

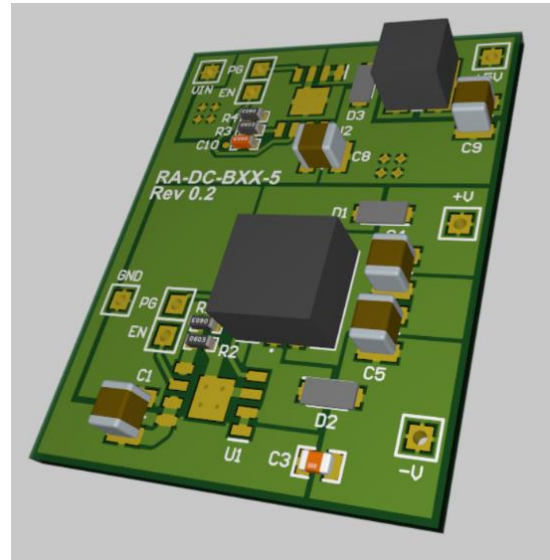
# Audio Power Module

## General Description

The Resolute Audio DCBXXA5 range of power modules provide a bipolar regulated power supply for audio product design available in  $\pm 5$ ,  $\pm 12$ ,  $\pm 15$ , or  $\pm 18$ V variants. Additionally, a further single 5V regulated power supply is also included. The module is designed to be a convenient alternative to discrete power supply design and facilitate rapid product design.

## Features

- Wide operating Input Voltage 6 to 24V
- Available with fixed bipolar output voltages of  $\pm 5$ ,  $\pm 12$ ,  $\pm 15$ , or  $\pm 18$ V (other options available on request)
- Additional +5V Supply
- Oscillating Frequency 450kHz
- Over Current Protection
- Thermal Shutdown Protection
- Standby enable and power good pin for both  $\pm V$  and +5V supplies



## Architecture

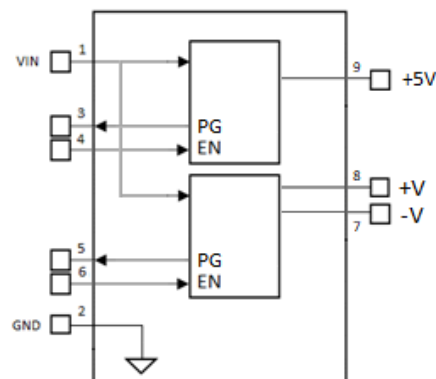


Figure 1 - Block Diagram

Pin	Name	Description
1	VIN	Positive input voltage referenced to GND
2	GND	Common ground connection for VIN and output voltages
3	PG_BI	Power Good for Bipolar Supply
4	EN_BI	Enable pin for +V and -V supplies
5	PG_S	Power Good for Single +5V Supply
6	EN_S	Enable pin for +5V supply
7	-V	Regulated negative output
8	+V	Regulated positive output
9	+5V	Regulated +5V output

Table 1 - Pin Description

Characteristics	Conditions	Min	Typ	Max	Unit
V <sub>IN</sub>	Supply Voltage	+6	-	+24	V
I <sub>OUT+5V</sub>	Output Current(Single +5V Supply)		800		mA
$\eta_1$	Efficiency of +5V Supply	V <sub>IN</sub> =6V, LOAD=5 $\Omega$	90		%
f <sub>OSC</sub>	Oscillation Frequency	405	450	495	kHz
I <sub>DD</sub>	Quiescent Current		8	9.4	mA
V <sub>DD_EN</sub>	Enable pin	1.6	V <sub>IN</sub>	V <sub>IN</sub>	V

Table 2 - Electrical Characteristics

Conditions	Model	RADCB05A5	RADCB12A5	RADCB15A5	RADCB18A5
Bipolar	V <sub>OUT</sub> (V)	±5	±12	±15	±18
	I <sub>OUT</sub> (mA)	300 <sup>(1)</sup>	300 <sup>(1)</sup>	200 <sup>(1)</sup>	150 <sup>(1)</sup>
	V <sub>ripple</sub> (mV)	52	95	90	90
+5V Single Supply (V <sub>IN</sub> =15V, LOAD=5 $\Omega$ )	V <sub>OUT+5</sub> (V)	5	5	5	5
	I <sub>OUT+5</sub> (mA)	800	800	800	800
	V <sub>ripple</sub> (mV)	~78	~78	~44	~50
	Quiescent Current(mA)	5.5	8.1	9.4	13.2
	Efficiency(%)	83	85	85	82

Table 3 - Specification

<sup>(1)</sup>Value is per rail and recommended for low-noise applications. Data captured whilst the single +5V supply was delivering 900mA into a 5ohm load

V <sub>IN</sub> (V)	I <sub>OUTS</sub> (mA)	+I <sub>OUT</sub> (mA)	-I <sub>OUT</sub> (mA)	Efficiency(%)	V <sub>ripple+</sub> (mV)	V <sub>ripple-</sub> (mV)
24	800	300	300	80	65	50
18	800	300	300	80	60	50
15	800	300	300	80	80	55
12	800	300	300	85	70	55
9	800	300	300	85	60	60
6	800	150	150	85	40	40

Table 4 - Output Current for various input voltages (RADCB05A5)

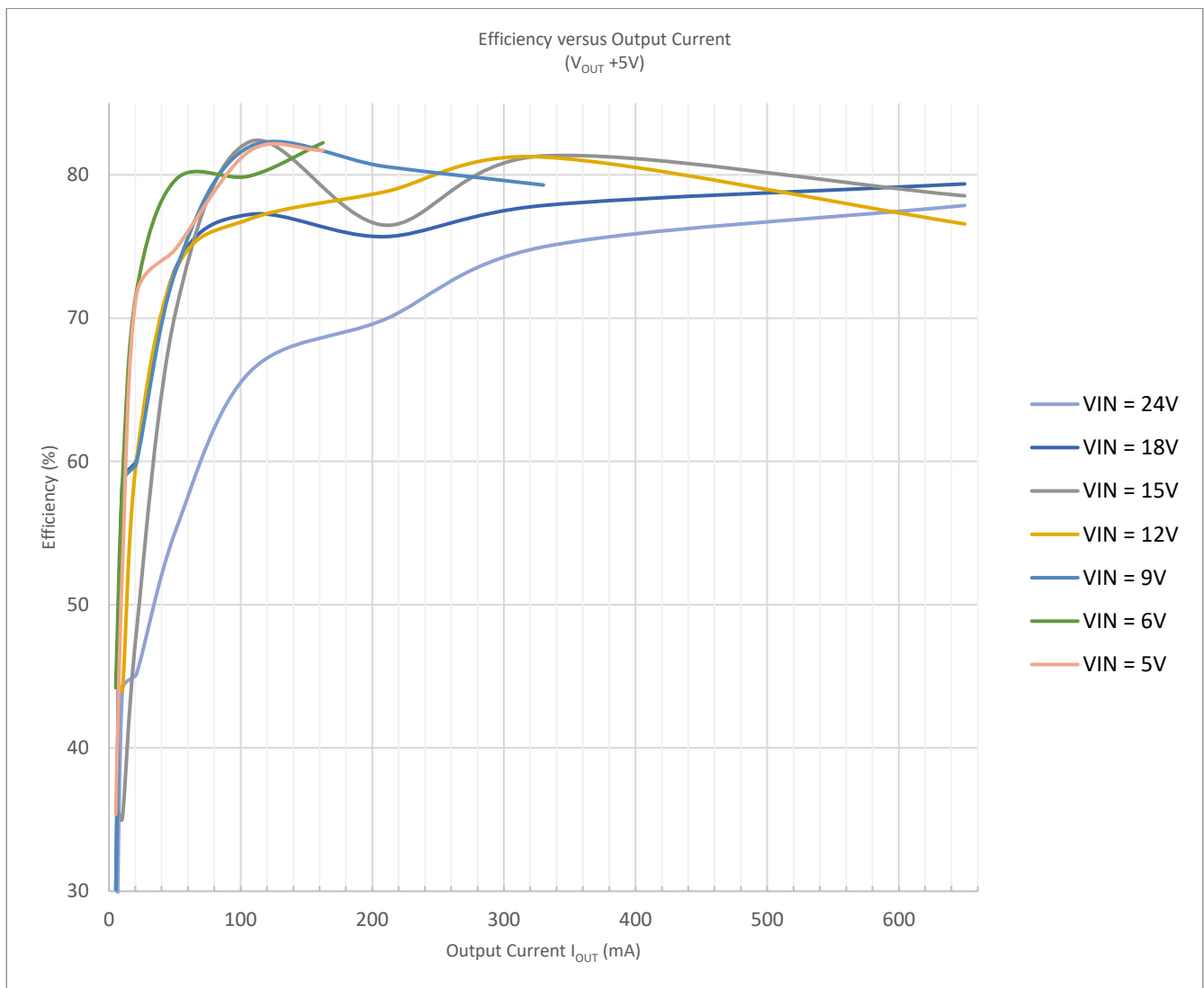
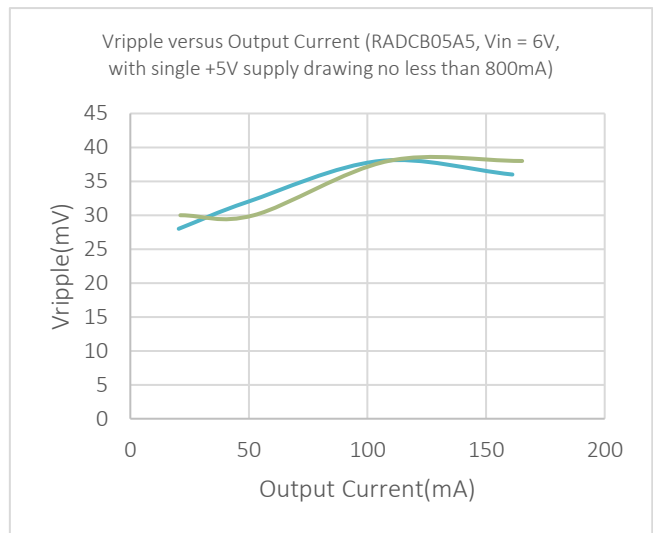
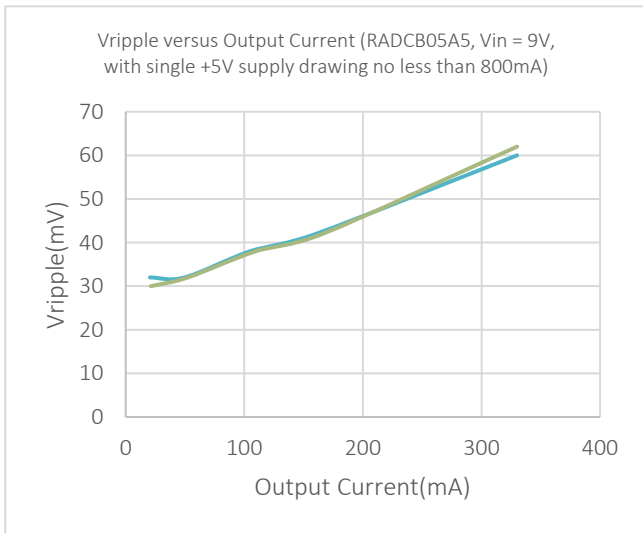
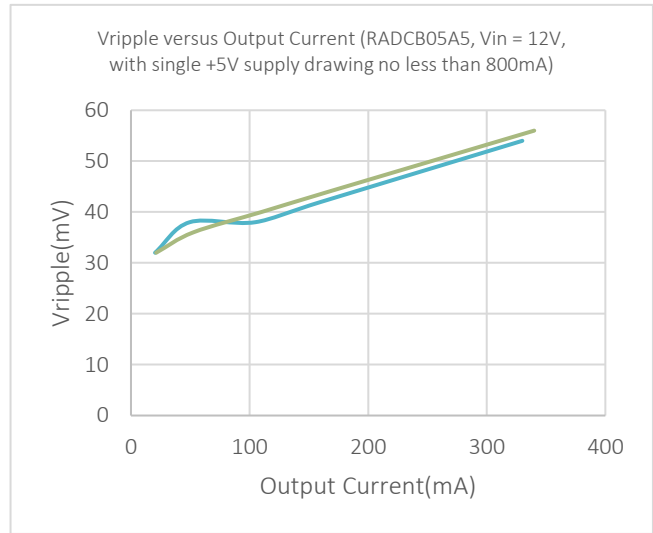
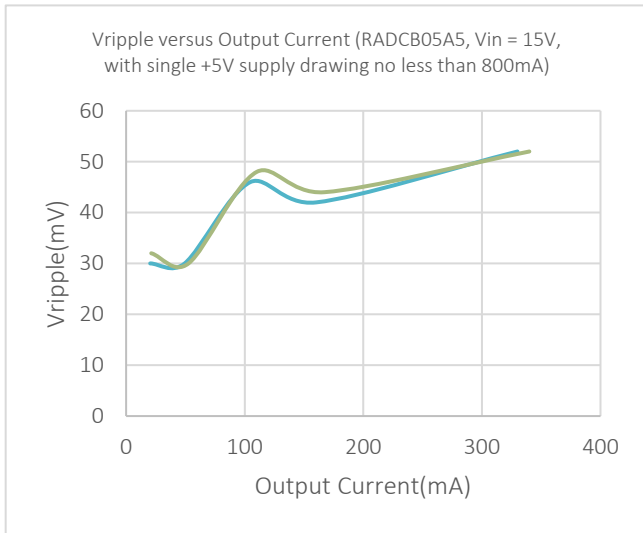
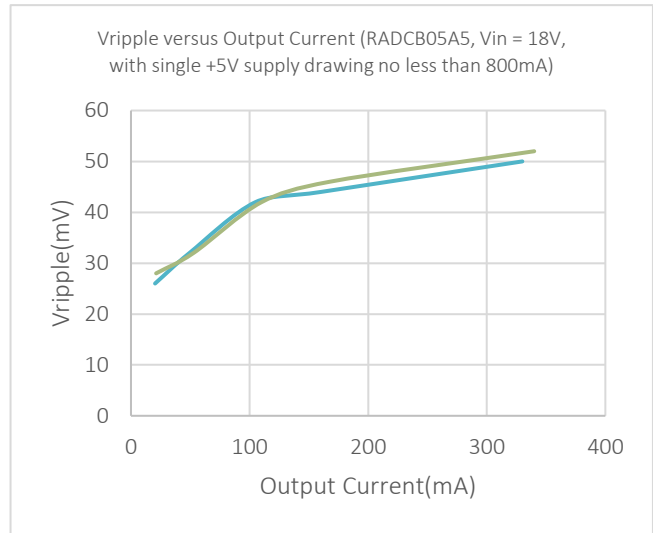
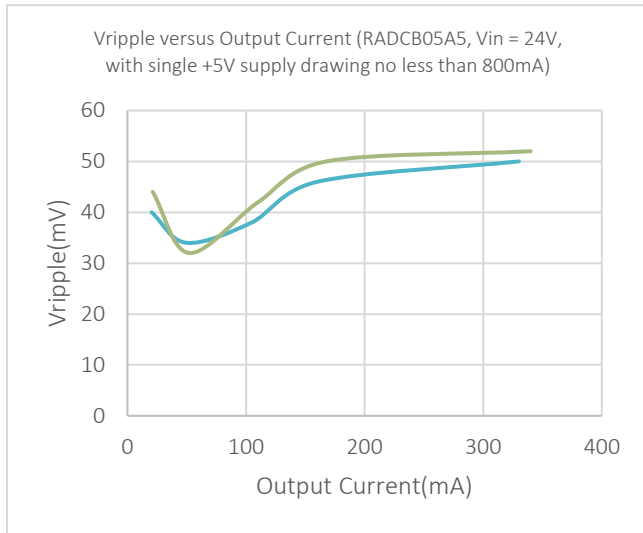


Figure 2 - Efficiency versus Output Current (RADCB05A5)



V <sub>IN</sub> (V)	I <sub>OUTSV</sub> (mA)	+I <sub>OUT</sub> (mA)	-I <sub>OUT</sub> (mA)	Efficiency(%)	V <sub>ripple+</sub> (mV)	V <sub>ripple-</sub> (mV)
24	800	300	300	80	55	80
18	800	300	300	80	50	80
15	800	300	300	80	55	80
12	800	300	300	80	45	90
9	800	250	250	80	40	95
6	800	200	200	80	35	115

Table 5 - Output Current for various input voltages (RADCB12A5)

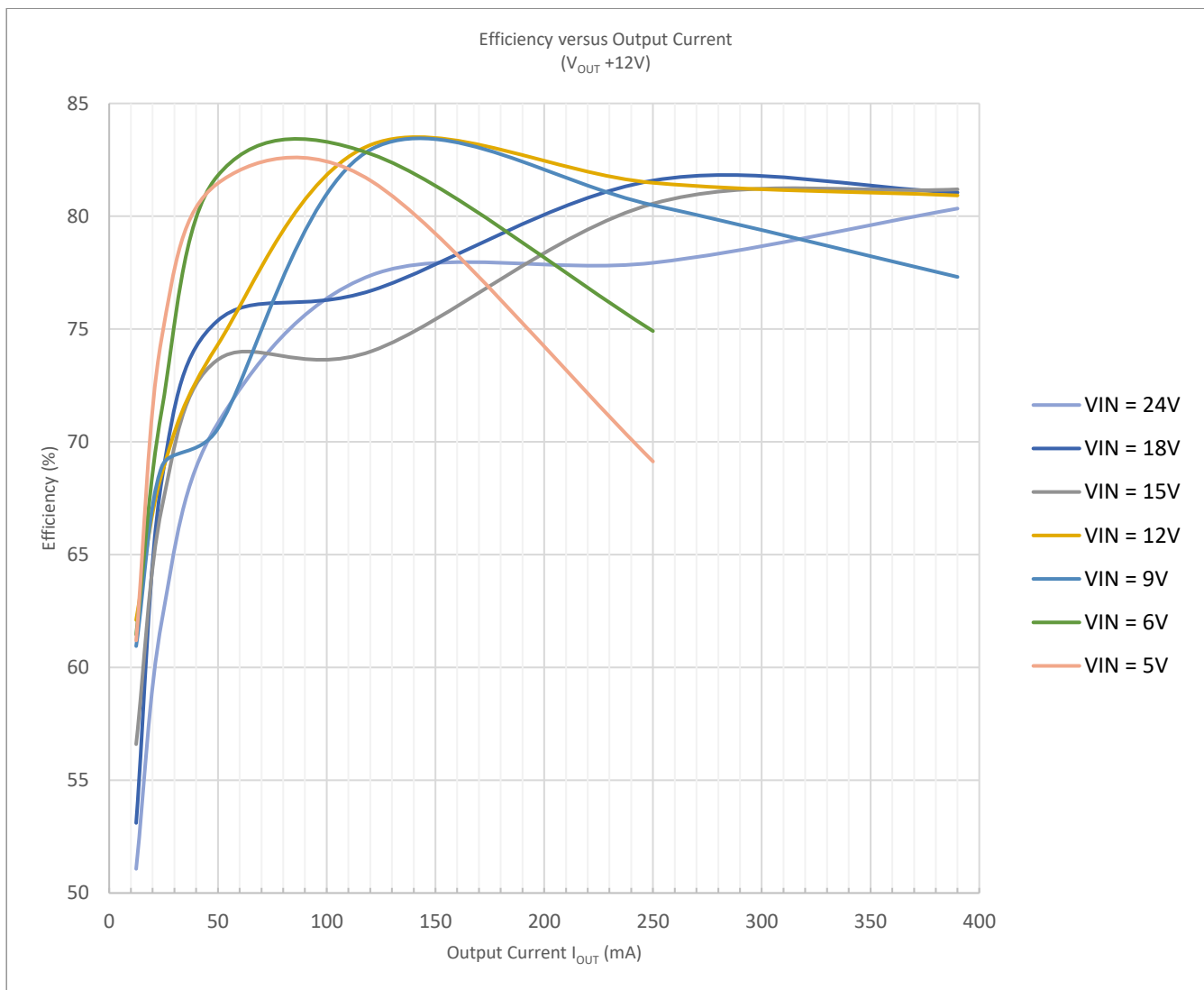
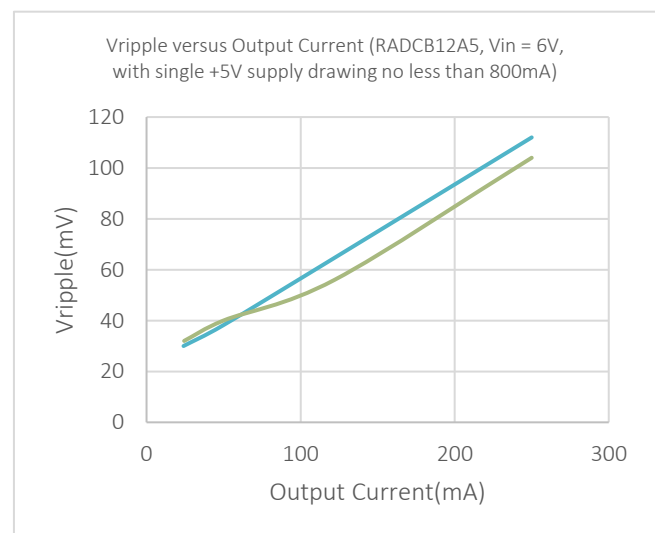
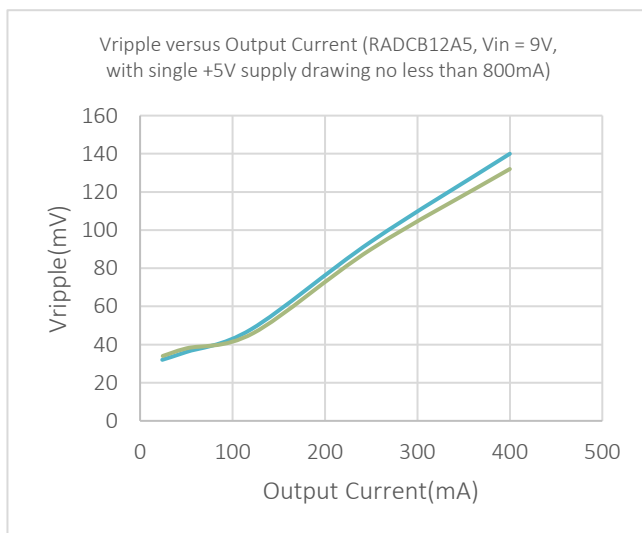
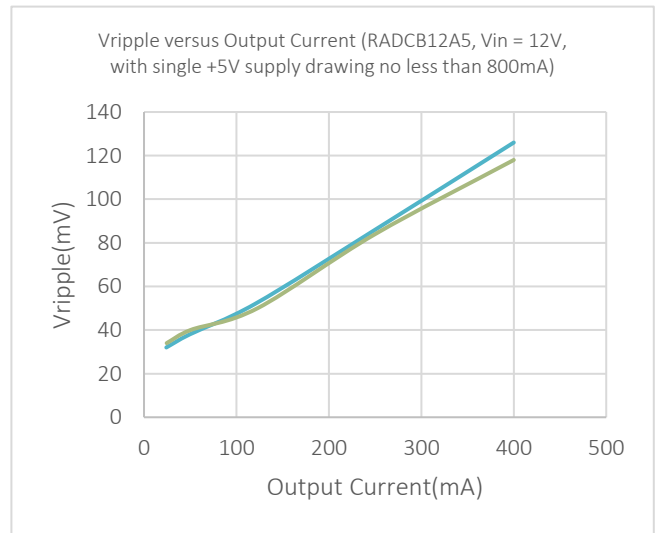
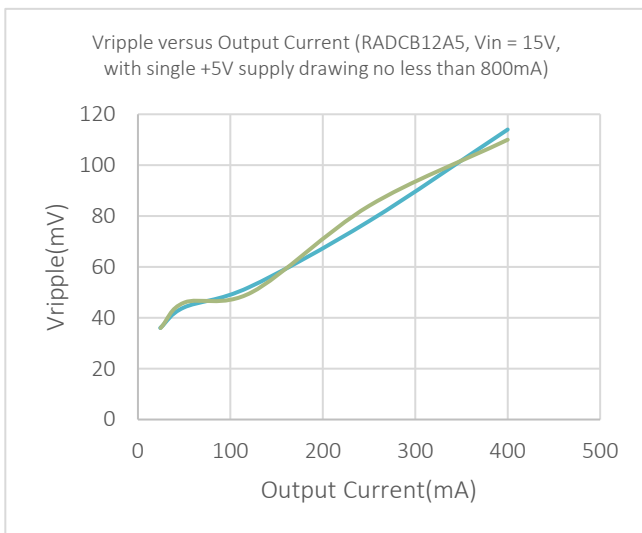
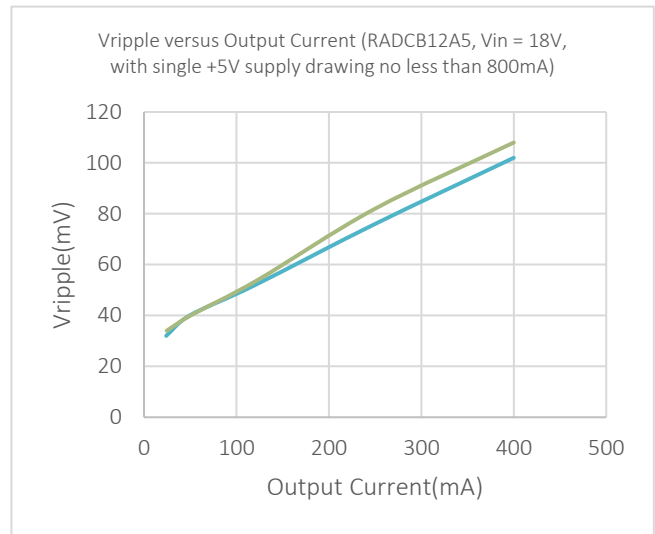
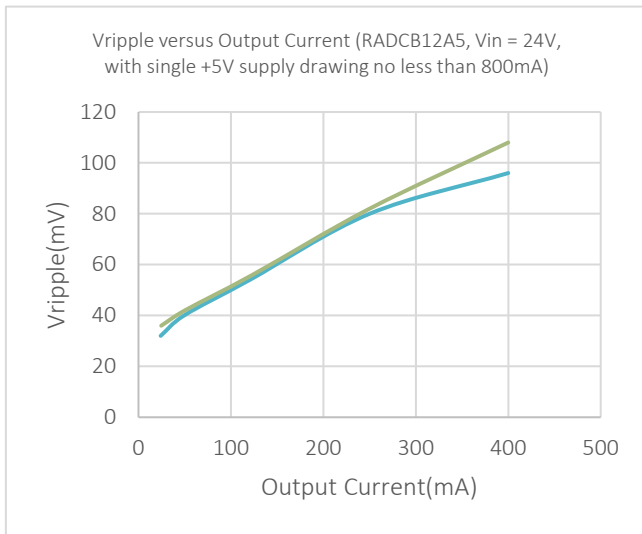


Figure 3 - Efficiency versus Output Current (RADCB12A5)



V <sub>IN</sub> (V)	I <sub>OUTSV</sub> (mA)	+I <sub>OUT</sub> (mA)	-I <sub>OUT</sub> (mA)	Efficiency(%)	V <sub>ripple+</sub> (mV)	V <sub>ripple-</sub> (mV)
24	800	200	200	80	55	95
18	800	200	200	80	50	95
15	800	200	200	80	45	95
12	800	200	200	80	40	100
9	800	200	200	80	40	110
6	800	150	150	85	35	85

Table 6 - Output Current for various input voltages (RADCB15A5)

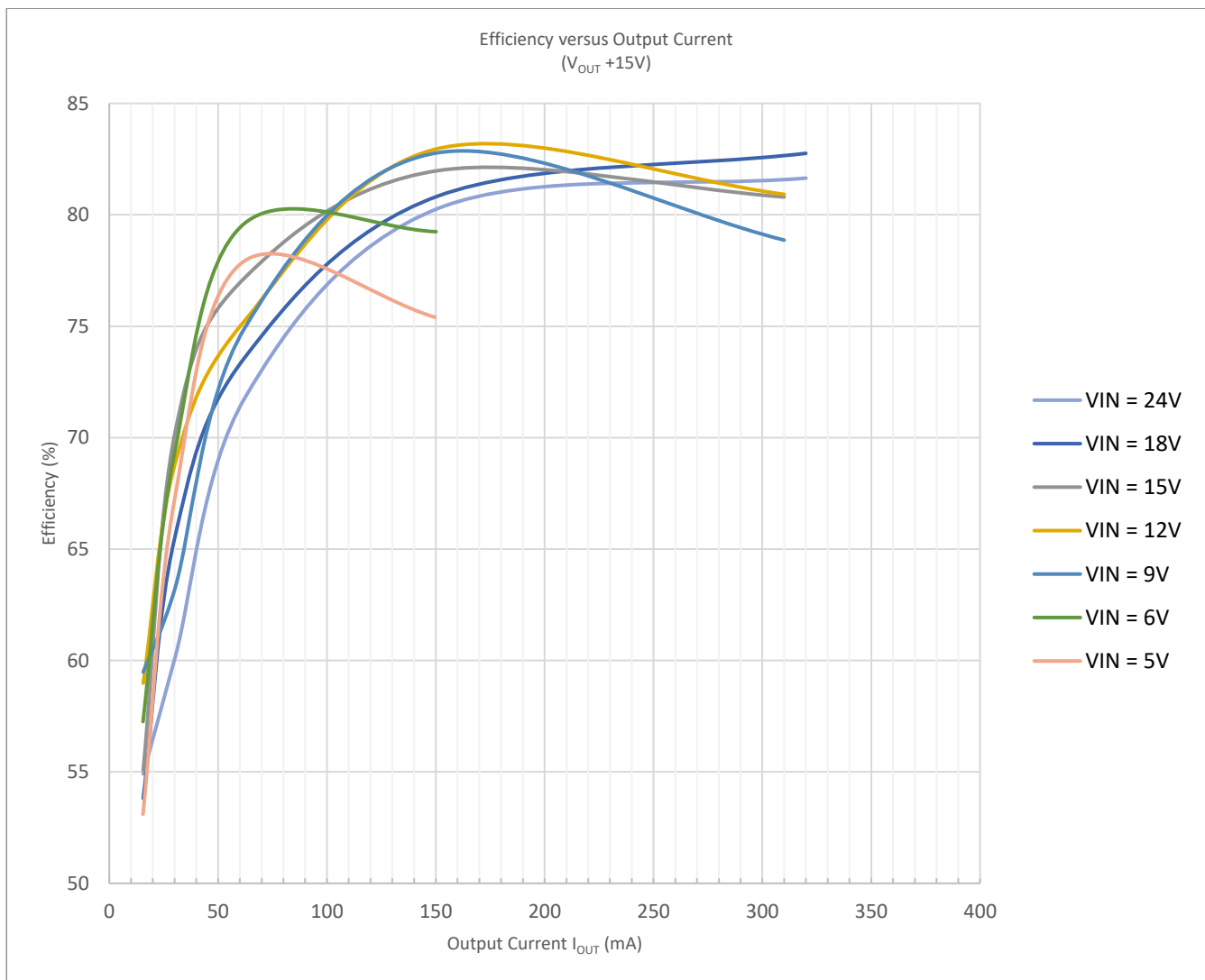
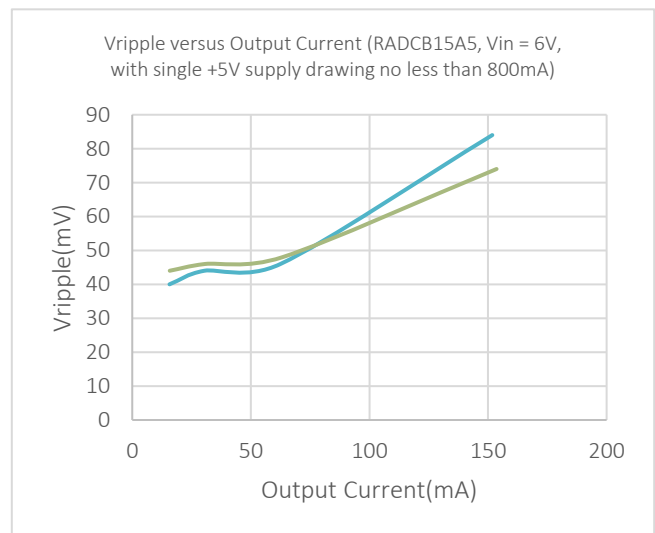
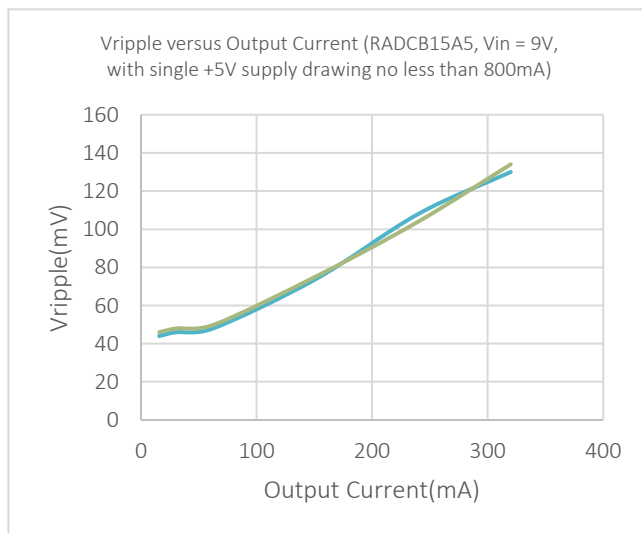
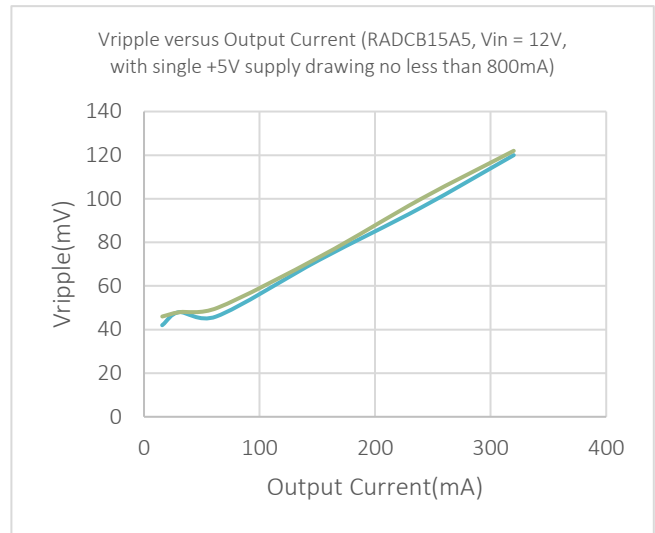
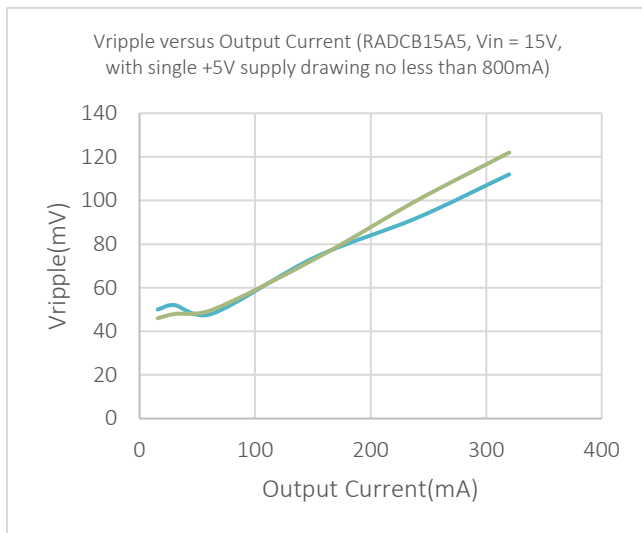
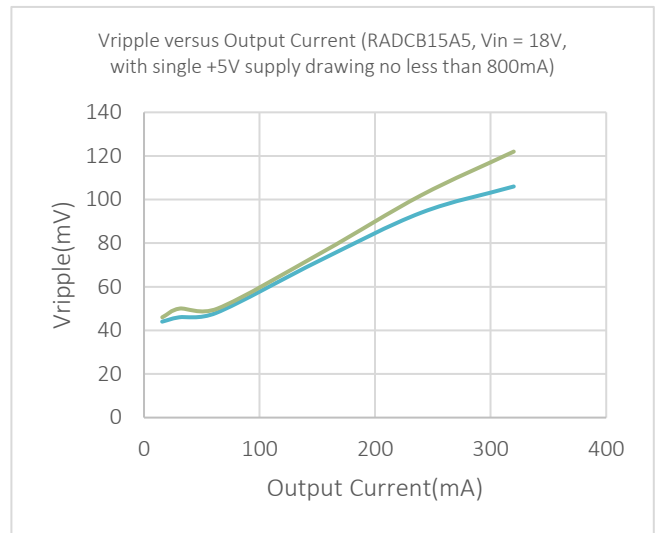
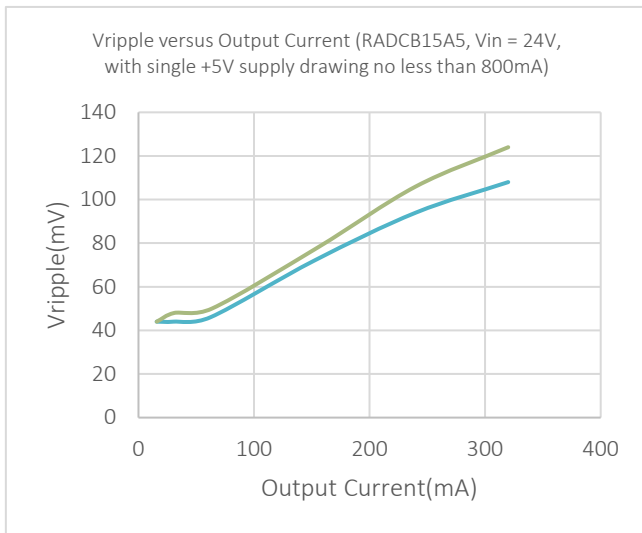


Figure 4 - Efficiency versus Output Current (RADCB15A5)





V <sub>IN</sub> (V)	I <sub>OUTSV</sub> (mA)	+I <sub>OUT</sub> (mA)	-I <sub>OUT</sub> (mA)	Efficiency(%)	V <sub>ripple+</sub> (mV)	V <sub>ripple-</sub> (mV)
24	800	150	150	80	60	80
18	800	150	150	80	55	80
15	800	150	150	85	50	80
12	800	150	150	85	45	75
9	800	150	150	85	40	80
6	800	120	120	85	35	90

Table 7 - Output Current for various input voltages (RADCB18A5)

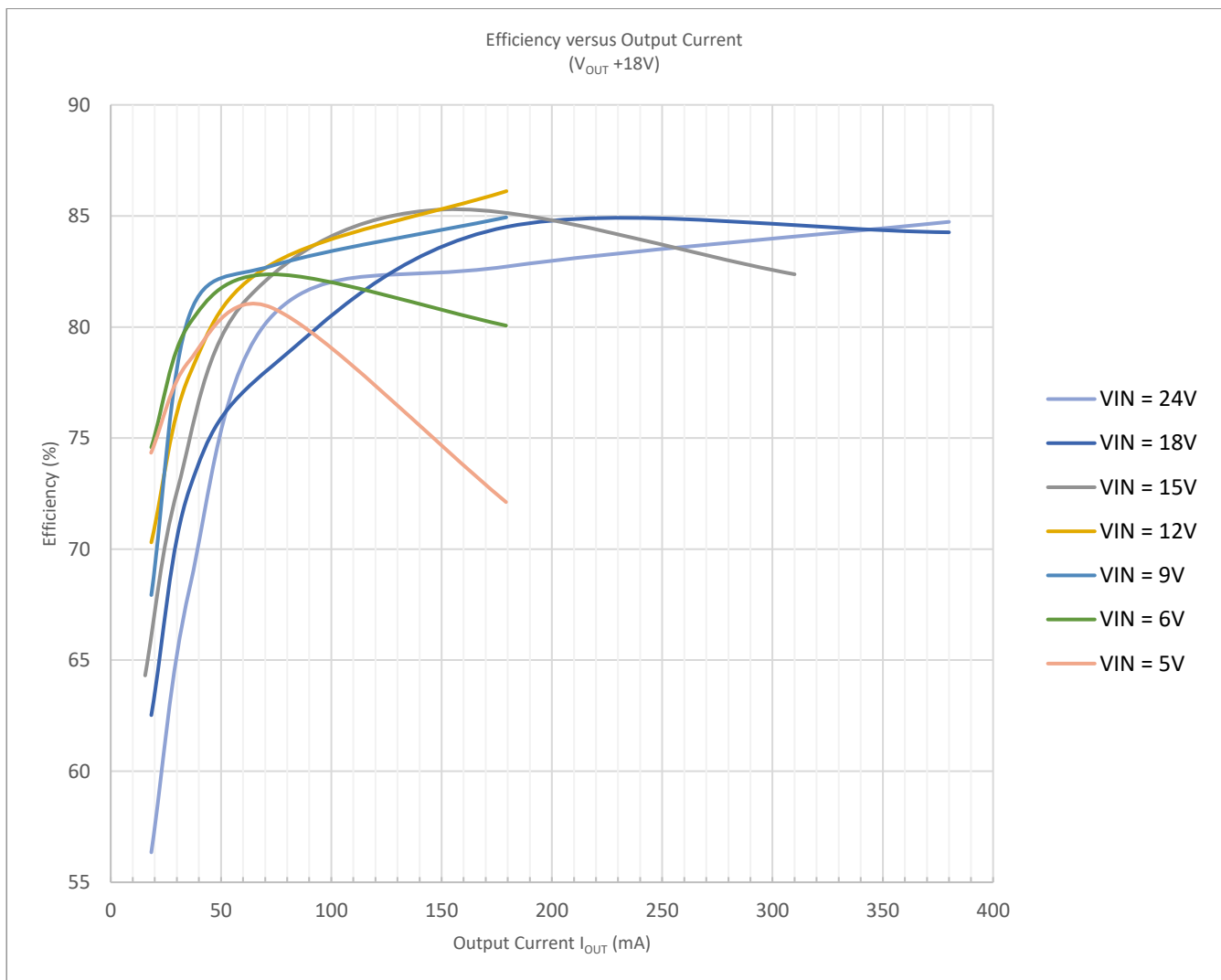
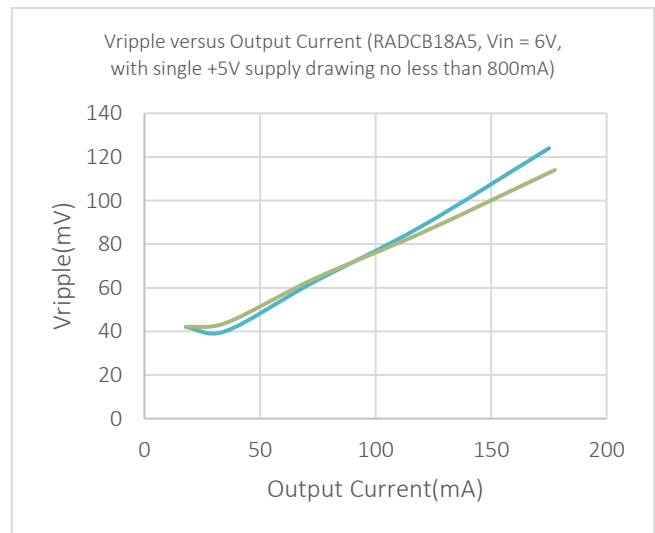
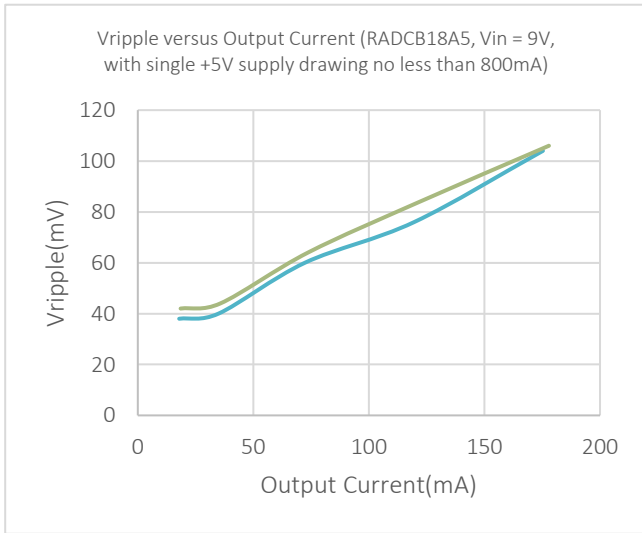
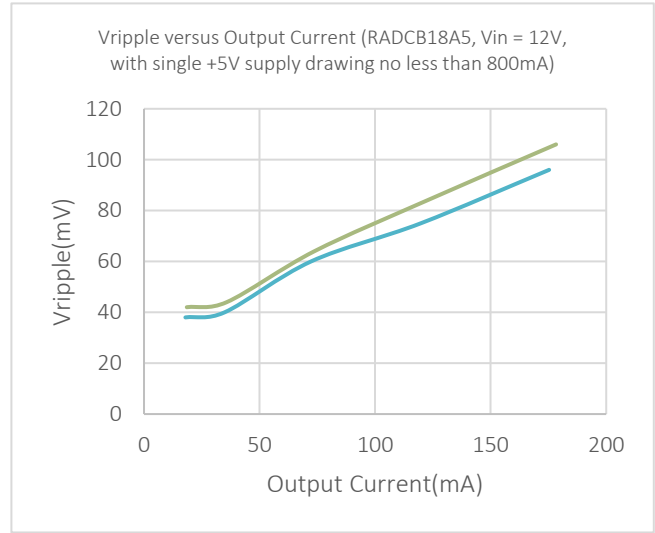
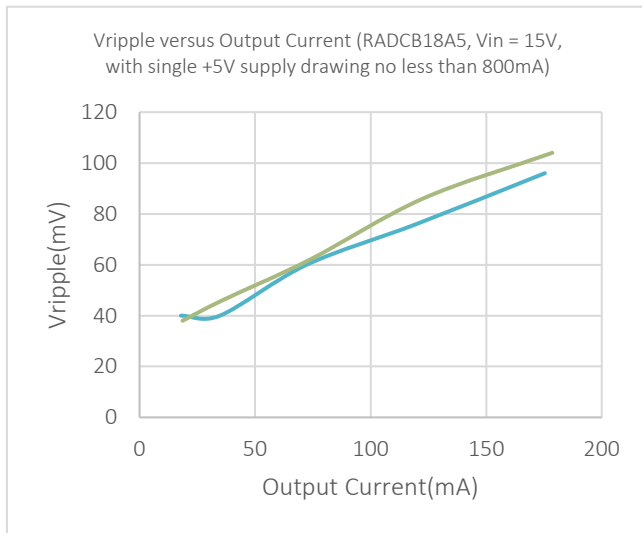
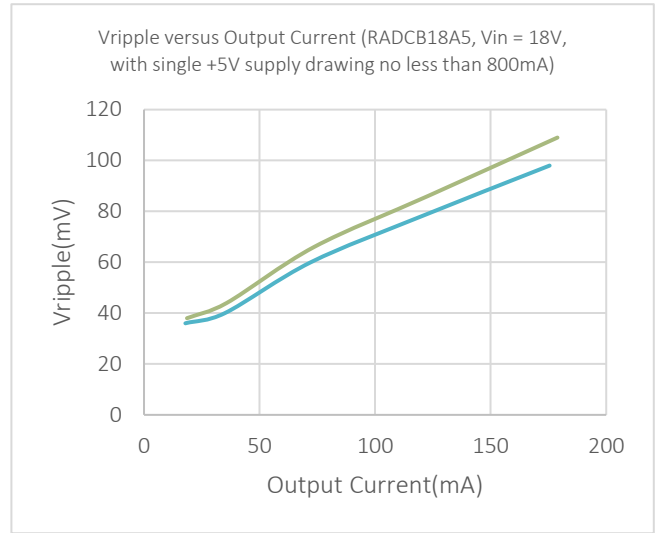
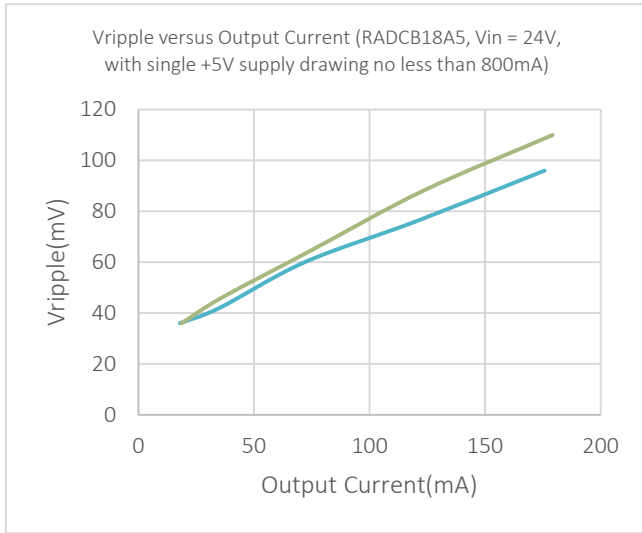


Figure 5 - Efficiency versus Output Current (RADCB18A5)



Characteristics		Min	Typ	Max	Unit
ENABLED	$V_{ENABLE}$	1.6	-	$V_{IN}$	V
DISABLED	$V_{DISABLE}$	0	-	0.5	V
Pull Down Resistor	$R_{PULL\_DOWN}$		450		k $\Omega$

Table 8 - Enable pin

## Operation

To permanently enable the +V, -V supplies, the EN enable pin can be connected directly to VIN.

To have discrete control using an MCU, the enable pins can instead be pulled high when supplies are required and pulled low or left open circuit for standby mode. The enable pins are internally pulled down with a 450k $\Omega$  resistor.

The open-drain PG power good pin goes high impedance when the output is stable.

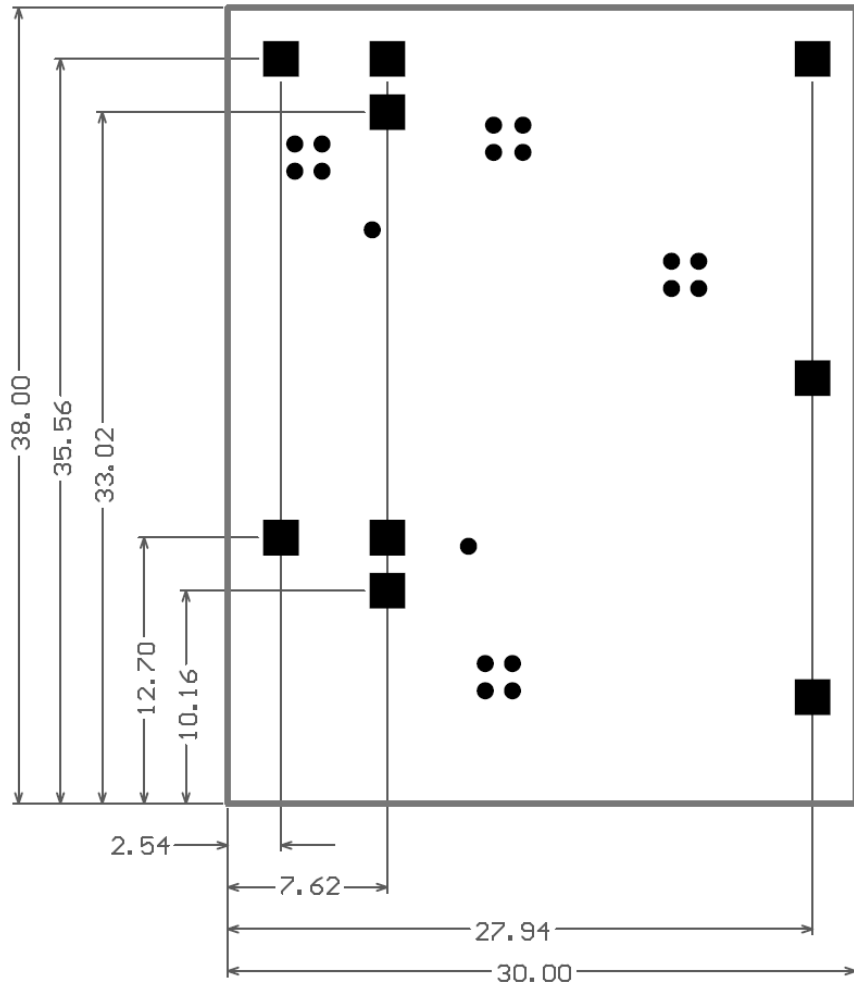


Figure 6 - Mechanical Specification

Symbol	Parameter	Value	Unit
L	Legth	30	mm
W	Width	22.8	mm
H	Height	12	mm
Mass	Weight	7	g

Table 9 - Mechanical Specification

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