

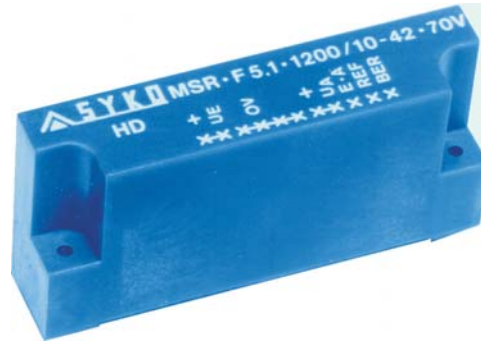
single output  
up to 16 Watt

Switching Regulators  
without isolation



- Housing screwable
- Height 29 mm
- Usable on extreme fluctuating on-board networks 12V and 24V
- Very high functional reliability
- Transient proof
- Plastic-housing (potted)
- 100% functional tests of all parameters

Replacement for linear regulators 3 W - 17 W.  
The functionality is controlled in all operational situations and characteristics.



Not for new developments

© registered trade mark of company SYKO GmbH & Co. KG

## Series MSR - F

### Main points:

#### Output:

- Output voltage adaptation  $U_{out} +2\%$ (BER)
- Accuracy absolute  $\pm 1\%$
- Regulation  $\Sigma(U_{in} + I_{out} + T_U) < \pm 1,5\%$
- Ripple  $< 45 \text{ mV}_{\text{rms}}$  (typ.  $20 \text{ mV}_{\text{rms}}$ )
- Spikes  $< 50 \text{ mV}_{\text{rms}}$  (T 1:1/50MHz)
- Response time  $\Delta I=50\% \leq 250\mu\text{s}$
- No-load-, static over load- and static short circuit protected
- Short circuit current  $\leq 1,2 I_{o \text{ max}}$
- Reference  $5\text{V} \pm 1,5\% / 2\text{mA}$  (REF)

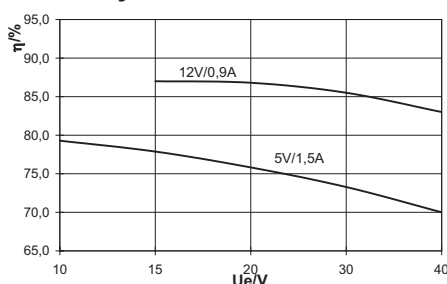
#### Input:

- No-load power consumption approx. 0,4 Watt
- ON-OFF-control (Inhibit)
- Transient adapted
- Do not use without CE
- Easy noise suppressible (application)

#### General:

- Ambient temperature  $-25^\circ\text{C} / +70^\circ\text{C}$   
Option:  $-40^\circ\text{C} / +85^\circ\text{C}$   
Derating  $1\%/^\circ\text{C} > 70^\circ\text{C}$  (except \*)
- Free air convection
- Common 0V Input-output
- MTBF  $G_F(40^\circ) > 850000 \text{ h}$
- Plastic housing
- Dimension  $60 \times 14 \times 29 \text{ mm}^3$
- Base plate with distance to the PCB [Soldering cone]

#### Efficiency:



<u>U<sub>in</sub></u> V	<u>U<sub>out</sub></u> A	<u>I<sub>out</sub></u> A	<u>CE</u> μF/V	Model number
<b>7 - 38</b>	5,1	1,2	220/50	MSR·F 05·12·38
	5,1	1,5	220/50	MSR·F 05·15·38 *
<b>9 - 42</b> 50V / 5s 70V / 0,5s	5,1	0,8	150/80	MSR·F 05·08·42
	5,1	1,2	220/80	MSR·F 05·12·42
	6	0,8	150/80	MSR·F 06·08·42
	6	1,2	220/80	MSR·F 06·12·42
<b>15 - 42</b> 50V / 5s 70V / 0,5s	12	0,6	150/80	MSR·F 12·06·42
	12	0,9	220/80	MSR·F 12·09·42
	12	1,2	220/80	MSR·F 12·12·42
<b>18 - 42</b> 50V / 5s 70V / 0,5s	15	0,5	150/80	MSR·F 15·05·42
	15	0,8	220/80	MSR·F 15·08·42
	15	1,0	220/80	MSR·F 15·10·42
<b>15 - 72</b>	5,1	0,8	150/100	MSR·F 05·08·72
	6	0,8	150/100	MSR·F 06·08·72
<b>18 - 72</b>	12	0,7	150/100	MSR·F 12·07·72
<b>22 - 72</b>	15	0,6	150/100	MSR·F 15·06·72
<b>28 - 72</b>	24	0,4	100/100	MSR·F 24·04·72

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

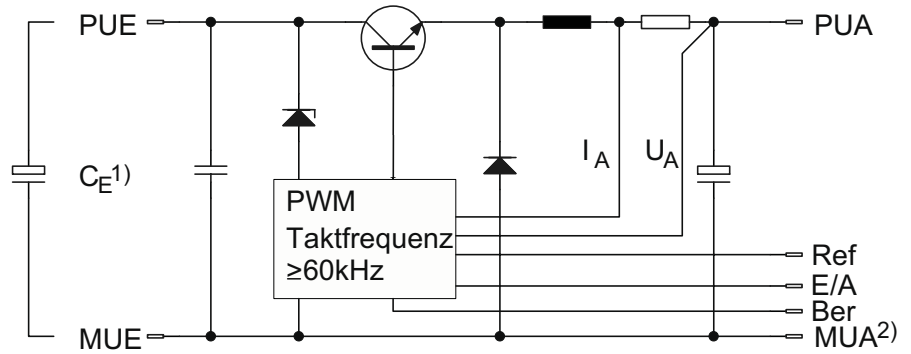
Modification costs for possible changes above values: on request

\* Derating  $1,5\% / ^\circ\text{C} > 65^\circ\text{C}$

Switching regulators of the **MSR.F** series have been designed especially for the use in vehicle battery-supplied networks with 12V or 24V. The converter is also applicable for other battery- and industrial networks. The source voltage can be extremely fluctuating and the occurring transients are absorbed based on external pre-filters (application).

The capability for the use in vehicles has been realised with the secured internal functionality as well as the mechanical adaptation with a flange housing. The reliable operation has been displayed in several applications.

All electrical parameters (voltages, currents, frequencies, efficiency, ripple, spikes etc.) are 100%-tested at all internal points as well as on all customer interface points. The result is that the modules can guarantee a very high quality level. The H-version (-40/+85°C) includes an automatically documented temperature cycle-test, which leads to an optimal protection against early failures and functional errors.

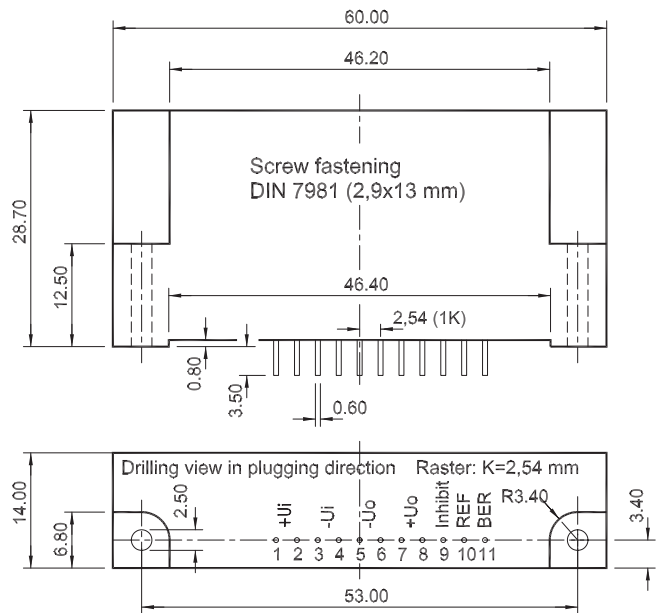
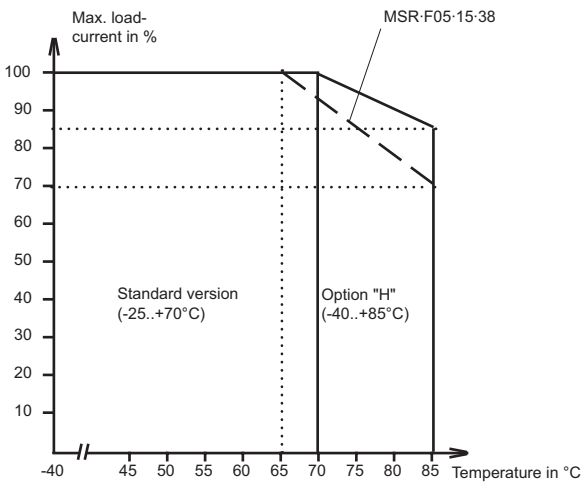


2) Reference all potentials to -Uout

1) Do not use without CE  
See product line M  
for special capacitors and filters

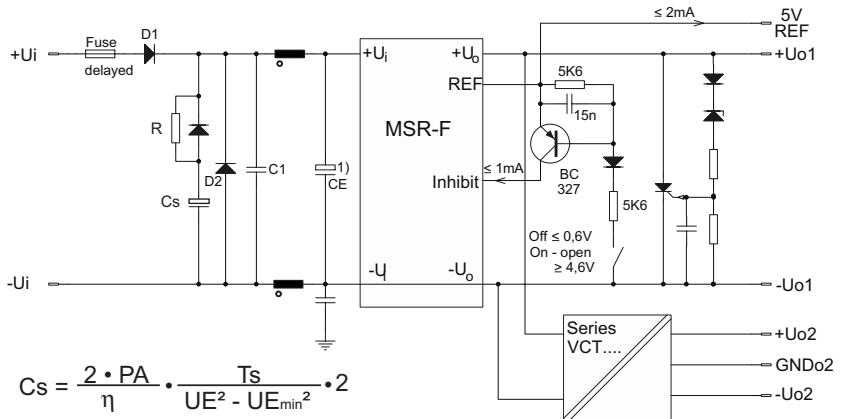
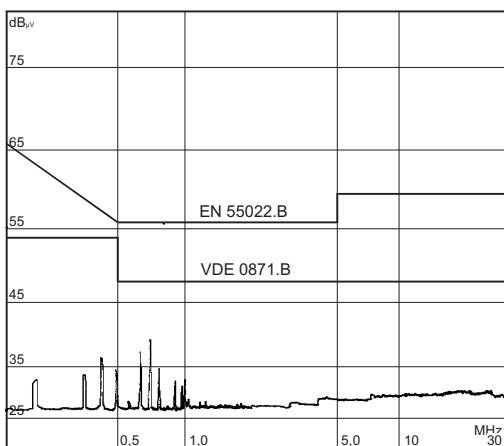
© registered trade mark of company SYKO GmbH & Co. KG

**Derating curve**



**Application (Noise suppression / multiple outputs)**

**Measurement of radio interference**



$$C_s = \frac{2 \cdot PA}{\eta} \cdot \frac{T_s}{U_E^2 - U_{Emin}^2} \cdot 2$$

Hold-up capacitor

R for inrush current limitation  
Power loss at voltage ripples