

## RAA457100GBM

R19AN0047EJ0100

### Selection of the Inductor for DCDC Converter

Rev.1.00

Aug. 10, 2017

When the inductor current exceeds a rated current, the inductor may cause magnetic saturation. Magnetic saturation will cause the efficiency decreases and the destruction of IC. Please choose the inductor so that a peak current does not exceed the rated current in the range of use.

The circuit of DCDC converter of the RAA457100 is shown in Figure1. External component values of DCDC converter are shown in the Table 1, and Inductor list is shown Table 2.

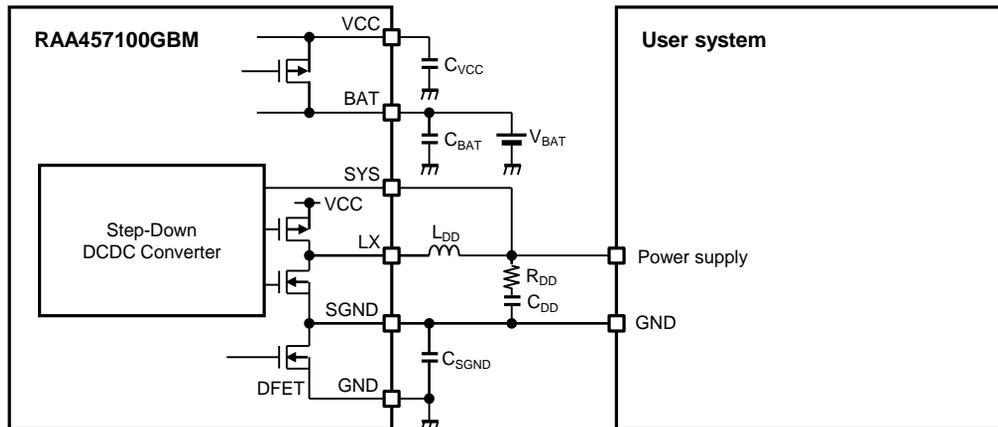


Figure1. The circuit of DCDC converter of the RAA457100

Table 1. External component values of the RAA457100 DCDC converter

Setting voltage of SYS	C <sub>VCC</sub> [uF]	C <sub>BAT</sub> [uF]	L <sub>DD</sub> [uH]	C <sub>DD</sub> [uF]	C <sub>SGND</sub> [uF]	R <sub>DD</sub> [Ω]
1.2V ,1.5V ,1.8V	4.7	1.0	10	3.3	0.47	0
3.0V	4.7	1.0	10	4.7	1.0	0.33

\* There is a possibility to change the value for improving the performance.

Table 2. Inductor list

Part Number	Manufacturer	Inductance [uH]	DCR (typ) [Ω]	Isat (typ) [mA]	Size [mm]		
					L(typ)	W(typ)	T(max)
VLS252008ET-100M-CA	TDK Corporation	10	1.026	480	2.5	2.0	0.80
VLS252010CX-100M		10	0.483	750	2.5	2.0	1.0
VLS201610CX-100M		10	0.610	620	2.0	1.6	1.0
LQH2HPN100MGR	Murata Manufacturing Co., Ltd.	10	0.560	700	2.5	2.0	1.0
LQH2HPN100MDR		10	1.200	420	2.5	2.0	0.60
LQH2MPN100MGR		10	0.880	610	2.0	1.6	0.95

\* DCR: Series resistance

Isat :Saturation current

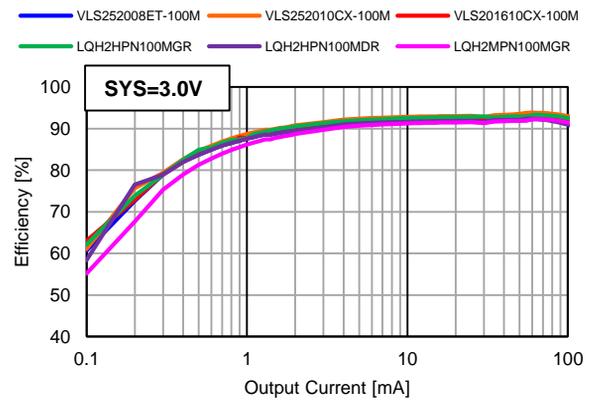
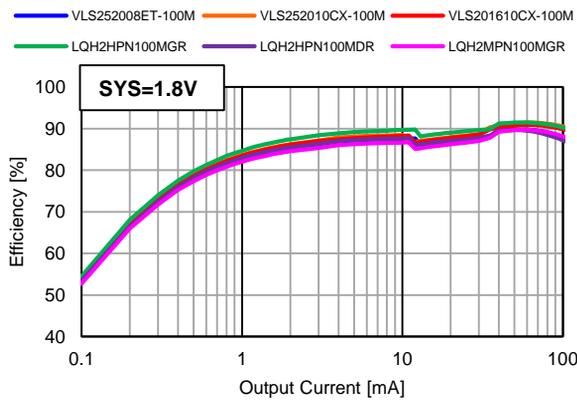
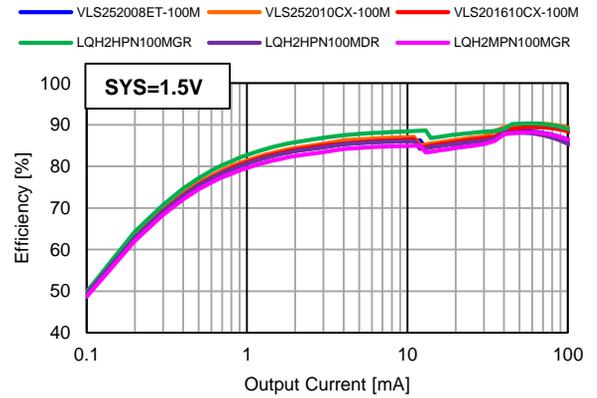
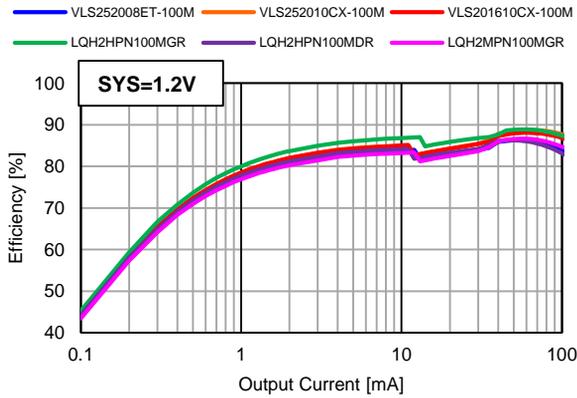
Table 2 is an example and does not limit inductors. Please consider according to the conditions for use.

Please refer to the inductor maker for the details.

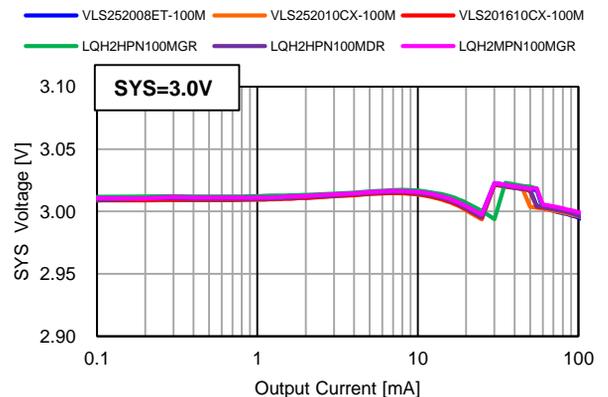
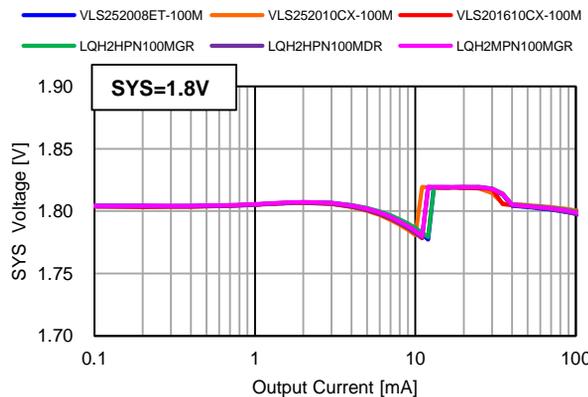
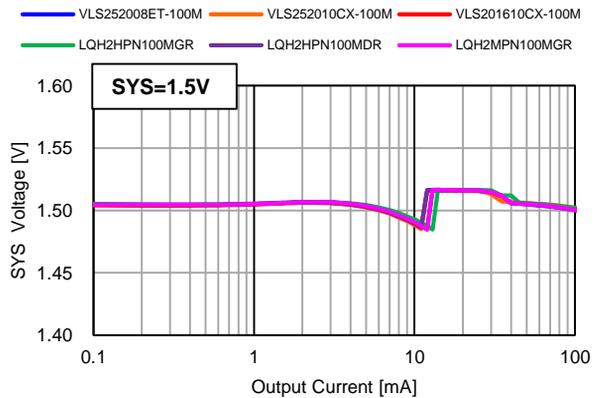
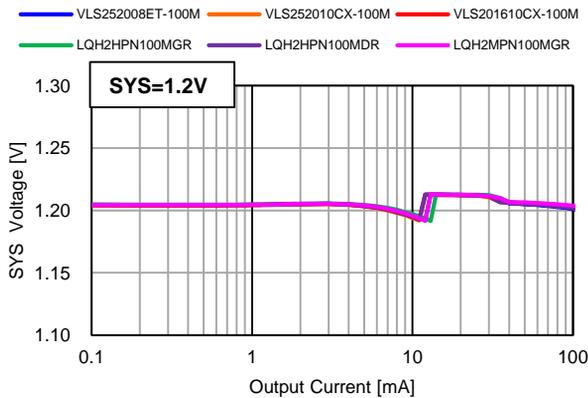
### Typical performance characteristics of DCDC converter (for reference)

Typical performance characteristics of DCDC converter are shown below. These values are reference data, and are not guaranteed. Evaluate the DCDC converter enough, and then select inductor.

#### ■ Efficiency vs. Output current ( $V_{BAT}=3.8V$ )

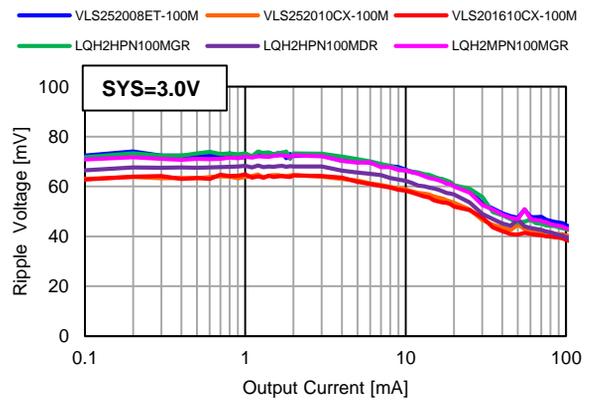
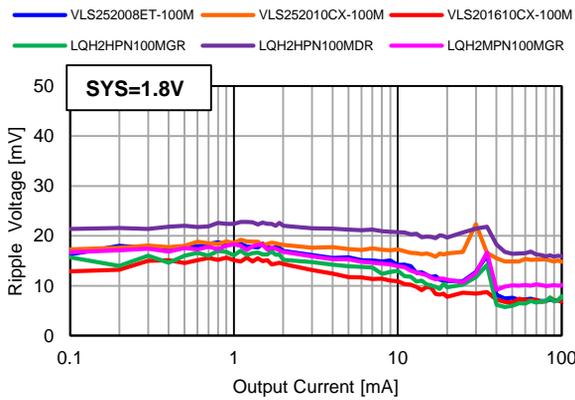
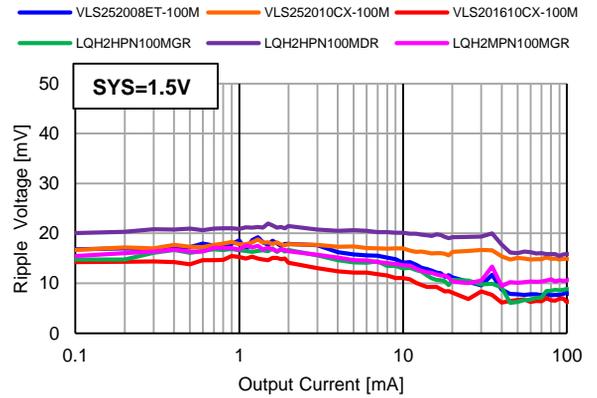
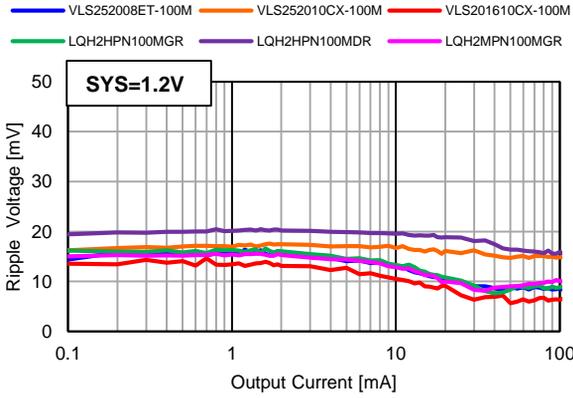


#### ■ Output Voltage vs. Output current ( $V_{BAT}=3.8V$ )



Typical performance characteristics of DCDC converter (for reference)

■ Ripple voltage vs. Output current ( $V_{BAT}=3.8V$ )



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## Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Aug. 10, 2017	-	First Edition issued

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2801 Scott Boulevard Santa Clara, CA 95050-2549, U.S.A.  
Tel: +1-408-588-6000, Fax: +1-408-588-6130

#### **Renesas Electronics Canada Limited**

9251 Yonge Street, Suite 8309 Richmond Hill, Ontario Canada L4C 9T3  
Tel: +1-905-237-2004

#### **Renesas Electronics Europe Limited**

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K  
Tel: +44-1628-585-100, Fax: +44-1628-585-900

#### **Renesas Electronics Europe GmbH**

Arcadiastrasse 10, 40472 Düsseldorf, Germany  
Tel: +49-211-6503-0, Fax: +49-211-6503-1327

#### **Renesas Electronics (China) Co., Ltd.**

Room 1709, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100191, P.R.China  
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

#### **Renesas Electronics (Shanghai) Co., Ltd.**

Unit 301, Tower A, Central Towers, 555 Langao Road, Putuo District, Shanghai, P. R. China 200333  
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

#### **Renesas Electronics Hong Kong Limited**

Unit 1601-1611, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong  
Tel: +852-2265-6688, Fax: +852 2886-9022

#### **Renesas Electronics Taiwan Co., Ltd.**

13F, No. 363, Fu Shing North Road, Taipei 10543, Taiwan  
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

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80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre, Singapore 339949  
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Unit 1207, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jin Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia  
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

#### **Renesas Electronics India Pvt. Ltd.**

No.777C, 100 Feet Road, HAL II Stage, Indiranagar, Bangalore, India  
Tel: +91-80-67208700, Fax: +91-80-67208777

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12F., 234 Teheran-ro, Gangnam-Gu, Seoul, 135-080, Korea  
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