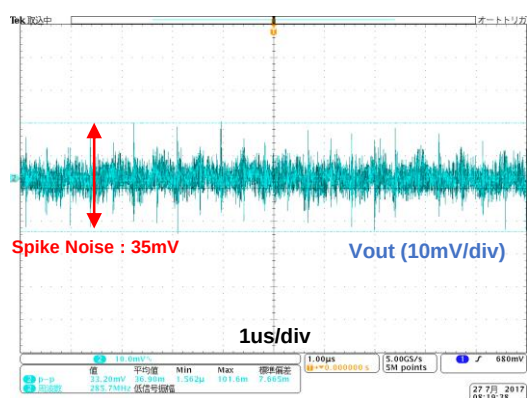
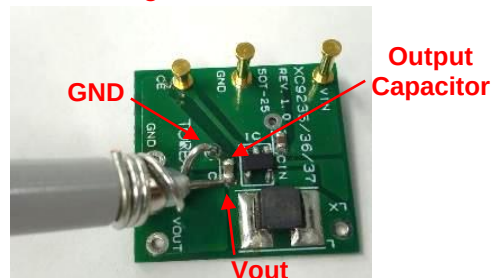


XC9144B10CER-G Evaluation Board18V, $I_{in}=1A$, 1.2MHz PWM/PFM Synchronous Step-up Converter**【Appendix】 How to calculate DC/DC Converter or DC/DC Controller.**

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/>

XC9144B10CER-G Evaluation Board18V, $I_{in}=1A$, 1.2MHz PWM/PFM Synchronous Step-up Converter**【Appendix】 How to reduce the spike noise caused by measurement (Probing method with oscilloscope)****Probing method : Before improvement****Probing method : After*** Condition : XC9236, $V_{in}=3.6V/V_{out}=1.8V/100mA$ 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/>

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