

single output
up to 1500 Watt

Switching Regulators
without isolation



- On-board voltage processing
- Chassis mounting, no fans
- Extreme high efficiency
- Wide Input voltage range
- EMC EN50121.3.2 / 55022.B
- Floating and polarity-free inhibit
- Dyn./stat. short circuit proof
- Over voltage protection logic/thyristor
- Limited parallel operation
- No-load capable

for Telecommunication / Vehicle applications /
Installation technology / Railway technology



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Series QSR

Main points:

Output:

- Accuracy absolute $\pm 1,5\%$
- Regulation $\Sigma(U_{in} + I_{out} + T_U) < \pm 1,5\%$
- Ripple $< 50 \text{ mV}_{\text{rms}}$ const. over T_U
- Spikes $< 100 \text{ mV}_{\text{rms}}$ (T 1:1/50MHz)
- Response time $\Delta I=50\% \leq 1 \text{ms}$
- Short circuit current $\leq 1,2 I_{Amax}$
- Output spike filter (C - L² - C)
- Over voltage protection logic 1,2 U_{Amax}
- Option: Thyristor dyn. on fuse
- Output adjustable (option)
- No-load capability / Load-step 0-100%
- High current screw terminal M8

Input:

- Wide input voltage range
- Input fuse external (Customer)
- Reverse pol. protection on fuse (option)
- Very low stand-by current
- No external application circuit necessary
- Under voltage switch-off with hysteresis
- Surge proof 1,8kV / 42Ω
- Input filter acc. to EN 55022.A
- ON-OFF-control
floating and polarity independent
(Function see principle diagram)
- High current screw terminal M6

General:

- 2 pol interface plug (gold plated!)
- Ambient temperature $-25^\circ\text{C} / +70^\circ\text{C}$
Option: $-40^\circ\text{C} / +85^\circ\text{C}$
- Derating 2%/°C $>70^\circ\text{C}$
- Free air convection
- Max. heat sink temp. ★-point 95°C
- Over temperature-switch-off
- Filter frequency $>400\text{kHz}$
- Chopping currents to foil/ceramic-capacitors
- Up to $T_U = 70^\circ\text{C}$ without ventilation
- Common 0V input-output
- MTBF on request
- Shock/vibration acc. to EN 50155
- Chassis mounting
- Dimension incl. flange [with clamps]:
L x B x H (260 x 240 x 47,5 [51,5])mm
- Weight approx. 4kg

U _{in} Min / Range V	U _{out} Min / Nom V	I _{out} A	η %	Model number
9,6 / 13,5 - 27 ²⁾	8 / 12	80	95	QSR 12.12.800
11,5 / 13,5 - 36 ²⁾	10 / 12	70	94	QSR 24.12.700
13,5 - 52 ^{1) 2)}	12	70	93	QSR 30.12.700
16 / 20,5 - 36 ²⁾	14,5 / 19	70	96	QSR 24.19.700
22 / 26 - 52 ²⁾	20,5 / 24	60	97	QSR 30.24.600
26 - 80 ²⁾	24	50	96	QSR 48.24.500
38 - 80 ²⁾	36	42	95	QSR 48.36.420
26 - 110	24	50	94	QSR 72.24.500
38 - 110	36	42	95	QSR 72.36.420
28 - 154	24	50	94	QSR 10.24.500
40 - 154	36	42	96	QSR 10.36.420
51 - 154	48	31	96	QSR 10.48.310

(H) -40°C up to $+85^\circ\text{C}$ Additional charge

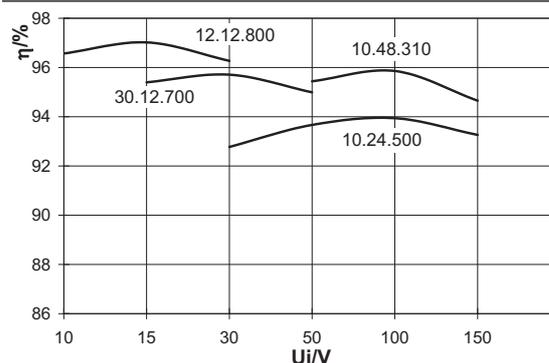
1) not protected against over voltages and transients $>65\text{V}$

Modification costs for possible changes above values on request

2) **Warning:** (Synchronous switches)

Output sided energy carrier like batteries/High-Caps must be decoupled over diodes.
The parallel operation without decoupling diodes is generally not allowed.

Efficiency

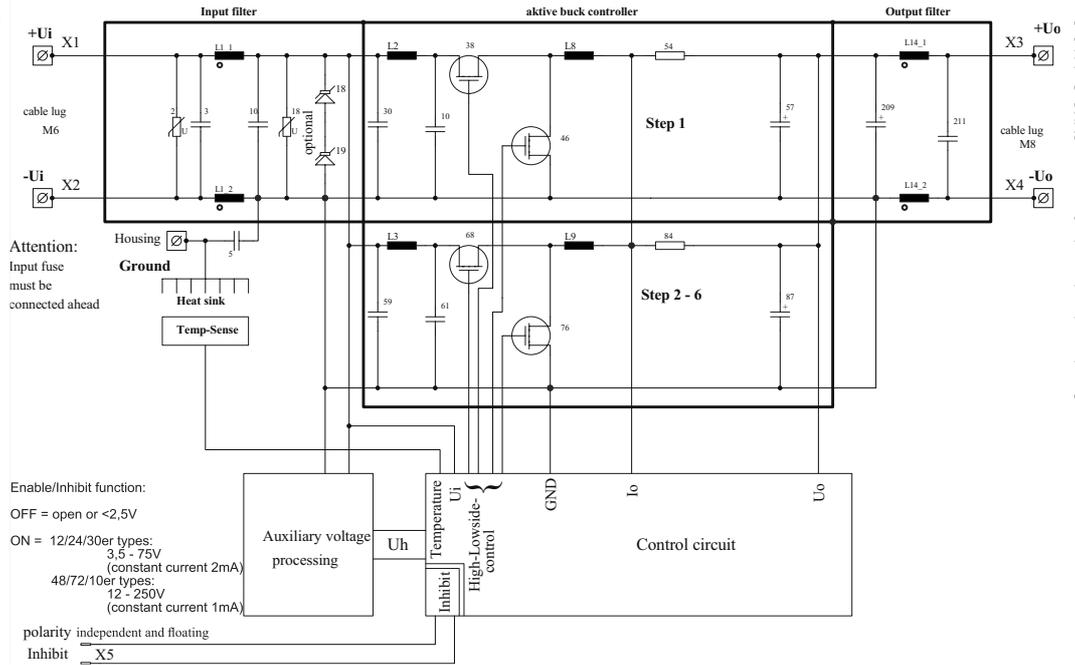


High power converters of the **QSR** series have been developed to generate a non-isolated, constant supply voltage for a platform-solution. Extreme high efficiency up to 98%, very high functionality and the adapted choice of components lead to a very high availability over wide input voltage ranges, temperature and shock/vibration by high chopping-currents.

External ventilation up to 70°C ambient temperature is not necessary when the possibility of free air convection is given. The filter frequency of

≥400kHz minimises the input and output voltage ripples. The no-load capability allows load-steps from no-load to $I_{o\ max}$ with the normal regulation characteristics.

The **QSR** series works as Buck converter with approx. 1V dropout-voltage up to a minimum input voltage of $0,8 \times U_{o\ nom}$, where the on-board-network/voltage configuration allows it. Output sided energy carrier like batteries/High-Caps must be decoupled over diodes. The parallel operation without decoupling diodes is generally not allowed. When a step-up/step-down operation is needed, the mechanic compatible DBR.V series (product line B) can be used.



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Mechanics

