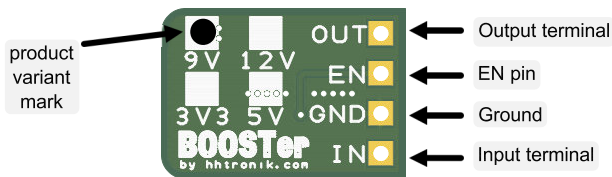


The BOOSTer module family offers fixed value step up DC-DC converters with a small form factor and great performance at low cost. The converters provide a stable output over a wide input supply range under various load conditions.

## Features

- Small: 14.4x10.7x4.9mm
- Fixed output voltages: 3.3/5/9/12V
- High efficiency (typ.  $\geq 75\%$ , up to 92%)
- Supply voltage range: 2V to  $V_{OUT}$
- Excellent line and load regulation
- Low ripple output
- 1 $\mu$ A shutdown mode
- Low quiescent current:
  - Typ.  $\leq 100\mu$ A for 3.3V and 5V variants
  - Typ.  $\leq 150\mu$ A for 9V and 12V variants

## Connections



## Application notes

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

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

The EN pin is tied to  $V_{IN}$  via a 100K $\Omega$  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 300mA (for the 3.3V and 5V variants) and 125mA (for the 9V and 12V variants) 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.

The startup voltage depends on the load present on the output. Stable startup is usually possible at 2V for loads smaller than 100mA.

If required, the transient response behavior can be improved by adding additional reservoir capacitance on the output of the module. Recommended values are 33 $\mu$ F to 100 $\mu$ F.

| Input characteristics |      |      |           |         |
|-----------------------|------|------|-----------|---------|
| Parameter             | Min. | Typ. | Max.      | Units   |
| Voltage range         |      | 2V   | $V_{OUT}$ | V       |
| Startup voltage (1)   | 1.98 | 2.05 |           | V       |
| Quiescent current     |      | 150  |           | $\mu$ A |

(1) Figure at  $I_{load} \leq 100mA$

| Output characteristics general |      |      |      |       |
|--------------------------------|------|------|------|-------|
| Parameter                      | Min. | Typ. | Max. | Units |
| Out. voltage accuracy (1)      |      | 3    |      | %     |
| Line regulation (2)            |      | 0.5  | 1.5  | %/V   |
| Load regulation (2)            |      | 0.5  | 1    | %     |
| RMS ripple                     |      | 10   | 100  | mV    |

(1) Figure at  $T_{AMBIENT} 21.5^{\circ}C$   
 (2) Figures at  $I_{load} \leq 500mA$

| Product variants / current supply capability (1) |      |      |      |       |
|--|------|------|------|-------|
| Parameter  | Min. | Typ. | Max. | Units |
| BOOSTer 3v3                                      |      | 400  | 680  | mA    |
| BOOSTer 5v                                       |      | 500  | 720  | mA    |
| BOOSTer 9v                                       |      | 350  | 580  | mA    |
| BOOSTer 12v                                      |      | 330  | 550  | 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 $^{\circ}C$  ambient. Max. current rating at module temperature  $\leq T_{ambient} + 50^{\circ}C$  for safe long term operation with  $V_{OUT}$  constrained to specified load and line regulation characteristics. Higher supply is possible with adequate cooling.

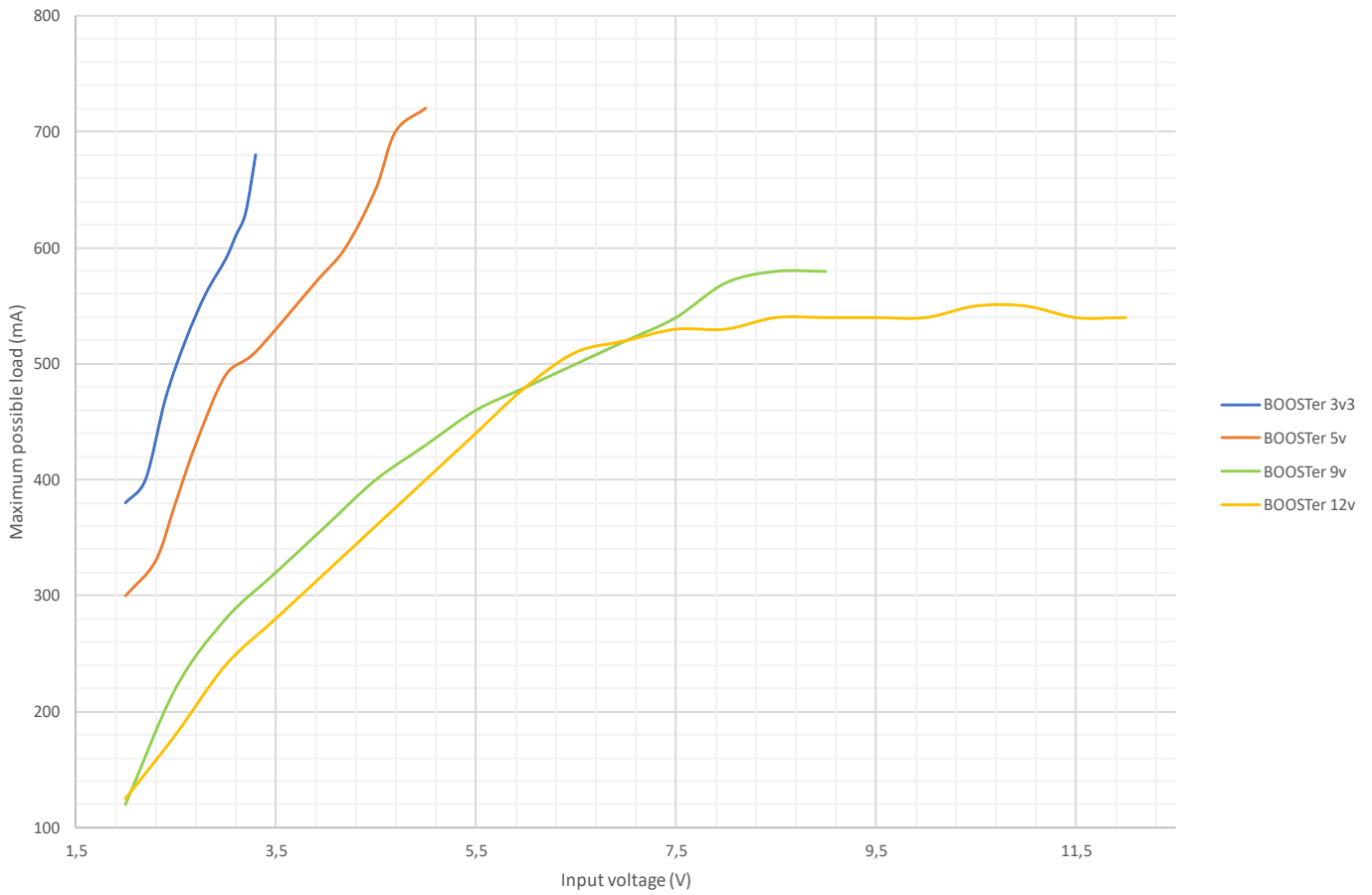
| Mechanical characteristics |      |      |      |       |
|----------------------------|------|------|------|-------|
| Parameter                  | Min. | Typ. | Max. | Units |
| Length                     |      | 14.4 |      | mm    |
| Width                      |      | 10.7 |      | mm    |
| Height                     |      | 4.9  |      | mm    |
| Weight                     |      | 1    |      | g     |

| Absolute maximum ratings |      |      |      |             |
|--------------------------|------|------|------|-------------|
| Parameter                | Min. | Typ. | Max. | Units       |
| Input pin                | -0.3 |      | 26   | V           |
| EN pin                   | -0.3 |      | 26   | V           |
| Output pin               | -0.3 |      | 30   | V           |
| Ambient temperature      | -30  |      | 80   | $^{\circ}C$ |
| Storage temperature      | -55  |      | 135  | $^{\circ}C$ |

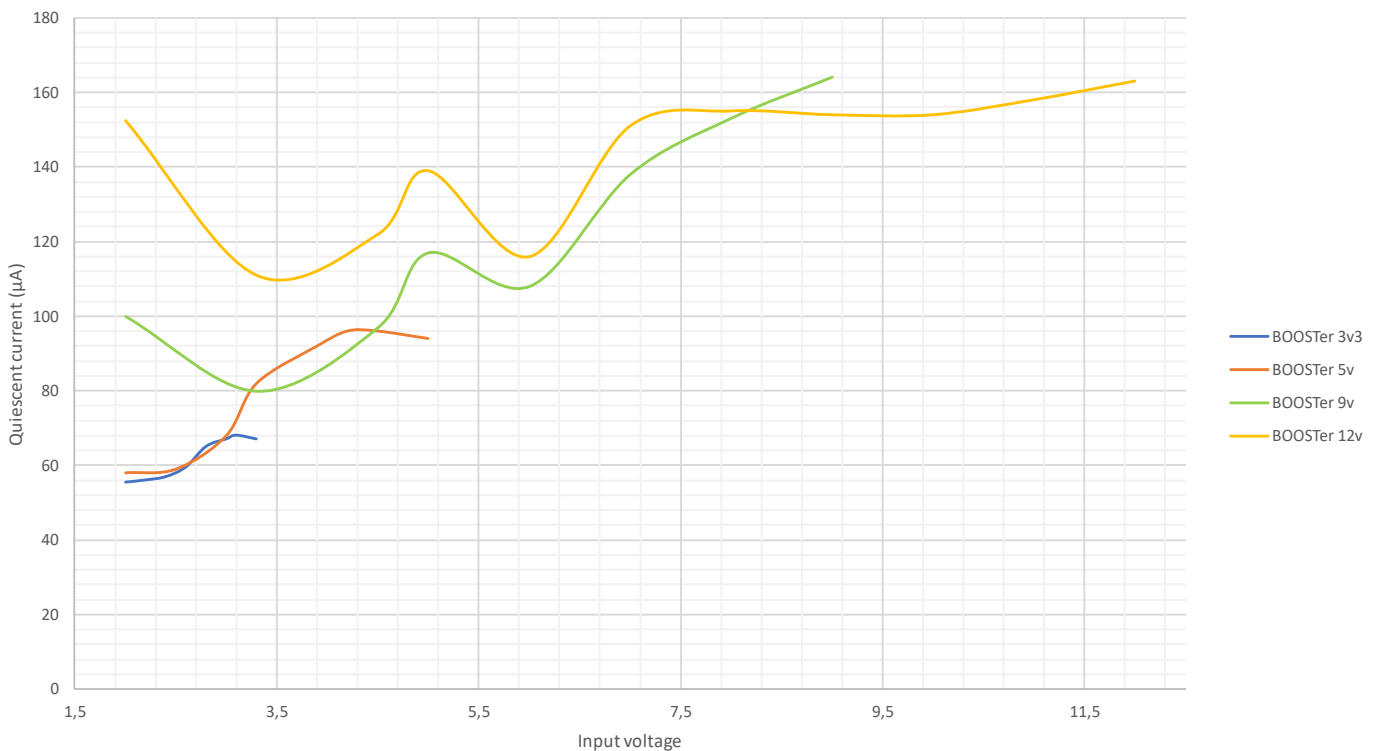
The available maximum sustained current supply may be increased by providing additional cooling.

*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 $^{\circ}C$ . The module include thermal protection shutting down the regulator when the junction temperature of the control IC reaches 155 $^{\circ}C$ .*

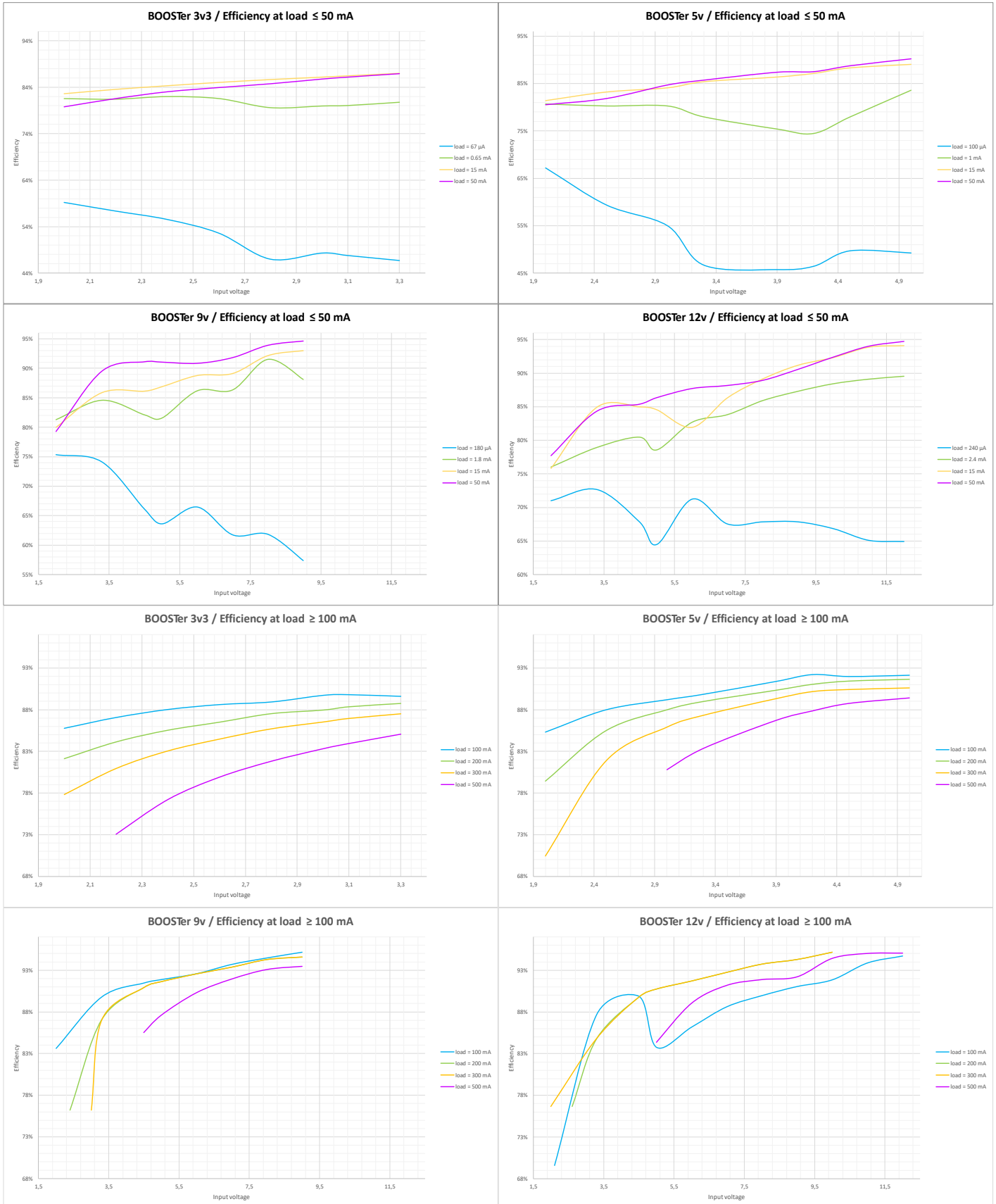
### Typical safe maximum load vs input voltage



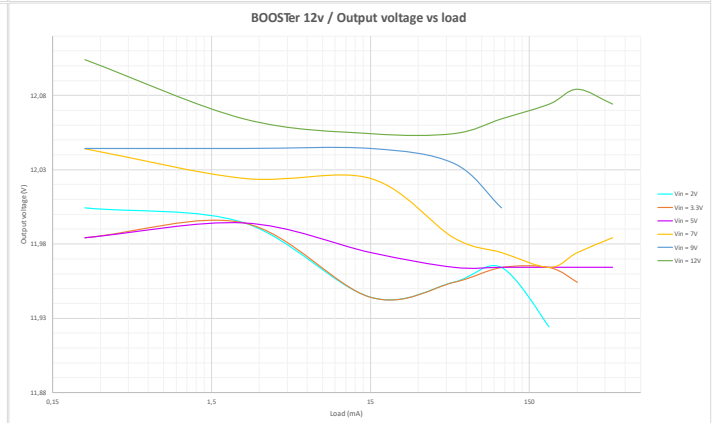
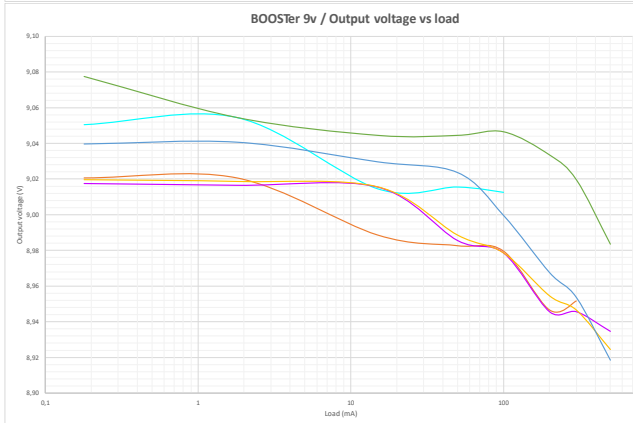
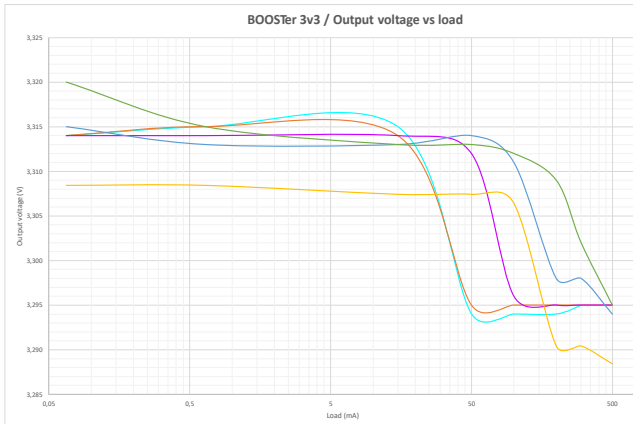
### Quiescent current ( $I_{LOAD} = 0 \text{ mA}$ )



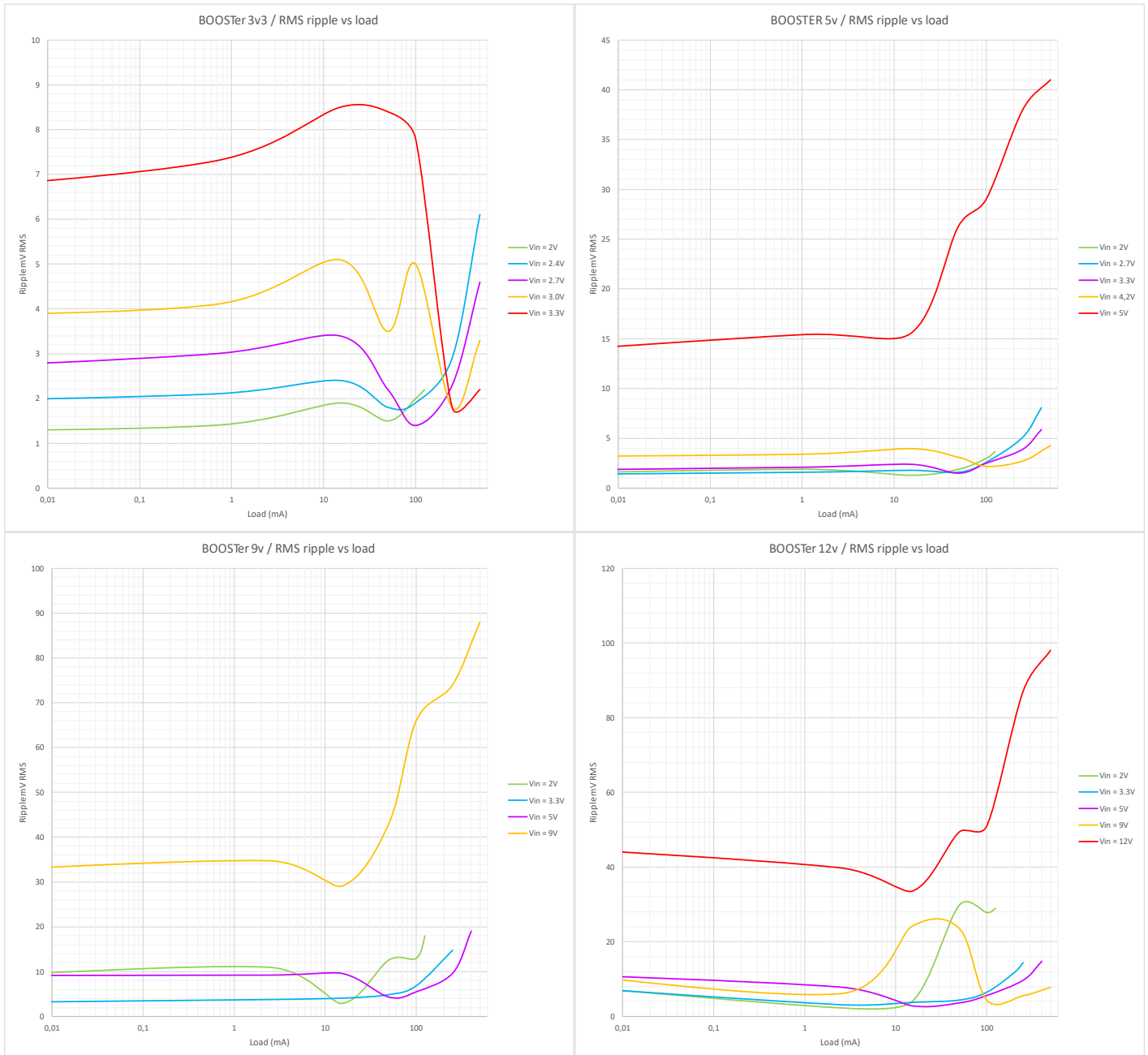
## Efficiency measurements



## Load regulation



## Ripple



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