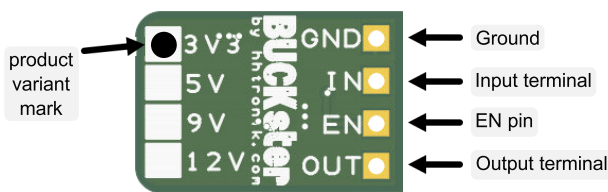


The BUCKster module family offers fixed value step down DC-DC converters with a small form factor and great performance at low cost. The converters provide a stable output over a wide input supply range, typically ranging from $V_{OUT} + 1V$ to 24V.

Features

- Small: 16.0x10.7x4.9mm
- Fixed output voltages: 3.3/5/9/12V
- High efficiency (typ. $\geq 70\%$, up to 92%)
- Wide supply voltage range: $V_{OUT} + 1V$ to 24V
- Good line and load regulation
- Low ripple output
- 1 μ A shutdown mode
- Built-in current limiting and thermal protection

Connections



Application notes

The module might heat up significantly under certain operation conditions, especially at higher loads.

Avoid short circuit and over-load conditions, do not invert polarity. Such error condition may damage the module.

The EN pin is tied to V_{IN} via a 100K Ω resistor. Make sure any application circuitry used to switch the EN pin can handle the voltage.

To enter shutdown mode, the EN pin must be driven low ($\leq 0.4V$).

The modules can typically supply more than 125mA from their starting voltage to the maximum rated input voltage. Refer to the chart "Typical safe maximum load vs. input voltage" on the next page for details.

You may increase the available maximum sustained current supply by providing additional cooling.

Note that increased load and higher temperatures may affect the durability of the module. It is recommended to keep the average operation temperature under 80°C. The module include thermal protection shutting down the regulator when the junction temperature of the control IC reaches 150°C.

Input characteristics				
Parameter	Min.	Typ.	Max.	Units
Voltage range		$V_{OUT} + 1V$	24	V
Startup voltage	4.5	$V_{OUT} + 1V$		V
Quiescent current		900		μ A

Output characteristics general				
Parameter	Min.	Typ.	Max.	Units
Output voltage accuracy		3		%
Line regulation (1)		0.5	1.5	%/V
Load regulation (2)		1.5	4.4	%
RMS ripple		8	30	mV

(1) Figure at $I_{load} = 50mA$
 (2) Figure at $I_{load} = 0$ to 300mA

Product variants / current supply capability (1)				
Parameter	Min.	Typ.	Max.	Units
BUCKster 3v3		600	800	mA
BUCKster 5v		600	750	mA
BUCKster 9v		550	780	mA
BUCKster 12v		550	720	mA

(1) Please refer to the chart "Typical safe maximum load vs. input voltage" for more details about input voltage dependent operation points. Ratings at 21.5°C ambient. Max. current rating at module temperature $\leq T_{ambient} + 50^\circ C$ for safe long term operation. Higher supply is possible with adequate cooling.

Mechanical characteristics				
Parameter	Min.	Typ.	Max.	Units
Length		16.0		mm
Width		10.7		mm
Height		4.9		mm
Weight		1		g

Absolute maximum ratings				
Parameter	Min.	Typ.	Max.	Units
Input terminal	0		26	V
EN pin	-0.3		6	V
Output terminal	0		26	V
Ambient temperature	-30		80	°C
Storage temperature	-55		135	°C

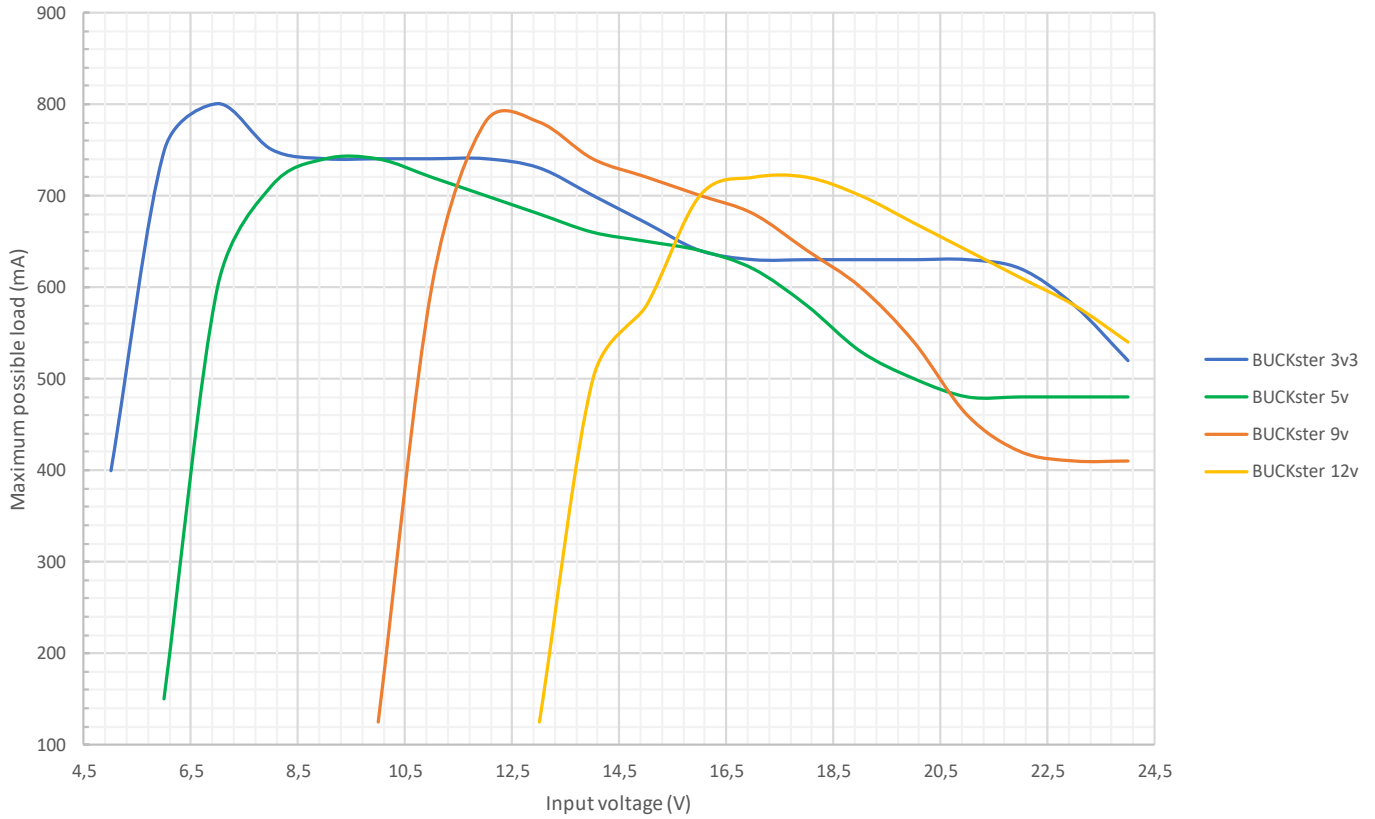
Note on LC spikes

Please note that voltage spikes can occur when disconnecting a module from longer power supply wires (such as typically used in laboratory environments). These voltage spikes can easily exceed the maximum acceptable input voltage modules even at modest supply voltages around 12-15V.

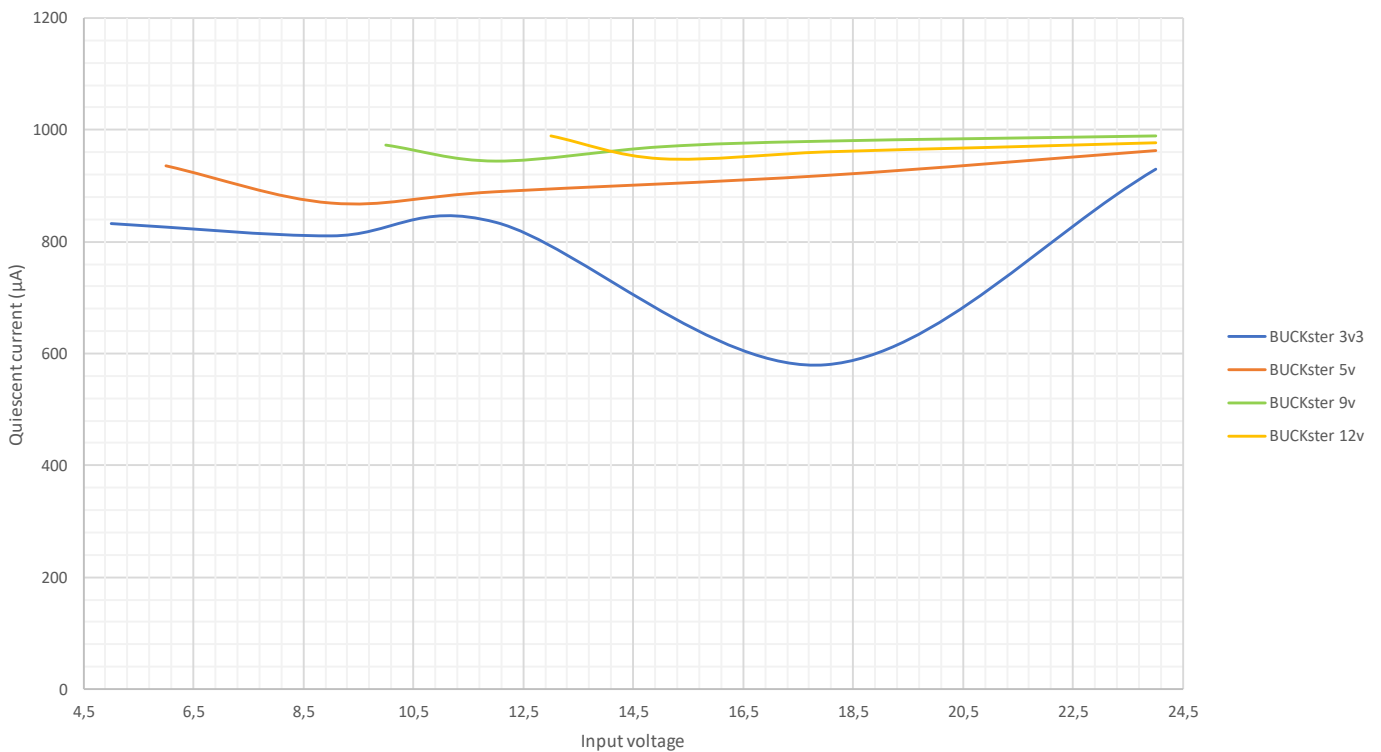
To mitigate this issue we recommend you:

- use short wiring when possible
- reduce the supply voltage or switch off the power supply before physically disconnecting the module
- add an additional input capacitance of at least 33 μ F close to the BUCKster module

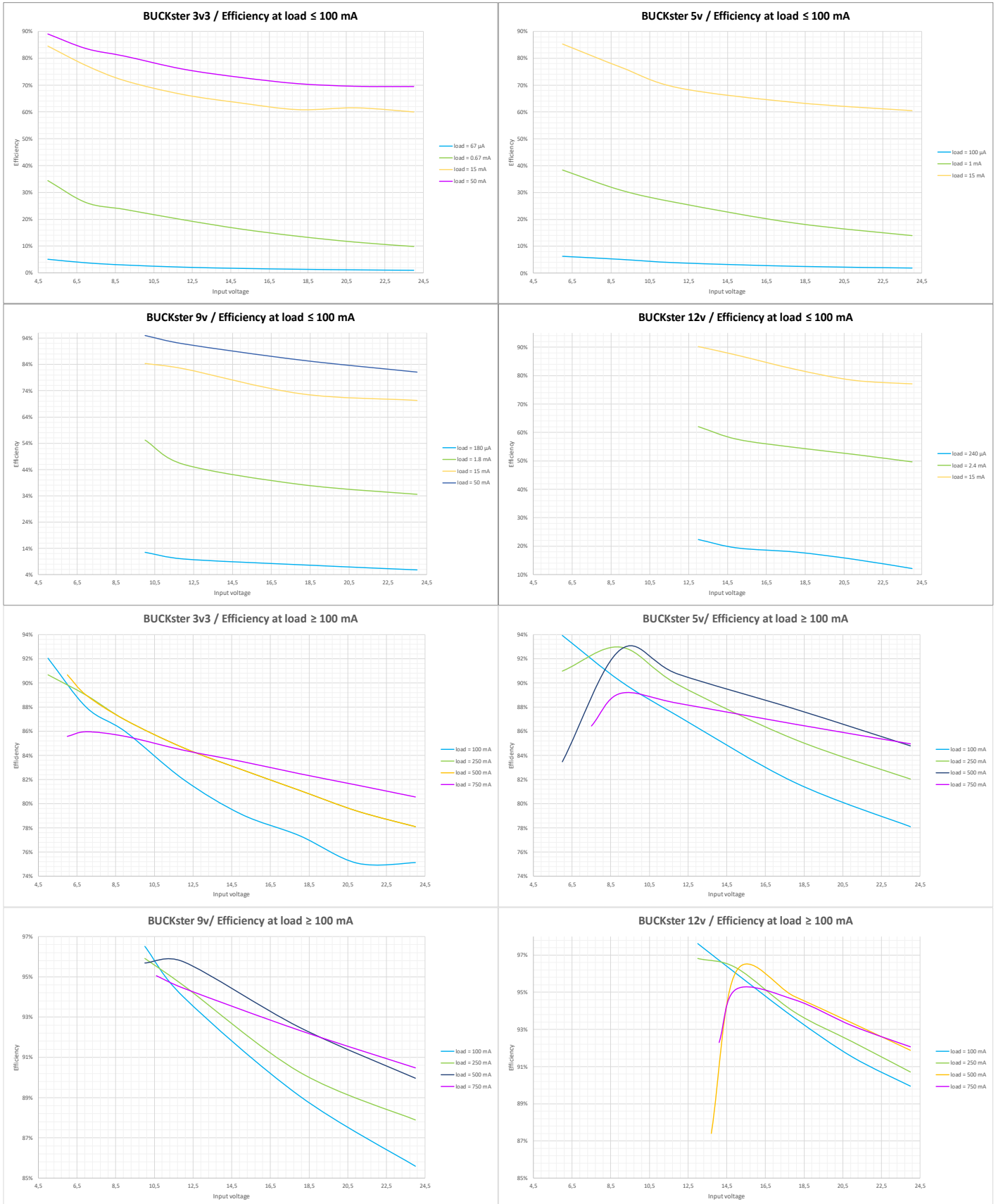
Typical safe maximum load vs input voltage



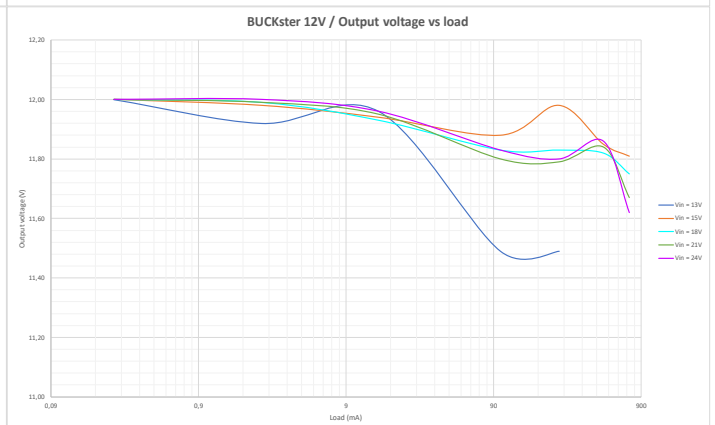
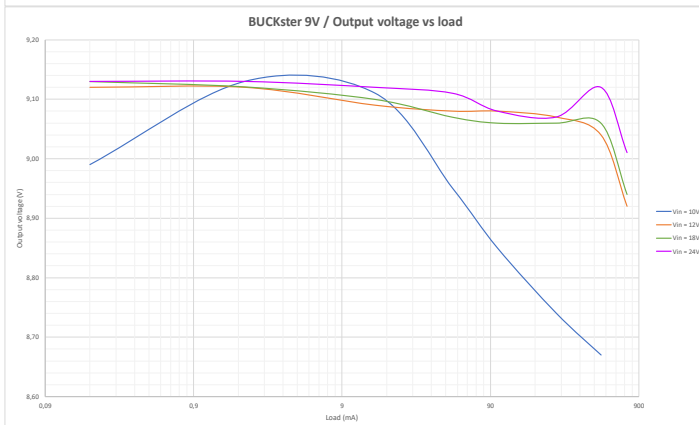
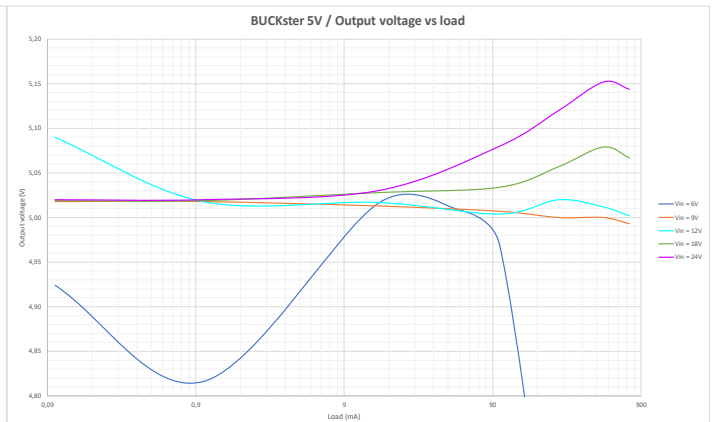
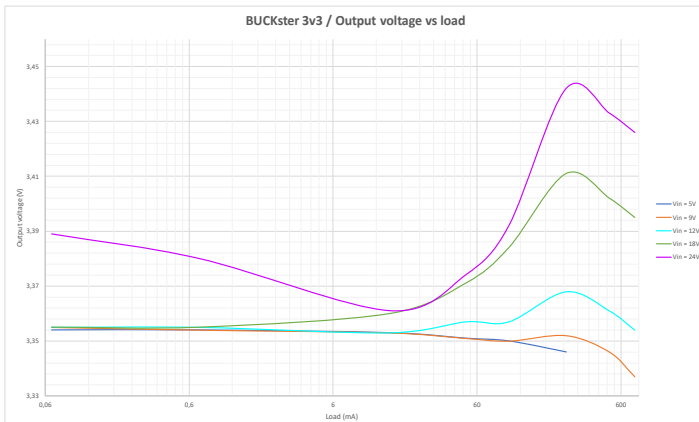
Quiescent current ($I_{LOAD} = 0 \text{ mA}$)



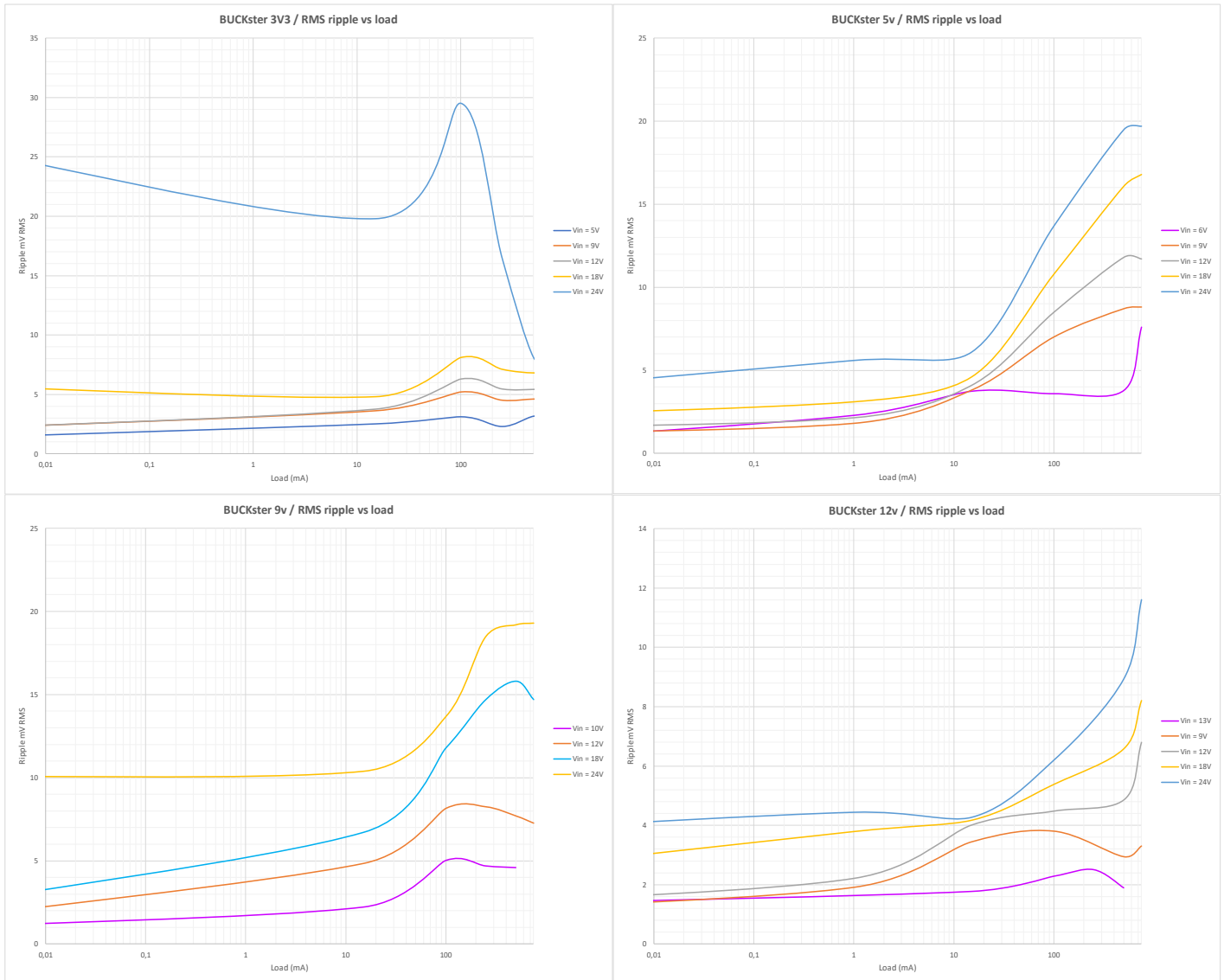
Efficiency measurements



Load regulation



Ripple



Note: measured at 20MHz bandwidth using a 1x probe.